



# Gender diversity on boards: Determinants that underlie the proposals for female directors

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## ABSTRACT

Although the gender composition of corporate boards and the contribution of female directors to corporate governance have been previously analysed, few studies have investigated the factors that may help contribute to increasing the still scarce presence of women on boards. Therefore, using three-stage least squares (3SLS) estimation on a data panel comprising the 100 largest companies in the world according to the 2019 Fortune Global 500 ranking, including data on (re)election proposals for corporate board members, this research aims to analyse the influence of the number of men's nominations, board interlocks, director tenure, geographical area, the sector to which the firms belong, and the relevance of firms on women's nominations for boards of directors. The results show the factors that facilitate the presence of women on boards. In addition, the different influences that remain in the election of female and male directors when considering factors related to the experience, expertise, and networks of directors or the visibility of firms can also be observed. This study contributes to the knowledge of gender diversity on boards, shedding light on the factors that might lead to gender-balanced boards. It could also help companies and policymakers design strategies to build more egalitarian boards.

## 1. Introduction

Boards of directors are considered to be the principal mechanism for implementing and maintaining good corporate governance. The configuration of corporate boards has been an important research topic in corporate governance during the last decades, although arguments about the need to review the composition of a board still remain strong, especially with regard to gender diversity (Baker et al., 2020).

Corporate boards act not only to maximise the returns of shareholders' investments but also to achieve responsible and sustainable corporate performance, as demanded by multiple stakeholders and shareholders (Hafsi and Turgut, 2013). Given these demands, firms and boards of directors have begun to implement corporate social responsibility (CSR) strategies, and precisely the presence of women on boards impacts different aspects of these strategies (Byron and Post, 2016; Glass et al., 2016). Some authors have also suggested that the inclusion of women on boards contributes positively to the governance of companies (Adams and Ferreira, 2009) through their ability to reduce interpersonal problems (Nielsen and Huse, 2010a), as well as their

participation in the decision-making processes and their ability to monitor effectively (Nielsen and Huse, 2010b; Terjesen et al., 2009); further, their inclusion also influences firm performance (Hoobler et al., 2018; Terjesen et al., 2016). Therefore, women on boards can improve corporate reputation and promote companies' public image through socially responsible actions (Bear et al., 2010).

Although previous studies have analysed the role of women on board teams from different perspectives as well as their influence on different issues of corporate performance (Kirsch, 2018), more analysis related to the appointment of women on corporate boards is still needed (Baker et al., 2020). Specifically, few studies have analysed the factors that facilitate or prevent the presence of women on boards (Geiger and Marlin, 2012; Hillman et al., 2007; Saeed et al., 2016). Unlike other studies in the area that have analysed the number or proportion of female directors on boards, this study considers the number of women's nominations for boards of directors to analyse the factors that determine their appointment and consequently help understand the reasons that motivate or limit gender equality on boards. Evidently, prior to holding seats on boards, proposals for the appointment of directors on corporate

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boards must be considered and ratified in shareholders' meetings. Therefore, if women are not proposed as members of boards of directors, they cannot occupy a board seat and cannot influence board governance and firm performance. Moreover, in contrast to most previous research that has mainly focused on a particular country (Baker et al., 2020; Terjesen and Singh, 2008), this research analyses gender diversity on boards worldwide.

Therefore, using a database from 2004 to 2019 composed by the proposals of (re)election of board directors for 83 out of the 100 largest companies in the world ranked in the 2019 Fortune Global 500 list, and a three-stage squares estimation for a system of simultaneous equations, the aim of this paper is to investigate the effect of individual attributes of directors, firm and board characteristics, and environmental features to explain why women are proposed as members of boards of directors. Among these factors, the number of nominations for male directors, the number of simultaneous proposals for boards of different companies, the cumulative number of nominations for the same company, and the number of accumulated years that a company has been included in a top ranking can be considered as drivers of the proposals for female directors. In addition, the geographical area and the sector to which the company belongs can also act as explanatory factors for women's nominations on boards.

Based on different theoretical frameworks related to the factors analysed, the results of the study show that the presence of women on boards continues to be reduced, although in recent years, this situation has started to change. The results indicate that while some of the factors considered seem to facilitate women's nominations, other factors highlight the differences that still exist between the election of male and female directors in top firms. These conclusions contribute to sharpening the debate on the reasons that lead companies to incorporate women on their boards, providing a better understanding of the lead determinants of gender-based gaps observed in board teams.

The rest of this paper is structured as follows: Section 2 provides the theoretical framework of the study and formulates the hypotheses; Section 3 describes the study method, including the data sample, variables, and model; Section 4 presents the main results of the empirical examination; Section 5 discusses the results; obtained, and Section 6 presents the overall study conclusions and opportunities for future research.

