

## RESEARCH ARTICLE



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# Advisory or monitoring role in ESG scenario: Which women directors are more influential in the Italian context?

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## Abstract

Board composition has received increasingly more attention from scholars as an important determinant of environmental, social and governance (ESG) performance. Two factors of board composition receive attention as they strongly relate to sustainability issues: gender diversity and board independence. The aim of this study is to test whether the presence of a critical mass of women in boardrooms correlates with firm ESG performance. In addition, we aim to study whether women receiving appointment as executive rather than nonexecutive directors may positively influence ESG performance. Using a sample of Italian companies listed on the Mercato Telematico Azionario during 2003–2019, the empirical results show that a critical mass of at least three female directors is necessary to improve ESG performance and that executive women directors represent a crucial component of board mechanisms, in terms of aligning the needs of stakeholders, since they increase ESG performance. Because the advising and monitoring functions impact firm value, we support the idea that female directors in strategic positions in the boardroom may benefit ESG performance. Thus, we support the idea of increasing women's presence on corporate boards and across executive leadership as a measure and a signal of how firms can respond to ESG challenges.

## KEYWORDS

board composition, board of directors, corporate governance, critical mass, ESG, gender diversity

## 1 | INTRODUCTION

The composition of the board of directors (BoD) plays a fundamental role in determining socially responsible behaviours and strategic decision-making. Indeed, it is the 'decision control system' (Fama & Jensen, 1983, p. 311), and of course, it has a fundamental operational role that relates to sustainability (Glass et al., 2016; Orazalin, 2020).

In light of its ability to influence the organisation's choices and values, board composition has increasingly received attention from scholars as an important determinant of environmental, social and governance (ESG) disclosure (Cucari et al., 2018; Husted & de Sousa-Filho, 2019), corporate social responsibility (CSR) practices (Naciti, 2019; Tenuta & Cambrea, 2022) and climate change solutions (Kyaw et al., 2022).

In this scenario, the board of directors functions as an institution to advise and monitor (Faleye et al., 2011; Garner et al., 2017). Literature on board capabilities argues that firms attempt to balance

**Abbreviations:** BoD, Board of Directors; CSR, corporate social responsibility; ESG, environmental, social, governance.

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monitoring and advising functions primarily by adjusting the respective proportions of inside and outside directors (Kim et al., 2014; Nielsen & Huse, 2010). On a closer look, the role and effectiveness of women on corporate boards have garnered increased attention (García-Lara et al., 2017; Kim & Starks, 2016), as board gender diversity due to its strong relation to sustainability issues (Amorelli & García-Sánchez, 2020, 2021; Kyaw et al., 2022). Therefore, exploring further not only differences in gender but also in associated roles in governance is advisable, to reach a better understanding of the consequences for an ESG scenario. Recently, ESG issues and climate change have increased in popularity (Amel-Zadeh & Serafeim, 2018; Huang, 2021; Sullivan & Gouldson, 2017). On the one hand, the vast 'ESG movement' leads some scholars to argue that both aspects constitute the new battleground for competitive advantage and, on the other hand, firms begin to rethink and reshape their business model and purposes in a greener and more responsible way (Cornell & Shapiro, 2021; Klettner et al., 2014; Rao & Tilt, 2016; Rivera et al., 2022).

Studies of corporate governance practices that address ESG and climate change still await thorough qualification and investigation (Buchetti et al., 2022; Galbreath, 2018; Naciti et al., 2022; Senadheera et al., 2022). From this point of view, various scholars are seeking to identify and analyse the main drivers that may encourage companies to develop sustainability activities. The extant research in this domain follows two branches: an 'out-in' approach and a strategic 'inside-out' approach (Dienes et al., 2016). The present research aligns with this second scholarly stream, and a significant portion of this research considers corporate governance a driver of CSR activities (de Villiers et al., 2011; Dwekat et al., 2022; Kock et al., 2012), focusing attention, especially, on board composition (Cucari et al., 2018; Lynall et al., 2003; Post et al., 2011; Velte, 2016).

However, it is neither theoretically nor empirically clear which of the two major board roles—advisory or monitoring—better suits female directors (Zalata et al., 2019), especially in ESG performance, and we contribute to filling this gap. Notably, we contribute to the literature on ESG performance by investigating the effect of female board representation from two 'angles on the same view'.

First, following critical mass theory, prior research has stressed the need for an increased number of women (Dobija et al., 2022; Slomka-Golebiowska et al., 2022; Torchia et al., 2011) in boardrooms, suggesting that reaching a minimum critical number enhances the ability to pursue positive outcomes, particularly in terms of disclosure (Fernandez-Feijoo et al., 2014). We thus test different minorities of women directors (one woman, two women and at least three women) to find the cut-off point of critical mass for positively affecting firm ESG performance (De Masi et al., 2021).

Second, following the trade-off perspective on board capabilities, prior research has analysed the impact of women on boards from the perspective of its correlation with the nature of the task they perform (Nielsen & Huse, 2010; Rubino et al., 2021). Generally, this literature suggests outside directors contribute primarily to the monitoring function because they are independent of

management. Inside directors contribute primarily to the advising function because they have more firm-specific knowledge, crucial to alleviating problems arising from information asymmetry between the board and management (Duchin et al., 2010; Linck et al., 2008). Thus, we test whether women appointed as executive/inside rather than nonexecutive/outside directors may positively influence ESG performance.

In this regard, this study aims to answer the following research questions:

RQ1: What is the relationship between women directors and ESG performance?

RQ2: Does achieving a critical mass for really affect firm ESG performance?

RQ3: Are there differences between inside and outside women directors in affecting ESG performance?

