



Busy boards and environmental, social and governance performance: a gender perspective on NASDAQ-100 firms

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Abstract

The composition of corporate boards determines board governance and influences firm performance. In the current corporate environment, greater emphasis is being placed on the environmental, social and governance performance of companies. In this sense, board members serving on multiple corporate boards have emerged as relevant corporate governance mechanisms. Using the OLS model on sample data composed of companies listed on the NASDAQ-100 Index, this research aims to evaluate the effect of busy boards and the tenure of board members on ESG performance from a gender perspective. The results indicate that board networks, experience, and knowledge have a positive effect on Bloomberg's and S&P Global ESG scores, with female directors and independent directors playing an important role. In this way, the human and social capital of corporate boards is a valuable resource for corporate governance. This research contributes to identifying the principal attributes of corporate boards that influence ESG performance.

Keywords ESG performance · Busy boards · Board tenure · Female directors · Independent directors · Corporate governance

JEL Classification M14 · M10

1 Introduction

Corporate boards are responsible for implementing principal decisions about corporate strategy and ensuring effective corporate governance. The survival of companies is highly dependent on the quality of their decisions. Corporate boards are the primary instrument for corporate governance. The impact of corporate board composition on firm performance and board governance has been widely researched, with a

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particular focus on the effect of board members accumulating multiple board seats across different companies (Ferris et al. 2003; Fich and Shivdasani 2006). Boards are considered busy when at least 50% of their board members serve three or more corporate boards simultaneously (Ferris et al. 2003). Multiple directorships bring experience and knowledge to corporate boards, as well as wider networks, which have an impact on board governance and firm performance. Whether those contributions of busy directors are beneficial or harmful to corporate governance has been widely investigated by previous research, resulting in two completely opposing arguments. According to the ‘reputation hypothesis’, this knowledge and connections are valuable resources for a board’s advisory function and decision-making, which positively impacts board performance (Ferris et al. 2018; Kim 2022; Liu and Paul 2015). However, according to the ‘busyness hypothesis’, the more extensive capabilities of board members holding multiple board seats can be reduced by dividing their limited time and effort among a greater number of corporate boards, negatively affecting the board monitoring function and firm performance (Ferris et al. 2003; Fich and Shivdasani 2006; Jiraporn et al. 2008).

This debate has been extended to the influence of multiple directorships on environmental, social and governance (ESG) performance (Cooper and Uzun 2022; Romano et al. 2020). The United Nations’ publication of the Principles of Responsible Investment (PRI) in 2006 marked the first steps towards considering ESG criteria in investment decisions. Since then, investors, regulators, proxy advisors and numerous organisations have demanded that firms include ESG issues in their strategic decisions. ESG performance can also be influenced by board busyness (Kim 2022). On the one hand, according to the ‘busyness hypothesis’, multiple directorships may significantly reduce their commitment to the board monitoring function and increase other no business responsibilities, negatively affecting sustainability performance (de Villiers et al. 2011; Harjoto and Wang 2020). On the other hand, serving on other corporate boards provides board members with more networks, experience, knowledge, and expertise, which improves the board advisory function and, under the premises of the ‘reputation hypothesis’, may have a positive effect on ESG strategies (Harjoto and Wang 2020; Mallin and Michelon 2011; Nandy et al. 2020). However, few studies have examined the impact of busy boards on ESG scores, considering three ESG factors at the same time, and even fewer have considered the gender of board members and their experience serving the same corporate board.

As a result, the aim of this paper is to investigate the influence of busy boards and board tenure on ESG performance in companies listed on the NASDAQ-100 Index, focusing on the role of female directors. Unlike previous studies, this paper analyses knowledge, experience and networks jointly from two perspectives: outside acquisition via board members serving on multiple corporate boards and inside acquisition via board members holding a board seat in the same company for years. Therefore, the multiple cognitive skills of board members are considered to enhance the ESG performance of companies (Behlau et al. 2023). Using data from 2018 to 2022 and applying an OLS model, this research assesses the effect of corporate board composition on Bloomberg and S&P Global ESG scores. Important governance variables, including experience-related factors such as board busyness (busy board and the number of directorships held by independent directors) and tenure (years on the

board, in the current role and within the company of directors), along with board composition (female directors and insider directors), are analysed as drivers of ESG scores in the 100 most innovative and high-growth companies recognised for their pivotal role in driving global economic progress. This paper highlights the crucial role of corporate boards by providing a deeper understanding of how board members' networks, experience and knowledge can positively influence ESG performance, particularly in companies that are leading or driving innovation in the global economy. In this context, the study extends the previous literature on the importance of board composition in influencing corporate performance by demonstrating that having busy boards and long-tenure directors can be crucial for creating sustainable value in innovative companies. Additionally, this research emphasises the significant contribution of women on corporate boards in promoting sustainability in corporate governance. Overall, this research advances the understanding of the principal governance attributes that contribute to responsible corporate performance.

2 Literature review

Previous literature research has demonstrated the influence of accumulating board seats on firm performance and corporate governance. Following prior studies, a busy board is defined as a board on which at least half its members serve on the boards of three or more companies (Benson et al. 2015; Fich and Shivdasani 2006; Field et al. 2013). This is a widespread corporate governance practice, as most corporate boards worldwide have some board members with multiple directorships (Ferris et al. 2020). Previous studies have presented two opposing perspectives regarding the influence of board busyness on firm performance: the 'busyness hypothesis' and the 'reputation hypothesis', according to which the presence of board members with multiple directorships may harm or improve firm performance, respectively.

