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## Article

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# The moderating effect of independent board members' ownership on the relationship between their independence and firm performance

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## ABSTRACT

Despite the extensive research on the relationship between board independence and firm performance, which reveals an inconclusive result, there is a lack of evidence on the potential factors affecting this relationship. This study is an attempt to fill this gap by investigating whether equity ownership by independent board members affects the association between board independence and Saudi bank performance. To substantiate its hypotheses and sidestep endogeneity concerns, this study employs a panel dataset of Saudi listed banks from 2009 to 2018, using diverse statistical techniques, including feasible generalized least squares (FGLS), ordinary least square (OLS), random-effects, panel-corrected standard errors (PCSE), fixed-effects, two-stage least squares (2SLS), two-step system generalized method of moments (GMM), and hierarchical analysis. The empirical results show that while independent board members have a negative impact on bank performance, their ownership has a positive influence. More interestingly, the results demonstrate that the negative relationship between bank financial and market performance and independent board members is positively and significantly moderated by their ownership. These findings challenge the notion that good governance practices like having more independent members on the board would lead to better firm performance and indicate that their effectiveness is contingent on their ownership level. Insights derived from agency theory and the convergence of interests hypothesis contribute valuable perspectives to this investigation and suggest that board independence would be efficient when the convergence of interests between independent board members and other shareholders is engaged.

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## 1. Introduction

Effective corporate governance (CG) practices reduce agency conflicts and maximize shareholder wealth. Recent scholarly investigations have been directed toward dissecting the intricate interconnections between CG mechanisms and firm performance (FP). The crux of this debate revolves around the crucial function of the board of directors as the principal regulator tasked with overseeing and directing management for the benefit of shareholders (Jensen & Meckling, 1976). Among board attributes, board independence (BI) assumes a central position in shaping board composition and is considered a crucial yardstick for assessing its efficacy. Undoubtedly, the significance of independent directors in determining board effectiveness cannot be overlooked (Chen & Al-Najjar, 2012).

CG-related theories offer different viewpoints on how BI influences a company's success. Agency, resource dependency, and legitimacy theories are significant in this respect. They assert that the role of

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independent members is to oversee management, serve as links between the organization and its stakeholders, facilitate access to resources, and ultimately legitimize the organization (Fama & Jensen, 1983; Hamdan, 2018; Hillman & Dalziel, 2003; Jensen & Meckling, 1976). However, institutional and stewardship frameworks also provide an alternative perspective that warns against an entirely positive relationship (Davis et al., 1997; Gaur et al., 2015; Waheed & Malik, 2019). These theories, on the other hand, highlight some limitations where independent directors, being non-executives, may not be well versed with organizational strategies, strengths, or weaknesses, rendering them less capable of providing strategic advice or making appropriate managerial judgments.

Exploring the intricate interplay between BI and FP has yielded inconclusive results. For example, Al-Gamrh et al. (2020), Erena et al. (2022), and Shittu & Che-Ahmad (2023) demonstrated positive correlations. Conversely, Amin & Nor (2019), Anas et al. (2023), Shan (2019), Waheed & Malik (2019), and others have reported negative correlations. However, Assenga et al. (2018), Peizhi & Ramzan (2020), and Roudaki (2018), among others, found that BI has no significant explanatory power on FP. These empirical studies highlight the complexity of understanding how BI affects FP.

Understanding how BI and FP are related in Saudi Arabia and in the larger Arabic region is an intricate web of inconclusive evidence. Al Nasser (2020) and Hamdan et al. (2019) believe in a constructive effect, which suggests that performance is higher in firms with more independent boards. However, Ghabayen (2012) and Habtoor (2022) seem to hold contrary views that there is an inverse effect, indicating that more outsiders on the board leads to lower FP. However, Buallay et al. (2017) failed to establish solid evidence on the link between BI and FP.