To investigate our research questions, we covered a sample of Italian companies listed at the Mercato Telematico Azionario for the years 2003 through 2019. According to Seierstad et al. (2017), several EU countries have introduced specific laws adopting quotas to increase the number of women on corporate boards. The specific regulation in Italy—setting thresholds for the percentage of women on boards using a long year (2012)—makes the Italian context particularly interesting. In fact, Italy was one of the EU countries that introduced the gender board quota early on (Slomka-Golebiowska et al., 2022). Starting from very low-level female board representation, Italian public companies achieved one of the highest proportions of women on boards in Europe in 2015 (European Commission, 2018; Seierstad, 2016).

Our results show that when women participate on the board as inside directors, they positively affect ESG performance, whereas when they are nominated as independent directors, their role risks becoming mere 'window dressing', with no positive effects for firm sustainability. In this way, we contribute to the literature on board diversity and nonfinancial performance, covering a very long period of analysis (2003–2019). In addition, by answering our research questions, our paper contributes to several important areas of the literature. First, we respond to the call of Cuadrado-Ballesteros et al. (2017) for research studying more specific characteristics than the mere relationship between gender and CSR. Therefore, analysing the female board member's directorial role (inside/outside), we contribute to the literature on the role of women on the board by shedding light on the conditions under which women on boards can influence ESG disclosure. In this regard, we contribute to the literature by asking what roles best suit women directors, specifically focusing on advisory and monitoring roles (Cambrea et al., 2019; Zalata et al., 2019), in the sustainability context. Finally, we contribute to shedding light on the scarce literature regarding board composition and ESG in Italy.

The rest of the paper is organised as follows. First, we describe the theoretical background. The subsequent section presents the literature review and the hypotheses development. Section 3 reports the methodology. Section 4 shows the results. Finally, we conclude with some remarks, contributions and implications.

## 2 | THEORETICAL BACKGROUND AND PRIOR STUDIES

The implementation of a strategy depends on proper deployment of the organisation's resources and capabilities (Husted & Allen, 2007; Minutolo et al., 2019). In this context, the literature suggests that the board of directors (BoD) plays a main role, representing the basic and most relevant corporate governance mechanism as well as being ultimately responsible for the long-term success of the company (Klettner et al., 2014; Stiles, 2001; Wheelen et al., 2017).

In this context, the most debated issue concerns whether and to what extent boards must rely on outside and/or 'diverse' (in terms of gender) directors to assist them in elaborating and reviewing corporate strategy (Gani & Jermias, 2006; Rao & Tilt, 2016). Therefore, the importance of the BoD is primarily studied through the lenses of independence and diversity. Previous research examining the effect of demographic diversity on firm outcomes (Harrison & Klein, 2007; Miller & del Carmen Triana, 2009) has included gender diversity as a proxy for other heterogeneity constructs (Kirsch, 2018). That is, female directors differ from their male counterparts in specific ways that will influence how they monitor managers and the resources they bring to board deliberations (Hillman & Dalziel, 2003).

Existing research presents three theoretical perspectives that suggest greater gender diversity may have a positive effect on board effectiveness and long-term performance: agency theory, resource dependency and gender role theory (Terjesen et al., 2016, 2009). Furthermore, two additional perspectives may better explain the relation of gender diversity to board effectiveness, namely, information-processing and decision-making perspective (Van Knippenberg & Schippers, 2007) and social categorisation theory (Brewer, 2007; Tajfel & Turner, 2004).

According to Francoeur et al. (2008), the agency theory perspective suggests that female directors often bring fresh perspective on complex issues, successfully supporting strategy formulation and problem-solving. Other contributions found that women are more likely to ask questions (Bilimoria & Wheeler, 2000) and generally support higher ethical standards for their companies (Pan & Sparks, 2012). In addition, the quality of board meetings may benefit from the presence of female directors; female directors generally prepare more for board meetings (Pathan & Faff, 2013) and attend more board reunions (Adams & Ferreira, 2009).

The resource dependence theory represents the second perspective, as women on boards lead to more valuable resources (Terjesen et al., 2016). Other contributions point out that females have more diverse networks than males (Ibarra, 1992). Directors with different characteristics influence corporate decision-making and performance through their differences in cognition, knowledge, experience and other aspects. From the cognitive perspective, the diversified nature of board members produces a differentiated cognitive structure that could improve the decision-making quality that faces irregular problems (Johnson et al., 2013).

The third perspective, which Eagly (1987) pioneered as 'gender role theory', asserts that 'an individual's gender determines his/her

behavior and its effectiveness with respect to influence' (Terjesen et al., 2016, p. 6). It indicates how male and female directors normatively prescribe behaviour with respect to communication. Specifically, women are more likely to assume more feminine roles, such as sympathy and gentility (Eagly, 1987). On the other hand, men will more likely be assertive and aggressive. According to Rosener (1995), flexibility represents one of the main gender roles associated with females, which may lead to better ability to manage controversial or ambiguous situations. Gender roles are relevant for the board; directors must use communication tactics that are effectively influential (Terjesen et al., 2016).

Moreover, a further perspective that needs consideration refers to the information-processing and decision-making perspective (Van Knippenberg & Schippers, 2007). Board gender diversity should lead to better firm outcomes. From this perspective, diversity allows greater access to different ideas, skills and points of view, fostering constructive debate and, thereby, stimulating creativity and more effective decision-making (Certo & Semadeni, 2006; Heavey & Simsek, 2013; Talke et al., 2010). This positive view of diversity as variety (Harrison & Klein, 2007) also implies that diverse groups have greater cognitive resources (i.e. distinct experience, knowledge, abilities and skills) and, as such, should be better able to bring differing views, opinions and perspectives to problem-solving. Furthermore, board gender diversity could be valuable in helping to reduce 'group-think'. Diversity often leads to discussion of conflicting points of view and creates friction, enhancing deliberation and reducing errors and conformity (Van Dick et al., 2008; Van Knippenberg & Schippers, 2007). Therefore, more gender-diverse boards should analyse information more thoroughly before coming to a conclusion (Levi et al., 2014). According to Pucheta-Martínez et al. (2021), women directors play a relevant moderating role in corporate social and environmental disclosure as a sustainable development tool.

