

Sustainable corporate governance and non-financial disclosure in Europe: does the gender diversity matter?

Non-financial
disclosure in
Europe

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Abstract

Purpose – Recent regulatory changes in Europe have promoted non-financial reporting practices (e.g., Directive, 2014/95/EU) and gender diversity in decision-making positions. Special attention is devoted to promoting the gender balance on corporate boards as a key mechanism to enhance corporate governance effectiveness and better address multiple stakeholders' needs. With this in mind, this study intends to examine the impact of boardroom gender diversity on Environmental Social Governance (ESG) disclosure practices in the European listed firms' context.

Design/methodology/approach – The study applies different panel data models on an extended sample of 1,392 firms from 21 European Union (EU) countries for six years (2014–2019).

Findings – Findings allow to spotlight the positive role exerted by the presence of women directors on the boards in enhancing ESG disclosure, both at the overall and specific (individual ESG scores) level.

Research limitations/implications – Policymakers and regulators might consider the study's evidence as a stimulus to continue in promoting strategic actions and reforms that foster gender equality and balance in corporate decision-making positions.

Practical implications – Creating a heterogeneous and diversified board of directors may support implementing a “sustainable corporate governance” recently claimed by the EC.

Originality/value – The study contributes to the literature by disentangling the links between gender diversity and ESG disclosure over a period that covers a long season of European regulations and measures that affected both non-financial reporting practices and the board of directors' composition. Accordingly, it can contribute to enhancing the practical and theoretical understanding of the pivotal role that gender diversity may exert in strengthening corporate governance and, in turn, corporate transparency and accountability behaviours about non-financial issues.

Keywords Gender diversity, Corporate governance, ESG disclosure, Corporate social responsibility, Sustainable corporate governance, Directive 2014/95/EU

Paper type Research paper

1. Introduction

As the journey towards Corporate Social Responsibility (CSR) and Sustainable development (SD) is maturing, worldwide corporations are increasingly called to broaden the scope of their actions by going beyond the simple profit maximisation objective, embracing an active commitment to social, environmental and governance issues (Giannarakis *et al.*, 2014; Jackson *et al.*, 2020; Wasiuzzaman and Wan Mohammad, 2020).

Following the path traced by the seminal Brundtland Report (WCED, 1987) and the Conference on Environment and Development, which was held in Rio de Janeiro in 1992, in



2015, the UN launched the 2030 Agenda for Sustainable Development (SD). The 2030 Agenda marked a groundbreaking step in the necessary process of aligning corporate strategies, investment decisions and business models with the economic, social and environmental dimensions of SD (UN, 2015; Qureshi *et al.*, 2020; Pizzi *et al.*, 2020). The 17 Sustainable Development Goals (SDGs) and 169 targets, settled within the agenda, provided firms with a “coherent, holistic framework for addressing the world’s most urgent sustainability challenges – such as climate change, human rights, corruption, poverty, inequalities and justice, naming just a few – to help create a better future for all” (GRI, 2017, p. 11).

Growing concerns about corporate CSR and SD practices go hand in hand with the need to widen the limits of corporate transparency and accountability. As a result, enterprises are increasingly called upon to go beyond the simple financial aspect, including – in their reports – information on the various non-financial dimensions that affect the value creation processes. In particular, environmental, social and governance (ESG) information has acquired pivotal importance to meet multiple stakeholders’ expectations about corporate sustainability and CSR metrics (Tamimi and Sebastianelli, 2017; Fernandez *et al.*, 2019). Besides strengthening the broad dialogue with stakeholders, ESG information is also conducive to strategic and financial benefits involving managers, investors and market players.

Aware of its relevance, within a broader strategy to promote CSR and improve corporate transparency to create social and environmental benefits, in 2015 the European Union (EU) approved the Directive 2014/95/EU (EU Directive) [1], which regulates non-financial and diversity disclosure across Europe (EU, 2014; Mio *et al.*, 2020, 2021). The EU Directive requires large companies of public interest – with more than 500 employees – to include in their management report or a separate non-financial report, information at the minimum about environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters (EU, 2014; Venturelli *et al.*, 2017; Mio *et al.*, 2020). However, the EU Directive does confer some degrees of flexibility for the Member States in its transposition. For example, it allows State-specific requirements on companies regarding three core aspects of reporting: disclosure format, reporting framework and reporting content (GRI, 2017; Mio *et al.*, 2020, 2021). In particular, under the “comply or explain” principle, the regulation allows undertakings to omit certain information from their non-financial statements provided that they clearly explain the underpinning reasons for this choice (GRI, 2017; Pizzi *et al.*, 2020; Mio *et al.*, 2021).

Therefore, although mandatory since 2017, ESG disclosure practices among firms are still barely uniform, varying between countries and companies (Tamimi and Sebastianelli, 2017; Buallay, 2019; Qureshi *et al.*, 2020). This makes the scope for shedding light on the potential factors that could drive ESG transparency levels (Nadeem *et al.*, 2017; Tamimi and Sebastianelli, 2017; Arayssi *et al.*, 2020). Prior literature contends that corporate governance mechanisms – by means of certain board of directors’ compositions – may play a fundamental role in influencing non-financial disclosure practices (Giannarakis *et al.*, 2014; Tamimi and Sebastianelli, 2017; Arayssi *et al.*, 2020). In particular, board gender diversity, in terms of the proportion of women on the boards, is considered a key factor in increasing ESG disclosure levels (Arayssi *et al.*, 2020; Qureshi *et al.*, 2020; Wasiuzzaman and Wan Mohammad, 2020). According to the Resource dependence theory framework, female directors’ presence provides the board with a heterogeneous package of skills, competencies, professional experiences, leadership styles, knowledge and opinions (Hillman *et al.*, 2007; Rao and Tilt, 2016; Venturelli *et al.*, 2019). This increases the internal decision-making process and facilitates access to critical resources and the alignment of corporate strategies with the external environment (Rao and Tilt, 2016). In such a way, women on boards support companies in adopting environmentally and socially responsible behaviours that result in greater ESG disclosure levels provided to the different corporate stakeholders’ benefit (Fernandez *et al.*, 2019; Wasiuzzaman and Wan Mohammad, 2020).

Nevertheless, despite its relevance, the impact that board gender diversity exerts on ESG disclosure levels is still under-investigated. Most of the previous research examined the

association between ESG disclosure and firms' financial performance; while studies that specifically focused on the association between board gender diversity and ESG disclosures provided mixed findings (e.g., Husted and de Sousa Filho, 2019; Cucari *et al.*, 2018; Manita *et al.*, 2018; Arayssi *et al.*, 2020; Wasiuzzaman and Wan Mohammad, 2020).

In light of these gaps, this study is designed to help understand the relevance of gender diversity in corporate governance mechanisms and non-financial accountability.

To this end, the paper investigates the influence that board gender diversity exerts on ESG disclosures in the European context that, in recent decades, has been characterised by several measures and regulations affecting non-financial reporting requirements (e.g., EU, 2003, 2014), women's participation on corporate boards (EC, 2012, 2020a; Jourova, 2016) and sustainable corporate governance (EC, 2020b). In particular, in recent years, the European Union has been working on parallel tracks along a common path: to promote the integration of sustainability issues and stakeholders' long-term interests into corporate value creation processes and ensure more accountability for the economic, social and environmental impacts of firm activities. This entails creating a "sustainable corporate governance" based on a heterogeneous and diversified board composition (EY, 2020; EC, 2020b).

