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The influence of corporate governance characteristics on the readability of corporate social responsibility reports written in Spanish language

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A B S T R A C T

As it is the board of directors which is responsible for non-financial information, this article analyses the influence of several characteristics of boards of directors (board size, the proportion of independent directors and the proportion of female directors) on the readability of Corporate Social Responsibility (CSR) reports written in Spanish. It also considers the effect on CSR readability of the hard regulation (law 18/2017 of 24 November 2017) of non-financial information in Spain and the type of reports used (Integrated Reports vs. Management Reports, Annual Reports, Sustainability or CSR reports). The study was carried out on 235 observations of CSR sustainability reports of Spanish listed companies from 2015 to 2019 using the Fernandez-Huerta Formula for Spanish language readability. Findings suggest that board of directors characteristics affect CSR report readability. The proportion of independent directors negatively affects the readability index, while the proportion of women on boards affects it positively. Moreover, readability is unaffected when disclosure of non-financial information is required by law, but it is positively affected when CSR issues are presented in an integrated report. The existence of a CSR committee negatively affects the readability index.

La influencia del gobierno corporativo como determinante de la legibilidad de los informes de responsabilidad social corporativa en español

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R E S U M E N

Dado que el consejo de administración es el responsable de la información no financiera de la empresa, este artículo analiza la influencia de varias características del consejo de administración (tamaño del consejo, proporción de consejeros independientes y proporción de mujeres consejeras) en la legibilidad de los informes de responsabilidad social (RSC) escritos en español. También considera el efecto del Real Decreto-ley 18/2017, de 24 de noviembre sobre información no-financiera, así como del tipo de informe utilizado por la empresa (informes integrados vs informes de gestión, informes anuales, informes de sostenibilidad o de RSC). El estudio se llevó a cabo con 235 informes de RSC de empresas cotizadas españolas desde 2015 a 2019, utilizando la fórmula de Fernández-Huerta para analizar la legibilidad de la información en español. Los resultados indican que las características del consejo de administración afectan a la legibilidad de los informes de RSC. La proporción de consejeros independientes afecta de forma negativa al índice de legibilidad, mientras que la proporción de mujeres en el consejo afecta de forma positiva. Además, la legibilidad no se ve afectada cuando la publicación de la información no financiera es requerida por ley, pero mejora cuando los informes de RSC se elaboran siguiendo el modelo de los informes integrados. Por otra parte, la existencia de comités de RSC afecta negativamente al índice de legibilidad.

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1. Introduction

For companies, non-financial information is as relevant as financial information. Interest in these issues has increased in recent years among stakeholders (Arena, Bozzolan & Michelon, 2015; Boiral, Heras-Saizarbitoria & Testa, 2017) and has led companies to increase CSR reported information. At the same time, it has encouraged regulators to rule its reporting (Adams & Zutshi, 2004; Amran, Lee & Devi, 2014). Despite this fact, many companies had been reporting non-financial information for years before it became mandatory. Currently, the report of non-financial information, as it is named nowadays, is no more a voluntary action. It has been ruled by the European Parliament under Directive 2014/95/EU, Disclosure of non-financial and diversity information by certain large undertakings and groups of 22 October 2014. Furthermore, in Spain, the European Directive was transposed by Law 18/2017 of 24 November 2017, and non-financial information reporting became mandatory for companies with certain characteristics[1] starting with 2018 reports. As a consequence, a revision of the former Directive of 21 of April 2021 of Corporate Sustainability Reports, has been approved[2], which will be applied in 2024 reports, increasing the number of companies affected by reporting and ruling over the sustainability factors to be published, among others. Moreover, guidelines to report non-financial information are available for companies (European Commission Communication from the Commission, 2019). Auditors must verify that the obligation to report non-financial information has been met, either in the management report or as a separate piece.

Non-financial information has become not only a practice of reporting but of transparency and mitigation of information asymmetry, delivering the information to different stakeholders. But CSR information is affected by the intricacy of reporting, namely the complexity of explanatory language surrounding a company's reporting narrative (from now on, readability). Financial literature argues that managers have incentives to increase the complexity of financial reporting (readability) to obfuscate poor performance, irregularities, or bad news. Regulatory bodies, like the Securities and Exchange Commission (SEC, 1998) have suggested measures to ease the reading of financial reports, among which is the use of readability indices (Loughran & McDonald, 2014; Melón-Izco, Ruiz-Cabestre & Ruiz-Olalla, 2021). Companies use readability to influence interest in and comprehension of non-financial reporting texts, writing more readable narratives for positive disclosures than negative ones (Wang, Hsiech & Sarkis, 2018). Therefore, stakeholders need to be conscious of this manipulation and have a critical attitude when reading non-financial information reports.

In this context, the role of the board of directors in Spain is essential since the board is the entity within the company that has the final undelegated responsibility over non-financial information reporting. Among its duties, the board should state how understandable to all stakeholders the company wants its CSR reporting information to be, which liaisons with non-financial information readability level. Spain, as a Continental country, considers the board as the most important corporate governance organ. The main Spanish corporate governance variable characteristics indicate how Spain is slightly above the average in board size (with11 board members vs. an average of 10 in Europe). Concerning independent directors, it is clearly under the average with 47% of independent directors vs. an average of 70% in Europe. As far as diversity is concerned, it is clearly above the average with 42% vs. an average of 30%.

In this sense, our research question emerges: Do board of director characteristics, such as board size, independence, gender diversity, the effect of the type of reporting (the adoption of integrated reporting or not) and the change of law (from soft law to a hard regulation) influence the readability of Spanish CSR reporting in Spain?

The paper focuses on the study of the readability of non-financial information based on CSR reports of Spanish listed companies written in Spanish. The final study was performed on 235 CSR reports of 55 companies in the period 2015-2019. Within CSR reports, six GRI indicators that require compliance were taken into consideration for the study. Results obtained suggest that the proportion of independent directors affects negatively CSR readability, whether the percentage of female directors influences positively. The regulation has not contributed positively to readability in the CSR reports of Spanish listed companies, even though there was a slight increase in reports that marked above average on readability after regulation. Findings also suggest that reporting CSR information through integrated reporting (IR) influence positively readability and having a CSR committee negatively influences readability.

The main contributions of the paper are the following. First, we provide evidence towards multi-source (Integrated Reports, CSR reports, etc.) non-financial information readability, a topic which interests all stakeholders. Stakeholders need to know when they should be more alert for possible obfuscations of the non-financial information. Second, we consider the effect of board of director characteristics on non-financial information readability. The board of directors has the undelegated responsibility to manage non-financial information and is the final responsible body to define the readability level of the texts provided. Third, we provide evidence of readability of non-financial information in Spanish. Spanish is the second most spoken mother language in the world and the third language in commercial communication (Instituto Cervantes, 2021), and the first Spanish-speaking economy in GDP in 2018 (International Monetary Fund, 2022), and is particularly relevant as much of the previous research is either in English or is not focused on corporate governance determinants (Raimo, Vitolla, Marrone & Tettamanzi, 2021). Our study also provides more evidence to the increasing use of textual analysis (Moreno & Casasola, 2016). Finally, we also consider the effect of regulation on readability, as well as the effect of the type of report on readability. In sum, there is a clear gap, which we intend to fill with this study.

The empirical evidence concerning the readability of Spanish company reports written in Spanish is scant, apart from Moreno and Casasola (2016), which is focused on annual reports, not on non-financial information as a basis for analysis (Melón-Izco et al., 2021). It is important to consider the effect of board characteristics on readability, as is one of the board's responsibilities. This is the study gap, which we intend to fill.

The paper is organised as follows. First, we review relevant literature and provide a theoretical framework containing the questions and hypotheses of this study. Then the methodology is described, which includes a reference to the

[1] Firms under this rule are entities of public interest, companies with 500 employees as average in the year, and companies classified as "big companies" for two consecutive years. (Big companies are those that meet two of these criteria: 20 million euros in assets, 40 million euros in annual turnover, and 250 employees on average). It also includes banks and insurance companies, among others.