Finally, social categorisation theory (Brewer, 2007; Tajfel & Turner, 2004) posits that demographic diversity makes diverse teams potentially less effective because they are more difficult to coordinate. Majority-male groups could respond negatively to female directors in the decision-making process and negatively affect team outcomes. Gender diversity as separation (Harrison & Klein, 2007) can reflect differences in beliefs, values and experiences of team members, potentially leading to social categorisation effects in the team. From this perspective, differences and similarities are the basis for placing unlike and like into groups, resulting in potential discrimination between in- and out-groups (Brewer, 2007). People display a bias towards favouring and trusting in-group members more than out-group members (Tajfel & Turner, 2004). Thus, from this perspective, we would expect lower-level performance in firms with more gender-diverse boards.

## 3 | HYPOTHESES DEVELOPMENT

Women are obviously different from male counterparts in several aspects (i.e. experience and values), and boards need several of their

characteristics, such as their increased diversity of opinions and ability to improve the corporate image with stakeholder groups (Burgess & Tharenou, 2002; Galbreath, 2018). Moreover, women famously enhance firms' reputation (Bear et al., 2010; Brammer et al., 2009) and add different perspectives, experiences and expertise to men's (Daily & Dalton, 2003; Hillman et al., 2001), also because of their greater wisdom and diligence (Huse & Grethe Solberg, 2006). Women directors contribute a more independent view to the board (Fondas, 2000), and they can change the strategic direction of the firm (Selby, 2000).

These characteristics cause women directors to be positively related to CSR outcomes, and the literature consistently claims that a positive relationship exists between women directors and socially responsible activities (Ferrero-Ferrero et al., 2015; Post et al., 2011). Prior research argues that women directors improve strategic decision-making and play a fundamental role in establishing positive values, in terms such as reducing carbon emissions (Kassinis et al., 2016; Nuber & Velte, 2021), especially when they are highly educated and pushing the firm to be more 'green' (Atif et al., 2020; De Silva & Pownall, 2014). But is the presence of one woman on the board sufficient to positively affect firm outcomes?

In this regard, critical mass theory (Granovetter, 1978; Kanter, 1977, 1987) argues that group subgroups' size affects interactions. According to this theory, only when the size of subgroups reaches a certain critical mass will they really be able to affect firm strategy. Prior studies have suggested that as a subgroup, women directors reach critical mass when boards of directors have at least three women (Erkut et al., 2008; Konrad et al., 2008), and only with that minimum threshold can they influence board dynamics and processes. For instance, Torchia et al. (2011) found that at least three women must be on the board to positively affect innovation. Very recently, Kyaw et al. (2022) confirmed that companies with at least three females on their BoD have better performance when it comes to emissions.

In Table 1, we summarise a list of scientific contributions of women on boards in general and in relation to ESG issues in particular, to identify the main theoretical lens and recent literature in this area.

Following prior research results, we thus expect that only when the number of women directors increases from 'tokens' to constituting a consistent part of the board will they be able to influence the level of firm environmental performance. Specifically, we expect that only boards that have reached a minimum threshold of three women board members will be able to affect environmental performance; with only one or two women, we expect their role to be more a form of tokenism, with no effects on firm sustainability. Therefore, we hypothesise the following:

**Hp 1a.** There is no relationship between one woman director and the level of firm ESG performance.

**Hp 1b.** There is no relationship between two women directors and the level of firm ESG performance.

**TABLE 1** Main contribution on specific subjects (source: our elaboration)

Subject	Main contributions
Corporate governance and women on board	Adams and Ferreira (2009) Brammer et al. (2009) Daily and Dalton (2003) Fondas (2000) Huse and Grethe Solberg (2006) Terjesen et al. (2009) Torchia et al. (2011)
Women on board and ESG	Cabeza-García et al. (2018) Fernandez-Feijoo et al. (2014) Nguyen et al. (2020) Nuber and Velte (2021) Pucheta-Martínez et al. (2021) Rao and Tilt (2016) Velte (2016)

Abbreviation: ESG, environmental, social and governance.

**Hp 1c.** There is a positive relationship between the critical mass of women directors (at least three women) and the level of firm ESG performance.

Going beyond the mere participation of women directors within boardrooms, we investigate which of the two major board member roles (advisory versus monitoring) women directors play best to achieve ESG performance. For example, according to Croci et al. (2020), the advising and monitoring functions impact firm value and firm resilience differently, and the gender composition of the board can improve the quality of monitoring activities (Campbell & Mínguez-Vera, 2008). Indeed, from this point of view, scholars generally recognise two primary roles for boards (monitoring and advising) and the literature distinguishes between two corresponding types of directors (executive and nonexecutive directors). Executive directors, usually called 'insiders', are officers of the company who serve as board members (Cruz et al., 2019), often gaining their position through internal career progression (Burgess & Tharenou, 2002). Insiders who 'are corporate executives and therefore tend to be closely involved in day-to-day corporate decisions' (Ibrahim & Angelidis, 1995, p. 409) are more sensitive to the organisation's economic needs than philanthropic goals. On the other hand, the board chair or a nominating committee invites nonexecutive directors, also called 'outsiders' or 'independent directors' (Burgess & Tharenou, 2002). Specifically, an outside director is 'a director who is not a present or former employee of the firm and whose only formal connection with the firm is his duties as a director' (Rosenstein & Wyatt, 1990, p. 177). Independent directors function as a fundamental mechanism for ensuring that firms

pursue not only shareholders' interests but also those of all stakeholders (García-Sánchez & Martínez-Ferrero, 2017; Haniffa & Cooke, 2005). The presence of independent directors is fundamental to increasing the efforts for longer-term-oriented strategies, such as CSR (Jo & Harjoto, 2011). Therefore, boards with more independent directors can motivate companies to be more sustainably responsible (Khan, 2010), especially because their reputation directly links with the ethical responsibility of the firms that appoint them (Cabeza-García et al., 2018).

