

RESEARCH ARTICLE OPEN ACCESS

Board Dynamics: Balancing Quantity and Quality of Non-Financial Information Reports Through Director Composition

Melanie Grueso-Gala  | Sergio Camisón Haba

Faculty of Economics, Universitat de València, Valencia, Spain

Correspondence: Melanie Grueso-Gala (melanie.grueso@uv.es)

Received: 21 January 2025 | **Revised:** 30 September 2025 | **Accepted:** 3 October 2025

Funding: This work was supported by Ministerio de Ciencia, Innovación y Universidades (FPU17/04804) and Ministerio de Ciencia e Innovación (PID2020-119642GB-I00).

Keywords: board of directors | female directors | Ibex35 | non-financial information | panel data | sustainability reports

ABSTRACT

This study investigates the influence of board composition on the quantity and quality of non-financial information (NFI) reports in firms listed on the Ibex35 index. Utilizing a longitudinal panel data analysis spanning 2015, 2017, and 2019, the research evaluates the roles of independent, proprietary, and female directors. Results indicate that independent and proprietary directors significantly enhance the quantity of NFI disclosed but exhibit no impact on quality. Conversely, female directors positively affect the quality of NFI reporting without influencing quantity. These findings underline the distinct contributions of director types to NFI transparency, emphasizing the need for tailored board composition strategies to align with organizational objectives. The study further highlights the importance of considering both NFI quantity and quality as separate constructs, offering valuable insights for corporate governance practices, legislative reforms, and future research on sustainable business reporting.

1 | Introduction

Despite extensive literature on the board of directors (BoDs), little research explores how its composition influences non-financial information (NFI) reporting (Cucari et al. 2018; Rao and Tilt 2016). As key organizational elements, BoDs must address stakeholder concerns and align firm strategies accordingly. CSR investments and reports help meet these demands (Jizi 2017; Martínez-Ferrero and García-Sánchez 2017) while reducing information asymmetries between management and stakeholders (Velte 2022).

Upper echelons theory (Hambrick and Mason 1984) has the premise that “executives’ experiences, values, and personalities greatly influence their interpretations of the situations they face and, in turn, affect their choices” (Hambrick 2007, 334). Hence, there might be a relationship between the composition of the

BoD and the NFI reports. The argument supporting that idea is that the background, beliefs, and motives of those in charge of formulating and taking decisions in the firm may influence the outcomes, in this case, CSR disclosures (Khan et al. 2013).

Studies analyzing the relationship between the BoD and aspects of CSR are scarce (Rao and Tilt 2016) and, specifically, the link with CSR reporting, which needs even more attention (Cucari et al. 2018). We study different types of directors: independent, proprietary, and women directors. Board independence is one of the most studied characteristics of the BoD; however, there are inconclusive results when the studied relationship is between independent directors and disclosure (Hossain et al. 2017). Regarding proprietary directors, despite being one of the most important shareholders (Cabeza-García et al. 2018; Fuente et al. 2017), we have found a lack of articles studying their relationship with NFI disclosure. Hence, there is a need

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial](https://creativecommons.org/licenses/by-nc/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2025 The Author(s). *Business Strategy and Development* published by ERP Environment and John Wiley & Sons Ltd.

for more research on this. When it comes to women on the BoD, as Giannarakis (2014) indicates: Gender composition has been largely associated with financial performance, but there is no satisfactory evidence of its relationship with CSR reports. Bannò et al. (2021) perform a literature review of 77 articles on the relationship between women on the BoD and the disclosure of NFI. Although most studies document a positive impact (Velte 2022), consensus hasn't been reached yet.

The objective of our research is to shed some light on the relationship between the BoD and NFI reporting. Specifically, we want to answer the following questions: Do independent directors increase the quantity and quality of NFI reporting? Do proprietary directors improve the quantity and quality of NFI reporting? And do women on the BoD increase the quantity and quality of NFI reports?

Most of the research found is focused on studying the impact on the quantity of NFI; however, aspects related to quality are scarcely studied because assessing quality presents greater methodological challenges (Brammer and Pavelin 2008). Some scholars have even used the quantity as an indirect indicator of its quality; for instance, Romero et al. (2019) or Adel et al. (2019). Nevertheless, empirical findings indicate that the amount of information disclosed does not reliably reflect its quality (Castilla-Polo and Ruiz-Rodríguez 2021). Furthermore, much of the existing literature tends to analyze either quantity or quality in isolation (Adel et al. 2019; Avram et al. 2019; Fernandez-Feijoo et al. 2018; Romero et al. 2019), rather than considering both dimensions jointly. Therefore, in this article, we study both variables to see if there are differences in their drivers.

There is also need for more studies that employ panel data. As indicated in the review by Bannò et al. (2021) and Rao and Tilt (2016) most of them use cross-sectional data, hence they might have more difficulties finding causality between the BoD composition and the firm's performance. Rao and Tilt (2016) and Khan (2010) highlight the importance of more longitudinal studies. Khan (2010) indicates that "a longitudinal study in different time settings may offer further glitter on the issue to know the changes of CSR reporting across time on annual reports" (p. 102).

In order to fill these gaps in the literature, we perform a panel data analysis of the Ibex35 firms, including the years 2015, 2017, and 2019. The results show that independent and proprietary directors have a positive influence on the quantity of disclosed NFI, but they seem to be insignificant for the quality of it. It occurs the opposite with women directors: They show no significant relationship with the quantity; however, they positively affect the quality of NFI.

Our study contributes to the existing literature in different ways. We provide insight on the relationship between certain types/characteristics of directors (independent, proprietary, and women directors) and the NFI reports. Independent and women directors have been largely studied; however, there are still mixed results in the literature. We also add some evidence to the proprietary director's literature, as there are not many studies that analyze its relationship with the quantity and quality of the NFI reports. We also follow the indications of previous authors,

saying that most studies use cross-sectional data (Bannò et al. 2021; Rao and Tilt 2016) and that longitudinal studies are needed to provide more insight into the changes across time in CSR annual reports (Khan 2010). We perform a panel data analysis which can overcome the limitations of cross-sectional studies (Martínez-Ferrero and García-Sánchez 2017). Also, previous studies mainly focus on studying only the quantity of the disclosed NFI (Barako and Brown 2008; Cabeza-García et al. 2018; Cucari et al. 2018; Fernandez-Feijoo et al. 2014; Frias-Aceituno et al. 2013; Fuente et al. 2017; Giannarakis 2014; Khan 2010). This leaves out other relevant aspects that reflect the quality of the NFI report, such as accuracy, clarity, or relevance. Also, as we have seen with our results, we can obtain different outcomes when measuring quantity and quality as differentiated concepts. Hence, we measure and analyze both the quantity and quality in the same study. There are authors like Al-Shaer and Zaman (2016) that study quality; however, the measurement they use could be improved by adding a few more sets of indicators. We use a comprehensive index following the one proposed by Castilla-Polo and Ruiz-Rodríguez (2021). These contributions are relevant for researchers but also have important implications for practitioners. Even though it was not among our main objectives, our findings are useful to set the criteria for the best composition of the BoD that can support the firm's strategic objectives. Also, with our study, we provide useful insights for legislators who can present new laws and influence the composition of the BoD, thus improving the quantity and quality of the NFI reports.

The next section reviews the literature and the link between the BoD and the NFI reports. Then we explain the methodology, where we indicate how all the variables have been measured, and the method we follow to analyze the data. In Section 4, we can see the descriptive statistics, correlation analysis, and the regression results. Finally, we discuss the findings and their implications.

2 | Theoretical Background and Hypothesis Development

The BoD plays an important role in the organization. They have the responsibility to align firm behavior with pressure from all stakeholders (Cucari et al. 2018). Stakeholder theory assumes that firms must fulfil various stakeholders' interests (Velte 2022). An effective BoD is expected to address the concerns and protect the interests of not only shareholders, but also a wider group of stakeholders (Jizi 2017; Rao et al. 2012). In other words, they must identify the legitimate claims of the different stakeholders and respond to them.

The corporate governance (CG) is one of the main instruments for the supervision of managerial actions (Bannò et al. 2021) and where decisions are taken, including those regarding sustainability issues. The BoD is responsible for setting the firm's CSR agenda and developing strategies for sustainable business, among others. The increasing pressure from regulators and powerful groups of stakeholders is making business adopt sustainable development programs (Jizi 2017). Also, as a strategy for firm value maximization, boards have become more inclined to invest in CSR and produce NFI reports (Jizi 2017). Some of

the claims of stakeholders can be addressed by publishing CSR reports (Pucheta-Martínez et al. 2018). According to stakeholder theory, CSR is the firm's attempt to negotiate its relationship with stakeholders (Ihlen et al. 2011) and considers reports as the mechanism to cover stakeholders' demands (Martínez-Ferrero et al. 2016).

From an agency theory perspective, NFI reports reduce information asymmetries between management and the different stakeholder groups (Velte 2022). CSR reports are "part of a firm's communication tool to reduce the asymmetries of information between managers and investors' and is used to produce a better valuation of a company" (Reverte 2012, 253). Agency theory argues that managers might tend to misuse their power for personal benefits. In this case, the BoD is supposed to control and protect shareholders' interests (Jizi 2017). CSR information would perform as a control mechanism between the BoD and other stakeholders (Frias-Aceituno et al. 2013).

Some authors such as Afeltra et al. (2022), Cucari et al. (2018) or Rao and Tilt (2016) claim that the characteristics of the BoD may influence the company's NFI disclosure. Based on upper echelons theory (Hambrick and Mason 1984): the choices, motives, and values of those who are involved in formulating and making decisions in the organization may influence CSR disclosures (Khan et al. 2013). Previous studies explain that as CSR and disclosure policies emanate from the BoD, it is possible that the characteristics of the board are determinants of companies' disclosure (Afeltra et al. 2022).

Research on board composition has mainly focused on its effect on corporate financial performance, while CSR and NFI reporting have been paid much less attention (Rao and Tilt 2016). Despite the important body of literature on CG and CSR separately, the link between them is still scarcely studied. Specifically, the CG-NFI disclosure needs more attention (Cucari et al. 2018; Khan et al. 2013) to explain the empirical mixed evidence (Jizi 2017). It is only recently that the relationship between NFI reporting and governance has been given consideration (Rao et al. 2012). Very limited research has examined whether diversity among the BoD members has any influence on CSR reporting (Rao and Tilt 2016). Although limited, research suggests that "board diversity to a certain extent can also influence social and environmental aspects of the business (i.e., CSR)" (Rao and Tilt 2016, 331).

