

RESEARCH ARTICLE

Diversity, equity, and inclusion reporting in European Union companies: The role of female directors and the European regulatory framework

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Abstract

Equality, equity, and nondiscrimination are core human rights and prerequisites for peace, prosperity, and sustainability that require the commitment of all actors. They have received considerable attention from the European Union, leading to the development of a regulatory framework aimed at promoting gender diversity and the disclosure of information on diversity, equity, and inclusion by European companies. Considering the regulatory pressure from the institutional environment of the European Union that characterizes the period 2011–2020, this study aims to analyze the role played by female directors in promoting diversity, equity, and inclusion disclosures of 189 large European companies. Based on international guidelines and recommendations as well as European legislation, we developed a transparency score that assesses the relevance, standardization, reliability, and completeness of the diversity, equity, and inclusion information disclosed by these companies. Using a Tobit regression approach for panel data, we show that board diversity has a positive effect on the information reported by European companies, although this effect is only associated with having at least three female directors or gender-balanced boards. Moreover, the European institutional context in force since 2014 favors corporate transparency on equality, equity, and inclusiveness practices of European companies and encourages the consideration of the views of minority female directors. The results can improve the understanding of gender equality and corporate transparency regarding diversity, equity, and inclusion decisions made by companies in light of the advent of new mandatory requirements within the EU and the extension of their scope to a wider range of companies.

KEYWORDS

diversity, equity, and inclusion reporting; EU regulatory framework; gender diversity; institutional pressures

Abbreviations: BGD, board gender diversity; DEI, diversity, equity and inclusion; ESG, environmental, social and governance; EU, European Union; GRI, Global Reporting Initiative; IT, institutional theory; RDT, resource dependence theory.

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1 | INTRODUCTION

Equality, equity, and nondiscrimination are core human rights and prerequisites for peace, prosperity, and sustainability (United Nations General Assembly, 2015). Achieving an equitable, just, and inclusive society requires the commitment of a wide range of actors, particularly those in the business sector. However, certain high-profile incidents in recent years have brought diversity, equity, and equal opportunity into the public spotlight (Manoharan et al., 2021), increasing pressure on companies to step up and make commitments in this regard (Shohaieb et al., 2022). Given that “where there is limited concern, there will be limited disclosure” (Deegan et al., 2002, p. 335), diversity, equity, and inclusion (DEI) reporting can be seen as a starting point for addressing the gender gap and advancing the diversity agenda (Maj, 2018; Shimeld et al., 2017). DEI disclosures can be a means to improve diversity, fairness and inclusion in companies (Adediran, 2023). However, despite the pressure to disclose information on DEI and its associated benefits (Holton, 2005), the disclosure of this type of information is often low compared to the other dimensions of corporate sustainability (Adediran, 2023), focusing on the age and gender structure of the workforce (Vuontisjärvi, 2006) and neglecting other aspects (Maj, 2018; Shimeld et al., 2017).

In parallel, since Robinson and Dechant (1997) first referred to the “business case for gender diversity” more than 25 years ago, gender diversity has been the subject of public debate, of increasing interest to academics and regulators, and recognized as a value driver for corporate governance (Adams, 2016; Esposito et al., 2023). Diversity in director profiles enhances the skills and knowledge pool of the board (Tejedo-Romero et al., 2017; Vitolla et al., 2020). In particular, greater board gender diversity (BGD) brings several benefits to firms, both financial and nonfinancial (Cucari et al., 2018; Hussain et al., 2018; Raimo, Nicolò, et al., 2022). Nevertheless, gender equality in leadership positions is still far from being achieved.

Both the disclosure of DEI information and gender diversity in top management positions have received considerable attention from the European Union (EU) over the last decade, leading to the development of a regulatory framework aimed at promoting BGD and the disclosure of material information on DEI by European companies. Previous literature has examined the impact of this regulatory framework on the quality and quantity of sustainability information disclosed by companies (Caputo et al., 2021; Mio et al., 2021; Fiechter et al., 2022; Lippai-Makra et al., 2022). Although the results are mixed, in general, an increase in the level and, to a lesser extent, the quality of sustainability disclosure has been documented, although some categories of information are still poorly disclosed. Nevertheless, few scholars have explicitly considered DEI information (Maj, 2018).

Although a rich literature has investigated the relationship between BGD and sustainability disclosure (Amorelli & García-Sánchez, 2023), it has mainly focused on environmental information (e.g., Esposito et al., 2023; Raimo, de Nuccio, & Vitolla, 2022), and little is still known about the impact of BGD on social disclosure (Monteiro et al., 2022) and, in particular, on the disclosure of

information related to DEI issues. At the same time, there is an ongoing debate about the impact of regulation on sustainability reporting on the level and quality of information disclosed (García-Sánchez, Sierra-García, & García-Benau, 2022). This study combines the above issues to fill a clear gap in the literature on the drivers of DEI disclosure, focusing on the effect of BGD as a sign of corporate governance effectiveness and the pressure on the materiality of DEI information disclosed by European companies resulting from the EU regulatory framework for sustainability disclosure. To the best of our knowledge, this study is the first to examine this association. Specifically, we attempt to answer two main questions: (1) Is BGD associated with greater DEI disclosure? (2) Is the effect of BGD on DEI disclosure determined by the EU regulatory framework established to promote sustainability reporting? To answer these questions, we analyze a panel data of 189 large European firms from 2011 to 2020 (1890 observations). The results indicate that BGD positively affects DEI disclosure, although this effect is only associated with the presence of a critical mass of three or more female directors or gender-balanced boards. Moreover, we find that the European institutional context in place since 2014 favors corporate transparency on DEI and encourages the consideration of minority female directors' opinions.

This study contributes to the literature in several ways. First, this study is one of the few to analyze DEI disclosure, thus contributing to a broader understanding of sustainability reporting with novel empirical evidence and providing some insights into its drivers. Second, we extend the existing knowledge on the relationship between BGD and corporate transparency by analyzing the influence of female directors on DEI disclosure, providing a novel perspective that has not been explored before (Beloskar et al., 2024). Our results confirm that the resource-providing role of female directors favors the firm's stakeholder orientation and corporate transparency with respect to DEI. Third, we explore the dynamics of BGD and its implications for corporate transparency by providing a comprehensive picture of the conditions under which female directors influence DEI disclosure. On the one hand, we show that tokenism limits the influence of female directors, as a critical mass of female directors is required to influence board decisions on DEI disclosure and its characteristics. On the other hand, we document the moderating effect of the EU regulatory framework established by Directive 2014/95/EU, which strengthens the influence of BGD on DEI disclosure. Beyond the level of DEI information disclosure, we show that decisions regarding the relevance, standardization, reliability, and completeness of DEI information disclosed by European companies are driven by the gender diversity of board members, but this relationship occurs only in an environment characterized by institutional pressure to disclose sustainability information. Fourth, we contribute to the ongoing debate on the desirability of a mandatory sustainability reporting framework by providing empirical evidence on its positive impact on the DEI information disclosed by European firms. We also show that this institutional pressure has a positive effect on the parameters of relevance, reliability, and integrity of DEI information. Overall, this research improves the understanding of corporate transparency with respect to DEI and opens new lines of research.

The paper unfolds in the following parts. Following this introduction, Section 2 outlines the theoretical arguments and develops the hypotheses. Section 3 presents the empirical framework. Section 4 presents the main results of the study and some complementary analyses. The implications of the results are discussed in Section 5, after which the main conclusions and limitations of this study are summarized in Section 6, along with some topics for future investigation.

2 | BACKGROUND AND HYPOTHESES

According to the previous literature, sustainability disclosure practices and their determinants cannot be fully explained from the perspective of a single theoretical framework, and it is necessary to draw on several complementary theories (Elmagrhi et al., 2019; Hussain et al., 2018). In the field of sustainability, the literature has shown that both firms' internal resources and capabilities and institutional pressures are important drivers of disclosure practices (Haque & Jones, 2020). Therefore, we combine the arguments from resource dependence theory (RDT) and institutional theory (IT) to analyze the effect of BGD in promoting DEI disclosure by European firms and how regulatory pressures from the EU institutional environment affect the role of female directors in this regard.

