International Journal of Manpower

1389

Gender diversity in boardrooms: the impact of female co-opted directors on corporate governance, firm risk, and firm value

Rizwan Ali and Ali Amin
Lahore Business School, The University of Lahore, Lahore, Pakistan
Ramiz Ur Rehman
TUIBS, Teesside University, Middlesbrough, UK and
Faculty of Business, Sohar University, Sohar, Oman, and
Ahmed A. Elamer
Brunel Business School, Brunel University London, Uxbridge, UK;
College of Business, Alfaisal University, Riyadh, Kingdom of Saudi Arabia and
Gulf Financial Center, Gulf University for Science and Technology,
Mubarak Al-Abdullah, Kuwait

Received 19 November 2024
Revised 13 February 2025
Accepted 21 April 2025

Abstract

Purpose – This study examines the relationship between female co-opted directors and firm performance. Moreover, this study also explores the serial mediation effects of corporate governance and firm risk on this relationship.

Design/methodology/approach – We used 3,385-firm year observations of the nonfinancial firms listed on the Pakistan Stock Exchange. To test the hypotheses, we applied generalized method of moments estimation and further employed ordinary least squares regression analysis and two-stage least squares analysis to check for the robustness of the results.

Findings – Using the lens of agency theory, this study reports that female co-opted directors in family firms are positively related to firm value. Moreover, the corporate governance and firm risk serially mediate this relationship, leading to higher firm value.

Originality/value – This study provides novel evidence of the positive influence of female co-opted directors on the firm value in the context of an emerging economy. Further, unlike previous studies, we use a self-constructed corporate governance index and report serial mediation effects of corporate governance and firm risk on the firm value.

Keywords Female co-opted directors, Firm value, Corporate governance, Firm risk, Family firms

Paper type Research paper

1. Introduction

This research investigates the impact of female co-opted directors (the proportion of female directors who join the board after the CEO assumed office) in family owned businesses on firm value, focusing on nonfinancial firms listed on the Pakistan Stock Exchange. Moreover, this study also examines the mediating role of corporate governance and firm risk on this relationship. Our motivation for this study stems from at least two reasons. First, the board of directors is considered an important aspect of a firm's corporate governance mechanism that influences the strategic behavior of the firm and firm value (Ain *et al.*, 2021). As such, the corporate governance literature is of the view that board composition of the listed firm has a potent influence on strategic decision-making and the firm's risk-taking behavior. Among other attributes of the corporate board, the board cooption has attracted significant attention from the researchers due to its both positive and negative implications for the performance of the firm (Gull *et al.*, 2024). On the one hand, board co-option is associated with higher principal–agent conflict due to alignment of interest between the CEO and his or her nominated directors (Zaman *et al.*, 2021). On the other hand, some researchers are of the view that board co-option increases the harmony and mutual trust among the CEO and the board that

International Journal of Manpower
Vol. 46 No. 8, 2025
pp. 1389-1417

e-ISSN: 1758-6577
p-ISSN: 0143-7720
DOI 10.1108/IJM-11-2024-0795

has a positive effect on the firm's decision-making (Duchin and Sosyura, 2013). Despite the recent surge in the debate over the positive and negative effects of board co-option on firm outcomes, its influence on firm value through corporate governance mechanisms and a firm's risk-taking behavior is still a missing link, which this study attempts to address.

Second, prior studies highlight that the presence of female directors brings a different perspective to the board's decision-making capabilities due to their ethical decision-making and consideration of stakeholder demands (Nadeem, 2022). As such, their presence is associated with higher firm performance and better firm value. The beneficial effects of female directors on boards urged the policymakers and regulators to introduce the gender quota and mandatory placement of female directors on boards. In Pakistan, the Listed Companies (Code of Corporate Governance) Rules, 2019, mandated the listed firms to place at least one female director on the board (Amin *et al.*, 2022). Contextually, the gender diversity literature has examined the influence of female directors on various firm outcomes such as, among others, dividend payout (e.g. García-Meca *et al.*, 2022), firm performance (e.g. Brahma *et al.*, 2021) and CSR (e.g. Yarram and Adapa, 2022) and mainly highlighted their effective monitoring role. However, their influence on firm outcomes in the context of board co-option warrants examination due to two different perspectives. On the one hand, their independence may be compromised in case of co-option, as they are more likely to assign their allegiance to the CEO involved in their appointment (Baghdadi *et al.*, 2020). On the other hand, their presence is associated with lesser agency conflict and protection of shareholders due to stringent monitoring of management and their effective role in strategic decision-making (Ain *et al.*, 2021). Thus, the female board co-option may have both positive and negative impacts on the firm's corporate governance mechanism and firm value. Although the overall influence of female directors on various firm outcomes has been explored earlier in the literature, we believe that their role as co-opted directors also has a significant effect on firm value, which is an important area of research that needs to be explored.

Moving ahead, family owned enterprises possess a unique ownership structure where either a single individual or a family is involved in owning the firm (Federo *et al.*, 2020). Moreover, these businesses often prioritize socioemotional wealth, emphasizing nonfinancial objectives more prominently. Zellweger *et al.* (2013) noted that this ownership type differs from others owing to their strong commitment and emotional attachment to the firm. Their early engagement in the business and prioritization of the family's socioemotional wealth serve as strong incentives for effectively overseeing the firm (Kabbach de Castro *et al.*, 2017). Additionally, family owners regard the firm as a legacy intended for transfer to the succeeding generation (Miller *et al.*, 2022). The primary focus of family owned firms typically revolves around augmenting family wealth and pursuing familial objectives (Al-Begali and Phua, 2023). According to the family business literature (Zellweger *et al.*, 2013), the vigilance and supervision by family owners are often linked to the pursuit of nonfinancial objectives. Furthermore, in numerous instances, the company symbolizes the heritage and tradition of the family, representing an integral part of the identity of the family (Berrone *et al.*, 2010). Moreover, family owners frequently aim to transfer the business to the succeeding generation, aspiring to maintain the enterprise in optimal condition (Brune *et al.*, 2019). The firm's heritage and emphasis on socioemotional wealth prompt family owners to adopt a long-term perspective and act as vigilant overseers (Yasser and Mamun, 2017). Similarly, Purkayastha *et al.* (2019) highlighted the significant value family owners place on their firm's reputation, leading them to avoid actions that could harm it. According to Yoshikawa and Rasheed (2010), family businesses serve as a safeguard for shareholders in maintaining the firm's reputation. In less regulated markets with weak regulations, family owners act as an alternative governance mechanism, aiming to enhance the firm's reputation and safeguard shareholder interests. Hence, the substantial engagement of family owners in business operations and their commitment to preserving the firm's reputation suggest the likelihood of low risk-taking and improved firm value in family owned enterprises.

According to social identity theory, nonfinancial objectives are more pronounced within family firms (Zellweger *et al.*, 2013). From this standpoint, owners are inclined to participate more in social initiatives compared to other ownership structures to enhance the firm's

reputation and overall image (Amore *et al.*, 2022). Furthermore, family owners prioritize the preservation of socioemotional wealth and tend to avoid decisions that could potentially damage the firm's reputation. They intend to gain society's recognition and enjoy social prestige by undertaking an active part in social acts (Kavadis and Thomsen, 2023). Overall, using the sample of 3,385 firm-year observations over the period 2013–2023, we report that female board co-option is positively related to firm value. Moreover, corporate governance and firm risk-taking partially mediate the relationship between female board co-option and firm value. Our study extends the contribution to the body of literature in several ways. First, we provide novel evidence of the influence of female board co-option in family owned firms on firm value and the mediating role of corporate governance and firm risk-taking on this relationship. Second, unlike the previous studies that used individual measures of corporate governance, this study used a corporate governance index based on 15 points to determine the mediating role of corporate governance on this relationship. Third, the study provides the serial mediation analysis of corporate governance and firm risk-taking on the relationship between female board co-option and firm value.

The rest of the study will proceed in the following manner: Section two will discuss the institutional background. Section three will provide the literature review and develop hypotheses. Research methodology will be presented in section four. Results will be reported and discussed in section five. Section six will conclude the study.

2. Institutional background

Pakistan is categorized as an emerging market, and similar to many developing economies, a considerable number of firms listed on the Pakistan Stock Exchange (PSX) are family owned. Armitage *et al.* (2017) indicate that emerging markets are often characterized by concentrated ownership and pyramidal structures, which can lead to principal-principal conflicts. These enterprises are vital to the country's economic development (Yousaf *et al.*, 2019). For instance, the textile sector in Pakistan is largely composed of family firms, accounting for up to 57% of the nation's total exports (Khan *et al.*, 2024). However, Chang *et al.* (2021) have observed that the absence of succession planning and internal family disputes often jeopardize the survival of these firms beyond three generations. Additionally, the organizational structures of these businesses are shaped by family marriages and the religion and ethnicity of the controlling family (Khan and Tariq, 2022). The controlling shareholders' presence can either alleviate principal-agent conflicts or exacerbate principal-principal conflicts, potentially leading to the exploitation of minority shareholders. Moreover, Pakistan's institutional environment is generally viewed as less stringent, which may enable family owners to extract private benefits at the expense of minority shareholders. In this scenario, Hashmi *et al.* (2018) have urged policymakers to enhance minority representation on boards through independent directors. Consequently, the prevalence of family owned businesses has significant implications for investors in Pakistan's emerging market.

In alignment with global initiatives aimed at fostering effective corporate governance practices to safeguard shareholder interests, Pakistan introduced its first code of corporate governance (CCG) in 2002 (Amin *et al.*, 2022). This code encouraged listed firms to ensure adequate representation of independent directors on their boards and implement measures to protect investors. Later, the CCG 2012 was incorporated into the stock exchange listing regulations, and the CCG 2017 was established through the Listed Companies (Code of Corporate Governance) Regulations, 2017, which defined criteria for board composition and the responsibilities of boards and audit committees. Notably, from a gender diversity perspective, the CCG 2019 mandates that listed firms appoint at least one female director to their boards. Given Pakistan's male-dominated culture, where women frequently encounter barriers to advancing to executive roles on corporate boards (Mirza *et al.*, 2012), the requirement for mandatory female board appointments offers a compelling area for research, particularly in assessing the influence of female directors on investment decisions and firm value.

3. Literature review and hypotheses development

3.1 Agency theory

Agency theory posits that the separation of ownership between shareholders and managers leads to agency conflicts (Jensen and Meckling, 1976). This situation can result in increased information asymmetry and conflicting interests, causing managers to prioritize personal gains over shareholder wealth. For instance, while shareholders may advocate higher returns through riskier, long-term projects, managers might prefer short-term profits to secure higher salaries and benefits (Gyapong *et al.*, 2021), resulting in principal–agent conflicts. The corporate governance literature identifies boards of directors as effective mechanisms to mitigate these conflicts and protect shareholder interests. A gender-diverse board can reduce principal-agent conflicts by improving oversight and aligning the interests of shareholders and managers. Research indicates that female directors are often seen as more independent, diligent and responsible, contributing to better attendance and reduced agency conflicts (Fan *et al.*, 2019).