Mindful of this, the study contributes to the existing literature, broadening the scope of actions of previous research focused on circumscribed geographical contexts (e.g., Cucari *et al.*, 2018; Manita *et al.*, 2018; Arayssi *et al.*, 2020; Wasiuzzaman and Wan Mohammad, 2020), by collecting ESG and board gender diversity data from a wider sample, composed of 1,392 listed firms coming from 21 European countries over six years (2014–2019). Unlike prior literature, this study focuses on a period spanning from the voluntary (2014–2016) to mandatory (2017–2019) non-financial reporting implementation, using the financial year 2017 – when the Directive 2014/95/EU came into force – as a cut-off point. Accordingly, different panel regression models controlling for countries' effects have been estimated to test the associations between firms' ESG disclosure scores and the proportion of women on the board of directors in *pre* and *post* the EU Directive introduction. In addition, control variables related to other corporate governance features (board size, attendance and independence) and firm characteristics (size, profitability, and leverage) were also tested to improve the goodness of the panel models.

Standing at the intersection between different literature streams, including non-financial reporting and gender diversity, the study's findings speak directly to policymakers, standard setters, corporations and academics about the importance of female directors as catalysts of sustainability and improved ESG disclosure. In particular, the inclusion of sustainability into the corporate governance framework and the provision of higher-quality information to investors and other stakeholders about the sustainability risks to which companies are exposed and their impacts have become crucial to ensure a global transition to a sustainable economic system as claimed by the European Green Deal and the Sustainable Finance Action Plan (EC, 2021). However, respondents from the consultation on the Review of the Non-Financial Reporting Directive that took place from 20 February 2020–11 June 2020, cast the spotlight on the deficiency of current non-financial reporting in terms of reliability, relevance and comparability (EC, 2020c). A huge gap between what companies do and what investors need in terms of non-financial information persists (EC, 2020c, 2021). Moreover, the EU observed that corporate governance actors are still mainly focused on short-term financial performance objectives (EC, 2020). Therefore, from this perspective, our study stimulates practical reflections into the role that board gender diversity may play in ensuring corporate focus shift from short-term financial objectives to long-term sustainability goals and promoting greater transparency and accountability for corporate activities' social and environmental impact. In other words, we contend that gender diversity fosters good and green corporate governance practices that – in turn – ensure effective monitoring by the board and improve firms' ability to address investors and other stakeholders' demands – in terms of non-financial disclosure – properly.

The remainder of the paper is organised as follows. In the next section, a review of relevant literature is presented, outlining the theoretical framework within which hypotheses are developed and reviewing prior relevant research. The hypotheses development concludes the section. The third section explains the research methodology applied. The fourth and fifth sections illustrate and discuss research findings. Last, the sixth section presents conclusions, implications and limitations and suggests future avenues for research.

2. Literature review

2.1 Theoretical background

The role that board gender diversity plays in strengthening corporate governance mechanisms and fostering higher ESG disclosures may be framed within the double perspective of stakeholder and resource dependence theory that may represent two complementary frameworks (Gray *et al.*, 1996; Michelon and Parbonetti, 2012; Rao and Tilt, 2016; Manita *et al.*, 2018; Nicolò *et al.*, 2021).

Stakeholder theory provides a snapshot that links corporate governance mechanisms and ESG disclosure by focusing on the corporate board's crucial role (Michelon and Parbonetti, 2012; Fernandez *et al.*, 2019; de Villiers and Dimes, 2020). According to Arayssi *et al.* (2020, p. 142), the board of directors is responsible for "creating a well-structured and accountable internal control system capable of reflecting a transparent and reliable flow of information and operations". In a nutshell, the board is the main corporate decision-making body that is responsible for controlling managers' behaviors and addressing, in a balanced way, the interests of the different stakeholders through the implementation of adequate disclosure strategies and policies that embrace both financial and non-financial issues (Michelon and Parbonetti, 2012; Fasan and Mio, 2017; Valls Martínez *et al.*, 2019; de Villiers and Dimes, 2020). However, the effectiveness and efficiency with which the board pursues its monitoring and accountability tasks strictly depends on the bundle of capabilities, skills, experiences and perspectives provided by its directors (de Villiers and Dimes, 2020). Accordingly, a sound corporate governance structure should be based on an adequate composition of the corporate board regarding its members' diversity (Fernandez *et al.*, 2019). Indeed, men and women have different personalities, socio-cultural backgrounds, leadership styles, expertise and expectations, which, if adequately combined, may enrich the discussions and improve the decision-making process within the board (de Villiers and Dimes, 2020).

Resource dependence theory forms an ideal bridge with the stakeholder theory that illuminates the potential connections between board gender diversity and ESG disclosure (Pfeffer and Salancik, 1978; Hilman *et al.*, 2007; Rao and Tilt, 2016; Manita *et al.*, 2018; Yarram and Adapa, 2021). From this standpoint, each organisation can be considered an open system that interacts with the external environment to acquire and exchange resources crucial for its survival (Pfeffer and Salancik, 1978; Hilman *et al.*, 2007). As advocated by de Villiers and Dimes (2020, p. 3), in line with the resource dependence theory, effective boards "should also not just monitor managers, but should also enable managerial entrepreneurship, bringing network benefits to stakeholders of the firm". According to this theoretical perspective, organisations should act to reduce their dependence on the external environment and limit the uncertainty, focusing on the board of directors' resources (Hilman *et al.*, 2007). As such, increasing the board gender diversity via women directors' appointment is of utmost importance. Specifically, women provide the board with a bundle of unique resources in terms of different values, experiences, opinions, ideas, business solutions, competencies, knowledge, leadership styles and linkages with the external environment that improve the internal decision-making process and reduce both uncertainty and dependence from the external environment (Terjesen *et al.*, 2016; Fasan and Mio, 2017; Manita *et al.*, 2018; Nicolò *et al.*, 2021). In particular, women provide links with several networks and better knowledge of certain markets and customers' behaviours than male directors (Terjesen *et al.*, 2016; Manita *et al.*, 2018; Nicolò *et al.*, 2021).

Female directors are also more sensitive to social, environmental and ethical issues and more attentive to address stakeholders' interests than their male counterparts (Fernandez *et al.*, 2019; Zahid *et al.*, 2020). Furthermore, women have educational backgrounds more linked to non-financial issues and are more prone to act ethically and avoid violating social and environmental policies than male directors (Valls Martínez *et al.*, 2019; Wasiuzzaman and Wan Mohammad, 2020). The diversity ensured by such characteristics stimulates the firm to adopt more socially responsible behaviours or sustainability practices and, in turn, provides more accountability and transparency about ESG issues (Nadeem *et al.*, 2017; Valls Martínez *et al.*, 2019; Wasiuzzaman and Wan Mohammad, 2020).

2.2 Prior research and hypotheses development

As aforementioned in previous sections, in recent years, the debate surrounding the relevance of gender diversity in corporate boards is increasing, involving both policymakers and academics.

