



# Gender quota laws and intra-group governance: Evidence from parent-subsidiary dynamics

Mariasole Bannò<sup>1</sup> · Emilia Filippi<sup>2</sup> · Tommaso Fornasari<sup>3</sup> 

Received: 30 March 2025 / Accepted: 28 April 2026  
© The Author(s) 2026

## Abstract

Gender quota laws apply to parent firms but typically do not extend to their subsidiaries, raising the question of whether legally induced changes in board composition are associated with changes within corporate groups. Drawing on institutional theory and sensemaking theory, this study examines whether gender quota laws targeting parent firms are associated with a greater presence of women directors in their subsidiaries and identifies which parent- and subsidiary-level characteristics foster gender balance on subsidiary boards. To this end, we employ propensity score matching, fractional logit regression, and hierarchical logit regression on a sample of Italian firms. The results show that the presence of women directors in subsidiaries of parent firms directly subject to the gender quota law is lower than in firms that are neither directly nor indirectly subject. Consistently, being a subsidiary of a regulated parent firm is associated with a lower presence of women directors, even after accounting for observable firm characteristics and regardless of the parent firm's shareholding. A larger subsidiary's board size, greater subsidiary age, being an innovative subsidiary, and a higher proportion of women directors in the parent firm (including the presence of a critical mass) are positively associated with a higher percentage of women directors in the subsidiary. By contrast, having a multinational parent firm is negatively associated with the presence of women directors. Overall, the findings suggest that regulatory pressure at the parent-firm level does not automatically translate into similar governance outcomes within subsidiaries and may be consistent with limited or even negative intra-group diffusion, although the evidence refers to a single-year cross-section and may not capture longer-term adjustment processes.

**Keywords** Gender quota laws · Gender balance · Corporate governance · Institutional theory

---

Extended author information available on the last page of the article

## 1 Introduction

Despite the progress achieved in recent decades, women continue to encounter structural barriers to career advancement, particularly in access to leadership and board positions, a phenomenon commonly referred to as the “glass ceiling” (e.g., Kogut et al., 2014). As a result, women remain underrepresented on corporate boards of directors (e.g., Comi et al., 2020). This persistent underrepresentation of women in leadership roles highlights the enduring problem of vertical gender segregation and underscores the need for sustained and decisive interventions to enhance the presence of women in upper echelons and boards of directors (e.g., Atinc et al., 2022).

In response to these persistent asymmetries, several European countries, including Italy, have introduced policy measures, namely gender quota laws, aimed at accelerating women’s presence on corporate boards of directors and promoting broader cultural and organisational change (Klettner et al., 2016; Kirsch, 2021). While the primary objective of these regulations is to ensure gender balance on corporate boards of directors in firms directly subject to the law (De Masi et al., 2018), gender quota laws also raise a broader question concerning the extent to which legally induced changes may diffuse beyond the formally regulated firms. The issue is especially salient in corporate groups, where the parent firm subject to gender quota laws coexists with subsidiaries that are formally exempt but remain organisationally and strategically connected, as the parent firm typically exercises varying degrees of control and influence (Chandler, 1991; Garcia-Pont et al., 2009). Accordingly, regulatory interventions at the parent level may have implications that extend to their subsidiaries. What remains unclear is the extent to which parent-level decisions prompted by gender quota laws translate into gender-related changes within subsidiaries. The parent firm may either extend its commitment to women’s representation across the corporate group or restrict compliance to its own board of directors, thereby leaving any structural imbalances intact at the subsidiary level. This ambiguity raises a broader empirical question regarding whether, and under which conditions, changes induced at the parent-firm level are associated with similar governance patterns within subsidiaries.

This gap calls for empirical investigation into whether and how corporate governance reforms aimed at promoting gender equality diffuse within corporate groups. To address this gap, this study draws on institutional theory (DiMaggio & Powell, 1983; Oliver, 1991) and sensemaking theory (Maitlis & Christianson, 2014) to investigate whether gender quota laws targeting parent firms are associated with a greater presence of women directors in their subsidiaries, and to identify the parent- and subsidiary-level characteristics that may favour or hinder the diffusion of gender balance across corporate groups. To this end, we employed propensity score matching, fractional logit regression, and hierarchical logit regression, focusing on the Italian context where gender quota regulation applies to listed and publicly owned parent firms, while their subsidiaries are not directly subject to the same legal provisions. Given the data availability, our empirical analysis focuses on a single-year cross-section. While this design allows us to identify contemporaneous patterns, it may not capture longer-term organisational adjustments, which are particularly relevant in the context of intra-group diffusion processes.

The results show that the presence of women directors in subsidiaries of parent firms directly subject to the gender quota law (16.41%) is lower than that in firms that are neither directly nor indirectly subject to the law (22.63%). Consistently, being a subsidiary of a parent firm directly subject to the law is associated with a reduction in the presence of women directors regardless of the parent firm's shareholding. Finally, a larger subsidiary's board size, greater subsidiary age, being an innovative subsidiary, and a higher proportion of women directors in the parent firm (including the presence of a critical mass of women directors) are associated with a higher percentage of women directors in the subsidiary. By contrast, having a multinational parent firm is associated with a lower percentage.

## 2 Theoretical background

### 2.1 Affirmative actions to promote women's presence in top echelon positions

Affirmative actions are policies that, through positive discrimination, favour individuals belonging to disadvantaged groups of people (Holzer & Neumark, 2000). The issue of affirmative action lies at the intersection of two different ways of conceiving equality: formally and substantially (Stancil, 2016). Formal equality of opportunity implies the absence of formal barriers in accessing jobs and positions, with merit as the sole criterion for selection (Stancil, 2016). However, formal equality of opportunity may not translate into substantive equality (Gamson & Modigliani, 1995; Kellogg, 2006): while everyone has an equal opportunity to participate, sometimes not everyone has an equal chance to succeed (Rubinfeld, 1997). Achieving substantive equality requires measures that benefit disadvantaged groups, ensuring both formal and real opportunities (Kantola & Nousiainen, 2009; Stancil, 2016). In this sense, affirmative actions can help restore equality and support those who face discrimination (Rubinfeld, 1997). In the context of gender quota laws, the primary goal is to remove barriers to equal access to corporate governance by mandating the inclusion of women on boards of directors (Mensi Klarbach & Seierstad, 2020), while also promoting gender balance and fostering broader cultural change (Klettner et al., 2016).

According to Clavero & Galligan (2021), affirmative actions can be implemented through three approaches: coercive, enabling, or voluntary. The coercive approach relies on mandatory laws, which may create temporary *ex-lege* discrimination to counteract more serious inequalities (Rubinfeld, 1997). Regardless of the specific mechanism, coercive measures share common features: a quota of board seats reserved for women, a defined compliance timeline, and a system of penalties for non-compliance (Reddy & Jadhav, 2019). The introduction of such measures is justified by their temporary nature, with the aim of fostering long-term cultural change regarding gender balance (Kellogg, 2006). The enabling approach involves the adoption of rules by a regulatory body that oversees the implementation and enforcement of laws. Firms adhere voluntarily to governance codes, with an obligation to justify any instances of non-compliance (Allemand et al., 2022). Finally, the voluntary or *laissez-faire* approach leaves firms free to set their own commitments or targets, which are not legally binding (Labelle et al., 2015). In this case, the achievement of gender balance

depends entirely on the commitment of individual firms (Campbell & Erzeel, 2018). To promote gender equality on corporate boards, several European countries, including Norway, Italy, and France, have opted for a coercive approach by introducing gender quota laws (Kirsch, 2021).

## 2.2 The effects of gender quota laws

Several studies have examined the effects of gender quota laws at firm and societal levels, offering arguments in favour and against their adoption (Hamplová et al., 2022).

Gender quota laws are designed to correct historical and systemic gender imbalances by ensuring women's equitable access to leadership positions based on their qualifications and capabilities (De Vita & Magliocco, 2018; Ferrari et al., 2022). Unlike voluntary recommendations, which have often proved ineffective, gender quota laws establish binding targets, thereby moving beyond mere recommendations and providing a concrete mechanism to achieve measurable results (Fagan & Gonzáles Menéndez, 2012; Mensi-Klarbach & Seierstad, 2020). Their implementation can also promote greater awareness of gender equality issues and broader cultural transformation (Klettner et al., 2016; Latura & Catalano Weeks, 2023). By mandating a minimum women's presence, gender quota laws create opportunities for women to demonstrate skills and effectiveness in leadership roles, helping to dismantle stereotypes and entrenched barriers (Hamplová et al., 2022; Kogut et al., 2014; Seierstad, 2016). In this way, gender quota laws are viewed as a catalyst for more diverse and representative leadership (De Vita & Magliocco, 2018). At the firm level, gender quota laws promote the appointment of women (Klettner et al., 2016), improve recruitment processes (Wiersema & Mors, 2016), drive organisational changes toward gender equality (Wang & Kelan, 2013), and foster the introduction of equality initiatives (Latura & Catalano Weeks, 2023). Proponents also emphasise the "business case" for diversity, noting that gender-balanced boards of directors are associated with greater efficiency, improved performance, higher economic value, and benefits for a wide range of stakeholders (e.g., Comi et al., 2020; Hamplová et al., 2022; Martínez-Jimenez et al., 2020). At the governance level, gender quota laws counteract monopolistic power structures that have historically excluded women (e.g., Atinc et al., 2022) and challenge "inside directorship," where leadership roles circulate within narrow, male-dominated networks (Chandler, 2016). Women directors bring valuable resources to the board, including unique skills, knowledge, and perspectives (e.g., Comi et al., 2020; Ferrari et al., 2022), which foster broader discussions, consideration of various alternatives and responsiveness to stakeholders' needs (e.g., Atinc et al., 2022; Pastore & Tommaso, 2016). The external recruitment of women directors also strengthens board independence (e.g., Atinc et al., 2022; Bøhren & Staubo, 2016) and enhances monitoring (De Masi et al., 2018).

Critics, however, question both the effectiveness and the desirability of gender quota laws. Some studies find no compelling social or economic justification (Bertrand et al., 2018) and highlight compliance issues (e.g., Mateos De Cabo et al., 2019). Gender quota laws may result in a "false progress": they risk projecting an illusion of equality while leaving structural inequalities intact and stalling meaning-

ful organisational change (Fagan & Gonzáles Menéndez, 2012). The spillover effects of gender quota laws appear limited: they neither increase women's representation in non-targeted managerial bodies nor enhance their chances of attaining board chairs, with the overall impact beyond the boards of directors remaining minimal (Bertrand et al., 2018; Gibert & Fedorets, 2025). Achieving gender-balanced boards of directors may further be constrained by a limited pool of candidates (Dale-Olsen et al., 2013), while some gender disparities may reflect women's personal career choices rather than systemic discrimination, making gender quota laws an imperfect solution (Ferrari et al., 2022). Appointments made to meet quotas may also raise doubts about competence, reinforcing tokenism and stereotypes that portray women as “decorative additions” rather than qualified leaders (Freidenvall & Hallonsten, 2013). Concerns about reverse discrimination have also been raised, as privileging gender over other criteria may disadvantage qualified men (Chandler, 2016; Velkova, 2015). In some cases, gender quota laws may hinder board functioning by fuelling conflicts and undermining decision-making (Ferrari et al., 2022; Hamplová et al., 2022). Further risks include negative effects on firm value and performance arising from the appointment of women directors solely to comply with the law (e.g., Ahern & Dittmar, 2012; Comi et al., 2020; Greene et al., 2020). Lastly, gender quota laws represent undue state interference in corporate governance, disrupting established organisational practices (Chandler, 2016; Dale-Olsen et al., 2013).

Ultimately, some authors argue that the existing evidence is insufficient to take a definitive stance either for or against gender quota laws (e.g., Ferreira, 2015).

### **2.3 Institutional theory and sensemaking theory as a mean to understand the reaction of firms to gender quota laws**

Institutional theory and sensemaking theory provide a useful framework for examining affirmative actions, particularly the effects of gender quota laws in subsidiaries of parent firms directly subject to such law.

One of the central insights of institutional theory is its focus on how institutional settings influence firms' strategies and outcomes (Scott, 1995). Institutional environments are “characterized by the elaboration of rules and requirements to which individual organisations must conform if they are to receive support and legitimacy” (Meyer & Scott, 1983). Institutions encompass cultural-cognitive, normative, and regulatory elements that establish a framework of societal expectations. The cultural-cognitive component reflects widely shared social knowledge across populations (Atinc et al., 2022). The normative aspect incorporates values, beliefs, norms, and assumptions regarding human action, shaping the appropriate goals and means for achieving them (Heugens & Lander, 2009). The regulatory dimension represents statutes and regulations that promote or constrain specific behaviours (Kostova & Roth, 2002). In this regard, states are the most powerful institutions, capable of enforcing institutional constraints by imposing legislation, such as mandatory affirmative actions, thereby guiding organisational behaviour (Atinc et al., 2022; DiMaggio & Powell, 1983).

Institutional theory posits that firms adopt different strategies and demonstrate different behaviours in response to institutional pressures (Oliver, 1991). Institutions are

ultimately enacted by individuals in specific social contexts, as they are carried and materialised through actors' behaviours, tools, and organisational practices (Powell & Colyvas, 2008; Jensen et al., 2009). This insight highlights the importance of understanding how organisational actors interpret, process, and respond to institutional pressures, rather than assuming automatic or uniform compliance.

Sensemaking refers to the process through which individuals and organisations attempt to interpret novel, ambiguous, or unexpected situations by extracting cues from their environment and constructing plausible explanations that give meaning to what is happening and guide subsequent action (Maitlis & Christianson, 2014). Sensemaking therefore represents a crucial micro-level mechanism through which institutional pressures are translated into organisational responses. Sensemaking accounts for both the cognitive complexity underlying organisational behaviour and the diverse ways in which institutional pressures operate at the micro level (Powell & Colyvas, 2008). Rather than reacting mechanically to regulation, organisations actively interpret institutional requirements, which may result in heterogeneous responses even under similar regulatory conditions. For example, firms can comply with mandatory laws by consciously adhering to them or by incorporating the associated values, norms, and institutional requirements (Oliver, 1991). Alternatively, firms can act proactively, demonstrating commitment by strategically aligning with institutional expectations to secure the benefits from the government's support and legitimacy (Salancik & Pfeffer, 1978).

One key regulatory pressure faced by firms is the enforcement of gender quota laws by certain states. In response to this institutional pressure, firms make strategic choices to align with or resist the regulation (Goodstein et al., 1994). These responses are not automatic but are shaped by how organisational actors interpret the meaning, relevance, and implications of the law for their organisation. Under a coercive approach, the expected outcome is the legally mandated achievement of gender balance. Firms demonstrating strong commitment may exceed these requirements, achieving a higher proportion of women directors than the gender quota law requires. Conversely, failure to meet the minimum levels required by the gender quota law indicates insufficient commitment, resulting in an unsatisfactory scenario. Under an enabling approach, the attainment of gender balance depends entirely on the firm's internal commitment, as soft law provisions lack enforceable sanctions (Mateos De Cabo et al., 2019). Thus, both positive and negative outcomes are possible, depending on the firm's commitment to gender equality. In the case of a voluntary or *laissez-faire* approach, only the most responsible firms achieve substantial gender balance. Conversely, firms with insufficient commitment fail to reach gender balance. Across these regulatory regimes, variation in outcomes suggests that firms' responses are shaped not only by the formal strength of the law, but also by how organisational actors interpret, internalise, and give meaning to it.