Additionally, concentrated ownership, particularly in family firms, is viewed as a potential solution to principal–agent conflicts (Gyapong *et al.*, 2021). The involvement of controlling shareholders in management can curb opportunistic behavior among managers, thereby lessening agency conflicts (Purkayastha *et al.*, 2019). However, this concentration can also give rise to principal-principal conflicts, where controlling shareholders may engage in questionable related-party transactions and extract resources from the firm (tunneling) to benefit their family (Solarino and Boyd, 2020), ultimately disadvantaging minority shareholders. While principal-agent conflicts are more prominent in developed countries, principal-principal conflicts are more common in emerging markets, where governance structures are weaker and protections for minority shareholders are less robust (Armitage *et al.*, 2017).

The implications of principal-principal conflicts for investment decisions and firm value in family firms can be significant. The active involvement of family members in management helps reduce information asymmetry, aligning the firm's strategic objectives with the family's personal interests (Moin *et al.*, 2020). This intense oversight by family owners may discourage managers from engaging in opportunistic behaviors, leading to better investment decisions that enhance firm value (Purkayastha *et al.*, 2019). Conversely, family owners may adopt a risk-averse approach when pursuing personal agendas, potentially causing the firm to miss valuable investment opportunities (Block, 2012). Furthermore, family owners might allocate free cash flows for personal use, leaving fewer resources for investment, which can adversely affect minority shareholders due to inefficient investment decisions (Amin *et al.*, 2024). Overall, we view agency theory as a foundational framework for understanding the behaviors of female directors and family owners in relation to investment decisions and firm value.

3.2 Female board co-option, family ownership and firm value

Agency theory considers the female directors' presence an effective tool in the corporate governance framework for reducing agency conflict (Ain *et al.*, 2021). Although the positive influence of female directors on firm value is evident in the literature, nevertheless, their strategic behavior is also shaped by the firm's ownership structure and the personal agenda of the firm's owners. Berrone *et al.* (2010) argued that female directors' interests are aligned with those of the firm's owners, guiding the firm in line with the owners' goals. Baghdadi *et al.* (2020) mentioned that the co-opted directors offer allegiance to the CEOs, and their interests are aligned with the executives who are involved in their appointment. Martínez-García *et al.* (2021) suggested that family owners often appoint female directors and executives from within the family, which strengthens the alignment with family objectives. Nekhili and Gatfaoui (2013) highlighted that the strong familial ties of female executives are seen as a positive signal by shareholders, leading to higher firm value. From the socioemotional wealth perspective, Amin *et al.* (2023) pointed out that female directors share the family's goals and continue its legacy, ensuring the alignment of firm strategies with the controlling family's

priorities. In a similar vein, Purkayastha *et al.* (2019) argued that the effective involvement of family owners in the firm's operations results in close monitoring of managers that restricts the divergent behavior of managers and leads to alignment of interest between both the parties. Moreover, family owners' motivation for the reputation of the firm may reduce the negative impacts of principal-principal and enhance the firm value for the shareholder. The appointment of female coopted directors in family firms, therefore, facilitates the family owners in fulfillment of family's agenda and leads to increase in firm value.

The literature presents mixed empirical evidence regarding the influence of female executives on firm value in family owned firms. For instance, Amin *et al.* (2024) found that female directors positively impact firm performance in family-owned companies listed on the Pakistan Stock Exchange. Similarly, Fėlix and David (2019) reported positive effects of female directors on firm performance in Portuguese family-owned firms. Moreover, Nadeem *et al.* (2020) also highlighted a positive relationship between female directors and firm value in UK-listed family firms. However, Tran *et al.* (2023) found that female directors have an insignificant impact on firm performance in Vietnamese family firms. Overall, we believe that due to the effective leadership and monitoring skills, female board co-option is positively associated with higher firm value. Additionally, their empathetic approach and socioemotional considerations align their strategic behavior with the controlling family's priorities. Thus, we hypothesize that

H1. Female board co-option is positively related to firm value.

H2. Female board co-option in family owned firm is positively related to firm value.

3.3 Female board co-option and corporate governance

The gender diversity literature considers the presence of female on the board as an important aspect of corporate governance (Nadeem, 2022). As such, the presence of female co-opted members is associated with higher board independence, and their presence in audit committees is also related to effective governance and firm performance (Amin *et al.*, 2022). The extant literature considers women different from men due to different social values, norms and beliefs (Ain *et al.*, 2021). Thus, the same situation is perceived differently by men and women that results in different decision-making by opposite genders. In a similar vein, Sarhan *et al.* (2019) reported that women leaders are associated with a collaborative atmosphere, and their presence leads to open discussions and mitigation of agency conflicts. Further, the presence of women at key management positions provides alternate solutions to complex problems and increases the legitimacy of corporate practices (Hillman *et al.*, 2007). In this context, we may assume that due to different values, norms and beliefs of women CEOs, the presence of female CEOs may have an influence on corporate governance mechanisms different from men.

According to Baixauli-Soler *et al.* (2015), the presence of women in the top management team enhances the monitoring and control function due to their conservative behavior. Moreover, females are considered more altruistic than men and possess better abilities to recognize the interests of stakeholders (Al-Shaer and Zaman, 2016). Therefore, the presence of women in top management team is linked to better monitoring mechanisms and increased financial reporting quality (Dobija *et al.*, 2022). Since the non-disclosure of certain risks may lead to penalties and risk of bankruptcy; therefore, due to the risk-aversion attitude of female, we may assume the higher disclosures in the presence of female CEOs. Multiple studies (e.g. Cho *et al.*, 2021) examined the behavior of gender differences in investment decision-making and concluded that women are more averse to loss and their presence on the board is related to better investment decision and governance mechanisms. Overall, we may assume a positive relationship between female board co-option and corporate governance due to better board independence and other governance mechanisms. We, therefore, hypothesize that:

H3. Female board co-option is positively related to corporate governance.

3.4 Corporate governance, firm risk and firm value

The corporate governance mechanism of the firm is considered by owners as a vehicle to influence the firm's outcomes (Federo *et al.*, 2020). The existing body of literature recognizes the ownership structure of a firm as a crucial factor influencing its performance (Yang and Schwarz, 2016). The strategic behavior and cognitive framework of these owners influence various components of firm performance, such as financial performance, social performance and strategic performance. Akhter and Hassan (2024) noted that board attributes of the firm affect firm performance. Similarly, McCahery *et al.* (2016) contended that the strategic behavior of a firm is shaped by its owners through their representatives serving on the board. Bukari *et al.* (2024) also observed that in the current business environment, corporate governance has a significant influence over the firm's outcomes. The corporate directors, therefore, serve as a vehicle used by owners to gain influence over the affairs of the company and affect the strategic objectives. The different types of owners influence the corporate governance feature of the firm, such as board composition and board committees, according to their social context and personal motive that have profound implications for firm value. Federo *et al.* (2020) observed that owners of firms frequently participate in the selection process of directors and influence the firm's strategic decisions through these directors. Moreover, Armstrong *et al.* (2014) noted that in some scenarios the investors are inclined toward investment in a particular firm due to its board governance features. In a similar vein, González-Cruz and Cruz-Ros (2016) noted owners' participation in the strategic decisions of the firm through their appointed representatives present on the board.

Similarly, a diverse range of literature underscores that a robust governance framework restricts managers' divergent behavior and aligns the interests of both parties, leading to wealth maximization (Ain *et al.*, 2021). The effective governance practices are linked to the better investment decisions and performance of the firm (Atugeba and Acquah-Sam, 2024). In this scenario, empirical literature provided positive outcomes of the board structure and composition, audit and board committees on the firm's performance. Effective board independence enhances the monitoring of the management, resulting in lower firm risk and higher firm performance. Similarly, the better audit quality improves the firm's performance through better reporting. For instance, Brahma *et al.* (2021) argued that the expertise and skills of a large number of board members increases firm performance through better advice and counsel. Similarly, independent boards are associated with better firm performance due to impartial and independent strategic decisions (Sundarasen *et al.*, 2016). Moreover, reliable and transparent financial statements due to better quality audits also result in better firm value (Qawqzeh *et al.*, 2021). Finally, the board committees allow independent directors to fully participate in the operations of the business, thus leading to higher firm performance due to the independent input of the directors (Chan and Li, 2008).

Similarly, family owned firms are defined by their singular or family-centered management and control. According to Miller *et al.* (2022), these businesses are deeply rooted in social identity, seeing the family enterprise as a legacy passed down through generations. To strengthen financial oversight and support family objectives, family owned companies frequently include family members on their board. Federo *et al.* (2020) noted that these owners significantly impact the firm's corporate governance framework, according to their distinct social context and personal agendas. Consequently, the owners' desires shape the governance structure and the firm value through better strategic decisions. In contrast to businesses with dispersed ownership, family owned firms do not typically encounter principal–agent conflicts due to the extensive involvement of family owners in management (Hernández-Linares *et al.*, 2023). Miller *et al.* (2022) observed that such firms prioritize fulfilling personal agendas, including socioemotional wealth and augmenting family wealth. In pursuit of these agendas, family owners might make decisions that do not align with minority shareholders' interests. However, Solarino and Boyd (2020) emphasized that family owners prioritize the firm's reputation, caring about their local community's esteem and external stakeholders' perception. Furthermore, in economies with weak regulations and limited shareholder protection, family

owners act as an alternative governance mechanism, bolstering the firm's credibility (Yoshikawa and Rasheed, 2010). Consequently, to serve the family agenda, family owners influence the firm's corporate governance, thereby impacting its overall performance. Overall, in line with the study of Wu *et al.* (2020), this study hypothesizes that:

H4. Corporate governance reduces the likelihood of firm risk.

H5. Reduction in the likelihood of firm risk is positively related to firm value.

H6. Corporate governance is positively related to firm value.

3.5 Female board co-option, corporate governance, firm risk and firm value

The board of directors is a critical component of corporate governance mechanisms (Li and Li, 2020). Its primary role is to offer independent oversight and address agency conflicts arising from principal-agent or principal-principal dynamics (Fan *et al.*, 2019). The effectiveness of a board is enhanced when it operates independently and provides unbiased advice (Ain *et al.*, 2021). Effective boards can promote transparency and resist undue management pressure, as their members are more concerned about their reputation and prestige (Nadeem, 2022). A strand of literature is of the view that the presence of female directors on the board improves the quality of corporate decisions. From the perspective of agency theory, female directors are viewed as more effective monitors of management actions, and their presence is associated with reduced agency conflicts (Gyapong *et al.*, 2021). The participation of women directors in executive teams can help reduce systemic biases and expand social networks (Bass, 2019). Consequently, the effective monitoring provided by female directors on the board can help mitigate agency conflicts and enhance shareholder confidence. In terms of investment decisions, Farooq *et al.* (2023) suggested that the presence of female directors fosters more open discussions and idea exchanges, leading to more efficient investment choices.