2.1 | Female directors and diversity and inclusion transparency

According to RDT (Barney, 1991), firms build their competitive strategies on their unique resources and capabilities. From this perspective, the board of directors performs a "resource provisioning role" (Hillman & Dalziel, 2003), providing knowledge, expertise, and networks to the firm (Adams, 2016; He et al., 2021). Thus, the more diverse the board, with different skills, backgrounds, values, and connections, the more able it is to provide critical resources to the firm (Ramon-Llorens et al., 2021; Tunyi et al., 2023). In particular, gender diversity increases the intangible capital of the board and enhances its effectiveness (Elmagrhi et al., 2019; Haque & Jones, 2020; Issa & Zaid, 2023; Vitolla et al., 2020).

As directors, women and men differ in their values, skills, backgrounds, and work styles (He et al., 2021). In general, female directors are more sensitive to social issues (Areneke et al., 2023; Rao & Tilt, 2016), more concerned about the well-being of others (Eagly et al., 2003; Esposito et al., 2023), and less tolerant of injustices and inequalities in the workplace (Adams, 2016; Galbreath, 2011; Tunyi et al., 2023). Accordingly, their presence on the board increases perceptions of ethical challenges, such as respect for human rights (Esposito et al., 2023; Hollindale et al., 2019), and encourages attention to vulnerable stakeholder groups (Francoeur et al., 2019). As a result, BGD tends to induce firms to be more socially responsible and philanthropic (Cucari et al., 2018), such that BGD has a positive effect on corporate social performance (Hussain et al., 2018; Monteiro et al., 2022).

In addition, BGD promotes stakeholder engagement and corporate transparency (Haque & Jones, 2020; Raimo, de Nuccio, & Vitolla, 2022; Areneke et al., 2023; Vitolla et al., 2022), thereby mitigating information asymmetry problems (Srinidhi et al., 2011; Vitolla et al., 2020). Most previous studies report a positive effect of BGD on sustainability disclosure (Peng et al., 2022; Raimo, de Nuccio, & Vitolla, 2022; Rao & Tilt, 2016; Temiz & Acar, 2023; Zampone et al., 2024). For environmental information, Haque and Jones (2020) document a positive effect of BGD on biodiversity disclosure, He et al. (2021) show that BGD positively affects carbon disclosure, and Esposito et al. (2023) find that BGD favors disclosure of information related to circular economy initiatives. Gerged et al. (2023) also find a positive effect of BGD on environmental disclosure by sub-Saharan African firms. Regarding social information, Furlotti et al. (2019) document a positive effect of BGD on gender disclosure, Nicolò et al. (2022) and Vitolla et al. (2022) show the same effect in the case of online intellectual capital disclosure, and Shohaieb et al. (2022) find a positive relationship between BGD and the level of diversity management disclosure by UK firms. Wasiuzzaman and Subramaniam (2023) document a positive relationship between BGD and social disclosure in developed countries, but not in developing countries. Finally, Raimo, Nicolò, et al. (2022) show that BGD favors risk disclosure within integrated reports.

Based on the above arguments, we hypothesize that BGD positively affects DEI disclosure.

H1. The relationship between BGD and DEI disclosure is positive.

2.2 | The effect of the European Union's regulatory framework on DEI transparency

There are significant differences between countries in how DEI is institutionalized, both in terms of antidiscrimination legislation and social norms, with far-reaching implications for human resource and diversity management practices (Kornau et al., 2023). Interpretive theories seek to analyze the influence of the elements that make up the cultural, historical, and social environment in which organizations operate on the structures and patterns of behavior they adopt to survive in that environment and to legitimize their actions. As noted by IT, organizations are constrained by the institutional environment that defines what is considered socially appropriate (Scapens, 1994). Thus, in order to maintain legitimacy, they respond to pressures from their institutional environment by conforming their behavior to those pressures (DiMaggio & Powell, 1983).

The influence of a company's institutional environment on its sustainability reporting practices has been highlighted in the literature (Peng et al., 2022; García-Sánchez, Ortiz-Martínez, et al., 2023), either through coercive pressures (e.g., mandatory reporting standards) or mimetic and normative pressures (e.g., voluntary reporting standards). In this sense, the increasing regulation of sustainability disclosure in the EU context represents a source of coercive pressure to which

companies respond by disclosing more sustainability information in order to demonstrate their compliance with the existing rules in their institutional environment and to avoid social and economic penalties for noncompliance (Posadas & Tarquinio, 2021).

Directive 2014/95/EU represented a notable change in the EU regulatory framework for sustainability reporting. It made nonfinancial and diversity disclosures mandatory and introduced new disclosure requirements for large companies and groups (i.e., those companies and groups that have a balance sheet total of at or above 20 million of euros or a net turnover of at or above 40 million of euros at their balance sheet date) that are public interest entities and have more than 500 employees. These entities are required to include a nonfinancial statement in their annual report that provides information on environmental issues, social and human resources issues, respect for human rights, and the fight against corruption and bribery.¹ Directive 2014/95/EU highlights the importance of increasing the accountability of companies' diversity policies. With regard to DEI information, companies are required to disclose material information on social issues, including the board's diversity policy, as well as information on the measures taken to ensure equal treatment in employment and to prevent human rights violations.

Previously, DEI reporting had been promoted by self-regulatory bodies (Maj, 2018), but until then, the disclosure of this type of information was a voluntary commitment by firms. In addition, to assist firms in disclosing relevant nonfinancial information, Directive 2014/95/EU was complemented in 2017 by the publication of Guidelines 2017/C 215/01, which set out a methodology for the disclosure of nonfinancial information. These guidelines specify the information to be disclosed for each of the matters set out in Directive 2014/95/EU. For example, the diversity policy must disclose the diversity criteria used, as well as the objectives and results of all aspects of the diversity policy.

The new disclosure requirements directly or indirectly affect all companies belonging to the EU institutional field (Ortiz-Martínez & Marín-Hernández, 2022). This new regulatory framework has created new “rules of the game” in the EU institutional environment to which companies must adapt (Tarquinio et al., 2020), increasing stakeholder attention and, consequently, pressure for greater transparency (Fiechter et al., 2022; García-Sánchez, Ortiz-Martínez, et al., 2023). Several authors show that Directive 2014/95/EU has positively influenced the quality and quantity of sustainability information disclosed by companies (García-Sánchez, Aibar-Guzmán, et al., 2023; Lippai-Makra et al., 2022; Mio et al., 2021), which can be explained by the desire for legitimacy by demonstrating compliance with the requirements of Directive 2014/95/EU. This desire for legitimacy was also noted by Shimeld et al. (2017), who documented a notable increase in diversity disclosure by Australian listed companies following the

update of the ASX Corporate Governance Principles and Recommendations, which included recommendations on diversity disclosure.

Therefore, we expect that the EU regulatory framework established by the cited Directive and Guidelines to have a positive effect on DEI disclosure.

H2. There is a positive relationship between the EU regulatory framework established by Directive 2014/95/EU & Guidelines 2017/C215/01 and DEI disclosure.

In addition, as noted by García-Sánchez et al. (2021), institutional pressures moderate the effect of BGD on corporate social responsibility. Thus, given that female directors are more likely to comply with the law (Elmagrhi et al., 2019) and respond to stakeholder demands (Daily & Dalton, 2003; Peng et al., 2021), we speculate that the EU regulatory framework established by Directive 2014/95/EU and Guidelines 2017/C215/01 strengthens the positive effect of BGD on DEI disclosure.

H3. The EU regulatory framework established by Directive 2014/95/EU and Guidelines 2017/C215/01 strengthens the positive association between BGD and DEI disclosure.

Figure 1 depicts the research model.

3 | EMPIRICAL DESIGN

3.1 | Sample

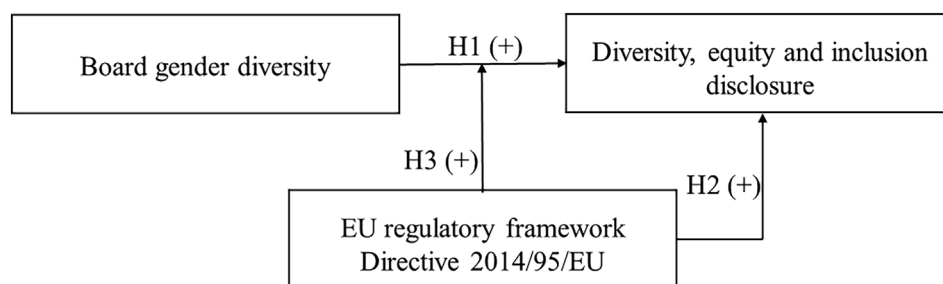
As the target population, we select the major European companies in Thomson Reuters EIKON for which financial and ESG or sustainability information is available. This choice is justified because these companies are the largest European companies and also have significant public importance. As such, they are subject to the rules resulting from the implementation of Directive 2014/95/EU, which requires them to publish nonfinancial or sustainability reports in which they disclose their commitments to employees, human rights, diversity, bribery and corruption, and other related issues.