Board diversity is becoming increasingly important nowadays. Modern society these days is multicultural, gender sensitive, socially and environmentally concerned, or exhibits diverse backgrounds among others (Rao and Tilt 2016). Firms are facing more complex economies and more sophisticated demands from stakeholders (Walt and Ingley 2003). To connect the organization with society and serve the wide community within which they exist, firms need to examine how to organize the composition of the board. It needs to reflect democracy and civil society in its diversity (Walt and Ingley 2003). Westphal and Milton (2000) explain that "boards have traditionally been viewed as a homogenous group of elites who have similar socioeconomic backgrounds, hold degrees from the same schools, have similar educational and professional training, and, as a result, have very similar views about business practices" (Westphal

and Milton 2000, 366). Rao and Tilt (2016) also indicate that "homogeneous boards usually think alike and are more likely to have similar perspectives/opinions" (Rao and Tilt 2016, 331). Due to this shared vision and lack of diverse perspectives, such BoD may not be able to challenge the management thinking, thus weakening the quality of the debates (Rao and Tilt 2016).

Moving from corporate monoculture and the BoD uniformity to a more diverse composition can benefit organizations by being able to better represent the diverse perspectives that businesses require nowadays (Walt and Ingley 2003). Minority groups on the BoD can stimulate divergent thinking in the decision-making process and offer unique perspectives that change the conventional wisdom of the group (Westphal and Milton 2000).

Board diversity, as explained by the resource-based view (RBV), links internal resources with performance (Galbreath 2005, 2016; Katmon et al. 2019). Firms utilize tangible resources, like financial assets, and intangible ones, such as skills and knowledge, to achieve competitive advantage (Barney 1981). Diversity on boards enhances decision-making by introducing varied perspectives (Rao and Tilt 2016), particularly in CSR, enabling the evaluation of more alternatives compared to homogeneous boards. The more diverse the perspectives, the higher the capability of the firms to adapt to new requirements or demands from stakeholders, and thus contribute to the competitive advantage.

Based on the above arguments, several authors suggest that board diversity has the potential to increase the effectiveness of the BoD and thereby performance, including aspects such as NFI reporting (Barako and Brown 2008; Cucari et al. 2018; Fernandez-Feijoo et al. 2014; Frias-Aceituno et al. 2013; Jizi 2017; Katmon et al. 2019; I. Khan et al. 2021; Pucheta-Martínez et al. 2018; Rao and Tilt 2016). Hence, we are going to specifically study different compositions and BoD characteristics to see their influence on NFI reporting.

2.1 | Independent Directors

One of the most studied characteristics of the BoD is the board independence (Rao et al. 2012; Rao and Tilt 2016). Independent directors are considered an important control mechanism of management actions and ensure that shareholders' goals are accomplished (Fama and Jensen 1983; A. Khan et al. 2013).

There are previous studies focusing on the link between independent directors and CSR. Rao and Tilt (2016) indicate that most studies linking board independence and CSR present a positive relationship. This is due to mainly two arguments (Rao and Tilt 2016): First, that outside directors tend to be more sensitive to society's needs (Ibrahim and Angetidis 1995; Lorenzo et al. 2009). The second argument is that independent directors are more inclined toward compliance with the firm's responsible behavior and the regulation because it will directly affect the directors' reputation (Lorenzo et al. 2009).

As Frias-Aceituno et al. (2013) highlights, the findings are inconclusive when the relationship studied is between independent directors and disclosure (Hossain et al. 2017). Empirical results still show a disagreement on the significance and sign

of this relationship. We can find several studies that indicate that there exists a positive influence from independent directors on CSR disclosures (Barako and Brown 2008; Cucari et al. 2018; Rao et al. 2012). Cheng and Courtenay (2006) indicate that higher proportions of independent directors encourage higher levels of voluntary disclosure and facilitate engagement in CSR investments. Cucari et al. (2018) perform a panel data analysis of Italian listed companies and find that there is a positive effect of independent directors on the level of CSR disclosure. Jizi et al. (2014) emphasize the role of independent directors promoting not only the quantity but also the quality of NFI information. Chouaibi et al. (2021) and Pavlopoulos et al. (2017) indicate a positive impact on the quality of integrated reports. Fahad and Rahman (2020) also confirm a positive impact in Indian companies. On the other hand, a negative relationship has been found in other studies (Frias-Aceituno et al. 2013; Haniffa and Cooke 2005). Frias-Aceituno et al. (2013) performed a panel data analysis of a sample of multinational companies and the results indicate a negative impact. García-Sánchez, Aibar-Guzmán, et al. (2022) and García-Sánchez, Minutiello, and Tettamanzi (2022) also find a marginally negative effect. Other authors suggest no significant impact of board independence on the quantity (Giannarakis 2014; Hossain et al. 2017; Nurhayati et al. 2016; Prado-Lorenzo and Garcia-Sanchez 2010), and on the quality of NFI reporting (Khan et al. 2021; Li et al. 2013; Omair Alotaibi and Hussainey 2016).

Due to the mixed results found, there is a need for more studies. Agency theory argues that independent directors are more effective in governing and monitoring management practices (Khan et al. 2013). This is because they are less involved in the execution of the company's operations, and the CEO has less control over them (Jizi 2017), therefore, they have the capacity to force management to disclose CSR (Rao et al. 2012). They are expected to be more objective (Frias-Aceituno et al. 2013) when making decisions and more encouraging toward long-term value maximizing activities and a higher level of transparency (Cheng and Courtenay 2006). To ensure the sustainability of the firm and to reduce information asymmetry with different stakeholders, BoDs with higher proportions of independent directors are expected to direct management toward effective CSR initiatives and facilitate reporting on them (Jizi 2017).

Consistent with the abovementioned arguments, we propose the following hypotheses:

H1. *Independent directors have a positive impact on the quantity of NFI disclosed.*

H2. *Independent directors have a positive impact on the quality of NFI disclosed.*

2.2 | Proprietary Directors

There are two types of outside directors: independent and proprietary (Garcia-Torea et al. 2017). As we have already seen, independent directors are one of the most studied components of the BoD. Proprietary directors represent the owners of the firm,

the most important shareholders (Cabeza-García et al. 2018; Fuente et al. 2017).

We have not found much evidence on the role of proprietary directors regarding NFI reports; thus, there is a need for more studies. The only previous studies we have found studying this relationship or similar variables are: Cabeza-García et al. (2018), Fuente et al. (2017), Garcia-Torea et al. (2017), Molinero-Diez et al. (2022) and Prado Lorenzo et al. (2009).

Cabeza-García et al. (2018) focus their study on the impact of gender diversity on CSR reporting. They also go a step further and classify if women are outside directors. However, they do not specifically study the role of proprietary directors. The results indicate that women as outside directors (in which proprietary directors are included) have a positive impact on CSR reporting. Molinero-Diez et al. (2022) also focus on women, classifying them into independent and proprietary directors. They find that CSR (studied as a broad concept, not focusing on CSR reporting) is driven by independent directors and not proprietary directors, who focus more on economic performance and firm value.

Prado Lorenzo et al. (2009) found that proprietary directors have no impact on the adoption of CSR reporting standards (specifically the GRI). However, Fuente et al. (2017) indicate that they positively influence the GRI level, and Garcia-Torea et al. (2017) find a positive impact of proprietary directors on the transparency of CSR reports.

We follow the idea that proprietary directors will be interested in NFI disclosure because they worry about the image of the firm as it will impact their reputation and their capital (Prado Lorenzo et al. 2009). In other words, they are interested in the long-term survival of the firm and in maintaining an entrepreneurial reputation that is strongly related to their own (Fuente et al. 2017).

Also, outside directors are independent from CEOs (Cabeza-García et al. 2018). They tend to pay more attention to stakeholders' interests and motivate firms to be more engaged in sustainability and philanthropic endeavors (Ibrahim and Angetidis 1995). Being independent from the CEO and having knowledge of the outside world are especially significant characteristics in CSR activities (Hafsi and Turgut 2013).

Based on these arguments, we expect that:

H3. *Proprietary directors have a positive impact on the quantity of NFI disclosed.*

H4. *Proprietary directors have a positive impact on the quality of NFI disclosed.*

2.3 | Women Directors

Previous studies have shown that the presence of gender diversity on boards has positive effects in different variables such as sustainable development (Carvajal et al. 2022), business transparency in energy matters (García-Sánchez, Enciso-Alfaro, and García-Sánchez 2024; García-Sánchez,

Marín-Hernández, et al. 2024), and biodiversity disclosures (Haque and Jones 2020). However, the evidence shows mixed results on the relationship between women on the BoD and CSR reports. Giannarakis (2014) indicates that gender composition has been largely associated with financial performance, but there is no satisfactory evidence of its relationship with CSR reports.

Bannò et al. (2021) perform a literature review of the relationship between women on BoD and the disclosure of NFI. The authors analyze 77 studies, of which 55 find a positive relationship, 5 a negative relationship, 8 mixed results, and 9 no relationship. We can observe that, although most studies document a positive impact (Velte 2022), consensus has not been reached yet. Barako and Brown (2008), García-Sánchez, Minutiello, and Tettamanzi (2022), Katmon et al. (2019) and Rao et al. (2012) find that there is a positive relationship between gender diversity and the quantity of NFI disclosed. Barako and Brown (2008) study Kenyan banks, whereas Rao et al. (2012) and Katmon et al. (2019) study listed firms from Australia and Malaysia respectively. These studies use cross-sectional data; however, Frias-Aceituno et al. (2013) study the relationship with panel data from 2008 to 2010 and also find a positive impact of women directors on the quantity of integrated reports. Fernandez-Feijoo et al. (2014) and García-Sánchez, Marín-Hernández, et al. (2024) indicate that in countries with a higher proportion of boards of directors with at least three women, the level of CSR reporting is higher. Al-Shaer and Zaman (2016) also find a positive relationship, but this time focused not on quantity but on the quality of the NFI reporting. However, we find that the measurement for quality that the authors use could be improved and more complete. They only create an index that goes from 0 points if the firm does not present a disclosure to the maximum points if the firm has a report that has been verified by an external auditor, thus leaving out many other aspects of the reports.