In the context of an emerging economy characterized by the presence of large shareholders such as family owners, multiple studies have examined the role of female directors on various firm outcomes. For instance, Purkayastha *et al.* (2019) mentioned that family owners in family firms offer protection to the investors and other stakeholders as they are motivated for the overall success of the operations. In this scenario, the alignment of interest between the family owners and female directors results in effective corporate governance and lower risk-taking. Similarly, the role of females in managing uncertainty in the external environment and gaining access to critical resources ultimately leads to better firm outcomes (Hillman *et al.*, 2007). In a similar vein, Yoshikawa and Rasheed (2010) mentioned that in the presence of weak regulatory frameworks and low investor protection, the family owners serve as an alternate governance mechanism for the stakeholders for the sake of the firm's reputation. The presence of family owners and female directors, therefore, serves as a positive signal to the external stakeholders regarding the accuracy of financial information and corporate risk-taking.

We propose that corporate risk-taking is lower in the presence of female co-opted directors for several reasons. First, the psychological literature considers women more risk-averse than their male counterparts. As such, the women are more inclined to avoid uncertainty, and therefore their presence on the board leads to less risky investment decisions by the firm (Khaw *et al.*, 2016). Second, female directors are regarded as effective monitors, contributing to reduced agency conflicts (Ain *et al.*, 2021). Their presence may limit management's divergent behaviors and encourage investment in viable, profitable ventures rather than personal empire-building that may enhance the firm's risk in the long run. Third, female directors' presence is associated with lower information asymmetry and better information efficiency due to intense management monitoring and better financial reporting. According to Dobija *et al.* (2022), the management may take advantage of the information asymmetry that may lead to the exploitation of shareholders and increase the agency problem. In this context, the presence of female directors on corporate board are considered an effective governance

mechanism that reduces information asymmetry through more voluntary public disclosures and higher informativeness for the shareholders. The enhanced information related to the firm's operations may lessen the firm's risk.

Fourth, the active involvement of female directors in business operations helps reduce information asymmetry, leading to a more transparent and equitable view of financial information among board members. This access to authentic information enables the board to make better investment decisions. Finally, Ain *et al.* (2021) argued that the presence of female directors on board committees enhances both the committees' performance and the overall value of the firm. Since these committees provide critical information for strategic decision-making, improved information flow from audit and other committees represented by female directors can lead to better investment choices. Thus, we may assume that female directors on the corporate board are associated with higher financial reporting quality due to effective monitoring, which may lead to lower firm risk-taking. Empirically, Khaw *et al.* (2016) found that in Chinese corporations, corporate risk-taking behavior of firms decreases with the presence of female directors on the board. Similarly, using a sample of USA bank holding companies, Liu and Wu (2023) found that female directors significantly reduce the bank's risk-taking. Yarram and Adapa (2022) also reported a negative association between female directors and business risk in Australian Stock Exchange-listed firms.

While the risk-averse behavior of female directors has been highlighted in the literature, we further assume the lower firm risk-taking in the presence of female co-opted directors in our sample firms for multiple reasons. First, the majority of firms listed on PSX are family firms owned and controlled by families. Amin *et al.* (2023) argued that family owned firms are mainly plagued by the presence of family CEOs, and their risks are aligned with the interests of the family. As such, the risk-averse behavior of the family CEO due to socioemotional wealth's considerations is aligned with the co-opted female directors. Second, Ararat and Yurtoglu (2021). Mentioned that female directors appointed in the family firms mainly belong to the same family. In this scenario, we may assume the lower risk-taking behavior of female co-opted directors in line with the interests of the controlling family. Finally, the non-family CEO in family firms is threatened by family members if the interests of the non-family CEO differ from the personal agenda of the controlling family (Miller *et al.*, 2022). Thus, the female co-opted directors in the presence of a non-family CEO are also assumed to reveal the lower firm risk-taking behavior in such firms. Therefore, we hypothesize that:

H7. Corporate governance and firm risk mediate the relationship between female board co-option and firm value.

4. Methodology

4.1 Sample selection

The sample for this study was obtained from the financial statements and annual reports of the firms available on the website of the Pakistan Stock Exchange. Our sample consists of the years 2013–2023. We started our sample from 2013, as the code of corporate governance was first implemented in 2012 and data was mainly available from that period. The total number of financial and nonfinancial firms in our sample period was 447. We excluded 112 financial firms from our analysis as they are regulated under a separate legal framework. Our final sample consists of 324 firms comprising of 3,385 firm-year observations, as reflected in Table 1.

4.2 Variable measurement

In order to construct our dependent variable, firm value, consistent with the literature (e.g. Amin *et al.*, 2024), we used Tobin's Q as a proxy for firm performance. According to Hutchinson and Gul (2004), the Tobin's Q is a stock-based measure of firm performance that

Table 1. Sample distribution

Panel A: sample selection procedure	Number of observations	Number of firms
Total firm-year observations (2013–2023)	4,881	447
Less: firm observation related to financial firms	1,227	112
Total firm-year observations related to nonfinancial firms	3,654	335
Less: missing firm-year observations	269	11
Final sample	3,385	324

Panel B: sample composition – year-wise

Year	Frequency	Percentage	Cumulative percentage
2013	285	8.42	8.42
2014	287	8.48	16.9
2015	293	8.66	25.55
2016	304	8.98	34.53
2017	307	9.07	43.6
2018	311	9.19	52.79
2019	315	9.31	62.1
2020	316	9.34	71.43
2021	319	9.42	80.86
2022	324	9.57	90.43
2023	324	9.57	100
Total	3,385	100	

Panel C: sample composition – sector-wise

Sector	Frequency	Percentage	Cumulative percentage
Automobile assembler	121	3.57	3.57
Automobile parts and accessories	75	2.22	5.79
Cable and electrical goods	77	2.27	8.06
Cement	176	5.2	13.26
Chemicals	253	7.47	20.74
Engineering	124	3.66	24.4
Fertilizer	64	1.89	26.29
Food and personal care products	230	6.79	33.09
Glass and ceramics	85	2.51	35.6
Leather and tanneries	43	1.27	36.87
Miscellaneous	196	5.79	42.66
Oil and gas exploration companies	44	1.3	43.96
Oil and gas marketing companies	84	2.48	46.44
Paper and board	72	2.13	48.57
Pharmaceuticals	107	3.16	51.73
Power generation and distribution	154	4.55	56.28
Property	11	0.32	56.6
Real estate investment trust	19	0.56	57.16
Refinery	44	1.3	58.46
Sugar and allied industries	264	7.8	66.26
Synthetic and rayon	74	2.19	68.45
Technology and communication	143	4.22	72.67
Textile composite	378	11.17	83.84
Textile spinning	372	10.99	94.83
Textile weaving	55	1.62	96.45

(*continued*)

Table 1. Continued

Panel C: sample composition – sector-wise

Sector	Frequency	Percentage	Cumulative percentage
Tobacco	33	0.97	97.43
Transport	54	1.6	99.03
Vanaspati and allied industries	22	0.65	99.68
Woollen	11	0.32	100
Total	*3,385*	*100*	

Panel D: sample composition – ownership-wise

Ownership-wise composition	Firm year observations	Percentage
Lone founder ownership	365	10.78%
Family ownership	1,569	46.35%
Corporate ownership	1,220	36.04%
Institutional ownership	121	3.57%
State ownership	110	3.25%
Total	*3,385*	

Panel E: industry-wise composition of female co-opted directors

Sector	Frequency	Percentage	Cumulative percentage
Automobile assembler	61	7.15	7.15
Automobile parts and accessories	12	1.41	8.56
Cable and electrical goods	19	2.23	10.79
Cement	55	6.45	17.23
Chemicals	63	7.39	24.62
Engineering	17	1.99	26.61
Fertilizer	10	1.17	27.78
Food and personal care products	51	5.98	33.76
Leather and tanneries	9	1.06	34.82
Miscellaneous	31	3.63	38.45
Oil and gas exploration companies	7	0.82	39.27
Oil and gas marketing companies	19	2.23	41.50
Paper and board	10	1.17	42.67
Pharmaceuticals	17	1.99	44.67
Power generation and distribution	81	9.50	54.16
Property	5	0.59	54.75
Refinery	7	0.82	55.57
Sugar and allied industries	103	12.08	67.64
Synthetic and rayon	19	2.23	69.87
Technology and communication	30	3.52	73.39
Textile composite	91	10.67	84.06
Textile spinning	113	13.25	97.30
Textile weaving	12	1.41	98.71
Transport	11	1.29	100.00
Total	*853*	*100*	

Note(s): The table reports the sample selection procedure and overall composition of the sample
Source(s): Authors' own work

reflects the confidence of shareholders in the firm and is less prone to management's manipulation. Consistent with the literature (e.g. Gull *et al.*, 2024), we defined our independent variable, female co-opted directors, as the female directors appointed after the

CEO assumes office. Consistently, we used the proportion of female co-opted directors to the total number of directors on the board. The measure reflects the affiliation and loyalty of female co-opted directors toward the CEO, as they are appointed by that CEO. To measure family ownership, following Murro and Peruzzi (2019), we created a dummy variable where "1" represents if a firm is categorized as a family firm and "0" otherwise. Consistently, we define a firm as a family firm if an individual or family owns more than 20% of the firm's equity.

In order to measure our first mediator, corporate governance, consistent with Prommin *et al.* (2014) and Crisóstomo and de Freitas Brandão (2018), we developed an index consisting of 15 points based on the relevant rule laid down by the Listed Companies (Code of Corporate Governance) Rules, 2019, in the context of an emerging economy. Compliance with each rule is awarded 1 point, such that the maximum score a company may obtain is 15. Overall, the index is divided into three main sections: board of directors, audit and board committees. The board of directors' section reflects the board's composition, including details such as the number of directors, inter-directorship relationships, the presence of female directors and the frequency of board meetings held within the year. The audit component covers factors such as the existence of an audit committee, the frequency of committee meetings, and the involvement of a Big 4 audit firm as the company's auditor. Finally, the board committees section represents the existence of a compensation committee and a nomination committee. The complete index used for the measurement of corporate governance is shown in Appendix 1.

To measure firm risk-taking, our second mediator, we follow Huang *et al.* (2023). The firm risk was measured as volatility of return on assets (ROA) of assets over five-year overlapping periods. The overlapping period was defined as year 0 to the next four consecutive years. Whereas ROA was measured as the ratio of earnings before interest and taxes to total assets. Finally, following Huang *et al.* (2023), we introduce various governance and firm control variables in the model to control for the endogeneity. We include board size, board independence, CEO duality, gender diversity and audit committee independence as governance control variables that may affect our variable of interest, firm risk-taking. To control for the financial characteristics, we include return on assets, sales, leverage, firm age and firm size in our model. Table 2 depicts the measurement of all the variables used in the study.