[2] https://eur-lex.europa.eu/legal-content/ES/TXT/?uri=CELEX%3A32022L2464

readability indices used. Finally, we present the results, the discussion, the conclusions and the implications.

2. Theoretical framework and hypothesis development

2.1. Readability

A definition of readability is (Smeuninx, Clerck, & Aerts, 2016, p. 55), 'when a text's features make it easier for the reader to extract desired information, it is more readable'. Harris & Hodges (1995) mention that reading and understanding a written text defines the concept of readability. Studies identify that 'readability' and 'legibility' influence the ease and speed of reading a text. Readability focuses on the style of the written text (length of words and sentences, punctuation, etc.). Legibility focuses on visually engaging with the written text (typeface, size, margins, and spaces, among others) (Melón-Izco et al., 2021; Moreno & Casasola, 2016).

Concerning readability, there are two types of content analysis to be considered: thematic analysis (theme and topic analysis), and syntactic analysis (difficulty of reading a text) (Jones & Shoemaker, 1994). Additionally, syntactic analysis can also be classified into readability and comprehensibility (Smith & Taffler, 1992; Soper & Dolphin, 1964). The former is text capacity, ("text-centred") and the latter reader ability ("reader-centred") (Jones, 1997; Moreno & Casasola, 2016; Schroeder & Gibson, 1990). Measuring readability is not without problems in finance literature (Loughran & McDonald, 2016). Rudolf Flesch (1948) is considered the father of readability numeric measuring techniques in the English language. Dale and Chall (1948), Gunning (1952) and Kincaid, Fishburne, Rogers, and Chissom (1975) have also defined popular formulae that are still in use (Smeuninx et al., 2016). Most formulae use two variables to predict the text's readability: a semantic variable (word) and a syntactic variable (sentence) (Courtis, 1986). Results are measured on a readability scale (Jones, 1997), which is occasionally referred to as the necessary educational level of the reader to understand the text (Schroeder & Gibson, 1990). But formulae have limitations since they fail to consider sentence complexity (they only consider sentence length), word complexity (they only consider word length), and word difficulty (Courtis, 1987; McConnell, 1983). The Flesch formula is accurate, simple, practical, and reliable, and it is the one most frequently used in accounting studies, in studies on readability evolution, and in others (Clatworthy & Jones, 2001; DuBay, 2007; Klare, 1974; Moreno & Casasola, 2016).

Spanish readability formulae are adapted from those designed for the English language since Spanish words are longer and more words are normally used per sentence (Fialho, Fuentes & Pascual 2002; Jones, 1994). For this study, two adaptations to Spanish of the Flesch formulae have been used: the Fernández-Huerta (1959) adaptation, which is the one most frequently used (Moreno & Casasola, 2016), and a revision of Szigriszt Pazoss (1992), the Inflesz formula, which adjusted the original by widening the sample to become more accurate (Barrio, 2008).

Various studies have been carried out on the concept of readability. Among others, Klare (1963) focused on readability from the view of its usefulness for the communicator, while Smith & Taffler (1992) underlined the differences between readability and understandability. DuBay (2004) made an introduction to readability formulae. Crossley, Skalicky, Dascalu, McNamara & Kyle (2017) also researched readability formulae, but from the point of view of comprehension by adult readers; Hesarzadeh & Rajabalizadeh (2019) found a positive association between readability and informational efficiency on corporate reporting. Most of the studies on readability have been of English texts of Anglophone countries (Courtis, 1986; Du & Yu, 2021; Jones, 1988; Moreno & Casasola, 2016; Parker, 2012; Subramanian, Insley & Blackwell, 1993).

2.2 Non-financial information readability

Non-financial information appeals to the interests of stakeholders more than annual reports, financial or corporate governance reporting (GRI, 2013; Smeuninx et al., 2016). Non-financial information reporting, and the use of guidelines to provide its content, is not only a public relations tool (Boiral et al., 2017; Cho, Michelon & Patten, 2012), but also an important platform for demonstrating transparency, strengthening accountability and engagement with stakeholders. It delivers investors and decision-makers information on sustainability policies, strategies, effective governance, performance, as well as ecological and social data (ACCA & NetBalance, 2007; Amran et al., 2014; Clarkson, Li, Richardson & Vasvari, 2008; Lungu, Caraiani & Dasclu, 2011).

From the legitimacy theory perspective, stakeholder reaction can be influenced by non-financial information reporting. Consequently, reports may improve corporate reputation and image (Chan, Watson & Woodliff, 2014; Wang et al., 2018), corporate relations with stakeholders (Adams & Zutshi, 2004; Chan, et al., 2014), nancial returns (Torugsa & ODonohue, 2012; Wang et al., 2018), and they may reduce capital market information uncertainty (Martínez-Ferrero, Ruiz-Cano & García-Sánchez, 2015; Wang et al., 2018).

The signalling theory looks at how greater transparency and connectivity of both financial and non-financial information conveyed by integrated reports are likely to exert a signalling effect on capital providers, encouraging managers to adopt a long-term value-creation strategy to the benefit of investors (Lys, Naughton & Wang, 2015).

Under the agency theory (Adams & Zutshi, 2004), the two key motivating factors for non-financial information reporting are moral responsibility and business interests. As managers are accountable for reporting processes and driven by business interests, there is a possibility that the information disseminated is designed to portray a positive image of the corporation rather than to provide transparency and accountability to stakeholders. This is called the 'obfuscation hypothesis' (Courtis, 1998; Rutherford, 2003; Smeuninx et al., 2016). In this case, the separation between managers and owners (Agency conflict type I) (Villalonga & Amit, 2016), may explain possible opportunistic managerial behaviour. As a result, managers may obfuscate disclosures to mask unfavourable information that may harm the firm's performance. One way of masking unfavourable information is through text complexity or lower readability.

Other studies under the impression-management hypothesis suggest that managers might apply communication tactics to influence share prices to their advantage, as the market is not able to assess short-term reporting (Clatworthy & Jones, 2001). Furthermore, from the point of view of readability in the context of financial reporting, the 'incomplete revelation hypothesis' (Bloomfield, 2002; 2008) indicates that information with higher processing costs produces fewer trading interests and, therefore, will produce less price efficiency and higher uncertainty. So, a report of lower readability will increase complexity as it increases the cost of processing information, and managers may use this to obfuscate poor performance, bad news, etc.

Studies by Adelberg (1979) and Li (2008) suggest, for example, that the readability of a company's report and its financial performance are negatively associated; other authors have studied consequences and costs relating to how the readability of narrative text on financial disclosure influences the reaction of investors (You & Zhang, 2007; Lehavy, Li & Merkley, 2011). Other studies find that a higher readability of financial statements leads to a lower dispersion and uncertainty of analyst earnings forecasts (Lehavy et al., 2011). Furthermore, prior research suggests that managers selectively disclose good news and are less forthcoming with bad news (Lang & Lundholm, 2000). Clarkson, Li, Richardson & Vasvari (2008) report that managers are not economically incentivised towards opportunistic reporting, since the market might identify it and punish the company with share price reduction. Guay, Samuels, and Taylor (2016) find that managers of firms with high financial complexity increase voluntary disclosure to mitigate the negative impact of financial complexity on their environment. As a result, managers will use CSR text narrative for reports as a communication tool, to provide relevant information and reduce information asymmetries between the company and the different stakeholders (Arena et al., 2015; Clarkson et al., 2008; Martínez-Ferrero et al., 2015).

Although several finance and accounting papers explore the impact of textual or linguistic features, such as readability, on the decision-making of investors and information intermediaries (Li, 2008; Loughran & McDonald, 2016), less attention has been paid to the complexity of non-financial information. Studies of firms' readability reports have considered chairperson statements, letters to stakeholders, and annual reports (Moreno & Casasola, 2016; Rahman & Kabir, 2023), but fewer are focused on non-financial information such as the integrated report (IR) or the CSR reports (Abu Bakar & Ameer, 2011; Roman, Mocanu, & Hoinaru, 2019). Concerning the readability of CSR reports or integrated reports, studies have considered the effect of some firm's characteristics like size, age, national culture, leverage on firm readability, but there is no evidence about the effect of corporate governance variables on it. Roman et al. (2019) analyse an international sample, concluding that the higher the revenue, the more balanced their integrated reports (IR); younger companies use a more optimistic tone when reporting, countries with a transparency culture provide less readable integrated reports, and companies of non-environmentally sensitive industries provide less readable integrated reports. Du & Yu (2021) studied companies in the Fortune 500 index and concluded that better readability and optimistic tone of CSR reports influence CSR performance, being more positive with better performance. Raimo et al. (2021), on an international sample using the Flesh formulae, analysed the readability of the IR report and found a low level of readability and a positive effect of size and financial leverage on it. In summary, some positive and negative arguments may influence the readability of corporate responsibility information.