## 2. Literature review

Boards of directors, as the principal mechanism of corporate governance in decision making, are responsible for the implementation of organisational strategies. Different decisions can be adopted depending on the board composition, in particular, gender diversity (Nielsen and Huse, 2010b). Previous research has concluded that the presence of women on boards influences financial performance with mixed results. Some authors have established a positive relationship (Erhardt et al., 2003; Hoobler et al., 2018; Terjesen et al., 2016), others have found a negative or non-existent relationship (Adams and Ferreira, 2009; Marinova et al., 2016; Rose, 2007), while others have even contradictory results when considering different financial performance measures (Bennouri et al., 2018; Carter et al., 2010; Farrell and Hersch, 2005; Post and Byron, 2015). In addition to financial results, investors also consider sustainable and socially responsible companies in their investment strategies (Lopez-Cabarcos et al., 2019). Thus, stakeholders' demands also determine the commitment of firms to their CSR performance (Galbreath, 2011; Lee and Suh, 2022). In this context, the responsibility of carrying out a moral, ethical, and sustainable business is added to the functions of boards (Guerrero-Villegas et al., 2018; Nadeem et al., 2020). Previous research has analysed the influence of the presence of women on boards on different aspects of CSR strategies, but the results have not been homogeneous. While some studies have concluded that female directors positively impact corporate social performance (Byron and Post, 2016; Hafsi and Turgut, 2013; Harjoto et al., 2015;

McGuinness et al., 2017), promote corporate environmental strategies (Glass et al., 2016; Kassinis et al., 2016; Konadu et al., 2022), or tend to implement more charitable contributions (Wang and Coffey, 1992; Williams, 2003), other studies have concluded a negative or non-significant relationship (Boulouta, 2013; Cucari et al., 2018).

The presence of women on boards can also determine board performance. Female representation contributes to the board decision-making process and influences strategic decisions and operational performance (Bennouri et al., 2018; Nielsen and Huse, 2010b), reduces the conflict on boards owing to their sensitivity and interpersonal abilities (Nielsen and Huse, 2010a), provides a major quality of discussions and reporting effectiveness (Gul et al., 2011), and improves board attendance, and, consequently, board governance (Adams and Ferreira, 2009). In sum, female directors significantly contribute to the efficiency of corporate governance (Naveed et al., 2021; Terjesen et al., 2009) and increase corporate reputation (Bear et al., 2010), helping to build an image of commitment to diversity and legitimacy that can enhance the support of stakeholders, especially customers, suppliers, and investors (Hillman et al., 2007).

The influence of the presence of women on boards on those organisational outcomes has been widely analysed through agency theory (Terjesen et al., 2009). Based on this theory (Fama and Jensen, 1983), boards of directors are responsible for the alignment of the different interests among agents and principals, monitoring and controlling managers' functions on behalf of shareholders. Another theory widely used in this field of research is the resource dependence theory (Pfeffer and Salancik, 1978), according to which organisations operate in an open system and their behaviour depends on external resources. Boards of directors can enable firms to minimise dependence on resources and reduce environmental fluctuations by providing advice, legitimacy, and access to resources and communication channels. Beyond both theories, the impact of gender diversity on boards has been analysed from other multiple theoretical perspectives (López-Pérez, 2022). Consequently, in addition to the two aforementioned theories, this research considers several theoretical frameworks related to each factor considered to explain women's nominations on boards.

Despite the positive impacts of the presence of women on boards, their presence is still very low. Women only hold 26.5 % of board seats of Fortune 500 companies (Catalyst, 2020). In addition, scientific research analysing the factors that might explain why women have been appointed members on corporate boards continues to be scarce (Baker et al., 2020; Kirsch, 2018). Terjesen et al. (2009) classified these factors into individual director characteristics (micro-level), board and firm characteristics (meso-level), and environmental features (macro-level). Based on previously used theoretical approaches and other theories more related to each predictor, this study considers the number of nominated female-male directors and tenure (micro-level factors), board interlocks, relevant firms and sector (meso-level factors), and geographical area (macro-level factor) as drivers that could explain why women can be proposed to participate on boards of directors.

### 2.1. Board gender diversity – number of nominated women-men directors

The selection of directors has been shown to not be gender-neutral but is influenced by the gender composition of the board (Birkner, 2020). The probability of adding a woman to a board increases when a female director has previously left the board or when there are few or even no female directors on boards. In this way, the existence of gender bias affects the appointment of a new board member (Farrell and Hersch, 2005; Gregory-Smith et al., 2014). According to Tinsley et al. (2017), if the relationship between the gender of directors who leave the board and new directors who join the board is maintained, the number of female directors would not likely increase. According to institutional theory, firms under strong internal or external pressures tend to increase the presence of women on boards; however, this pressure does not reduce the gender bias on boards if female directors are added to

increase the number of seats on boards of directors rather than to replace male directors (Bennouri et al., 2018; Knippen et al., 2019). Therefore, the appointment of female directors can only be a consequence of the tokenism effect in creating a symbolic gender diversity image of corporate boards (Gregory-Smith et al., 2014). Further research is needed on male and female representation on boards. Therefore, the following hypothesis is proposed:

**Hypothesis 1.** Proposals regarding female representation on boards are significantly influenced by the proposals of male directors.