When board members serve on multiple corporate boards, they must logically distribute their limited time and effort among more corporate boards. Although it would seem that the most reputable and talented board members are those who accumulate more board seats (Adams et al. 2010), the lack of sufficient time to serve all corporate boards can negatively affect their superior qualities (Falato et al. 2014) and their attendance at board meetings (Jiraporn et al. 2009; Latif et al. 2024). On the basis of these arguments, the 'busyness hypothesis' is established. Boards that are too busy may not fulfil their role of control, becoming less cautious and reducing the effectiveness of the board monitoring function (Ferris et al. 2003; Liu et al. 2023). This weakness in corporate governance may increase the probability of managers manipulating firm earnings (Kim 2022), diminish the quality of firm financial reporting (Ferris and Liao 2019) and reduce firm value (Cashman et al. 2012; Ferris et al. 2020; Fich and Shivdasani 2006; Jiraporn et al. 2008). Similarly, boards that are too busy may also be unable to devote sufficient effort and attention to managing complexity and long-term investment in innovation (Bolton and Zhao 2022). However, other authors have demonstrated that multiple directorships do not necessarily imply less control and commitment on the part of board members (Kiel and Nicholson 2006; Latif et al. 2024) or an increase in the cases of security fraud (Ferris et al. 2003; Field et

al. 2013). The theoretical basis of the ‘busyness hypothesis’ seems to be related to agency theory, with a principal focus on the board monitoring function and controlling and supervising management performance (Fama and Jensen 1983). Regulatory authorities seem to adopt this perspective (Ferris et al. 2018; Keys and Li 2005). Their reforms and regulations have attempted to limit the number of board seats that directors may hold in an effort to preserve firm value (Perry and Peyer 2005).

Although busy boards may reduce monitoring effectiveness, some firms prefer to take advantage of the advice and networking benefits that multiple directorships may provide to business strategies (Bazrafshan and Hesarzadeh 2022; Kim 2022). The ‘reputation hypothesis’ premises are based on improving the quality of the board advisory function provided by busy boards. On the one hand, multiple networks with other corporate boards and firms increase the skills, experience, expertise, and knowledge of board members in terms of corporate governance, management styles, and business strategies, thus improving the advising board function and decision-making (Carpenter and Westphal 2001; Ferris et al. 2018; Liu and Paul 2015). On the other hand, holding multiple board seats increases the visibility and reputation of directors, which can encourage their commitment to board functions (Brullebaut et al. 2022; James et al. 2018). As a result, having multiple directorships improves financial performance and market value (Ferris et al. 2003; Mbanyele 2020; Perry and Peyer 2005). This human capital accumulated by corporate boards may be especially relevant in mergers and acquisitions (Benson et al. 2015; Kim 2022) and initial public offerings (Field et al. 2013; Tham 2024), which are not typical transactions in that the prior expertise and experience of board members can provide greater advising benefits. Ferris et al. (2020) have gone further with those strategic events, demonstrating the value of busy boards in young firms that are unfamiliar with the business world and where the knowledge of board members may be truly valuable. Similarly, multiple connections among the members of busy boards may be crucial for improving the quality of advice in strategic decisions on innovation (Kim 2022) and asset management (James et al. 2018). However, Andres et al. (2013) noted that connections with other firms may also imply other indirect social and informal commitments outside the board that saturate board members’ agendas and reduce their time dedicated to corporate boards. The ‘reputation hypothesis’ seems to be supported by resource dependence theory (Pfeffer and Salancik 1978), as human capital and social networks are valuable resources that contribute to corporate governance.

In conclusion, previous research results are inconclusive regarding the two perspectives outlined above. Some authors have argued that the mixed results are simply due to the study samples chosen for research (Cashman et al. 2012). However, other authors have suggested that the inconclusive results may imply that the impact of a busy board on firm performance is dependent on the principal board function required by firms: a positive effect will result in firms where managers primarily require advice yet it is ineffective in firms with a high need for supervision and control of management activities (Kim 2022).

Beyond the role of busy boards and the traditional objective of maximising shareholders’ value, strong demands from multiple stakeholders, international organisations, and society at large have resulted in ESG issues dominating boardroom discussions (Cooper and Uzun 2022). ESG refers to the environmental, social and

governance dimensions of corporate performance. The environmental dimension refers to a firm's practices and policies to protect the environment and manage its impact on it (for example, greenhouse gas emission footprints, waste management and pollution, climate change, environmentally friendly products, etc.); social issues are related to the firm's relationship with its stakeholders (for example, considering workplace health and safety, human rights, community impacts, and supply chain management); and the governance dimension refers to how a company is led and managed (for example, board diversity and structure, executive pay, transparency and disclosure practices, and shareholder rights). These ESG issues are not a closed list that remains constant over time (Escrig-Olmedo et al. 2019), and all of them are used by investors as decisive criteria in their investment decisions (Birindelli et al. 2018; Lopez-Cabarcos et al. 2019). This increasing popularity among investors has resulted in establishing multiple ESG rating providers (Escrig-Olmedo et al. 2019) despite the lack of consensus in the methodology used, the ESG attributes measured and the weight of each ESG factor (Berg et al. 2022; Billio et al. 2021; Chatterji et al. 2016).

2.1 Busy boards and ESG performance

Board busyness has become another important feature of board governance feature that impacts ESG performance. Wider social and professional networks for accumulating board seats contribute to obtaining more information about stakeholders' demands, which improves the quality and effectiveness of ESG strategic decisions (Harjoto and Wang 2020; Nandy et al. 2020). Contributing to the diffusion and communication of ESG reporting is another role of board networks (Mishra et al. 2024; Sun et al. 2020). Additionally, board members may use their close contact with stakeholders to promote their own sustainability values and skills, which would benefit the ESG performance of the companies they serve (Birindelli et al. 2018; Shu et al. 2024). Serving on multiple corporate boards of other prestigious firms allows board members to develop a strong reputation and high credibility among stakeholders, who will be rewarded by corporate boards that act in accordance with their social needs and encourage social performance (Mallin and Michelon 2011). Additionally, multiple directorships allow board members to obtain information about innovative environmental initiatives from other firms and amplify and update their knowledge and experience with environmental practices and strategies (de Villiers et al. 2011; Tijani and Ahmadi 2022). Due to the high complexity and strategic nature of the environmental framework, the advice of a busy board may be especially relevant for promoting environmental performance (Cooper and Uzun 2022; Glass et al. 2016; Homroy and Slechten 2019; Ortiz de Mandojana and Aragon-Correa 2015), reducing greenhouse gas emissions, and increasing investments in green technologies (Homroy and Slechten 2019). In sum, interlocked directors can improve the ESG performance of those firms with higher requirements for advice from their board members (Amin et al. 2020).