The empirical evidence concerning the readability of Spanish companies reports written in Spanish is scant, except for Moreno and Casasola (2016) and Melón-Izco et al. (2021). Moreno and Casasola (2016) performed a longitudinal study on readability in the Spanish language over two companies: on CEPSA's (large-sized company) president's letters from 1930 to 2012 and on El Alcázar's (medium size company) management reports from 1928 to 1992. They focused on readability evolution over time on variables not related to corporate governance, which were firm size, profitability, risk (payback to creditors), changes in companies' presidents/general managers, document titles, and listing status. The results confirmed that reports are indeed difficult to read but show an improvement in readability over the years. Melón-Izco et al. (2021) studied annual reports of Spanish Stock Exchange companies from 2010 to 2016. The results reveal that the most extensive management reports are the least readable.

2.3. Board of director's characteristics and readability

Corporate governance is widening its scope and 'now addresses the concerns of the social, environmental, and public arena' (McBarnet, 2007, p. 556) as well as issues related to ethics, accountability, and disclosure (Lerach, 2002). 'Corporate governance involves a set of relationships between a company's management, its board, its shareholders, and other stakeholders' (OECD, 2015, p.9). Traditional CSR issues (such as non-financial reporting practices, codes of conduct, stakeholder engagement, etc.) are now being addressed by corporate governance practices (Rahim & Alam, 2013). So, the scope of corporate governance has broadened to encompass the growing importance of CSR (Amran et al., 2014).

Corporate governance and voluntary disclosure are mechanisms used to protect investors and help reduce agency conflicts. Within the literature, numerous studies link companies' disclosure practices with corporate governance (Adams, 2002; Cerbioni & Parbonetti, 2007; Gul & Leung, 2004; Michelon & Parbonetti, 2012; Wang et al., 2018). Walls, Berrone, & Phan (2012), Mason & Simmons (2014), and Tamimi & Sebastianelli (2017) discuss the influence of corporate governance on the deepening of CSR implementation. Others have related disclosure practices and corporate governance attributes, among which we find board composition (Haniffa & Cooke, 2005), board size (Villiers, Naiker & Van Staden, 2011), and the proportion of independent non-executive directors (Chan et al., 2014; Cerbioni & Parbonetti, 2007; Eng & Mak, 2003; Haniffa & Cooke, 2005; Villiers et al., 2011).

Concerning specifically the board of directors, its role appears to be crucial (Fiori, di Donato & Izzo, 2016; Songini, Pistoni, Tettamanzi, Fratini & Minutiello, 2021) to defend stakeholders' interest as a responsibility (Frías-Aceituno, Rodríguez-Ariza & García-Sánchez, 2012; Songini et al., 2021) and to restrain management opportunism (Frías-Aceituno et al., 2012; Songini et al., 2021). The benefits of greater disclosure are better understood by boards of directors (Aras & Crowther, 2008). The board of directors is responsible for the disclosure of CSR information and influences the quality of reporting (Kim & Starks, 2016). Therefore, a strong positive relationship between the board of directors' characteristics and quality non-financial information reporting can be expected.

Previous studies have mostly addressed corporate governance and disclosure practices (Adams, 2002) or quality (Amran et al., 2014). Nevertheless, there is a clear gap in the literature concerning the relationship between board of directors' characteristics and readability, specifically, concerning non-financial information.

As a relevant corporate governance variable, board size should be optimized according to the type of company and its ownership structure (Gaeremynck & Renders, 2012). On average, European countries'[3] boards are made up of 10 board

[3] The European countries included in Spencer Stuart's Board Indexes are Belgium, Denmark, Finland, France, Ireland, Italy, Netherlands, Norway, Spain, Sweden and Switzerland.

members. Spain has on average, 11 board members (Spencer Stuart, 2022). Although it seems that smaller boards tend to be more effective (Amran et al., 2014; Lipton & Lorsch, 1992) as they reduce opportunism problems, encourage proactive behaviour of directors, and motivate active participation of board members. Moreover, an effective board contributes to better decisions. In a contrary sense, studies from the stakeholder theory suggest that boards with more members have higher levels of CSR reporting as they represent different groups of stakeholders. This results in a greater effort to communicate with and satisfy the demands of stakeholders (Kaymak & Bektas, 2017), influencing readability. Larger boards might influence management to engage with CSR activities or adopt CSR practices (Jizi, Salama, Dixon & Stratling, 2014; Ben Barka & Dardour, 2015; Tamimi & Sebastianelli, 2017), and will influence the disclosure of companies' actions and their transparency (Frías-Aceituno et al., 2012; Songini et al., 2021; Tamimi & Sebastianelli, 2017), influencing positively readability. They will have larger diversity in terms of experience and expertise (Songini et al., 2021), which can also influence readability. Nevertheless, large boards may suffer from communication and coordination problems. A larger board may reduce the board's ability to control managers and could slow the decision-making process (Amran et al., 2014; Lipton & Lorsch, 1992; Yermack, 1996).

Concerning empirical evidence, Amran et al. (2014) suggest that an efficient composition of the board (board size, independence, and gender) influences CSR report quality. Songini et al. (2021) consider the effect of the board of directors' characteristics (board size, diversity, composition, and qualitative characteristics of directors) on the quality of Integrated Reports. Prior empirical evidence has considered the relationship between board size, independence, and female presence on boards with transparency and accountability practices in the company (Amran et al., 2014; Kolk, 2008; Tamimi & Sebastianelli, 2017). Melón-Izco et al. (2021) suggest that the readability of accounting narratives is improved by good governance practices over listed companies in Spain from 2010-2016 and board size is included among them.

In summary, a broad range of studies argue that large boards have a wider diversity of experience and skills, which contributes to better and more transparent non-financial information disclosure and might improve CSR readability.

Based on the above, we propose:

> ***H1:*** *Board size is positively associated with the readability of non-financial information reports.*

Concerning board composition, on average, European countries'[4] boards have 70% independent directors on their boards while Spain has 47% of independent directors (Spencer Stuart, 2022). Independent directors have no ties to the company. Outside directors' objective is to protect minority shareholders' interests (Fama, 1980). They are expected to provide the board with a different view of issues and are supposed to be more objective than inside directors, who are employees with potentially conflicting interests and easier access to information (Kaymak & Bektas, 2017). Independent directors connect the firm with external stakeholders and are interested in a high degree of transparency, which implies the disclosure of high-quality information (Amran et al., 2014). Independent directors are more interested in satisfying new information needs (García-Sánchez, Rodríguez Domínguez & Gallego Álvarez, 2011). Greater board independence affects the degree of transparency (Cheng & Courtenay, 2006; Donnelly & Mulcahy, 2008; Huafang & Jianguo, 2007; Kaymak & Bektas, 2017).

The potential misalignment between independent directors and company management causes an increase in both the quantity and the quality of voluntary disclosure (Songini et al., 2021). A higher proportion of independent directors will make the control of top management more effective in maintaining their reputation capital (Fama & Jensen, 1983). Therefore, there are incentives for independent directors to influence disclosure practices to maintain a firm's reputation (Amran et al., 2014).