On the other hand, other studies find a negative impact (Cucari et al. 2018; Muttakin et al. 2015). Cucari et al. (2018) with their panel data study from 2011 to 2014 of Italian listed firms, show a negative impact of women directors on the quantity of NFI reporting. Other authors find that women on board weaken CSR disclosure in Indian companies (Fahad and Rahman 2020).

Giannarakis (2014) and Khan (2010) indicate that there is an insignificant relationship between women's representation in the board and CSR reporting.

Despite all the mixed evidence, which indicated the need for more studies, there are reasons to believe that female participation on the BoD increases the probability of voluntary disclosure and improves the ability of the board to provide better supervision of the firms' reporting (Katmon et al. 2019).

Some reasons involve the female characteristics. Prior literature suggests that women are more sensitive to society (Al-Shaer and Zaman 2016; Fernandez-Feijoo et al. 2014) and to non-profit activities (Pucheta-Martínez et al. 2018); they also behave more ethically than male directors (Pucheta-Martínez et al. 2018). Gibson (1995) indicates that women are often more characterized by communal qualities, which include affection, the ability to devote self to others, awareness of the feelings of

others, sympathy, or helpfulness among others. The communal qualities represent, in general, a concern with the welfare of other people (Gibson 1995). Women have been socialized to care for the needs of others and are closer to corporate responsibility (Katmon et al. 2019). These female behavior patterns are often associated with higher transparency (Frias-Aceituno et al. 2013), especially regarding CSR issues (Prado-Lorenzo and Garcia-Sanchez 2010).

Another aspect that might relate these two variables is the female leadership style. The literature regarding leadership style distinguishes between democratic/participative versus autocratic and transformational versus transactional. Democratic leaders allow subordinates to participate in decision-making (Eagly and Carli 2003; Eagly and Johannesen-Schmidt 2001). Transformational leaders focus on the importance of socialization as well as providing attention and care to subordinates (Taleb 2010). This leadership style also is future-oriented rather than present-oriented (Eagly and Carli 2003). This type of leaders "state future goals, develop plans to achieve those goals, and innovate, even when their organization is generally successful" (Eagly and Carli 2003, 815). Transactional leaders see their job performance as a series of transactions with subordinates in which rewards or punishments are exchanged for providing their service or inadequate performance (Gibson 1995).

Female leaders tend to be more democratic and participative than male leaders (Eagly and Carli 2003; Eagly and Johannesen-Schmidt 2001; Gibson 1995; Taleb 2010). Also, they show a more transformational leadership style (Eagly and Carli 2003; Eagly and Johannesen-Schmidt 2001). According to some authors, the female leadership style encourages CSR practices (Harjoto et al. 2015; Landry et al. 2016; Setó-Pamies 2015). "female directors apply specific initiatives to obtain more democratic and socially and environmentally committed firms [...], and act more responsibly, according to cognitive, psychological and sociological literature and, therefore, may encourage firms to disclose CSR information." (Pucheta-Martínez et al. 2018, 186). In other words, they will increase the board's focus on CSR-related issues (Hossain et al. 2017).

Other reasons involve the decision-making process. Women bring heterogeneity to the board (Katmon et al. 2019; Pucheta-Martínez et al. 2018). As we have seen, "in the context of decision-making, a diverse board is more likely to provide a better platform to share a wider range of opinions, beliefs, networks and backgrounds to balance the firm's financial and non-financial objectives and address the demands of different groups of stakeholders with conflicting needs" (Jizi 2017, 645). The board will benefit from having different perspectives (Al-Shaer and Zaman 2016; Rao and Tilt 2016) and more alternatives evaluated (Pucheta-Martínez et al. 2018), which will enhance the quality of the discussions and decisions (Rao et al. 2012), and this will likely be reflected in actions such as providing more and better NFI to stakeholders (Katmon et al. 2019). As Jizi (2017) indicates, gender diversity enhances the ability to answer effectively to the firm's CSR obligations and report on them.

After indicating the need for more evidence to clarify this relation, and based on the arguments presented above, we test the following hypotheses:

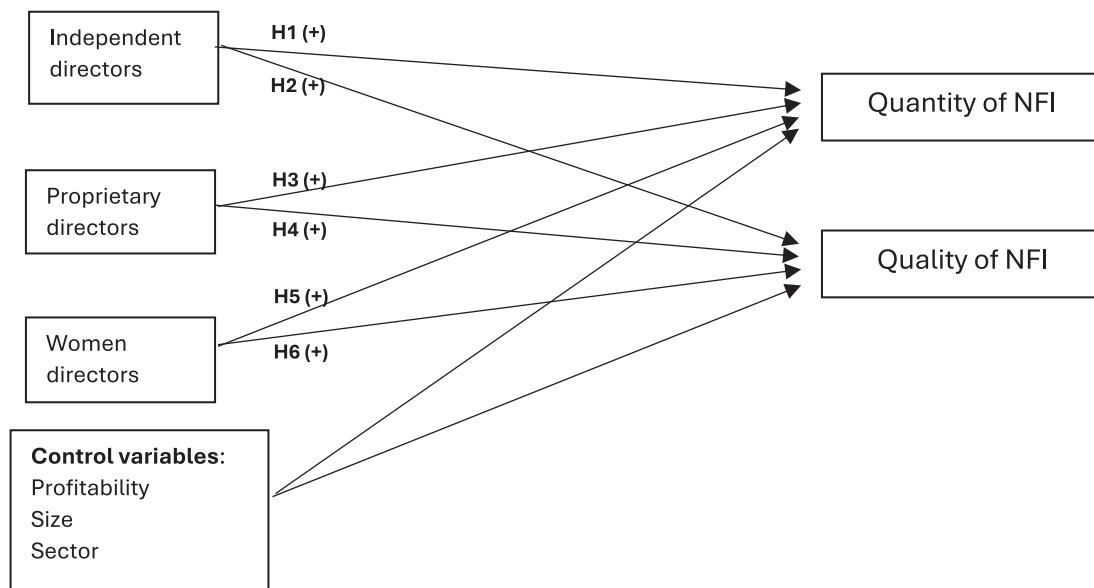


FIGURE 1 | Overview of research model.

H5. *Women directors have a positive impact on the quantity of NFI disclosed.*

H6. *Women directors have a positive impact on the quality of NFI disclosed.*

In the following image, Figure 1, we can see the research model that will be tested.

3 | Methodology

3.1 | Sample

The sample of our research is composed of all the firms that were part of the Ibex35 index at any point during the period of 2015–2019. The Ibex35 index comprises the 35 most liquid companies traded on the Spanish stock exchange, and it is representative of the Spanish economic development (Odrizola and Baraibar-Diez 2017). However, since the composition of the index is revised every 6 months, firms may enter or exit the index over time. During the selected period, a total of 40 unique firms were included in the index at least once, and all of them were incorporated into our sample.

We focus our analysis on the years 2015, 2017, and 2019, resulting in a balanced panel of 120 firm-year observations (40 firms×3years). These years were purposefully selected to capture the impact of regulatory changes in Spain related to the disclosure of NFI. In 2014, the European Union adopted Directive 2014/95/EU; and Spain incorporated the EU Directive with Royal Decree-Law 18/2017 and Law 11/2018. This new regulatory framework required certain large companies to disclose NFI related to environmental, social, and employee matters, respect for human rights, anti-corruption, and diversity. Specifically, 2017 marked the first year in which NFI disclosure became mandatory for certain companies. Thus, by selecting 2015, 2017, and 2019, we are able to examine firm behavior before the regulation (2015), at the

onset of its implementation (2017), and in a subsequent post-implementation phase (2019). Although our study does not aim to directly analyze the regulatory impact—an issue already addressed in prior research (Grueso-Gala and Camisón-Haba 2025)—we deliberately incorporate these years to ensure that regulatory changes are reflected in our sample and considered in the broader interpretation of our results. This 2-year lag that we introduced also helps to mitigate reverse causality, a form of endogeneity. The NFI reports are published after the end of the year. This means, for example, that the 2015 NFI report was published in 2016. In our study, we analyze how the composition of the 2015 board affects the 2015 NFI reports, which were published in 2016. Therefore, reverse causality is not possible since a 2016 report cannot retroactively affect the composition of the board in 2015.

3.2 | Variables

3.2.1 | Dependent Variables

The dependent variables in our study are the quality and quantity of NFI reporting.

To measure them, we adopted an index from Castilla-Polo and Ruiz-Rodríguez (2021). For quality, we measure two aspects: relevance and accuracy of the information. In Table 1, we can see all the information that was collected to measure it. For quantity, we considered some options applied by previous researchers, such as counting words (Lee 2017) or sentences (Al-Shaer et al. 2017), but finally, they were discarded. By counting words or sentences, there are many informative charts or figures that would be ignored (Unerman 2000); thus, counting the number of pages solves this matter. However, we did not count all of the pages, and we excluded the non-informative images from the count, as we will explain later after Table 2.

All the data needed was manually collected from the reports found on the firm's website.

TABLE 1 | Variables for the quality index.

ID	Variable	Type	Description
RE1	SR strategy	D	Explicit reference to sustainability in business strategy (broad sense or specific contents)
RE2	SR committee	D	Presence or absence of a sustainability committee within the organization
RE3	SR awards	D	Awards or recognitions related to sustainability performance (broad or specific aspects)
L1.1	GRI	D	Preparing the report in accordance with the GRI guidelines
L1.2	UN Global Compact	D	Adhering to the principles of the UN Global Compact
L1.3	AA1000	D	Adoption of the standard
L1.4	IIFR	D	Using the International Integrated Reporting Framework (IIFR)
L1.5	Other standards	D	Adoption of any other sustainability standard
L2	Assurance	D	If the company has had any external assurance of the NFI

Abbreviation: D, dichotomous variable.

Source: Own elaboration.

TABLE 2 | Variables for the quantity index.