The positive impact of interlocked directors on ESG performance could vanish, however, if they to accumulate an increasing number of board seats such that they are unable to provide adequate attention to their monitoring and advising functions (de Villiers et al. 2011; Harjoto and Wang 2020). The negative effect is exacerbated when

networks of busy boards are established with other no business organisations, assuming that board members are too busy with other responsibilities away from business to devote enough attention to their board functions (Evans et al. 2022). Directorship accumulation may be especially detrimental to sustainability performance since the complexity of environmental issues requires more time and a high level of commitment that a board that is too busy may not be able to provide (Bravo-Urquiza and Reguera-Alvarado 2024; Haque 2017). Other authors have noted that not only the number of directorships but also the sector in which the company operates may have a negative effect on environmental performance. In this sense, the contributions of board busyness to sustainability performance are not possible when board members are interlocked with financial institutions or fossil fuel companies, industries that are more reluctant to assume the high financial risks of environmental investments or invest in renewable energy, respectively (Ortiz-de-Mandojana et al. 2012). Similarly, busy directors may prioritise their attention, efforts and time towards improving ESG performance, principally in the most prestigious firms in which they serve, at the expense of those firms that could provide them fewer reputational benefits (Wang et al. 2023).

The gender of busy boardmembers may also influence ESG performance. Specifically, the presence of women on boards tends to improve ESG scores (Cooper and Uzun 2022; Romano et al. 2020) and has emerged as a significant moderator when ESG-related variables are considered (Hussain et al. 2024; Pucheta-Martinez et al. 2021). The influence of each individual ESG factor has been demonstrated. Board gender diversity improves social performance (Byron and Post 2016; Hafsi and Turgut 2013; Harjoto et al. 2015), enhances corporate philanthropy (Williams 2003) and reduces firms' negative societal impacts (Boukattaya and Omri 2021; Diez-Martin et al. 2024). Female directors tend to create a climate of confidence and trust that improves the corporate image among stakeholders (Kyaw et al. 2017), particularly customers and the community (Ardito et al. 2020), which has a positive effect on social scores. Similarly, their presence promotes the establishment of ethics codes (Garcia-Sanchez et al. 2015), the pursuit of constructive employee interactions, and the protection of human rights (Mallin and Michelon 2011), all of which positively impact governance scores (Beji et al. 2020; De Masi et al. 2021). In summary, more women on corporate boards tend to improve social and ethical firm compliance (Di Miceli da Silveira, Alexandre 2022; Isidro and Sobral 2015), which raises scores for responsible firm performance (Provasi and Harasheh 2020), favours the inclusion of companies in the most prestigious ethical and social rankings and facilitates their recognition as the best government companies to work for (Landry et al. 2016; Neuberger et al. 2023). However, other research has demonstrated that their presence is not significant in companies certified for their social and environmental performance (Ardito et al. 2020).

In addition to their contribution to social performance and governance, female directors also promote environmental initiatives (Li et al. 2017; Nadeem et al. 2017) and increase corporate investment in sustainable issues (Atif et al. 2020; Garcia-Meca et al. 2024), positively impacting environmental performance (Garcia Martin and Herrero 2020; Kassinis et al. 2016). Gender-balanced boards help combat climate change in diverse sectors, such as technology (Al-Najjar and Salama 2022) or

banking (Galletta et al. 2022), but they are particularly beneficial in those with high environmental impact (Khatri 2022; Lu and Herremans 2019). Female representation on boards tends to encourage environmental practices centred on developing environmental innovation in the production process (He and Jiang 2019; Lin and Xie 2023; Nadeem et al. 2020), aimed at reducing the use of fossil fuels (Haque 2017) and greenhouse gas emissions (Konadu et al. 2022; Nuber and Velte 2021). Similarly, other authors have demonstrated that neither their presence on boards nor their multiple networks from serving on other corporate boards have a significant effect on environmental strategies (Glass et al. 2016).

Apart from their influence on each ESG component, female directors may have beneficial effects on social performance but have no impact on environmental issues. Gender stereotypes that tend to associate women principally with social issues and high social commitment (Hussain et al. 2018) and men with technical abilities (Ardito et al. 2020) may determine whether female directors have more (or fewer) opportunities to participate in social (environmental) board decisions. Due to the association of this social role with women and their underrepresentation on corporate boards, female directors may attempt to overcome their lack of visibility by emphasising social management to distinguish themselves from male management (Boulouta 2013). However, in addition to gender-balanced boards, there may also be other governance mechanisms that affect environmental performance (Orazalin and Baydauletov 2020).

The presence of women on boards contributes not only to the consideration of ESG issues as strategic firm decisions but also to the promotion of reporting on ESG practices among stakeholders (Guerrero-Villegas et al. 2018; Lagasio and Cucari 2019; Nicolo et al. 2022; Qureshi et al. 2020), enhancing firm transparency and, thus, ensuring stakeholder confidence in corporate boards. In addition to increasing the quantity of ESG information, female directors improve the quality of ESG disclosure content (Al-Shaer and Zaman 2016; Arayssi et al. 2016). However, their influence may be limited to boards with three or more women (De Masi et al. 2021; Garcia-Meca et al. 2024) or even be non-existent, resulting in ESG disclosure being gender neutral (Cucari et al. 2018).