The empirical evidence is mixed. Some studies on board independence and transparency have suggested a positive association between voluntary disclosure and board independence (Eng & Mak, 2003, Cheng & Courtenay, 2006; Donnelly & Mulcahy, 2008), while other studies indicate no relationship between voluntary disclosure and the number of outside directors on the board (Kashanipoor, Rahmani & Parchini Parchin, 2009). Also, studies suggest that external board members contribute to board independence in decision-making capacity, and to mitigate information asymmetries within CSR (Dalton, Daily, Ellstrand & Johnson, 1998; Kaymak & Bektas, 2017). Previous studies of the Kenyan banking sector (Barako & Brown, 2008) and Pakistani companies (Lone, Chaudhry & Khan, 2016) have suggested that the presence of independent directors (outsiders) on the board increases CSR disclosure (Tamimi & Sebastianelli, 2017). As Songini et al. (2021) summarise, the effectiveness of independent directors on disclosure depends on the institutional systems and business culture.

Concerning the effect of board independence and readability of annual reports, Rahman & Kabir (2023) show how this relation is not clear. While a higher independent board may improve readability due to a greater monitoring of the company improving company information (improvement of disclosure hypothesis), managers, may try to avoid costly monitoring imposed by independent directors, reducing readability (avoidance of monitoring hypothesis).

In summary, the study of board independence and disclosure of non-financial information has provided contradictory information. Since the proportion of independent directors contributes to increase voluntary disclosure and enhances the control function of the board, their presence will contribute to increase readability, i.e., not obfuscate poor performance or negative actions concerning non-financial information. Therefore, we hypothesise that:

> ***H2:*** *The proportion of independent directors on the board is positively associated with the non-financial information reports readability.*

Board diversity means differences in directors' characteristics concerning age, gender, race, etc. On average, large European companies currently have 30% female non-executive directors. Spain has 42% female non-executive directors, being among the top 5 (IoD, 2022).

Gender diversity brings to the board different perspectives and ideas or opinions, as well as more board knowledge in board discussions, which favour problem-solving. Greater board gender diversity increases the ability to satisfy the needs of its stakeholders (Songini et al., 2021) and enhances board independence. Moreover, it increases stakeholder interaction and greater reporting transparency (Gerwanski, Kordsachia & Velte, 2019). More gender diversity may contribute to better social and environmental perform-

[4] The European countries included in Spencer Stuart's Board Indexes are: Belgium, Denmark, Finland, France, Ireland, Italy, Netherlands, Norway, Spain, Sweden and Switzerland.

ance (Orazalin & Baydauletov, 2020). In particular, female presence on boards enhanced CSR quality and management in listed European companies (Ferrero-Ferrero, Fernández-Izquierdo & Muñoz-Torres, 2015). Concerning CSR disclosures and for an international sample, García-Sánchez, Suárez-Fernández & Martínez-Ferrero (2019) found strong evidence on how boards with more female directors are more oriented towards decreasing the complexity of CSR disclosures due to a reduction of the risk of impression management strategies. Bear, Rahman and Post (2010: 211) state that 'the presence and the number of women on boards may signal to stakeholders that the firm pays attention to women and minorities, and is, therefore, socially responsible'. Some studies also suggest that females are more sensitive about social issues (Kiliç, Kuzey & Uyar, 2015; Tamimi & Sebastianelli, 2017) and enhance CSR performance (Tamimi & Sebastianelli, 2017; Velte, 2016). In this sense, female directors have shown to affect the circular model (Enciso-Alfaro & García-Sánchez, 2024), due to their diligence and leadership style that led firms to positive changes in transparency and dissemination of environmental and Circular economy information. Thus, gender diversity is shown to be positively associated with CSR and better social and environmental performance (Adams & Ferreira, 2004).

The same has been found in the study of females on boards of directors and the positive relation to CSR reporting quality or the quality of CSR disclosure (Amorelli & García-Sánchez, 2020). While Fernandez-Feijoo, Romero, & Ruiz-Blanco (2012) found a positive relationship between having more than three women on the board and CSR reporting, Frías-Aceituno et al. (2012), Lone et al. (2016), and Tamimi & Sebastianelli (2017) found that gender diverse boards had higher Bloomberg ESG scores[5]. On the contrary, the study by Amran et al. (2014) did not find any consistent relationship between gender diversity and CSR reporting quality. Regarding the scope of this study, Ginesti, Drago, Maccioni, & Sanninos (2018) research explores the impact of board gender on readability. In their analysis of a sample of Italian companies, they discovered that the participation of women on the board has a favourable effect on the readability of annual reports in companies with fewer board connections but the opposite effect in companies with a greater number of board connections. Nadeem (2022), for US firms, find a significant positive impact of board gender diversity on the readability of 10-k reports. Harjoto, Laksmana & Lee (2020) consider the effect of gender leaders that sign a CSR reports. Their results indicate how female signers produce CSR reports that are easier to read, showing the importance of gender composition of CSR teams. In short, most studies suggest that a higher proportion of female directors will improve CSR reporting quality and, therefore, readability. Taken together, we state:

> ***H3:*** *A greater proportion of female directors is positively associated with a better readability of non-financial information reports.*

[5]ESG is a Bloomberg Terminal function that provides sustainability investors with data about a company's environmental, social, and governance metrics, such as greenhouse gas emission intensity, resource consumption, and workplace diversity. The function provides an overview of a company's support of sustainability initiatives and ranks its performance against industry peers. Retrieved from https://www.bloomberg.com/company/press/esg-function-addsrobecosam. (4 August 2020).

2.4. Mandatory disclosure of non-financial information and the influence of the type of report on readability

CSR information (non-financial information, as named in law) reporting was ruled by the European Parliament under Directive 2014/95/EU, Disclosure of non-financial and diversity information by certain large undertakings and groups, of 22 October 2014. Furthermore, in Spain, the object of our study, CSR reporting has been ruled as mandatory by Law 18/2017 (24 November 2017) for all companies with certain characteristics since 2018. Firms obliged to report are entities of public interest, entities with 500 employees as averaged throughout the year, entities classified as 'big companies' for two consecutive years, and others. Therefore, it might be interesting to research whether CSR readability has changed since the application of the new legislation.

Under RD 18/2017, of 24 Nov, companies have the option to report non-financial information either as part of the management report or in a separate document, provided that the legally mandated content is included. In this sense, integrated reporting (IR) represents the convergence of CSR and financial reporting into a single narrative as a holistic representation of a company's performance in terms of finance and sustainability (Roman et al., 2019). The goal of IR is to provide information in a clear, understandable, and accessible way (Raimo et al., 2021), so it is to be expected that companies that strive to communicate their CSR policies through IR will score higher on readability. Raimo et al. (2021) obtain a low level of readability for an international sample of IR in the year 2020 with a positive effect on the firm's size and financial leverage. Alfiero, Cane, Doronzo & Esposito (2018) obtained a positive relationship between gender diversity and the adoption of IR.

To sum up, our investigation will assess whether there are disparities in the comprehensibility of non-financial information reports prior to and following the norm change, as well as before and after the implementation of integrated reports. Therefore, we suggest the following:

> ***H4:*** *The introduction of the norm that made the disclosure of non-financial information mandatory for certain firms, and the use of an integrated report (IR), improved the readability of non-financial information reports.*

3. Methodology

3.1. Sample and sources

The initial sample is the entire population of Spanish-listed firms indexed on the IBEX35 index for at least one year during the period 2015-2019 (41 firms and 200 observations), as well as Spanish-listed firms not belonging to the IBEX 35 that are included in the GRI database[6] (18 firms and 87 observations). The initial sample is therefore made up of 59 firms and 287 observations during the period 2015-2019. From this initial sample, we deleted the observations corresponding to companies with a registered office outside Spain (1 firm / 5 observations) and those that did not report under the GRI indices of the study (13), as well as those observations for which CSR information was not available (1 observation). After applying all these filters, the final sample contains an unbalanced panel of 55 firms and 235 observations from 2015-2019.

[6]GRI's Sustainability Disclosure Database stores and tracks specific reporting data.

Information required to estimate variables employed in the study was manually gathered from different sources. For the six GRI indicators to which the readability formulas were applied, data were extracted from CSR or sustainability reports. These reports can either be an independent piece or included in firms' management (annual) reports or firms' integrated reports (reports with focus on integrated thinking). Reports were retrieved from firms' official websites. Information on corporate governance was gathered from annual corporate governance reports submitted by each firm at the Spanish Supervisory Agency, the Comisión Nacional del Mercado de Valores (CNMV). The data for economics and finance was collected from the SABI database and Madrid Stock Exchange website.