## 2.2. Board gender diversity - board interlocks

Boards of directors perform control and monitoring functions based on agency theory and a resource provision function based on resource dependence theory. Based on both theories, Hillman and Dalziel (2003) developed the concept of 'board capital' as the combination of experience and expertise (human capital) and director's network (social capital) that establish the competencies that board members provide to both functions. Directors serving on different corporate boards, as providers of knowledge, experience, and network connections with other firms, facilitate the exchange of information, knowledge, and business practices, which in turn could attract investors' attention if relevant firms are considered (Connelly and Van Slyke, 2012; Franco and Esteves, 2020). Based on institutional theory, interlocked directors also promote the transmission of gender diversity practices, pressuring companies to assume the legitimacy of gender diversity on boards. Thus, firms with directors serving in other egalitarian firms tend to include more female representation on their own boards (Geiger and Marlin, 2012; Hillman et al., 2007). However, Huang et al. (2020) demonstrated an inverse relationship on boards with male interlocked directors, considering that directors serving on multiple boards can be socially considered as members of an elitist group and, in an attempt to preserve this prestige, male directors do not support the appointment of female directors.

Female directors serving on multiple corporate boards can also show a distortional image of gender diversity, also creating an elitist group of women ('golden skirts') holding positions on multiple boards (Huse, 2013; Rigolini and Huse, 2019). Organisations, in response to the pressures of gender diversity, may select their female directors only among this elitist group, which does not provide a real increase in the presence of women on boards (Nili, 2019).

Previous research has also demonstrated that 'busy directors' or directors on boards of different firms (men or women) reduce their time of dedication to each board, negatively affecting the effectiveness of their monitoring function (Hillman et al., 2011) and, in turn, reducing firm performance (Bennouri et al., 2018). The findings regarding this issue are inconclusive and require more research; therefore, the following hypothesis is proposed:

**Hypothesis 2.** Proposals regarding female representation on boards are significantly influenced by the simultaneous presence of female directors on other board teams.

## 2.3. Board gender diversity - tenure

Tenure, or the number of years a director serves on the current board, can be used as a measure of equality between men and women. Gender diversity on boards implies not only the inclusion of women on boards but also the retention of female directors for longer tenures after being appointed, enhancing egalitarian participation in board decision processes (Nili, 2019). Based on the expertise hypothesis (Vafeas, 2003), long tenures are associated with greater experience, commitment, and knowledge about the firm and its environment; and based on the human capital theory (Becker, 1964) and upper echelon theory (Hambrick and Mason, 1984), the previous professional experience, knowledge, values, and perceptions can provide directors a set of abilities to improve cognitive and productive capabilities that positively contribute to both

individuals and organisations (Chaithanapat et al., 2022; Halilem et al., 2022). However, when directors have served on the same boards for several years, the benefits derived from tenure can be transformed on 'friendly boards' (Vafeas, 2003); that is, when directors and managers have a close friendship, the independence and objectivity of the directors can be reduced, thereby compromising the monitoring function (Hillman et al., 2011) and affecting negatively firm performance (Bennouri et al., 2018). (Main and Gregory-Smith, 2018) demonstrated that this loss of independence is not gender neutral. Female directors show shorter tenures than male directors, suggesting that they could be appointed only for their symbolism of independence and the pressure to display gender diversity on boards. More research is needed on the influence of tenure on board composition, especially if female representation is considered. Therefore, the following hypothesis is proposed:

**Hypothesis 3.** Proposals regarding female representation on boards are significantly influenced by the tenure of male and female directors on the corporate board.

## 2.4. Board gender diversity - geographical area

The national context in which firms operate can also explain the presence of women on boards (Gabaldon et al., 2016; Halliday et al., 2020; Terjesen and Singh, 2008). Institutional theory analysing the role of social, political, legal, and economic institutions is the principal approach to explain the different female participation on boards from a macro-environmental perspective (Terjesen et al., 2009).

Differences across countries in relation to their institutional environment can influence board composition and the participation of women on boards (Saeed et al., 2016). Countries with stronger shareholders' legal protection against the decisions adopted by directors (who assume major legal responsibilities) are more prone to increase the presence of women on boards based on the expertise and knowledge that can provide for decision-making processes (Post and Byron, 2015). Similarly, countries with equality in wages tend to have a higher representation of women on boards; however, this fact does not necessarily imply an increase in the number of women on boards (Tyrowicz et al., 2020).

The differences in the number of women on boards across countries can also be explained by the level of female representation in other key social or political institutions. These institutions can act as drivers of equal opportunities between women and men, influencing gender role attitudes and helping break down gender stereotypes (Ahl, 2006; Chizema et al., 2015). An egalitarian supportive climate leads women to reach more work experiences and education (Hiltz and Turoff, 2005; Hoobler et al., 2018; Post and Byron, 2015), reinforcing their potential and entrepreneurial intentions (Armuna et al., 2020; Kuehn, 2008; Wilson et al., 2007) and contributing to successful decision-making processes and strategic involvement on boards (Nielsen and Huse, 2010b). In addition, in gender-egalitarian countries, all types of stakeholders require firms to align their behaviour to the social context, being more likely to have a major female presence on boards (Fernandez-Feijoo et al., 2014; Halliday et al., 2020). The economic environment and economic shocks (2008 global crisis, COVID-19 pandemic, etc.) may also affect the number and nature of votes in corporate meetings, being likely to change drivers of voting decisions, including proposals for the election of directors (Pineiro-Chousa et al., 2016; Vizcaino-Gonzalez et al., 2017). Similarly, cultural dimensions (Attah-Boakye et al., 2020; Carrasco et al., 2015) and the role of the national institutional system (Grosvold and Brammer, 2011) can facilitate or hinder women's access to corporate boards. More research is needed on this issue; therefore, the following hypothesis is proposed:

**Hypothesis 4.** Proposals regarding female representation on boards are significantly influenced by the geographical area to which the firm belongs.