Regarding the time period, we focused on the last decade with available information, from 2011 to 2020, with the aim of analyzing the disclosure of information on DEI in the preregulatory and postregulatory periods, since the main European regulations on sustainability, and more specifically on DEI, were adopted during this period.

First, we selected the 318 European companies in the database with information for the ESG score in one of the years in the 2011–2020 period. As mentioned above, these are public companies with more than 500 employees. Later, we dropped the companies without information for all the items in Table 1 because their reports were not available. In this sense, we keep those European companies that report (corresponding value) or do not report (coded with value 0) DEI information in their sustainability reports. However, for the remaining

¹Directive 2014/95/EU has been amended by Directive 2022/2464/EU on corporate sustainability reporting, which was endorsed by the European Parliament on December 14, 2022 and entered into force on January 1, 2024. It extends the scope of the nonfinancial reporting requirements set out in Directive 2014/95/EU to all large companies and all companies with securities listed on regulated markets in the EU, with the exception of microenterprises. It also clarifies the sustainability information that companies are required to disclose.

FIGURE 1 Research model.



companies, these items were missing, and it was not objectively possible to assign values or code them as 0 and 1. Subsequently, in order to ensure a complete panel of data that would allow a homogeneous analysis of the decisions made at the board level, the sample of analysis consists of 189 companies, forming a panel of 1890 observations over a 10-year period (2011–2020). These companies are located in 10 European countries and operate in different industries.

3.2 | Model

Equations (1) and (2) represent the model designed to contrast the research hypotheses on the effect of BGD (H1) and the EU institutional environment (H2) on European firms' DEI disclosure, as well as the moderating effect of regulatory pressure from the EU institutional environment on the role of BGD in relation to DEI disclosure (H3). Their tests are based on the significance and effect of β_1 , β_2 , and β_3 .

$$\begin{aligned}
 DEI_{i,t} = & \beta_0 + \beta_1 \%Women_{i,t} + \beta_2 DISCLframe_{i,t} + \beta_3 Age_{i,t} \quad (1) \\
 & + \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + \beta_6 Leverage_{i,t} \\
 & + \beta_7 Boardsize_{i,t} + \beta_8 Boardmeet_{i,t} \\
 & + \beta_9 \%Independent_{i,t} + \beta_{10} CEOduality_{i,t} \\
 & + \beta_{11} SustCommitte_{i,t} + \beta_{12} Analyst_{i,t} \\
 & + \beta_{13} InstInve_{i,t} + \beta_{14} Covid_{i,t} + \beta_{15} Country_i \\
 & + \beta_{16} Industry_i + \beta_{17} Year + \varepsilon_{it} + \eta_i
 \end{aligned}$$

$$\begin{aligned}
 DEI_{i,t} = & \beta_0 + \beta_1 \%Women_{i,t} + \beta_2 DISCLframe_{i,t} + \beta_3 Women \quad (2) \\
 & *DISCLframe_{i,t} + \beta_4 Age_{i,t} + \beta_5 Size_{i,t} + \beta_6 ROA_{i,t} \\
 & + \beta_7 Leverage_{i,t} + \beta_8 Boardsize_{i,t} + \beta_9 Boardmeet_{i,t} \\
 & + \beta_{10} \%Independent_{i,t} + \beta_{11} CEOduality_{i,t} \\
 & + \beta_{12} SustCommitte_{i,t} + \beta_{13} Analyst_{i,t} \\
 & + \beta_{14} InstInve_{i,t} + \beta_{15} Covid_{i,t} + \beta_{16} Country_i \\
 & + \beta_{17} Industry_i + \beta_{18} Year + \varepsilon_{it} + \eta_i
 \end{aligned}$$

Analyzing the DEI information that companies disclose requires first identifying the material information that stakeholders need to understand the firm's behavior, make decisions, and interact with the organization. This approach analyzes whether the reported information reflects the organization's most significant actions, performance, and impacts that influence stakeholders' judgments and decisions.

The process for identifying material issues and determining their scope has been chosen in accordance with the recommendations of the Global Reporting Initiative (GRI), Sustainability Accounting Standard Board (SASB), and International Council of Integrated Reporting (IIRC) standards, as well as EFRAG proposals and European and national legislation, and ensures equivalence with what is set out in various responsible business principles and frameworks, most notably the United Nations WEP (García-Sánchez, Minutiello, & Tettamanzi, 2022).

In identifying relevant issues, consideration is given to whether the company can have an impact on the various issues in the short, medium, and long term. Table 1 shows the material information on DEI identified in the analysis (Panel A). In addition, if reporting is relevant, it is a characteristic that makes it reliable, but there are other different qualities of credible and useful reporting. In this sense, other characteristics of information related to standardization, reliability, and integrity are included (Panel B).

Specifically, the dependent variable (DEIindex) is a composite indicator whose value ranges from 0 to 20 points and is constructed from (i) 17 items that measure the materiality of the DEI information disclosed by the companies (Relevance) and (ii) three items that identify whether the disclosed information has been prepared in accordance with international standards, such as those proposed by the United Nations and the GRI (Standardization), the use of assurance services (Reliability), and the inclusion of negative information (Integrity). Table 1 shows the value assigned to each of the items and subcomponents that make up the proposed indicator. In addition, to improve knowledge, we consider the DEIindex score and the four subcomponents—relevance, standardization, reliability, and integrity—in isolation. Two researchers manually analyzed and coded all items. The initial evaluations were independent and in case of divergence, both researchers revised the codifications and assigned a common value. In addition, in order to control any potential bias in the information disclosed by the companies, the proposed items reflect whether the company reports or not, eliminating the bias of the numerical value reported by the company. In the case of qualitative information on policies, and so forth, the codifications were linked to the existence of specific objectives, targets or content.

Regarding the independent variables, the Women variable corresponds to the percentage of female directors in the total number of board members. This variable was constructed following García-Sánchez, Aibar-Guzmán, et al. (2023). The ordinal variable (DISCLframe) encodes the European institutional framework for

TABLE 1 Material information on diversity, equity, and inclusion (DEI).

Panel A. Indicators of relevance	Points	Range
Information on management approach		
The company discloses information regarding:		
DEI1. Its policy on diversity, equity, and inclusion relating to the relationships governing work in the company's facilities. This description includes the establishment of deadlines and objectives, as well as information on the possible existence of a diversity officer or the existence of diversity and inclusion criteria in performance evaluations.	1	0–2
DEI2. Its diversity, equity, and inclusion policy related to the work undertaken in the supply chain.	1	
Information on leadership and talent development		
The company discloses information regarding:		
DEI3. The proportion of women on the board of directors, senior management, and in middle management positions.	1	0–3
DEI4. The proportion of positions held by women that autonomously generate cash flows.	1	
DEI5. The proportion of other underrepresented groups (i.e., by nationality, racial, and ethnic groups, employees with disabilities, LGBTQ+).	1	
Retention and recruitment information		
The company discloses:		
DEI6. Gender-related information regarding total number of employees in the company; promotions; new hires; reductions in working hours; voluntary severance; and layoffs.	1	0–2
DEI7. The same disaggregation of information for other underrepresented groups (i.e., by nationality, racial and ethnic groups, employees with disabilities, LGBTQ+).	1	
Information on equality and parity in remuneration.		
The company discloses:		
DEI8. Gender-disaggregated pay information: average (median) gross gender pay gap; percentage of women whose pay is in the top 10% of its highest paid employees at the company/sector/national/international level; audits conducted to ensure pay equity between men and women performing equivalent work.	1	0–2
DEI9. The same disaggregation of pay information for other underrepresented groups (i.e., by nationality, racial and ethnic groups, employees with disabilities, LGBTQ+).	1	
Inclusive culture		
The company discloses information regarding:		
DEI10. Paternity or maternity leave and other initiatives; percentage of women who keep their jobs after maternity leave; employees benefiting from work-life balance measures (i.e., flexible working hours and/or teleworking).	1	0–2
DEI11. Other initiatives:	1	
<ul style="list-style-type: none"> • Access to on-site lactation rooms, nursery, playroom, etc. • Existence of assistance to employees for adoption processes, fertility treatments, egg freezing, contraceptives, or gender reassignment. • Existence of assistance to employees for childcare expenses, schooling assistance, scholarships for university tuition, etc. • Existence of employee allowances for care of dependent family members. • Programs and paid bereavement leave 		
Anti-harassment policies		
DEI12. The company discloses information on company policy and protocols against discrimination, sexual harassment, and harassment based on race, ethnicity, sexual orientation and/or gender identity in the workplace; comprehensive training programs to prevent harassment and discriminatory situations (description of programs and percentage of employees who completed the training).	1	0–1
Community initiatives		
The company discloses information regarding:		
DEI13. Internal control systems for evaluating all advertising and marketing content for gender bias prior to publication; to prevent machine learning algorithms from perpetuating gender bias; EDGEplus certifications, etc.	1	0–4
DEI14. Initiatives to increase the number of female suppliers and customers.	1	
DEI15. Assimilated information regarding other underrepresented groups (i.e., by nationality, racial and ethnic groups, employees with disabilities, LGBTQ+).	1	