Following the European Commission (EC) legislation proposal to increase the presence of the under-represented sex among non-executive directors by 40% in listed companies by 2020 (EC, 2012; Jourova, 2016; Nicolò *et al.*, 2021), several countries have started to adopt both voluntary and mandatory measures to promote female appointment in corporate boards (Nadeem *et al.*, 2017; Furlotti *et al.*, 2019). Apart from the leading examples of Norway, which, in 2003, mandated a gender quota of 40% for women directors, other countries such as Spain, Italy, France, Belgium, Sweden, Austria and the Netherlands have adopted legal measures, involving both listed and State-Owned companies to enhance female presence on the boards. Attuned, in 2016, the EC launched the "Strategic engagement for gender equality 2016–2019" framework (Jourova, 2016), which, while reaffirming the target quota of 40% for companies listed on stock exchanges, encouraged member states to adopt measures that foster gender balance in political and public decision-making positions (Jourova, 2016). This echoed the SDG 5 "Achieve gender equality and empower all women and girls" declared in the 2030 Agenda for Sustainable Development, which recognised the need to "ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life" (UN, 2015, p. 10). Moreover, in 2020 the EC launched an initiative to challenge the status quo of current corporate governance frameworks. Specifically, the EC raised many concerns about the excessive focus of current firms' corporate governance actors on short-term financial performance objectives (EC, 2020). Accordingly, it claimed the need to encourage the shift of companies' attention towards long-term sustainable value creation through the concrete integration of environmental, social and human impact aspects into business strategies, in line with emerging UN SDGs and new European Green Deal ambitions (EC, 2020). This has sparked further interest in the necessity to promote the creation of more heterogeneous and diversified boards of directors in terms of gender and competencies in order to ensure the diffusion of "sustainable corporate governance" structures, abler to guarantee the convergence of interests of firms, their shareholders, managers, stakeholders and society at large (EC, 2020b; EY, 2020).

In the wake of these political and societal concerns, the gender diversity debate has gained momentum also among academics. Accordingly, many scholars have started investigating the role that board gender diversity – as a key factor of corporate governance mechanisms – may play in stimulating accountability and transparency about non-financial issues. As reported by Amorelli and Garcia-Sanchez (2021) in their recent bibliometric and bibliographic review, the number of articles addressing this topic has gained particular prominence since 2016. Most of the studies reviewed found a positive association between gender diversity on board CSR and its disclosure. However, as the authors noted, some scholars failed in finding any significant impact of gender diversity on corporate disclosure (Amorelli and Garcia-Sanchez, 2021); so, they call for further studies examining the reasons for such differences.

Some scholars have used ESG disclosure scores as proxies for the extent of CSR disclosure (Giannarakis *et al.*, 2014; Jizi, 2017; Uyar *et al.*, 2020; Yarram and Adapa, 2021); Corporate

Sustainability practices (Nadeem *et al.*, 2017; Fernandez *et al.*, 2019); and Corporate Sustainability disclosure (Zahid *et al.*, 2020), to test potential associations with board gender diversity. Accordingly, while Giannarakis *et al.* (2014) failed in detecting any significant association between the presence of women on the board and the level of CSR disclosure, Nadeem *et al.* (2017), Fernandez *et al.* (2019) and Zahid *et al.* (2020), provided empirical evidence supporting the positive influence exerted by the presence of female directors on board, on Corporate Sustainability practices (Nadeem *et al.*, 2017; Fernandez *et al.*, 2019) and both Corporate Sustainability disclosure and its environmental, workplace, social and economics dimensions (Zahid *et al.*, 2020). Furthermore, Jizi (2017), using a sample of FTSE 350 firms for 2007–2012, observed that female board participation positively affects CSR disclosure and the implementation of social and environmental policies such as energy efficiency, green building and climate change policy. Similarly, Uyar *et al.* (2020) demonstrated that female directors positively impact all dimensions of CSR disclosure in terms of ESG scores in the Hospitality and tourism (H&T) industry, while Yarram and Adapa (2021) detected a positive association between board gender diversity and CSR disclosure in the Australian listed firms' context.

Another strand of literature specifically referred to ESG disclosure scores to assess potential relationships with board gender diversity. Lagasio and Cucari (2019) conducted a meta-analytical review on a sample of 24 empirical studies, observing that a higher women's participation on boards is likely to strengthen ESG disclosure. Tamimi and Sebastianelli (2017) investigated a sample of S&P 500 companies, finding a significant positive association between women's percentage on the board and ESG disclosure scores. Also, Arayssi *et al.* (2020) found a positive and significant association between board gender diversity and ESG disclosure in the Gulf Cooperation Council (GCC) countries context, advocating that, alongside board independence, board gender diversity may represent an effective tool to harmonise corporate financial targets and social responsibilities duties. Moreover, Wasiuzzaman and Wan Mohammad (2020), conducted a longitudinal study on a sample of 78 Malaysian listed firms, observing that the participation of women on the board positively affects both the overall level of ESG disclosure and, when taken separately, the level of the sub-components referred to environmental and governance dimensions. Last, Qureshi *et al.* (2020), using a sample of 812 listed European firms for the period 2011–2017, casted the spotlight on the positive influence females' presence on the boards exerts on the market value, and the overall and individual ESG disclosure scores.

However, it is worth noticing that some studies found a negative association between board gender diversity and ESG disclosure. In particular, both Cucari *et al.* (2018) and Husted and de Sousa-Filho (2019), respectively, in the Italian and Latin American context, evidenced that women's presence on the corporate board negatively affects ESG disclosure. Further, in the US context, Manita *et al.* (2018) found that female directors on the board do not seem to impact the extent of ESG disclosure significantly. However, Manita *et al.* (2018) observed that when two, three or more women are appointed to a board, firms tend to be more transparent, providing increasing ESG disclosure levels. Similarly, in the Italian context, De Masi *et al.* (2021) used a sample of the FTSE-MIB companies over the 2005–2017 period and found that women's presence on boards positively influenced ESG disclosure only if the critical mass was reached. They also proved that the contribution of women is null when the board includes only one or two women.

Recently, scholars have broadened the scope of board gender diversity studies to disclosure provided via Integrated Reporting (IR).

Specifically, in examining a sample of 568 international companies from 2008 to 2010, Frias-Aceituno *et al.* (2013) observed that board gender diversity positively drives IR adoption. Similarly, Alfiero *et al.* (2018) provide evidence supporting the positive role of the women's presence on board on IR adoption in Italian firms. A positive association has also been found

between board gender diversity and: IR disclosure quality (Vitolla *et al.*, 2020); IR forward-looking disclosures (Kilic and Kuzey, 2018) and IR materiality disclosure quality (Gerwanski *et al.*, 2019). Differently, Omran *et al.* (2021), using a sample of 50 top listed firms in the Australian Stock Exchange from 2014 to 2017, have found no significant relationship between the presence of women on board and IR disclosure. They argued that women, being the minority gender in the boardroom, may not be able to convince their male counterparts to convey greater disclosures.

Nevertheless, despite these mixed results, there is a general expectation that women's presence on corporate boards is likely to enhance the level of ESG disclosures (Nadeem *et al.*, 2017; Valls Martínez *et al.*, 2019; Arayssi *et al.*, 2020; Wasiuzzaman and Wan Mohammad, 2020; Amorelli and Garcia-Sanchez, 2021).

Based on the arguments of stakeholder theory, the board is the main corporate decision-making body responsible for addressing, in a balanced way, the interests of the different types of stakeholders through the implementation of adequate accountability systems which include information on both financial and non-financial firms' performance (Michelon and Parbonetti, 2012; Nadeem *et al.*, 2017; Zahid *et al.*, 2020). In tune, according to the Resource Dependence Theory, the presence of the women is likely to enhance the accountability strength of the board as women ensure a diversity of perspectives, competencies, skills, opinions and leadership styles on the board, which are likely to enhance the quality, creativity and innovation of decision-making process (Nadeem *et al.*, 2017). Moreover, female directors are more sensitive to social, environmental and ethical issues (Nadeem *et al.*, 2017; Valls Martínez *et al.*, 2019; Arayssi *et al.*, 2020). Hence, firms' accountability and transparency about ESG issues are likely to be positively affected by women's presence on board (Giannarakis *et al.*, 2014; Tamimi and Sebastianelli, 2017; Wasiuzzaman and Wan Mohammad, 2020).