ID	Variable	Type	Description
R1	Annual report	D	Absence (=0) or presence (=1) of annual reports in which sustainability issues were disclosed
P1	Annual report: pages	N	Number of pages dedicated to content related to sustainability in this type of report
R2	Integrated report	D	Absence (=0) or presence (=1) of integrated reports in which sustainability issues were disclosed
P2	Integrated report: pages	N	Number of pages dedicated to content related to sustainability in this type of report
R3	Sustainability report	D	Absence (=0) or presence (=1) of sustainability reports
P3	Sustainability report: pages	N	Number of pages dedicated to content related to sustainability in this type of report

Abbreviations: D, dichotomous variable; N, numerical variable.

Source: Own elaboration.

3.2.1.1 | Quality Index. The quality index was created as follows:

$$\text{Quality index}_{(a,x)} = \frac{\sum_{ij=1}^n \text{Score from REi} + \text{Score from Lj}}{\text{Maximum score}} \times 100$$

As we mentioned, we measure two aspects for the quality index. In total, five variables were used: three variables for relevance issues (RE1 to RE3) and two for liability concerns (L1 and L2). The maximum possible total score in each year was $9 = \text{RE1}/\text{RE2}/\text{RE3}/\text{L1.1}/\text{L1.2}/\text{L1.3}/\text{L1.4}/\text{L1.5}/\text{L2}$ (as they are dichotomous variables). The variables related to the type of standards followed were included separately in the index (L1.1, L1.2, L1.3, L1.4, and L1.5) because, as Castilla-Polo and Ruiz-Rodríguez (2021) indicate, it is not the same to follow one standard or more than one standard in quality terms. The quality index is a percentage that indicates the quality level detected for the company “a” in the year “x.”

3.2.1.2 | Quantity Index. The quantity index, for the company “a” in the year “x” was created as follows:

$$\text{Quantity index}_{(a,x)} = \sum_{i=1}^3 \text{Type of report (Ri)} * \text{Number of pages (Pi)}$$

3.2.1.3 | Types of Report. We took into consideration different types of report as it is often the case that firms disclose the information in more than just one document, or in more than one format. Thus, we included in our count all the available reports published on the firm's website that disclosed NFI: annual reports, integrated reports, and other sustainability reports (GRI, corporate governance reports, social reports, environmental reports...).

3.2.1.4 | Number of Pages. We wanted to be accurate when counting the pages dedicated to NFI. Thus, we did not include pages like the cover, the table of contents, the CEO letter, other general or contextual information (‘about this report’ section, history of the firm or business areas/divisions), or information belonging to the financial statements. As we mentioned earlier, the only way to include all the informative charts and figures of the report is by counting pages and not counting words/sentences. However, in the reports there are many non-informative images, which only serve as decoration, and do not add any information about the topics. By counting pages, we could be including them and not being accurate with the actual amount of information disclosed. Some firms focus on reporting just text, but others format the document with many non-informative photos or big blank

TABLE 3 | Control variables.

Control variable	Description	References
Profitability	Return on assets (ROA)	(Brammer and Pavelin 2008; Branco and Rodrigues 2008; del Giudice and Rigamonti 2020; Ortas et al. 2015)
Size	Natural logarithm of total assets (TA)	(Brammer and Pavelin 2008; Branco and Rodrigues 2008; Ortas et al. 2015)
Sector	Value of 1 if the firm belongs to environmentally sensitive industries (ESI), and a value of 0 otherwise	(Kilian and Hennigs 2014; Niskala and Pretes 1995)

spaces, which can lead to raising the number of pages significantly: In some cases, they represent up to 40% of the extension of the reports included in our sample. To deal with this, we corrected the total number of pages by subtracting a percentage of each page according to the size of the image. For example, if we found an image occupying half of a page, we subtracted 50% of that page from the total count of pages.

3.2.2 | Independent Variables

In our study, the independent variables are independent directors, proprietary directors, and women directors. We measure them as a percentage of the total members of the board. The data about these variables were extracted manually from the corporate governance report of each firm for each year.

3.2.3 | Control Variables

We control for additional variables (Table 3) that are theoretically and empirically related to NFI reporting:

3.2.3.1 | Profitability. Financially healthy organizations can more easily fulfill their obligations (Brammer and Pavelin 2008) and have more available resources to allocate to this task. The firms' profitability or the levels of financial performance are related to the levels of disclosure (Brammer and Pavelin 2008; Branco and Rodrigues 2008; del Giudice and Rigamonti 2020; Ortas et al. 2015). We downloaded from the ORBIS database the return on assets (ROA) ratio of each company for every year.

3.2.3.2 | Size. Organizational size is often proposed as a determinant of sustainability disclosures (Ortas et al. 2015). Large firms are more visible; hence they are subject to more pressure and scrutiny from external groups (Brammer and Pavelin 2008; Branco and Rodrigues 2008; Ortas et al. 2015). Due to this, large firms may pay special attention to sustainability disclosure in order to demonstrate that their actions are legitimate (Brammer and Pavelin 2008). This variable was measured as a natural logarithm of total assets (TA). The information about the TA of each company was downloaded from the ORBIS database.

3.2.3.3 | Sector. The sector in which the company operates has been studied as a driver of sustainability disclosures (Kilian

and Hennigs 2014; Niskala and Pretes 1995). Companies in sectors that can potentially have a high impact on the environment are considered to have greater pressures than companies in less environmentally sensitive industries (ESI). Thus, the former companies are more likely to disclose more sustainability information than the latter. The sectors that are considered ESI, based on prior literature (Branco and Rodrigues 2008; Djajadikerta and Trireksani 2012; Kilian and Hennigs 2014; Morales-Raya et al. 2019; Zeng et al. 2012), are: pharmaceutical; chemical; forestry, paper and pulp mills; mining; oil and gas; steel and other metals; petroleum and plastic manufacturing; construction and building materials; electricity, gas distribution and water; transport; textile, clothing and fur; and tourism. In our dataset, we assign a value of 1 if the firm belongs to an ESI, and a value of 0 otherwise.

3.3 | Method

We built the database and then imported it into the software RStudio for analysis. First, we summarize our sample data with descriptive statistics. Second, we conducted a correlation analysis to determine the relationship among the variables in our study. Next, we performed a panel data analysis. Panel data consists of repeated observations of a cross-section of companies over time. The use of this technique allows us to overcome the limitations of the low explanatory capacity (Martínez-Ferrero and García-Sánchez 2017) of cross-sectional (different companies in a period of time) and time series analyses (one company for several periods). We employ three different methods of static panel data analysis to estimate our regression: the pooled OLS, fixed effects (FE), and random effects (RE). To select which of the three is the best method for our model, we use the Hausman test and the *F*-test. We also check for multicollinearity, heteroskedasticity, and autocorrelation.

4 | Results

4.1 | Descriptive Statistics

Table 4 reports the descriptive statistics of the dependent and independent variables in our study. We have divided the results into the 3 years of our sample to see the evolution of each variable.

The mean of quality and quantity of NFI reporting increased over the years, with page counts and quality scores showing

TABLE 4 | Descriptive statistics.

Variable	2015				2017				2019			
	Mean	Min	Max	SD	Mean	Min	Max	SD	Mean	Min	Max	SD
Quantity	82.68	9.5	230.81	52.12	86.08	36.17	225.57	52.49	98.98	16.03	373.07	68.63
Quality	58.61	0	88.89	18.49	65.28	22.22	100	18.52	65.56	33.33	100	15.67
Independent directors (%)	47.53	15.38	77.77	14.72	48.53	15.38	75	14.41	49.38	0	76.96	15.75
Proprietary directors (%)	29.96	0	72.72	20.52	28.06	0	66.66	19.15	27.81	0	80	19.6
Women directors (%)	18	0	41.66	10.91	22.25	7.14	46.15	9.36	25.61	0	42.85	10.45
Sector	0.5	0	1	0.51	0.5	0	1	0.51	0.5	0	1	0.51
ROA	2.77	−20.92	16.26	5.91	4.31	−0.12	16.09	4.22	2.06	−23.81	15.88	6.18
Size	16.7	13.63	21.02	1.75	16.82	13.78	21.09	1.69	16.91	13.9	21.14	1.66

notable variation among firms. Independent directors comprised about 50% of BoDs, proprietary directors 30% (slightly declining), and female directors rose from 18% in 2015 to 26% in 2019. Regarding ROA, it has remained between 2% and 4% more or less for the periods in our sample. Size, which is the natural logarithm of TAs, has been quite constant every year. Finally, sector is a dummy variable that indicates if a firm belongs to ESI or not. We can see that the values remain constant over the 3 years, as sector is a variable that is not commonly changed in businesses.

4.2 | Correlation Analysis

Before Panel data analysis, Spearman correlation analysis was performed to see the bivariate relationships among the variables (Table 5). Spearman correlation does not require normally distributed variables (Schober et al. 2018). As our data does not follow a normal distribution, Spearman correlation is indicated instead of Pearson's correlation.

Women directors are positively associated with quantity and quality. Nevertheless, independent directors and proprietary directors present an insignificant relationship with the two dependent variables.

There are also significant relationships among the three types of directors: a negative association between independent and proprietary directors; however, women are positively associated with both independent and proprietary directors.

Regarding the control variables, sector is positively associated with quantity. Size is significantly related to all the other variables: It presents a negative relationship with proprietary directors, sector, and ROA, and a positive relationship with all the other variables.

The assumption of no perfect multicollinearity was tested by using the variance inflation factor (VIF) and tolerance. A VIF value greater than 10 (O'Brien 2007; Thompson et al. 2017), or a tolerance

below 0.20 (O'Brien 2007; Thompson et al. 2017) indicates serious collinearity problems. We can see in Table 5 that the VIF values for the variables range from 1.073 to 3.190, and the tolerance from 0.313 to 0.932. We can conclude that there is no multicollinearity concern among the input variables in our study.

4.3 | Regression

To select which of the three static panel data models—OLS, FE and RE—is more appropriate, we run the *F*-test and the Hausman test. The Hausman test is also used to detect endogeneity in regression models (Gullason 1998; Guo et al. 2018; Patrick 2020; Qorraj et al. 2025). It examines if the regressor is exogenous (uncorrelated with errors) or endogenous (correlated with errors). If the null hypothesis is rejected, it indicates endogeneity. If the null hypothesis is not rejected, the REs (or OLS) model is preferred since it is efficient and exogeneity is assumed.