## 2.5. Board gender diversity – firms' characteristics

Top-ranked firms are more noticeable, observable, and known by regulators, media, stakeholders, and, in general, the entire society. Based on legitimacy theory and institutional theory, higher transparency and visibility of firms increase the pressure on them to satisfy the demands of institutional actors, such as reducing discrimination related, for example, to gender bias on boards (Gabaldon et al., 2016). According to this approach, prestigious and top firms tend to respond to pressure and include more women on their boards (Carter et al., 2003; Hillman et al., 2007); however, not all previous studies have confirmed this postulation (Geiger and Marlin, 2012). These mixed results encourage further research in this area. Therefore, the following hypothesis is proposed:

**Hypothesis 5.** Proposals regarding female representation on boards are significantly influenced by the relevance of firms.

The sector in which a firm operates can be both a barrier and a facilitator of the presence of women on boards. De Jonge (2014) demonstrated that the service sector (healthcare, consumer discretionary, and telecommunications) and, specifically, financial services facilitate female representation on boards. Conversely, firms in the industrial or energy sectors show a significantly lower presence of women on their boards. Other studies have also observed differences related to the sector considered (Adams and Ferreira, 2009; Geiger and Marlin, 2012; Hillman et al., 2007). Further research is needed to analyse the relationship between board composition and the business sector to which the firm belongs. Therefore, the following hypothesis is proposed:

**Hypothesis 6.** Proposals regarding female representation on boards are significantly influenced by the sector to which the firm belongs.

## 3. Method

### 3.1. Data and sample

An international sample comprising the 100 largest companies in the world, according to the 2019 Fortune Global 500 list, was used in this study. This annual ranking comprises the top 500 companies worldwide, measured by total revenues, and includes the industry and location of each company. This database was selected because previous research has demonstrated that large firms are more likely to have female representation on their boards (Bennouri et al., 2018; Carter et al., 2003; De Jonge, 2014; Farrell and Hersch, 2005; Hillman et al., 2007). In addition, Fortune rankings are commonly used by institutions such as Catalyst, a global non-profit organisation that publishes a census of women on boards, as well as by other empirical research (Carter et al., 2003; Farrell and Hersch, 2005; Hillman et al., 2011). Unlike most previous research on gender diversity on corporate boards that selected organisations included in Fortune rankings belonging only to the United States or other single countries (Kirsch, 2018; Terjesen et al., 2009), this study employs organisations belonging to the Fortune Global list including firms worldwide. The list of companies was added to the proposals for (re)election of members of the boards of directors collected from i) SEC Form N-PX filings; ii) annual reports of the proxy voting record of registered management investment companies, and iii) the notices from shareholders' meetings published on the companies' website.

Information about the nominated directors of each firm was collected for the period 2004–2019. The study period is justified because the disclosure of proxy voting policies through Form N-PX filings was required by the U.S. Securities and Exchange Commission (SEC) for annual periods beginning 1 July 2003, and loss of information during the first months of the year led to 2004 being considered as the initial year of the study period. Although most of the companies were in existence for all years throughout the study period, some were founded or

emerged during the examined period due to mergers, spin-offs, or initial public offerings. Moreover, some companies, both state-owned and private, had to be removed from the initial sample due to lack of public information about directors' nominations in their shareholders' meetings. As a result, the study sample considers 83 of the 100 largest companies included in the 2019 Fortune Global 500 ranking, resulting in a final unbalanced panel composed of 9842 proposals of (re)election of directors, distinguishing between the gender of the director who was proposed for each shareholder meeting. The gender of directors was determined by observing references such as Mr. and Ms. and she or he, on the personal information of the candidates on the notices of shareholders' meetings, annual reports, and other announcements published by firms (Saeed et al., 2016).

Although the number of proposals for female directors has been on the rise in recent years, the difference between women and men proposed holding positions on boards of directors remains significantly high. The data reveal that the number of proposals regarding women is lower than that of proposals concerning men throughout the analysed period (Table 1).

Table 2 presents descriptive statistics about the number of nominations of women and men according to the geographical area to which the company belongs. Most of the nominations refer to American companies, and the number of nominated men far exceeds the number of nominated women across all regions. The lowest number of nominations of women to hold a position on boards are in the Asia region.

Table 3 lists the number of nominations by gender and sector. The leading nominations are clearly in financial services and industry. For all sectors, the number of nominated women is lower than that of nominated men. Higher female representation on boards is mainly in financial services and basics, while their presence in the energy sector is reduced.