In line with previous arguments, the hypotheses are stated as follows:

- H1. There is a positive relationship between board gender diversity and ESG disclosure.
- H1a. There is a positive relationship between board gender diversity and environmental disclosure.
- H1b. There is a positive relationship between board gender diversity and social disclosure.
- H1c. There is a positive relationship between board gender diversity and governance disclosure.

3. Research methodology

3.1 Population and sample

The study's initial population includes all non-financial firms operating in the 28 [2] UE member countries. The decision to focus the research on the European setting may be deemed appropriate for the following reasons. Firstly, European Countries are considered leading economies in contributing to SD (Buallay, 2019; Qureshi *et al.*, 2020). Secondly, the introduction of the Directive 2014/95/EU marked a definite step in the transition from voluntary to mandatory non-financial reporting, putting a point to a harmonisation process of non-financial reporting practices started in 2003 with the EU Modernization Directive 2003/51 (Jackson *et al.*, 2020; Mio *et al.*, 2020, 2021). It is hoped that the Directive 2014/95/EU will play a key role in encouraging European private sector action and commitment to fully achieve the UN SDGs and the Paris climate agreement (Pizzi *et al.*, 2020). Thirdly, EC is highly committed to settling policies that promote gender equality in political and economic decision-making spheres (EC, 2012, 2020; Jourova, 2016).

The sample selection process starts by selecting all listed firms operating in at least one Member State of the European Union as of the Thomson Reuters Eikon database. Eikon has been considered an appropriate data provider for data collection purposes related to ESG due

to its wide data availability and global coverage (Arayssi *et al.*, 2020; Jackson *et al.*, 2020; Qureshi *et al.*, 2020).

The initial sample included 6,279 European listed firms for which financial information is available. Subsequently, firms with missing ESG and governance data (4,887) were excluded. As a result, a final sample of 1,392 firms, which leads to 5,714 firm-year observations for the period 2014–2019, was available to test the hypotheses. The final sample is unbalanced since not all companies are represented in all years. Sample firms belong to the following 21 countries: Austria, Belgium, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovenia, Spain, Sweden and the United Kingdom. The sample composition (by country) is shown in Table 1.

3.2 Dependent variables

After defining the sample, in keeping with previous similar studies (Jackson *et al.*, 2020; Arayssi *et al.*, 2020; Qureshi *et al.*, 2020; Uyar *et al.*, 2020), a third-party approach has been adopted to define the dependent variable, collecting data from Thomson Reuter’s database. Thomson Reuters provides weighted average ESG scores that depend on the ESG information level each firm discloses through different communication tools (Jackson *et al.*, 2020; Arayssi *et al.*, 2020; Uyar *et al.*, 2020). According to their relevance, the scores are based on a specific bundle of weighted indicators attributed for each ESG dimension (Environmental, Social and Governance). The scores also consider the peculiarities of each industry sector firms belong to (Arayssi *et al.*, 2020).

Accordingly, four different ESG disclosure scores have been selected as dependent variables: (1) the overall ESG disclosure, which represents a reflection of the company’s ESG transparency based on 178 critical ESG publicly disclosed measures; (2) the Environmental disclosure score; the (3) Social disclosure score and, the (4) Governance

Country	Frequencies (by ID)		Frequencies (by observations)	
	Absolute	Relative (%)	Absolute	Relative (%)
Austria	26	1.87	98	1.72
Belgium	45	3.23	178	3.12
Cyprus	1	0.07	6	0.11
Czech Republic	6	0.43	22	0.39
Denmark	41	2.95	150	2.63
Finland	46	3.30	231	4.04
France	125	8.98	548	9.59
Germany	294	21.12	1,067	18.67
Greece	18	1.29	70	1.23
Hungary	5	0.36	19	0.33
Ireland	18	1.29	81	1.42
Italy	82	5.89	260	4.55
Luxembourg	8	0.57	32	0.56
Netherlands	53	3.81	237	4.15
Poland	19	1.36	42	0.74
Portugal	16	1.15	61	1.07
Romania	2	0.14	6	0.11
Slovenia	1	0.07	3	0.05
Spain	65	4.67	232	4.06
Sweden	153	10.99	548	9.59
United Kingdom	368	26.44	1,823	31.90
All countries	1,392	100	5,714	100

Table 1.
Sample composition by country

disclosure score. The three scores related to the individual ESG dimensions are based on 61 (Environmental), 63 (Social) and 54 (Governance) disclosure indicators. All disclosure scores range from 0 (no disclosure of ESG information) to 100 (full disclosure of information).

3.3 Independent and control variables

Consistent with prior literature (e.g., [García Sánchez et al., 2020](#); [Qureshi et al., 2020](#); [Wasiuzzaman and Wan Mohammad, 2020](#)), the board gender diversity variable was calculated as the percentage of females on the board.

Furthermore, to avoid biased results and strengthen the consistency of the analysis, several control variables that can affect ESG disclosures have been tested.

The first group of variables relates to other governance features: *board size*, proxied by the total number of board members; *board activity*, proxied by the number of annual board meetings and *board independence*, calculated as the number of independent directors on the board to the total number of directors.

Board size is expected to exert an influence on ESG disclosure as larger boards may benefit from a larger pool of backgrounds, expertise, competencies, skills, leadership styles and networks which may enhance the internal decision-making process and strengthen managers' monitoring task ([Giannarakis et al., 2014](#); [Arayssi et al., 2020](#); [Zahid et al., 2020](#)). This, in turn, may stimulate more ESG disclosures. However, beyond a certain threshold, such benefits may be outweighed by communication and coordination problems, which might hinder board monitoring ability, limiting, in turn, the level of ESG disclosure firms provide ([Fasan and Mio, 2017](#); [Jizi, 2017](#); [Mio et al., 2020](#)).

Board activity could be a significant determinant of ESG disclosure since a higher number of board meetings increases the likelihood of sharing more information and competencies and devoting more attention to social and environmental issues ([Giannarakis et al., 2014](#); [Jizi, 2017](#); [Valls Martínez et al., 2019](#)). Moreover, a higher presence of directors in board meetings enhances board monitoring effectiveness, resulting in higher ESG disclosure levels ([Giannarakis et al., 2014](#); [Jizi, 2017](#); [Valls Martínez et al., 2019](#)). From another standpoint, more frequent board meetings can adversely affect quality time among board members, denoting the inefficacy of directors and thereby poor performance of the activity they carry out ([Vafeas, 1999](#)). More board meetings may lead to higher coordination and communication costs, providing room for the possibility of simply splitting the board agenda into many formal meetings without concretely addressing ESG issues ([Vafeas, 1999](#); [Giannarakis et al., 2014](#); [Birindelli et al., 2018](#)).