## **2.4 How corporate groups internalise gender quota laws: Theoretical framework and research question**

Corporate groups consist of legally independent firms that remain interconnected through both formal and informal economic or social ties, and whose activities are

coordinated under the leadership of a core entity, i.e., the parent firm (e.g., Khanna & Rivkin, 2001). Although subsidiaries retain distinct legal identities, management structures, and boards of directors, their operations are not fully autonomous but show a degree of interdependence (Aggarwal et al., 2019). The parent firm, by virtue of its comparatively greater resource endowment, exerts direct control over its subsidiaries (Sakawa & Watanabel, 2018). Its contribution lies, for example, in offering strategic direction, establishing standards to guide and align activities, mobilising corporate resources, and fostering synergies across business units (e.g., Pla-Barber et al., 2018). Furthermore, the parent firm may intervene directly in decisions regarding the subsidiary's management (Sakawa & Watanabel, 2018). Consequently, the behaviour and performance of subsidiaries are largely shaped by the parent firm, as they develop their strategies by balancing their own initiatives with the demands imposed by headquarters (Chandler, 1991; Garcia-Pont et al., 2009).

The structural configuration of corporate groups also affects how subsidiaries interpret and process information coming from both within and outside the corporate group (He & Shaw, 2025). Dense interconnections among subsidiaries create relational and structural embeddedness, which, in turn, fosters trust and facilitates the exchange of information (He & Shaw, 2025). Over time, subsidiaries not only adapt to external environmental pressures but also coevolve through reciprocal interactions (Pla-Barber et al., 2018). This coevolutionary process, rooted in the embeddedness of subsidiaries within the broader institutional framework of the parent firm (Oliver, 1991), underscores the necessity of internal responsiveness and, consequently, shapes their developmental trajectories (Pla-Barber et al., 2018). Specifically, subsidiaries engage in sensemaking processes through which they interpret institutional and environmental cues coming from both within and outside the corporate group, address ambiguity, and construct shared understandings that guide subsequent organisational decisions (Weick, 1995; Maitlis & Christianson, 2014).

Within this context, gender quota laws interact with the internal dynamics of corporate groups, shaping practices and decision-making. Often, gender quota laws target only the parent firm, leaving subsidiaries formally exempt. This reflects a voluntary or *laissez-faire* approach, where the achievement of gender balance depends primarily on firms' governance choices and cultural-cognitive and narrative components. Sensemaking allows subsidiaries to interpret these institutional pressures, prioritise certain cues over others, and enact practices that do not necessarily align with the parent firm's commitment to gender equality (Maitlis & Christianson, 2014). This helps explain why subsidiaries of parent firms directly subject to gender quota laws may either promote or fail to promote the presence of women on their boards of directors.

Nevertheless, the regulatory institutional pressure imposed on the parent firm may still influence the importance given to gender equality in the corporate group. Specifically, the embeddedness of subsidiaries within the corporate group (He & Shaw, 2025), combined with dense relational and structural ties (e.g., Khanna & Rivkin, 2001), can create channels through which the parent's commitment to gender equality cascades, affecting practices beyond the legally regulated entity. Consequently, the parent firm may choose to extend its commitment to women's representation to the boards of directors of subsidiaries, even when they are not subject, directly or

indirectly, to the gender quota law. When this extension does not occur, the result is partial compliance: the parent firm fulfils legal requirements, but gender disparities persist within the wider corporate group, particularly in subsidiaries. In such circumstances, gender quota laws risk functioning more as symbolic gestures than as effective instruments of transformation. In this sense, sensemaking processes at the subsidiary level can either reinforce symbolic compliance or enable the internalisation of gender equality, depending on how cues are interpreted and enacted.

Therefore, our aim is to examine whether subsidiaries operating under a voluntary approach, but linked hierarchically to parent firms directly subject to gender quota laws, achieve progress toward gender balance or instead fail to advance. In other words, we aim to investigate whether the cultural-cognitive and normative change advocated by regulatory institutional pressures through gender quota laws is diffusing within corporate groups, thereby increasing the presence of women directors in subsidiaries of parent firms directly subject to the law. In doing so, we also account for the parent firm's shareholding level.

Moreover, based on the idea that the behaviour and performance of subsidiaries are largely shaped by the parent firm (Chandler, 1991; Garcia-Pont et al., 2009), we aim to identify which parent- and subsidiary-level characteristics promote a greater presence of women directors in subsidiaries of parent firms directly subject to gender quota laws. The underlying idea is that characteristics of both the parent firm and the subsidiary regarding governance (i.e., board size and women directors), capabilities and resources (i.e., firm size, firm age, and financial performance), strategy (i.e., multinational status and innovation activity), gender-related initiatives (i.e., holding the UNI/PdR 125 gender equality certification), and context (i.e., location in Northern Italy, Provincial women entrepreneurship rate, and industry) may shape the presence of women directors in subsidiaries by affecting the availability of resources and the nature of strategic guidance. Specifically, women directors in parent firms may trigger broader organisational changes toward gender equality within the corporate group (Wang & Kelan, 2013), thereby fostering the inclusion of women directors in subsidiaries. Multinational firms are often better positioned to ensure more equitable access to leadership roles (Suárez-Ortega et al., 2026), including appointment of women directors in subsidiaries, as the institutional contexts of both home and host countries shape multinational firms' attention to gender equality and their adoption of gender diversity policies. Finally, drawing on signalling theory, according to which the less informed party (in this study, the subsidiary) looks for signals about the intentions of the more informed party (the parent firm) to guide its decisions (Spence, 1973), the parent firm's adoption of the UNI/PdR 125 gender equality certification can signal its commitment to gender equality. This may encourage subsidiaries to align their practices, for instance by promoting the appointment of women directors.

Based on the above, the theoretical framework guiding this study is presented in Fig. 1.

To examine whether the Italian gender quota law has succeeded in increasing the presence of women directors in subsidiaries of parent firms directly subject to the law, and to identify which parent- and subsidiary-level characteristics (regarding governance, capabilities and resources, strategy, gender-related initiatives, and context) promote a greater presence of women directors in subsidiaries of parent

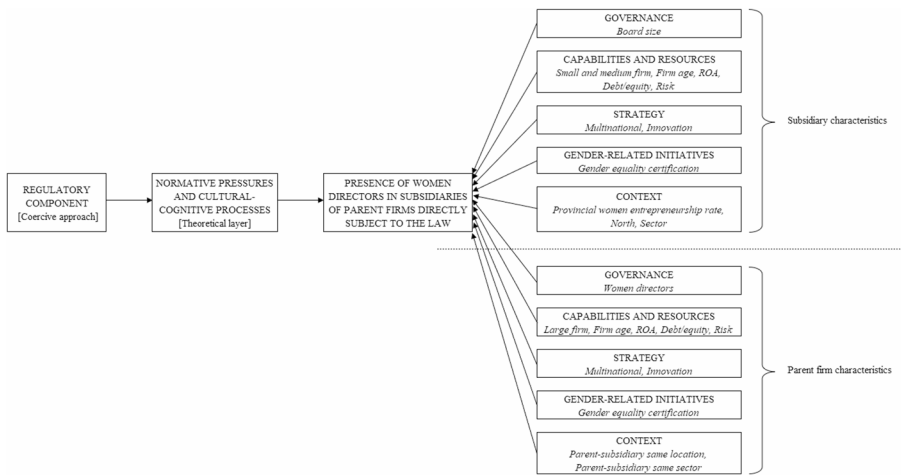


Fig. 1 Theoretical framework

firms directly subject to gender quota laws, we applied the propensity score matching proposed by Rosenbaum & Rubin (1983), a fractional logit regression analysis, and hierarchical logit regression analysis.

### 3 Methodology

#### 3.1 Context of analysis

Italy represents a particularly relevant context for this analysis, given its distinctive corporate governance system and the historically low representation of women on boards of directors. The Italian system of corporate governance has historically been marked by a limited number of listed firms, weak investor protection, and a high concentration of ownership, predominantly held by families and the State (Zattoni, 2019). These features were often accompanied by the use of control-enhancing mechanisms that widened the gap between ownership and control, as well as by the significant influence exercised by large shareholders over the selection and conduct of board members and top managers (Zattoni, 2019).

Within this institutional framework, board composition in terms of gender diversity began to change only gradually in response to legal and regulatory reforms. Women were largely absent from Italian boards of directors until the late 20th century; when present, they were typically confined to marginal roles, seldom held multiple directorships, and were often linked to controlling shareholders through family ties (De Masi et al., 2018; Rinaldi & Tagliacuzzi, 2025). The presence of women directors began to increase significantly in the early 2000s (Rinaldi & Tagliacuzzi, 2025). In 2006, the Italian National Code of Equal Opportunities between Women and Men (Legislative Decree No. 198/2006) was introduced to guarantee equal opportunities for women and men across all areas of society; however, the presence of women on Italian boards of directors remained limited (De Masi et al., 2018). A substantial shift

occurred following the introduction, in 2011, of the gender quota law for boards of directors, known as the Golfo-Mosca Law (Law 120/2011) (Paoloni et al., 2019; Rinaldi & Tagliazucchi, 2025). The law applies to listed and publicly-owned firms, mandating that at least one-third of board seats be allocated to the less-represented gender, effective from August 2012 for the following three board appointments. In 2019, the Italian Parliament increased the quota to at least two-fifths of the components and not more than one-third for the most-represented gender, and extended the law to cover an additional six mandates. The enactment of the Golfo-Mosca Law facilitated women's access to boards of directors, extending its influence even to firms not directly subject to the legislation, albeit to a more limited degree (Rinaldi & Tagliazucchi, 2025). Moreover, by 2017, women directors with professional backgrounds and no family affiliations had clearly become the predominant group, although these highly qualified women were largely confined to less powerful non-executive roles (Rinaldi & Tagliazucchi, 2025).

### 3.2 Propensity score matching

The propensity score matching proposed by Rosenbaum & Rubin (1983) was applied to compare the presence of women directors in (1) subsidiaries of parent firms directly subject to the law and (2) firms that are neither directly nor indirectly subject to the law (i.e., control firms).

To evaluate the effect of the Golfo-Mosca Law, it might be possible to compute the average treatment effect  $ATE = E(Y_1 - Y_0)$  or the average treatment effect on the treated  $ATT = E(Y_1 - Y_0 | D = 1)$ , where  $D = 1$  refers to the condition of being treated (i.e., being a subsidiary of a parent firm directly subject to the law),  $Y_1$  refers to the presence of women directors in treated firms (i.e., subsidiaries of parent firms directly subject to the law), and  $Y_0$  refers to the presence of women directors in control firms (i.e., firms that are neither directly nor indirectly subject to the law), respectively.  $ATT = E(Y_1 - Y_0 | D = 1)$  can be rewritten as  $ATT = E(Y_1 | D = 1) - E(Y_0 | D = 1)$ , where  $E(Y_0 | D = 1)$  refers to the presence of women directors in control firms if they were treated. This condition cannot be observed, while  $E(Y_0 | D = 0)$ , i.e., the presence of women directors in control firms, can be. It is possible to write  $\Delta = E(Y_1 | D = 1) - E(Y_0 | D = 0) = ATT + E(Y_0 | D = 1) - E(Y_0 | D = 0)$ , where  $E(Y_0 | D = 1) - E(Y_0 | D = 0)$  is the selection bias. The true ATT can be estimated only if the selection bias is equal to zero.

The selection bias would be eliminated if firms were randomly assigned to the treatment (i.e., being a subsidiary of a parent firm directly subject to the law) and control (i.e., being a firm that is neither directly nor indirectly subject to the law) groups. Since this selection is non-random, the estimation of the effect of being a treated firm is biased. To solve this selection problem, the matching approach can be applied (Caliendo & Kopeinig, 2008): firms in the treatment group are matched with firms in the control group that are similar in all relevant characteristics. In this way, the different presence of women directors in treated and control firms is only due to the effect of the treatment.

Two assumptions are required: (1) the unconfoundedness or selection on observables or conditional independence assumption, according to which the potential out-

come is independent of the treatment given a set of observable covariates; (2) the common support or overlap condition, according to which similar units must have a positive probability of being treated and untreated (i.e., boundary conditions 0 and 1 for the propensity score are ruled out) otherwise an evaluation bias arises (Ozbugday, 2018).

This study adopted the propensity score matching proposed by Rosenbaum & Rubin (1983): the propensity score was computed based on the probability of being a subsidiary of a parent firm directly subject to the law, given observed characteristics. The propensity score was estimated using a logit model, including the variables that affect both the treatment (i.e., being a subsidiary of a parent firm directly subject to the law) and the outcome variable (i.e., presence of women directors), i.e., firm size, firm age, multinational status, innovation activity, financial situation, location, and sector. These variables were chosen based on economic theory and previous empirical analysis. Specifically, the following model was estimated:

$$\begin{aligned} \text{Subsidiary of a parent firm directly subject to the} \\ \text{law}_{i, 2024} = \beta_0 + \beta_1 \text{Small and medium firm}_{i, 2024} + \\ \beta_2 \text{Firm age}_{i, 2024} + \beta_3 \text{Multinational firm}_{i, 2024} + \\ \beta_4 \text{Innovation}_{i, 2024} + \beta_5 \text{ROA}_{i, 2024} + \\ \beta_6 \text{Debt/Equity}_{i, 2024} + \beta_7 \text{Risk}_{i, 2024} + \\ \beta_8 \text{North}_{i, 2024} + \beta_9 \text{Industry}_{i, 2024} + \varepsilon_i \end{aligned}$$

Subsequently, a matching algorithm was selected and treated firms (i.e., subsidiaries of parent firms directly subject to the law) were paired with control firms (i.e., firms that are neither directly nor indirectly subject to the law) based on their propensity scores. Several matching methods exist (see e.g., Nearest Neighbour, Radius Matching, Kernel Matching). Following Ozbugday (2018), Nearest Neighbour without replacement and caliper 0.05 was employed in this analysis: a treated firm was matched with a control firm with the closest propensity score.

To evaluate if the balancing property was satisfied, three analyses were performed. First, the propensity score distributions in the treatment and control groups were evaluated before and after matching. Second, the descriptive statistics of the two groups were compared with a Wilcoxon test. Ideally, after matching, there should be no statistical difference between the two groups concerning any of the covariates in the matching model (Bakhtiari et al., 2013). Third, the standardized mean differences for each covariate before and after matching were analysed. A substantial reduction in standardized mean differences after matching indicates an improvement in covariate balance between the two groups. If these conditions are not satisfied, there is either a misspecification of the logit model used to estimate the propensity score or a lack of common support (i.e., insufficient comparability between the treatment and control groups) (Caliendo & Kopeinig, 2008).