4.3 Econometric model

To test the hypotheses, we applied the following models to test our developed hypotheses:

$$\begin{aligned}\text{Firm value}_{i,t} = {} & \alpha_{i,t} + \beta_1 \text{Female coopted directors}_{i,t} + \beta_2 \text{Family ownership}_{i,t} \\ & + \beta_3 \text{Female coopted directors} * \text{Family ownership}_{i,t} + \sum_{m=1}^{n} \beta_4 \text{Controls}_{i,t} \\ & + \sum_{p=1}^{q} \beta_5 \text{Industrydummy}_{i,t} + \sum_{s=1}^{t} \beta_6 \text{yeardummy}_{i,t} + \varepsilon_{i,t}\end{aligned} \quad \text{(Model 1)}$$

$$\begin{aligned}\text{Firm value}_{i,t} = {} & \alpha_{i,t} + \beta_1 \text{Female coopted directors}_{i,t} + \sum_{m=1}^{n} \beta_2 \text{Controls}_{i,t} \\ & + \sum_{p=1}^{q} \beta_3 \text{Industrydummy}_{i,t} + \sum_{s=1}^{t} \beta_4 \text{yeardummy}_{i,t} + \varepsilon_{i,t}\end{aligned} \quad \text{(Model 2)}$$

Table 2. Variable measurement

Nature	Variable	Symbol	Measure
Dependent variable	Firm value	TOBIN	Market value of assets divided by book value of assets
Independent variable	Female board co-option	CO-OPTION	Proportion of female co-opted directors to the total number of directors on the board
Mediating variable	Corporate governance	CORP_GOV	15 points index as shown in Appendix
	Firm risk-taking	FIRM_RISK	Volatility of Return on assets (ROA) of assets over 5-year overlapping periods. The overlapping period was defined as year 0 to next four consecutive years
Moderating variable	Family ownership	FAM_OWN	Dummy variable equals to '1' if a firm is categorized as family firm, '0' otherwise. A firm is categorized as family firm if an individual or a family hold more than 20% firm's equity
Control variables	Board size	BD_SIZE	Total number of directors on the board
	Board independence	BD_IND	Number of independent directors on the board divided by total number of directors on the board
	CEO duality	CEO_DUAL	Dummy variable equals to "1" if chairman also serves as CEO, '0' otherwise
	Gender diversity	BD_GD	Number of female directors on the board divided by total number of directors on the board
	Audit committee independence	AUD_COMM	Number of independent directors in the audit committee
	Return on assets	ROA	Net income divided by total assets
	Sales	SALE	Log of total sales
	Leverage	LEV	Total debt divided by total assets
	Firm age	FIRM_AGE	Number of years since the firm is listed on stock exchange
	Firm size	FIRM_SIZE	Log of total assets

Note(s): The table depicts nature, symbol and measurement of all the variables used in the study
Source(s): Authors' own work

$$\text{Firm value}_{i,t} = \alpha_{i,t} + \beta_1 \text{Female coopted directors}_{i,t} + \beta_2 \text{Corporate governance}_{i,t} + \sum_{m=1}^{n} \beta_3 \text{Controls}_{i,t} + \sum_{p=1}^{q} \beta_4 \text{Industrydummy}_{i,t} + \sum_{s=1}^{t} \beta_5 \text{yeardummy}_{i,t} + \varepsilon_{i,t} \quad \text{(Model 3)}$$

$$\text{Firm value}_{i,t} = \alpha_{i,t} + \beta_1 \text{Female coopted directors}_{i,t} + \beta_2 \text{Corporate governance}_{i,t} + \beta_3 \text{Firm risk taking}_{i,t} + \sum_{m=1}^{n} \beta_4 \text{Controls}_{i,t} + \sum_{p=1}^{q} \beta_5 \text{Industrydummy}_{i,t} + \sum_{s=1}^{t} \beta_6 \text{yeardummy}_{i,t} + \varepsilon_{i,t} \quad \text{(Model 4)}$$

Whereas firm value represents our dependent variable. Female coopted director is the independent variable. Family ownership is moderating variable. Corporate governance and firm risk are the mediating variables. Control variables listed in Table 2 are included in the model to control for the endogeneity. Industry dummy and year dummy are added to control for the industry specific and time specific factors; ε is the error term and "i" represents the firm at time "t."

Further, consistent with Brahma *et al.* (2021), we used Pearson's correlation to check for the issue of multicollinearity in our data. The results of Pearson's correlation of all the variables are reflected in Table 3. The table shows the positive and significant correlation between the independent variable, CO-OPTION and TOBIN (0.211**). Similarly, a positive correlation was found between mediator CORP_GOV and TOBIN (0.189**). We also found the negative correlation in the case of FIRM_RISK and TOBIN (−0.237**). Finally, in line with our arguments, we found a positive association between FAM_OWN and TOBIN (0.113***) and FAM_OWN and CO-OPTION (0.207***). The results provide initial support for our hypothesis, as all the correlation results were in line with the director of the hypotheses. Consistent with Gujarati (2009), none of our correlation coefficient was exceeding 0.5, which shows that multicollinearity was not an issue in our data. We further confirm the multicollinearity through the use of variance inflation factor (VIF) and found that all VIF values are within the acceptable range. Hence, multicollinearity was not existent in our sample.

5. Results

5.1 Descriptive statistics

Table 4 shows the descriptive statistics of all the variables used in the study. The mean value of our dependent variable, TOBIN, is 3.466. The mean for our independent variable, CO-OPTION, is 0.252, which shows that the average of female co-opted directors in our sample is 25.2%. Overall, across our entire sample of 324 firms, we found that 82 firms had female co-opted directors during our sample period. The mean of our mediator, CORP_GOV is 10.209 which shows the compliance of corporate governance practices of the sample firms. On the other hand, the mean of our second mediator, FIRM_RISK, is 0.059, which is also consistent with the prior studies. The mean value of FAM_OWN is 0.463, which represents that around 46.30% of our sample comprises family firms. The mean BD_SIZE is 8.010, which is in line with the minimum board size of 7 mandated by the Code of Corporate Governance Rules. The mean of BD_IND is 0.484, which indicates the average presence of 48% of the independent directors in our sample firms. The mean of CEO_DUAL is 0.137. The mean for BD_GD is 0.141, with a minimum of 0 and a maximum of 0.38. This indicates that while some firms lack female directors entirely, others have up to 38% representation. Given that our sample includes observations prior to the mandatory inclusion of female directors, the absence of women on some boards is not surprising. The mean of AUD_COMM is 2.927, which indicates the presence of at least three independent directors in the audit committee of the firm. Regarding other control variables, the mean values for ROA (6.553), SALES (17.541), LEV (21.71%), FIRM_AGE (26 years) and FIRM_SIZE (22.751) are also reported.

5.2 Baseline results

In order to test our hypotheses, we used the generalized method of moments (GMM) estimation, and the results were reported in Table 5. Under hypothesis H1, we hypothesized that female board co-option is positively related to firm value. We based our hypothesis on the argument that due to effective monitoring of female directors, the female board co-option is associated with higher firm value. Our hypothesis H1 was supported as we found significant a positive association between CO-OPTION and TOBIN ($\beta = 0.157$: $p < 0.01$). Statistically, our results were significant at the 1% level of significance. Our results were in line with the findings of Amin *et al.* (2024), which mentioned the positive role of female directors on firm

Table 3. Pearson correlation

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	VIF
1	TOBIN	1															
2	CO-OPTION	0.211**	1														1.04
3	CORP_GOV	0.189**	0.137**	1													1.04
4	FIRM_RISK	−0.237**	−0.197***	−0.110***	1												1.02
5	FAM_OWN	0.113***	0.207***	0.139***	−0.161***	1											1.03
6	BD_SIZE	−0.125*	0.136*	0.139**	0.135*	0.147**	1										1.02
7	BD_IND	−0.121*	0.122**	0.125**	0.163**	0.105**	0.021	1									1.02
8	CEO_DUAL	0.119*	0.037	−0.031*	−0.061*	−0.169*	−0.047*	0.108***	1								1.04
9	BD_GD	−0.143**	0.115*	0.043*	0.135*	0.155***	0.149**	−0.127	0.022	1							1.02
10	AUD_COMM	0.101	0.113*	0.027**	0.127	0.133***	0.193**	0.193*	0.031**	0.025*	1						1.01
11	ROA	−0.133*	0.121**	0.021*	0.105	0.147**	0.125	0.077*	0.017*	0.019	0.022**	1					1.01
12	SALE	0.191*	0.119*	0.035*	0.043*	0.071*	−0.037	0.081*	0.061	0.054*	0.039*	0.023**	1				1.02
13	LEV	0.035*	0.033*	−0.015*	0.031	0.025	0.012	0.063**	−0.051**	−0.021*	−0.024***	−0.031*	0.011*	1			1.01
14	FIRM_AGE	0.053*	0.065**	0.056***	0.058	0.107**	−0.015	−0.011	0.027	−0.053*	−0.041	−0.065**	0.021**	−0.033	1		1.01
15	FIRM_SIZE	0.032	0.021*	0.032*	0.031	0.059*	0.163**	0.141**	0.039	0.036*	0.034*	0.021	0.125	−0.037	0.165***	1	1.01

Note(s): The table reports Pearson correlation and variance inflation factor (VIF) of all the variables used in the study. *, ** and *** indicates significance at 10, 5 and 1% level of significance
Source(s): Authors' own work

Table 4. Descriptive statistics

Variable	*N*	Mean	SD	Min	Max
TOBIN	3,385	3.466	0.651	0.002	11.853
CO-OPTION	3,385	0.252	0.096	0.113	0.307
CORP_GOV	3,385	10.209	3.011	1.000	15.000
FIRM_RISK	3,385	0.059	0.071	0.011	0.083
FAM_OWN	3,385	0.463	0.019	0.000	1.000
BD_SIZE	3,385	8.010	1.052	7.000	13.000
BD_IND	3,385	0.484	0.047	0.151	0.560
CEO_DUAL	3,385	0.137	0.043	0.000	1.000
BD_GD	3,385	0.141	0.097	0.000	0.380
AUD_COMM	3,385	2.927	0.323	1.000	4.000
ROA	3,385	6.553	1.037	−18.510	26.140
SALE	3,385	17.541	3.077	0.002	34.051
LEV	3,385	0.217	0.021	0.010	0.510
FIRM_AGE	3,385	26.438	3.077	1.000	70.000
FIRM_SIZE	3,385	22.751	2.047	19.032	26.556

Note(s): The table shows the number of observations (*N*), means (Means), standard deviations (SD), minimum (Min) and maximum (Max) of all the variables used in the study
Source(s): Authors' own work

value. Similarly, under hypothesis H2, we hypothesized that presence of family ownership strengthens the positive relationship between female board co-option and firm value. We argue that in emerging markets, the family owners offer protection to the shareholders for the sake of the firm's reputation. Moreover, the alignment of interest between the female co-opted directors and family owners leads to higher firm value. Our hypothesis H2 was supported as we found a significant positive coefficient of the interaction term CO-OPTION*FAM_OWN ($\beta = 0.193$: $p < 0.01$). Empirically, our results were aligned with the findings of Nadeem *et al.* (2020) in this context.