Board independence is linked to the presence of external, independent directors on board who – is not involved in internal managerial activities and having no direct or indirect ties with the ownership – are likely to exert their monitoring role better and to address the interests of all corporate stakeholders ([Jizi, 2017](#); [Arayssi et al., 2020](#); [Valls Martínez et al., 2019](#)). Independent directors are also likely to promote involvement in more CSR activities and have high incentives to demand higher transparency and accountability about ESG issues to preserve their reputation ([Jizi, 2017](#); [Terjesen et al., 2016](#); [Arayssi et al., 2020](#); [Zahid et al., 2020](#)). Moreover, from a resource-dependency standpoint, independent directors' presence supports facilitating access to external knowledge and networks, which could benefit the organisation ([Terjesen et al., 2016](#); [de Villiers and Dimes, 2020](#)).

The second group of variables relates to the major firm's characteristics: *size* proxied by the natural logarithm of total assets, *profitability*, measured by the ratio between net income and total equity (ROE); and *leverage*, measured as the total debt to total assets ratio, have been considered.

Size was selected as larger companies face greater stakeholders' scrutiny and social and political pressure on their activities due to their larger impact on the society ([Tamimi and Sebastianelli, 2017](#); [Valls Martínez et al., 2019](#); [Zahid et al., 2020](#)). Thereby, they are likely to

provide higher ESG disclosure levels to mitigate external pressures and demonstrate their commitment towards CSR and SD issues to a wider range of stakeholders (Tamimi and Sebastianelli, 2017; Valls Martínez *et al.*, 2019; Zahid *et al.*, 2020). Accordingly, most of the prior literature has reported a positive relationship between size and ESG disclosures (e.g., Rao and Tilt, 2016; Tamimi and Sebastianelli, 2017; Cucari *et al.*, 2018; Arayssi *et al.*, 2020; Qureshi *et al.*, 2020). Also, more profitable companies are exposed to massive social and political pressures and stakeholders' scrutiny on their activities (Jizi, 2017; Arayssi *et al.*, 2020; Valls Martínez *et al.*, 2019). Moreover, they have more economic and financial resources to be devoted to social and environmental initiatives (Jizi, 2017; Giannarakis *et al.*, 2014; Valls Martínez *et al.*, 2019). As such, they are expected to be particularly prone to provide ESG disclosures (Giannarakis *et al.*, 2014; Jizi, 2017; Arayssi *et al.*, 2020; Zahid *et al.*, 2020).

Last, more leveraged firms, on the one hand, tend to be under the scrutiny of a wider forum of creditors and, so, are stimulated to provide more information about both financial and non-financial issues to satisfy their expectations and increase their confidence (Qureshi *et al.*, 2020; Wasiuzzaman and Wan Mohammad, 2020). On the other hand, they have more financial constraints, limiting the possibility of investing in CSR activities and reporting on ESG issues (Jizi, 2017; Arayssi *et al.*, 2020).

Last, as the study focused on the European listed firms' context, the effect of the EU Directive introduction on ESG disclosure levels has also been tested.

Overall, Governments use regulation stimulating greater ESG transparency to generate trust and enhance the information available to stakeholders (Jackson *et al.*, 2020). However, as contended by Bebbington *et al.* (2012, p. 90) "formal legislation alone may not be sufficient to create a norm". The introduction of norms regulating non-financial reporting practices may not be followed by automatic increases in the extent and quality of disclosure, as a norm may take a long time to be internalised and accepted as legitimate (Bebbington *et al.*, 2012; Chauvey *et al.*, 2015). The lack of specific constraints in terms of standards, the absence of sanctions for non-compliance, and the incongruence with consolidated informal norms of behaviours are among the causes that can limit the norm's effectiveness in driving higher levels of disclosures (Bebbington *et al.*, 2012; Chauvey *et al.*, 2015). Further, as noted by some scholars, the coercive nature of regulation may facilitate the standardisation of practices and, in turn, increase the extent but not in the quality of disclosure (Venturelli *et al.*, 2017, 2019).

Following the ongoing debate surrounding voluntary versus mandatory disclosure, scholars have started to investigate the impact of the EU Directive enactment on corporate non-financial disclosure levels in different countries (e.g., Venturelli *et al.*, 2017, 2019; Mio and Adai, 2019; Mio *et al.*, 2020; Nicolò *et al.*, 2020; Tarquinio *et al.*, 2020). However, results are still mixed and inconclusive, as studies mainly examine the differences in non-financial disclosure one year prior to one year after the EU Directive introduction (Korca and Costa, 2021). Accordingly, a need for more "longitudinal analysis remains" (Korca and Costa, 2021, p. 14). Therefore, to test the effect of the *EU Directive* on ESG disclosure levels—in line with Jackson *et al.* (2020) - we adopt a dichotomous variable, taking the value of (1) for the years in which the EU Directive was active (from 2017 onwards) and (0) otherwise (years before 2017).

The following section clarifies the models adopted to test our hypotheses linked to the described variables.

3.4 Model specification

The influence of board gender diversity on the ESG disclosure scores of sampled firms was examined via the following equations related to four statistical models:

$$ESG D_{i,t} = \beta_0 + \beta_1 BGD_{i,t} + \sum_{k=2}^7 \beta_k CONTROLS_k + \varepsilon_{i,t} \quad (\text{Model 1})$$

$$ENV_D_{i,t} = \beta_0 + \beta_1 BGD_{i,t} + \sum_{k=2}^7 \beta_k CONTROLS_k + \varepsilon_{i,t} \quad (\text{Model 2})$$

$$SOC_D_{i,t} = \beta_0 + \beta_1 BGD_{i,t} + \sum_{k=2}^7 \beta_k CONTROLS_k + \varepsilon_{i,t} \quad (\text{Model 3})$$

$$GOV_D_{i,t} = \beta_0 + \beta_1 BGD_{i,t} + \sum_{k=2}^7 \beta_k CONTROLS_k + \varepsilon_{i,t} \quad (\text{Model 4})$$

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where:

ESG_D = ESG disclosure

ENV_D = environmental disclosure

SOC_D = social disclosure

GOV_D = governance disclosure

CONTROLS = control variables, defined as follows:

B_SIZE = number of board members

B_ACTIVITY = number of annual board meetings

B_IND = percentage of independent directors out of the total number of board members.

SIZE = natural logarithm of total assets

PROFIT = ratio between net income and total equity (ROE)

LEVERAGE = ratio between total debt and total assets

DIRECTIVE = dummy variable that takes a value of (1) for the years in which the EU Directive was active (from 2017 onwards) and (0) otherwise (years before 2017).

The equations of the models were estimated through four-panel data models using Stata16 software. Panel data typically provides the researcher with many data points, increasing the degree of freedom and reducing the collinearity among the independent variables (Gujarati, 2009).

All regressions have country and sector dummies to control variation across country and sector (i.e., fixed-effects). The Hausman test was used to decide whether the fixed or random-effects model was appropriate (Onali *et al.*, 2017). The test revealed that the fixed effects model was the most suitable method for testing the hypotheses. Figure 1 resumed the conceived model.

4. Results and discussion

4.1 Descriptive results and correlation analysis

Tables 2 and 3 provides descriptive statistics for the dependent and independent variables.