We also check for autocorrelation and heteroskedasticity.

4.3.1 | Quantity Regression

F-test is used to determine which model is more appropriate between OLS and FE model. The null hypothesis is that all FE constants are zero. The test results indicate that the *F*-test = (55,073; $p = 1.685e-10$). Therefore, the null hypothesis is rejected; thus, the FE model is selected.

To select between FE and RE we continue to use the Hausman test (Hausman 1978). We test the null hypothesis that the RE model is appropriate. The results (15,367; $p = 0.9088$) show that the null hypothesis is accepted, and also exogeneity is assumed. Therefore, the findings of the RE model were considered for further discussion below.

In the selected model, we check for autocorrelation issues. We perform the Durbin–Watson (DW) test to detect serial correlation. The null hypothesis of the test is that autocorrelation

TABLE 5 | Spearman correlation matrix.

No.	VIF	Tolerance	Variables	1	2	3	4	5	6	7	8
1			Quantity	1							
2			Quality	—	1						
3	3185	0.314	Independent directors	0.026 (0.78)	0.089 (0.332)	1					
4	3190	0.313	Proprietary directors	0.067 (0.466)	0.014 (0.883)	−0.776*** (0)	1				
5	1204	0.831	Women directors	0.249*** (0.006)	0.244*** (0.004)	0.319*** (0)	−0.223** (0.014)	1			
6	1073	0.932	Sector	0.310*** (0.001)	−0.028 (0.759)	−0.025 (0.788)	0.054 (0.560)	−0.024 (0.792)	1		
7	1188	0.842	ROA	0.092 (0.319)	−0.076 (0.410)	−0.017 (0.855)	−0.042 (0.645)	0.006 (0.952)	0.127 (0.167)	1	
8	1333	0.750	Size	0.239*** (0.009)	0.260*** (0.004)	0.215** (0.018)	−0.236*** (0.009)	0.231** (0.011)	−0.01162	−0.400*** (0)	1

Note: **, ***, correlation statistically significant at the 0.05 and 0.01 levels, respectively (two-tailed). We do not show correlation coefficients between 1 and 2, because they are both independent variables.

TABLE 6 | Regressions results using the RE models.

Dependent variable	Quantity	Quality
Independent variables	Coefficients	Coefficients
Intercept	−194.3527**	−0.0349
Independent directors	81.6364**	16.2439
Proprietary directors	75.2371*	17.5086
Women directors	25.0135	20.6073*
Sector	49.5038***	0.918
ROA	13,291**	−0.1401
Size	10.9409***	2.5082*
2017	−0.3783	58,878**
2019	13.1596*	4.8322
N	120	120
R ²	0.2009	0.1267
Wald X ²	27.9106***	16.1105**

* $p < 0.10$.

** $p < 0.05$.

*** $p < 0.01$.

does not exist in the model. The results of the DW test (18,645; $p = 0.1893$) indicate that the null hypothesis is accepted; thus, there are no serial correlation issues in this model.

We also aim to test the null hypothesis that there is no heteroskedasticity in the model. We use the Breusch–Pagan test, which results (51,869; $1.981\text{e-}09$) indicate that the null hypothesis is rejected; thus, there is a heteroskedasticity issue in our model. To deal with the heteroskedasticity problem, we obtain heteroskedasticity-robust standard errors and their corresponding t values (Zeileis 2004). The robust REs model is provided in Table 6.

4.3.2 | Quality Regression

The results of the F -test (3904; $p = 2.435\text{e-}07$) and the Hausman test (6.2596; $p = 0.2818$) indicate that we should consider the RE model as explained previously, and that exogeneity is assumed. The results of the DW test (19,238; $p = 0.2809$) indicate that there are no serial correlation issues in this regression. Although the Breusch–Pagan test (21,412; 0.0015) indicates that the null hypothesis is rejected, thus we confirm there is a heteroskedasticity issue in our model. The robust regression results are provided in Table 6.

4.3.3 | Regression Results

In the following table we can see the results for both regressions (quality and quantity) using the RE models. We provide the robust REs models, where the heteroskedasticity issue is solved.

According to the results, independent directors have a positive significant effect on the quantity of reporting ($\beta = 75.83$;

$p < 0.10$); however, it does not show a significant relationship with quality. In accordance, H1 is accepted and H2 is rejected. Prior literature also presented a positive relationship of independent directors on the quantity of NFI (Barako and Brown 2008; Cucari et al. 2018; Rao et al. 2012), but no significant relationship on the quality of the disclosure (Khan et al. 2021). Moving to proprietary directors, we find the same results as with independent directors. There is a positive significant effect on quantity ($\beta = 73.90$; $p < 0.10$), but insignificant on quality. Thus, H3 is accepted, which is in line with Cabeza-García et al. (2018), Fuente et al. (2017) and García-Torea et al. (2017); and H4 rejected, as there is no significant effect, which was also indicated previously by Prado Lorenzo et al. (2009).

When it comes to the effect of women directors, we find the opposite results: The effect on quantity is insignificant; however, we find a positive relationship with the quality of the reporting ($\beta = 31.03$; $p < 0.05$). Hence, H5 is rejected but H6 is accepted. These results are in line with prior studies indicating the insignificant effect of women on the quantity of NFI disclosure (Giannarakis 2014; Khan 2010) and a positive effect on the quality (Al-Shaer and Zaman 2016; Katmon et al. 2019).

5 | Discussion & Conclusion

The BoD is a key element in taking decisions regarding the firm's strategy. Many authors indicate that the composition of the BoD has an influence on the CSR and CSR reports, as they emanate from it (Afeltra et al. 2022). This study aims to deepen the knowledge on the impact that certain BoD characteristics have on the quantity and quality of NFI reports. Specifically, we study independent, proprietary, and women directors. We examine firms in the Ibex-35 index, which is the main national and international reference of the Spanish Stock Exchange.

The panel data analysis reveals the following results. Independent directors present a positive and significant influence on the quantity of NFI, which is in line with previous studies such as Barako and Brown (2008), Cucari et al. (2018) and Rao et al. (2012). Proprietary directors also seem to have a positive significant effect on the quantity of NFI, matching previous studies too, for example, Cabeza-García et al. (2018), Fuente et al. (2017) and García-Torea et al. (2017).

We expected these results because, as we argued earlier, independent and proprietary directors are inclined to comply with the firm's CSR and regulation because it will affect their reputation (Lorenzo et al. 2009), and in the case of proprietary directors, it will also affect their capital (Prado Lorenzo et al. 2009).

Another surprising finding is that, although independent and proprietary directors have a positive influence on quantity, they seem not to have any significant effect on the quality of the report. These could be due to different reasons. As indicated by Lorenzo et al. (2009), outside directors will be keen on complying with the firm's CSR and regulation, because it will directly impact their reputation. CSR reports have been voluntary since their beginnings and nowadays it still remains like that in many countries around the world (Yang et al. 2021). However, in the last decade, there have been some changes in the European

context (García-Sánchez et al. 2023; Mazzotta et al. 2020), which affect the Spanish firms that we include in our study. The EU Directive 2014/95/UE was incorporated in Spain with the Royal Decree-Law 18/2017 and the Law 11/2018. The Directive requires firms to report information on six topics: environmental; social; employee matters; respect for human rights; anti-corruption; and bribery matters. Firms are required to report on these topics; however, other aspects such as following a reporting framework/standard (like the Global Reporting Initiative [GRI] or the Integrated Reporting [IR] framework) or the verification by independent assurance providers are optional. Many authors (Al-Shaer and Zaman 2016; Avram et al. 2019; García-Sánchez et al. 2019; Odriozola and Baraibar-Diez 2017) consider that these optional aspects are related to the quality of the report, as they are usually included as items in the quality measurements in their studies (as we also do in this study). This is due to the fact that following a certain reporting standard or assuring the content of the report enhances comparability, reliability, accuracy, and clarity (Castilla-Polo and Ruiz-Rodríguez 2021).

To improve the quality of the report, following these practices is a costly and time-consuming task. Being verified by an external assurer will bring economic costs to the firm, and disclosing according to a specific standard will require the firm to go through a learning process in order to adapt the report to the requirements. Thus, this process will also cost time and economic efforts.

As these aspects are not mandatory by law, independent and proprietary directors might want to save the firm's resources (Prado Lorenzo et al. 2009). They might just focus on complying with the legal requirements (disclose information about the six topics we have mentioned). Not complying with the law would have a negative impact on the directors' reputation; therefore, they have a positive impact on the quantity of NFI. However, not providing more quality will not harm their reputation, as it is a voluntary aspect of the law, and it will also save economic and time resources for the firm.

Another possible explanation of why outside directors do not have a significant effect on the quality of NFI is explained by Dwekat et al. (2021) and Fuente et al. (2017). As they are outside directors and are considered external professionals, they might "not know the company perfectly and have a lack of suitable training in social and environmental issues that do not traditionally comprise their responsibilities" (Fuente et al. 2017, 747). As Dwekat et al. (2021) indicate, independent directors could be more concerned with corporate financials than CSR or may not have enough experience and knowledge to improve CSR.

We also find with our analysis the effect of women directors on NFI reporting: They have a positive impact on the quality, but they do not show a significant relationship with the quantity of NFI. Previous literature studying the effect of women in the BoD on the quantity and the quality of CSR reports shows the same conclusions: no significance on quantity (Giannarakis 2014; Khan 2010), but a positive effect on quality (Al-Shaer and Zaman 2016).

These findings could be explained by the above-mentioned female leadership style. We saw that women tend to have a transformational leadership style, and men are associated with a transactional

style (Eagly and Carli 2003; Eagly and Johannesen-Schmidt 2001; Gibson 1995; Taleb 2010). Transformative style is future oriented, and these leaders tend to innovate even when the firms is generally successful (Eagly and Carli 2003). On the other hand, transactional leadership is based on a system of reward and punishment (Gibson 1995). This style is also more present oriented.