In addition to gender diversity, board independence can also impact ESG performance. In contrast to inside (or executive) directors, who are actual employees of the firm, outside directors (also known as independent or non-executive directors) have no employment affiliations with the company. This way, insiders will better understand the company's day-to-day operations, and independent directors will provide corporate boards with extensive knowledge and experience from outside the firm without any relationship with management. Specifically, those characteristics impact board functions differently (Cambrea et al. 2023). While the firm-specific knowledge of insiders contributes positively to a board's advisory function (Benson et al. 2022), according to agency theory, the independence of outsiders (Fama and Jensen 1983) contributes fundamentally to monitoring management on behalf of shareholders' interests (Duchin et al. 2010; Lee 2023).

A majority of independent directors is one of the board requirements for a firm to be listed on the leading stock exchanges, particularly the NYSE and Nasdaq (The National Association of Securities Dealers Automated Quotation System).

Their stronger external connections lead them to pay more attention to stakeholder demands, which have a positive effect on social (Mallin and Michelon 2011; Webb 2004) and environmental performance (Cooper and Uzun 2022; Post et al. 2011). Similarly, their independence allows them to be more objective and away from shareholder and manager pressure in favour of all stakeholders' interests, improving ESG performance (Godos-Díez et al. 2018; Hussain et al. 2018). Additionally, due to complex environmental initiatives requiring high control and the high social impact of environmentally friendly companies, the presence of outsiders has positive effects on environmental practices (de Villiers et al. 2011; Qiu and Yu 2023), carbon emissions reduction (Haque 2017) and environmental disclosure (Liao et al. 2015). Nevertheless, inside directors with deep knowledge and experience within the firm may be the only ones with a beneficial impact on ESG performance (Cambrea et al. 2023). As a result, replacing insiders with outsiders could negatively affect ESG performance (Birindelli et al. 2018).

The effects of busy directors on firms and board governance may differ depending on whether they are independent or insiders. In this sense, the positive effect of busy directors is especially strong, with an independent board demonstrating the best effectiveness in the board monitoring function (Ferris and Liao 2019; Fich and Shivdasani 2006; James et al. 2018). Similarly, the “business hypothesis”, linked to the harm caused by busy directors to the firm, could be mitigated by executive directors (Ferris et al. 2003). However, this major commitment may be due to the incentive for busy directors to dedicate more time and effort to companies with high prestige and visibility (Masulis and Mobbs 2014). Due to their independence and lack of pressure from not being a member of the management team, outsiders may also choose to serve on more boards, which may result in lower attendance at board meetings with a negative impact on corporate governance (Jiraporn et al. 2009) and firm value (Amin et al. 2023; Ferris et al. 2020). Nevertheless, Liu and Paul (2015) demonstrated the opposite, indicating that insiders with multiple board seats may be more harmful, diminishing the beneficial networks and connections that outsiders bring to boards.

According to previous mixed results related to board busyness, gender diversity and board independence, the following hypothesis is proposed:

Hypothesis H1a Busy boards have a negative effect on ESG, E, S or G scores.

2.2 Tenure and ESG performance

Tenure, as a measure of service for board members in a given company, may have a significant effect on firm performance and corporate governance (Sun and Bhuiyan 2020). Under the ‘expertise hypothesis’ (Vafeas 2003), the more time a director serves on a board, the more knowledge the firm has (Field et al. 2013). A greater understanding of a firm’s business history becomes a valuable resource, improving board effectiveness and, thus, firm performance (Kor and Sundaramurthy 2009), especially for firms with complex operations where board monitoring and advisory functions are more relevant (Bonini et al. 2022). Additionally, long-tenured directors tend to maintain their attendance at board meetings where they can exercise those duties (Dou et al. 2015), favouring a reduction in earnings manipulation (Bonini et

al. 2022) and increasing shareholders' confidence in corporate boards (Livnat et al. 2021). Similarly, the increased stability of long-tenured directors tends to strengthen board members' commitment, leading them to take a longer-term view and positively influencing the adoption of long-term impact initiatives (Patro et al. 2018) and corporate innovation (Bolton and Zhao 2022; Sierra-Moran et al. 2024).

The favourable effects of long tenures may be diminished when director tenure exceeds approximately ten years, at which time the value to the firm may begin to decline (Huang and Hilary 2018). After the initial years of accumulating corporate information, directors may become less active and prefer stability, which limits their predisposition for strategic changes (Golden and Zajac 2001) and innovation strategies (Jia 2017). Additionally, those directors with long tenures may not share all the information and knowledge with the most recent board members, which is detrimental to board governance (Kaczmarek et al. 2012). When this circumstance is combined with a busy board that already has scarce time and commitment, the negative consequences for financial performance become more pronounced (Kaczmarek et al. 2012). On the other hand, the longer a director serves on a board, the lesser the degree of director independence due to increased familiarity with the firm and its managers (Patro et al. 2018). In this sense, according to the 'management friendliness hypothesis' (Vafeas 2003), longer board tenure may lead to the development of friendships with managers, which could reduce monitoring effectiveness (Hillman et al. 2011) and lead to financial irregularities (Sharma and Iselin 2012).