The results show that the average value of the overall *ESG_D* is about 58.336, ranging from a minimum of 1.353 and a maximum of 94.473. The mean values of *ENV_D*, *SOC_D* and *GOV_D* for each firm are 54.153, 61.87 and 55.898, respectively. As showed in Figure 2, the overall level of *ESG_D* increased over the time horizon, from 57.218 in 2014 to 57.593 in 2019, although the annual growth is not linear. The highest peak can be seen in 2017, when the EU 95/2014 directive began to produce its first effects. In the next two years, a slight decrease in

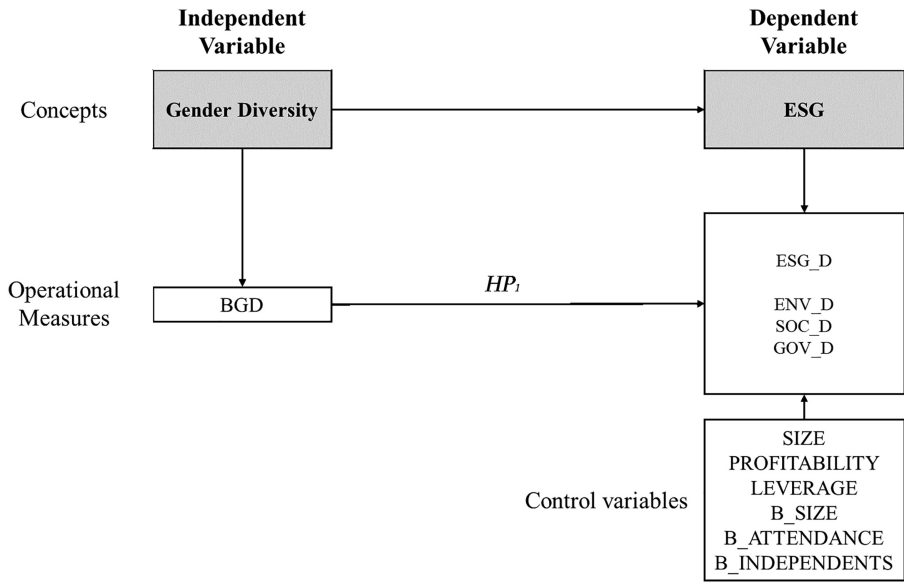


Figure 1.
Conceived model

Variables	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
ESG_D	5,714	58.336	20.131	1.353	94.473
ENV_D	5,714	54.153	28.072	0	98.872
SOC_D	5,714	61.87	22.545	0.235	98.637
GOV_D	5,714	55.898	22.67	0.812	98.107
BGD	5,714	27.272	12.576	0	75
B_SIZE	5,714	2.313	0.383	0.693	3.434
B_ACTIVITY	5,714	9.495	5.154	0	91
B_IND	5,714	59.006	24.007	0	100
SIZE	5,714	23.004	2.198	16.691	30.311
PROFIT	5,714	0.089	2.076	-107.398	39.29
LEVERAGE	5,714	0.24	0.188	0	4.752
Number of ID	1,392	1,392	1,392	1,392	1,392

Note(s): All variables are measured as continuous variables

Table 2.
Descriptive statistics
for continuous
variables

DIRECTIVE	2014	2015	2016	2016	2018	2019	Total	%
0	779	798	806	0	0	0	2,383	41,70
1	0	0	0	867	1,201	1,263	3,331	58,30
Total	779	798	806	867	1,201	1,263	5,714	100

Table 3.
Descriptive statistics
for dummy variables

ESG values is detected, probably because after the initial effect, companies limit to comply with minimum EU Directive requirements, reducing the extent and quality of disclosure about some aspects (e.g environmental) which could cause commercial and reputational damages.

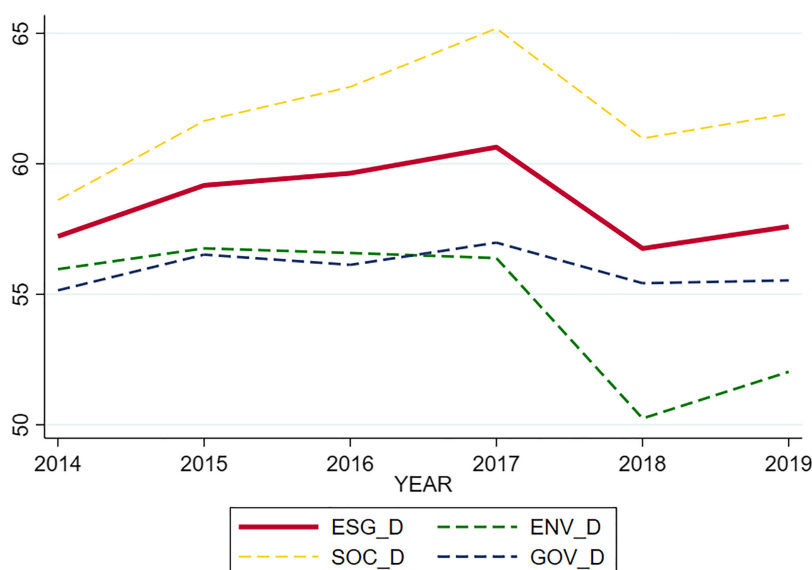


Figure 2. ESG disclosures trend

Regarding the other variables, BGD ranges from 0 to 75%, with an average value of 27.272 (for every 100 board members, there are at least 27 female members) and a SD of 12.576.

Concerning control variables, the average logarithm of *B_SIZE* is 2.313. Concerning this latter, the average number of *B_ACTIVITY* – i.e., the annual number of board meetings – is 9.495, while the *B_IND* for each firm is 59.006%. This means that, on average, each firm holds at least about nine board meetings per year and that each board comprises at least 59% of independent members. In addition, the average logarithm of the total assets (*SIZE*) is 23.004. Furthermore, PROFIT (ROE) has an average of 0.089, whereas the *LEVERAGE* of 0.24. Regarding the variable Directive, it is possible to note that the companies are equally distributed between the two periods (pre and post the entry into force of Directive), even though the latter accounts for 58.30% of the sample, owing to the increased availability of information on data provider.

Table 4 presents pairwise correlations between the dependent and independent variables, including statistical significance.

All of the correlation values between independent variables are lower than the critical threshold of 0.8, indicating no multicollinearity problems (Gujarati, 2009).

4.2 Multivariate regression analysis

Table 5 summarises the results of panel data analysis performed to test the hypotheses.

The results statistically support the analysis's significance due to the adequate explanatory power of the models. Concerning the r-squared measure, the value is at least about 17%, except for the fourth model (*ENV_D* as a dependent variable), where the r-squared is 10.4%. Specifically, the independent variables explain at least 17% of the ESG disclosure measures variance in three models.

Also, in order to detect the presence of collinearity among independent variables, the variance-inflating factor (VIF) test was conducted. The test results, reported in Table 5, indicated that all VIFs values were under the critical threshold of 10, ranging between 1.02 and 3.16. This means that multicollinearity was not a critical problem.