3.2. Variables

Dependent variables: Readability measures

Readability studies building on the English language (Adelberg, 1979; Courtis, 1998; Lehavy et al., 2011; Li, 2008; Wang et al., 2018) have mostly applied the Fog, Kincaid, and Flesch indices to measure the readability of narrative disclosure in annual and CSR reports. The most frequently used index is the Flesch Reading Ease Formula, which considers word and sentence length and ranks from 0 to 100, where low outcomes suggest difficult-reading narrative texts and high outcomes suggest the opposite. Due to the differences in length between English and Spanish narrative texts, the Flesch formula has been adapted to be applied to Spanish texts (Moreno & Casasola, 2016). This study has used a readability index based on the Flesch formula (Flesch, 1948): the Fernández-Huerta Index (1959).

The Fernández-Huerta Index (FH) is defined as:

$$FH = 206.84 - 0.60P - 1.02F$$

where FH is the Fernández-Huerta readability Index, P is the average number of syllables per word, and F is the average number of words per sentence. The readability index ranks from 0 to 100. The higher the FH index, the better readability of a firm's CSR report, meaning reports are easier to read. The readability index is estimated using the program legible.es on Python software.

The observations gathered from CSR reports are a selection of the Global Reporting Initiative (GRI)[7] standard reporting indicators used by Spanish IBEX35 companies, since GRI standard reporting is the most frequently used guideline employed by these companies for CSR reports. To identify which specific GRI indicator should be the subject of this study, the selection was based on the Bloomberg ESG (Environmental, Social, and Governance) database, which is often used for academic ESG studies, such as that of Pei-Yi Yu, Qian Guo and Van Luu (2018) or Tamimi and Sebastianelli (2017). In particular, the GRI indicators selected were those related to compliance with laws and regulations, which have a high-impact evaluation on the Bloomberg ESG database. Specifically, the GRI indicators studied are 205/G4-SO5 Confirmed incidents of corruption; 206/G4-SO7 Legal actions for anti-competitive behaviour; 307/G4-EN29 Non-compliance with environmental laws and regulations; 417-2/G4-PR4 Incidents of non-compliance concerning product and service information and labelling; 417-3/G4-PR7 Incidents of non-compliance concerning marketing communications; and 419/G4-SO8 and PR9 Non-compliance with laws and regulations in the social and economic area. Readability formulas were applied to Spanish narrative texts of these six GRI indicators reported on in CSR reports.

The process of measuring the sustainability information followed four steps. First, the narrative text of each GRI indicator studied was extracted from the CSR report and copied to the database, specifying the page from which it was extracted. Next, a debugging process was involved removing punctuation marks, such as semicolons, colons, brackets, and others that could lead to the interpretation of additional sentences by the calculation software. Additionally, all acronyms were replaced with their full word equivalents. For example, 'Comisión Nacional del Mercado de Valores' instead of 'CNMV'. In cases where substitution was not possible, any unnecessary elements were removed if they did not affect the content of the text. For example, acronyms such as S.A. or S.L. were eliminated. We relied on Melón-Izco et al. (2021) for this cleaning process. Finally, readability indices were estimated, and their results were registered.

Independent variables

Independent corporate governance variables include (a) the total number of directors (BSIZE), (b) the percentage of independent directors (BINDE), and (c) the percentage of women directors (BFEM). The mandatory content of CSR information (CSRMANDAT) is considered as a dummy variable equal to one from 2018 onwards, and zero otherwise, as that was the year when reporting of CSR information became mandatory for Spanish listed firms[8]. Finally, INTREPORT is a dummy variable that takes the value of one when the CSR information corresponds with an integrated report, and zero otherwise.

Control variables

Control variables comprise a set of continuous variables previously employed in CSR-related research (Raimo et al., 2021): the natural logarithm of the book value of total ASSETS as a measure of firm size and the firm-industry-adjusted operating income (OPINCOME) as an indicator of company performance. A variable capturing the average of total GRI standards accomplished by companies each year (SCOMPL) is defined as the control variable. Each GRI criterion has been identified and classified using a binary score (1-0) for each observation, 1 being compliance and 0 being non-compliance. Binary scoring is frequently used in sustainability studies following the Kinder, Lydenberg and Domini, KLD, database criterion (Arena et al., 2015; Cho & Patten, 2007; Cho, Roberts & Patten, 2010). Consequently, a firm could score a maximum of zero point five (0.50) and a minimum of zero (0). The higher the score, the more the compliance. Formulae for calculating the reporting with these six GRI indicators was a total percentage (A/(A+B)): *(binary GRI 205 + binary GRI 206 + binary GRI 307 + binary GRI 417-2 + binary GRI 417-3 + binary GRI 419) / ((binary GRI 205 + binary GRI 206 + binary GRI 307 + binary GRI 417-2 + binary*

[7] There are two different versions of GRI standards applied by companies. The most recent is GRI Sustainability Reporting Standards, launched on 19 October 2016 and required for reports published on or after 1 July 2018. Previous GRI standards are GRI4 Guidelines. A Mapping (GRI, 2018) that correlates GRI Standards with GRI4 Guidelines has been used, preventing the new version of the guidelines from being a limitation of this study (Global Reporting Initiative, 2020).

[8] Under European Directive 2014/95/EU Disclosure of non-financial and diversity information of 22 October 2014 and its transposition to Spanish legislation by the law 18/2017, of 24 November 2017.

GRI 417-3 + binary GRI 419) + Number of GRI indicators reported by firm) (e.g., a company reports on three indicators, it complies with two and fails to comply with one; the formula would be: (1+1+0)/ ((1+1+0) +3) = 0.40, meaning that it complies with 0.40 - out of 1 - of reported indicators). Finally, CSRCOMMITTEE dummy variable, which takes the value of 1 when the board of directors has a specific sustainability or CSR committee and 0 otherwise, and the voting rights of the board of directors (INSIDEOWN) are also included.

Table 1 provides the variable definitions.

Table 1. Variables

Variables	Description
Dependent variables	
FH	Fernandez-Huerta readability index computed as: L = 206.84 0.60P 1.02F Where 0= lowest readability; 100= highest readability
Independent variables	
BSIZE	Total number of directors.
BINDE	Percentage of independent directors.
BFEM	Percentage of women directors.
CSRMANDAT	Dummy variable = 1 in 2018 and 2019 and = 0 otherwise.
INTREPORT	Dummy variable = 1 if CSR report is an integrated report and = 0 otherwise.
Control variables	
ASSETS	Natural logarithm of total assets (measured in euros).
OPINCOME	Firm industry-adjusted operating income: firm operating income minus industry median each year.
SCOMPL	A binary code on compliance (compliance=1; non-compliance=0) is given to each of the GRI indicators reported by the firm (maximum of 6). Then, a total percentage formula is run (A/(A+B)). Results: 0.50 is the highest higher score for compliance and 0 the lowest.
CSRCOMMITTEE	Dummy variable = 1 if the board of directors has a specific sustainability or CSR committee and = 0 otherwise.
INSIDEOWN	Voting rights of the board of directors.

3.3. Methodology

After applying descriptive and correlation analyses, we first employ the Mann Whitney U and the Wilcoxon tests for significant differences in CSR readability (FH), depending on corporate governance characteristics (BSIZE, BINDE, and BFEM), regulation (CSRMANDAT) and type of report (INTREPORT). To test the research hypotheses, we analyse the influence of corporate governance characteristics (H1 to H3), and regulation and type of report (H4) on CSR readability by applying a random-effects panel data model, given that the Hausman test reveals potential autocorrelation between independent variables and the fixed effects. The random-effect panel data model is defined as:

$$\begin{aligned} FH_{it} = \beta_0 + \beta_1 BSIZE_{it} + \; & \beta_2 BINDE_{it} + \beta_3 BFEM_{it} \\ & + \beta_4 CSRMANDAT_t + \beta_5 INTREPORT_{it} \\ & + \beta_6 X_{it} + \sum_{j=1}^{6} S_{ij} + \varepsilon_{it} \end{aligned}$$

where FH_{it} is the Fernandez-Huerta readability index of the firm i in the year t; $BSIZE_{it}$, $BINDE_{it}$ and $BFEM_{it}$ are the total number of directors, the percentage of independent directors, and the percentage of women directors, respectively, of the firm i in the year t; $CSRMANDAT_t$ denotes the legislation introduced in 2018; $INTREPORT_{it}$ captures if the firm i in the year t adopts integrated reporting; X_{it} is a vector of control variables (*ASSETS*, *OPINCOME*, *SCOMPL*, *CSRCOMMITTEE,* and *INSIDEOWN* , $\sum_{j=1}^{6} S_{ij}$ is a set of industry dummy variables[9] and ε_{it} is a normal error term.