Under hypothesis H3, we hypothesized that the presence of female co-opted directors is positively related to corporate governance. We argue that due to independent monitoring of the female directors, their presence is associated with better corporate governance. Our hypothesis H3 and our argument were supported as we found a significant positive association between female board co-option and corporate governance ($\beta = 0.129$: $p < 0.01$). Our results reflect that the presence of female co-opted directors enhances the corporate governance mechanism. Empirically, our results were consistent with the findings of Amin *et al.* (2023), which found a positive effect of female directors on corporate governance. Similarly, under hypothesis H4, we hypothesize that corporate governance reduces the likelihood of firm risk. We argue that due to better governance structure, such as independent boards and board committees, the firm's risk is reduced. Our hypothesis is supported as we found a significant negative association between CORP_GOV and FIRM_RISK ($\beta = -0.133$: $p < 0.01$). Our results are in line with the findings of Mathew *et al.* (2018) in this context. Under hypothesis H5, we hypothesize that a reduction in the likelihood of firm risk is positively related to firm value. We based our hypothesis on the notion that lower risk is considered a positive signal by investors. Thus, the lower firm risk is associated with higher firm value. The results reported in column 3 of Table 5 show that our hypothesis H5 was supported, as we found a significant negative association between FIRM_RISK and TOBIN ($\beta = -0.151$***: $p < 0.01$). Under hypothesis H6, we hypothesize and argue that corporate governance is positively related to firm value. We argue that better corporate governance mechanisms, such as board independence and the presence of an audit committee, lead to better firm value. The results reported in column 4 of Table 5 show that our hypothesis H6 and our argument was supported as we found a significant positive association between CORP_GOV and TOBIN ($\beta = 0.207$***; $p < 0.01$). Our results

Table 5. Generalized method of moments estimation – female board co-option, family ownership, corporate governance, firm risk and firm value

Variables	TOBIN (1)	TOBIN (2)	CORP_ GOV (3)	FIRM_ RISK (4)	TOBIN (5)	TOBIN (6)	TOBIN (7)
$TOBIN_{t-1}$	1.361***	1.093***			2.037***	1.233***	1.871***
	(0.105)	(0.107)			(0.203)	(0.163)	(0.112)
$CORP\_GOV_{t-1}$			2.128***				
			(0.211)				
$FIRM\_RISK_{t-1}$				3.065***			
				(0.217)			
CO-OPTION	0.157***	0.187***	0.129***				0.331***
	(0.015)	(0.017)	(0.031)				(0.010)
CORP_GOV				−0.133***		0.207***	0.191***
				(0.015)		(0.013)	(0.019)
FIRM_RISK					−0.151***		−0.173***
					(0.012)		(0.011)
FAM_OWN		0.167***					
		(0.015)					
CO-OPTION*FAM_OWN		0.193***					
		(0.031)					
BD_SIZE	0.183***	0.191***	−0.133***	−0.151***	−0.141***	−0.171***	−0.149***
	(0.010)	(0.011)	(0.015)	(0.015)	(0.010)	(0.011)	(0.013)
BD_IND	0.179***	0.163***	−0.165***	−0.119***	−0.157***	−0.129***	−0.135***
	(0.013)	(0.011)	(0.017)	(0.013)	(0.015)	(0.011)	(0.015)
CEO_DUAL	0.141***	0.139***	0.117***	0.157***	0.199***	0.151***	0.193***
	(0.013)	(0.015)	(0.013)	(0.013)	(0.011)	(0.017)	(0.012)
BD_GD	−0.139***	−0.133***	−0.151***	−0.131***	−0.117***	−0.139***	−0.119***
	(0.011)	(0.015)	(0.011)	(0.015)	(0.011)	(0.015)	(0.013)
AUD_COMM	0.215*	0.207*	−0.183**	−0.159**	−0.225*	−0.143**	−0.227*
	(0.103)	(0.109)	(0.011)	(0.115)	(0.113)	(0.015)	(0.113)
ROA	0.143**	0.161**	−0.115*	−0.197**	−0.151*	−0.197**	−0.353*
	(0.115)	(0.110)	(0.085)	(0.010)	(0.017)	(0.010)	(0.117)

(*continued*)

Table 5. Continued

Variables	TOBIN (1)	TOBIN (2)	CORP_ GOV (3)	FIRM_ RISK (4)	TOBIN (5)	TOBIN (6)	TOBIN (7)
SALES	0.139***	0.127***	−0.169***	−0.151***	−0.149***	−0.155***	−0.141***
	(0.011)	(0.013)	(0.013)	(0.013)	(0.011)	(0.011)	(0.011)
LEV	−0.185***	−0.193***	0.157***	0.189***	0.107***	0.187***	0.203***
	(0.010)	(0.011)	(0.015)	(0.011)	(0.011)	(0.011)	(0.013)
FIRM_AGE	0.109	0.105	−0.121***	−0.127***	−0.119***	−0.115***	−0.117***
	(0.013)	(0.013)	(0.013)	(0.017)	(0.011)	(0.018)	(0.019)
FIRM_SIZE	−0.133*	−0.119*	−0.115**	−0.159**	−0.167**	−0.155**	−0.107**
	(0.011)	(0.013)	(0.017)	(0.011)	(0.017)	(0.009)	(0.015)
Constant	0.351***	0.371***	0.516***	0.337***	0.597***	0.377***	0.431***
	(0.025)	(0.025)	(0.017)	(0.015)	(0.021)	(0.014)	(0.021)
Observations	2,918	2,918	2,918	2,918	2,918	2,918	2,918
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Instruments	46	46	46	46	46	46	46
Hansen j-test (*p*-value)	0.217	0.225	0.211	0.281	0.305	0.163	0.355
AR 2 (*p*-value)	0.113	0.153	0.117	0.203	0.191	0.123	0.171

Note(s): The table reports generalized method of moments estimation results of female board co-option, family ownership, corporate governance, firm risk and firm value. Standard errors are reported in parentheses. *, ** and *** indicates significance at 10, 5 and 1% level of significance, respectively
Source(s): Authors' own work

were consistent with the literature (e.g. Federo *et al.*, 2020), which mentioned that corporate governance mechanisms are used by firm owners to influence the firm's outcomes.

Finally, under hypothesis H7, we hypothesize that corporate governance and firm risk serially mediate the relationship between female board co-option and firm value. We argue that female co-opted directors influence the firm value through corporate governance mechanism and firm risk. The positive influence of female directors toward the corporate governance and firm risk ultimately leads to higher firm value. The results reported in column 5 of Table 5 show that corporate governance and firm risk partially mediate the relationship between female co-option and firm value. The results show the positive coefficient of CO-OPTION ($\beta = 0.331$***; $p < 0.01$), CORP_GOV ($\beta = 0.191$***; $p < 0.01$) and FIRM_RISK ($\beta = -0.173$***; $p < 0.01$), which shows support for our hypothesis H7. Further, the insignificant results of the Hansen j test and AR2 show the validity of our instruments. Overall, our results were consistent with the previous studies (e.g. Ain *et al.*, 2021; Gull *et al.*, 2024) and provide empirical support to social identity theory and agency theory in the context of an emerging economy.

5.3 Robustness check

5.3.1 Ordinary least squares regression analysis. Another widely used method in the literature to test the hypotheses is ordinary least squares regression (OLS) analysis. In order to check for the robustness of our results, we re-run our models using ordinary least squares regression analysis. Table 6 reports that the results obtained through OLS analysis are similar to our baseline results; therefore, our results are robust. In all the cases, the sign of our coefficients was in line with the directions of our hypotheses. Moreover, our results were statistically significant at the 1% level of significance, which shows support of our hypotheses H1–H7. Further, in line with Wu *et al.* (2020), the study further applied the Sobel test to confirm the mediation effects. The significant values obtained from Sobel tests show conformance for the prior mediation results and provide robustness of the results.

5.3.2 Two stage least squares analysis. In order to provide assurance for the earlier reported results, further additional analysis was performed. Accordingly, 2SLS is applied to check the endogeneity problem that may affect the results. In order to perform 2SLS regression, it is necessary to identify an instrumental variable that is strongly correlated to female co-opted directors but uncorrelated to firm value. Although identifying such an instrument is difficult (Wang *et al.*, 2021), nevertheless, following the literature (Liu *et al.*, 2014), we used the industry average of the percentage of female directors as the instrumental variable in the analysis. To check for the accuracy of our selected variable, we run several diagnostic tests, such as the Wu–Hausman test, the Hansen–Sargan test and the Wooldridge test. For the validity of our instrument, it is essential that Wu–Hausman test values and Wooldridge test values are statistically significant at 1, 5 and 10% levels of significance. On the other hand, the insignificance of the Hansen–Sargan test will confirm the validity of the instrument. Additionally, to reject the null hypothesis of weak instruments proposed by the Stock and Yogo test, the test statistics obtained must exceed the critical value at the 5% significance level (for details, please see Bhagat and Bolton, 2019). The results reported in Table 7 show that our first and second stage analyses were robust, as we found significant results at both stages of analysis. Moreover, our diagnostic tests also highlighted the validity of our instruments.