Table 4.
Correlation analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) ESG_D	1											
(2) ENV_D	0.854 ^{***}	1										
(3) SOC_D	0.903 ^{***}	0.742 ^{***}	1									
(4) GOV_D	0.714 ^{***}	0.405 ^{***}	0.459 ^{***}	1								
(5) BGD	0.312 ^{***}	0.262 ^{***}	0.280 ^{***}	0.249 ^{***}	1							
(6) B_SIZE	0.436 ^{***}	0.454 ^{***}	0.394 ^{***}	0.217 ^{***}	0.180 ^{***}	1						
(7) B_ACTIVITY	0.027 ^{**}	-0.009	0.022 [*]	0.047 ^{***}	0.044 ^{***}	-0.027 ^{**}	1					
(8) B_IND	0.281 ^{***}	0.152 ^{***}	0.205 ^{***}	0.382 ^{***}	0.170 ^{***}	-0.140 ^{***}	0.064 ^{***}	1				
(9) SIZE	0.548 ^{***}	0.523 ^{***}	0.485 ^{***}	0.366 ^{***}	0.235 ^{***}	0.523 ^{***}	0.149 ^{***}	0.135 ^{***}	1			
(10) PROFIT	-0.018	-0.02	-0.02	-0.008	-0.006	0.002	-0.043 ^{***}	0.007	-0.022 [*]	1		
(11) LEVERAGE	0.056 ^{***}	0.066 ^{***}	0.060 ^{***}	0.007	0.014	-0.036 ^{***}	0.084 ^{***}	0.029 ^{***}	0.001	-0.008	1	
(12) DIRECTIVE	-0.015	-0.069 ^{***}	0.029 ^{***}	-0.001	0.193 ^{***}	-0.138 ^{***}	0.022 [*]	0.040 ^{***}	-0.105 ^{***}	-0.021	0.032 ^{***}	1

Note(s): ***, **, and * denote significance at the 1, 5 and 10% levels, respectively

Variables	Model (1) ESG_D	Model (2) ENV_D	Model (3) SOC_D	Model (4) GOV_D	VIF (1/VIF)
BGD	0.197*** (0.0142)	0.103*** (0.0197)	0.107*** (0.0188)	0.393*** (0.0248)	1.61 (0.62)
B_SIZE	-1.793** (0.800)	-1.547 (1.113)	-0.982 (1.062)	-4.627*** (1.401)	2.23 (0.45)
B_ACTIVITY	-0.0463 (0.0313)	0.0203 (0.0436)	-0.0141 (0.0415)	-0.152*** (0.0548)	1.53 (0.65)
B_IND	0.106*** (0.0111)	0.0254 (0.0155)	0.0412*** (0.0148)	0.269*** (0.0195)	1.43 (0.70)
SIZE	4.229*** (0.398)	5.483*** (0.553)	4.441*** (0.527)	2.971*** (0.696)	3.16 (0.32)
PROFIT	0.0391 (0.0417)	0.0106 (0.0580)	0.0640 (0.0553)	0.0769 (0.0730)	1.02 (0.98)
LEVERAGE	1.662 (1.292)	1.549 (1.797)	-0.745 (1.713)	5.229** (2.260)	1.28 (0.78)
DIRECTIVE	3.586*** (0.200)	2.860*** (0.278)	5.743*** (0.265)	1.518*** (0.349)	1.12 (0.89)
Constant	-48.45*** (8.997)	-74.93*** (12.51)	-46.41*** (11.93)	-29.05* (15.74)	
Observations	5,714	5,714	5,714	5,714	
R-squared	0.282	0.104	0.214	0.177	
Number of ID	1,392	1,392	1,392	1,392	
Country FE	YES	YES	YES	YES	
Sector FE	YES	YES	YES	YES	

Note(s): Standard errors in parentheses. ***, **, and * denote significance at the 1, 5 and 10% levels, respectively

Table 5. Multivariate analysis

In line with expectations, panel data analysis results highlight the fact that board gender diversity exerts a positive and significant influence on the overall ESG disclosure score (see Table 4). This result supports Hypothesis 1 and confirms findings from previous empirical studies (Rao and Tilt, 2016; Arayssi et al., 2020; Valls Martínez et al., 2019; Uyar et al., 2020; Wasiuzzaman and Wan Mohammad, 2020; Yarram and Adapa, 2021). It can be explained in light of both stakeholder and resource dependence theory. Accordingly – in addition to providing the board with a unique batch of skills, competencies, perspectives, leadership styles, experiences and linkages with the external environment that enhance the decision-making process – the presence of women strengthens the board ability to meet the expectations of the whole of stakeholders, as female are more concerned about the welfare of society and more sensitive to sustainability issues (Nadeem et al., 2017; Fernandez et al., 2019; Arayssi et al., 2020; Wasiuzzaman and Wan Mohammad, 2020). Therefore, more gender diversity results in more accountability and transparency about ESG issues. This may represent a stimulus for EU policymakers in bringing forward the “sustainable corporate governance” strategy, taking into account the need of empowering women in a decision-making position to ensure the shift from a short-term – financial-based – corporate vision, to a more long-term – sustainability based – corporate vision. The primary attention paid by women directors to sustainability matters is an aspect that should also be taken into account in the Non-Financial Reporting Directive process as the appointment of women on board may be suggested as a policy to reduce the non-financial information gap between investors and organisations.

Focusing on individual ESG scores, Table 5 shows that board gender diversity also exerts a positive and significant influence on the environmental, social and governance disclosure

dimensions. These results are in line with previous studies (Uyar *et al.*, 2020; Zahid *et al.*, 2020; Qureshi *et al.*, 2020), thus, supporting Hypothesis 1a, 1b and 1c.

Specifically, Model 2 results corroborate the need to implement proactive diversity strategies—based on women’s appointment to boards—to improve firms’ environmental performance and related disclosures (Rao and Tilt, 2016; Qureshi *et al.*, 2020; Wasiuzzaman and Wan Mohammad, 2020). They confirm that gender diversity represents a critical corporate governance mechanism that enables firms to address environmental threats better, improving board sensitivity towards pollution and climate change issues. In particular, women are more environmentally conscious than men as they are less likely to engage in unethical and risky practices that can compromise the ecosystem’s integrity or damage corporate reputation. So, in line with Resource Dependency theory the presence of women on board may help companies in demonstrating full commitment towards the environment through greater transparency and obtain – in turn – access to critical resources necessary for survival (Rao and Tilt, 2016; Manita *et al.*, 2018; Yarram and Adapa, 2021). Therefore, results confirm that the women directors’ environmental friendly character is conducive to better environmental disclosure.

Model 3 evidence supports the argument that female directors are particularly prone to address social and human well-being issues in addition to environmental matters. In particular, unlike men who are agentic by nature, women’s communal psychological characteristics are supportive of a greater commitment towards ethical, philanthropic, and social issues. This is reflected by results reported by Model 3 that allow appreciation of how a higher presence of women on boards leads to an increase in social disclosure levels, enabling firms to engage with multiple stakeholders and respond to their needs about corporate social achievements (Fasan and Mio, 2017; Nadeem *et al.*, 2017; Manita *et al.*, 2018).

Last, Model 4 evidences that a higher presence of women on the board stimulates higher transparency about governance issues. This validates the rationale that gender heterogeneity on the corporate board enhances board discussion and decision-making (Rao and Tilt, 2016; Jizi, 2017) and increases the board’s level of independence, empowering firms’ governance mechanisms in terms of monitoring ability (Tamimi and Sebastianelli, 2017; Arayssi *et al.*, 2020; Valls Martinez *et al.*, 2019). Taken together, such factors create a positive effect on policies and strategies about governance disclosure levels.

The three ESG sub-components provide additional significant evidence by unveiling the positive impact of the presence of women directors on environmental, social, and governance disclosure scores. Since ESG overall score reflects all three ESG sub-components, a positive relationship does not mean that each individual score has a positive relationship. For instance, Wasiuzzaman and Wan Mohammad (2020) have detected a positive influence of female directors on the overall ESG score. The environmental score has the most significant impact at an individual level, whereas board gender diversity has a weak impact on governance and no significant impact on social disclosure scores.

Differently from their findings, the results of this study support the notion that the presence of women directors improves the ESG disclosure throughout all levels.

Lastly, results regarding control variables evidence that *board independence*, *size* and *EU Directive* enactment positively affect the overall level of ESG disclosure, while *board size* exerts a negative influence.