To summarise, a common assumption is that inside directors are the primary source of firm-specific information that advising requires,

while outside directors provide better monitoring because they are independent of management (Kim et al., 2014). Prior research has indeed shown that independent directors are fundamental for CSR disclosure (Prado-Lorenzo et al., 2009), bringing the firm to a higher degree of transparency (Amran et al., 2014). Outside directors have a greater corporate social responsiveness orientation than inside directors, who have a stronger orientation towards economic performance (Ibrahim & Angelidis, 1995). Outside board members are also more likely than inside directors to be more sensitive to society's needs (Ibrahim & Angelidis, 1995), and they have a key role in protecting more than only the shareholders' interests, thanks to their CSR

**TABLE 2** Descriptive statistics and correlation matrix

Variables	Mean	SD	1	2	3	4	5	6	7		
1 ESG score	56.90	19.10	1								
2 CSR strategy score	46.36	31.52	0.731***	1							
3 PR score	61.06	32.18	0.615***	0.400***	1						
4 Emissions score	57.63	32.59	0.804***	0.713***	0.488***	1					
5 One woman	0.187	0.390	-0.0851	-0.0303	-0.117**	-0.111*	1				
6 Two women	0.117	0.322	-0.187***	-0.132**	-0.0529	-0.180***	-0.0911*	1			
7 Three women	0.205	0.404	0.0748	0.0843	0.169***	0.0617	-0.205***	-0.157***	1		
8 Executive females	0.013	0.037	-0.0366	-0.0469	0.0879*	-0.0212	-0.0961*	0.0750	0.0539		
9 Independent females	0.106	0.127	0.191***	0.165***	0.184***	0.124**	-0.203***	0.00107	0.275***		
10 ROE	0.109	0.215	0.0186	0.0453	-0.0477	0.00103	-0.00608	0.0669	0.00471		
11 Cash holdings	0.129	0.091	-0.147***	-0.180***	-0.0867	-0.182***	-0.125**	0.0833	0.219***		
12 Firm size	21.592	1.562	0.509***	0.491***	0.114*	0.443***	0.105*	-0.0862	-0.179***		
13 Leverage	0.310	0.166	0.230***	0.309***	0.155***	0.229***	0.0297	-0.0241	-0.0824		
14 Independent directors	0.474	0.169	0.401***	0.363***	0.209***	0.302***	-0.0292	-0.0304	-0.0443		
15 Board size	10.807	2.847	0.0449	0.0793	0.0537	-0.00254	0.261***	-0.0102	-0.191***		
16 Firm age	32.896	26.970	0.148***	0.0681	-0.0128	0.111*	0.138**	-0.0484	0.0338		
			7	8	9	10	11	12	13	14	15
8 Three women		1									
9 Independent females		0.200***	1								
10 ROE		-0.0439	0.0652	1							
11 Cash holdings		0.0722	0.0207	0.0830	1						
12 Firm size		-0.238***	-0.0897*	-0.0182	-0.321***	1					
13 Leverage		-0.0794	-0.137**	-0.101*	-0.381***	0.297***	1				
14 Independent directors		-0.233***	0.158***	0.0676	-0.180***	0.414***	-0.0352	1			
15 Board size		-0.0459	-0.0703	-0.0102	-0.0413	0.115**	0.0645	0.0200	1		
16 Firm age		-0.0218	0.0203	-0.111*	0.0591	0.182***	-0.167***	0.0222	0.397***	1	

\* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

orientation being stronger than insiders' (O'Neill et al., 1989). In sum, outside directors have a broader range of experience and interests (Vance, 1983) and a greater social responsiveness (Zahra & Stanton, 1988) than inside directors.

However, this study's objective is not to test whether board independence affects ESG. Rather, we aim to study whether women who serve as an executive rather than nonexecutive directors may have a positive influence on ESG performance. This idea relates to what roles best suit female directors, with a specific focus on advisory and monitoring roles. For this reason, we may assume that both inside and outside directors represent an important source of firm-specific information, and they have a leading role in decision-making processes.

Therefore, we argue that when women serve as executive (inside) directors, they will really be able to head firm strategy and transfer their values to the corporate culture. Furthermore, we also argue that when women are independent (outside) directors, they will more likely head firm strategy and communicate their values in the organisation, producing better performance. In sum, we expect that women directors involved as executive and independent directors will have the power to really provide their voice to the boardroom and the whole firm, with positive effects for environmental performance.

Based on this reasoning, we propose the following hypotheses:

**Hp 2a.** There is a positive relationship between the number of women appointed as executive (inside) directors and ESG performance.

**Hp 2b.** There is a positive relationship between the number of women appointed as nonexecutive (outside) directors and ESG performance.

## 4 | DATA AND METHOD

### 4.1 | Sample

Since 2012, the European Union had encouraged firms' voluntary initiatives to increase women's representation in decision-making mechanisms. Several governments across Europe have introduced laws adopting quotas, to increase the number of women on corporate boards (Seierstad et al., 2017). However, Italy was one of the European countries that introduced gender board quotas early on ('Golfo-Mosca' law, August 2011), and the regulation setting thresholds for the percentage of women on boards makes the Italian context particularly interesting (Slomka-Golebiowska et al., 2022).