Finally, the presence of women directors in the treatment (i.e., subsidiaries of parent firms directly subject to the law) and control groups (i.e., firms that are neither directly nor indirectly subject to the law) was estimated and compared with a Wilcoxon test.

### 3.3 Fractional logit regression analysis

To assess the effect of being a subsidiary of a parent firm directly subject to the law on the presence of women directors in the subsidiary, a fractional logit regression analysis was performed, which is appropriate given the fractional nature of the dependent variable, with robust standard error clustered at the provincial level (Greene, 2003). All predictors were lagged relative to the dependent variable to reduce concerns about reverse causality, although some variables may still be jointly determined.

Specifically, the following model was estimated (Model 1):

$$\begin{aligned} \text{Women directors}_{i, 2024} = & \beta_0 + \beta_1 \text{Subsidiary of a} \\ & \text{parent firm directly subject to the law}_{i, 2023} + \\ & \beta_2 \text{Board size}_{i, 2023} + \beta_3 \text{Small and medium firm}_{i, 2023} + \\ & \beta_4 \text{Firm age}_{i, 2023} + \beta_5 \text{Multinational firm}_{i, 2023} + \\ & \beta_6 \text{Innovation}_{i, 2023} + \beta_7 \text{ROA}_{i, 2023} + \\ & \beta_8 \text{Debt/Equity}_{i, 2023} + \beta_9 \text{Risk}_{i, 2023} + \beta_{10} \text{Gender} \\ & \text{equality certification}_{i, 2023} + \beta_{11} \text{Provincial women} \\ & \text{entrepreneurship rate}_{i, 2023} + \beta_{12} \text{North}_{i, 2023} + \\ & \beta_{13} \text{Industry}_{i, 2023} + \varepsilon_i \end{aligned}$$

As a robustness check, we examined whether the effect of being a subsidiary of a parent firm directly subject to the law on the presence of women directors in the subsidiary varies with the parent firm's shareholding. To test this, in Model 1, *Subsidiary of a parent firm directly subject to the law* was replaced by *Affiliate of a parent firm directly subject to the law* (in Model 2) and *Minority-owned affiliate of a parent firm directly subject to the law* (in Model 3).

### 3.4 Hierarchical logit regression analysis

To identify which parent- and subsidiary-level characteristics regarding governance (i.e., board size and women directors), capabilities and resources (i.e., firm size, firm age, and financial performance), strategy (i.e., multinational status and innovation activity), gender-related initiatives (i.e., holding the UNI/PdR 125 gender equality certification), and context (i.e., location in Northern Italy, Provincial women entrepreneurship rate, and industry) promote a greater presence of women directors in subsidiaries of parent firms directly subject to the law, a hierarchical logit regression analysis was applied.

Hierarchical models provide a conceptual and statistical framework for analysing hierarchically nested data structures. In such settings, “subjects” at a given hierarchical level may be influenced by “subjects” at higher hierarchical levels (Stryhn & Christensen, 2014). Moreover, “subjects” within the same group tend to be more similar to one another than to “subjects” in other groups, thereby violating the assumption of independence of observations (Hofmann, 1997). Hierarchical models handle such data structures by allowing the analysis of how factors at one hierarchical level influence, or are influenced by, factors at another hierarchical level (Hofmann, 1997). Specifically, hierarchical models separate the modelling equations at each level of the hierarchy, thereby allowing the investigation of higher-level units' influence on

lower-level outcomes, while maintaining the correct level of analysis (Hofmann, 1997; Stryhn & Christensen, 2014). Moreover, unlike ordinary least squares (OLS) regression, which does not distinguish between individual- and group-level residuals, hierarchical models explicitly account for the partial dependence of observations within groups by estimating variance components at each level of the hierarchy (Hofmann, 1997; Osborne, 2000). Therefore, hierarchical models make it possible to include predictors at their appropriate level of analysis and to disentangle the different sources of variation in the outcome variable (Hofmann, 1997).

Accordingly, hierarchical models are particularly suitable in this study, as they enable the examination of lower-level (i.e., subsidiary-level) and higher-level (i.e., parent-level) characteristics on a lower-level outcome variable (i.e., the presence of women directors in subsidiaries) (Hofmann, 1997; Osborne, 2000).

Specifically, a hierarchical logit regression analysis was performed, appropriate given the fractional nature of the dependent variable. All predictors were lagged relative to the dependent variable to reduce concerns about reverse causality, although some variables may still be jointly determined. The following model was estimated (Model 4):

$$\begin{aligned} \text{Women directors}_{i, 2024} = & \beta_0 + \beta_1 \text{Board size}_{i, 2023} + \\ & \beta_2 \text{Small and medium firm}_{i, 2023} + \beta_3 \text{Firm age}_{i, 2023} + \\ & \beta_4 \text{Multinational firm}_{i, 2023} + \beta_5 \text{Innovation}_{i, 2023} + \\ & \beta_6 \text{ROA}_{i, 2023} + \beta_7 \text{Debt/Equity}_{i, 2023} + \beta_8 \text{Risk}_{i, 2023} + \\ & \beta_9 \text{Gender equality certification}_{i, 2023} + \beta_{10} \text{Provincial} \\ & \text{women entrepreneurship rate}_{i, 2023} + \beta_{11} \text{North}_{i, 2023} + \\ & \beta_{12} \text{Women directors - parent firm}_{i, 2023} + \\ & \beta_{13} \text{Large firm}_{i, 2023} + \beta_{14} \text{Firm age - parent firm}_{i, 2023} + \\ & \beta_{15} \text{Multinational firm - parent firm}_{i, 2023} + \\ & \beta_{16} \text{Innovation - parent firm}_{i, 2023} + \\ & \beta_{17} \text{ROA - parent firm}_{i, 2023} + \beta_{18} \text{Debt/Equity - parent} \\ & \text{firm}_{i, 2023} + \beta_{19} \text{Risk - parent firm}_{i, 2023} + \beta_{20} \text{Gender} \\ & \text{equality certification - parent firm}_{i, 2023} + \\ & \beta_{21} \text{Same location}_{i, 2023} + \beta_{22} \text{Same industry}_{i, 2023} + \varepsilon_i \end{aligned}$$

Moreover, to assess whether the effects of parent- and subsidiary-level characteristics (regarding governance, capabilities and resources, strategy, gender-related initiatives, and context) vary across different types of subsidiaries, two heterogeneity analyses were performed. Model 4 was estimated separately for young versus old subsidiaries (Models 5 and 6, respectively) and for small and medium versus large subsidiaries (Models 7 and 8, respectively).

Finally, the effect of the presence of a critical mass of women directors in the parent firm (i.e., the presence of at least 40% women) was examined based on the idea that women directors need to reach a critical mass, i.e., a certain threshold, for their ideas and contributions to be genuinely recognised and influential in strategic decision-making (Kanter, 1977). To this end, *Women directors - parent firm* in Model 4 was replaced with *Critical mass - parent firm* in Model 9.

All hierarchical logit regressions were estimated as random-intercept models, with subsidiaries nested within parent firms and covariates entered without centering.

### 3.5 Data and variables

The propensity score matching was performed on a database of 9,773 Italian firms, of which 1,426 are subsidiaries of parent firms directly subject to the law, while 8,347 are firms that are neither directly nor indirectly subject to the law. The identification of the sample proceeded as follows. Subsidiaries of parent firms directly subject to the law were defined as those firms in which a listed firm (i.e., the firms directly subject to the Golfo-Mosca Law) held more than 50% of the equity stake in 2024, resulting in a total of 3,886 subsidiaries. To construct the control group, we first identified all Italian firms with available data on revenues from sales and services (for 2024), province of location, and industry, yielding a population of 472,978 firms. From this set, a stratified random sample of 50,009 firms<sup>1</sup> was drawn based on revenue class (i.e., lower than €10 million, between €10 million and €50 million, and higher than €50 million), provincial level, and industry. Owing to missing data on key analytical variables for both subsidiaries of parent firms directly subject to the law and firms that are neither directly nor indirectly subject to the law, the final sample was reduced to 9,773 firms. All data refer to 2024.

The fractional logit regression analysis was performed on a subsample of the dataset used for the propensity score matching, comprising 9,323 Italian firms (both subsidiaries of parent firms directly subject to the law and firms neither directly nor indirectly subject). The discrepancy in sample size between the two analyses stems from differences in the reference years of the data and the resulting availability of key variables: in the propensity score matching, all variables refer to 2024, whereas in the regression analysis the dependent variable (i.e., *Women directors*) refers to 2024, while the independent variables refer to 2023.

Finally, the hierarchical logit regression analysis was performed on a narrower sample than in the previous two analyses, comprising 1,321 subsidiary-parent firm relationships. The smaller sample size is due to the availability of key variables for both subsidiaries and parent firms. In this regression, the dependent variable (i.e., *Women directors*) refers to 2024, while the independent variables refer to 2023.

Table 1 provides an overview of the variables employed in the propensity score matching, fractional logit regression analysis, and hierarchical logit regression analysis, including their definitions, application, and data sources.

In the three analyses conducted, the outcome/dependent variable is *Women directors*, which measures the percentage of women directors in the subsidiary.

The treatment/independent variable is *Subsidiary of a parent firm directly subject to the law*, which is a dummy variable equal to 1 if the firm is a subsidiary of a parent firm directly subject to the law (i.e., it is at least 50% controlled by a firm directly subject to the law), and 0 otherwise. In the robustness check for the fractional logit regression analysis, *Subsidiary of a parent firm directly subject to the law* was replaced by the following two variables: (1) *Affiliate of a parent firm directly subject to the law*, a dummy variable equal to 1 if the firm is an affiliate of a parent firm directly subject to the law (i.e., it is 25–50% controlled by a firm directly subject to

<sup>1</sup> The stratified random sampling procedure was designed to extract 50,000 firms; however, adjustments in the sampling process resulted in a final extraction of 50,009 firms.

**Table 1** Variables and their definition

Variable	Definition	Used in propensity score matching	Used in fractional logit regression analysis	Used in hierarchical logit regression analysis	Source
<b>Outcome/Dependent variable</b>					
Women directors	Percentage of women directors in the subsidiary	Yes	Yes	Yes	Our elaboration based on Orbis
<b>Treatment, independent and control variables</b>					
Subsidiary of a parent firm directly subject to the law	Dummy variable equal to 1 if the firm is a subsidiary of a parent firm directly subject to the law (i.e., it is at least 50% controlled by a firm directly subject to the law), and 0 otherwise	Yes	Yes	Yes	Our elaboration based on Orbis
Affiliate of a parent firm directly subject to the law	Dummy variable equal to 1 if the firm is an affiliate of a parent firm directly subject to the law (i.e., it is 25–50% controlled by a firm directly subject to the law), and 0 otherwise		Yes		Our elaboration based on Orbis
Minority-owned affiliate of a parent firm directly subject to the law	Dummy variable equal to 1 if the firm is a minority-owned affiliate of a parent firm directly subject to the law (i.e., less than 25% controlled by a firm directly subject to the law), and 0 otherwise		Yes		Our elaboration based on Orbis
Board size	Logarithm of the number of directors in the subsidiary		Yes	Yes	Orbis
Women directors - parent firm	Percentage of women directors in the parent firm			Yes	Our elaboration based on Orbis
Critical mass - parent firm	Dummy variable equal to 1 if the percentage of women directors in the parent firm is higher than 40%, and 0 otherwise			Yes	Our elaboration based on Orbis
Small and medium firm	Dummy variable equal to 1 if the subsidiary is a small and medium firm, and 0 otherwise	Yes	Yes	Yes	Our elaboration based on Orbis

**Table 1** (continued)

Variable	Definition	Used in propensity score matching	Used in fractional logit regression analysis	Used in hierarchical logit regression analysis	Source
Large firm	Dummy variable equal to 1 if the subsidiary is a large firm, and 0 otherwise			Yes	Our elaboration based on Orbis
Large firm - parent firm	Dummy variable equal to 1 if the parent firm is a large firm, and 0 otherwise			Yes	Our elaboration based on Orbis
Firm age	Logarithm of the number of years since subsidiary foundation	Yes	Yes	Yes	Our elaboration based on Orbis
Young	Dummy variable equal to 1 if the subsidiary is a young firm (less than 10 years since its foundation), and 0 otherwise			Yes	Our elaboration based on Orbis
Old	Dummy variable equal to 1 if the subsidiary is an old firm (at least 10 years since its foundation), and 0 otherwise			Yes	Our elaboration based on Orbis
Firm age - parent firm	Logarithm of the number of years since parent firm foundation			Yes	Our elaboration based on Orbis
Multinational firm	Dummy variable equal to 1 if the subsidiary has foreign subsidiaries, and 0 otherwise	Yes	Yes	Yes	Our elaboration based on Orbis
Multinational firm - parent firm	Dummy variable equal to 1 if the parent firm has foreign subsidiaries, and 0 otherwise			Yes	Our elaboration based on Orbis
Innovation	Dummy variable equal to 1 if the subsidiary has at least one patent, and 0 otherwise	Yes	Yes	Yes	Orbis Intellectual Property
Innovation - parent firm	Dummy variable equal to 1 if the parent firm has at least one patent, and 0 otherwise			Yes	Orbis Intellectual Property
ROA	Return on assets of the subsidiary, given by net income on total assets	Yes	Yes	Yes	Orbis
ROA - parent firm	Return on assets of the parent firm, given by net income on total assets			Yes	Orbis
Debt/Equity	Debts on equity of the subsidiary	Yes	Yes	Yes	Orbis

**Table 1** (continued)

Variable	Definition	Used in propensity score matching	Used in fractional logit regression analysis	Used in hierarchical logit regression analysis	Source
Debt/Equity - parent firm	Debts on equity of the parent firm			Yes	Orbis
Risk	Standard deviation of subsidiary return on assets over the last 5 years	Yes	Yes	Yes	Our elaboration based on Orbis
Risk - parent firm	Standard deviation of parent firm return on assets over the last 5 years			Yes	Our elaboration based on Orbis
Gender equality certification	Dummy variable equal to 1 if the subsidiary has a gender equality certification (UNI/PdR 125), and 0 otherwise		Yes	Yes	Accredia
Gender equality certification - parent firm	Dummy variable equal to 1 if the parent firm has a gender equality certification (UNI/PdR 125), and 0 otherwise			Yes	Accredia
Provincial women entrepreneurship rate	Share of firms led or owned by women relative to the total number of firms in 2023 at the provincial level where the subsidiary is located		Yes	Yes	Our elaboration based on Italian Chambers of Commerce Open Data
North	Dummy variable equal to 1 if the subsidiary is located in Northern Italy, and 0 otherwise	Yes	Yes	Yes	Orbis
Same location	Dummy variable equal to 1 if the subsidiary and the parent firm are both located in Northern Italy, and 0 otherwise			Yes	Our elaboration based on Orbis
Industry	Dummy variable equal to 1 if the subsidiary belongs to a specific sector, and 0 otherwise	Yes	Yes	Yes	Orbis
Same industry	Dummy variable equal to 1 if the subsidiary and the parent firm belong to the same sector, and 0 otherwise			Yes	Our elaboration based on Orbis

Source: Our elaboration

the law), and 0 otherwise; (2) *Minority-owned affiliate of a parent firm directly subject to the law*, a dummy variable equal to 1 if the firm is a minority-owned affiliate of a parent firm directly subject to the law (i.e., less than 25% controlled by a firm directly subject to the law), and 0 otherwise.