The presence of women on corporate boards was measured as the total number of proposals for female directors for the same company in the same year. To obtain more conclusive results, an analysis of the total number of proposals of male directors for each company and year was also considered.

Other variables were introduced in the model to control for factors that may explain why women are proposed for a seat on corporate boards. The presence of a director serving on the boards of different companies in the same year was measured as the average of simultaneous nominations of women and men, which was computed as the total nominations of each female (male) director across all companies in the sample for that year. The tenure variable for the same company until a given year was obtained as the average of the accumulated nominations of female and male directors, which were computed as the total number of nominations for each female (male) director until that year. In

**Table 1**  
Nominations broken down by gender and year.

Year	Women	Men
2004	52	454
2005	50	454
2006	61	483
2007	81	552
2008	81	532
2009	79	536
2010	90	530
2011	87	479
2012	99	536
2013	113	532
2014	113	525
2015	131	522
2016	146	500
2017	161	530
2018	156	523
2019	164	490
Total	1664	8178



**Table 2**  
Nominations broken down by gender and geographical area.

Region	Women	Men
America	1121	3980
Europe	393	1982
Asia	150	2216
Total	1664	8178

**Table 3**  
Nominations broken down by gender and sector.

Sector	Women	Men
Basics	391	1292
Energy	227	1534
Financials	521	1968
Industry	258	2064
IT	267	1320
Total	1664	8178

addition, the relevance of firms was determined by the number of years a company had been in the first 100 positions of the Fortune Global 500 ranking until a given year.

Finally, three dummy variables were introduced to analyse the presence of women on boards within sectors and regions over the years. The sector to which the firm belongs was included in five sector dummies, classified into basics (including basic products, healthcare, and retail companies), energy, financials, industry, and IT (comprising technology and telecommunications). The location of the firms was determined using three geographical area dummies: America, Europe, and Asia. The time series was considered by a year dummy for each of the years included in the sample, from 2004 to 2019.

Thus, the variables included in the study were as follows:

- $D_W$ : number of nominated directors (women), computed by aggregating all proposals referring to women, for the same company, and the same year.
- $D_M$ : number of nominated directors (men), computed by aggregating all proposals referring to men, for the same company, and the same year.
- $B_W$ : average of simultaneous nominations (women), computed as the average number of boards in the sample for which a woman was nominated in the same year.
- $B_M$ : average of simultaneous nominations (men), computed as the average number of boards in the sample for which a man was nominated in the same year.
- $T_W$ : average of accumulated nominations (women), computed as the average number of nominations a woman has accumulated for the same company until a given year.
- $T_M$ : average of accumulated nominations (men), computed as the average number of nominations a man had accumulated for the same company until a given year.
- $R$ : number of years that a company has been ranked until a given year.
- $Y$ : year dummies.
- $I$ : sector dummies.
- $A$ : geographical area.

### 3.2. Model

According to previous theories, the proposals of female directors can influence the number of proposals of men to be elected as members on corporate boards, and the proposals of female directors can influence the proposals regarding female representation on boards. To avoid the problem of reverse causality in the analysis of the factors that might explain why women have been proposed for a seat on boards of directors

and to obtain more efficient results for cross-equation correlation, the following system of simultaneous equations was estimated using three-stage least squares (3SLS) estimation instead of 2SLS estimation:

$$D_{Wit} = \alpha_2 + \beta_2 D_{Mit} + \theta_2 z_{2it} + \gamma_2 x_{it} + d_{it} + \epsilon_{2it} \tag{1}$$

$$D_{Mit} = \alpha_1 + \beta_1 D_{Wit} + \theta_1 z_{1it} + \gamma_1 x_{it} + d_{it} + \epsilon_{1it} \tag{2}$$

In Eq. (1), the endogenous variable is  $D_W$  for company (i) and year (t). The explanatory variables are  $D_M$ , an instrumental variable for the first endogenous variable ( $z_2$ ), which is  $B_W$ ; a set of exogenous variables (x) that includes  $T_W$ ,  $T_M$ , and  $R$ ; and a set of dummies (d) that includes  $S$ ,  $A$ , and  $Y$ .

In Eq. (2), the endogenous variable is  $D_M$ . The explanatory variables are  $D_W$ , an instrumental variable for the second endogenous variable ( $z_1$ ), which is  $B_M$ ; a set of exogenous variables (x) that includes  $T_W$ ,  $T_M$ , and  $R$ ; and a set of dummies (d) that includes  $S$ ,  $A$ , and  $Y$ .

## 4. Results

Table 4 reports the outcome from the 3SLS estimation. The results show that the number of nominated men is significant for the explanation of the number of nominated women, with a positive associated coefficient. However, the results indicate that the influential relationship does not hold the other way. Thus, the number of nominated women is not significant for the explanation of the number of nominated men.

The results also show that the average number of simultaneous nominations for a woman is significant for explaining the number of nominated women, and it exerts an inverse relationship; thus, the more boards women are nominated for, the less nominated women are found on boards. Interestingly, the average number of simultaneous nominations for a man is significant in explaining the number of nominated men but exerts a direct relationship; thus, the more boards men are nominated for, the more nominated men are found on boards.