Our initial sample consisted of the whole population of Italian industrial firms listed on Mercato Telematico Azionario (MTA) during

**TABLE 3** Relationship between gender and ESG score

Variables	ESG score			
	(1)	(2)	(3)	(4)
One woman	−0.0216 (0.3420)			
Two women	−0.0283 (0.1742)			
Three women	0.0311** (0.0424)			
Executive females	0.6197*** (0.0006)		0.6313*** (0.0005)	
Independent females			−0.0504 (0.5400)	−0.0681 (0.4040)
ROE	0.0843*** (0.0027)	0.0914*** (0.0016)	0.0815*** (0.0053)	0.0916*** (0.0018)
Cash holdings	−0.2185** (0.0127)	−0.1959** (0.0306)	−0.1883** (0.0360)	−0.1923** (0.0337)
Firm size	0.0518*** (0.0000)	0.0543*** (0.0000)	0.0533*** (0.0000)	0.0544*** (0.0000)
Leverage	0.1203** (0.0184)	0.1340*** (0.0085)	0.1307** (0.0106)	0.1356*** (0.0076)
Independent directors	0.1243*** (0.0022)	0.1511*** (0.0002)	0.1299*** (0.0016)	0.1586*** (0.0002)
Board size	0.0043* (0.0616)	0.0043** (0.0438)	0.0039* (0.0762)	0.0044** (0.0401)
Firm age	0.0005*** (0.0059)	0.0005*** (0.0056)	0.0005*** (0.0039)	0.0005*** (0.0052)
Constant	−0.8015*** (0.0000)	−0.8739*** (0.0000)	−0.8397*** (0.0000)	−0.8787*** (0.0000)
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
R-squared	0.6061	0.6069	0.5988	0.6076
Observations	487	487	487	487

Note: Robust pval in parentheses.

Abbreviation: ESG, environmental, social and governance.

\*\*\* $p < 0.01$ . \*\* $p < 0.05$ . \* $p < 0.1$ .



2003–2019, a long period never investigated in empirical studies on gender diversity and ESG proxies.

After eliminating companies belonging to the financial industry (i.e. banks, insurance, and financial institutions) and observations with insufficient financial and governance data, our final sample comprised 75 companies. The restricted number of observations is due to the low quantity of specific ESG data that Refinitiv provides for Italian listed companies. Data on board structure were collected manually from publicly available annual reports, the website of the Italian Stock Exchange, and the Commissione Italiana per le Società e la Borsa (Consob), the Italian authority for listed companies and the stock exchange market. Financial data come from Refinitiv Datastream, one of the most reliable and updated sources for financial information on listed companies.

## 4.2 | Variables

The empirical analyses employ ESG scores (ESG score) as the dependent variable. Refinitiv Eikon, a database that the empirical literature on CSR often cites, provided the data (Arena et al., 2018; Shaukat et al., 2016). Refinitiv's ESG score measures a company's ESG performance based on reported data in the public domain, an overall company score based on self-reported information in the environmental,

social and corporate governance pillars. The score ranges between 0 and 100, and a score superior to 75 indicates excellent relative ESG performance and a high degree of transparency in reporting material ESG data publicly.

The additional analyses section also employs three alternative dependent variables investigating the impacts of the three E, S and G score components separately: environmental score (Emissions score), social score (Product Responsibility score) and governance score (CSR strategy score). Thus, we completed the empirical framework by using an overall measure (ESG score) and one proxy for each of the three pillars, ESG.

Our study differentiates female directors according to their numbers and their roles on the BoD. To test critical mass, following Torchia et al. (2011), we used three dummy variables: one woman (assuming value '1' if boards had only one woman, '0' otherwise), two women (assuming value '1' if boards had two women, '0' otherwise) and at least three women (assuming value '1' if boards had at least three women, '0' otherwise). To investigate whether the effect of female directors depends on the role they fulfil on corporate boards, we distinguish between executive female directors and independent female directors, using their respective percentages as female board members.

Following studies investigating the determinants of ESG performance (Baldini et al., 2018), we considered both financial variables and boards as control variables in all regressions.

**TABLE 4** Relationship between gender and CSR strategy score

Variables	CSR strategy score			
	(1)	(2)	(3)	(4)
One woman	0.0166 (0.6508)			
Two women	0.0014 (0.9657)			
Three women	0.1013*** (0.0001)			
Executive females		0.7854*** (0.0026)		0.8237*** (0.0018)
Independent females			−0.2036 (0.1683)	−0.2267 (0.1185)
ROE	0.0790* (0.0778)	0.0913** (0.0445)	0.0788* (0.0991)	0.0919** (0.0484)
Cash holdings	−0.3319** (0.0335)	−0.2574 (0.1177)	−0.2401 (0.1439)	−0.2452 (0.1387)
Firm size	0.0639*** (0.0000)	0.0654*** (0.0000)	0.0642*** (0.0000)	0.0655*** (0.0000)
Leverage	0.2095** (0.0150)	0.2543*** (0.0024)	0.2532*** (0.0031)	0.2596*** (0.0022)
Independent directors	0.1376* (0.0552)	0.1703** (0.0205)	0.1579** (0.0356)	0.1953** (0.0118)
Board size	0.0191*** (0.0000)	0.0187*** (0.0000)	0.0182*** (0.0000)	0.0189*** (0.0000)
Firm age	−0.0001 (0.8429)	0.0001 (0.8145)	0.0001 (0.6991)	0.0001 (0.7500)
Constant	−1.4218*** (0.0000)	−1.4747*** (0.0000)	−1.4398*** (0.0000)	−1.4906*** (0.0000)
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
R-squared	0.5601	0.5498	0.5468	0.5524
Observations	487	487	487	487

Note: Robust pval in parentheses.