Because of the absence of consistent results, some studies have established arguments supported by different theoretical frameworks to empirically examine the factors that could moderate the role of board composition on FP (e.g. Fayyaz et al., 2023; Habtoor, 2020; Nimer et al., 2023; Tran, 2021; Uribe-Bohorquez et al., 2018; Waheed & Malik, 2019; Xu et al., 2023). Theoretical perspectives and empirical evidence indicate one significant fact: ownership structure substantially affects both board composition and FP (Habtoor, 2020; Waheed & Malik, 2019, among others). The separation of ownership from control creates a conflict of interests between owners and managers, leading to the potential expropriation of owners' rights by managers (Gaur et al., 2015; Shleifer & Vishny, 1997). Agency theory is a significant concept in CG research, suggesting that directors and managers may act opportunistically unless they have the proper incentives in place to align their interests with those of shareholders (Jensen & Meckling, 1976; Wang et al., 2019). Grounded in the convergence of interests hypothesis, managerial ownership serves as a powerful incentive mechanism for directors and managers to act in the best interests of shareholders, as their own wealth is tied to the FP (Brickley & Zimmerman, 2010; Jensen & Meckling, 1976).

On the other hand, the entrenchment hypothesis suggests that an excessive increase in ownership will encourage controlling shareholders and managers to entrench themselves in their positions and act in their own best interests at the expense of other shareholders' rights, especially the minority shareholders' rights (Ameziane Lasfer, 2006; Kwansa et al., 2014). This hypothesis posits that an increase in ownership, notably managerial ownership can lead to negative consequences on other CG mechanisms (Allam, 2018; Ameziane Lasfer, 2006). Entrenched managers and controlling shareholders may have the ability to control the composition of the board and hire board members who are less likely to effectively monitor the manager's actions (Allam, 2018).

The convergence of interests versus the entrenchment hypotheses indicates that director ownership can be a double-edged sword, with the potential to either align interests and enhance control and performance or create conflicts and impair shareholders wealth (Craswell et al., 1997; Johari et al., 2008; McConnell & Servaes, 1990; Morck et al., 1988; Shan, 2019).

Corporate ownership in Saudi Arabia is highly concentrated (Boshnak, 2021; Habtoor, 2022) and is characterized by a mix of family and controlling shareholders, including outside owners (i.e. family, governmental, institutional, royal), and inside owners (i.e. executive, non-executive directors) with varying levels of influence and control over companies (Al-Gamrh et al., 2020; Al-Ghamdi & Rhodes, 2015; Bajaher et al., 2022; Boshnak, 2021; Habtoor, 2020).

In an environment characterized by ownership concentration and controlling shareholders' dominance, such as in Saudi Arabia, some conventional governance mechanisms employed, such as BI, may not work effectively since controlling shareholder control board composition and hinder independent directors

from carrying out their oversight and supervisory duties (Anderson & Reeb, 2004; Barako et al., 2006; Boshnak, 2021).

Accordingly, this study argues that agency conflicts, notably Type II between majority and minority shareholders, may be exacerbated by controlling entities—families or institutions—owning a significant portion of bank shares and placing their representatives in critical positions to entrench themselves and serve their private benefits on the expense of minority shareholders. Therefore, they may hesitate to grant independent directors the power to monitor and act in the best interests of all shareholders (Shan, 2019). In such a situation, the effectiveness of BI in overseeing executives and restraining the greedy impulses of controlling shareholders may be compromised. However, Shan (2019), among others, found that when the convergence of interests effect predominated at a low level of director ownership (0%–20%), BI would be effective and favorably connected to FP.

Considering the dominance of controlling shareholders and their representatives on Saudi corporate boards, it can be said that the weak role of independent board members can be mitigated or moderated through independent directors having a certain amount of company shares at a low level, so that they act as powerful small owners whose interests are aligned with those of the other shareholders. They are no longer just outsiders, but also owners who may be more inclined to take a long-term view of the FP and to push for strategies that will benefit all shareholders in the long run.

According to the alignment of interests derived from agency theory perspective, the level of ownership by independent directors would enhance their power over controlling shareholders and managers, which may not only regains their violated independence as outsiders, but also increases their influence as owners to monitor management and restrict their opportunistic behavior resulting from the entrenchment effect towards minority shareholders (Bhagat & Bolton, 2013; Jalila & Devi, 2012; Shan, 2019).