Additional control/independent variables were considered in the three analyses. *Board size* is the logarithm of the number of directors in the subsidiary. *Women directors - parent firm* measures the percentage of women directors in the parent firm, while *Critical mass - parent firm* is a dummy variable equal to 1 if the percentage of women directors in the parent firm is higher than 40%, and 0 otherwise.

Subsidiary's and the parent firm's sizes are captured through the following variables: *Small and medium firm* is a dummy variable equal to 1 if the subsidiary is a small and medium firm, 0 otherwise; *Large firm* is a dummy variable equal to 1 if the subsidiary is a large firm, and 0 otherwise; *Large firm - parent firm* is a dummy variable equal to 1 if the parent firm is a large firm, and 0 otherwise.

Firm age of the subsidiary and the parent firm is captured through the following variables: *Firm age* is the logarithm of the number of years since subsidiary foundation; *Young* is a dummy variable equal to 1 if the subsidiary is a young firm (less than 10 years since its foundation), and 0 otherwise; *Old* is a dummy variable equal to 1 if the subsidiary is an old firm (at least 10 years since its foundation), and 0 otherwise; *Firm age - parent firm* is the logarithm of the number of years since parent firm foundation.

The multinational status of the subsidiary and the parent firm is considered through *Multinational firm* and *Multinational firm - parent firm*, which are dummy variables equal to 1 if the subsidiary or the parent firm has foreign subsidiaries, and 0 otherwise. *Innovation* and *Innovation - parent firm* are dummy variables equal to 1 if the subsidiary or the parent firm has at least one patent, and 0 otherwise.

The economic and financial situation of the subsidiary and the parent firm is captured through three sets of variables. *ROA* and *ROA - parent firm* measure return on assets, calculated as net income on total assets for the subsidiary and the parent firm, respectively. *Debt/Equity* and *Debt/Equity - parent firm* are equal to debts on equity of the subsidiary and the parent firm, respectively. *Risk* and *Risk - parent firm* are computed as the standard deviation of ROA over the last five years for the subsidiary and the parent firm, respectively.

The engagement in gender equity of the subsidiary and the parent firm is captured by *Gender equality certification* and *Gender equality certification - parent firm*, which are dummy variables equal to 1 if the subsidiary or the parent firm holds a gender equality certification (UNI/PdR 125), and 0 otherwise.

The level of gender equity at the provincial level where the subsidiary is located is captured by the variable *Provincial women entrepreneurship rate*, which captures the share of firms led or owned by women relative to the total number of firms.

Finally, the location and sector of the subsidiary and the parent firm are included through these four variables: (1) *North* is a dummy variable equal to 1 if the subsidiary is located in Northern Italy, and 0 otherwise. Northern Italy hosts the largest concentration of firms and corporate groups and constitutes the country's most industrialised and economically dynamic area, with a higher density of medium- and large-sized firms and more structured governance systems compared with Central

and Southern Italy; (2) *Industry* is a dummy variable equal to 1 if the subsidiary belongs to a specific sector, and 0 otherwise; (3) *Same location* is a dummy variable equal to 1 if the subsidiary and the parent firm are both located in Northern Italy, and 0 otherwise; (4) *Same industry* is a dummy variable equal to 1 if the subsidiary and the parent firm belong to the same sector, and 0 otherwise.

Continuous variables (i.e., *ROA*, *ROA - parent firm*, *Debt/Equity*, *Debt/Equity - parent firm*, *Risk*, and *Risk - parent firm*) were winsorised at the 1st and 99th percentile to reduce the impact of outliers.

Data on the subsidiary and parent firm, including board composition, firm size, year of foundation, multinational status, financial situation, location, and sector, were obtained from the Orbis Bureau van Dijk database. Information on innovation activity was extracted from the Orbis Intellectual Property Bureau van Dijk database. Data on gender equality certification (UNI/PdR 125) were sourced from Accredia, the Italian accreditation body designated by the government. Lastly, the provincial rate of women's entrepreneurship was calculated using data from the Italian Chambers of Commerce Open Data.

## 4 Results

### 4.1 Propensity score matching

#### 4.1.1 Descriptive statistics

Table 2 presents the descriptive statistics for the full sample of firms, subsidiaries of a parent firm directly subject to the law, and firms that are neither directly nor indirectly subject to the law, as well as the results of the Wilcoxon test for all the variables.

In the full sample, women account for 23.03% of board members. The share is lower among subsidiaries of parent firms directly subject to the law (16.74%) and higher among firms that are neither directly nor indirectly subject to the law (24.10%).

Before matching, most of the variables for subsidiaries of a parent firm directly subject to the law and for firms that are neither directly nor indirectly subject to the law are significantly different.

The correlation matrix for the full sample, available upon request, indicates acceptable correlation indexes (Greene, 2003).

#### 4.1.2 Empirical results

The first step in the propensity score matching consists of computing the propensity score for each firm based on the probability of being a subsidiary of a parent firm directly subject to the law, conditional on observed characteristics. The results of the logit model are reported in Table 3.

The model estimating the propensity to be a subsidiary of a parent firm directly subject to the law yields an  $R^2$  of 0.144. Results indicate that being a small and medium firm and having higher values of ROA and debt/equity decrease the probability of being a subsidiary of a parent firm directly subject to the law. Conversely,

being a multinational firm and holding patents increase this probability. The variables *Firm age*, *Risk* and *North* are not statistically significant.

Once the propensity score has been estimated, matching is performed using the propensity score and employing the Nearest Neighbour without replacement and caliper 0.05. Subsidiaries of a parent firm directly subject to the law are matched with firms that are neither directly nor indirectly subject to the law (i.e., control firms). The results of the matching procedure are presented in Table 4. As 99.86% of treated units remain in the sample, nearly all treated firms have a comparable control firm within the common support region, allowing for a reliable estimation of the treatment effect.

To evaluate whether the balancing property is satisfied, three analyses are performed. First, the distribution of the propensity score is evaluated. Specifically, the distribution of the propensity score for subsidiaries of parent firms directly subject to the law is compared to the distribution of the propensity score for firms that are neither directly nor indirectly subject to the law (i.e., control firms). As shown in Fig. 2, the distributions align after matching, indicating that balance has been achieved.

Second, the descriptive statistics of the treated and control groups before and after matching are compared with a Wilcoxon test. Specifically, the descriptive statistics of subsidiaries of parent firms directly subject to the law are compared with the descriptive statistics of firms that are neither directly nor indirectly subject to the law (i.e., control firms), both before and after matching. The descriptive statistics, available upon request, indicate that the matching procedure was effective: while notable differences exist between the two groups before matching, these differences disappear after matching.

Third, the standardized mean differences for each covariate before and after matching are analysed. The results show that there is a substantial reduction in standardized mean differences after matching, indicating a good covariate balance between the two groups (Table 5).

After matching, the effect of the Golfo-Mosca Law on the presence of women directors is evaluated. Specifically, the presence of women directors in subsidiaries of a parent firm directly subject to the law is compared with the presence of women directors in firms that are neither directly nor indirectly subject to the law (i.e., control firms). As shown in Table 6, the Golfo-Mosca Law does not have a positive effect on the presence of women directors in subsidiaries of a parent firm directly subject to the law: the presence of women directors in these firms (16.41%) is lower than that in firms that are neither directly nor indirectly subject to the law (22.63%).

As a robustness check, alternative matching methods were used: Nearest Neighbour without replacement and caliper 0.02, Nearest Neighbour without replacement and caliper 0.01, Nearest Neighbour with replacement and caliper 0.05, Nearest Neighbour with replacement and caliper 0.02, and Nearest Neighbour with replacement and caliper 0.01. The results, available upon request, confirm the previous findings: when comparing the presence of women directors in subsidiaries of parent firms directly subject to the law with the presence of women directors in firms that are neither directly nor indirectly subject to the law, the Golfo-Mosca Law does not have a significant impact on subsidiaries.

**Table 2** Descriptive statistics – Propensity score matching

Variable	Full sample (9,773 firms)				Subsidiary of a parent firm directly subject to the law (1,426 firms)		Firms neither directly nor in- directly subject to the law (i.e., control firms) (8,347 firms)		Wil- cox- on test
	Mean/%	Std. Dev.	Min	Max	Mean/%	Std. Dev.	Mean/%	Std. Dev.	
Subsidiary of a parent firm directly subject to the law	14.5912%	0.3530	0	1	-	-	-	-	-
Women directors	23.0274%	0.2720	0	1	16.7367%	0.1932	24.1021%	0.2819	***
Small and medium firm	88.7854%	0.3156	0	1	69.3548%	0.4612	92.1049%	0.2697	***
Firm age	2.8107	0.9416	0	5.0938	2.8261	0.8443	2.8081	0.9573	***
Multinational firm	7.1012%	0.2569	0	1	15.4979%	0.3620	5.6667%	0.2312	***
Innovation	11.7262%	0.3217	0	1	19.3548%	0.3952	10.4229%	0.3056	***
ROA	6.5921	14.8496	-45.1036	60.9845	3.4627	14.8815	7.1268	14.7789	***
Debt/Equity	97.0205	155.8686	0	819.1265	81.6699	150.6874	99.6430	156.5950	***
Risk	6.2672	7.2809	0	36.9792	6.3650	7.6333	6.2504	7.2193	***
North	71.4315%	0.4518	0	1	71.7391%	0.4504	71.3789%	0.4520	***
Agriculture, forestry and fishing	3.4278%	0.1820	0	1	1.4727%	0.1205	3.7618%	0.1903	***
Mining and quarrying	0.1228%	0.0350	0	1	0.2104%	0.0458	0.1078%	0.0328	***
Manufacturing	20.4338%	0.4032	0	1	16.5498%	0.3718	21.0974%	0.4080	***
Electricity, gas, steam and air conditioning supply	1.7395%	0.1307	0	1	5.3296%	0.2247	1.1262%	0.1055	***
Water supply, sewerage, waste management and remediation activities	1.3814%	0.1167	0	1	3.5764%	0.1858	1.0063%	0.0998	***
Construction	8.6667%	0.2814	0	1	7.3633%	0.2613	8.8894%	0.2846	**
Wholesale and retail trade; repair of motor vehicles and motorcycles	14.5503%	0.3526	0	1	5.2595%	0.2233	16.1375%	0.3679	***
Transportation and storage	4.5329%	0.2080	0	1	4.6985%	0.2117	4.5046%	0.2074	***
Accommodation and food service activities	3.2948%	0.1785	0	1	0.5610%	0.0747	3.7618%	0.1903	***
Information and communication	7.6947%	0.2665	0	1	17.6718%	0.3816	5.9902%	0.2373	***
Financial and insurance activities	2.2716%	0.1490	0	1	5.1893%	0.2219	1.7731%	0.1320	***
Real estate activities	7.0091%	0.2553	0	1	4.2076%	0.2008	7.4877%	0.2632	***

Table 2 (continued)

Variable	Full sample (9,773 firms)			Subsidiary of a parent firm directly subject to the law (1,426 firms)		Firms neither directly nor in- directly subject to the law (i.e., control firms) (8,347 firms)		Wil- coxon test
	Mean/%	Std. Dev.	Max	Mean/%	Std. Dev.	Mean/%	Std. Dev.	
Professional, scientific and technical activities	11.1020%	0.3142	0	15.4278%	0.3613	10.3630%	0.3048	***
Administrative and support service activities	5.4538%	0.2271	0	8.2749%	0.2756	4.9718%	0.2174	***
Education	1.7088%	0.1296	0	1.0519%	0.1021	1.8210%	0.1337	**
Human health and social work activities	3.8064%	0.1914	0	2.1038%	0.1436	4.0973%	0.1982	***
Arts, entertainment and recreation	1.8316%	0.1341	0	0.4909%	0.0699	2.0606%	0.1421	***
Other service activities	0.9721%	0.0981	0	0.5610%	0.0747	1.0423%	0.1016	**

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

Source: Our elaboration

**Table 3** Logit estimates of the propensity to be a subsidiary of a parent firm directly subject to the law

Variables	Model
Small and medium firm	-0.2430 *** (0.0116)
Firm age	-0.0047 (0.0038)
Multinational	0.0670 *** (0.0145)
Innovation	0.0340 *** (0.0119)
ROA	-0.0023 *** (0.0002)
Debt/Equity	-0.0001 *** (0.0000)
Risk	0.0005 (0.0005)
North	-0.0066 (0.0074)
Intercept	0.3631 *** (0.0379)
Industry	Yes
Observations	9,773
R <sup>2</sup> /R <sup>2</sup> adjusted	0.144/0.142

Robust standard errors in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Source: Our elaboration

**Table 4** Results of the matching for subsidiaries of parent firms directly subject to the law

	Subsidiary of a parent firm directly subject to the law	Firms neither directly nor indirectly subject to the law (i.e., control firms)
All	1,426	8,347
Matched	1,366	1,366
Unmatched	60	6,981
Discarded	0	0

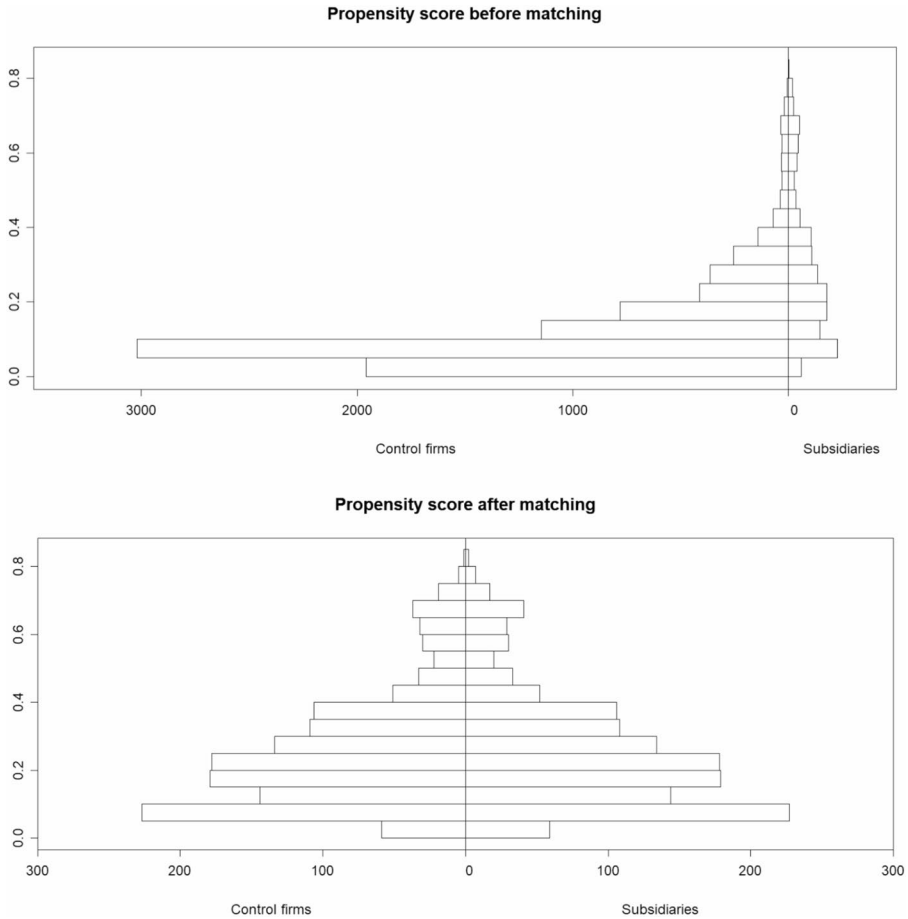
Source: Our elaboration

## 4.2 Fractional logit regression analysis

### 4.2.1 Descriptive statistics

Table 7 reports the descriptive statistics for the sample used in the fractional logit regression analysis. On average, women directors account for 22.90% of board members, although there is considerable variation: some firms have no women directors at all, while others have boards of directors composed entirely of women. Moreover, 10.45% of the firms in the sample are subsidiaries of a parent firm directly subject to the law.