We believe that the drivers to improve the quantity and quality of NFI information could be related to the leadership styles. As we have mentioned earlier, regulation on NFI disclosure has specified the aspects that firms must provide information about; thus, it increases the quantity of information that firms will have to disclose. A transactional leader will worry about complying with the law as they do not want to be punished for inadequate performance. There are other aspects such as the use of standards for reporting and the external assurance of the reports which have been considered voluntary by the law. Thus, there is no reward nor punishment for these aspects. Following this idea, a transactional leader would not demonstrate interest in them as they are voluntary; on the contrary, transformational leaders would do. Even when the organization is already successful (which we can understand in this case as disclosing all the NFI that the law requires), this type of leader will be future-oriented and will consider the voluntary aspects that could increase the quality of the information disclosed. To sum up, the female transformational leadership style could explain the positive impact that women have on the quality of the NFI reports, and the non-significant relationship with the quantity. In line with these results, previous articles indicate that female leadership style encourages CSR practices (Harjoto et al. 2015; Landry et al. 2016; Pucheta-Martínez et al. 2018; Setó-Pamies 2015).

Our results are relevant for researchers in different ways. We contribute to clarifying the relationship between certain types/characteristics of directors (independent, proprietary, and women directors) and the NFI reports. Independent and women directors were largely studied but still presented mixed results. Also, we have found only a small body of literature focusing on proprietary directors and their impact on NFI reporting. Thus, we contribute to deepening the knowledge on this topic.

Although literature about the BoD has focused on the impact on the quantity of NFI, studies regarding the quality are scarce. Hence, we also provide more insights about this matter, measuring and including both concepts: quantity and quality.

Our study makes a methodological contribution as well. Previous authors indicated that longitudinal studies are needed to provide more insight into the changes across time on CSR annual reports (Khan 2010). As indicated in the review by Bannó et al. (2021) and Rao and Tilt (2016) most of the studies use cross-sectional data; hence, they might have more difficulties finding causality between the BoD composition and the firm's performance. Therefore, we perform a panel data analysis, which can overcome the limitations of cross-sectional studies (Martínez-Ferrero and García-Sánchez 2017).

The results also have important implications for practitioners and policymakers. Even when this was not one of our aims, our findings are useful to set the criteria for the best composition of the BoD that can support the firm's strategic objectives. The results show the importance of the CG when it comes to emphasizing one

or another dimension of information transparency. To improve not only the quantity, but also the quality of NFI, they need to be aware of the role that the different types of directors play in the BoD and take this into account for the composition of the board in each firm. The findings suggest that firms aiming to increase the volume of their NFI disclosures—perhaps to enhance transparency or meet regulatory benchmarks—should consider strengthening the presence of independent and proprietary directors on their boards. However, if the strategic objective is to improve the quality, depth, or credibility of these disclosures, increasing the representation of women directors may be more effective.

From a policy perspective, these insights are highly relevant for legislators who should take into account the different contributions that board members can make. If the policy goal is not only to encourage firms to disclose more NFI, but also to disclose it better, regulators and public agents should consider differentiated strategies. For instance, legislative initiatives or corporate governance recommendations could promote board diversity not only in terms of independence but also gender. Regulatory incentives or recommendations could be designed to encourage the appointment of women directors, especially in roles connected to sustainability or reporting oversight. The political agreement reached in the European Union in 2022 to impose a gender quota of at least 33% among all directors by 2026 (European Commission Press Release 2022) represents an important step in this direction.

For further research, we suggest combining directors' characteristics (Dwekat et al. 2021) while looking for a moderating effect between the variables. For example, instead of just analyzing independent directors as a homogeneous group, it could be enriching for the literature to check if there are different impacts when considering their experience, gender, age, or other characteristics of the director. In other words, study if there are differences between women and men independent directors, or classify them with respect to their age or their previous experience. This could be applied not only to independent directors but also to other types of directors.

Finally, we are aware that this study is not without limitations. We have considered just one country: We include in our sample only Spanish firms. Also, the quantity and quality index we used, although we relied on previous literature (Castilla-Polo and Ruiz-Rodríguez 2021), might affect the results obtained as they are constrained to this research design.

Acknowledgments

This research is part of the project PID2020-119642GB-I00 funded by MCIN/AEI/10.13039/501100011033. It was also funded by the Ministry of Science, Innovation and Universities (grant number: FPU17/04804).

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

References

- Adel, C., M. M. Hussain, E. K. A. Mohamed, and M. A. K. Basuony. 2019. "Is Corporate Governance Relevant to the Quality of Corporate Social Responsibility Disclosure in Large European Companies?" *International Journal of Accounting and Information Management* 27, no. 2: 301–332. <https://doi.org/10.1108/IJAIM-10-2017-0118>.
- Afeltra, G., A. Alerasoul, and B. Usman. 2022. "Board of Directors and Corporate Social Reporting: A Systematic Literature Network Analysis." *Accounting in Europe* 19, no. 1: 48–77. <https://doi.org/10.1080/17449480.2021.1979609>.
- Al-Shaer, H., A. Salama, and S. Toms. 2017. "Audit Committees and Financial Reporting Quality: Evidence From UK Environmental Accounting Disclosures." *Journal of Applied Accounting Research* 18, no. 1: 2–21. <https://doi.org/10.1108/JAAR-10-2014-0114>.
- Al-Shaer, H., and M. Zaman. 2016. "Board Gender Diversity and Sustainability Reporting Quality." *Journal of Contemporary Accounting and Economics* 12: 210–222. <https://doi.org/10.1016/j.jcae.2016.09.001>.
- Avram, V., D. A. Calu, V. F. Dumitru, and T. Dănescu. 2019. "The Clarity of the Information Regarding the Bioeconomy: An Analysis of the Reports Published by the Organizations." *Amfiteatru Economic* 21, no. 50: 41–59. <https://doi.org/10.24818/EA/2019/50/41>.
- Bannò, M., E. Filippi, and S. Trento. 2021. "Women in Top Echelon Positions and Their Effects on Sustainability: A Review, Synthesis and Future Research Agenda." *Journal of Management and Governance* 27: 181–251. <https://doi.org/10.1007/s10997-021-09604-7>.
- Barako, D. G., and A. M. Brown. 2008. "Corporate Social Reporting and Board Representation: Evidence From the Kenyan Banking Sector." *Journal of Management and Governance* 12: 309–324. <https://doi.org/10.1007/s10997-008-9053-x>.
- Barney, J. 1981. "Firm Resources and Sustained Competitive Advantage." *Journal of Management* 17, no. 1: 99–120.
- Brammer, S., and S. Pavelin. 2008. "Factors Influencing the Quality of Corporate Environmental Disclosure." *Business Strategy and the Environment* 17: 120–136. <https://doi.org/10.1002/bse.506>.
- Branco, M. C., and L. L. Rodrigues. 2008. "Factors Influencing Social Responsibility Disclosure by Portuguese Companies." *Journal of Business Ethics* 83: 685–701. <https://doi.org/10.1007/s10551-007-9658-z>.
- Cabeza-García, L., R. Fernández-Gago, and M. Nieto. 2018. "Do Board Gender Diversity and Director Typology Impact CSR Reporting?" *European Management Review* 15: 559–575. <https://doi.org/10.1111/emre.12143>.
- Carvajal, M., M. Nadeem, and R. Zaman. 2022. "Biodiversity Disclosure, Sustainable Development and Environmental Initiatives: Does Board Gender Diversity Matter?" *Business Strategy and the Environment* 31, no. 3: 969–987. <https://doi.org/10.1002/bse.2929>.
- Castilla-Polo, F., and M. D. C. Ruiz-Rodríguez. 2021. "Do Well-Reputed Companies Carry out Higher Quality Social Reporting? An Empirical Approach." *Journal of Intellectual Capital* 22, no. 5: 889–917. <https://doi.org/10.1108/JIC-06-2020-0214>.
- Cheng, E. C. M., and S. M. Courtenay. 2006. "Board Composition, Regulatory Regime and Voluntary Disclosure." *International Journal of Accounting* 41, no. 3: 262–289. <https://doi.org/10.1016/j.intacc.2006.07.001>.
- Chouaibi, S., Y. Chouaibi, and G. Zouari. 2021. "Board Characteristics and Integrated Reporting Quality: Evidence From ESG European Companies." *EuroMed Journal of Business* 17: 425–447. <https://doi.org/10.1108/EMJB-11-2020-0121>.
- Cucari, N., S. Esposito De Falco, and B. Orlando. 2018. "Diversity of Board of Directors and Environmental Social Governance: Evidence From Italian Listed Companies." *Corporate Social Responsibility and Environmental Management* 25: 250–266. <https://doi.org/10.1002/csr.1452>.
- del Giudice, A., and S. Rigamonti. 2020. "Does Audit Improve the Quality of ESG Scores? Evidence From Corporate Misconduct." *Sustainability (Switzerland)* 12, no. 14: 5670. <https://doi.org/10.3390/su12145670>.
- Djajadikerta, H. G., and T. Trireksani. 2012. "Corporate Social and Environmental Disclosure by Indonesian Listed Companies on Their Corporate Web Sites. In." *Journal of Applied Accounting Research* 13, no. 1: 21–36. <https://doi.org/10.1108/09675421211231899>.
- Dwekat, A., E. Seguí-Mas, M. A. A. Zaid, and G. Tormo-Carbó. 2021. "Corporate Governance and Corporate Social Responsibility: Mapping the Most Critical Drivers in the Board Academic Literature." *Meditari Accountancy Research* 30: 1705–1739. <https://doi.org/10.1108/MEDAR-01-2021-1155>.
- Eagly, A. H., and L. L. Carli. 2003. "The Female Leadership Advantage: An Evaluation of the Evidence." *Leadership Quarterly* 14: 807–834. <https://doi.org/10.1016/j.leaqua.2003.09.004>.
- Eagly, A. H., and M. C. Johannesen-Schmidt. 2001. "The Leadership Styles of Women and Men." *Journal of Social Issues* 57, no. 4: 781–797. <https://doi.org/10.1111/0022-4537.00241>.
- European Commission Press Release. 2022. "Commission Welcomes Political Agreement on Gender Balance on Corporate Boards." https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3478.
- Fahad, P., and P. M. Rahman. 2020. "Impact of Corporate Governance on CSR Disclosure." *International Journal of Disclosure and Governance* 17, no. 2–3: 155–167. <https://doi.org/10.1057/s41310-020-00082-1>.
- Fama, E. F., and M. C. Jensen. 1983. "Separation of Ownership and Control." *Journal of Law & Economics* 26, no. 2: 301–325.
- Fernandez-Feijoo, B., S. Romero, and S. Ruiz. 2018. "Financial Auditor and Sustainability Reporting: Does It Matter?" *Corporate Social Responsibility and Environmental Management* 25: 209–224. <https://doi.org/10.1002/csr.1449>.
- Fernandez-Feijoo, B., S. Romero, and S. Ruiz-Blanco. 2014. "Women on Boards: Do They Affect Sustainability Reporting?" *Corporate Social Responsibility and Environmental Management* 21: 351–364. <https://doi.org/10.1002/csr.1329>.
- Frias-Aceituno, J. v., L. Rodriguez-Ariza, and I. M. Garcia-Sanchez. 2013. "The Role of the Board in the Dissemination of Integrated Corporate Social Reporting." *Corporate Social Responsibility and Environmental Management* 20: 219–233. <https://doi.org/10.1002/csr.1294>.
- Fuente, J. A., I. M. García-Sánchez, and M. B. Lozano. 2017. "The Role of the Board of Directors in the Adoption of GRI Guidelines for the Disclosure of CSR Information." *Journal of Cleaner Production* 141: 737–750. <https://doi.org/10.1016/j.jclepro.2016.09.155>.
- Galbreath, J. 2005. "Which Resources Matter the Most to Firm Success? An Exploratory Study of Resource-Based Theory." *Technovation* 25: 979–987. <https://doi.org/10.1016/j.technovation.2004.02.008>.
- Galbreath, J. 2016. "When do Board and Management Resources Complement Each Other? A Study of Effects on Corporate Social Responsibility." *Journal of Business Ethics* 136, no. 2: 281–292. <https://doi.org/10.1007/s10551-014-2519-7>.
- García-Sánchez, I., S. Marín-Hernández, E. Ortiz-Martínez, and B. Aibar-Guzmán. 2024. "Diversity, Equity, and Inclusion Reporting in European Union Companies: The Role of Female Directors and the European Regulatory Framework." *Business Strategy and the Environment* 33, no. 7: 7021–7040. <https://doi.org/10.1002/bse.3854>.
- García-Sánchez, I. M., B. Aibar-Guzmán, C. Aibar-Guzmán, and F. Somohano-Rodríguez. 2022. "The Drivers of the Integration of the Sustainable Development Goals Into the Non-Financial Information System: Individual and Joint Analysis of Their Influence." *Sustainable Development* 30, no. 4: 513–524. <https://doi.org/10.1002/sd.2246>.
- García-Sánchez, I. M., S.-Y. Enciso-Alfaro, and A. García-Sánchez. 2024. "Energy Transition Disclosures and Female Directors: Do Gender