TABLE 1 (Continued)

Panel A. Indicators of relevance	Points	Range
DEI16. Other initiatives: <ul style="list-style-type: none"> • Conducting and/or sponsoring educational programs targeting women or other groups (i.e., financial literacy, health, STEM). • Philanthropic giving to nonprofit organizations with a primary mission of promoting diversity and inclusion in the workplace. • Commitment to initiatives driven by international organizations (i.e., issuance of a statement of support for the UN Women's Empowerment Principles, signing of UN Global Compact) 	1	
Supply chain		
DEI17. The company discloses information on the requirement for business partners, contractors, and suppliers to adopt measures, policies and initiatives in favor of diversity and inclusion, identifying the percentage of suppliers selected with responsibility criteria.	1	0–1
Total score relevance		0–17
Panel B. Other features of diversity and inclusion information	Points	Range
DEI18. Standardization: The information disclosed has been prepared in accordance with GRI + UN standards (the company reports all indicators).	1	0–1
Total score standardization		0–1
DEI19. Reliability: The information on diversity and inclusion has been verified by an independent professional.	1	0–1
Total score reliability		0–1
DEI20. Integrity: The information disclosed is free of bias, providing information on facts contrary to the principles of equality and inclusion, cases of discrimination of working conditions in the company, harassment, or similar situations.	1	0–1
Total score integrity		0–1
TOTAL score DEIindex		0–20

transparency. It takes three values: 0, 1, and 2. We assign a value of 0 to the period with the lowest institutional pressure (i.e., the years prior to the issuance of Directive 2014/95/EU: 2011 to 2013), a value of 1 to the period when Directive 2014/95/EU was in force (2014 to 2016), and a value of 2 to the period when the guidelines were issued (2017 to 2020). In constructing this variable, we followed the suggestion of García-Sánchez, Sierra-García, and García-Benau (2022) and considered the adoption of Directive 2014/95/EU and the Guidelines as proxies for the EU institutional framework. We did not consider the Guidelines, which were published in 2019, as they are specifically related to climate. In addition, to ensure robust results, we consider a dummy variable (Dir) that only reflects the binding period from 2017 to 2020, as Directive 2014/95/EU has a deadline for transposition into legal frameworks and its application started in 2017.

To avoid any bias in the results, in line with previous work (e.g., Amorelli & García-Sánchez, 2023), eight control variables were included in the model that identify the age and size of the company as indicators of its resources and capabilities, measured by the logarithm of the age at which the company was founded and total assets (expressed in logarithm), respectively. In addition, to represent the visibility and control by different agents, indicators that measure the economic and financial health of the company were also included, using for this purpose the ROA or return on assets ratio and the ratio of total liabilities to equity (leverage). Monitoring by other external agents is controlled by the numerical variables Analyst and InstInv. Analyst

represents the number of financial analysts following the companies, and InstInv identifies the proportion of voting rights in the hands of institutional investors. Following Hussain et al. (2018) and García-Sánchez, Ortiz-Martínez, et al. (2023), we include five variables that allow us to control for different characteristics of the board of directors: activity, expressed by the number of meetings per year (Boardmeet); board size, expressed by the total number of male and female directors (Boardsize); board independence (Independent), assessed by the proportion of independent directors; the presence of the dual role of CEO and chairman (CEOduality); and the level of board specialization (SustCommittee), a dichotomous variable that takes the value of 1 if the company has created a sustainability subcommittee and 0 otherwise.

On the other hand, following Amorelli and García-Sánchez (2023), we include a dichotomous variable indicating the impact of the COVID-19 pandemic (Covid) in 2020. The inclusion of this control variable is justified because in the wake of the COVID-19 outbreak, companies have had to implement sustainability initiatives and provide more detailed disclosures in order to meet the needs of their stakeholders (Tettamanzi et al., 2022; Zharfpeykan & Ng, 2021). In this sense, Alkayed et al. (2023) showed that the COVID-19 pandemic has a positive impact on sustainability reporting, while Amorelli and García-Sánchez (2023) found that these sustainability initiatives were mainly implemented in companies with boards with a greater female presence. Finally, we also control for the effects of country, sector, and time period.

The DEIndex score takes values in a range with a minimum value (0) and a maximum value (20). These lower and upper limits imply a censoring in the values that the dependent variable can take. In this sense, due to the censored nature of the dependent variable (DEIndex), we use a Tobit regression approach for panel data to perform the analysis. The explanatory variables are introduced with a time lag to control for endogeneity problems (the causality between certain business actions and the information that firms report). We use centering variables to correct for multicollinearity problems due to the inclusion of the interaction between the independent and moderator variables. Centering variables, although they do not introduce changes in their correlations, modify the variance-covariance matrix of the linear model and, consequently, reduce the correlation between each variable (Women, DISCLframe) and the product term (Women * DISCLframe).

4 | RESULTS

4.1 | Descriptives

The descriptive statistics of the variables are presented in Table 2. It is possible to observe the mean and standard deviation for numerical

TABLE 2 Descriptive statistics.

Panel A. Numerical variables		
Variable	Mean	Standard deviation
DEIndex	10.00	2.87
Relevance	8.96	2.33
Women	27.83	12.80
Age	3.46	0.88
Size	3.39	2.86
ROA	5.93	6.28
Leverage	78.49	5.32
Boardsize	12.66	4.16
Boardmeet	9.61	4.05
Independent	60.93	40.01
Analyst	20.20	8.80
InstInv	25.91	24.42
Panel B. Dichotomic variables		
	Frequency (%)	
Standardization	17.28	
Reliability	78.31	
Integrity	17.67	
Directive	70.00	
Guidelines	40.00	
CEOduality	66.19	
SustCommittee	88.15	
Covid	10.00	

variables in Panel A and the frequency (percentage of companies receiving a value of 1) for dichotomous variables in Panel B. The numerical variables are expressed according to the measure used in their construction, described in the last epigraph of the Empirical Design section. In addition, we have presented the information for the global score DEIndex in Panel A, as well as for its components: Relevance (Panel A), Standardization (Panel B), Reliability (Panel B), and Integrity (Panel B). As can be seen, the average for the period analyzed for the DEI information disclosed by the companies is 10 out of 20 points. The average relevance of DEI information is 8.96 out of a total of 17 points, which means that companies disclose approximately 53% of the most useful items that assess the company's commitment to DEI. This percentage drops to 17% when we analyze the parameters of standardization and integrity of the information. Regarding the characteristics of the board of directors, on average, there are 13 directors who meet about 10 times a year, 61% of the directors are independent, and 28% are women. In addition, 15% of the board members are independent women. Nearly 90% of companies have established a sustainability committee.

Figure 2 shows the year-on-year evolution of the global DEI disclosure indicator (DEIndex) at the European level. As can be seen, since 2014, when Directive 2014/95/EU was enacted, there has been a positive evolution of the overall DEI score (DEIndex). However, the most significant increase in DEI disclosure occurs from 2017 onwards, coinciding with (i) the deadline foreseen for the transposition of Directive 2014/95/EU into the legal frameworks of the Member States and its effective application, and (ii) the publication of the 2017/C 215/01 Guidelines.