It is crucial to conduct more empirical research on the role of ownership structure on CG mechanisms and FP in Saudi Arabia. This study explores how independent directors' equity holdings affect their autonomy, and thus, FP, and whether this type of ownership can be used as an effective governance mechanism to encourage independent directors to perform their duties effectively. This research aims to generate new insights into CG dynamics in firms with high family control and concentrated ownership (Al-Gamrh et al., 2020). This investigation will contribute to our knowledge of CG practices under unique conditions, in which such studies are limited. This work responds to the recommendations of Almoneef & Samontaray (2019), Dalwai et al. (2015) Habtoor (2020, 2022), and Leung et al. (2014), among others, to further investigate the variables that can influence the linear link between BI and FP in Saudi Arabia and other Gulf Cooperation Council (GCC) nations.

This study makes significant contributions to literature through several distinctive avenues. As shown in studies by Al-Farooque et al. (2020), Al-Gamrh et al. (2020), Buallay et al. (2017), and Shittu & Che-Ahmad (2023), among others, much research has been conducted on the direct effect of ownership structure on FP. However, limited efforts have been made to investigate the indirect role of different types of board ownership in shaping the link between the composition of the board and FP. This study is notable because it represents the first of its kind to investigate how ownership by independent board members affects the balance between their autonomy and Saudi bank performance.

In addition, the majority of relevant empirical research has been carried out in industrialized countries, which makes it difficult to generalize the results to developing economies with different institutional, cultural, and governance regimes (Arora & Sharma, 2016; Haniffa & Hudaib, 2006; Ntim et al., 2013b). Consequently, a significant contribution is made to the literature by investigating these critical issues within a developing economy such as Saudi Arabia, which has distinct legal, cultural, and institutional characteristics.

Furthermore, the study's findings have significant implications for regulators and market participants in nations with concentrated ownership, such as Saudi Arabia. It is crucial to understand independent board members' ownership (BIO) as a significant form of governance. This makes them more independent and enhances the board quality and effectiveness in shielding the board from interference by controlling shareholders. Such insights are critical for achieving better FP within these unique corporate environments, revealing the practical relevance of the study results.

The research proceeds as follows: The second section covers a literature review related to hypothesis development. The methodology is discussed in the third section. The fourth section dissects the main

findings of this study, in addition to the robustness results. Section five concludes the paper. Finally, section six summarizes the study contributions and implications.

## 2. Literature review and hypothesis development

### 2.1. BI and FP

Optimal corporate policies and strategies hinge on the imprimatur of the board of directors, making the effectiveness of these boards paramount for mitigating agency costs and increasing FP. Under agency theory, boards characterized by a preponderance of independent and external directors are more adept at monitoring managerial behavior, scrutinizing executive decisions, and steering the firm toward enhanced performance (Conheady et al., 2015; Jensen & Meckling, 1976; Pucheta-Martínez & Gallego-Álvarez, 2020). Resource dependence and legitimacy theories underscore the pivotal role of independent board members as strategic assets. They enhance FP by establishing connections with the external milieu, securing essential resources, mitigating environmental reliance, and contributing to the establishment and reinforcement of legitimacy (Hamdan, 2018; Hillman & Dalziel, 2003). Conversely, stewardship theory posits a divergent perspective on the influence of BI on FP (Gaur et al., 2015; Waheed & Malik, 2019). From this standpoint, independent and non-executive directors demonstrate diminished effectiveness in augmenting FP when juxtaposed with their internal and executive counterparts. Issues including information asymmetry, a lack of awareness regarding corporate strengths and weaknesses, a deficit in firm-specific experience, and delays in decision execution contribute to their perceived ineffectiveness. Furthermore, institutional theory introduces the notion that organizations may hire outside members on their boards primarily to conform to institutional pressures, encompassing regulative, normative, and cognitive imperatives. Thus, having more external directors sometimes leads to better FP (Peng, 2004; Waheed & Malik, 2019).