Inconclusive results associated with board tenure have also been demonstrated in ESG performance. According to some research, director tenure tends to encourage ESG practices because of their greater understanding of and commitment to the firm (Fayyaz et al. 2023; Harjoto et al. 2015; Nguyen and Nguyen 2023). Adopting ESG initiatives has short-term costs but significant long-term benefits. Board members with long tenures and, hence, a long-term perspective may be more likely to implement them, positively influencing social (Melo 2012) and environmental performance (Cahyono et al. 2023; Paolone et al. 2023). In contrast, closer contact between managers and long-tenured board members may have a negative effect on ESG issues since managers may be more concerned with obtaining short-term financial value for only shareholders rather than considering long-term firm value for all stakeholders (Al-Jaifi et al. 2023; Hafsi and Turgut 2013). Similarly, the benefits of tenure for ESG performance tend to fade away with directors who are too busy and have to distribute their effort and attention among multiple boards (Patro et al. 2018). Additionally, the number of years a board member stays in the same firm may not be sufficient to implement ESG issues, particularly for environmental practices (de Villiers et al. 2011; Homroy and Slechten 2019).

On the basis of the previous mixed results concerning tenure and ESG performance, the following hypotheses are proposed:

Hypothesis H2a The number of years at the organisation, on a board, or in the current role have a positive effect on ESG, E, S, or G.

Hypothesis H3a The number of years ears at the organisation, on a board, or in the current role, when the percentage of women on board is analysed, have a positive effect on ESG, E, S or G.

3 Methodology

3.1 Data and sample

A sample composed of companies listed on the NASDAQ-100 Index was used for this research. The NASDAQ-100 Index includes 100 of the largest and most innovative domestic and international nonfinancial companies listed on the Nasdaq Stock Market, based on market capitalization. This index is composed of companies from different industries, but all share the characteristic of being cutting-edge companies that are leading innovation and revolutionary changes worldwide. In November 2022, there were 102 tickers in total, but one was removed since the company Alphabet, Inc., has two shares in the index (GOOGL for A class shares and GOOG for C class shares) with the same corporate board for both. The NASDAQ-100 Index was selected because corporate boards with multiple directorships are more common in the largest firms (Ferris et al. 2003).

The information on the board composition of firms listed on the NASDAQ-100 Index was obtained from the BoardEx database. BoardEx is a database that contains detailed profiles of board members from companies worldwide and has been frequently used in prior research (Amin et al. 2020; Ferris et al. 2018, 2020; Homroy and Slechten 2019; Kim 2022; Nandy et al. 2020). BoardEx reports the directors who served on the corporate boards of NASDAQ-100 firms in November 2022. Its database contains their biographical data and complete board information about their current positions and the directors' roles on the board. BoardEx also lists the number of years that board members have spent at the NASDAQ-100 firm, on the board and in their current board role. Additionally, the BoardEx database contains a complete historical professional profile of each board member, including the start and end dates of each organisation(s) in which directors of NASDAQ-100 firms have held positions. The corporate boards of NASDAQ-100 firms were considered busy when at least 50% of their board members served on the boards of three or more public companies, including NASDAQ-100 firms, between 2018 and 2022.

To examine the hypotheses, we apply panel data analysis to the 2018–2022 period using a sample of the top 100 NASDAQ firms. In this manner, we manage to secure better coverage of ESG data, and the attrition rate may not be more than 10% across various strongly balanced panel specifications. Eight out of 100 firms were completely rejected from all tests because of the significant lack of data. An additional ten firms were occasionally included or excluded from the sample analyses depending on the availability of ESG data. All other datasets were readily available for this subsample of firms.

Finally, two scores were used to measure ESG performance. The first was the ESG S&P Global Scores, with values ranging from 0 (worst performance) to 100 (best performance). The ESG S&P Global Score measures the potential impact on

the financial performance of sustainability factors, weighted by the relevance of each factor within the industry, across the Environmental (E), Social (S) and Governance (G) dimensions. The second metric was obtained from the Bloomberg database, with a range from 0 (worst) to 10 (best) (Table 1).

3.2 Model

To evaluate the level of busy directors, we follow Liu and Paul (2015) and Fich and Shivdasani (2006) to claim that a director with three or more directorships is labelled a busy director.¹ Following the analogy of calculating the total number of directorships and dividing by a specific group of directors (Fich and Shivdasani 2006), we create the *independentdirector* variable, which represents the number of total directorships held by independent directors divided by the number of independent directors. Additionally, the *busyboard* was assigned a value of 1 if most of the directors had three or more directorships or 0 otherwise. To evaluate the length of relevant services in the company, we include the *yearscurrentrole*, which is a ratio comprising the difference between the observed year (from 2018 to 2022) and the year the current role was assumed, divided by the difference between the observed year and the person with the longest directorship in the sample starting in 1991. The values reported are the averages for each board per year. Similarly, the years on board (*yearsonboard*) and years at organisation (*yearsorganisation*) were calculated.

We control for the general features of the board of directors and follow Jiraporn et al. (2008). *Duality* assumes a value of 1 if the CEO and chairperson are the same person or 0 otherwise. *The insidersonboard* is the ratio of insiders to the total number

¹ We have also applied the alternative formulation implying that a director with two or more directorships

Table 1 Descriptive statistics

	Obs	Mean	St. Dev.	Min	Max
Bloomberg_esg	435	4.4241	1.2575	1.23	7.35
Bloomberg_e	425	3.7346	2.2767	0	8.26
Bloomberg_s	425	2.5708	1.6665	0	7.4
Bloomberg_g	425	6.8026	1.1464	2.02	8.59
S&P_esg	435	55.6414	28.3959	0	100
S&P_e	435	54.6437	27.8294	0	100
S&P_s	435	51.269	30.5151	0	100
S&P_g	435	59.6253	25.4538	0	100
busyboard	435	0.2791	0.4491	0	1
independentdirector	435	2.8659	3.0073	1	30
insidersonboard	435	0.1845	0.1105	0	0.58
womenperboard	435	0.3094	0.0862	0	0.55
duality	435	0.3494	0.4773	0	1
yearscurrentrole	435	0.2183	0.0984	0.04	0.60
yearsonboard	435	0.1558	0.0716	0.02	0.46
yearsorganisation	435	0.1724	0.0780	0.04	0.44

is a busy one, but we did not get significantly different results.

of board members per year. *Boardsize* is the ln value of the number of board directors, whereas *womenonboard* is the ratio of female directors to the board size calculated each year.