- Egalitarian Societies Matter?" *Journal of Cleaner Production* 480: 144039. <https://doi.org/10.1016/j.jclepro.2024.144039>.
- García-Sánchez, I. M., N. Hussain, J. Martínez-Ferrero, and E. Ruiz-Barbadillo. 2019. "Impact of Disclosure and Assurance Quality of Corporate Sustainability Reports on Access to Finance." *Corporate Social Responsibility and Environmental Management* 26, no. 4: 832–848. <https://doi.org/10.1002/csr.1724>.
- García-Sánchez, I. M., V. Minutiello, and P. Tettamanzi. 2022. "Gender Disclosure: The Impact of Peer Behaviour and the Firm's Equality Policies." *Corporate Social Responsibility and Environmental Management* 29, no. 2: 385–405. <https://doi.org/10.1002/csr.2207>.
- García-Sánchez, I. M., E. Ortiz-Martínez, S. Marín-Hernández, and B. Aibar-Guzmán. 2023. "How Does the European Green Deal Affect the Disclosure of Environmental Information?" *Corporate Social Responsibility and Environmental Management* 30, no. 6: 2766–2782. <https://doi.org/10.1002/csr.2514>.
- García-Torea, N., B. Fernandez-Feijoo, and M. de la Cuesta-González. 2017. "The Influence of Ownership Structure on the Transparency of CSR Reporting: Empirical Evidence From Spain." *Spanish Journal of Finance and Accounting* 46, no. 3: 249–271. <https://doi.org/10.1080/02102412.2016.1267451>.
- Giannarakis, G. 2014. "Corporate Governance and Financial Characteristic Effects on the Extent of Corporate Social Responsibility Disclosure." *Social Responsibility Journal* 10, no. 4: 569–590. <https://doi.org/10.1108/SRJ-02-2013-0008>.
- Gibson, C. B. 1995. "An Investigation of Gender Differences in Leadership Across Four Countries." *Journal of International Business Studies* 26, no. 2: 255–279.
- Grueso-Gala, M., and S. Camisón-Haba. 2025. "The Role of Reputation and Regulation in Shaping Non-Financial Information Reporting." *Administrative Sciences* 15, no. 5: 174. <https://doi.org/10.3390/admsci15050174>.
- Gullason, E. T. 1998. "A Test of the Validity of the Screening Hypothesis Versus the Human Capital Theory Using the Wu-Hausman Specification Test for Endogeneity." *Journal of Applied Business Research* 14, no. 3: 13–20. <https://doi.org/10.19030/jabr.v14i3.5699>.
- Guo, Z., H. Kang, T. T. Cai, and D. S. Small. 2018. "Testing Endogeneity With High Dimensional Covariates." *Journal of Econometrics* 207, no. 1: 175–187. <https://doi.org/10.1016/j.jeconom.2018.07.002>.
- Hafsi, T., and G. Turgut. 2013. "Boardroom Diversity and Its Effect on Social Performance: Conceptualization and Empirical Evidence." *Journal of Business Ethics* 112: 463–479. <https://doi.org/10.1007/s10551-012-1272-z>.
- Hambrick, D. C. 2007. "Upper Echelons Theory: An Update." *Academy of Management Review* 32, no. 2: 334–343. <https://doi.org/10.5465/amr.2007.24345254>.
- Hambrick, D. C., and P. A. Mason. 1984. "Upper Echelons: The Organization as a Reflection of Its Top Managers." *Academy of Management Review* 9, no. 2: 193. <https://doi.org/10.2307/258434>.
- Haniffa, R. M., and T. E. Cooke. 2005. "The Impact of Culture and Governance on Corporate Social Reporting." *Journal of Accounting and Public Policy* 24: 391–430. <https://doi.org/10.1016/j.jaccpubpol.2005.06.001>.
- Haque, F., and M. J. Jones. 2020. "European Firms' Corporate Biodiversity Disclosures and Board Gender Diversity From 2002 to 2016." *British Accounting Review* 52, no. 2: 100893. <https://doi.org/10.1016/j.bar.2020.100893>.
- Harjoto, M., I. Laksmana, and R. Lee. 2015. "Board Diversity and Corporate Social Responsibility." *Journal of Business Ethics* 132: 641–660. <https://doi.org/10.1007/s10551-014-2343-0>.
- Hausman, J. A. 1978. "Specification Tests in Econometrics." *Econometrica* 46, no. 6: 1251–1271.
- Hossain, T., A. Akter, and X. Li. 2017. "Corporate Governance and Corporate Social Disclosures: A Meta-Analytical Review." *International Journal of Accounting and Information Management* 25, no. 4: 434–458. <https://doi.org/10.1108/IJAIM-01-2017-0005>.
- Ibrahim, N., and J. Angetidis. 1995. "The Corporate Social Responsiveness Orientation of Board Members: Are There Differences Between Inside and Outside Directors?" *Journal of Business Ethics* 14: 405–410.
- Ihlen, Ø., J. L. Bartlett, and S. May. 2011. "Corporate Social Responsibility and Communication." In *The Handbook of Communication and Corporate Social Responsibility*, edited by Ø. Ihlen, J. L. Bartlett, and S. May, 3–22. Wiley-Blackwell.
- Jizi, M. 2017. "The Influence of Board Composition on Sustainable Development Disclosure." *Business Strategy and the Environment* 26: 640–655. <https://doi.org/10.1002/bse.1943>.
- Jizi, M., A. Salama, R. Dixon, and R. Stratling. 2014. "Corporate Governance and Corporate Social Responsibility Disclosure: Evidence From the US Banking Sector." *Journal of Business Ethics* 125, no. 4: 601–615. <https://doi.org/10.1007/s10551-013-1929-2>.
- Katmon, N., Z. Z. Mohamad, N. M. Norwani, and O. Farooque. 2019. "Comprehensive Board Diversity and Quality of Corporate Social Responsibility Disclosure: Evidence From an Emerging Market." *Journal of Business Ethics* 157: 447–481. <https://doi.org/10.1007/s10551-017-3672-6>.
- Khan, A., M. B. Muttakin, and J. Siddiqui. 2013. "Corporate Governance and Corporate Social Responsibility Disclosures: Evidence From an Emerging Economy." *Journal of Business Ethics* 114, no. 2: 207–223. <https://doi.org/10.1007/s>.
- Khan, H. U. Z. 2010. "The Effect of Corporate Governance Elements on Corporate Social Responsibility (CSR) Reporting: Empirical Evidence From Private Commercial Banks of Bangladesh." *International Journal of Law and Management* 52, no. 2: 82–109. <https://doi.org/10.1108/17542431011029406>.
- Khan, I., I. Khan, and M. A. Afridi. 2021. "Does Board Diversity Matter for the Quality of CSR Disclosure? Evidence From the Financial Sector of Pakistan." *Revista Brasileira de Gestao de Negocios* 23, no. 1: 104–126. <https://doi.org/10.7819/RBGN.V23I1.4091>.
- Kilian, T., and N. Hennigs. 2014. "Corporate Social Responsibility and Environmental Reporting in Controversial Industries." *European Business Review* 26, no. 1: 79–101. <https://doi.org/10.1108/EBR-04-2013-0080>.
- Landry, E. E., R. A. Bernardi, and S. M. Bosco. 2016. "Recognition for Sustained Corporate Social Responsibility: Female Directors Make a Difference." *Corporate Social Responsibility and Environmental Management* 23: 27–36. <https://doi.org/10.1002/csr.1358>.
- Lee, K.-H. 2017. "Does Size Matter? Evaluating Corporate Environmental Disclosure in the Australian Mining and Metal Industry: A Combined Approach of Quantity and Quality Measurement." *Business Strategy and the Environment* 26: 209–223. <https://doi.org/10.1002/bse.1910>.
- Li, Y., J. Zhang, and C. T. Foo. 2013. "Towards a Theory of Social Responsibility Reporting: Empirical Analysis of 613 CSR Reports by Listed Corporations in China." *Chinese Management Studies* 7, no. 4: 519–534. <https://doi.org/10.1108/CMS-09-2013-0167>.
- Lorenzo, J. M., I. M. Sánchez, and I. Gallego-Álvarez. 2009. "Características del Consejo de administración e información en Materia de Responsabilidad Social Corporativa, Características of the Board of Directors and Information in Matters of Corporate Social Responsibility." *Revista Española de Financiación y Contabilidad* 38, no. 141: 107–135.
- Martínez-Ferrero, J., and I. M. García-Sánchez. 2017. "Coercive, Normative and Mimetic Isomorphism as Determinants of the Voluntary Assurance of Sustainability Reports." *International Business Review* 26, no. 1: 102–118. <https://doi.org/10.1016/j.ibusrev.2016.05.009>.
- Martínez-Ferrero, J., D. Ruiz-Cano, and I.-M. García-Sánchez. 2016. "The Causal Link Between Sustainable Disclosure and Information Asymmetry: The Moderating Role of the Stakeholder Protection