Abbreviation: CSR, corporate social responsibility.

\*\*\* $p < 0.01$ . \*\* $p < 0.05$ . \* $p < 0.1$ .

Return on Equity (ROE) is computed as net income divided by stockholders' equity (Arrondo-Garcia et al., 2016). Cash holdings is the ratio of cash and cash equivalents to total assets (Chen et al., 2012). Firm size is measured as the natural logarithm of total assets (Daily & Dalton, 1994). Leverage is calculated as total debt to total assets (Lepore et al., 2018). Independent directors is computed by the ratio of male independent directors on the board (Cotter et al., 1997). Board size is measured as the number of members of the BoD. Firm age is the number of firm years, which has been computed as the difference between the year of the observation and the company's founding year (Bansal & Sharma, 2016). To capture the heterogeneity across different industrial sectors and time periods, we included industry dummy variables and year dummies in all empirical regressions. Appendix 1 describes the variables.

### 4.3 | Empirical approach

We followed Bueno-Garcia et al. (2021) to select the proper estimation methodology. After testing for the presence of random effects using a Breusch–Pagan Lagrangian multiplier test, the results did not reject the null hypothesis; there were no firm-specific intercepts (i.e. no panel effect), indicating the absence of a panel effect (Alda, 2019; Meier & Schier, 2021). Consequently, to examine the

impact of female directors on the ESG score, we employ ordinary least squares (OLS) regressions and heteroscedasticity-adjusted standard errors. To capture the heterogeneity across different industrial sectors and time periods, we included industry dummy variables and year dummies in all regressions. Several empirical studies that investigate the effects of board diversity on ESG and CSR measures of performance have adopted this econometric methodology (Amore et al., 2019; Bear et al., 2010; Katmon et al., 2019). To minimise a reverse causality issue, all empirical models used control variables lagged by 1 year (Bear et al., 2010; Cabeza-García et al., 2018), except for the industry dummy variables.

## 5 | RESULTS

### 5.1 | Descriptive statistics

Table 2 reports the main statistics for our sample and shows the level of correlation among the variables used in the econometric analysis. ESG score, the dependent variable of the study, represents 2.5% of total assets. Concerning the main independent variables, the statistics show that 18.7% of companies have a woman director on the board, 11.7% have two women directors and 20.5% have at least three women directors. Also, executive females are 1.3% of directors,

**TABLE 5** Relationship between gender and product responsibility score

Variables	Product responsibility score			
	(1)	(2)	(3)	(4)
One woman	−0.0212 (0.5551)			
Two women	0.0603 (0.1460)			
Three women	0.1134*** (0.0005)			
Executive females		1.2520*** (0.0006)		1.3233*** (0.0002)
Independent females			−0.3850** (0.0264)	−0.4221** (0.0164)
ROE	0.0361 (0.5667)	0.0601 (0.3314)	0.0401 (0.5331)	0.0612 (0.3080)
Cash holdings	−0.4984*** (0.0063)	−0.3780** (0.0275)	−0.3471** (0.0413)	−0.3554** (0.0349)
Firm size	0.0101 (0.3485)	0.0116 (0.2905)	0.0097 (0.3784)	0.0119 (0.2828)
Leverage	0.2624*** (0.0086)	0.3240*** (0.0015)	0.3236*** (0.0017)	0.3339*** (0.0012)
Independent directors	0.2186*** (0.0048)	0.2723*** (0.0007)	0.2588*** (0.0011)	0.3190*** (0.0001)
Board size	0.0107** (0.0134)	0.0091** (0.0383)	0.0085* (0.0557)	0.0096** (0.0277)
Firm age	−0.0009** (0.0339)	−0.0008* (0.0736)	−0.0007 (0.1152)	−0.0007* (0.0947)
Constant	−0.0756 (0.7713)	−0.1349 (0.6128)	−0.0828 (0.7566)	−0.1645 (0.5392)
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
R-squared	0.4344	0.4281	0.4226	0.4368
Observations	487	487	487	487

Note: Robust pval in parentheses.

\*\*\* $p < 0.01$ . \*\* $p < 0.05$ . \* $p < 0.1$ .



whereas independent females are 6.5% of all directors on the board. The correlations between independent variables and the dependent variable do not show the existence of a significant correlation between ESG measures and female directors. The findings indicate acceptable levels of correlation among all the variables of the empirical models. We also computed the variance inflation factor (VIF) values among all the independent variables our models employed. VIF values (not reported for brevity) reach a mean value of 2.45, indicating no evidence of multicollinearity.

## 5.2 | Hypotheses test

Table 3 reports the econometric results for the research hypotheses.

Model 1 of Table 3 presents the critical mass effect on ESG score. The econometric results show a positive and statistically significant relationship only in the presence of at least three women directors on the board ( $\beta = 0.0311$ ,  $p < 0.05$ ). This result supports our Hypothesis 1c, indicating that female directors can get their 'voices' heard in a satisfying way, in terms of sustainability policies, when they are present in a large enough number on corporate boards.

Models 2–4 introduce the female directors' variables according to their roles on the board. Specifically, model 2 reports the empirical findings regarding the role of executive female directors, whereas

model 3 displays the results in terms of the percentage of independent females. The full model presented in column 4, which simultaneously employs both executive and independent female variables, shows that the coefficient of executive females is positive and statistically significant ( $\beta = 0.6313$ ,  $p < 0.01$ ) and, in line with our Hypothesis 2a, demonstrates that the higher percentage of executive females is associated with an increase in corporate ESG score. On the other hand, the coefficient of independent females (outside) was found to be not statistically significant. For this reason, we reject Hypothesis 2b, demonstrating that a higher level of independent females is not related to a better ESG score.