Panel data models control for unobservable heterogeneity by decomposing the random error term ε_{it} into two parts: the combined effect (μ_{it}), which depends on individual and time periods, and the individual effect (η_i), which captures the firm's characteristics and constants over time.

4. Results

4.1. Descriptive statistics and correlations

Table 2 represents the descriptive statistics of variables for this study. The mean readability of Spanish-listed firms is 56.62 (FH). Concerning readability, in order to interpret the results, it is worth noting the readability scale for the FH index, which is: 90-100 very easy, 80-90 easy, 70-80 somewhat easy, 60-70 normal (adult), 50-60 somewhat hard (pre-university), 30-50 hard (basic university), 0-30 very hard (specialised university). Therefore, Spanish non-financial readability belongs to the category of "somewhat hard". Previous studies on the readability of Spanish companies (Melón-Izco et al., 2021) obtain a mean FH index of 48.47, which falls into the category of "hard", although the study is not focused on CSR information on Management reports.

Board size average is 12.43 directors (BSIZE), signifying boards are large since they almost top the Good Governance Code of Listed Companies (2020) recommendation of 5 to 15 members. Among the members of the board, on average, 47.40 % are independent directors (BINDE) and 21.82% are female directors (BFEM). Female presence on boards of directors is far from the objective of 30% set by the Good Governance Code of Listed Companies (2015) and from the objective of 40% set by the Good Governance Code of Listed Companies (2020) and the Spanish board gender diversity quota (2007). While some boards have no female directors and as few as 12.5% independent directors, others include up to 85.71% independent directors and 57.14% female directors. 22.98 % of firms use integrated reporting (INTREPORT) and 41.28% of the observations belong to years 2018 and 2019, i.e., reports are affected by the Directive 2014/95 EU (CSRMANDAT).

Regarding control variables, average ASSETS are 74,700,000 euros. Our sample has lower operating incomes than their industries (OPINCOME). The level of compliance with GRI indicators is on average 40%, 50% of the maximum level of compliance. Among the GRI indicators, 417-3/G4-PR7, concerning marketing communications, is the one most complied with, followed by 307/G4-EN29 concerning environmental laws and regulations. The least complied with is 206/G4-SO7 Legal actions for anti-competitive behaviour. 19.15% of the firms have a specific sustainability committee (CSRCOMMITTEE) on their boards and 9.95% is the average voting rights of board members (INSIDEOWN).

Table 3 reports the bivariate correlations among study variables. Readability (FH) is positively and significantly correlated with board size, gender diversity on boards, and the

[9]Industries considered: Oil and energy; Basic mats. Industry and construction; Consumer goods, Consumer services; Technology and telecommunications; and Real estate services. Reference sector: Financial services.

Table 2. Descriptive statistics

	Descriptive statistics						
Variables	MEAN	FREQ (%)	SD	MIN	MEDIAN	MAX	N
FH	56.62		12.77	0	56.64	93.81	235
BSIZE	12.43		2.58	6	12	18	235
BINDE	47.40		16.14	12.5	50	85.71	235
BFEM	21.82		10.93	0	23.08	57.14	235
CSRMANDT (d)		41.28					235
INTREPORT (d)		22.98					235
ASSETS	7.4 7x 10^7		2.32 x 10^8	276,059	1.05 x 10^7	1.52 x 10^9	235
OPINCOME	-0.001		1,417,578	-4,473,830	-212,477.3	5,204,664	235
SCOMPL	0.40		0.13	0	0.444	0.50	235
CSRCOMMITTEE (d)		19.15					235
INSIDEOWN	9.95		16.36	0	0.35	59.37	235

Table 3. Bivariate correlations

	VIF	1	2	3	4	5	6	7	8	9	10	11	12
1. FH		1											
2. BSIZE	1.89	0.136** (0.038)	1										
3. BINDE	1.57	-0.266*** (0.000)	-0.299*** (0.000)	1									
4. BFEM	1.18	0.139** (0.034)	-0.002 (0.974)	0.171*** (0.009)	1								
5. CSRMANDT	1.06	-0.011 (0.873)	-0.031 (0.635)	0.070 (0.283)	0.171*** (0.009)	1							
6. INTREPORT	1.08	0.224*** (0.001)	-0.039** (0.550)	-0.110* (0.093)	-0147** (0.024)	0.035 (0.592)	1						
7. ASSETS	1.88	0.078 (0.236)	0.267*** (0.000)	0.134** (0.040)	0.197*** (0.002)	-0.023 (0.722)	-0.118* (0.071)	1					
8. OPINCOME	1.30	0.063 (0.338)	0.244*** (0.000)	0.116* (0.076)	0.211*** (0.001)	0.000 (0.999)	-0.140** (0.033)	0.473*** (0.000)	1				
9. SCOMPL	1.08	-0.107 (0.101)	-0.145** (0.027)	0.063 (0.337)	-0.161** (0.014)	0.046 (0.479)	-0.006 (0.933)	-0.130** (0.047)	-0.176*** (0.007)	1			
10. CSRCOMITTEE	1.08	-0.216*** (0.001)	0.054 (0.411)	0.155** (0.018)	0.138** (0.034)	0.097 (0.137)	-0.137** (0.035)	0.046 (0.488)	0.136** (0.037)	0.028 (0.666)	1		
11. INSIDEOWN	1.17	0.098 (0.134)	-0.129** (0.048)	-0.278*** (0.000)	-0.054 (0.411)	-0.036 (0.580)	0.098 (0.133)	-0.150** (0.021)	0.011 (0.867)	0.006 (0.925)	-0.039 (0.585)	1	

* p <0.10; **p <0.05; *** p <0.01.

choice of using integrated reports. On the contrary, readability is negatively correlated with board independence, compliance with GRI standards, and the existence of CSR or sustainability committee. Although some of the variables are significantly correlated, correlation coefficients are lower than 0.50 and the analysis of the variance inflation factors (VIF) reveals no evidence of multicollinearity, as all of them take values under 2.

4.2. Bivariate analysis

Next, we preliminarily test whether there are differences in readability depending on corporate governance characteristics, type of reporting, and regulation. Results are reported in Table 4. We have divided the firms' observations into two groups: those observations that are above the mean or below the mean in the variables: total number of directors (BSIZE), the percentage of independent directors (BINDE), and the percentage of female directors (BFEM). Additionally, we look for static differences depending on the year of reporting (pre-regulation versus post-regulation) and between firms that use an Integrated Report (INTREPORT) and firms that use another report. The statistical tests we use to measure statistical differences are the Mann-Whitney U test (BSIZE, BINDE, BFEM, and INTREPORT) and the Wilcoxon test for related samples (CSRMANDT).

Concerning the readability measured using the FH measure and the size of the board (BSIZE), there are 115 observations above the mean of BSIZE and 120 below the mean. Firms with larger board sizes have better readability versus the smallest, with the differences significant at a 10% level.

Regarding the percentage of independent directors (BINDE), there are 122 observations above the mean and 113, below. Those observations characterized by a larger percentage of independent directors on boards show worse readability than the others. Statistical differences are significant at a 10% level.

Regarding the proportion of female directors, there are 119 observations above the mean and 113 below. Readability is better for the observations with a larger percentage of women directors on boards on average. In this case, statistical differences are not significant.