5.4 Additional analysis

Although our results revealed a positive influence of female co-opted directors on firm value, however, one might argue that these results may differ between large and small firms. Therefore, as an additional analysis, we further categorized our sample into large and small firms to determine the effects of female board co-option on firm value. The extant literature provides various proxies to determine the firm size, such as total sales and total assets. Consistently, following Mubeen *et al.* (2021), we used the average value of sales volume to

Table 6. Ordinary least squares regression analysis – female board co-option, family ownership, corporate governance, firm risk and firm value

Variables	TOBIN (1)	TOBIN (2)	CORP_ GOV (3)	FIRM_ RISK (4)	TOBIN (5)	TOBIN (6)	TOBIN (7)
CO-OPTION	0.257***	0.283***	0.221***				0.101***
	(0.051)	(0.063)	(0.058)				(0.057)
CORP_GOV				−0.177***		0.133***	0.163***
				(0.122)		(0.029)	(0.033)
FIRM_RISK					−2.035**		−0.217***
					(0.129)		(0.017)
FAM_OWN		0.117***					
		(0.031)					
CO-OPTION*FAM_OWN		0.167***					
		(0.023)					
BD_SIZE	0.117***	0.213***	−0.131***	−0.193***	−0.151***	−0.133***	−0.127***
	(0.010)	(0.015)	(0.011)	(0.012)	(0.017)	(0.013)	(0.011)
BD_IND	0.181***	0.125***	−0.117***	−0.112***	−0.107***	−0.133***	−0.157***
	(0.011)	(0.011)	(0.013)	(0.017)	(0.021)	(0.011)	(0.013)
CEO_DUAL	0.153***	0.187***	0.191***	0.157***	0.109***	0.165***	0.129***
	(0.010)	(0.011)	(0.015)	(0.013)	(0.011)	(0.015)	(0.013)
BD_GD	0.139***	0.193***	−0.127***	−0.145***	−0.139***	−0.109***	−0.133***
	(0.011)	(0.017)	(0.013)	(0.011)	(0.014)	(0.010)	(0.011)
AUD_COMM	0.207*	0.119**	−0.279*	−0.237**	0.213	0.255**	0.233
	(0.105)	(0.107)	(0.113)	(0.110)	(0.121)	(0.117)	(0.121)
ROA	0.151*	0.231*	−0.361*	−0.311**	−0.322**	−0.291**	−0.247**
	(0.017)	(0.019)	(0.160)	(0.117)	(0.117)	(0.120)	(0.109)
SALES	0.119*	0.139***	−0.151***	−0.047***	−0.025***	−0.037***	−0.021***
	(0.011)	(0.017)	(0.013)	(0.003)	(0.007)	(0.009)	(0.017)
LEV	−0.129*	0.158***	0.121***	0.113***	0.139***	0.157***	0.171***
	(0.011)	(0.011)	(0.013)	(0.015)	(0.014)	(0.015)	(0.013)
FIRM_AGE	−0.163***	−0.153***	−0.149***	−0.121***	−0.105***	−0.185***	−0.133***
	(0.013)	(0.010)	(0.011)	(0.021)	(0.017)	(0.021)	(0.011)

(*continued*)

Table 6. Continued

Variables	TOBIN (1)	TOBIN (2)	CORP_ GOV (3)	FIRM_ RISK (4)	TOBIN (5)	TOBIN (6)	TOBIN (7)
FIRM_SIZE	−0.107**	−0.147**	−0.131**	−0.108**	−0.167**	−0.113**	−0.163**
	(0.019)	(0.011)	(0.017)	(0.009)	(0.011)	(0.007)	(0.013)
Constant	0.319***	0.217***	0.461***	0.391***	0.547***	0.519***	0.401***
	(0.015)	(0.019)	(0.019)	(0.011)	(0.017)	(0.016)	(0.021)
Observations	3,385	3,385	3,385	3,385	3,385	3,385	3,385
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.21	0.24	0.21	0.19	0.18	0.19	0.18
Sobel test (Z-test)			4.229***	3.083***	2.131**	1.257***	3.611***

Note(s): The table reports ordinary least squares regression results of female board co-option, family ownership, corporate governance, firm risk and firm value. Standard errors are reported in parentheses. *, ** and *** indicates significance at 10, 5 and 1% level of significance, respectively
Source(s): Authors' own work

Table 7. Two-stage least squares estimations – female board co-option and firm value using industry average of female directors as an instrumental variable

Variables	First stage CO-OPTION (1)	Second stage TOBIN (2)
Industry average of female directors	1.607***	
	(0.105)	
CO-OPTION (fitted)		2.057***
		(0.110)
BD_SIZE	0.161***	0.173***
	(0.013)	(0.013)
BD_IND	0.115***	0.191***
	(0.013)	(0.014)
CEO_DUAL	0.151***	0.137***
	(0.010)	(0.010)
BD_GD	0.129***	0.161***
	(0.011)	(0.005)
AUD_COMM	0.123*	0.119*
	(0.014)	(0.011)
ROA	0.131*	0.113**
	(0.011)	(0.015)
SALES	0.159***	0.157***
	(0.015)	(0.015)
LEV	0.101***	0.191***
	(0.010)	(0.013)
FIRM_AGE	0.127***	0.141***
	(0.014)	(0.010)
FIRM_SIZE	0.167**	0.193**
	(0.010)	(0.011)
Constant	0.351***	0.381***
	(0.013)	(0.019)
Observations	3,385	3,385
Year effects	Yes	Yes
Industry effects	Yes	Yes
Adj-R^2	0.211	0.237
Wu-Hausman test	0.001	
Hansen Sargan test	0.141	
Wooldridge test	0.001	
Stock and Yogo test	38.33	
Critical value on 5% relative basis	15.31	

Note(s): The table reports Two stage least squares estimation results of female board co-option and firm value using industry average of percentage of female directors as an instrumental variable. Standard errors are reported in parentheses. *, ** and *** indicates significance at 10, 5 and 1% level of significance, respectively
Source(s): Authors' own work

categorize the firms between large and small firms. Firms with sales volumes above the average were classified as large firms, while those with sales volumes below the average were categorized as small firms. The results reported in Table 8 show that the impact was more prominent in larger industries compared to smaller ones, as a higher coefficient was obtained for large firms. This finding suggests that large firms gain greater economic benefits and increased shareholder value from including female board members.

6. Conclusion

This study explores the impact of female board co-option on firm value in family owned firms along with the mediating role of corporate governance and firm risk in this relationship. The

Table 8. Alternate analysis – female board co-option and firm value

Variables	Firm value (1)	Firm value (2)
CO-OPTION - large industries	0.285***	
	(0.017)	
CO-OPTION - small industries		0.119***
		(0.010)
BD_SIZE	0.161***	0.155***
	(0.011)	(0.011)
BD_IND	0.113***	0.135***
	(0.007)	(0.011)
CEO_DUAL	0.153***	0.121***
	(0.010)	(0.010)
BD_GD	0.137***	0.109***
	(0.011)	(0.005)
AUD_COMM	0.115*	0.103*
	(0.019)	(0.011)
ROA	0.121*	0.091**
	(0.013)	(0.015)
SALES	0.159***	0.137***
	(0.015)	(0.017)
LEV	0.113***	0.155***
	(0.010)	(0.011)
FIRM_AGE	0.125***	0.136***
	(0.011)	(0.011)
FIRM_SIZE	0.137**	0.108**
	(0.010)	(0.011)
Constant	0.351***	0.219***
	(0.011)	(0.015)
Observations	2,687	698
Controls	Yes	Yes
Year fixed effects	Yes	Yes
Adj *R*-square	0.25	0.23

Note(s): The table reports OLS results of female board co-option and firm value showing alternate analysis using small and large industries. Standard errors are reported in parentheses. *, ** and *** indicates significance at 10, 5 and 1% level of significance, respectively
Source(s): Authors' own work

gender diversity literature is of the view that the presence of female in the top management team is associated with positive firm outcomes such as firm value. As such, our study sheds light on the positive strategic behavior of female co-opted directors on firm value in the context of an emerging economy. Our findings make significant contributions to existing literature in several areas. First, our research provides novel evidence of the impact of female co-opted directors on firm value in the context of family-owned firms in an emerging economy. Second, our study explains that corporate governance is an effective mechanism that mediates the relationship between female co-opted directors and firm value. Third, our findings show women's active participation in the strategic decision-making process and their risk-averse behavior in corporate firm risk-taking. Fourth, we enhance the gender diversity literature by demonstrating the beneficial effects of female directors in family owned firms, thus supporting regulatory efforts for mandatory female board appointments and gender quotas. Finally, our findings offer empirical support for social identity theory and agency theory in this context.

Using a sample of 3,385 firm-year observations from nonfinancial firms listed on the Pakistan Stock Exchange from 2013 to 2023, we tested our hypotheses through generalized method of moments estimation, followed by ordinary least squares regression analysis and

two-stage least squares analysis to address endogeneity. We argue that, in line with the family business literature, the presence of family owners is associated with higher firm value. Moreover, the gender diversity literature posits that the presence of female members in the top management team is associated with better investment decisions that lead to higher firm value. Our results suggests that female co-opted directors are positively related to firm value. As such, we found that due to better investment decisions, the firm risk mediates the relationship between female co-opted directors and firm value. Moreover, we use a self-constructed corporate governance index to measure the mediating effect of corporate governance on this relationship. Our results suggest that corporate governance and firm risk serially mediate the relationship between female co-opted directors and firm value. Therefore, the corporate governance mechanism is an effective way to influence the firm's value. Overall, our results align with previous studies and extend support for social identity theory and agency theory in the context of an emerging economy.

The theoretical implications of our results enrich the existing body of research by highlighting the significance of women's participation in strategic decision-making. The findings of this study reveal the positive effects of women directors over investment decisions in an emerging market characterized by cultural barriers and limited educational opportunities for women. Moreover, family business literature argues that the presence of family owners may exacerbate the principal-principal conflict for the pursuance of a family agenda. On the other hand, another strand of literature is of the view that family owners serve as alternate governance mechanisms in emerging economies for the sake of firm's reputation. Our results show that for the sake of the family's dynasty, the female board co-option and presence of family owners leads to higher firm value in family owned firms. Additionally, the family business literature emphasizes the family-oriented behavior of family firms. In terms of social identity theory, family firms represent social assets, with firm reputation being a crucial factor in investment decisions. As such, our results provide insight into the family oriented behavior of family owners in PSX-listed firms. Practically, our findings carry implications for investors, regulators and practitioners. Our findings highlight the significant role of women in strategic decision-making, encouraging policymakers to invest in professional training for the female workforce. Our results support the implementation of mandatory female board appointments and suggest increasing gender quotas to maximize the benefits of female directors in decision-making. For investors, our findings highlight the positive influence of female co-opted directors on investment decisions, providing valuable insights into the strategic behavior of family firms listed on the PSX.

Like other studies, our study also suffers from some limitations that could guide future research. First, we focused solely on the strategic roles of female directors; examining their influence in other executive positions, such as chief financial officer or chief operating officer, could yield additional insights. Second, the ownership structure of the firm has a profound influence over the strategic behavior of the firm. While our sample mainly comprises family firms, future studies could investigate this relationship in these other ownership structures, such as institutional ownership and state ownership. Third, our sample consists only of listed firms; exploring family ownership in small and medium-sized enterprises could offer interesting results. Finally, examining this relationship in other economies may enhance the generalizability of our results.

References

Ain, Q.U., Yuan, X., Javaid, H.M., Zhao, J. and Xiang, L. (2021), "Board gender diversity and dividend policy in Chinese listed firms", *Sage Open*, Vol. 11 No. 1, doi: 10.1177/2158244021997807.

Akhter, W. and Hassan, A. (2024), "Does corporate social responsibility mediate the relationship between corporate governance and firm performance? Empirical evidence from BRICS countries", *Corporate Social Responsibility and Environmental Management*, Vol. 31 No. 1, pp. 566-578, doi: 10.1002/csr.2586.

Al-Begali, S.A.A. and Phua, L.K. (2023), "Earnings management in emerging markets: the COVID-19 and family ownership", *Cogent Economics and Finance*, Vol. 11 No. 1, 2220246, doi: 10.1080/23322039.2023.2220246.

Al-Shaer, H. and Zaman, M. (2016), "Board gender diversity and sustainability reporting quality", *Journal of Contemporary Accounting and Economics*, Vol. 12 No. 3, pp. 210-222, doi: 10.1016/j.jcae.2016.09.001.