## 5.3 | Additional analyses

In this section, we present further empirical analyses employing different dependent variables.

Specifically, we rerun all the models presented in Table 3 by using three different ESG measures from the Refinitiv database: *CSR strategy score*, *product responsibility score* and *emissions score*. The *CSR strategy score* reflects a company's practice of communicating that it integrates economic (financial), social and environmental dimensions into its day-to-day decision-making processes. The *product responsibility score* represents a company's capacity to produce quality goods

**TABLE 6** Relationship between gender and emissions score

Variables	Emissions score			
	(1)	(2)	(3)	(4)
One woman	−0.0870** (0.0171)			
Two women	−0.0452 (0.2522)			
Three women	0.0506* (0.0666)			
Executive females		0.9865*** (0.0045)		1.0716*** (0.0027)
Independent females			−0.4731*** (0.0017)	−0.5031*** (0.0008)
ROE	0.1351*** (0.0058)	0.1456*** (0.0025)	0.1298** (0.0119)	0.1469*** (0.0029)
Cash holdings	−0.7025*** (0.0000)	−0.6404*** (0.0002)	−0.6068*** (0.0004)	−0.6135*** (0.0004)
Firm size	0.0541*** (0.0000)	0.0594*** (0.0000)	0.0579*** (0.0000)	0.0596*** (0.0000)
Leverage	0.0994 (0.3083)	0.1234 (0.2032)	0.1269 (0.1901)	0.1352 (0.1632)
Independent directors	−0.0365 (0.6200)	0.0077 (0.9179)	0.0145 (0.8403)	0.0632 (0.3895)
Board size	0.0085** (0.0320)	0.0077** (0.0471)	0.0073* (0.0557)	0.0082** (0.0312)
Firm age	0.0013*** (0.0002)	0.0013*** (0.0003)	0.0014*** (0.0001)	0.0013*** (0.0002)
Constant	−0.7534*** (0.0022)	−0.8945*** (0.0005)	−0.8636*** (0.0004)	−0.9298*** (0.0002)
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
R-squared	0.5326	0.5282	0.5313	0.5404
Observations	487	487	487	487

Note: Robust pval in parentheses.

\*\*\* $p < 0.01$ . \*\* $p < 0.05$ . \* $p < 0.1$ .

and services, integrating the customer's health and safety, integrity and data privacy. The *emissions score* measures a company's commitment to and effectiveness in reducing environmental emissions in its production and operational processes. These three proxies represent the three ESG pillars, Environmental, Social and Governance. These further analyses give us the opportunity to verify whether the use of alternative ESG score measures results in a different impact of female directors on ESG performance.

The empirical findings shown in Tables 4–6 are identical to our previous results, suggesting the appropriateness of our measure of environmental performance.

Table 4 shows the results using the *CSR strategy score* as the dependent variable, which are qualitatively similar to those in Table 3. Indeed, both the coefficients of the variables 'three women' ( $\beta = 0.1013, p < 0.01$ ) and 'executive females' ( $\beta = 0.8237, p < 0.01$ ) are positive and statistically significant at 1%. This positive impact is confirmed also in Tables 5 and 6, which employ the *product responsibility score* or *emissions score* as the dependent variable, respectively.

Conversely, column 4 of Tables 5 and 6 shows that the results differ regarding the percentage of independent females. Both coefficients of the independent females variables are negative and statistically significant in model 4 of Table 5 ( $\beta = -0.4221, p < 0.05$ ) and Table 6 ( $\beta = -0.5031, p < 0.01$ ). Therefore, these additional analyses reveal that a greater presence of independent female directors on the board can negatively influence ESG performance when it refers to specific social and environmental topics.

## 6 | DISCUSSION AND CONCLUSIONS

A corporate governance issue that has drawn broad attention is the underrepresentation of females on corporate boards (Nguyen et al., 2020). According to the European Institute for Gender Equality's latest data in 2021 (EIGE, 2022), only 30.6% of board members in the EU's largest publicly listed companies were women, with significant differences among member states (from 45.3% in France to 8.5% in Cyprus). Even with increases in representation on boards, in 2022, fewer than 1 in 10 of the largest listed companies in EU countries have a woman chair or CEO. Women hold mostly nonexecutive positions in the two highest decision-making bodies of the EU's largest publicly listed companies (Kerneis, 2022).

In this context, through an empirical approach, our research addresses the effect of board gender diversity on ESG issues, by examining whether and how female directors affect ESG performance. We offer scientific arguments on board feminisation, not only in the name of female–male equality but also in the light of evidence in favour of 'critical mass effect'.

First, prior literature is quite consistent in arguing that the presence of women on boards improves firms' financial and nonfinancial performance. More specifically, regarding women's role in ESG outcomes, previous scholars have found that the impact of female directors can depend not only on their representative percentage but also on reaching a suitable threshold number (Cabeza-García et al., 2018).

When the size of women members reaches critical mass, women's influence increases significantly (Alazzani et al., 2017). In line with this research, we confirm that a critical mass of at least three female directors is necessary to improve ESG performance.

Second, since the impact of women on boards depends on the nature of the task performed (Nielsen & Huse, 2010), we found that the role of executive female director is positively associated with ESG performance. We also demonstrated that the higher percentage of executive females is associated with an increase in the corporate ESG score. Consequently, putting women on boards as nonexecutive directors can be a mere token for responding to legal pressures, but such an approach will not lead to better ESG performance.

Third, quite surprisingly, the presence of women as independent directors does not influence ESG performance. Contrary to our Hypothesis 2b, our study shows that female board members are better able to improve ESG if they hold advisory rather than monitoring roles. Generally, corporate boards tend to perform their principal monitoring functions through monitoring committees. Therefore, we argue that the contribution of women on these committees is not valorised or that female directors could demonstrate their skills in advisory committees by offering strategic advice, such as the sustainability actions (Ciasullo et al., 2022).