Figure 3 illustrates the dynamics by industry, which shows a high similarity both in the annual score and in the evolution of the information on DEI disclosed by European companies. However, it is possible to observe a slight lead of companies in the Energy & Gas industry.

Table 3 presents the bivariate correlation matrix, showing that none of the coefficients indicate problems of collinearity between the variables. In particular, the correlations between the dependent variable (DEIndex), its subcomponents (Relevance, Standardization, Reliability and Integrity), and the independent variables are high. The correlations between the independent variables and the control variables are less than 0.5, except in the case of Women and DISCLframe. Variables that are introduced by centering values to correct this problem. In addition, we specify that the models should be robust to multicollinearity problems.

4.2 | Main results

The second column of Table 4 reflects the econometric results obtained for the estimation of Equation (2), which was proposed to contrast the research hypotheses. In addition, for a better understanding of the results, the first column of Table 4 reflects the results of Equation (1), without the interaction that was included to test the moderating effect of the EU mandatory reporting framework. In this column, we observe a positive effect of the variables Women

FIGURE 2 Evolution of diversity, equity, and inclusion transparency (DEIindex).

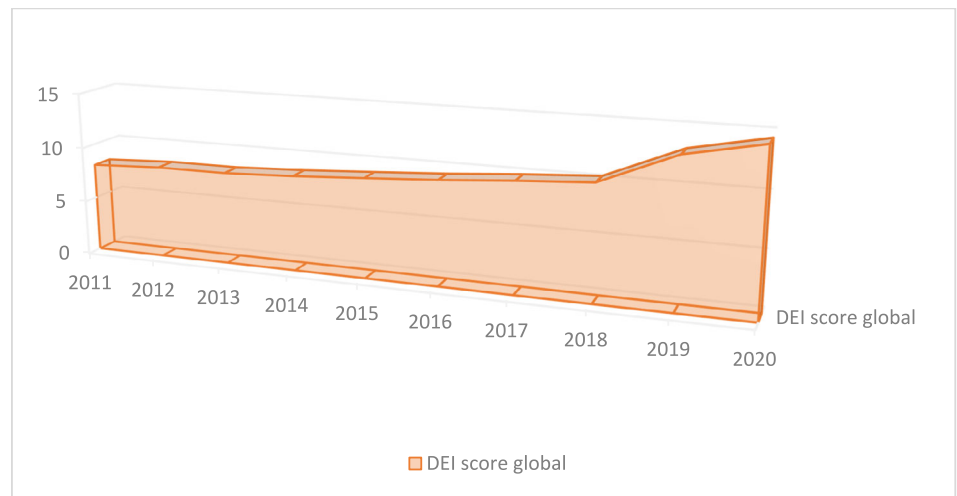
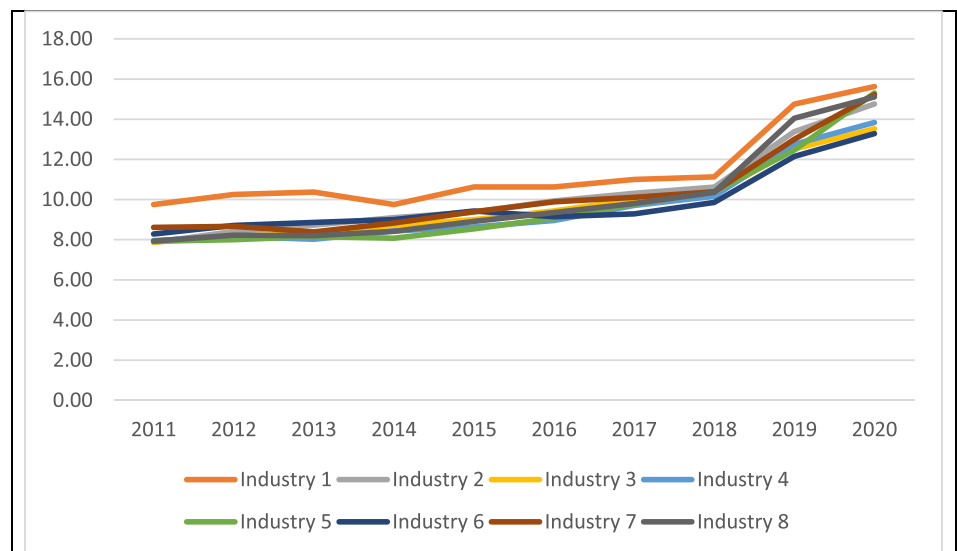


FIGURE 3 Dynamic evolution of DEIindex by industry.



Industry 1. Oil and Gas; Industry 2. Basic Materials and Industry; Industry 3. Consumer goods; Industry 4. Consumer services; Industry 5. Financial services; Industry 6. Technology & Telecommunications; Industry 7. Real State services; Industry 8. Other activities

(coeff. = 0.0261; p value = .000 < .01) and DISCLframe (coeff. = 1.297; p value = .000 < .01) on the total DEI score (DEIindex). Both effects are significant at the 99% confidence level.

However, in the second column, the inclusion of the interaction between the two independent variables modifies the observed effect for the Women variable, which, although still positive (coeff. = 0.0127; p value = .091 < .1), has a marginally significant statistical impact at the 90% confidence level. Nevertheless, DISCLframe remains statistically relevant (coeff. = 0.865; p value = .000 < .01), with the same sign and at the same confidence level; and the interaction Women * DISCLframe (coeff. = 0.0150; p value = .002 < .01) is positive and significant (99% confidence level).

The third and fourth columns of Table 4 show the robust results for the variable Dir instead of DISCLframe. It can be

observed that the results are significant and similar to the previous one. Moreover, the effects are higher due to the fact that all companies adopt the proposal behind the implementation in the regulatory framework in 2017. However, we believe that our initial variable is more appropriate due to the fact that some countries have completed the transposition of Directive 2014/95/EU before 2017, and we have not considered these situations by using the Dir variable.

Regarding the control variables, the most visible companies in terms of age and size, those that are followed by more financial analysts, and those with larger boards and a specialized committee, are the most committed to DEI disclosure. The effect of COVID-19 on DEI disclosure is also confirmed and, with a marginal impact, that of the dual role of the CEO.



TABLE 3 Correlation matrix.

	1	2	3	4	5	6	7	8	9
1 DEIndex	1								
2 Relevance	.98***	1							
3 Standardization	.58***	.49***	1						
4 Reliability	.40***	.28***	.11***	1					
5 Integrity	.71***	.61***	.60***	.15***	1				
6 Women	.37***	.36***	.19***	.24***	.24***	1			
7 DISCLframe	.55***	.55***	.33***	.18***	.38***	.50***	1		
8 Age	.17***	.17***	.04*	.13***	.10***	.12***	.12***	1	
9 Size	.01	.01	-.02	.05**	-.03	.05**	.02	-.09***	1
10 ROA	-.03	.00	-.04	-.16***	-.05*	.05**	.03	.00	.02
11 Leverage	-.03	.00	-.01	-.19***	.00	.07***	.07***	.09***	-.05**
12 Boardsize	.13***	.12***	.03	.17***	.05**	-.07***	-.06**	.15***	.01
13 Boardmeet	.09***	.05**	.13***	.14***	.15***	.11***	.11***	.05*	.09***
14 Independent	.12***	.13***	.04*	.02	.04*	-.03	.10***	-.05**	-.06***
15 CEOduality	.01	.02	.01	-.05**	.00	-.10***	.01	-.06**	.05**
16 SustCommittee	.22***	.20***	.09***	.29***	.11***	.16***	.05**	.11***	.04
17 Analyst	.14***	.14***	-.03	.24***	.01	-.04**	-.20***	.08***	.06***
18 InstInve	-.03	-.06***	.02	.09***	.03	-.04	-.03	-.03	-.09***
19 Covid	.53***	.48***	.49***	.08***	.57***	.24***	.36***	.06**	.00

TABLE 3 (Continued)

	10	11	12	13	14	15	16	17	18	19
1										
2										
3										
4										
5										
6										
7										
8										
9										
10	1									
11	.48***	1								
12	-.20***	-.26***	1							
13	-.03	.10***	-.15***	1						
14	-.07***	-.10***	.03	.02	1					
15	.15***	.10***	-.10***	.07***	.18***	1				
16	.00	.03	.07***	.14***	.04*	-.01	1			
17	-.05**	-.22***	.31***	-.06**	.15***	-.05**	.15***	1		
18	-.09***	-.09***	.19***	-.08***	-.18***	-.10***	-.04*	-.20***	1	
19	-.04	.02	-.03	.18***	.05**	.03	.05**	-.07***	-.01	1

***p < .01, **p < .05, and *p < .1.

TABLE 4 Results for basic and complementary models.