Amin, A., Ur Rehman, R., Ali, R. and Ntim, C.G. (2022), "Does gender diversity on the board reduce agency cost? Evidence from Pakistan", *Gender in Management: An International Journal*, Vol. 37 No. 2, pp. 164-181, doi: 10.1108/gm-10-2020-0303.

Amin, A., Ali, R. and Rehman, R.U. (2023), "Departure of giants: ownership transition in lone-founder owned firms", *Management Decision*, Vol. 61 No. 11, pp. 3361-3384, doi: 10.1108/md-12-2022-1685.

Amin, A., Ali, R., Rehman, R.U. and Hasan, M. (2024), "Family ownership, control, and firm performance: does gender diversity matter?", *Eurasian Business Review*, Vol. 14 No. 2, pp. 1-25, doi: 10.1007/s40821-024-00256-9.

Amore, M.D., Pelucco, V. and Quarato, F. (2022), "Family ownership during the Covid-19 pandemic", *Journal of Banking and Finance*, Vol. 135, 106385, doi: 10.1016/j.jbankfin.2021.106385.

Ararat, M. and Yurtoglu, B.B. (2021), "Female directors, board committees, and firm performance: time-series evidence from Turkey", *Emerging Markets Review*, Vol. 48, 100768, doi: 10.1016/j.ememar.2020.100768.

Armitage, S., Hou, W., Sarkar, S. and Talaulicar, T. (2017), "Corporate governance challenges in emerging economies", *Corporate Governance: An International Review*, Vol. 25 No. 3, pp. 148-154, doi: 10.1111/corg.12209.

Armstrong, C.S., Core, J.E. and Guay, W.R. (2014), "Do independent directors cause improvements in firm transparency?", *Journal of Financial Economics*, Vol. 113 No. 3, pp. 383-403, doi: 10.1016/j.jfineco.2014.05.009.

Atugeba, I.L.A. and Acquah-Sam, E. (2024), "Relationship between corporate governance and firm performance in Ghana: does compliance to national governance frameworks matter?", *Cogent Economics and Finance*, Vol. 12 No. 1, 2347022, doi: 10.1080/23322039.2024.2347022.

Baghdadi, G.A., Nguyen, L.H. and Podolski, E.J. (2020), "Board co-option and default risk", *Journal of Corporate Finance*, Vol. 64, 101703, doi: 10.1016/j.jcorpfin.2020.101703.

Baixauli-Soler, J.S., Belda-Ruiz, M. and Sanchez-Marin, G. (2015), "Executive stock options, gender diversity in the top management team, and firm risk taking", *Journal of Business Research*, Vol. 68 No. 2, pp. 451-463, doi: 10.1016/j.jbusres.2014.06.003.

Bass, A.E. (2019), "Top management team diversity, equality, and innovation: a multilevel investigation of the health care industry", *Journal of Leadership and Organizational Studies*, Vol. 26 No. 3, pp. 339-351, doi: 10.1177/1548051819849008.

Berrone, P., Cruz, C., Gomez-Mejia, L.R. and Larraza-Kintana, M. (2010), "Socioemotional wealth and corporate responses to institutional pressures: do family-controlled firms pollute less?", *Administrative Science Quarterly*, Vol. 55 No. 1, pp. 82-113, doi: 10.2189/asqu.2010.55.1.82.

Bhagat, S. and Bolton, B. (2019), "Corporate governance and firm performance: the sequel", *Journal of Corporate Finance*, Vol. 58, pp. 142-168, doi: 10.1016/j.jcorpfin.2019.04.006.

Block, J.H. (2012), "R&D investments in family and founder firms: an agency perspective", *Journal of Business Venturing*, Vol. 27 No. 2, pp. 248-265.

Brahma, S., Nwafor, C. and Boateng, A. (2021), "Board gender diversity and firm performance: the UK evidence", *International Journal of Finance and Economics*, Vol. 26 No. 4, pp. 5704-5719, doi: 10.1002/ijfe.2089.

Brune, A., Thomsen, M. and Watrin, C. (2019), "Family firm heterogeneity and tax avoidance: the role of the founder", *Family Business Review*, Vol. 32 No. 3, pp. 296-317, doi: 10.1177/0894486519831467.

Bukari, A., Agyemang, A.O. and Bawuah, B. (2024), "Assessing the moderating role of ESG performance on corporate governance and firm value in developing countries", *Cogent Business and Management*, Vol. 11 No. 1, 2333941, doi: 10.1080/23311975.2024.2333941.

Chan, K.C. and Li, J. (2008), "Audit committee and firm value: evidence on outside top executives as expert-independent directors", *Corporate Governance: An International Review*, Vol. 16 No. 1, pp. 16-31, doi: 10.1111/j.1467-8683.2008.00662.x.

Chang, A.A., Mubarik, M.S. and Naghavi, N. (2021), "Passing on the legacy: exploring the dynamics of succession in family businesses in Pakistan", *Journal of Family Business Management*, Vol. 11 No. 2, pp. 161-184, doi: 10.1108/jfbm-10-2019-0065.

Cho, Y., Kim, S., You, J., Moon, H. and Sung, H. (2021), "Application of ESG measures for gender diversity and equality at the organizational level in a Korean context", *European Journal of Training and Development*, Vol. 45 Nos 4/5, pp. 346-365, doi: 10.1108/ejtd-05-2020-0090.

Crisóstomo, V.L. and de Freitas Brandão, I. (2018), "The ultimate controlling owner and corporate governance in Brazil", *Corporate Governance: International Journal of Business in Society*, Vol. 19 No. 1, pp. 120-140.

Dobija, D., Hryckiewicz, A., Zaman, M. and Puławska, K. (2022), "Critical mass and voice: board gender diversity and financial reporting quality", *European Management Journal*, Vol. 40 No. 1, pp. 29-44, doi: 10.1016/j.emj.2021.02.005.

Duchin, R. and Sosyura, D. (2013), "Divisional managers and internal capital markets", *The Journal of Finance*, Vol. 68 No. 2, pp. 387-429, doi: 10.1111/jofi.12003.

Fan, Y., Jiang, Y., Zhang, X. and Zhou, Y. (2019), "Women on boards and bank earnings management: from zero to hero", *Journal of Banking and Finance*, Vol. 107, 105607, doi: 10.1016/j.jbankfin.2019.105607.

Farooq, S., Gan, C. and Nadeem, M. (2023), "Boardroom gender diversity and investment inefficiency: new evidence from the United Kingdom", *Corporate Governance: An International Review*, Vol. 31 No. 1, pp. 2-32, doi: 10.1111/corg.12443.

Federo, R., Ponomareva, Y., Aguilera, R.V., Saz-Carranza, A. and Losada, C. (2020), "Bringing owners back on board: a review of the role of ownership type in board governance", *Corporate Governance: An International Review*, Vol. 28 No. 6, pp. 348-371, doi: 10.1111/corg.12346.

Fèlix, E.G.S. and David, D.S.T. (2019), "Performance of family-owned firms: the impact of gender at the management level", *Journal of Family Business Management*, Vol. 9 No. 2, pp. 228-250, doi: 10.1108/jfbm-10-2018-0051.

García-Meca, E., López-Iturriaga, F.J. and Santana-Martín, D.J. (2022), "Board gender diversity and dividend payout: the critical mass and the family ties effect", *International Review of Financial Analysis*, Vol. 79, 101973, doi: 10.1016/j.irfa.2021.101973.

González-Cruz, T.F. and Cruz-Ros, S. (2016), "When does family involvement produce superior performance in SME family business?", *Journal of Business Research*, Vol. 69 No. 4, pp. 1452-1457, doi: 10.1016/j.jbusres.2015.10.124.

Gujarati, D.N. (2009), *Basic Econometrics*, 5th ed., Tata McGraw-Hill Education, New Delhi.

Gull, A.A., Luong, H. and Nadeem, M. (2024), "Board co-option and corporate environmental orientation: new insights from the waste management perspective", *Corporate Governance: An International Review*, Vol. 32 No. 5, pp. 758-785, doi: 10.1111/corg.12567.

Gyapong, E., Ahmed, A., Ntim, C.G. and Nadeem, M. (2021), "Board gender diversity and dividend policy in Australian listed firms: the effect of ownership concentration", *Asia Pacific Journal of Management*, Vol. 38 No. 2, pp. 603-643, doi: 10.1007/s10490-019-09672-2.

Hashmi, M.A., Brahmana, R.K. and Lau, E. (2018), "Political connections, family firms and earnings quality", *Management Research Review*, Vol. 41 No. 4, pp. 414-432, doi: 10.1108/mrr-05-2017-0136.

Hernández-Linares, R., López-Fernández, M.C., Memili, E., Mullins, F. and Patel, P.C. (2023), "High-performance work practices, socioemotional wealth preservation, and family firm labor productivity", *BRQ Business Research Quarterly*, Vol. 26 No. 3, pp. 237-255, doi: 10.1177/23409444211002521.

Hillman, A.J., Shropshire, C. and Cannella Jr, A.A. (2007), "Organizational predictors of women on corporate boards", *Academy of Management Journal*, Vol. 50 No. 4, pp. 941-952, doi: 10.5465/amj.2007.26279222.

Huang, G., An, Z. and Li, D. (2023), "Foreign institutional ownership and corporate risk-taking: international evidence", *Corporate Governance: An International Review*, Vol. 31 No. 2, pp. 260-284, doi: 10.1111/corg.12456.

Hutchinson, M. and Gul, F.A. (2004), "Investment opportunity set, corporate governance practices and firm performance", *Journal of Corporate Finance*, Vol. 10 No. 4, pp. 595-614, doi: 10.1016/s0929-1199(03)00022-1.

Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-360, doi: 10.1016/0304-405x(76)90026-x.

Kabbach de Castro, L.R., Aguilera, R.V. and Crespí-Cladera, R. (2017), "Family firms and compliance: reconciling the conflicting predictions within the socioemotional wealth perspective", *Family Business Review*, Vol. 30 No. 2, pp. 137-159, doi: 10.1177/0894486516685239.

Kavadis, N. and Thomsen, S. (2023), "Sustainable corporate governance: a review of research on long-term corporate ownership and sustainability", *Corporate Governance: An International Review*, Vol. 31 No. 1, pp. 198-226, doi: 10.1111/corg.12486.

Khan, M.R. and Tariq, Y.B. (2022), "An investigation of family entrepreneurship in ownership and firm performance: empirical evidence from Pakistan", *The Journal of Asian Finance, Economics and Business*, Vol. 9 No. 5, pp. 63-73.

Khan, S., Khan, N.U. and Kamal, Y. (2024), "Earnings management in the family business groups of Pakistan: the role of corporate governance", *Corporate Governance: International Journal of Business in Society*, Vol. 25 No. 2, pp. 337-366, doi: 10.1108/cg-01-2023-0033.

Khaw, K.L.H., Liao, J., Tripe, D. and Wongchoti, U. (2016), "Gender diversity, state control, and corporate risk-taking: evidence from China", *Pacific-Basin Finance Journal*, Vol. 39, pp. 141-158, doi: 10.1016/j.pacfin.2016.06.002.