The correlation matrix, available upon request, shows acceptable correlation indexes (Greene, 2023).



**Fig. 2** Distribution of the propensity score before and after matching. “Control firms” indicates firms that are neither directly nor indirectly subject to the law (i.e., control firms). “Subsidiaries” indicates subsidiaries of parent firms directly subject to the law Source: Our elaboration

#### 4.2.2 Empirical results

Table 8 reports the marginal effects at the means of the covariates from the fractional logit regression analysis assessing the effect of being a subsidiary of a parent firm directly subject to the law on the presence of women directors in the subsidiary. In Model 1, *Subsidiary of a parent firm directly subject to the law* has a negative and statistically significant marginal effect ( $dy/dx = -0.0338$ ,  $p < 0.05$ ), implying that being a subsidiary of a parent firm directly subject to the law is associated with a reduction of about 3.4% points in the percentage of women directors. Similarly, *Affiliate of a parent firm directly subject to the law* (Model 2) and *Minority-owned affiliate of a parent firm directly subject to the law* (Model 3) have negative and statistically significant marginal effects ( $dy/dx = -0.0710$ ,  $p < 0.01$  and  $dy/dx = -0.0638$ ,  $p < 0.01$ , respectively), implying that being an affiliate of a parent firm directly subject to the law or

**Table 5** Standardized mean differences before and after matching

Variable	Before matching	After matching
Distance	0.7923	0.0025
Small and medium firm	-0.4935	-0.0413
Firm age	0.0214	-0.0219
Multinational firm	0.2717	-0.0081
Innovation	0.2261	0.0037
ROA	-0.2462	0.0297
Debt/Equity	-0.1193	-0.0126
Risk	0.0150	-0.0113
North	0.0080	-0.0049
Agriculture, forestry and fishing	-0.1900	0.0122
Mining and quarrying	0.0224	-0.0320
Manufacturing	-0.1224	-0.0217
Electricity, gas, steam and air conditioning supply	0.1871	0.0293
Water supply; sewerage, waste management and remediation activities	0.1384	-0.0118
Construction	-0.0584	0.0617
Wholesale and retail trade; repair of motor vehicles and motorcycles	-0.4873	0.0164
Transportation and storage	0.0092	0.0173
Accommodation and food service activities	-0.4285	0.0196
Information and communication	0.3063	0.0058
Financial and insurance activities	0.1540	-0.0066
Real estate activities	-0.1634	0.0401
Professional, scientific and technical activities	0.1402	-0.0243
Administrative and support service activities	0.1199	-0.0664
Education	-0.0754	-0.0072
Human health and social work activities	-0.1389	-0.0153
Arts, entertainment and recreation	-0.2246	0.0314
Other service activities	-0.0644	-0.0294

Source: Our elaboration

**Table 6** Presence of women directors in subsidiaries of parent firms directly subject to the law and in firms that are neither directly nor indirectly subject to the law (i.e., control firms)

	Subsidiary of a parent firm directly subject to the law	Firms neither directly nor indirectly subject to the law (i.e., control firms)	Average treatment effect	Wilcoxon rank test
Presence of women directors	16.41%	22.63%	-6.22%	***

Wilcoxon rank test: Significance levels: \*  $p < 0.1$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$ 

Source: Our elaboration

**Table 7** Descriptive statistics – Fractional logit regression analysis

Variable	Mean/%	Std. Dev.	Min	Max
Women directors	22.8990%	0.2646	0.0000%	100.0000%
Subsidiary of a parent firm directly subject to the law	10.4473%	0.3059	0	1
Affiliate of a parent firm directly subject to the law	2.2525%	0.1484	0	1
Minority-owned affiliate of a parent firm directly subject to the law	5.0842%	0.2197	0	1
Board size	1.2775	0.5744	0.0000	3.7612
Small and medium firm	85.1014%	0.3561	0	1
Firm age	2.8034	0.9681	0.6931	5.0938
Multinational firm	10.3400%	0.3045	0	1
Innovation	14.4589%	0.3517	0	1
ROA	6.0504	14.6667	-48.6110	67.9980
Debt/Equity	98.4671	155.52011	0.0000	807.5230
Risk	5.8424	7.1144	0.0000	40.6700
Gender equality certification	3.4217%	0.1818	0	1
Provincial women entrepreneurship rate	21.5444%	0.0278	17.9671%	40.4875%
North	71.1681%	0.4530	0	1
Agriculture, forestry and fishing	3.4538%	0.1826	0	1
Mining and quarrying	0.1931%	0.0439	0	1
Manufacturing	20.8088%	0.4060	0	1
Electricity, gas, steam and air conditioning supply	2.1131%	0.1438	0	1
Water supply; sewerage, waste management and remediation activities	1.3622%	0.1159	0	1
Construction	7.7228%	0.2670	0	1
Wholesale and retail trade; repair of motor vehicles and motorcycles	13.7402%	0.3443	0	1
Transportation and storage	4.4621%	0.2065	0	1
Accommodation and food service activities	2.7030%	0.1622	0	1
Information and communication	8.7740%	0.2829	0	1
Financial and insurance activities	3.0248%	0.1713	0	1
Real estate activities	6.6180%	0.2486	0	1
Professional, scientific and technical activities	11.5521%	0.3197	0	1
Administrative and support service activities	5.4381%	0.2268	0	1
Public administration and defence; compulsory social security	0.0322%	0.0179	0	1
Education	1.6947%	0.1291	0	1
Human health and social work activities	3.6040%	0.1864	0	1
Arts, entertainment and recreation	1.7805%	0.1323	0	1
Other service activities	0.9225%	0.0956	0	1

Source: Our elaboration

a minority-owned affiliate of a parent firm directly subject to the law is associated with a reduction of about 7.1 and 6.4% points in the percentage of women directors, respectively. Overall, these results suggest that being a subsidiary of a parent firm directly subject to the law reduces the presence of women directors regardless of the parent firm's shareholding.

**Table 8** Fractional logit regression results

Variable	Model 1	Model 2	Model 3
Subsidiary of a parent firm directly subject to the law	-0.0338** (0.0159) [-0.0649 - -0.0027]		
Affiliate of a parent firm directly subject to the law		-0.0710*** (0.0152) [-0.1008 - -0.0412]	
Minority-owned affiliate of a parent firm directly subject to the law			-0.0638*** (0.0123) [-0.0879 - -0.0397]
Board size	-0.0223*** (0.0066) [-0.0353 - -0.0093]	-0.0221*** (0.0068) [-0.0355 - -0.0087]	-0.0206*** (0.0070) [-0.0343 - -0.0069]
Small and medium firm	-0.0197** (0.0087) [-0.0367 - -0.0026]	-0.0172* (0.0097) [-0.0362-0.0018]	-0.0159 (0.0097) [-0.0348- 0.0031]
Firm age	0.0086*** (0.0026) [0.0035-0.0137]	0.0084*** (0.0026) [0.0033-0.0135]	0.0088*** (0.0026) [0.0037-0.0139]
Multinational firm	-0.0067 (0.0087) [-0.0238-0.0104]	-0.0086 (0.0087) [-0.0257-0.0085]	-0.0086 (0.0087) [-0.0256- 0.0084]
Innovation	-0.0016 (0.0091) [-0.0194-0.0162]	-0.0015 (0.0093) [-0.0198-0.0168]	0.0000 (0.0094) [-0.0184- 0.0185]
ROA	0.0002 (0.0001) [-0.0001-0.0004]	0.0001 (0.0001) [-0.0001-0.0004]	0.0001 (0.0001) [-0.0002- 0.0004]
Debt/Equity	0.0000*** (0.0000) [0.0000-0.0001]	0.0000*** (0.0000) [0.0000-0.0001]	0.0000** (0.0000) [0.0000-0.0001]
Risk	0.0001 (0.0004) [-0.0006-0.0008]	0.0001 (0.0004) [-0.0006-0.0008]	0.0001 (0.0004) [-0.0006- 0.0008]
Gender equality certification	0.0416*** (0.0104) [0.0213-0.0620]	0.0408*** (0.0106) [0.0199-0.0616]	0.0418*** (0.0107) [0.0208-0.0627]
Provincial women entrepreneurship rate	0.2342***	0.2429***	0.2543***

**Table 8** (continued)

Variable	Model 1	Model 2	Model 3
	(0.0904)	(0.0903)	(0.0912)
	[0.0571–0.4114]	[0.0659–0.4200]	[0.0756–0.4331]
North	–0.0093	–0.0096	–0.0093
	(0.0068)	(0.0069)	(0.0069)
	[–0.0227–0.0041]	[–0.0231–0.0039]	[–0.0229–0.0042]
Industry	Yes	Yes	Yes
Observations	9,323	9,323	9,323
Pseudo R-squared	0.0226	0.0226	0.0230

Marginal effects reported at the means of the covariates

Robust standard errors in parentheses. Confidence intervals in square brackets

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

Source: Our elaboration

Among the control variables, larger board size is associated with a lower percentage of women directors. By contrast, greater firm age, holding a gender equality certification, and being located in provinces with higher women entrepreneurship rates are all positively associated with the presence of women directors.

### 4.3 Hierarchical logit regression analysis

#### 4.3.1 Descriptive statistics

The average percentage of women directors in subsidiaries of a parent firm directly subject to the law is 16.99%, ranging from 0% to 100%, while at the parent firm level the average is 36.80%, with a minimum of 0% and a maximum of 63.64% (Table 9). This indicates a clear gap between subsidiaries and parent firms, as well as substantial variation among subsidiaries, where some boards of directors have no women at all while others are composed entirely of women. Parent firms show a more moderate dispersion, suggesting a more consistent presence of women directors. Most subsidiaries are small and medium-sized enterprises (69.95%) and are more than ten years old (67.22%). The share of subsidiaries that are multinational (17.94%) is substantially lower than that of parent firms (83.12%), as is the share of subsidiaries engaged in innovation activities (21.04% versus 79.49%). Subsidiaries appear to be less leveraged than parent firms, while exhibiting higher risk and a similar level of ROA. Only 5.22% of subsidiaries hold the gender equality certification (UNI/PdR 125), compared to 23.32% of parent firms. Finally, 72.25% of subsidiaries are located in the same geographical area as their parent firm, and 36.64% operate in the same industry.

#### 4.3.2 Empirical results

Table 10 presents the marginal effects at the means of the covariates from the hierarchical logit regression analysis examining the effects of parent- and subsidiary-level characteristics (regarding governance, capabilities and resources, strategy,

**Table 9** Descriptive statistics – Hierarchical logit regression analysis

Variables	Mean/%	Std. Dev.	Min	Max
Women directors	16.9892%	0.1974	0.0000%	100.0000%
Board size	1.5288	0.5499	0.0000	3.4340
Small and medium firm	69.9470%	0.4587	0	1
Large firm	30.0530%	0.4587	0	1
Firm age	2.6974	0.8763	0.6931	5.0876
Young	32.7782%	0.4696	0	1
Old	67.2218%	0.4696	0	1
Multinational firm	17.9410%	0.3838	0	1
Innovation	21.0447%	0.4078	0	1
ROA	3.3141	16.3999	-73.3530	60.0180
Debt/Equity	83.0636	140.3359	0	757.0430
Risk	6.3032	7.5609	0	38.6455
Gender equality certification	5.2233%	0.2226	0	1
Provincial women entrepreneurship rate	21.2308%	0.0277	0.1797	0.4049
North	69.4928%	0.4606	0	1
Agriculture, forestry and fishing	1.1355%	0.1060	0	1
Mining and quarrying	0.0000%	0.0000	0	0
Manufacturing	18.6222%	0.3894	0	1
Electricity, gas, steam and air conditioning supply	6.5859%	0.2481	0	1
Water supply; sewerage, waste management and remediation activities	3.7093%	0.1891	0	1
Construction	7.5700%	0.2646	0	1
Wholesale and retail trade; repair of motor vehicles and motorcycles	5.3747%	0.2256	0	1
Transportation and storage	3.7093%	0.1891	0	1
Accommodation and food service activities	0.5299%	0.0726	0	1
Information and communication	19.6064%	0.3972	0	1
Financial and insurance activities	4.0121%	0.1963	0	1
Real estate activities	3.4065%	0.1815	0	1
Professional, scientific and technical activities	16.6541%	0.3727	0	1
Administrative and support service activities	5.8289%	0.2344	0	1
Public administration and defence; compulsory social security	0.0000%	0.0000	0	0
Education	0.9084%	0.0949	0	1
Human health and social work activities	1.5897%	0.1251	0	1
Arts, entertainment and recreation	0.3785%	0.0614	0	1
Other service activities	0.3785%	0.0614	0	1
Women directors - parent firm	36.7980%	0.1398	0.0000%	63.6364%
Critical mass - parent firm	59.8789%	0.4903	0	1
Large firm - parent firm	91.5973%	0.2775	0	1
Firm age - parent firm	3.5693	0.7853	1.3863	5.0938
Multinational firm - parent firm	83.1189%	0.37473	0	1
Innovation - parent firm	79.4852%	0.4040	0	1
ROA - parent firm	3.6996	6.6414	-29.3540	19.6590
Debt/Equity - parent firm	149.3766	164.7616	3.4640	789.2650
Risk - parent firm	3.3059	4.0912	0	21.2499
Gender equality certification - parent firm	23.3157%	0.4230	0	1

**Table 9** (continued)

Variables	Mean/%	Std. Dev.	Min	Max
Same location	75.2460%	0.4317	0	1
Same industry	36.6389%	0.4820	0	1

Source: Our elaboration

gender-related initiatives, and context) on the percentage of women directors in the subsidiary.