- Context." *Corporate Social Responsibility and Environmental Management* 23, no. 5: 319–332. <https://doi.org/10.1002/csr.1379>.
- Mazzotta, R., G. Bronzetti, and S. Veltri. 2020. "Are Mandatory Non-Financial Disclosures Credible? Evidence From Italian Listed Companies." *Corporate Social Responsibility and Environmental Management* 27, no. 4: 1900–1913. <https://doi.org/10.1002/csr.1935>.
- Molinero-Díez, P., V. Blanco-Mazagatos, I. García-Rodríguez, and M. E. Romero-Merino. 2022. "Women Directors, Educational Background and Firm Value of Spanish Listed Companies." *Gender in Management: An International Journal* 37, no. 7: 816–835. <https://doi.org/10.1108/GM-07-2020-0221>.
- Morales-Raya, M., I. Martín-Tapia, and N. Ortiz-de-Mandojana. 2019. "To Be or to Seem: The Role of Environmental Practices in Corporate Environmental Reputation." *Organization and Environment* 32, no. 3: 309–330. <https://doi.org/10.1177/1086026617753154>.
- Muttakin, M. B., A. Khan, and N. Subramaniam. 2015. "Firm Characteristics, Board Diversity and Corporate Social Responsibility: Evidence From Bangladesh." *Pacific Accounting Review* 27, no. 3: 353–372. <https://doi.org/10.1108/PAR-01-2013-0007>.
- Niskala, M., and M. Pretes. 1995. "Environmental Reporting in Finland: A Note on the Use of Annual Reports." *Accounting, Organizations and Society* 20, no. 6: 457–466.
- Nurhayati, R., G. Taylor, R. Rusmin, G. Tower, and B. Chatterjee. 2016. "Factors Determining Social and Environmental Reporting by Indian Textile and Apparel Firms: A Test of Legitimacy Theory." *Social Responsibility Journal* 12, no. 1: 167–189. <https://doi.org/10.1108/SRJ-06-2013-0074>.
- O'Brien, R. M. 2007. "A Caution Regarding Rules of Thumb for Variance Inflation Factors." *Quality and Quantity* 41: 673–690. <https://doi.org/10.1007/s11135-006-9018-6>.
- Odriozola, M. D., and E. Baraibar-Díez. 2017. "Is Corporate Reputation Associated With Quality of CSR Reporting? Evidence From Spain." *Corporate Social Responsibility and Environmental Management* 24: 121–132. <https://doi.org/10.1002/csr.1399>.
- Omair Alotaibi, K., and K. Hussainey. 2016. "Determinants of CSR Disclosure Quantity and Quality: Evidence From Non-Financial Listed Firms in Saudi Arabia." *International Journal of Disclosure and Governance* 13, no. 4: 364–393. <https://doi.org/10.1057/jdg.2016.2>.
- Ortas, E., I. Gallego-Alvarez, and I. Álvarez Etcheberria. 2015. "Financial Factors Influencing the Quality of Corporate Social Responsibility and Environmental Management Disclosure: A Quantile Regression Approach." *Corporate Social Responsibility and Environmental Management* 22: 362–380. <https://doi.org/10.1002/csr.1351>.
- Patrick, R. H. 2020. "Durbin-Wu-Hausman Specification Tests." In *Handbook of Financial Econometrics, Mathematics, Statistics, and Machine Learning*, edited by C. F. Lee and J. C. Lee, 1075–1108. World Scientific Publishing Co. Pte. Ltd.
- Pavlopoulos, A., C. Magnis, and G. E. Iatridis. 2017. "Integrated Reporting: Is It the Last Piece of the Accounting Disclosure Puzzle?" *Journal of Multinational Financial Management* 41: 23–46. <https://doi.org/10.1016/j.mulfin.2017.05.001>.
- Prado Lorenzo, J. M., I. M. García Sánchez, and I. Gallego-Álvarez. 2009. "Características del consejo de administración e información en materia de Responsabilidad Social Corporativa." *Spanish Journal of Finance and Accounting* 38, no. 141: 107–135. <https://doi.org/10.1080/02102412.2009.10779664>.
- Prado-Lorenzo, J.-M., and I.-M. Garcia-Sanchez. 2010. "The Role of the Board of Directors in Disseminating Relevant Information on Greenhouse Gases." *Journal of Business Ethics* 97: 391–424. <https://doi.org/10.1007/s10551-010-0515-0>.
- Pucheta-Martínez, M. C., I. Bel-Oms, and G. Olcina-Sempere. 2018. "The Association Between Board Gender Diversity and Financial Reporting Quality, Corporate Performance and Corporate Social Responsibility Disclosure: A Literature Review." *Academia Revista Latinoamericana de Administración* 31, no. 1: 177–194. <https://doi.org/10.1108/ARLA-04-2017-0110>.
- Qorraj, E., A. Gara, and B. Fetai. 2025. "Green Economy and Economic Growth: An Empirical Analysis Using Panel Data." *Economic Alternatives* 3: 797–814. <https://doi.org/10.37075/EA.2025.3.09>.
- Rao, K., and C. Tilt. 2016. "Board Composition and Corporate Social Responsibility: The Role of Diversity, Gender, Strategy and Decision Making." *Journal of Business Ethics* 138: 327–347. <https://doi.org/10.1007/s10551-015-2613-5>.
- Rao, K., C. A. Tilt, and L. H. Lester. 2012. "Corporate Governance and Environmental Reporting: An Australian Study." *Corporate Governance* 12, no. 2: 143–163. <https://doi.org/10.1108/14720701211214052>.
- Reverte, C. 2012. "The Impact of Better Corporate Social Responsibility Disclosure on the Cost of Equity Capital." *Corporate Social Responsibility and Environmental Management* 19: 253–272. <https://doi.org/10.1002/csr.273>.
- Romero, S., S. Ruiz, and B. Fernandez-Feijoo. 2019. "Sustainability Reporting and Stakeholder Engagement in Spain: Different Instruments, Different Quality." *Business Strategy and the Environment* 28: 221–232. <https://doi.org/10.1002/bse.2251>.
- Schober, P., C. Boer, and L. A. Schwarte. 2018. "Correlation Coefficients: Appropriate Use and Interpretation." *Anesthesia and Analgesia* 126, no. 5: 1763–1768. <https://doi.org/10.1213/ANE.0000000000002864>.
- Setó-Pamies, D. 2015. "The Relationship Between Women Directors and Corporate Social Responsibility." *Corporate Social Responsibility and Environmental Management* 22: 334–345. <https://doi.org/10.1002/csr.1349>.
- Taleb, H. M. 2010. "Gender and Leadership Styles in Single-Sex Academic Institutions." *International Journal of Educational Management* 24, no. 4: 287–302. <https://doi.org/10.1108/09513541011045236>.
- Thompson, C. G., R. S. Kim, A. M. Aloe, and B. J. Becker. 2017. "Extracting the Variance in Flation Factor and Other Multicollinearity Diagnostics From Typical Regression Results." *Basic and Applied Social Psychology* 39, no. 2: 81–90. <https://doi.org/10.1080/01973533.2016.1277529>.
- Unerman, J. 2000. "Methodological Issues - Reflections on Quantification in Corporate Social Reporting Content Analysis." *Accounting, Auditing & Accountability Journal* 13, no. 5: 667–681. <https://doi.org/10.1108/09513570010353756>.
- Velte, P. 2022. "Does Sustainable Board Governance Drive Corporate Social Responsibility? A Structured Literature Review on European Archival Research." *Journal of Global Responsibility* 14: 2041–2568. <https://doi.org/10.1108/JGR-05-2022-0044>.
- Walt, N., and C. Ingle. 2003. "Board Dynamics and the Influence of Professional Background, Gender and Ethnic Diversity of Directors." *Corporate Governance* 11, no. 3: 218–234. <https://doi.org/10.1111/1467-8683.00320>.
- Westphal, J. D., and L. P. Milton. 2000. "How Experience and Network Ties Affect the Influence of Demographic Minorities on Corporate Boards." *Administrative Science Quarterly* 45: 366–398.
- Yang, H., L. le Luo, and A. Bhattacharyya. 2021. "Mandatory Environmental Reporting in Australia: An In-Depth Analysis of Quantity and Quality." *Abacus* 57, no. 4: 737–779. <https://doi.org/10.1111/abac.12231>.
- Zeileis, A. 2004. "Econometric Computing With HC and HAC Covariance Matrix Estimators." Research Report Series. <http://statistik.wu-wien.ac.at/>.
- Zeng, S. X., X. D. Xu, H. T. Yin, and C. M. Tam. 2012. "Factors That Drive Chinese Listed Companies in Voluntary Disclosure of Environmental Information." *Journal of Business Ethics* 109: 309–321. <https://doi.org/10.1007/s10551-011-1129-x>.