In Table 2, we have included the correlation matrix for all the variables. Unsurprisingly, the correlation, reported at the 5% level, is significant among all ESG variables, and a significant number of explanatory variables demonstrate a strong correlation with the dependent variables. Unsurprisingly, a correlation between independent variables does occasionally appear.

To examine the following hypotheses elaborated earlier, we apply the following models:

$$\begin{aligned}
 ESorG_{i,t} = & \alpha + \beta \sum_{j=1}^2 \text{busyvariables} + \gamma \sum_{k=1}^3 \text{boardvariables} + \delta \sum_{l=1}^3 \text{agevariables} \\
 & + \theta \sum_{m=1}^3 \text{womenperboard} * \text{agevariables} \\
 & + \vartheta (\text{womenperboard} * \text{indepdirectors}) + \varepsilon_{i,t}
 \end{aligned}$$

where $ESorG_{i,t}$ takes the values of *Bloomberg_esg*, *Bloomberg_e*, *Bloomberg_s*, *Bloomberg_g*, *S&P_esg*, *S&P_e*, *S&P_s*, or *S&P_g*. Busy variables are represented by *busyboard* and *indepdirectors*; boardvariables are *duality*, *womenperboard* and *insidersonboard*, while age variables are comprised of *yearscurrentrole*, *yearsonboard* and *yearsorganisation*. The last term represents our intent to examine whether the representation of women on boards impacts age variables.

4 Results and discussion

Since we use panel data, some variables have limited variability over the period, leading to their omission during the analysis. We selected OLS as the starting point in our analysis, but the Breusch–Pagan Lagrangian test for random effects indicated that OLS may be more appropriate for our analysis. Therefore, in Table 3, we report the OLS results. The ratio of directorships held by independent directors has a positive effect on all Bloomberg and S&P global indicators, except for Bloomberg Social, which does not support the negative links found by Birindelli et al. (2018). These findings are also corroborated by Fama and Jensen (1983), who claimed that outside directors have a strong incentive to perform and do not neglect monitoring duties. As claimed by Wang et al. (2023), the dummy variable of busy boards has a positive effect on Bloomberg ESG and Bloomberg Environmental and a negative effect on Bloomberg Governance, which is the sole indicator for which busy and unfocused directors are associated with poor company management. In most cases, we do not find clear support for our Hypothesis H_{1a} , and busy directors contribute to better overall ESG rankings, which could be explained by their ability to effectively apply their vast experience and knowledge acquired across multiple firms. These findings are consistent with previous studies on the ‘reputation hypothesis’, which is based on the positive effects of networks, experience and expertise by board members with multiple directorships (Carpenter and Westphal 2001; Ferris et al. 2018; Liu and Paul

Table 2 Correlation Matrix

	a.	b.	c.	d.	e.	f.	g.	i.	j.	k.	l.	m.	n.	o.	p.
a. bloomberg_esg	1														
b. bloomberg_e	0.8335*	1													
c. bloomberg_s	0.7318*	0.3696*	1												
d. bloomberg_g	0.4463*	0.1341*	0.1450*	1											
e. s&p_esg	0.4373*	0.5263*	0.3015*	0.1946*	1										
f. s&p_e	0.4916*	0.6092*	0.3211*	0.1754*	0.9122*	1									
g. s&p_s	0.3940*	0.4955*	0.2727*	0.1358*	0.9585*	0.8519*	1								
i. s&p_g	0.3654*	0.4049*	0.2523*	0.2269*	0.9252*	0.7801*	0.8643*	1							
j. busyboard2	0.1127*	0.2536*	0.1656*	-0.2765*	0.0958*	0.1496*	0.0798	0.0607	1						
k. independentdirector	-0.0203	0.0348	0.1086*	-0.2287*	0.0482	0.0392	0.0949*	-0.0501	0.6220*	1					
l. insiderpersons	-0.0815	0.0588	-	-0.2795*	-	-	-	-	-0.0768	0.2084*	1				
m. womenperboard	0.2086*	0.0808	0.1593*	0.4087*	0.1938*	0.1333*	0.1569*	0.2402*	-	-	-	1			
n. duality	-0.0255	0.0055	0.0637	-0.0805	0.0179	0.0222	-0.0054	0.0271	0.0822	-0.0677	-	-	1		
o. yearscurrentrole	-	-0.0081	-0.0281	-0.3619*	-0.0419	-0.0156	-0.0147	-0.0738	0.0579	0.0239	0.0027	0.2172*	0.1228*	-	-
p. yearsboard	0.1860*	-0.087	-	-0.3012*	-	-	-0.1111*	-	-0.0901	-0.0535	0.0459	-	-	0.0307	0.7988*
q. yearsinorganisation	0.1308*	-0.0927	-	-0.2184*	0.1174*	0.0957*	0.1166*	-	-	-	-	0.2398*	-	-	0.9337*
					0.1727*	0.1488*	0.1568*	0.1596*	0.1128*	-0.0923	0.093	-	-	0.7269*	0.0066

2015). According to prior studies, board busyness contributes positively to ESG performance (de Villiers et al. 2011; Harjoto and Wang 2020; Nandy et al. 2020). The results suggest that board members who accumulate more board seats can adequately distribute their time and efforts and help with board advising functions (Latif et al. 2024). This positive effect is reinforced by outside directors (Ferris and Liao 2019; Fich and Shivdasani 2006; James et al. 2018) with multiple external connections and independence from management on behalf of the demands of stakeholders (Cooper and Uzun 2022; Hussain et al. 2018; Mallin and Michelon 2011).