In Model 4, *Board size* ( $dy/dx=0.2690$ ,  $p<0.01$ ), *Firm age* ( $dy/dx=0.0313$ ,  $p<0.1$ ), *Innovation* ( $dy/dx=0.0754$ ,  $p<0.1$ ), and *Women directors - parent firm* ( $dy/dx=0.5023$ ,  $p<0.01$ ) have a positive and statistically significant marginal effect, while *Multinational firm - parent firm* has a negative and statistically significant marginal effect ( $dy/dx = -0.1862$ ,  $p<0.01$ ). Therefore, an increase in subsidiary's board size and subsidiary age is associated with increases of about 26.9 and 3.1% points, respectively, in the percentage of women directors in the subsidiary. Being an innovative subsidiary is associated with an increase of about 7.5% points. A one-percentage-point increase in the percentage of women directors in the parent firm is associated with an increase of about 0.5% points (Fig. 3). Having a multinational parent firm is associated with a decrease of about 18.6% points in the percentage of women directors in the subsidiary. Instead, being a small or medium-sized subsidiary, being a multinational subsidiary, holding a gender equality certification at either the subsidiary or the parent level, being located in provinces with a high rate of women's entrepreneurship, being located in Northern Italy, economic conditions (ROA, leverage, and risk), and operating in the same location or industry as the parent firm do not have a statistically significant effect on the percentage of women directors in the subsidiary.

Focusing on the effects of parent- and subsidiary-level characteristics (regarding governance, capabilities and resources, strategy, gender-related initiatives, and context) on the percentage of women directors in younger versus older subsidiaries (Models 5 and 6), the results indicate that a larger subsidiary's board of directors is positively associated with a higher percentage of women directors regardless of the subsidiary's age. The effect of other factors depends on subsidiary's age: higher leverage and holding a gender equality certification at the subsidiary level are associated with a greater percentage of women directors only in older subsidiaries; instead, higher provincial women entrepreneurship rate is associated with a lower percentage of women directors only in younger subsidiaries. A higher presence of women directors in the parent firm is associated with a higher percentage of women directors regardless of the subsidiary's age, although the effect is stronger in older subsidiaries. Finally, being a subsidiary of a large or multinational parent firm is associated with a lower percentage of women directors only in older subsidiaries.

Examining the same effects in smaller and medium-sized versus larger subsidiaries (Models 7 and 8), the results show that a larger subsidiary's board of directors is positively associated with a higher percentage of women directors regardless of the subsidiary's size. The effect of other factors depends on subsidiary's size: greater subsidiary's age and being an innovative firm are linked to a higher percentage of women directors only in larger subsidiaries. Holding a gender equality certification at the subsidiary level is positively associated with the percentage of women direc-

**Table 10** Hierarchical logit regression results

Variables	Model 4	Model 5 Young subsidiaries	Model 6 Old subsidiaries	Model 7 Small and medium subsidiaries	Model 8 Large subsidiaries	Model 9
Board size	0.2690*** (0.0315) [0.2072– 0.3308]	0.3046*** (0.0658) [0.1756– 0.4337]	0.2691*** (0.0379) [0.1949– 0.3433]	0.2767*** (0.0369) [0.2043– 0.3491]	0.2977*** (0.0673) [0.1658– 0.4296]	0.2678*** (0.0316) [0.2060– 0.3297]
Small and medium firm	0.0165 (0.0368) [–0.0557– 0.0887]	–0.0566 (0.0755) [–0.2045– 0.0914]	0.0081 (0.0455) [–0.0810– 0.0972]			0.0150 (0.0368) [–0.0571– 0.0872]
Firm age	0.0313* (0.0179) [–0.0039– 0.0664]			0.0346 (0.0219) [–0.0084– 0.0775]	0.0794** (0.0369) [0.0070– 0.1517]	0.0339* (0.0180) [–0.0013– 0.0691]
Multinational firm	–0.0296 (0.0408) [–0.1097– 0.0504]	–0.1299 (0.0904) [–0.3071– 0.0472]	–0.0294 (0.0490) [–0.1254– 0.0667]	–0.0314 (0.0578) [–0.1446– 0.0818]	–0.0303 (0.0656) [–0.1589– 0.0984]	–0.0257 (0.0408) [–0.1055– 0.0542]
Innovation	0.0754* (0.0406) [–0.0042– 0.1549]	0.0704 (0.0844) [–0.0950– 0.2357]	0.0769 (0.0495) [–0.0202– 0.1740]	0.0027 (0.0544) [–0.1040– 0.1093]	0.1597** (0.0635) [0.0353– 0.2840]	0.0700* (0.0405) [–0.0093– 0.1494]
ROA	–0.0004 (0.0009) [–0.0022– 0.0014]	0.0001 (0.0013) [–0.0025– 0.0027]	–0.0009 (0.0015) [–0.0037– 0.0020]	–0.0000 (0.0010) [–0.0020– 0.0019]	–0.0053* (0.0027) [–0.0105– 0.0000]	–0.0003 (0.0009) [–0.0021– 0.0015]
Debt/Equity	0.0002 (0.0001) [–0.0000– 0.0004]	–0.0002 (0.0002) [–0.0006– 0.0002]	0.0004*** (0.0001) [0.0001– 0.0006]	0.0001 (0.0001) [–0.0002– 0.0004]	0.0003 (0.0002) [–0.0001– 0.0006]	0.0002 (0.0001) [–0.0000– 0.0004]
Risk	–0.0002 (0.0019) [–0.0040– 0.0036]	–0.0030 (0.0029) [–0.0087– 0.0026]	0.0034 (0.0031) [–0.0026– 0.0094]	0.0012 (0.0022) [–0.0032– 0.0056]	–0.0035 (0.0044) [–0.0122– 0.0052]	–0.0002 (0.0019) [–0.0040– 0.0036]
Gender equality certification	0.1018 (0.0658) [–0.0271– 0.2307]	0.0706 (0.1369) [–0.1976– 0.3388]	0.1422* (0.0829) [–0.0203– 0.3046]	0.1895** (0.0963) [0.0008– 0.3781]	0.0805 (0.1013) [–0.1180– 0.2790]	0.1006 (0.0659) [–0.0285– 0.2297]
Provincial women entre- preneurship rate	–0.4429 (0.6915) [–1.7981– 0.9124]	–3.4989** (1.4699) [–6.3798 –0.6179]	0.7580 (0.8608) [–0.9291– 2.4451]	0.4208 (0.7988) [–1.1447– 1.9864]	–5.1147*** (1.5464) [–8.1457 –2.0837]	–0.5502 (0.6936) [–1.9096– 0.8092]

**Table 10** (continued)

Variables	Model 4	Model 5 Young subsidiaries	Model 6 Old subsidiaries	Model 7 Small and medium subsidiaries	Model 8 Large subsidiaries	Model 9
North	-0.0313 (0.0448) [-0.1191– 0.0564]	-0.1033 (0.0857) [-0.2714– 0.0647]	0.0262 (0.0542) [-0.0800– 0.1324]	-0.0087 (0.0543) [-0.1152– 0.0977]	-0.1381 (0.0853) [-0.3053– 0.0291]	-0.0319 (0.0448) [-0.1197– 0.0559]
Women direc- tors - parent firm	0.5023*** (0.1661) [0.1768– 0.8279]	0.4469** (0.2273) [0.0015– 0.8924]	0.6340*** (0.2093) [0.2238– 1.0441]	0.4728*** (0.1727) [0.1343– 0.8113]	1.0701** (0.4746) [0.1400– 2.0002]	
Critical mass - parent firm						0.1534*** (0.0508) [0.0539– 0.2530]
Large firm - parent firm	-0.1238 (0.0767) [-0.2741– 0.0265]	-0.0187 (0.1033) [-0.2211– 0.1837]	-0.2126** (0.1032) [-0.4149 - -0.0103]	-0.0770 (0.0785) [-0.2309– 0.0769]	-0.2888 (0.3693) [-1.0125– 0.4349]	-0.1157 (0.0760) [-0.2647– 0.0332]
Firm age - parent firm	-0.0261 (0.0324) [-0.0895– 0.0373]	-0.0457 (0.0485) [-0.1407– 0.0493]	-0.0073 (0.0372) [-0.0803– 0.0656]	-0.0423 (0.0355) [-0.1119– 0.0272]	0.0630 (0.0598) [-0.0542– 0.1803]	-0.0227 (0.0321) [-0.0857– 0.0402]
Multinational firm - parent firm	-0.1862*** (0.0638) [-0.3112 - -0.0612]	-0.0663 (0.0920) [-0.2467– 0.1141]	-0.2159*** (0.0782) [-0.3692 - -0.0626]	-0.1735** (0.0674) [-0.3056 - -0.0413]	-0.4654*** (0.1676) [-0.7939 - -0.1369]	-0.1845*** (0.0637) [-0.3094 - -0.0596]
Innovation - parent firm	0.0575 (0.0616) [-0.0632– 0.1782]	-0.0240 (0.0946) [-0.2094– 0.1614]	0.0540 (0.0749) [-0.0929– 0.2009]	0.0146 (0.0661) [-0.1149– 0.1440]	0.4091*** (0.1502) [0.1146– 0.7035]	0.0568 (0.0615) [-0.0638– 0.1775]
ROA - parent firm	0.0031 (0.0034) [-0.0036– 0.0098]	0.0054 (0.0048) [-0.0040– 0.0148]	0.0043 (0.0044) [-0.0044– 0.0131]	0.0070* (0.0036) [-0.0001– 0.0141]	-0.0003 (0.0089) [-0.0178– 0.0172]	0.0033 (0.0034) [-0.0033– 0.0100]
Debt/Equity - parent firm	0.0001 (0.0002) [-0.0003– 0.0005]	0.0001 (0.0002) [-0.0003– 0.0006]	0.0002 (0.0002) [-0.0003– 0.0007]	0.0002 (0.0002) [-0.0002– 0.0006]	-0.0000 (0.0004) [-0.0007– 0.0007]	0.0001 (0.0002) [-0.0003– 0.0004]

**Table 10** (continued)

Variables	Model 4	Model 5 Young subsidiaries	Model 6 Old subsidiaries	Model 7 Small and medium subsidiaries	Model 8 Large subsidiaries	Model 9
Risk - parent firm	0.0012 (0.0055) [-0.0095– 0.0119]	0.0039 (0.0079) [-0.0116– 0.0195]	-0.0021 (0.0066) [-0.0151– 0.0109]	0.0043 (0.0059) [-0.0073– 0.0160]	-0.0035 (0.0132) [-0.0294– 0.0224]	0.0014 (0.0055) [-0.0093– 0.0121]
Gender equal- ity certifica- tion - parent firm	0.0889 (0.0586) [-0.0260– 0.2039]	0.1336 (0.0839) [-0.0308– 0.2980]	0.0697 (0.0668) [-0.0612– 0.2006]	0.0542 (0.0631) [-0.0694– 0.1778]	0.1165 (0.1081) [-0.0954– 0.3284]	0.1099* (0.0589) [-0.0055– 0.2253]
Same location	-0.0193 (0.0387) [-0.0951– 0.0565]	-0.0339 (0.0706) [-0.1724– 0.1045]	-0.0364 (0.0475) [-0.1296– 0.0567]	-0.0456 (0.0480) [-0.1397– 0.0485]	0.0304 (0.0694) [-0.1056– 0.1664]	-0.0203 (0.0387) [-0.0961– 0.0555]
Same industry	-0.0036 (0.0385) [-0.0790– 0.0717]	0.0164 (0.0685) [-0.1178– 0.1507]	-0.0167 (0.0488) [-0.1123– 0.0789]	-0.0388 (0.0472) [-0.1313– 0.0538]	-0.0173 (0.0748) [-0.1639– 0.1294]	-0.0054 (0.0384) [-0.0807– 0.0699]
Intraclass correlation	0.3233*** (0.0563) [0.2239– 0.4419]	0.2589** (0.1071) [0.1047– 0.5106]	0.3460*** (0.0700) [0.2239– 0.4923]	0.2870*** (0.0641) [0.1789– 0.4264]	0.6042*** (0.1321) [0.3408– 0.8184]	0.3229*** (0.0565) [0.2232– 0.4417]
Observations	1,321	430	884	924	385	1,321
Number of groups	247	161	206	227	115	247

Marginal effects reported at the means of the covariates

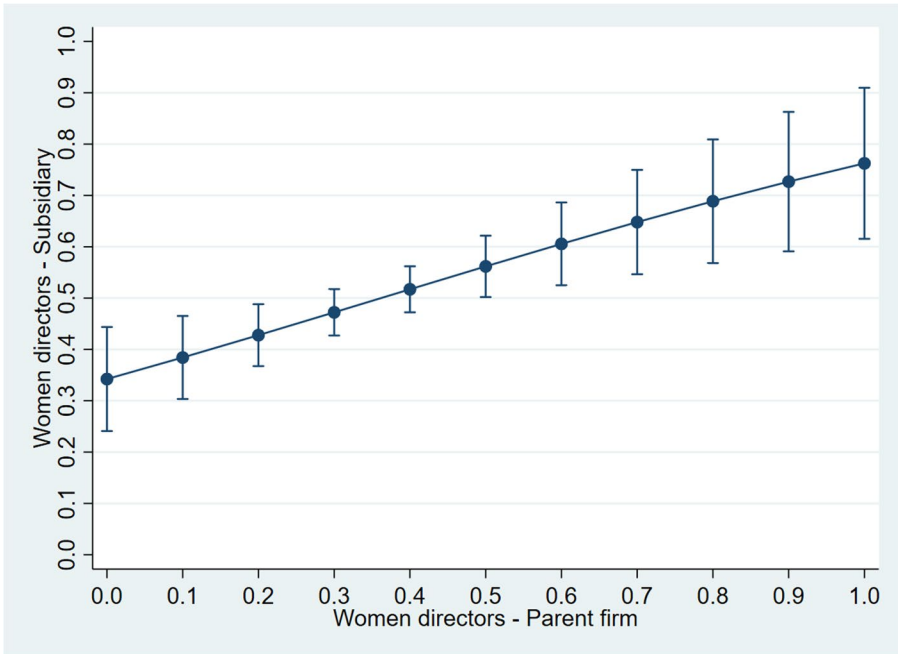
Robust standard errors in parentheses. Confidence intervals in square brackets

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

Source: Our elaboration

tors only in smaller and medium-sized subsidiaries. Instead, higher ROA and provincial women entrepreneurship rate are associated with a lower percentage of women directors only in larger subsidiaries. As in the previous analysis, a higher percentage of women directors in the parent firm is associated with a higher percentage of women directors regardless of the subsidiary's size, although the effect is stronger in larger subsidiaries. Finally, being a subsidiary of a multinational parent firm is associated with a lower percentage of women directors regardless of the subsidiary's size, whereas being a subsidiary of an innovative parent firm has the opposite effect only in larger subsidiaries.