A detailed review of prior empirical studies investigating the link between BI and FP in developed and emerging nations shows that results often need to be more conclusive and consistent. Im & Chung (2017) delve into insider ownership versus BI in the US restaurant sector. The findings reflect a complex situation where the positive influence of BI on return on assets (ROA) is accompanied by a negative effect on Tobin's *q* (TQ). In contrast, Pan et al. (2018) demonstrated that BI does not have any significant influence on FP in the US IT industry. Koji et al. (2020) investigated the role of BI in the performance of Japanese family to-non-family firms. The outcomes demonstrate that independent boards have detrimental effects on ROA. However, they did not influence the TQ. Roudaki's (2018) study on large agricultural corporations in New Zealand revealed no notable effect of BI on FP. In Shan's (2019) Australian exploration, BI had an inverse impact on FP. Merendino & Melville (2019) scrutiny of the board's role in Italian-listed companies indicates that independent directors have a nonlinear impact on FP. Pucheta-Martínez & Gallego-Álvarez (2020), spanning 34 countries, ascertained the adverse influence of BI on FP. An optimistic perspective was articulated by Xu et al. (2023), emphasizing the advantageous impact of BI on the financial performance of the world's foremost publicly listed family enterprises. Hence, the nexus between BI and FP proves to be intricate and context-dependent across diverse global settings.

Further empirical research has been conducted in both emerging and developing countries. Assenga et al. (2018) investigated whether introducing outside directors to companies listed in Tanzania can increase performance. However, they find no apparent influence of external directors on corporate success. Similarly, Vu et al. (2018) study the link between financial performance and board structure in Vietnam's listed companies. They found that BI had no impact on FP. On the contrary, Farhan et al. (2020) investigated the Indian pharmaceutical sector to show that independent directors positively influence TQ but negatively affect ROA. Majeed et al. (2020) investigated the banking sectors in Pakistan and China. They find that non-executive directors in the Pakistani banking industry are strongly and adversely correlated with ROA but not significantly correlated with return on equity (ROE). Nonetheless, in the Chinese banking industry, non-executive directors hardly make a difference in the ROE and ROA.

Research has produced inconsistent results regarding whether BI is linked to FP in the dynamic CG environment of GCC countries and the Arab region. In his study of Egyptian listed companies, El-Habashy



(2019) found that non-executive directors did not influence FP. In contrast, Al-Gamrh et al. (2020) analyze the complex linkages between foreign ownership, BI, and FP in the United Arab Emirates. They discovered that, while BI has a detrimental influence on social performance, financial performance is positively impacted. In contrast to Al-Saidi (2021) research, which found that BI and TQ in Kuwait have a positive relationship, Alajmi & Worthington (2023) documented a negative correlation.

The nexus between BI and business success in the Saudi context has recently been the focus of academic investigation; nevertheless, empirical analysis shows intricate discrepancies. For example, Al-Faryan (2021), Boshnak (2021), and Ghabayen (2012) found that, BI has a detrimental impact on Saudi FP. Nevertheless, Habbash & Bajaher (2015) investigation of board structure demonstrates that the presence of an independent board favorably influences FP. Hamdan et al. (2019) found that BI has a beneficial effect on FP in their study of IT governance and board attributes' roles in the performance of Saudi listed firms. However, Buallay et al. (2017) contended that outside directors had no impact on FP. Moreover, Habtoor (2022) conducted a study with the primary aim of examining the impact of board attributes on the performance of Saudi listed banks. The results indicate that BI has a significant adverse impact on ROA and ROE, and positive effect on TQ. A recent study has been done by Boshnak et al. (2023) to investigate the influence of CG mechanisms on Saudi FP before and during COVID-19. The results indicate that while BI affects ROA negatively and significantly, it has an insignificant negative impact on ROE and TQ.

These outcomes almost indicate an adverse or weak role of the BI on FP, which can be partly attributed to the structure of ownership in Saudi Arabia and the dominance of controlling shareholders on Saudi corporate boards who have a significant influence on board composition with a tendency to assign board members with less independence, such as their friends, relatives, or loyalists, to better serve their interests at the expense of the rights of minority shareholders (Alamri, 2014; Albassam, 2014; Boshnak, 2021). Accordingly, it can be hypothesized that.

**Hypothesis 1.** In a concentrated ownership environment, BI is negatively associated with bank performance.

## 2.2. BIO and FP

Agency theory suggests that managers and directors may act opportunistically if they are not properly incentivized (A. A. N. Abdallah & Ismail, 2017; Kumar & Zattoni, 2016; Wang et al., 2019). In line with the convergence of interests, Jensen & Meckling (1976) suggest managerial ownership as an important governance mechanism that acts as an incentive for directors to take actions and make decisions that maximize the value of the firm and benefit all stakeholders. When managers own equity in the company, their incentives are more closely aligned with those of other shareholders.