	DEindex					
	Women presence		Dir: Period 2017–2020		Critical mass	
	Equation (1)	Equation (2)	Equation (1)	Equation (2)	Equation (3)	Equation (4)
	Coeff. (std.dv.)	Coeff. (std.dv.)	Coeff. (std.dv.)	Coeff. (std.dv.)	Coeff. (std.dv.)	Coeff. (std.dv.)
Women	0.0261*** (0.00670)	0.0127* (0.00399)	0.0328*** (0.00647)	0.0138* (0.00793)		
DISCLframe	1.297*** (0.0887)	0.865*** (0.166)			1.080*** (0.141)	1.240*** (0.111)
Women * DISCLframe		0.0150*** (0.00490)				
Dir (2017–2020)			1.339*** (0.206)	1.985*** (0.134)		
Women * Dir			0.0165*** (0.00403)			
Tilted					0.00981 (0.160)	
Balanced					0.534*** (0.205)	
Tilted * DISCLframe					0.347** (0.140)	
Balanced * DISCLframe					0.0617 (0.105)	
CriticalMass (women≥3)					0.360** (0.157)	
CriticalMass * DISCLfram						0.218** (0.109)
Age	0.247** (0.107)	0.260** (0.108)	0.299*** (0.112)	0.286*** (0.109)	0.269** (0.108)	0.262** (0.107)
Size	8.04e–09** (3.32e–09)	8.10e–09** (3.31e–09)	8.08e–09** (3.39e–09)	8.06e–09** (3.35e–09)	7.85e–09** (3.33e–09)	7.53e–09** (3.30e–09)
ROA	–0.0486 (0.187)	–0.0335 (0.187)	–0.101 (0.189)	–0.0772 (0.187)	–0.0614 (0.188)	0.0111 (0.189)
Leverage	–0.0756 (0.0808)	–0.0789 (0.0807)	–0.0513 (0.0824)	–0.0642 (0.0813)	–0.0631 (0.0811)	–0.0586 (0.0806)
Boardsize	0.0736*** (0.0226)	0.0730*** (0.0226)	0.0711*** (0.0232)	0.0702*** (0.0228)	0.0716*** (0.0227)	0.0438* (0.0235)
Boardmeet	–0.00966 (0.0188)	–0.00833 (0.0187)	–0.0129 (0.0189)	–0.0107 (0.0187)	–0.00999 (0.0188)	–0.00592 (0.0187)
Independent	0.000538 (0.00172)	0.000731 (0.00172)	0.000831 (0.00173)	0.000872 (0.00171)	0.000924 (0.00172)	0.000528 (0.00172)
CEOduality	0.270* (0.164)	0.298* (0.164)	0.214 (0.166)	0.264 (0.165)	0.272* (0.164)	0.236 (0.163)
SustCommittee	0.815*** (0.199)	0.761*** (0.199)	0.710*** (0.200)	0.690*** (0.198)	0.790*** (0.199)	0.825*** (0.199)
Analysts	0.0290** (0.0119)	0.0298** (0.0119)	0.0196 (0.0122)	0.0258** (0.0120)	0.0318*** (0.0119)	0.0317*** (0.0117)

TABLE 4 (Continued)

	DEIindex					
	Women presence		Dir: Period 2017–2020		Critical mass	
	Equation (1)	Equation (2)	Equation (1)	Equation (2)	Equation (3)	Equation (4)
	Coeff. (std.dv.)	Coeff. (std.dv.)	Coeff. (std.dv.)	Coeff. (std.dv.)	Coeff. (std.dv.)	Coeff. (std.dv.)
InstInve	−5.59e-05 (0.00381)	0.000453 (0.00381)	−0.00179 (0.00392)	−0.000366 (0.00387)	0.000325 (0.00384)	0.000263 (0.00379)
Covid	3.394*** (0.172)	3.321*** (0.173)	3.183*** (0.173)	3.157*** (0.172)	3.342*** (0.173)	3.410*** (0.172)
Country, industry, and year controlled						
Constant	4.869*** (0.608)	5.037*** (0.610)	5.631*** (0.626)	5.565*** (0.617)	5.207*** (0.605)	5.435*** (0.598)
Log likelihood	−2487.32***	−2482.67***	−2483.62***	−2475.31***	−2484.03***	−2488.08***

*** $p < .01$, ** $p < .05$, and * $p < .1$.

4.3 | Complementary analysis (I): critical mass of women

To continue the discussion, and given that our main results indicate a lack of significance of BGD during the period when DEI disclosure was voluntary in Europe (second column in Table 4), in contrast to what has been observed in previous studies (e.g., Barako & Brown, 2008; Cucari et al., 2018; Shohaieb et al., 2022), this section elaborates on whether a critical mass of women is needed to ensure that their views are taken into account (Haque & Jones, 2020) and that they can influence board decisions regarding DEI disclosure information.

According to Kanter's (1977) critical mass theory, it is necessary to reach a certain number of women in a group (i.e., three or more) in order to focus group members' attention on the particular skills and abilities that women bring to the group, and thus to realize the benefits attributed to gender diversity. With respect to voluntary reporting, Fernandez-Feijoo et al. (2014) confirm that this critical mass of female board members is necessary for BGD to have an impact on sustainability disclosures. Accordingly, we propose two modifications to Equation (2), replacing the variable Women with other variables that attempt to reflect the voice of women on the board.

First, following Seebeck and Vetter (2022), in Equation (3), we consider three categories of boards according to the representation of female directors: skewed (boards dominated by male directors), tilted (boards with a higher presence of female directors, but proportionally not equally represented), and balanced (boards with an equal representation of both genders). According to Seebeck and Vetter (2022), skewed boards are those with less than 20% female directors, tilted boards are those with more than 20% but less than 40% female directors, and balanced boards are those with more than 40% but less than 60% female directors. Thus, operationally,

we introduced two dummies in Equation (2): Tilted and Balanced, which equal to 1 if the percentage of women is between 20% and 40% (Tilted); or greater than 40% but less than or equal to 60% (Balanced), and 0 otherwise. The skewed dummy was omitted to avoid the dummy variable trap. This criterion ensures that our model distinguishes between the effects of each category and avoids overparameterization.

$$\begin{aligned}
 DEIindex_{i,t} = & \beta_0 + \beta_1 Tilted_{i,t} + \beta_2 Balanced_{i,t} + \beta_3 DISCLframe_{i,t} \quad (3) \\
 & + \beta_4 Tilted * DISCLframe_{i,t} + \beta_5 Balanced \\
 & * DISCLframe_{i,t} + \beta_6 Age_{i,t} + \beta_7 Size_{i,t} + \beta_8 ROA_{i,t} \\
 & + \beta_9 Leverage_{i,t} + \beta_{10} Boardsize_{i,t} \\
 & + \beta_{11} Boardmeet_{i,t} + \beta_{12} \%Independent_{i,t} \\
 & + \beta_{13} CEOduality_{i,t} + \beta_{14} SustCommitte_{i,t} \\
 & + \beta_{15} Analyst_{i,t} + \beta_{16} InstInve_{i,t} + \beta_{17} Covid_{i,t} \\
 & + \beta_{18} Country_i + \beta_{19} Industry_i + \beta_{20} Year + \varepsilon_{it} + \eta_i
 \end{aligned}$$

Column 3 of Table 4 shows that the Tilted and Balanced variables have a positive impact on the DEIindex, although only the Balanced variable (coeff. = 0.534; p value = .009 < .01) is statistically significant at the 99% confident level. Regarding the interaction of both variables with institutional pressure, only the variable Tilted * DISCLframe (coeff. = 0.347; p value = .013 < .05) is significant at the 95% confidence level. These results suggest that gender-balanced boards favor the disclosure of material information about DEI in any institutional setting. In contrast, boards with less than 40% female directors need a legal and regulatory framework to ensure that their views are taken into account.