Finally, in Model 9, *Critical mass - parent firm* has a positive and statistically significant marginal effect ( $dy/dx=0.1534$ ,  $p<0.01$ ), implying that a critical mass



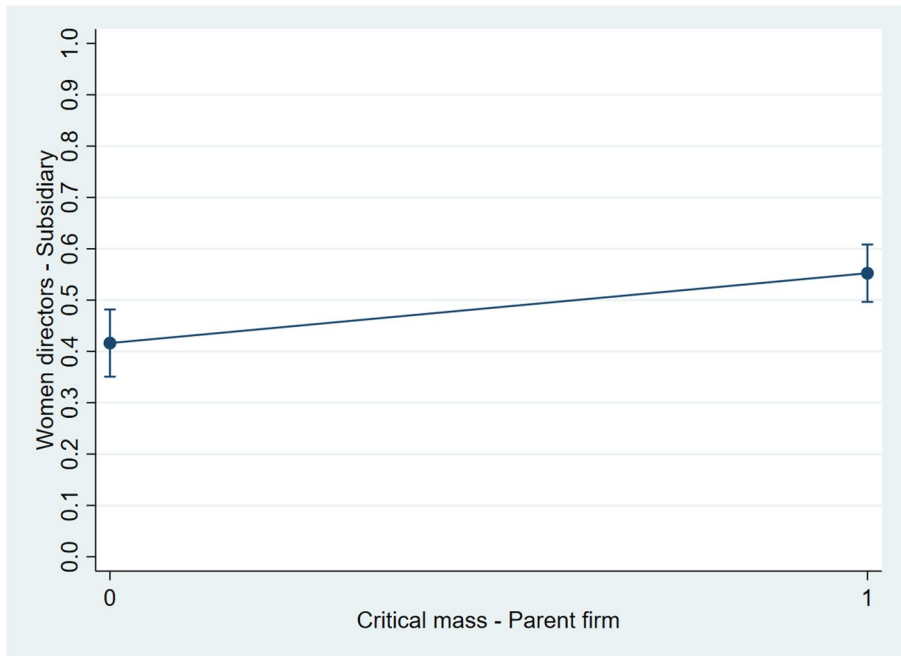
**Fig. 3** Margins plot of the percentage of women directors in subsidiaries (y-axis) by the percentage of women in the parent firm (x-axis) with confidence intervals

of women directors in the parent firm is associated with an increase of about 15.3% points in the percentage of women directors in the subsidiary (Fig. 4).

## 5 Discussion

The study shows that the presence of women directors in subsidiaries of parent firms directly subject to the gender quota law (16.41%) is lower than in firms that are neither directly nor indirectly affected by the law (22.63%) and that being a subsidiary of a parent firm directly subject to the law is associated with a lower presence of women directors in the subsidiary, regardless of the parent firm's shareholding. This negative effect thus emerges despite the subsidiary operating within a corporate group in which the parent firm is legally bound to comply with the gender quota law.

This evidence suggests that the expected increase in awareness of gender equality issues and the broader cultural transformation anticipated following the introduction of gender quota laws (Klettner et al., 2016; Latura & Catalano Weeks, 2023) do not immediately materialise. Rather, our results align with prior literature indicating that the spillover effects of gender quota laws are limited: they neither enhance women's representation in managerial bodies beyond those directly targeted nor improve their chances of attaining board chairs, with the overall impact outside the boards of directors remaining minimal (Bertrand et al., 2018; Gibert & Fedorets, 2025).



**Fig. 4** Margins plot of the percentage of women directors in subsidiaries (y-axis) by the presence of a critical mass of women in the parent firm (x-axis) with confidence intervals

Our findings can be interpreted in light of the literature on decoupling (Oliver, 1991): parent firms may formally comply with gender quota laws by increasing the presence of women on their boards of directors, yet this commitment remains symbolic and does not translate into substantive change within the corporate group. Moreover, the sensemaking process through which subsidiaries interpret the institutional pressures arising from the gender quota law faced by the parent firm (Weick, 1995; Maitlis & Christianson, 2014), also shaped by interconnections among subsidiaries (He & Shaw, 2025), may fail to generate shared understandings that foster gender equality internally and align with the parent firm's commitment to it. Two explanations may account for this pattern. First, a monitoring effect may come into play because the law and public opinion focus primarily on listed parent firms, while subsidiaries remain largely invisible to regulators, thus reducing incentives to extend compliance. In addition, a temporal adjustment mechanism may be at play. Given that our analysis is based on a single-year observation, the absence of diffusion effects may reflect the time required for organisational practices to propagate within corporate groups. The internalisation of gender-related governance changes may therefore unfold gradually, becoming more visible over longer time horizons.

The multi-level analysis highlights the conditions that foster or hinder the diffusion of gender quota laws within corporate groups and, consequently, the presence of women directors in subsidiaries of parent firms directly subject to the law. Specifically, a larger subsidiary's board size, greater subsidiary age, being an innovative subsidiary, and a higher proportion of women directors in the parent firm (including

the presence of a critical mass of women directors) are associated with a higher percentage of women directors in the subsidiary. By contrast, having a multinational parent firm is associated with a lower percentage. Moreover, the effects of some parent- and subsidiary-level characteristics vary depending on subsidiary's age and size. For instance, holding a gender equality certification (UNI/PdR 125) at the subsidiary level is associated with a higher percentage of women directors only in older subsidiaries and in smaller and medium-sized subsidiaries. Conversely, a higher provincial women entrepreneurship rate is associated with a lower percentage of women directors only in younger subsidiaries and in larger subsidiaries. Overall, our results suggest that organisational maturity and openness to innovation facilitate the transmission of governance practices within corporate groups. Moreover, the diffusion of gender-related practices within corporate groups is more likely when parent firms display a visible inclusion of women on their own board of directors. Their presence operates as an enabling lever that increases the salience, credibility, and accountability of gender balance within the corporate group, thereby reinforcing coercive regulation. By contrast, subsidiaries belonging to multinational parent firms are less likely to internalise gender-related practices and promote the presence of women directors, indicating that global integration pressures and competing organisational logics may weaken the local transmission of change induced by gender quota laws. Finally, the adoption of formalised equality systems, such as gender equality certification (UNI/PdR 125), which institutionalise commitments and provide internal monitoring structures, appears to function as an enabling lever only under certain conditions.

Taken together, our findings show that, within corporate groups, coercive regulation applied to the parent firm does not automatically spill over to subsidiaries per se, but instead requires complementary normative and cognitive reinforcements to generate substantive change across the group. Specifically, gender quota laws, while effective in increasing women's representation on parent firms' boards of directors, risk producing only partial compliance if not supported by enabling or voluntary initiatives. Diffusion is more likely when gender quota laws are accompanied by mechanisms that increase the salience and accountability of gender equality within the group, with the presence of women directors in the parent firm emerging as a particularly strong lever, as it amplifies the symbolic and relational relevance of gender balance. From a theoretical perspective, this supports the view that institutional pressures generate heterogeneous organisational responses (Oliver, 1991), with some firms limiting themselves to formal adherence and others embracing more substantive change.

Beyond the specific context of gender quota laws, our findings offer broader insights into the design and effectiveness of corporate governance regulation. First, the results suggest that regulatory interventions targeting a specific organisational unit such as the parent firm do not necessarily propagate within complex organisational structures. This highlights a structural limitation of governance regulation: formal compliance may remain confined to the level at which rules are enforced, without generating broader organisational change. In this sense, the effectiveness of governance regulation depends not only on its formal scope, but also on its ability to penetrate internal organisational boundaries. Second, our findings indicate that visibility and accountability mechanisms play a crucial role in shaping regulatory

outcomes. Parent firms, particularly listed ones, are subject to higher levels of public scrutiny and enforcement, whereas subsidiaries remain relatively less exposed. This asymmetry suggests that governance regulation may be effective where monitoring is strong, but significantly weaker in less visible organisational domains. Third, the evidence points to the importance of complementary organisational and institutional mechanisms. Coercive regulation alone appears insufficient to induce widespread change, unless it is supported by internal governance processes, cultural alignment, and signalling mechanisms (e.g., the presence of women directors at the top of the organisation). This implies that the effectiveness of governance regulation is conditional and mediated, rather than automatic. Taken together, these insights suggest that corporate governance regulation should be conceptualised not merely as a set of formal rules, but as a multi-level process, whose outcomes depend on how regulatory pressures interact with organisational structures, internal governance dynamics, and institutional contexts.

## 6 Conclusion

By investigating whether gender quota laws targeting parent firms also foster a greater presence of women directors in their subsidiaries and by identifying which parent- and subsidiary-level characteristics facilitate this change, the study advances existing research and provides relevant implications, while recognising its limitations.

### 6.1 Contribution to the literature

To the best of our knowledge, this is one of the first studies to evaluate whether gender quota laws foster cultural-cognitive and normative changes that extend beyond the firms directly subject to the law, spreading within corporate groups and fostering the intended cultural shift. Rather than assuming such diffusion, our analysis empirically investigates whether these regulatory pressures are associated with observable changes in subsidiaries' board composition.

As noted by Liebowitz et al. (2018), the impact of the regulatory environment on organisational behaviour has been largely overlooked. Our study addresses this gap by drawing on institutional theory and sensemaking theory to examine how subsidiaries of parent firms directly subject to the gender quota law respond to this regulatory pressure. From an institutional and sensemaking perspective, organisations do not merely comply with legal mandates; rather, they interpret and navigate a broader set of coercive, normative, and cognitive pressures. Some firms engage in symbolic compliance, meeting formal requirements without effecting real change, while others internalise regulatory demands and demonstrate genuine commitment, embedding gender diversity into their culture.

Building on this framework, our study provides novel empirical evidence on the association between parent-level gender quota regulation and board gender composition within corporate groups. Specifically, we show that subsidiaries of regulated parent firms do not exhibit higher levels of women's representation; rather, the observed

patterns are consistent with limited (or even negative) diffusion of gender-related governance practices.

This finding contributes to the literature by qualifying expectations about the effectiveness of coercive regulation: while gender quota laws may alter board composition at the level at which they are enforced, their influence within organisational boundaries appears conditional and mediated by firm-level characteristics and internal governance dynamics. By engaging with both perspectives, we shift the debate from whether such policies are effective in general to the conditions under which their influence extends beyond their formal scope. In doing so, we extend the debate on affirmative actions by examining their effectiveness in fostering social and cultural change beyond the immediate legal scope, particularly in contexts (such as Italy) where women were, for a long time, almost entirely absent from corporate boards of directors (De Masi et al., 2018; Rinaldi & Tagliazucchi, 2025). More broadly, our results support the view that institutional pressures generate heterogeneous organisational responses (Oliver, 1991), and that coercive regulation alone may be insufficient to trigger intra-group diffusion in the absence of reinforcing normative and cognitive mechanisms.

These findings also contribute to the literature on corporate governance regulation. They suggest that the effectiveness of regulatory interventions depends not only on their formal design, but also on their ability to penetrate organisational boundaries, on the visibility of the regulated entities, and on the presence of complementary organisational and institutional mechanisms. In this sense, governance regulation emerges as a multi-level and mediated process, rather than a self-executing mechanism. This moves beyond a firm-level view of regulation and contributes to a group-level perspective on governance dynamics.

## 6.2 Practical implications

The findings of this study also have important practical relevance for managers and policymakers. On the corporate side, our evidence suggests that parent firms directly subject to the gender quota law should not limit their efforts to their boards of directors, but should actively promote the diffusion of gender balance within the entire corporate group. In operational terms, parent firms can increase the presence of women on their own boards of directors, thereby strengthening the symbolic and substantive credibility of gender equality commitments within the group. They may also promote the adoption of gender equality certification and related supporting systems across subsidiaries, which helps institutionalise gender equality goals and provides formal monitoring mechanisms. In addition, parent firms can set internal targets for subsidiaries' boards of directors to enhance accountability for gender balance and to translate regulatory expectations into concrete organisational objectives. These efforts can be further reinforced by linking subsidiary leadership KPIs to diversity and inclusion milestones, thus embedding gender equality into managerial evaluation and incentive structures. Finally, parent firms can report board gender diversity at the group level, increasing transparency and visibility and facilitating both internal oversight and external scrutiny. Management teams should also align with and support these initiatives, recognising gender diversity as a strategic asset associated with

improved decision-making, transparency, and performance (e.g., Atinc et al., 2022; Comi et al., 2020).

For regulators and supervisory bodies, our findings suggest that the effectiveness of gender quota laws could be strengthened through greater group-level transparency and the use of light-touch governance instruments, without necessarily extending the formal legal scope of these regulations. For instance, policymakers could require large corporate groups to disclose board gender diversity indicators at the group level, introduce comply-or-explain mechanisms concerning diversity policies in subsidiaries, or encourage the adoption of complementary tools such as gender equality certification. Such measures would not impose additional binding obligations, but they could enhance visibility, accountability, and peer comparison, thereby fostering a more voluntary yet substantive diffusion of gender equality practices beyond the parent firm. In this way, compliance with gender quota laws would be more likely to become a catalyst for genuine organisational change towards gender equality, rather than remaining a merely symbolic response (Mateos De Cabo et al., 2019).

### 6.3 Limitations and future research

Future research has the potential to address the limitations of our study and deepen our understanding of the mechanisms underlying the diffusion (or non-diffusion) of change within corporate groups induced by gender quota laws. First, future research could employ qualitative methods, including process tracing, to explore how parent firms internalise gender quota laws, how organisational practices evolve within corporate groups in response to these regulations, and why they sometimes fail to diffuse to subsidiaries. This line of inquiry could reveal the organisational logics, interpretive frames, and power relations that shape the transmission, adaptation, or resistance of gender-related governance practices across parent firms and subsidiaries. It would provide a deeper understanding of why resistance, partial compliance, or symbolic adoption may occur within corporate groups.

Second, a key limitation of this study concerns its cross-sectional design, as the analysis is based on a single-year dataset. This prevents us from capturing the dynamic evolution of gender-related governance practices within corporate groups. Building on our findings, longitudinal, within-group analyses focused on board renewal cycles could assess whether the influence of gender quota laws on subsidiaries emerges with a temporal delay, and whether the intensity of parent firm oversight changes as regulatory scrutiny is periodically renewed. Such an approach would enable a direct examination of how monitoring and timing shape the diffusion of gender-related governance practices within corporate groups.