On the other hand, the entrenchment hypothesis indicates that a higher level of managerial ownership would negatively affect FP as managers become more entrenched to the extent that changing them or even controlling their acts is more difficult and costly (Morck et al., 1988). Accordingly, they are more likely to act opportunistically to serve themselves at the expense of other shareholders, notably, the minority shareholders.

Empirical evidence on the impact of managerial ownership on FP revealed mixed results. Some studies found a positive impact of managerial ownership on FP (e.g. Al-Farooque et al., 2020; Boshnak, 2023). Other studies such as Shan (2019) demonstrated a negative role on FP, while Al-Faryan (2017) and Tleubayev et al. (2020) documented an insignificant effect between the two variables.

Further investigation revealed that this relationship is non-monotonic, reflecting the competitive perspectives of both the convergence of interests and the entrenchment hypotheses depending on the level of ownership (Chau & Gray, 2010; Johari et al., 2008; Morck et al., 1988; Shan, 2019; Shan et al., 2021). For instance, Morck et al. (1988) provided valuable insights into the complex relationship between managerial ownership and firm value. The results indicated that the impact of managerial ownership on firm value is not linear, but rather varies across different ownership levels. Managerial ownership within the range of 0-5% and above 25% can enhance firm value due to the alignment of interests between managers and shareholders. However, managers are more likely to entrench themselves with ownership levels ranging between 5% and 25%.

Furthermore, Shan (2019) found that the alignment of interests occurs when board directors own equity between 0% to 20% and above 50%, resulting in improved FP. Conversely, an entrenchment effect is observed when they have ownership between 20% to 50%, leading to a decrease in FP.

In Saudi Arabia, ownership is highly concentrated and family-controlled with a variety of controlling shareholders who have different incentives and thus effects on wealth maximization and FP (Arayssi & Jizi, 2019). Therefore, the Saudi CG regulations (SCGRs) (CMA, 2006) and the principles of CG for banks operating in Saudi Arabia (PCGB) (SAMA, 2014) recognized the significant role of ownership structure on board effectiveness and FP. For example, Article 20 of the SCGRs and the definition of independent member of the PCGB stipulate that the firm shares owned by an independent board member shall not exceed 5%.

This governance rule may reflect the importance of the tradeoff between the benefits and costs of different ownership levels in the Saudi context. This level of BIO would preserve BI from the influence of management and controlling shareholders to act more effectively, as they have become owners who care about the company's success and performance. On the other hand, this low level of ownership is unlikely to enable independent directors to entrench themselves to the extent that they might usurp other shareholders' rights.

Accordingly, inline of the convergence of interests hypothesis, which dominates at a low level of ownership leading to better FP (Morck et al., 1988; Shan, 2019), this study expects a positive impact of BIO on bank performance as a result of the alignment of their interests with those of other shareholders, notably minority owners. Thus, it can be hypothesized that.

**Hypothesis 2.** In a concentrated ownership environment, there is a positive relationship between BIO and bank performance.

### **2.3. The moderation effect of BIO on their independence toward FP**

Multi-theoretical approaches and multi-meta-analyses conclude that it is still challenging to determine the effect of an independent board on the company's functioning (e.g. Finegold et al., 2007; Pan et al., 2018). This delicate mosaic may exemplify the subtle interaction between corporate success and BI within the complex Arabian governance framework.

As Pearce & Zahra (1992) highlight, the intricate interplay between board composition and business performance depends on several contextual variables, organizational factors, and environmental conditions. More specifically, the inconsistent and inconclusive findings regarding the influence of BI on FP can be attributed to the use of different samples in different jurisdictions and methodological frameworks. Additionally, the different perspectives of agency and stewardship theories on BI, varying assumptions on the alignment of interests versus entrenchment about ownership, and the potential presence of endogeneity issues among CG variables contribute to the mixed results. Such intricacies necessitate a thorough exploration of the nuanced processes influencing the board composition–the FP link.