The accumulated nominations for men and women are not significant for explaining the number of nominated women, but they are significant for explaining the number of nominated men, exerting a direct influence. Moreover, the number of years the company has accumulated in the ranking is significant for the number of nominated women exerting direct influence, but it is not significant for the number of nominated men.

Regarding year dummies, while 2013 to 2019 are significant for the number of nominated women, exerting a positive relationship, 2004 to 2015 are significant for the number of nominated men. Concerning area dummies, only Asia seems to be significant for the number of nominated men, exerting a positive influence. Finally, the sector dummies indicate that basics and IT exert a positive influence on the number of nominated women, and they both exert a negative influence on the number of nominated men. In addition, financials and industry exert a positive influence on the number of nominated women while not having any significant influence on the number of nominated men.

## 5. Discussion

The results of this study show that the number of proposals for female directors is positively influenced by the number of male nominations. Thus, a higher (lower) number of male proposals leads to a higher (lower) number of women's nominations. This finding confirms Hypothesis 1, suggesting that the number of female directors is directly related to a higher number of seats on boards and that a higher number of male directors' proposals is necessary to increase the number of women on boards. According to institutional theory, the results are consistent with previous research demonstrating that women are added to corporate boards to increase the board size rather than to substitute male directors (Bennouri et al., 2018; Knippen et al., 2019). Such new seats for female directors are created in many cases exclusively to

**Table 4**  
Results from the 3SLS estimation.

	Dw						D <sub>M</sub>							
	Coef.	Std. Err.	z	P >  z	[95 % Conf. Interval]		Coef.	Std. Err.	z	P >  z	[95 % Conf. Interval]			
D <sub>M</sub>	0.1715	0.0846	2.03	0.043	**	0.0057	0.3374							
Dw								-0.2432	1.1449	-0.21	0.832		2.0009	
B <sub>M</sub>								3.5900	1.1046	3.25	0.001	***	1.4251	5.7549
Bw	-0.5085	0.1843	-2.76	0.006	***	-0.8698	-0.1473							
T <sub>M</sub>	-0.0522	0.0532	-0.98	0.326		-0.1564	0.0520	0.4781	0.0916	5.22	0.000	***	0.2987	0.6576
Tw	-0.0363	0.0400	-0.91	0.365		-0.1147	0.0422	0.4020	0.0857	4.69	0.000	***	0.2341	0.5699
R	0.0458	0.0113	4.06	0.000	***	0.0237	0.0679	0.0308	0.0670	0.46	0.645		-0.1005	0.1621
2004	0.0000	(omitted)						5.9749	1.0560	5.66	0.000	***	3.9052	8.0445
2005	-0.0607	0.2807	-0.22	0.829		-0.6109	0.4896	5.4943	1.1240	4.89	0.000	***	3.2913	7.6973
2006	0.0603	0.2743	0.22	0.826		-0.4772	0.5979	5.4942	1.0005	5.49	0.000	***	3.5332	7.4553
2007	0.4207	0.2739	1.54	0.125		-0.1161	0.9575	5.6540	0.8147	6.94	0.000	***	4.0571	7.2509
2008	0.4073	0.3137	1.30	0.194		-0.2076	1.0222	4.1056	0.8982	4.57	0.000	***	2.3453	5.8660
2009	0.4415	0.3335	1.32	0.186		-0.2121	1.0951	3.7173	0.8989	4.14	0.000	***	1.9555	5.4791
2010	0.5534	0.3593	1.54	0.124		-0.1509	1.2577	3.4378	0.8303	4.14	0.000	***	1.8105	5.0652
2011	0.6212	0.4535	1.37	0.171		-0.2677	1.5101	1.9401	0.9497	2.04	0.041	**	0.0787	3.8016
2012	0.5877	0.4216	1.39	0.163		-0.2387	1.4141	2.4031	0.8864	2.71	0.007	***	0.6658	4.1403
2013	0.8743	0.4807	1.82	0.069	*	-0.0679	1.8165	1.5250	0.7961	1.92	0.055	*	-0.0353	3.0853
2014	1.0974	0.4823	2.28	0.023	**	0.1521	2.0428	1.4729	0.7007	2.10	0.036	**	0.0995	2.8463
2015	1.1308	0.4795	2.36	0.018	**	0.1910	2.0706	1.4767	0.6571	2.25	0.025	**	0.1887	2.7647
2016	1.3575	0.5263	2.58	0.010	**	0.3261	2.3890	0.9820	0.6275	1.57	0.118		-0.2478	2.2118
2017	1.5401	0.5468	2.82	0.005	***	0.4684	2.6119	0.6947	0.6285	1.11	0.269		-0.5372	1.9266
2018	1.3156	0.5605	2.35	0.019	**	0.2171	2.4142	0.5190	0.6121	0.85	0.397		-0.6807	1.7187
2019	1.5321	0.6050	2.53	0.011	**	0.3464	2.7178	0.0000	(omitted)					
America	0.2157	0.8324	0.26	0.796		-1.4158	1.8472	0.0000	(omitted)					
Asia	-1.3595	1.1100	-1.22	0.221		-3.5350	0.8161	3.4792	1.1522	3.02	0.003	***	1.2210	5.7375
Europe	-0.1242	0.8304	-0.15	0.881		-1.7518	1.5034	0.0126	0.5075	0.02	0.980		-0.9820	1.0073
Basics	0.6923	0.2424	2.86	0.004	***	0.2173	1.1673	-2.3213	0.9633	-2.41	0.016	**	-4.2094	-0.4332
Energy	0.0000	(omitted)						-0.0467	1.2868	-0.04	0.971		-2.5688	2.4755
Financials	1.1141	0.1343	8.30	0.000	***	0.8510	1.3773	0.0000	(omitted)					
IT	0.8838	0.3018	2.93	0.003	***	0.2923	1.4752	-2.8535	0.9493	-3.01	0.003	***	-4.7140	-0.9929
Industry	0.6148	0.1717	3.58	0.000	***	0.2783	0.9513	-1.0943	0.8554	-1.28	0.201		-2.7708	0.5822
RMSE	1.0617							3.2277						
R-sq	0.2919							0.2780						
Chi-2	3675.2600			0.000	***			310.5300		0.000	***			
Chi-2 test (all variables)								612.5600		0.000	***			
Chi-2 test (instrumental variables)								16.8400		0.000	***			
Chi-2 test (exogenous variables)								113.8400		0.000	***			
Chi-2 test (all dummies)								383.9700		0.000	***			
Chi-2 test (year dummies)								113.9700		0.000	***			
Chi-2 test (area dummies)								86.8700		0.000	***			
Chi-2 test (sector dummies)								125.2500		0.000	***			