The second modification of the Women variable is the creation of a dichotomous variable (CriticalMass) that takes the value of 1 for boards with 3 or more female members and 0 otherwise (Atif et al., 2021). This modification requires the estimation of Equation (4).

$$\begin{aligned}
 DEIindex_{i,t} = & \beta_0 + \beta_1 CriticalMass_{i,t} + \beta_2 DISCLframe_{i,t} & (4) \\
 & + \beta_3 CriticalMass * DISCLframe_{i,t} + \beta_4 Age_{i,t} \\
 & + \beta_5 Size_{i,t} + \beta_6 ROA_{i,t} + \beta_7 Leverage_{i,t} \\
 & + \beta_8 Boardsize_{i,t} + \beta_9 Boardmeet_{i,t} \\
 & + \beta_{10} \%Independent_{i,t} + \beta_{11} CEOduality_{i,t} \\
 & + \beta_{12} SustCommitte_{i,t} + \beta_{13} Analyst_{i,t} \\
 & + \beta_{14} InstlInve_{i,t} + \beta_{15} Covid_{i,t} + \beta_{16} Country_i \\
 & + \beta_{17} Industry_i + \beta_{18} Year + \varepsilon_{it} + \eta_i
 \end{aligned}$$

The coefficients and p values in the last column of Table 4 allow us to observe, at a 95% confidence level, that the presence of three or more female directors improves the relevance, standardization, reliability, and completeness of the information on DEI disclosed by European companies (CriticalMass: coeff. = 0.360; p value = .022 < .05) and that this effect is reinforced by the emergence of an institutional framework that imposes the mandatory reporting of sustainability information and specifies the content of these reports (CriticalMass * DISCLframe: coeff. = 0.218; p value = .045 < .05).

4.4 | Complementary analysis (II): disaggregation of information characteristics

In order to better understand the board's decision-making process with respect to the characteristics of the DEI information disclosed by European companies, Equation (2) is estimated for the subcomponents of the global DEI score (DEIindex): Relevance, Standardization, Reliability, and Integrity. The first variable is censored and takes values between 0 and 17, which requires the use of the same methodology as the DEIindex variable (i.e., a Tobit regression for panel data). The remaining three variables are dichotomous in nature, so their models are estimated with logistic regressions for panel data.

In Table 5, we can see that institutional pressure (represented by the variable DISCLframe) has a positive effect on the parameters of relevance (coeff. = 0.769; p value = .000 < .01), reliability (coeff. = 2.479; p value = .001 < .01), and integrity (coeff. = 0.858; p value = .016 < .05), for confidence levels of 99% (relevance and reliability) and 95% (integrity). On the contrary, the positive effect on the standardization of DEI information disclosed by European companies is not statistically significant.

Regarding the proportion of female board members (BGD), its effect on the relevance of DEI information is similar to that identified for the overall score and only occurs in periods characterized by the existence of mandatory sustainability standards and guidelines (Women * DISCLframe: coeff. = 0.0126; p value = .002 < .01) for a confidence level of 99%. On the contrary, regardless of the institutional framework in place, BGD positively affects the completeness of information on DEI (Women: coeff. = 0.0285; p value = .0942 < .1) and in its reliability (Women: coeff. = 0.0326; p value = .098 < .1) with a marginal impact (90% confidence level), while lacking significance for the parameter related to standardization (Women: coeff. = 0.00246; p value = .930 > .1).

In this sense, some recent works, such as ours, have found that women on the board have no significant impact on the GRI sustainability reporting standard (Bananuka et al., 2022). We believe that European companies have been pioneers in adopting international standards for the presentation of their sustainability information, as shown in the articles by Luna-Sotorrió and Fernández-Sánchez (2008) and Ortas and Moneva (2011), which is why the presence of women has no impact in the period analyzed.

5 | DISCUSSION AND IMPLICATIONS OF FINDINGS

5.1 | Discussion

Our results in Table 4 indicate that the DEI score (DEIindex) is positively related to the proportion of women on boards, as predicted by hypothesis H1, suggesting that BGD positively influences DEI disclosure. Our results are consistent with the findings of Barako and Brown (2008), Tejedo-Romero et al. (2017), and Peng et al. (2022), who also found a positive relationship between BGD and social issues. In particular, our results support the findings of Ben-Amar et al. (2022) and Shohaieb et al. (2022), who found that BGD positively influences the level of reporting on diversity management in the Canadian and British contexts, respectively.

The positive association between BGD and DEI disclosure confirms the resource-providing role of female directors, who bring idiosyncratic values, perspectives, and skills that enhance the board's stakeholder engagement and promote corporate transparency (Esposito et al., 2023; Haque & Jones, 2020; He et al., 2021; Peng et al., 2022; Vitolla et al., 2020), thus supporting the prediction that women on boards favor social disclosure. However, further analysis of the relationship between BGD and DEI disclosure revealed that this positive effect is only associated with having at least three female directors or gender-balanced boards. These results suggest that tokenism limits the influence of female directors, with a critical mass required for female directors to influence board decisions on DEI disclosure.

The results presented in Table 4 also show a positive and significant association between the EU regulatory framework and the DEI score (DEIindex), suggesting that, as predicted by hypothesis H2, the institutional pressure stemming from the regulatory framework established by Directive 2014/95/EU positively influences DEI disclosure. This result confirms the evidence obtained by several authors (e.g., Caputo et al., 2021; Fiechter et al., 2022; García-Sánchez, Ortiz-Martínez, et al., 2023; Lippai-Makra et al., 2022; Mio et al., 2021) regarding the positive effect of Directive 2014/95/EU on the disclosure of sustainability information by companies.

This positive effect occurs despite the lack of specific requirements in both Directive 2014/95/EU and Guidelines 2017/C 215/01, which leaves the list of DEI topics largely open, and the application of the “comply or explain” principle, aspects that influence the strength of the regulation and thus its impact on information

TABLE 5 Results for complementary model II.

	Equation (2) for a DEIndex disaggregation			
	Relevance	Standardization	Reliability	Integrity
	Coeff. (std.dv.)	Coeff. (std.dv.)	Coeff. (std.dv.)	Coeff. (std.dv.)
Women	0.00642 (0.00669)	0.00246 (0.0280)	0.0326* (0.0252)	0.0285** (0.0071)
DISCLframe	0.769*** (0.139)	0.0001 (0.001)	2.479*** (0.769)	0.858** (0.357)
Women * DISCLframe	0.0126*** (0.00408)	0.00678 (0.0157)	0.0372 (0.0239)	0.00598 (0.00984)
Age	0.203** (0.0906)	-0.0346 (0.273)	1.412* (0.802)	0.110 (0.162)
Size	5.43e-09* (2.78e-09)	1.46e-08** (7.20e-09)	7.21e-08 (4.58e-08)	9.52e-09** (4.23e-09)
ROA	0.000381 (0.156)	0.217 (0.689)	-0.338 (0.737)	0.221 (0.345)
Leverage	-0.0118 (0.0675)	-0.381* (0.220)	-1.789*** (0.474)	-0.0753 (0.130)
Boardsize	0.0563*** (0.0190)	0.104* (0.0566)	0.0234 (0.131)	0.132*** (0.0345)
Boardmeet	-0.0264* (0.0156)	0.0659 (0.0436)	0.165 (0.118)	0.0893*** (0.0291)
Independent	0.000837 (0.00143)	-0.00136 (0.00490)	-0.0187* (0.0107)	0.00178 (0.00300)
CEOduality	0.271** (0.137)	-0.0591 (0.409)	1.407 (0.940)	-0.0182 (0.263)
SustCommittee	0.537*** (0.166)	2.702** -1.128	2.181** -1.049	1.123** (0.454)
Analysts	0.0260*** (0.00986)	-0.0289 (0.0298)	0.166** (0.0724)	-0.0125 (0.0175)
InstInve	-0.00103 (0.00319)	0.00508 (0.00898)	0.0366 (0.0232)	0.00410 (0.00564)
Covid	2.318*** (0.144)	2.955*** (0.413)	0.765 (0.844)	3.429*** (0.318)
Country, industry, and year controlled				
Constant	5.407*** (0.510)	-8.101*** -2.327	-9.101* -5.087	-8.470*** -1.117
Log likelihood	-2260.58***	-195.97***	-194.08***	-364.81***

*** $p < .01$, ** $p < .05$, and * $p < .1$.

disclosure (Ioannou & Serafeim, 2017). This positive effect occurs since 2014, when Directive 2014/95/EU was issued, confirming the evidence obtained by Fiechter et al. (2022) that companies started to respond to the disclosure provisions established by Directive 2014/95 before its effective entry into force, although, as shown in Figure 2, the most significant increase in DEI disclosure occurs from 2017 onwards.