In light of these debates, scholars have broadened their focus to investigate additional variables that might impact the link between BI and business success. Zattoni et al. (2017) examined how the national business system (NBS) moderates the link between non-executive directors and a firm's financial performance. Their research, encompassing domestic initial public offerings (IPOs) from various global locales, posits that NBS significantly tempers the connection between firms' financial performance and BI. This proposition is supported by empirical evidence, indicating a complex interplay between BI and the financial performance of IPOs, with NBS markedly moderating the positive direct effect of BI.

Pan et al. (2018) investigated how the presence of new competitors affects the association between BI and FP in the IT sector in the United States. They contend that the ever-changing environment in which a company works has a crucial role in influencing the direct link between BI and business success. They suggested that the existence of substantial new entry challenges is an important contextual element that influences this connection. The empirical findings suggest that when faced with significant challenges from new competitors, companies with more autonomous directors achieve better performance than those with boards with less independence.



In an international sample of businesses, Uribe-Bohorquez et al. (2018) examined whether institutional determinants represented by the legal system affect the link between BI and FP. The empirical findings confirm the premise that the legal framework positively moderates the association between BI and FP. Waheed & Malik (2019) examined how the concentration of ownership moderates the correlation between board features and FP. The findings suggest that a high level of share ownership has a favorable and substantial impact on the relationship between board characteristics and FP.

The moderating role of board policies on the correlation between BI and FP in the hotel and tourist industries has been the subject of recent research by Nimer et al. (2023). However, moderation analysis indicates that board policies do not affect the influence of BI on performance. Furthermore, the research conducted by Xu et al. (2023) examined how legal jurisdiction influences the direct connection between CG and the financial performance of the largest publicly listed family controlled enterprises globally. Empirical findings suggest that the influence of BI on FP is higher in common law countries than in civil law settings.

In addition to the above mentioned attempts to investigate the potential factors that moderate the association between board structure and FP, theoretical perspectives and empirical evidence suggest that ownership structure is a significant factor affecting both board composition and FP (e.g. Gaur et al., 2015; Habtoor, 2020; Morck et al., 1988; Shan, 2019; Waheed & Malik, 2019; Wangwan & Leemakdej, 2023).

For example, Hu et al. (2010), Shan & McIver (2011), and Wang et al. (2019) found that FP is negatively affected by ownership concentration. Using meta-analysis techniques of 419 correlations collected from 42 studies in 18 emerging markets, Wang & Shailer (2015) investigated the influence of ownership concentration on FP. The results indicated that FP is negatively affected by ownership concentration across countries.

Moreover, Bansal & Thenmozhi (2020) investigated how controlling shareholders affect board structure and BI. They found that controlling shareholders have a significant impact on board structure and display a non-monotonic connection. As their ownership rises, the relationship shifts from entrenchment to alignment, then back to entrenchment. The non-monotonic pattern observed emphasizes the need for companies to carefully manage the influence of controlling shareholders to promote effective CG and long-term sustainability.

Shan (2019) indicated that the influence of corporate ownership on both BI and FP depends on the ownership level. The empirical results indicated that a higher level of managerial ownership is related to lower FP. The results also revealed that a higher level of managerial ownership affects BI negatively. This suggests that managers with a larger ownership stake may have more influence over the composition and decision-making of the board, potentially compromising its independence.

In the Saudi context, the negative impact of ownership concentration on FP was documented (e.g. Buallay et al., 2017; Habtoor, 2020, 2022). For instance, Habtoor (2020) examined how concentrated ownership affects the link between board composition and FP. The results show that the concentration of share ownership has an adverse and substantial moderating influence on this link. This finding indicates that controlling shareholders and their representatives on the board and management wield significant influence over the board composition and independence, leading to decreased bank performance.

The Kingdom of Saudi Arabia's ownership structure, characterized by high concentration, creates a conducive environment for the implementation of the convergence of interests and the entrenchment hypotheses, which play a significant role in determining how well a corporation performs. For instance, a significant managerial ownership position may lessens conflicts between controlling shareholders and managers as a result of the convergence of interests (e.g. Morck et al., 1988; Shan, 2019). Nevertheless, this gives rise to a paradox, since it heightens the awareness of potential agency problems among both majority and minority shareholders. Within the CG domain, the act of giving more importance to the preservation of financial interests by influential stakeholders sometimes takes precedence over defending the rights of individual and minority shareholders. However, this tendency to prioritize wealth preservation might diminish the value of the organization. In contrast, the entrenchment hypothesis warns against the dominance of entrenchment patterns exercised by controlling shareholders (e.g. Allam, 2018; Wangwan & Leemakdej, 2023). This means that dominant owners may unfairly divert resources from other shareholders as they bear only a fraction of the costs, but they gain full benefits, which may harm company performance (e.g. Allam, 2018; Gugler & Yurtoglu, 2003).