\* Indicates significance at a 10 % level.  
 \*\* Indicates significance at a 5 % level.  
 \*\*\* Indicates significance at a 1 % level.

respond to external pressures to create egalitarian boards, although the representation of female directors remains low. In addition, the results show that the number of women’s nominations does not affect men’s nominations, reinforcing the idea that the number of proposals for female directors depends on the number of men’s nominations, but not vice versa.

The results also show that more board seats held by women in other firms reduces the number of proposals for female directors. Therefore, the simultaneous presence on other corporate boards clearly penalizes the option of women to be proposed as directors. This finding, in line with previous research, which suggests that directors holding a large number of seats on different boards reduces their ability to monitor and control (Hillman et al., 2011) becoming board interlocks a negative factor for female nominations, supports Hypothesis 2. The opposite occurs with men, whose presence on other boards seems to increase the possibility of being proposed as directors on new boards. Thus, directors’ networks and the accumulation of experience, expertise, and knowledge seem to be valuable resources for men but not for women. This finding, which is consistent with the precepts of integrating agency and resource dependence theories, is consistent for male directors with the conclusions obtained by Hillman and Dalziel (2003).

Furthermore, the number of cumulative nominations for women and men affects the number of female proposals, in contrast to men’s

nominations, which shows a positive correlation. These findings seem to suggest that when women’s tenure and men’s tenure increase, a sort of reinforcement effect of male board structures arises, while egalitarian policies regarding board structures fade. In sum, the proposals of men to be elected as board members receive support for both women’s tenure and men’s tenure; however, the proposals of women to hold a seat on boards are supported neither for women’s tenure nor for men’s tenure. Therefore, Hypothesis 3 is rejected in line with previous research, which states that tenure can reduce the monitoring function (Hillman et al., 2011). In sum, contravening the precepts of human capital and upper echelon theories, the experience, knowledge, and values provided by women are not considered to justify their elections as members of the corporate board, thus establishing a gender difference in the expertise hypotheses established by Vafeas (2003).

Regarding the influence of the geographical area of the firm, only Asian companies tend to exhibit higher support for male directors. This finding rejects Hypothesis 4 since proposals of female directors are not significant for any of the geographical areas considered. This result is not in line with previous research that found that firm location was a factor in determining the presence of women on boards (Halliday et al., 2020; Terjesen and Singh, 2008).

The more years a firm has been included in the top 100 positions in the Fortune Global 500 ranking appears to lead to more proposals for

women to be elected as members of boards. However, this result does not hold for male proposals. These findings confirm *Hypothesis 5* and are consistent with previous research that points out that the pressure caused by the high visibility or relevance of firms leads them to promote, among other, gender diversity on boards (Carter et al., 2003; Hillman et al., 2007). Thus, the presence of women on boards can be clearly related to the attempts of the most relevant and visible companies to create a public and egalitarian image with regard to board composition.

The difference in the influence of the sector on women's and men's nominations is remarkable. Hence, companies in basic industries (including basic products, healthcare, and retail) and IT sectors (technology and telecommunications) tend to offer higher support for female directors and lower support for male directors. The financial and industrial sectors also encourage female proposals to be elected as board members, although neither of these sectors are relevant to men's nominations. These findings confirm *Hypothesis 6* and are in line with most previous studies, except for the positive relationship between the industrial sector and women's nominations which could be justified by the different types of industries considered in each study (Adams and Ferreira, 2009; De Jonge, 2014; Geiger and Marlin, 2012; Hillman et al., 2007).