CSRMANDT reports differences in readability indices before and after regulatory changes. We have measured differences between the years post-regulation (2018 and 2019) and the years before (2017, 2016, and 2015). Results reveal limited differences in CSR readability before and after law enforcement. Readability has improved with regulation when 2018 reports are compared with those of 2015. The increase is significant at a 5% level. No significant differences have been found when other pairs of years are compared (2015 versus 2019; 2016 versus 2018; 2016 versus 2019; and 2017 versus 2018).

Finally, concerning INTREPORT, the results show differ-

Table 4. Bivariate analysis: differences in readability depending on corporate governance characteristics, type of reporting, and regulation.

			FH		
		N	Mean	Mann-Withney U / Wilcoxon (a)	
BSIZE	Above	115	58.27	1.918*	
	Below	120	55.04		
BINDE	Above	122	54.85	1.825*	
	Below	113	58.54		
BFEM	Above	119	57.56	0.933	
	Below	116	55.66		
CSRMANDT (a)	Pre-regulation				
	t-3 (2015)	42	56.55	t0 vs t-1	1.517
	t-2 (2016)	46	58.08	t0 vs t-2	0.188
	t-1 (2017)	50	55.64	t0 vs t-3	2.042**
	Pot-regulation			t+1 vs t-1	0.209
	t0 (2018)	48	56.77	t+1 vs t-2	1.289
	t+1 (2019)	49	56.15	t+1 vs t-3	0.204
INTREPORT	Yes	54	61.85	3.492**	
	No	181	55.06		

* p <0.10; **p <0.05; *** p <0.01.

ences in readability indices depending on the type of report used to disclose CSR activities (i.e., integrated reporting versus management report, annual report, sustainability or CSR report, or annual report). Although only 54 firms have chosen integrated reports over the period 2015-2019, readability is better among companies that use integrating reporting, the difference being significant at a 5% level.

Overall, the results reveal that there are significant readability measures for firms with different corporate government characteristics.

4.3. Regression analysis

To test our hypotheses, we consider how CSR readability depends on certain corporate governance characteristics, the change in CSR regulation, and the type of report.

Model 1 in Table 5 summarises the random-effect panel data model results.

The results show that the size of the board does not affect CSR readability, contradicting H1. Previous empirical evidence is not directly based on CSR. Cerbioni & Parbonetti (2007), for a sample of European biotechnology firms, do not find a relationship between board size and the annual reports' readability.

Concerning the effect of the percentage of independent directors on CSR readability, the results show how the percentage of independent directors has a negative and significant effect on CSR readability in all the models. Nevertheless, results are contrary to H2 as we had hypothesised a positive effect. That means that the higher the proportion of independent directors, the worse the readability index. The results contradict previous empirical evidence as Cerbioni & Parbonetti (2007) obtain a positive effect of the board committees' composition (% of independent directors) on annual report readability in a sample of European biotechnology firms. They are, however, aligned with other studies, such as Boateng, Tawiah & Tackie (2022), that found board independence is not a significant determinant of the extent of voluntary disclosures made by the firm's annual reports of all 22 listed at Ghana Stock Exchange on financial firms over five years. Prior to this study, Kashanipoor et al. (2009) in their research of 239 manufacturing companies listed on the Tehran Stock Exchange found that there was no significant relationship between voluntary disclosure and outside directors.

The results indicate a positive and significant effect of the percentage of women directors on CSR readability. Therefore, we can accept H3. Our results are similar to those of Ginesti et al. (2018), who obtained a positive relationship between female board participation and annual report readability. Velte (2018) also obtained a positive effect on the percentage of women on audit committees of UK firms with readability.

Overall, the results partially support the hypotheses related to corporate governance characteristics, as we find a positive effect on the proportion of female directors on the board and CSR readability, but we do not find support for the positive influence of board size on readability. Additionally, regarding board independence, our results seem to contradict some previous research.

Regarding the effect of the changes of regulation, the results are in line with bivariate analysis: we do not find that the enactment of mandatory disclosure regulation strongly increases CSR readability. Something different occurs when

Table 5. Influence of corporate governance characteristics, regulation and type of CSR report on CSR readability

	Model 1	Model 2	Model 3	Model 4
	DV: FH	DV: BI	DV: FH	DV: FH
BSIZE	-0.248 (0.500)	-0.278 (0.484)	-0.199 (0.492)	-0.277 (0.505)
BINDE	-0.169** (0.069)	-0.170** (0.067)	-0.202*** (0.070)	-0.168** (0.070)
BFEM	0.179** (0.090)	0.194** (0.087)	0.192** (0.089)	0.200** (0.093)
CSRMANDT	0.500 (1.371)	-0.432 (1.316)	0.594 (2.249)	
INTREPORT	4.474** (2.276)	4.440** (2.198)	4.341* (2.249)	4.623* (2.348)
ASSETS	1.959 (1.216)	2.159* (1.182)	1.855 (1.188)	2.016 (1.232)
OPINCOME	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
SCOMPL	10.836* (6.262)	10.854* (6.019)	9.793 (6.246)	11.485* (6.272)
CSRCOMITTEE	-9.084*** (2.732)	-7.971*** (2.646)	-8.817*** (2.680)	-9.323*** (2.765)
INSIDEOWN	0.045 (0.077)	0.026 (0.075)	0.042 (0.057)	0.046 (0.058)
LEVERAGE			6.826* (3.675)	
Y2016				1.493 (2.026)
Y2017				-1.590 (2.053)
Y2018				0.645 (2.149)
Y2019				-0.043 (2.190)
Const.	Yes	Yes	Yes	Yes
Industry dummy variables	Yes	Yes	Yes	Yes
Wald's χ^2	31.11**	31.83**	36.15***	33.05**
Hausman test	14.16	13.82	15.93	13.69
N firms	55	55	55	55
N observations	235	235	235	235
Method	RE	RE	RE	RE

Values are unstandardized coefficients, with standard errors in parentheses. Model 2 considers a different readability measure. Model 3 considers an additional control variable, the leverage ratio. Model 4 considers year dummy variables instead of CSRMANDAT. Models are estimated with the constant, but it is not reported in the table. * p < 0.10; **p < 0.05; *** p < 0.01.

considering how CSR information is reported. Results show that integrated reports are easier to read than other types of reporting. So, we can partially accept H4. It is likely that changes in CSR readability have been made progressively over the years, meaning there is no direct impact when regulation changes.

Concerning control variables, firm size (ASSETS), operating income (OPINCOME), and board of directors voting rights (INSIDEOWN) do not seem to influence CSR readability. The readability of reports appears to be influenced by compliance with GRI standards (SCOMPL) and the presence of a sustainability committee (CSRCOMITTEE). Compliance with GRI standards (SCOMPL) improves non-financial readability, while the presence of a committee (CSRCOMMITEE) decreases readability by adding complexity.

4.4. Robustness checks

Finally, to assure the robustness of the data, we repeated our estimations considering additional measures and models. Firstly, we repeated our estimations using a different readability measure (Model 2, Table 5). We have used a different readability index, based again on the Flesch formula (Flesch, 1948): the Inflesz Index by Barrio (2008).

The Inflesz Index (BI) is estimated as:

$$BI = 206.835 - \left(62.3\frac{S}{P}\right) - (\frac{P}{F})$$

where BI is the Inflesz readability index; S is the total number of syllables per word; P is the total number of words per sentence; and F is the number of sentences. This readability index also ranks from 0 to 100. The higher the BI index, the better the readability of a firm's CSR report, meaning reports are easier to read. The readability scale for the BI index is 80-100 very easy, 65-80 somewhat easy, 55-65 normal, 40-55 somewhat hard, and 0-40 very hard. Results are the same as with the other readability indicator. Secondly, we included the firm's leverage ratio as an additional control variable (Model 3, Table 5) and the results did not change. Finally, we replaced the variable CSRMANDAT for a set of year dummy variables (Model 4, Table 5) and the results remained unchanged.