In the case of concentrated ownership, closely owned firms, especially by families, may experience low principal-agent conflict as a result of the effect of the convergence of interests between controlling shareholders and managers who are mostly representatives or loyal to the controlling owners. While this can lead to effective management and strategic direction, it can also create a different type of agency conflict known as principal-principal conflict between majority or controlling shareholders and minority shareholders (Shakri et al., 2022). This type of agency problem is a concern in institutional environments which lack minority shareholder protection and enforcement mechanisms (Shakri et al., 2022; Wang & Shailer, 2015), such as in the Saudi context (Boshnak, 2023; Buallay et al., 2017).

This can lead to a range of agency issues, including expropriation of wealth from minority shareholders, entrenchment of controlling shareholders, adopting weak governance forms, and lack of transparency and disclosure (e.g. Anderson & Reeb, 2004; Andres, 2008; Friedman et al., 2003; Morck & Yeung, 2003; Wangwan & Leemakdej, 2023).

To address these agency issues, regulatory authorities and companies can enforce and implement a range of governance mechanisms and practices to protect the interests of all shareholders notably minority shareholders (Shakri et al., 2022; Waheed & Malik, 2019). This may include having independent board members who can oversee the actions of controlling shareholders and managers and ensure that decisions are made in the best interests of all shareholders (Jensen & Meckling, 1976). They should play a crucial role in safeguarding the interests of minority shareholders.

Within the intricate tapestry of Saudi corporate ownership, a network emerges, comprising various controlling stakeholders, ranging from familial and royal entities to government, institutional, foreign, and domestic owners. This diverse array of ownership structures exerts a profound influence on board composition, notably with respect to the BI dimension (Wang & Shailer, 2015). Consequently, this influence can manifest both directly and indirectly, exerting tangible effects on companies' performance. Thus, BI in Saudi firms could be weakened or nearly nonexistent because of the dominance of significant shareholders and their representatives on corporate boards. This manifests in how they manipulate the formation of corporate boards to be less independent to serve their own interests (Setia-Atmaja et al., 2009).

The complexity of corporate ownership dynamics in Saudi Arabia is primarily influenced by the convergence of interests and entrenchment hypotheses, which provide a detailed perspective on how board members' ownership affects FP. The dual nature of this phenomenon is often compared to a double-edged sword, as noted in previous literature that recognizes the power of both hypotheses in interpreting the nonlinear association between ownership and FP. Such nonlinear trends have been observed empirically by Chau & Leung (2006), Morck et al. (1988), Park & Jang (2010), and Shan (2019), among others, who found that interest convergence effects are more dominant at low ownership levels, which leads to better FP, while entrenchment effects are more likely to be shown beyond this level, resulting in worse FP.

In this regard, Article 20 of the SCGRs and the definition of board member by the PCGB (CMA, 2006; SAMA, 2014) stipulate among other things, that the ownership of an independent board member shall not exceed 5% of the company shares. This governance rule may reflect the goal of regulatory authorities to keep this type of ownership low as an incentive for independent board members to perform their monitoring duties effectively and act in the best interests of all shareholders due to the prevalent effect of the convergence of interests between independent board members and all shareholders, which leads to better FP (Morck et al., 1988; Shan, 2019).

Accordingly, the current study suggests that agency conflicts, especially Type II, may be exacerbated by controlling entities—families or institutions—owning a significant portion of bank shares and placing their representatives in critical positions to entrench themselves and serve their private benefits on the expense of minority shareholders. Therefore, they may hesitate to grant independent directors the power to monitor and act in the best interests of all shareholders (Shan, 2019). In such a situation, the effectiveness of BI in overseeing executives and restraining the greedy impulses of controlling shareholders may be compromised. However, (Shan, 2019) found that when the convergence of interests effect predominated at a low level of 0%–20% of director ownership, BI would be effective and favorably connected to FP.