Li, X. and Li, Y. (2020), "Female independent directors and financial irregularities in Chinese listed firms: from the perspective of audit committee chairpersons", *Finance Research Letters*, Vol. 32, 101320, doi: 10.1016/j.frl.2019.101320.

Liu, C. and Wu, Y.W. (2023), "Gender diversity and bank risk-taking: female directors and executives", *Managerial Finance*, Vol. 49 No. 5, pp. 761-788, doi: 10.1108/mf-01-2022-0059.

Liu, Y., Wei, Z. and Xie, F. (2014), "Do women directors improve firm performance in China?", *Journal of Corporate Finance*, Vol. 28, pp. 169-184, doi: 10.1016/j.jcorpfin.2013.11.016.

Martínez-García, I., Basco, R. and Gómez-Ansón, S. (2021), "Dancing with giants: contextualizing state and family ownership effects on firm performance in the Gulf Cooperation Council", *Journal of Family Business Strategy*, Vol. 12 No. 4, 100373, doi: 10.1016/j.jfbs.2020.100373.

Mathew, S., Ibrahim, S. and Archbold, S. (2018), "Corporate governance and firm risk", *Corporate Governance: International Journal of Business in Society*, Vol. 18 No. 1, pp. 52-67, doi: 10.1108/cg-02-2017-0024.

McCahery, J.A., Sautner, Z. and Starks, L.T. (2016), "Behind the scenes: the corporate governance preferences of institutional investors", *The Journal of Finance*, Vol. 71 No. 6, pp. 2905-2932, doi: 10.1111/jofi.12393.

Miller, D., Amore, M.D., Quarato, F. and Corbetta, G. (2022), "Family ownership dispersion and dividend payout in family firms", *Journal of Family Business Strategy*, Vol. 13 No. 3, 100436, doi: 10.1016/j.jfbs.2021.100436.

Mirza, H.H., Andleeb, S. and Ramzan, F. (2012), "Gender diversity and firm performance: evidence from Pakistan", *Journal of Social and development Sciences*, Vol. 3 No. 5, pp. 161-166, doi: 10.22610/jsds.v3i5.698.

Moin, A., Guney, Y. and El Kalak, I. (2020), "The effects of ownership structure, sub-optimal cash holdings and investment inefficiency on dividend policy: evidence from Indonesia", *Review of Quantitative Finance and Accounting*, Vol. 55 No. 3, pp. 857-900, doi: 10.1007/s11156-019-00862-z.

Mubeen, R., Han, D., Abbas, J., Álvarez-Otero, S. and Sial, M.S. (2021), "The relationship between CEO duality and business firms' performance: the moderating role of firm size and corporate social responsibility", *Frontiers in Psychology*, Vol. 12, 669715, doi: 10.3389/fpsyg.2021.669715.

Murro, P. and Peruzzi, V. (2019), "Family firms and access to credit. Is family ownership beneficial?", *Journal of Banking and Finance*, Vol. 101, pp. 173-187, doi: 10.1016/j.jbankfin.2019.02.006.

Nadeem, M. (2022), "Board gender diversity and managerial obfuscation: evidence from the readability of narrative disclosure in 10-K reports", *Journal of Business Ethics*, Vol. 179 No. 1, pp. 153-177, doi: 10.1007/s10551-021-04830-3.

Nadeem, M., Gyapong, E. and Ahmed, A. (2020), "Board gender diversity and environmental, social, and economic value creation: does family ownership matter?", *Business Strategy and the Environment*, Vol. 29 No. 3, pp. 1268-1284, doi: 10.1002/bse.2432.

Nekhili, M. and Gatfaoui, H. (2013), "Are demographic attributes and firm characteristics drivers of gender diversity? Investigating women's positions on French boards of directors", *Journal of Business Ethics*, Vol. 118 No. 2, pp. 227-249, doi: 10.1007/s10551-012-1576-z.

Prommin, P., Jumreornvong, S. and Jiraporn, P. (2014), "The effect of corporate governance on stock liquidity: the case of Thailand", *International Review of Economics and Finance*, Vol. 32, pp. 132-142, doi: 10.1016/j.iref.2014.01.011.

Purkayastha, S., Veliyath, R. and George, R. (2019), "The roles of family ownership and family management in the governance of agency conflicts", *Journal of Business Research*, Vol. 98, pp. 50-64, doi: 10.1016/j.jbusres.2019.01.024.

Qawqzeh, H.K., Bshayreh, M.M. and Alharbi, A.W. (2021), "Does ownership structure affect audit quality in countries characterized by a weak legal protection of the shareholders?", *Journal of Financial Reporting and Accounting*, Vol. 19 No. 5, pp. 707-724.

Sarhan, A.A., Ntim, C.G. and Al-Najjar, B. (2019), "Board diversity, corporate governance, corporate performance, and executive pay", *International Journal of Finance and Economics*, Vol. 24 No. 2, pp. 761-786, doi: 10.1002/ijfe.1690.

Solarino, A.M. and Boyd, B.K. (2020), "Are all forms of ownership prone to tunneling? A meta-analysis", *Corporate Governance: An International Review*, Vol. 28 No. 6, pp. 488-501, doi: 10.1111/corg.12344.

Sundarasen, S.D.D., Je-Yen, T. and Rajangam, N. (2016), "Board composition and corporate social responsibility in an emerging market", *Corporate Governance: International Journal of Business in Society*, Vol. 16 No. 1, pp. 35-53, doi: 10.1108/cg-05-2015-0059.

Tran, N.M., Ngo, Q.G. and Tran, Q.T. (2023), "Top management team gender diversity and the financial performance of Vietnamese SMEs: family and non-family owned firms", *Gender in Management: An International Journal*, Vol. 38 No. 3, pp. 394-411, doi: 10.1108/gm-11-2021-0345.

Wang, Y., Farag, H. and Ahmad, W. (2021), "Corporate culture and innovation: a tale from an emerging market", *British Journal of Management*, Vol. 32 No. 4, pp. 1121-1140, doi: 10.1111/1467-8551.12478.

Wu, W., Peng, F., Shan, Y.G. and Zhang, L. (2020), "Litigation risk and firm performance: the effect of internal and external corporate governance", *Corporate Governance: An International Review*, Vol. 28 No. 4, pp. 210-239, doi: 10.1111/corg.12319.

Yang, K.P. and Schwarz, G.M. (2016), "A multilevel analysis of the performance implications of excess control in business groups", *Organization Science*, Vol. 27 No. 5, pp. 1219-1236, doi: 10.1287/orsc.2016.1086.

Yarram, S.R. and Adapa, S. (2022), "Women on boards, CSR and risk-taking: an investigation of the interaction effects of gender diversity and CSR on business risk", *Journal of Cleaner Production*, Vol. 378, 134493, doi: 10.1016/j.jclepro.2022.134493.

Yasser, Q.R. and Mamun, A.A. (2017), "The impact of ownership concentration on firm performance: evidence from an emerging market", *Emerging Economy Studies*, Vol. 3 No. 1, pp. 34-53, doi: 10.1177/2394901517696647.

Yoshikawa, T. and Rasheed, A.A. (2010), "Family control and ownership monitoring in family-controlled firms in Japan", *Journal of Management Studies*, Vol. 47 No. 2, pp. 274-295, doi: 10.1111/j.1467-6486.2009.00891.x.

Yousaf, I., Ali, S. and Hassan, A. (2019), "Effect of family control on corporate dividend policy of firms in Pakistan", *Financial Innovation*, Vol. 5 No. 1, p. 42, doi: 10.1186/s40854-019-0158-9.

Zaman, R., Atawnah, N., Baghdadi, G.A. and Liu, J. (2021), "Fiduciary duty or loyalty? Evidence from co-opted boards and corporate misconduct", *Journal of Corporate Finance*, Vol. 70, 102066, doi: 10.1016/j.jcorpfin.2021.102066.

Zellweger, T.M., Nason, R.S., Nordqvist, M. and Brush, C.G. (2013), "Why do family firms strive for nonfinancial goals? An organizational identity perspective", *Entrepreneurship: Theory and Practice*, Vol. 37 No. 2, pp. 229-248, doi: 10.1111/j.1540-6520.2011.00466.x.

Appendix

Table A1. Corporate governance index

Category		Governance standard	Code of corporate governance rules
Board of directors	1	Member of board of directors are not less than five and not more than thirteen	A listed company shall have not less than seven directors
	2	Extern-directorship: firm cross-directorship board member	No person shall be elected or nominated or hold office as a director of a listed company including as an alternate director of more than seven listed companies, simultaneously
	3	One-third of the directors are the independent directors	The independent directors of each listed company shall not be less than two members or one-third of the total members of the board, whichever is higher
	4	Chairman and CEO are separate	The Chairman and the CEO of a company shall not be the same person
	5	Gender diversity on the board	Board shall have at least one female director
	6	Largest Directors shareholding (as measure by using direct interest and deemed interest divided by total issued shares) is below 5% of share capital	The directors, CEO and executives do not hold any interest in the shares of the company other than that disclosed in the pattern of shareholding
	7	Disclosure about number of board meetings	The number of board meetings held during the year shall be disclosed
	8	Number of board meetings is not less than 6	The board of a public company shall meet at least once in each quarter of a year
Audit	9	Existence of audit committee	The board of directors of every listed company shall establish an audit committee
	10	Disclosure of frequency of audit committee meetings	The audit committee of a company shall meet at least once every quarter of the financial year
	11	Expertise of audit committee	The board shall satisfy itself such that at least one member of the audit committee qualifies as financially literate. Financially literate means a person who is a member of a recognized body of professional accountants or has a postgraduate degree in finance from a university or equivalent institution, either in Pakistan or abroad recognized by the Higher Education Commission of Pakistan
	12	Audit committee chaired by independent director	Chairman of the committee shall be an independent director, who shall not be the chairman of the board

(*continued*)

Table A1. Continued

Category		Governance standard	Code of corporate governance rules
	13	Engagement of Big 4 auditors	No listed company shall appoint as external auditors a firm of auditors which has not been given a satisfactory rating under the Quality Control Review program of the Institute of Chartered Accountants of Pakistan. No listed company shall appoint as external auditors a firm of auditors which or a partner of which is non-compliant with the International Federation of Accountants' (IFAC) Guidelines on Code of Ethics, as adopted by the Institute of Chartered Accountants of Pakistan
Board committees	14	Existence of compensation committee	There shall be a remuneration (compensation) committee
	15	Existence of nomination committee	The board may constitute a separate committee, designated as the nomination committee

Note(s): The table shows corporate governance index used to measure mediating variable, corporate governance. The index has been developed in accordance with Listed Companies (Code of Corporate Governance) 2019
Source(s): Authors' own work

Corresponding author
Rizwan Ali can be contacted at: rizwan.ali@lbs.uol.edu.pk