5. Discussion and main conclusions

Currently, there is a great debate concerning non-financial information. Companies are affected by increasing regulation on non-financial information disclosure, suffering great pressure from stakeholders towards sustainability. Topics such as the content of non-financial information, reporting, compliance, or auditing, taxonomy, are becoming more and more relevant, especially on the board of directors' agenda. Given that these reports convey valuable information to the market and that readability affects the difficulty of comprehension and information asymmetry, this study considers how corporate governance characteristics of the board of directors - board size, the proportion of independent directors, and the proportion of female directors - affect the readability of non-financial information in Spanish. To the best of our knowledge, this is the first study to examine Spanish readability in CSR reports. Moreover, we consider the influence of non-financial information regulation and the type of report on CSR readability.

One of the key findings of this study is that CSR report texts in Spanish are "somewhat hard", that is, they are difficult to read. These results are in line with the "obfuscation hypothesis" (Courtis, 1998; Rutherford, 2003; Smeuninx et al., 2016) proposed by the agency theory which states how non-financial information is given in order to exhibit a positive image of the firm as managers may obfuscate unfavourable information. Previous studies in English (Raimo et al., 2021) suggest that managers selectively disclose good news and are less forthcoming with bad news and might manipulate the report texts' readability to their interest. Lang & Lundholm (2000), Raimo et al. (2021), or Wang et al. (2018), confirm this. In line with other theories, such as the impression management theory, managers may apply communication tactics adding complexity to the non-financial information rather than being transparent and accountable to stakeholders.

Our data indicate that certain characteristics of a board of directors can impact the readability of corporate social responsibility (CSR) information. Specifically, these characteristics confirm the influence of the board on the readability of non-financial information. The size of the board, however, does not affect CSR readability, which supports Gaeremynck & Renders' (2012) argument that board size should be optimised based on the type of firm and its ownership structure. Contrary to the stakeholder theory, which suggests that larger boards will better represent different stakeholder groups and their information needs, and improve readability, board size does not affect readability.

Regarding the proportion of independent directors on the board, contrary to our expectations, our results show that a higher proportion of independent directors worsens the readability of non-financial information. This effect has partially been found concerning annual reports (Rahman & Kabir, 2023), who explain this behaviour due to the effect of managerial actions that serve to reduce the efficacy of monitoring by independent directors. In the case of non-financial information, and contrary to the obfuscation hypothesis which states how independent directors will not obfuscate poor performance to protect the interests of minority investors, our results reinforce the thesis of Almandoz & Tilcsick (2016). They highlight, for the banking industry when facing uncertainty, that a higher proportion of experts on a board may detract from the effectiveness of decision-making, due to their cognitive entrenchment (i.e. reliance on previous experience and unwillingness to adopt new methods), overconfidence and the suppression of alternative approaches. Our results show how a larger proportion of independent directors representing stakeholders seems to imply problems of clarity in the information presented. These results are in line with previous literature that confirms how voluntary disclosure (readability is one way to enable voluntary disclosure) is reduced when the number of external directors increases (Eng & Mak, 2003; Gul & Leung, 2004). However, they are opposite to those reported for the Kenyan banking sector (Barako & Brown, 2008) and for Pakistani firms (Lone, Chaudhry & Khan, 2016), which suggested that the presence of independent (outside) directors on the board increases CSR disclosure (Tamimi & Sebastianelli, 2017). In any case, those examples do not directly consider firms' non-financial readability. Our results add evidence showing that in a different legal environment, such as that in Spanish, the role of independents in non-financial readability is also different.

Concerning the presence of female directors, our results indicate for Spain, that a higher presence of women directors improves CSR readability, contributing to the belief that gender diversity leads to better social and environmental performance (Orazalin & Baydauletov, 2020). The results reinforce the idea that greater board gender diversity increases the ability to satisfy the needs of stakeholders (Songini et al., 2021) due to greater stakeholder interaction and greater reporting transparency (Gerwanski et al., 2019) confirming how women are more sensitive to social issues (Tamimi & Sebastianelli, 2017). The agency theory also tends to show how women directors do not want to obfuscate poor performance or hide negative information. Moreover, women can be considered superior writers as they provide grater descriptions making their reports easier to read and understand (Harjoto, Laksmana & lee, 2020). Results are in line with those obtained in Italy by Ginesti et al. (2018), showing a gender board effect on the readability of annual reports or those suggesting that gender diversity is shown to be positively associated with corporate social reporting and better social and environmental performance (Adams & Ferreira, 2004) or CSR reporting quality or the quality of CSR disclosure (Amorelli & García-Sánchez, 2020; García-Sánchez, Suárez-Fernández & Martínez-Ferrero, 2019).

In sum, having too many independent directors either on the board or on CSR committees, may not favour CSR readability as there are too many voices on the board representing different interests. However, a gender effect on CSR readability is shown. Women on boards contribute positively to greater transparency towards CSR reporting. We can conclude by arguing in favour of a feminine approach towards CSR transparency.

Moreover, the change of regulation making it mandatory to report CSR activity does not affect CSR readability. This result is aligned with the study of Samanta, Chen, and Hughes (2019) on 52 variables and a financial index out of five financial market parameters of Chinese companies from 1995-2014, concluding that changes in corporate governance regulation had no statistically significant impact on China's financial market growth. Regarding laws on the reporting of non-financial information, as is the case in Spain, these have not contributed towards improving the readability of CSR reports in general, having scored 'somewhat hard' in both indices studied. This conclusion reinforces the role played by stakeholders, since the companies studied were already reporting on CSR, on stakeholder demand, before mandatory regulation.

The type of report used (integrated report or other) affects CSR readability. In our case, the use of an Integrated Report favours CSR readability. Following the legitimacy theory, the type of report improves corporate reputation as it affects its image. Through IR reports, companies have given stakeholders non-financial information as a means of improving their relations with them. The use of an IR could also indicate a signalling effect. The compliance with GRI principles also improves firm's non-financial readability. New institutions are providing firms new ways to communicate non-financial information (GRI Principles, ISO, etc.). Following these guidelines helps firm's non-financial readability.

This result shows the great influence of stakeholders on CSR reporting. In addition, this effect is amplified through the media and is followed by regulation. It is also of interest to highlight the power of the consumer as a pressure group with a voice through social networks, increasingly aware of sustainable criteria when making purchasing decisions and willing to exert influence.

This study has valuable academic and practical implications. From a theoretical point of view, it contributes to the literature on readability by providing interesting results on the transparency of non-financial information of Spanish companies in a particular regulatory environment, being the first to consider the potential effect of corporate governance characteristics and the type of reporting the company uses could have. Due to agency conflicts, non-financial information is also affected by different stakeholder interests which is reflected in the low non-financial readability. Moreover, the study adds evidence of the effect that corporate governance characteristics have on non-financial information, reflecting how neither the representation of too many voices on the board by the proportion of independent directors nor the CSR committees favour readability, unlike the presence of women on boards, which supports a feminine approach towards CSR transparency.

Regarding the implications for regulators, executives, and boards of directors, this study offers two critical insights that are particularly relevant in the current regulatory and social environment, which often overlooks how companies report their contributions to true sustainability. Firstly, our descriptive results reveal that Spanish listed companies have the potential to enhance their non-financial information to achieve greater readability. Secondly, increasing the proportion of female directors on the board can be a strategy to improve transparency and yield better outcomes in terms of comprehending CSR.

Nevertheless, this research suffers some limitations that could be solved in future studies. First, considering sectorial effects, as the number of companies that report using GRI guidelines is not so huge, we were not able to observe differences in sectors. Additionally, our results refer to the Spanish market and the use of Spanish in CSR reports, so results cannot be generalised to other contexts. Similar studies should be carried out in different institutional frameworks and in other languages to see if there are differences. Also, this study was run on six GRI indicators that require compliance. Future studies could include other GRI indicators.

In addition to the directions stemming from our limitations, we outline other promising paths. Future research could consider the different board of directors' characteristics such as whether CSR is on the board's agenda, the presence on the board of independent directors with knowledge of CSR, the number of board meetings held if the audit committee supervises CSR reports and the background and social connections of the members of the board, especially of the independent directors. All of these could be future variables to be studied. Additionally, other corporate governance characteristics could be analysed, such as the influence of firm ownership structure (dispersed, concentrated, etc.) and the type of owners (families, institutional, foreign investors, etc.).

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Conflict of interest

The authors declare that they have no conflicts of interest.

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