Regarding the interaction between the two independent variables, the results in Table 4 indicate that, as predicted by hypothesis H3, the EU regulatory framework established by Directive 2014/95/EU strengthens the effect of BGD on DEI disclosure. This result suggests that the European institutional context, in place since 2014, favors corporate transparency regarding DEI practices and encourages the consideration of minority female directors' opinions.

Analyzing both models together, we find that the participation of female directors positively affects corporate transparency on DEI, although this relationship occurs in a European environment characterized by institutional pressure to disclose sustainability information. In the period prior to the publication of Directive 2014/95/EU and the 2017 Guidelines, women were interested in reporting on these issues, but lacked the necessary power for their opinions to influence the parameters of relevance, standardization, reliability, and completeness of the information on DEI disclosed by European companies.

With respect to the control variables, the results indicate that firms with greater resources and capabilities relative to their age and size, larger and more specialized boards, and those followed by more financial analysts are the most committed to DEI disclosure. These findings are consistent with those of Haque and Jones (2020), Ben-Amar et al. (2022), and Monteiro et al. (2022). Furthermore, in line with Alkayed et al. (2023), stakeholder pressure resulting from the COVID-19 pandemic has driven DEI disclosure.

5.2 | Theoretical implications

This study adds to previous research on the link between corporate governance, diversity, and sustainability disclosure (Haque & Jones, 2020; Shohaieb et al., 2022). We show that board effectiveness, as an internal corporate governance mechanism, is a key determinant of transparency concerning DEI. In particular, we address one of the most debated issues in the literature on board composition: gender diversity (Esposito et al., 2023). Our empirical evidence reveals “who” within the board promotes firms’ social orientation and “under what conditions” they do so. Thus, for BGD to affect DEI disclosure, there must be at least three female directors or a gender balance on the board. Furthermore, we find that the regulatory framework established by Directive 2014/95/EU positively influences DEI and moderates the effect of BGD on DEI disclosure by encouraging the consideration of the opinions of minority female directors. In this sense, we show that mandatory disclosure requirements strengthen internal corporate governance.

The academic literature has mainly focused on the disclosure of sustainability information in general, while the disclosure of information related to DEI issues has been understudied by researchers (Monteiro et al., 2022; Peng et al., 2022; Shohaieb et al., 2022). This study is one of the few that have analyzed the disclosure of DEI issues. It contributes to filling a gap in current knowledge by enhancing the understanding of sustainability reporting with novel empirical evidence and providing some insights into its drivers. We contribute to the literature by investigating whether and under what conditions female directors favor disclosure on DEI issues. Theoretically, we confirm the need to combine different theoretical lenses to analyze the impact of BGD on sustainability disclosure, particularly on DEI disclosure. We contribute to RDT by showing that female directors play a resource-providing role, bringing unique perspectives, values, and skills that lead to improved transparency. We also contribute to IT by

showing that coercive pressure, stemming from the EU regulatory framework established by Directive 2014/95/EU, affects DEI disclosure and moderates the resource-providing role of women on boards. Finally, we also provide empirical support for the critical mass theory by showing that BGD only significantly affects DEI disclosure when a threshold of three female directors is reached, or in the case of gender-balanced boards.

5.3 | Practical implications

Regarding the study’s practical implications, our findings offer insights for companies, stakeholders, and policymakers. From a managerial perspective, the results are of interest to companies because they reveal the gaps in the quality of DEI disclosure and thus point the way to improving the dissemination of this type of information. In addition, by showing that BGD positively influences firm transparency regarding DEI, we provide insights for firms to identify which directors are more likely to support disclosing DEI information. Our results also suggest that firms should consider gender balance when appointing board members. In particular, the fact that the positive effect of BGD on DEI disclosure requires having at least three female directors or gender-balanced boards guides firms interested in increasing transparency on how to improve the effectiveness of their boards by promoting greater female representation within that body. From a stakeholder perspective, given the growing stakeholder interest in DEI issues, our findings provide insight into which types of companies (i.e., those with gender-balanced boards) are more likely to step up and commit to achieving an equitable, just, and inclusive society.

From a policy point of view, our findings support the promotion of BGD and the introduction of mandatory disclosure requirements for DEI information. DEI issues have received considerable attention from the EU over the past decade, resulting in the adoption of two new directives by the end of 2022. First, on November 22, 2022, the European Parliament approved Directive 2022/2381/EU on gender balance on the boards of listed companies, which aims to promote gender equality on company boards. Second, on December 14, 2022, the European Parliament approved Directive 2022/2464/EU on corporate sustainability reporting, which introduces more detailed disclosure requirements on the impact of business on human rights and society, including information on DEI. Our findings show that both initiatives are on the right track to improving corporate transparency and strengthening European companies’ diversity management practices to create a fairer and more egalitarian society and achieve Sustainable Development Goal 5 and its related targets. In addition, our findings highlight the importance of aligning corporate governance and sustainability reporting reforms to achieve synergies. Finally, our findings suggest that the existing EU institutional framework positively impacts DEI information’s completeness, reliability, and integrity but not its comparability (standardization). This guides regulators on what areas to focus on to improve the materiality of DEI information disclosed by companies.

6 | CONCLUDING REMARKS

Sustainability disclosure is a “key policy issue” (Fiechter et al., 2022, p. 6). The search for a new economic model based on sustainable and inclusive development has been on the EU agenda for more than 30 years. In particular, DEI issues have received special attention and become a core priority (Van Ewijk, 2011) through the establishment of gender quotas on boards of directors and mandatory disclosure of DEI information. In addition to promoting a fairer and more equitable society, these initiatives aim to increase the effectiveness of the board of directors in both its advisory and oversight roles, as well as corporate transparency (Haque & Jones, 2020).

This scenario motivates us to analyze the effect of BGD, as a sign of effective corporate governance, and the requirements imposed by the EU regulatory framework for sustainability disclosure on the materiality of the information on DEI disclosed by European companies, thus filling a research gap in the related literature. Based on a panel data of 189 large European companies from 2011 to 2020 (1890 observations), we find that BGD positively affects DEI disclosure, although this effect is only associated with a critical mass of at least three female directors or gender-balanced boards. Moreover, we find that the European institutional context in place since 2014 favors corporate transparency with respect to DEI and encourages the consideration of the views of minority directors (women).

Despite its interest, this study has a number of limitations, mainly due to the fact that diversity is an “ambiguous, complex and multifaceted” concept, which may lead to different approaches to managing and reporting it (Maj, 2018). In addition, both Directive 2014/95/EU and the 2017/C 215/01 guidelines leave open the list of DEI topics that companies are required to disclose. This has implications for the way in which Directive 2014/95/EU is transposed into Member States' national legislation and thus for the level of enforcement of these disclosure requirements, which in turn affects the strength of coercive pressure on companies.

All of these issues should be considered in future studies in light of the new regulatory changes introduced in the EU. For example, in line with Temiz and Acar (2023), future studies could extend the scope of analysis beyond the EU to examine more closely the influence of the institutional context on the dynamics of BGD and its impact on corporate transparency regarding DEI information. In this sense, taking into account the differences between institutional contexts regarding the implementation of gender quotas on boards of directors, it could be interesting to extend the analysis by considering this issue. The analysis could also be complemented by considering the characteristics (age, background, specialization, independence, etc.) of female directors or the relationship between BGD and specific elements of DEI disclosure. Recently, Khemakhem et al. (2023) and Zampone et al. (2024) showed that the influence of female directors on board decisions regarding sustainability disclosure is stronger through their participation in board committees. In this sense, future studies could analyze whether this effect extends to the specific case of DEI disclosure. Similarly, in line with the study by García-Sánchez, Aibar-Guzmán, et al. (2023), future studies could analyze

whether the positive effect of BGD on DEI disclosure is moderated by the presence of women in other executive positions (e.g., CEO and top management). Finally, given the recent entry into force of Directives 2022/2381/EU on gender equality on company boards and 2022/2464/EU on corporate sustainability reporting, future research could assess how the recent regulatory changes affect the results and conclusions of this study.

CONFLICT OF INTEREST STATEMENT

The authors declare that there are no competing interests to declare.

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