Accordingly, these results highlight the fact that – being subject to higher social and political scrutiny – larger companies are more prone to disseminate information on ESG issues to mitigate such pressures and meet the expectation of a wider forum of stakeholders, demonstrating their active commitment towards CSR and SD (Rao and Tilt, 2016; Tamimi and Sebastianelli, 2017; Qureshi *et al.*, 2020; Amorelli and Garcia-Sanchez, 2021). Results also highlight that larger boards may create coordination and communication problems that negatively affect the internal decision-making processes and – in turn – ESG disclosure levels

(Fasan and Mio, 2017). On the other hand, the appointment of independent directors on the corporate board is crucial as—being detached from the property and managers—they are better in charge to contemplate the interests of the whole of corporate stakeholders, having—in turn—greater incentives in promoting transparency about ESG issues in order to preserve their reputation as external experts (Jizi, 2017; Arayssi *et al.*, 2020; Zahid *et al.*, 2020).

Lastly, it is apparent from an inspection of the directive variable coefficients that the entry into force of the EU Directive gave a positive impetus for disclosing ESG information (Mion and Adau, 2019; Mio *et al.*, 2020; Nicolò *et al.*, 2020). The sign (+) and the magnitude ($1.518 \leq \beta \leq 5.743$) of the coefficients leave little doubt about the EU Directive's active role in promoting both overall and sub-components ESG disclosures.

5. Conclusions

This study provides an innovative contribution to the current debate on gender diversity and corporate non-financial disclosure practices. In doing so, it enhances the knowledge of the role of women on the boards in affecting the ESG disclosure levels in the European context that, in last years, has been dominated by different regulatory processes aimed at promoting non-financial reporting (e.g., EU, 2003, 2014) and gender balance in political and public decision-making positions, including corporate boards (EC, 2012, 2020a, b; Jourova, 2016). Furthermore, it responds to the invitation formulated by JAAR Editorial (Lehner and Herrer, 2019) – *Accounting for economic sustainability: environmental, social and governance perspectives* – to take a more active role in disseminating the corresponding body of knowledge on sustainability accounting by delivering further insights into how the corporate governance mechanisms could allow better companies' transparency and accountability to their stakeholders.

Therefore, by collecting ESG and board gender diversity data from a large sample composed of 1,392 listed firms coming from 21 European countries over six years (2014–2019), the study provided empirical evidence supporting a positive role exerted by the presence of women on boards in stimulating transparency on both overall ESG disclosures and its environmental, social and governance dimensions.

Based on stakeholder and resource dependence theory standpoints, this study makes a theoretical contribution to governance and ESG literature. Accordingly, it supports the arguments that gender diversity is a crucial factor in creating a good corporate governance structure that aligns firms' interests with their shareholders, managers, stakeholders, and society. Specifically, the study demonstrates that the variety of opinions, perspectives, skills, competencies, leadership styles, experiences and relationships with the external environment, ensured by the presence of women on the board, enhances the quality of discussion and the internal decision-making process, improving organisations' ability to address the interests of the different groups of stakeholders about non-financial issues. So, women directors' presence enhances corporate attitude towards adopting socially responsible behaviours and sustainability practices, stimulating, in turn, higher levels of accountability and transparency on ESG issues (Nadeem *et al.*, 2017; Fernandez *et al.*, 2019; Uyar *et al.*, 2020; Wasiuzzaman and Wan Mohammad, 2020).

Moreover, this study also highlights the relevance of other corporate governance mechanisms. For example, it sheds light on the need to do not exceed the number of directors on board and related meetings, opting for a level that satisfies the firm's needs to avoid coordination pitfalls. Further, it is important to pay particular attention to the appointment of independent directors who, having no particular ties with the ownership and the managers, are likely to be more impartial and effective in exerting their monitoring role. Last, the study also adds to the growing debate between mandatory vs voluntary disclosure, providing evidence supporting a positive effect exerted by introducing the EU Directive on all ESG disclosure levels over a more extended period than those observed by previous studies.

Standing at the intersection between different literature streams, including non-financial reporting and gender diversity, the study's findings should be of interest to policymakers, standard setters, corporations and academics.

First, for those who decide on the board composition, it is important to know that the appointment of female directors is necessary to enhance corporate ESG disclosure. Specifically, the empirical findings suggest that firms should appoint a certain proportion of women on board to promote gender equality and lead to a broader perspective in the decision-making room, bringing a pool of different experiences, competencies, and skills within the company. This enhances ESG disclosure and, in turn, could benefit the firm through superior performance and long-term sustainable value creation.

Second, policymakers and regulators might consider this evidence as a stimulus to continue in promoting strategic actions and reforms that have the potential to foster gender equality and balance at all levels of corporate decision-making, paying specific attention to ensuring the participation of women in the board of directors as a driver of transparency and accountability. The creation of a "sustainable corporate governance" recently claimed by the EC cannot be decoupled by the need to promote valid norms that ensure the formation of a heterogeneous and diversified board of directors. To ensure the shift of corporate focus from short-term benefits of shareholders to long-term interests of the organisations and society at large, EC should necessarily consider the relevance of the women in decision-making and governance processes. Women held exclusive communal characteristics and a strong aptitude towards social and environmental issues that may ensure a corporate board shift towards sustainability and more accountability for organisations' sustainable value creation. The aspect of gender diversity should also be taken into account within the ongoing process to review and improve non-financial reporting disclosure. Promoting gender diversity on boards may serve as a valid strategy to increase companies' ability to make investors and other stakeholders more informed about sustainability-related issues, overcoming internal resistances in providing commercial-sensitive non-financial information.

This study's findings should also be interpreted in the context of the following limitations, which provide several directions for future investigations.

Firstly, this study focused on the European context. Future research may consider the possibility of comparing different inter-continental contexts and evaluating the impact of different cultural and legal environments. Secondly, mindful of different databases providing data about ESG (e.g., Bloomberg), the research collected data from Thomson Reuters Eikon database. So, aware that each database may have its strength and weaknesses, it could be interesting to learn lessons, conducting meaningful comparisons between ESG results obtained from different databases. Thirdly, this study only considers the gender aspect of boardroom diversity. Future research may evaluate the possibility to investigate other dimensions of board gender diversity such as education, political orientation and nationality, testing their potential association with ESG transparency. Lastly, prior literature (Ramon-Llorens *et al.*, 2020; Amorelli and García-Sánchez, 2021; Fernandez-Feijoo *et al.*, 2014) investigated whether third factors influence the strength or direction of the relationship between CSR disclosure and the presence of women on boards. Nevertheless, this paper does not consider the presence of any interaction effects. Therefore, additional future research is required, especially in understanding the underlying factors by which the board gender diversity influences the disclosure of ESG information through a mediation analysis.

Note

1. As part of the presentation of the European Green Deal, the European Commission (EC) expressed its willingness to act on the revision of the 2014/95/EU directive. To this end, the EC started a public consultation to collect opinions from the stakeholders. A total of 588 organizations and persons responded to the consultation, regarding the quality and scope of non-financial information to be

disclosed, standardization, materiality, assurance, digitalization, location of reported information, personal scope, simplification, and reduction of administrative burden for companies. On 26 April 2021, EC launched a Proposal for a Directive, which is still open for feedback until 14 July 2021. The EC will summarize all feedback and present it to the European Parliament and Council to feed into the EU legislative debate.

2. The United Kingdom withdrew from the European Union on 31 January 2020. Nevertheless, it was considered as the sample analysed spans from 2014 to 2019.

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