To conclude, women directors with executive positions would help directors to provide better advice and thereby improve firms' ESG performance through operating decisions instead of monitoring roles. Consequently, if firms decide to appoint female directors to strategic positions within the boardroom, they may benefit ESG performance (Di Miceli & Donaggio, 2018). In this way, we support the idea of increasing the presence of women on corporate boards, in *C-suite* positions, and across the executive leadership as a measure and signal of how corporations can respond to ESG challenges. Therefore, avoiding groupthink and analysing differing points of view are especially important to developing new and creative solutions to difficult tasks (Post et al., 2021) and, more generally, to increase public trust in business and drive economic growth. Therefore, board gender diversity should be associated with better organisational outcomes, especially in cases where effective team decision-making is most important (Boccardelli et al., 2022; Srikanth et al., 2016), such as in ESG issues.

Our findings provide practical and theoretical implications. For businesses, we show that managers should aim for highly gender-diverse boards, with at least three women directors, and appoint female directors into strategic/executive positions to increase ESG performance. Thus, this paper provides a useful guide to managers on the extent to which the presence of females can influence ESG scores. Our study also has important implications for policymakers and regulators. Regulators may consider our results to set quotas for higher board gender diversity and provide new rules for strategic roles of women. As noted, existing measures to promote board gender diversity in many EU Member States (Italy included) are fragmented and slow (European Commission, Directorate-General for Justice and Consumers, 2020). Very recently, the EU Members adopted a

general approach to an EU directive aiming to strengthen gender equality on corporate boards (Council of the EU, Press release 14 March 2022).

For scholars, this study attests to the ascending importance accorded to resource dependence theory on firms' sustainability activities. Especially, we offer additional evidence on the effects of the critical mass of women on boards. Our research places women in a very important role within the board, in fostering more gender balance among both categories of directors (executive and nonexecutive). This is in line with the recent Directive (EU), 2022/2381, the so-called 'Women on Boards' Directive, according to which by July 2026, all big publicly listed companies in the EU will have to take measures to increase women's presence at their helm.

This study acknowledges some limitations, which provide opportunities for future research avenues. First, we tested our hypotheses on only one country, so the results may not be generalisable. For this reason, future studies can expand our analysis by focusing on other EU companies as well as non-EU companies. Different corporate governance models may characterise them, such as the governance arrangements in emerging institutional contexts in India or China, with different national institutional environments where ownership-related corporate governance may play different roles (Cordeiro et al., 2018, 2020). Second, the presence of women on boards represents only one instance of board gender diversity: The interplay between female representation and other types of diversity (e.g. age, knowledge) could be relevant. Future contributions could also focus on other attributes, such as nationality or background/expertise. Third, although this study provides significant insights into how board gender diversity (the presence of executive/independent members who are women on boards) affects ESG performance, it does not consider the other diverse elements of the board members, such as ethnicity or socioeconomic background. These diverse elements may reshape the relevance of women directors in the context of ESG. Future studies can also incorporate other formal or informal institutional factors into the model, for fine-grained insights into the board gender diversity-ESG relationship in an international context. Finally, although the ESG data that Refinitiv Eikon is among the most used in empirical studies aiming to analyse the determinants and effects of ESG scores in companies, these data are not without weaknesses. The Refinitiv ESG scores are data-driven and based on data in the public domain. However, not all ESG factors are easily quantifiable, and the construction of an aggregate index is a complex process. Also, current disclosure of ESG scores is sometimes skewed towards self-declaration and, thus, may not consistently reflect actual performance. Additionally, Refinitiv data are not available for all a country's listed companies; it is difficult to build a balanced panel dataset to investigate a large number of companies for an extended number of years.

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## APPENDIX A: VARIABLE DESCRIPTIONS

Variable	Description
Board size	Number of directors on the board
Cash holdings	Ratio of cash and cash equivalents to total assets
CSR strategy score	This score ranges between 0 and 100. It reflects a company's practices to communicate that it integrates the economic (financial), social and environmental dimensions into its day-to-day decision-making processes
Emissions score	This score ranges between 0 and 100. It measures a firm's commitment to, and effectiveness in, reducing environmental emissions in production and operational processes
ESG score	This score ranges between 0 and 100. It measures a company's ESG performance based on reported data in the public domain, and it is an overall company score based on the self-reported information in the environmental, social and corporate governance pillars
Executive females	Ratio of executive female directors divided by the total number of directors on the board
Firm age	Number of firm years, computed as the difference between the year of the observation and the company's founding year
Firm size	Natural logarithm of total assets
Independent directors	Ratio of independent directors divided by the total number of directors on the board
Independent females	Ratio of independent female directors divided by the total number of directors on the board
Industry dummies	Nine dummy variables for each sector according to the industry classification indicated by the Italian stock exchange, equal to 1 if the observation refers to the corresponding sector, '0' otherwise
Leverage	Ratio of total debt to total assets
One woman	Dummy variables equal to '1' if corporate board has only one woman, '0' otherwise
Two women	Dummy variables equal to '1' if corporate board has only two women, '0' otherwise
Three women	Dummy variables equal to '1' if corporate board has at least three women, '0' otherwise
Product responsibility score	This score ranges between 0 and 100. It reflects a company's capacity to produce quality goods and services integrating the customer's health and safety, integrity and data privacy
ROE	It measures firm performance and it is computed as the net income divided by stockholders' equity
Year dummies	17 dummy variables for each year of the period 2003–2019, equal to '1' if the observation refers to the corresponding year, '0' otherwise