Finally, it is worth mentioning the change in the tendency of gender diversity on boards in recent years. The support for women nominations has clearly arisen in the latest years of the period analysed. These findings are consistent with the actual tendency of shareholders, institutional investors, regulators, stakeholders, and the entire society of increasing women's representation on boards.

## 6. Practical implications

The results obtained can have several implications for board diversity research. First, policymakers can establish various political and regulatory pressures on companies to promote the presence of women on boards. The results regarding the factors that may influence the election of female directors should be considered for regulators to introduce new recommendations or requirements to promote gender diversity and break down barriers to gender equality on boards. Moreover, cross-country and sectorial research can help policymakers determine which regions and sectors should be considered to reinforce policies to increase the presence of women on boards. Second, companies must design corporate governance strategies to build more egalitarian, responsible, and effective boards to promote gender diversity. Companies should take into consideration more the experience, expertise, and networks that female directors possess rather than the need to create a public image of gender diversity.

Third, investors can be crucial to encourage and promote gender diversity in boards. Company owners participate in shareholders' meetings, and their votes can not only determine the firm strategy but also change the composition of boards, including the possibility of creating egalitarian boards. In this sense, institutional investors' proxy votes should encourage companies to reduce the differences that still remain in the election between male and female directors.

Fourth, unlike previous research that mainly demonstrated the impact of female directors on board governance, financial results, and CSR performance, this research contributes to a better understanding of the variables that may explain the proposals of female directors to be part of corporate boards as the necessary first step to analyse their potential influence on firm performance.

Overall, more practical and theoretical efforts are necessary to provide more knowledge for designing corporate strategies and adopting legislation that can enhance gender diversity on boards in an attempt to contribute to the achievement of gender-balanced boards.

## 7. Conclusions

The purpose of this paper has been to analyse the factors that

determine the number of proposals for female directors to hold positions on boards of directors. Previous research has analysed the impact of the presence of women on boards in corporate governance with a special focus on gender diversity. However, very few studies have analysed the factors that explain why women have been appointed as members of corporate boards. Hence, this investigation contributes to the advancement of the literature on gender studies, specifically on gender diversity on corporate boards. This research specifically provides a better understanding of the individual, organisational, and environmental factors that could explain why women have been appointed as members on boards. The results confirm that the number of men's proposals, the years that a company accumulates in a top ranking, and the sector to which the firm belongs are significant for explaining the number of nominated women exerting a positive influence. On the contrary, the simultaneous nominations of women on different boards may be a barrier to their selection as members of other corporate boards. Similarly, the accumulated nominations for men and women in the same company and geographical area are not significant for explaining the number of nominated women.

As this research analyses the same factors when considering proposals of male and female directors, it can be concluded that i) the number of women's nominations decreases when they have multiple nominations for different boards, while the number of men's nominations increases; ii) the cumulative number of nominations for the same company does not influence women's nominations; however, it is a positive determinant of men's nominations; and iii) the support for women's nominations increases with the cumulative years that a company has been in the top ranking, while support for men's nominations is not affected.

Although the presence of women on boards has been increasing in recent years, reality still shows notable differences between men and women in occupying a seat on boards. In fact, the results evidently show that the presence of women on boards increases with the number of male nominations, which means that the former happens as a result of increasing the size of the boards instead of just replacing male directors. Unlike the nominations of male directors, the experience, expertise, connections, and knowledge accumulated by female directors do not seem to be considered when they are proposed as board members. Conversely, the relevance of firms seems to be a determinant factor, suggesting that the greater presence of women on boards can be more related to the reaction to the pressure that relevant firms undergo to reinforce their corporate reputation and public image of egalitarian firms than to the consideration of the human capital and networks that women directors possess. In sum, the results show that gender diversity on boards is being carried out by adding specific board seats for women and that this fact is due more to the need to create a favourable public image based on equality, rather than on the expertise, knowledge, or skills of women.

## 8. Future research

Future research should consider other factors that could explain the presence of women on corporate boards to obtain more information on how to increase female representation. In addition, future research should explore these factors while considering different sectors, geographical areas, or simply companies not included in top rankings to compare and confirm the different results obtained. It would also be valuable to consider Small and Medium-Sized Enterprises (SMEs), start-ups, or virtual companies to analyse the potential differences between these forms of businesses.

Future research should also analyse the results of the proposals of female directors. The first step to becoming a member of a corporate board is to be proposed, but finally, the nomination must be approved to hold a seat on the board. Therefore, the relationship between the number of women's nominations and the resolutions of these proposals considering the choice of voting for, against, or abstaining regarding

each of the proposals for directors should be analysed. The proxy votes of institutional investors can also be analysed to determine their influence on the gender composition on boards.

### CRedit authorship contribution statement

María López

Review the previous research

Sample preparation and data collection

Design the model

Analysis and interpretation of the results

Write the draft manuscript

Create the final version of the paper

Marcos Vizcaíno-González

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M. Luisa López-Pérez

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Sample preparation and data collection

Design the model

Analysis and interpretation of the results

Write the draft manuscript

Create the final version of the paper

### Data availability

The authors do not have permission to share data.

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