Third, cross-country comparative analyses could exploit variation in the design, enforcement, and institutional complements of gender quota laws to investigate how different regulatory and cultural contexts shape the extent to which gender-related changes diffuse within corporate groups. This line of research would help identify the conditions under which gender quota laws trigger substantive organisational change, rather than remaining confined to formal compliance at the parent-firm level.

**Funding** Open access funding provided by Università degli Studi di Brescia within the CRUI-CARE Agreement.

## Declarations

**Conflict of interest** Mariasole Bannò, Emilia Filippi and Tommaso Fornasari declare no conflicts of interest.

**Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

## References

- Aggarwal, R., Jindal, V., & Seth, R. (2019). Board diversity and firm performance: The role of business group affiliation. *International Business Review*, 28(6), Article 101600.
- Ahern, K. R., & Dittmar, A. K. (2012). The changing of the boards: The impact on firm valuation of mandated female board representation. *The Quarterly Journal of Economics*, 127(1), 137–197.
- Allemand, I., Bédard, J., Brullebaut, B., & Deschênes, J. (2022). Role of old boys' networks and regulatory approaches in selection processes for female directors. *British Journal of Management*, 33(2), 784–805.
- Atinc, G., Srivastava, S., & Taneja, S. (2022). The impact of gender quotas on corporate boards: A cross-country comparative study. *Journal of Management and Governance*, 26(3), 685–706.
- Bakhtiari, A., Murthi, B. P. S., & Steffes, E. (2013). Evaluating the effect of affinity card programs on customer profitability using propensity score matching. *Journal of Interactive Marketing*, 27(2), 83–97.
- Bertrand, M., Black, S. E., Jensen, S., & Lleras-Muney, A. (2018). *Breaking the glass ceiling? The effect of board quotas on female labour market outcomes in Norway*. The Review of Economic Studies.
- Bøhren, Ø., & Staubo, S. (2016). Mandatory gender balance and board independence: Mandatory gender balance and board independence. *European Financial Management*, 22(1), 3–30.
- Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of Economic Surveys*, 22(1), 31–72.
- Campbell, R., & Erzeel, S. (2018). Exploring gender differences in support for rightist parties: The role of party and gender ideology. *Politics & Gender*, 14(1), 80–105.
- Chandler, A. D. (1991). The functions of the HQ unit in the multibusiness firm. *Strategic Management Journal*, 12(S2), 31–50.
- Chandler, A. (2016). Women on corporate boards: A comparison of parliamentary discourse in the United Kingdom and France. *Politics & Gender*, 12(03), 443–468.
- Claverio, S., & Galligan, Y. (2021). Delivering gender justice in academia through gender equality plans? Normative and practical challenges. *Gender, Work & Organization*, 28(3), 1115–1132.
- Comi, S., Grasseni, M., Origo, F., & Pagani, L. (2020). Where women make a difference: Gender quotas and firms' performance in three European countries. *ILR Review*, 73(3), 768–793.
- Dale-Olsen, H., Schöne, P., & Verner, M. (2013). Diversity among Norwegian boards of directors: Does a quota for women improve firm performance? *Feminist Economics*, 19(4), 110–135.
- Mateos De Cabo, R., Terjesen, S., Escot, L., & Gimeno, R. (2019). Do “soft law” board gender quotas work? Evidence from a natural experiment. *European Management Journal*, 37(5), 611–624.
- De Masi, S., Słomka-Gołębiowska, A., & Paci, A. (2018). Women do the job: The reasons to set quota for women on boards. *International Journal of Business and Management*, 13(12), 167–179.
- De Vita, L., & Magliocco, A. (2018). Effects of gender quotas in Italy: A first impact assessment in the Italian banking sector. *International Journal of Sociology and Social Policy*, 38(7–8), 673–694.

- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147–160.
- Fagan, C., & González Menéndez, M. C. (2012). Conclusions. In C. Fagan, M. C. González Menéndez, & S. Gómez Anson (Eds.), *Women on corporate boards and in top management* (pp. 245–258). Palgrave.
- Ferrari, G., Ferraro, V., Profeta, P., & Pronzato, C. (2022). Do board gender quotas matter? Selection, performance, and stock market effects. *Management Science*, 68(8), 5618–5643.
- Ferreira, D. (2015). Board diversity: Should we trust research to inform policy? *Corporate Governance: An International Review*, 23(2), 108–111.
- Freidenvall, L., & Hallonsten, H. (2013). Why not corporate gender quotas in Sweden? *Representation*, 49(4), 467–485.
- Gamson, W. A., & Modigliani, A. (1995). Equal employment opportunity: Labor market discrimination and public policy. *The Journal of Sociology & Social Welfare*, 22(4), 373–394.
- García-Pont, C., Canales, J. I., & Noboa, F. (2009). Subsidiary strategy: The embeddedness component. *Journal of Management Studies*, 46(2), 182–214.
- Gibert, A., & Fedorets, A. (2025). Lifting women up: Gender quotas and the advancement of women on corporate boards. *Corporate Governance: An International Review*, 33, 407–435.
- Goodstein, J., Gautam, K., & Boeker, W. (1994). The effects of board size and diversity on strategic change. *Strategic Management Journal*, 15(3), 241–250.
- Greene, W. H. (2003). *Econometric analysis*. Pearson Education India.
- Greene, D., Intintoli, V. J., & Kahle, K. M. (2020). Do board gender quotas affect firm value? Evidence from California Senate Bill No. 826. *Journal of Corporate Finance*, 60, Article 101526.
- Hamplová, E., Janeček, V., & Lefley, F. (2022). Board gender diversity and women in leadership positions – Are quotas the solution? *Corporate Communications: An International Journal*, 27(4), 742–759.
- He, L., & Shaw, T. S. (2025). Business group affiliation and board independence in India: The effects of structural and situated attention. *Corporate Governance: An International Review*, 33(4), 900–921.
- Heugens, P. P. M. A. R., & Lander, M. W. (2009). Structure! Agency! (And other quarrels): A meta-analysis of institutional theories of organization. *Academy of Management Journal*, 52(1), 61–85.
- Hofmann, D. A. (1997). An overview of the logic and rationale of hierarchical linear models. *Journal of Management*, 23(6), 723–744.
- Holzer, H., & Neumark, D. (2000). Assessing affirmative action. *Journal of Economic Literature*, 38(3), 483–568.
- Jensen, T., Kjærgaard, A., & Svejvig, P. (2009). Using institutional theory with sensemaking theory: A case study of information system implementation in healthcare. *Journal of Information Technology*, 24, 343–353.
- Kanter, R. M. (1977). Some effects of proportions on group life: Skewed sex ratios and responses to token women. *American Journal of Sociology*, 82(5), 965–990.
- Kantola, J., & Nousiainen, K. (2009). Institutionalizing intersectionality in Europe: Introducing the theme. *International Feminist Journal of Politics*, 11(4), 459–477.
- Kellough, J. E. (2006). *Understanding affirmative action*. Georgetown University Press.
- Khanna, T., & Rivkin, J. W. (2001). Estimating the performance effects of business groups in emerging markets. *Strategic Management Journal*, 22(1), 45–74.
- Kirsch, A. (2021). *Women on board. Policies in member states and the effects on corporate governance*. European Parliament.
- Klettner, A., Clarke, T., & Boersma, M. (2016). Strategic and regulatory approaches to increasing women in leadership: Multilevel targets and mandatory quotas as levers for cultural change. *Journal of Business Ethics*, 133(3), 395–419.
- Kogut, B., Colomer, J., & Belinky, M. (2014). Structural equality at the top of the corporation: Mandated quotas for women directors. *Strategic Management Journal*, 35(6), 891–902.
- Kostova, T., & Roth, K. (2002). Adoption of an organizational practice by subsidiaries of multinational corporations: Institutional and relational effects. *Academy of Management Journal*, 45(1), 215–233.
- Labelle, R., Francoeur, C., & Lakhali, F. (2015). To regulate or not to regulate? Early evidence on the means used around the world to promote gender diversity in the boardroom. *Gender, Work & Organization*, 22(4), 339–363.
- Latura, A., & Catalano Weeks, A. (2023). Corporate board quotas and gender equality policies in the workplace. *American Journal of Political Science*, 67(3), 606–622.
- Liebowitz, J., Chan, Y., Jenkin, T., Spicker, D., Paliszkievicz, J., & Babiloni, F. (Eds.). (2018). *How well do executives trust their intuition*. CRC.

- Maitlis, S., & Christianson, M. (2014). Sensemaking in organizations: Taking stock and moving forward. *Academy of Management Annals*, 8(1), 57–125.
- Martinez-Jimenez, R., Hernández-Ortiz, M. J., & Cabrera Fernández, A. I. (2020). Gender diversity influence on board effectiveness and business performance. *Corporate Governance: The International Journal of Business in Society*, 20(2), 307–323.
- Mensi-Klarbach, H., & Seierstad, C. (2020). Gender quotas on corporate boards: Similarities and differences in quota scenarios. *European Management Review*, 17(3), 615–631.
- Meyer, L. D., & Scott, S. H. (1983). Possible errors during field evaluations of sediment size distributions. *Transactions of the ASAE*, 26(2), 481–485.
- Oliver, C. (1991). Strategic responses to institutional processes. *The Academy of Management Review*, 16(1), 145–179.
- Osborne, J. W. (2000). Advantages of hierarchical linear modeling. *Practical Assessment Research and Evaluation*, 7(1), 1.
- Ozbugday, F. C., & Ozgur, O. (2018). Advanced metering infrastructure and distributed generation: Panel causality evidence from New Zealand. *International Journal of Energy Economics and Policy*, 8(5), 125–137.
- Paoloni, M., Paoloni, P., & Lombardi, R. (2019). The impact on the governance of the gender quotas legislation: The Italian case. *Measuring Business Excellence*, 23(3), 317–334.
- Pastore, P., & Tommaso, S. (2016). Women on corporate boards. The case of ‘gender quotas’ in Italy. *Corporate Ownership and Control*, 13(4), 132–155.
- Pla-Barber, J., Villar, C., & Madhok, A. (2018). Co-parenting through subsidiaries: A model of value creation in the multinational firm. *Global Strategy Journal*, 8(4), 536–562.
- Powell, W. W., & Colyvas, J. A. (2008). Microfoundations of Institutional Theory. In R. Greenwood, C. Oliver, R. Suddaby, & K. Sahlin (Eds.), *The SAGE Handbook of Organizational Institutionalism* (pp. 276–298). SAGE Publications Ltd.
- Reddy, S., & Jadhav, A. M. (2019). Gender diversity in boardrooms – A literature review. In Y. P. P. Pai (Ed.), *Cogent Economics & Finance*, 7(1), 1644703.
- Rinaldi, A., & Tagliacuzzi, G. (2025). Women directors in Italy: 1913–2017. *Business History*, 67(1), 1–25.
- Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41–55.
- Rubinfeld, J. (1997). Affirmative action. *The Yale Law Journal*, 107(2), 427–472.
- Sakawa, H., & Watanabel, N. (2018). Parent control and ownership monitoring in publicly listed subsidiaries in Japan. *Research in International Business and Finance*, 45, 7–14.
- Salancik, G. R., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. *Administrative Science Quarterly*, 23(2), 224–253.
- Scott, W. R. (1995). *Institutions and organizations*. Sage.
- Seierstad, C. (2016). Beyond the business case: The need for both utility and justice rationales for increasing the share of women on boards: Beyond the business case. *Corporate Governance: An International Review*, 24(4), 390–405.
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374.
- Stancil, P. (2016). Substantive equality and procedural justice. *Iowa Law Review*, 102(2), 1633–1690.
- Stryhn, H., & Christensen, J. (2014). The analysis—Hierarchical models: Past, present and future. *Preventive Veterinary Medicine*, 113(3), 304–312.
- Suárez-Ortega, S. M., Suarez, M., & López-Duarte, C. (2026). Multinational enterprises’ contribution to gender equality: An integrative framework. *International Journal of Management Reviews*. <https://doi.org/10.1111/ijmr.70015>
- Velkova, I. (2015). *Quotas for women on corporate boards: The call for change in Europe*. SSRN Electronic Journal.
- Wang, M., & Kelan, E. (2013). The gender quota and female leadership: Effects of the Norwegian gender quota on board chairs and CEOs. *Journal of Business Ethics*, 117(3), 449–466.
- Weick, K. E. (1995). *Sensemaking in organizations*. Sage Publications Inc.
- Wiersema, M., & Mors, M. L. (2016). What board directors really think of gender quotas. *Harvard Business Review*, 14, 2–6.
- Zattoni, A. (2019). The evolution of corporate governance in Italy: Formal convergence or path-dependence? *Corporate Governance and Research & Development Studies*. <https://doi.org/10.3280/cgrd-s1-2019oa8799>

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

**Mariasole Bannò** is an Associate Professor of Management at the University of Brescia (Italy). In 2009, she held a PhD in Economics and Management of Technology at University of Bergamo and then she became a research fellow at University of Trento (Italy) until 2015. Her research interests concern diversity management, gender issues, and family business. She is an expert in diversity and inclusion training, having conducted courses across various organisational levels. She published several articles, monographs and book chapters in international publications in the field of economics and management.

**Emilia Filippi** is an Assistant Professor of Management at Sant'Anna School of Advanced Studies in Pisa (Italy). She holds a Ph.D. in Economics and Management from the University of Trento (Italy) and was a Research Fellow in Management at the University of Brescia (Italy). Her research interests include the impact of automation technologies on work, sustainability, and gender issues. She has published several articles and a monograph on these topics, with both national and international relevance.

**Tommaso Fornasari** is Research Fellow in business administration at the University of Brescia, where he teaches cost accounting. He gained a Ph.D. in Business and Law in 2020, with a thesis on sustainability committees within corporate governance. His extensive research interests include various key areas, such as corporate governance, diversity management, sustainability, corporate social responsibility, accounting, and circular economy. Author of numerous publications in international scientific journals of management and business economics. He is also actively involved in providing sustainability advisory services to both private and non-commercial organisations. Furthermore, his passion for ESG issues has led him to take the helm of several study groups that focus on researching and understanding the challenges and opportunities sustainability presents.

## Authors and Affiliations

Mariasole Bannò<sup>1</sup> · Emilia Filippi<sup>2</sup> · Tommaso Fornasari<sup>3</sup> 

✉ Tommaso Fornasari  
tommaso.fornasari@unibs.it

Mariasole Bannò  
mariasole.banno@unibs.it

Emilia Filippi  
emilia.filippi@santannapisa.it

<sup>1</sup> Department of Mechanical and Industrial Engineering, University of Brescia, Via Branze, 21, Brescia 25123, Italy

<sup>2</sup> Institute of Management, Sustainability Management SuM Lab Sant'Anna School of Advanced Studies, Piazza Martiri della Libertà, 24, Pisa 56127, Italy

<sup>3</sup> Department of Economics and Management, University of Brescia, Via San Faustino, 74/b, Brescia 25121, Italy