As expected, insiders on boards are associated with negative rankings, but the presence of women is marked by strongly positive coefficient estimates, indicating that more women could lead to higher rankings across all the measurements applied in our study. These findings are in line with previous research that demonstrated that the positive contribution of female directors to ESG performance (Cooper and Uzun 2022; Garcia Martin and Herrero 2020; Kassinis et al. 2016; Nicolo et al. 2022; Provasi and Harasheh 2020; Romano et al. 2020) is an important moderating variable (Pucheta-Martinez et al. 2021). However, this differs from those of Cambrea et al. (2023) and Birindelli et al. (2018), who demonstrated the positive effect of insiders owing to their greater understanding of the firm. In summary, the results suggest that multiple external connections (rather than internal knowledge) and the strong commitment of female directors to stakeholders contribute positively to ESG performance.

The length of relevant experience acquired by being on boards positively impacts rankings, thereby confirming our Hypothesis H_{2a}. In contrast, the same has not been the case for years in the organisation, because statistically significant negative coefficients prevail, but only for S&P rankings. However, for years in the current role, which is by definition the shortest of all three categories, the impact is negative for almost all Bloomberg measurements. It is possible to conclude that overall board experience is more relevant than employment history or comparatively recent role changes. These results are consistent with the ‘expertise hypothesis’ (Vafeas 2003) and other previous research that demonstrated that the more years directors remain on a board, the greater their knowledge and expertise (Bonini et al. 2022; Field et al. 2013) and commitment to long-term strategies (Patro et al. 2018), which positively impact ESG issues (Harjoto et al. 2015; Melo 2012; Paolone et al. 2023).

Finally, we find some interesting results when testing Hypothesis H_{3a} by examining the *womenperboard* interaction term and respective standalone coefficient estimates. For the ratio of independent directorships, including the ratio of female directors as an interaction term in the analysis renders the combined coefficient estimate smaller. For the age variables, the ratio of female directors on boards mainly reduces the *yearsonboard* coefficient estimate, and for larger ratios, it is negative, but it provides strong support for the claim that years in the organisation and years in the current role are relevant and positive for ranking when female directors are included in the analysis. We claim that women on boards positively impact rankings, which supports Hypothesis H_{3a} and is consistent with previous research that demonstrated that women on boards has a positive effect on ESG performance (Beji et al. 2020; De Masi et al. 2021; Garcia Martin and Herrero 2020; Hafsi and Turgut 2013; Kassinis et al. 2016).

Table 3 Panel data analysis

Independent variables	Dependent Variables							
	Bloomberg ESG	Bloomberg E	Bloomberg S	Bloomberg G	S&P ESG	S&P E	S&P S	S&P G
indepdirector	0.7698* (0.060)	2.6976*** (0.000)	-1.5365*** (0.005)	0.8587*** (0.006)	32.8050*** (0.001)	38.7135*** (0.000)	26.5131*** (0.010)	26.5613*** (0.002)
busyboard	0.4715*** (0.005)	1.5963*** (0.000)	0.3508 (0.117)	-0.7524*** (0.000)	-0.1536 (0.968)	4.7374 (0.208)	-1.6867 (0.688)	-0.0053 (0.999)
duality	0.1295 (0.300)	0.2803 (0.226)	0.2617 (0.116)	-0.1207 (0.202)	-1.2039 (0.677)	-0.6244 (0.824)	-2.7166 (0.386)	-1.1424 (0.663)
insidersonboard	-0.2653 (0.636)	3.0795*** (0.003)	-1.434* (0.056)	-3.0982*** (0.000)	-46.2008*** (0.000)	-24.8243** (0.049)	-44.2056*** (0.002)	-49.9499*** (0.000)
womenperboard	19.3887*** (0.000)	43.7741*** (0.000)	-2.5398 (0.671)	10.7386*** (0.001)	370.8871*** (0.000)	473.8955*** (0.000)	346.3627*** (0.002)	255.7304*** (0.006)
Indepdirector*womenperboard	-3.0204** (0.021)	-9.7993*** (0.000)	5.27*** (0.003)	-2.3625** (0.017)	-90.8642*** (0.003)	-112.9564*** (0.000)	-70.1712** (0.032)	-78.5338*** (0.004)
yearsonboard	36.0184*** (0.009)	39.6861 (0.166)	41.1586** (0.046)	-5.4112 (0.604)	930.3499*** (0.004)	809.2837*** (0.009)	1159.353*** (0.001)	456.1904 (0.115)
yearsonboard*womenperboard	-157.2782*** (0.001)	-150.471 (0.112)	-131.7857* (0.053)	-13.5420 (0.696)	-2937.599*** (0.006)	1602.601** (0.031)	-3859.136*** (0.001)	-1379.89 (0.152)
yearsorganisation	11.6245 (0.256)	23.9419 (0.214)	-18.4183 (0.184)	18.6529*** (0.016)	-612.772*** (0.010)	-574.963** (0.013)	-804.6263*** (0.002)	-301.5404 (0.161)
yearsorganisation*womenperboard	-17.4053 (0.598)	-83.1073 (0.178)	37.2948 (0.399)	-35.5715 (0.155)	1711.339** (0.025)	1602.601** (0.031)	2412.923*** (0.004)	757.2372 (0.275)
yearscurrentrole	-22.1375*** (0.000)	-22.9706** (0.032)	-5.2813 (0.491)	-11.3269*** (0.002)	-56.0243 (0.617)	55.1507 (0.613)	-8.6702 (0.943)	-63.8103 (0.531)
yearscurrentrole*womenperboard	78.8728*** (0.000)	89.2406** (0.013)	28.5697 (0.270)	30.7092** (0.015)	287.6709 (0.455)	-72.5627 (0.846)	197.7834 (0.637)	241.6194 (0.490)
No. observations	430	420	420	430	430	430	430	430
F-Stat	8.06***	5.99***	7.2***	24.88***	6.11***	6.85***	5.14***	4.67***
Adj. R2	0.1537	0.1251	0.1508	0.4005	0.1251	0.1406	0.1038	0.0931

5 Theoretical contributions and practical implications

The results obtained may have relevant theoretical contributions to the composition of corporate boards and their influence on ESG performance. This research contributes to the theoretical approaches related to the ‘reputation hypothesis’, which refers to the beneficial contributions of busy boards to corporate governance, and the ‘expertise hypothesis’, which is based on the positive effects of the accumulation of knowledge and experience derived from serving on the same board for a long period of time. Drawing on both perspectives, the innovative approach of this research contributes to a better understanding of the governance factors that can influence firm performance, particularly sustainable business practices. Researchers should consider the results obtained in this research to analyse how the knowledge, experience and expertise of board members (both external and internal) can become valuable resources when making strategic decisions on corporate innovation and how they can influence performance results.

From a practical perspective, this research suggests that directors serving on multiple corporate boards do not necessarily harm governance and firm performance. In fact, the findings show that directors with diverse experiences and networks can provide valuable insights that enhance ESG performance. Regulators and proxy advisors should carefully consider these findings, challenging the assumption that the number of busy directors on corporate boards should be limited. Instead, this research supports encouraging diverse types of expertise on boards rather than imposing restrictions that may inadvertently exclude valuable knowledge. Furthermore, companies and investors should recognise the potential of busy directors to drive long-term corporate value by promoting responsible and sustainable business practices. The involvement of experienced directors should be viewed as a key factor in addressing complex ESG challenges, improving corporate performance and contributing to a more sustainable society.

Companies and governments should also consider the effect of gender diversity on boards on ESG performance. While companies should consider how the presence of women on boards can lead to effective decisions to include sustainable practices in their core strategies, governments should use these results to design policies aimed at promoting board gender diversity and sustainable development. In general, the results of corporate governance studies involving gender differences are rarely considered robust and are not subject to further evaluation. While the inclusion of more female directors may contribute to creating a new board culture, the effectiveness may be affected by the lack of specialised knowledge or experience caused by the legally required quotas or societal expectations that must be met hastily and without sufficient time for appropriate selection processes. In this study, gender does seem to be a decisive factor that urges companies and governments to pay attention when designing corporate boards.

In summary, the findings of this research provide a better understanding of the best practices in corporate governance by establishing guidelines for board composition focused on linking innovation objectives and sustainability challenges.

6 Conclusions and future research

The purpose of this research is to investigate the influence of busy boards and the tenure of board members on ESG performance in the most innovative companies listed on the NASDAQ-100 index, with a particular focus on female directors. The results indicate that board experience is associated with higher rankings, but this is reversed by including the female director's ratio. Years in the organisation and the current role become more relevant when female directors are included in the analysis. Curiously, the expected negative sign for busy independent directors was not confirmed, but the coefficient estimates became less positive and ultimately negative with the inclusion of female directors in the analysis. A busy board dummy variable is linked to positive effects on Bloomberg ESG and Bloomberg E but to a rather negative influence on Bloomberg G. It is rather difficult to confirm that this is a self-fulfilling prophecy where busier boards are downgraded owing to assumed poor governance, because the result for S&P G was statistically insignificant. The 100 largest and most innovative companies listed on the NASDAQ-100 Index seem to consider multiple directorships as valuable sources of experience, expertise and connections for board members without preventing them from adequately distributing their limited time and energy to board functions. Their presence seems to favour the advisory role of the corporate board while not undermining the board monitoring function. Similarly, the service of board members in a given company reinforces their beneficial contribution. In summary, the results seem to point to the importance of knowledge and networks for ESG performance for companies at the forefront of innovation. However, this positive effect does not seem gender neutral. The still scarce presence of women on corporate boards as well as widespread gender stereotypes that prevent them from reaching their potential on corporate boards limit their contributions to ESG performance.

This paper provides valuable insights for companies aiming to strengthen their governance structures to improve their ESG performance. This highlights the importance of including diverse perspectives and experienced directors to obtain high ESG scores. Beyond simply improving ranking positions, this research underscores the need for corporate governance structures to adapt to contemporary challenges, providing a framework for integrating diverse perspectives into strategic decision-making processes. By demonstrating the positive influence of busy boards and gender diversity on ESG outcomes, this research sheds light on the strategic role of board composition. The results reinforce the value of directors with diverse experiences while emphasising the transformative potential of female representation on boards. This is particularly significant, as including women may change traditional board dynamics. Additionally, by focusing on the most innovative companies, which are often considered international benchmarks, this research may have broader implications in helping other companies align their governance practices with ESG strategies and, ultimately, promote more sustainable and responsible corporate governance.

The panel study faces limitations in the lack of variation for some variables that barely changed over the period. This contributed to the a priori exclusion of fixed effects analysis, which omitted certain crucial indicators. Another limitation is the period that covers the pre-pandemic and pandemic periods, which could have affected our results. Future research could be supported by longer periods to provide a deeper

understanding of whether the benefits of multiple directorships on ESG performance are sustained over time. Comparisons across countries and capital markets could also provide relevant insights. Exploring the effects of tenure and the number of corporate boards held by directors in middle and small-cap companies to analyse their influence on ESG performance would also be valuable. Potential effects on different outcomes related to innovation (R&D investments, patents, new products and services, etc.) could also be considered. Investigating how board members' experience and knowledge of technology and digital transformation could influence ESG performance and contribute to innovative and sustainable challenges would be valuable. Future studies should also explore how the effectiveness of board composition on ESG performance could contribute to achieving of sustainable goals.

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