In line with the convergence of interests hypothesis and in light of Article 20 of the SCGRs and the definition of board member by the PCGB, when independent board members own a certain amount of

bank shares, their interests with other shareholders would be aligned, which encourage them to become more vigilant and proactive in monitoring and steering executive management actions toward better FP. Therefore, this strategic ownership is envisioned as a pivotal governance instrument that fortifies oversight capabilities, exerts control over management, and preempts dominant stockholders' appropriation of minority rights, whether through direct actions or intricately connected party transactions that funnel profits to affiliated entities. Hence, this study is poised to probe whether BIO of bank shares exerts an influence on the direct link between their independence and bank performance.

Based on the literature and theoretical perspective and considering the Saudi context, BIO can be treated as a moderator factor for the relationship between their independence and bank performance, which sets the stage for the main hypothesis of the study.

**Hypothesis 3.** In a concentrated ownership environment, the BIO moderates the adverse and weak influence of their independence on bank performance.

### 3. Data and methodology

#### 3.1. Sample and data source

The study sample encompasses all listed banks on the Saudi Stock Market Exchange (Tadawul) from 2009 to 2018, yielding 113 bank-year observations across the 12 listed banks after excluding 7 observations with incomplete data related to independent variables, notably BIO. The reasons for choosing such a sample and data are outlined as follows.

First, The stability of this 10-year period played a role in choosing 2009 as the start year of the study and 2018 as the end of the study period. Before 2009 (due to the impact of the 2007/2008 global financial crisis), and after 2018 (because of the effect COVID-19 pandemic on the global economy), the performance of Saudi firms has fluctuated significantly (e.g. Arab et al., 2024; Boshnak, 2021; Boshnak et al., 2023; Makni, 2023). This instability has the potential to significantly impact the main objective of the study, which is to examine the moderating effect of BIO on the relationship between BI and bank performance. This could lead to biased outcomes caused by factors beyond the study's scope and control.

Many studies documented the significant impact of COVID-19 on both CG mechanisms and FP with substantial differences between governance variables effects on FP before, during, and after COVID-19 pandemic (e.g. Alharthi, 2022; Arab et al., 2024; Atayah et al., 2022; Boshnak et al., 2021, 2023; Hu & Zhang, 2021; Jin et al., 2021; Makni, 2023; Tarighi et al., 2023). For example, Atayah et al. (2022) examined the effect of COVID-19 period on the financial performance of logistic firms in the G-20 countries. The results indicated that firms in 14 countries performed well, while FP in the other 6 countries, including Saudi Arabia were affected significantly and negatively during COVID-19 pandemic. Moreover, Alharthi (2022) found a significant negative influence of the COVID-19 pandemic period of 2019–2020 on the financial performance of Kuwaiti listed banks. Boshnak et al. (2021) reported a significant drop in the performance of Saudi listed firms during the COVID-19 pandemic. Moreover, Boshnak et al. (2023) found a substantial variation in the effects of CG mechanisms on Saudi FP before and during the outbreak of COVID-19. A significant outcome was provided by Tarighi et al. (2023) who found that the COVID-19 pandemic moderates negatively the relationship between BI and FP. Recently, Arab et al. (2024) found that the outbreak of the COVID-19 pandemic during 2020–2022 had a significant negative impact on Saudi listed firms.

Therefore, this study excluded the period of COVID-19 pandemic from analysis to avoid potential unreliable and biased outcomes.

Second, the lack of accurate data on some variables, especially the ownership of independent board members, hinders adding years before 2009 to the sample, as such data was not accurately disclosed in the annual reports of most of Saudi listed banks.

Third, this research is a project funded by a government agency and the sample and data have been specified and approved. However, changing the sample size may take time to be approved and may not even be approved for the same reason mentioned previously, as adding any periods before 2009 or after 2018 may lead to biased results.

To ensure congruence in characteristics, regulations, and governance practices among the sample, non-financial listed firms, non-listed banks, and other financial institutions are not included in the sample.

The banking sector is under scrutiny of this study because of the key role that banks play in the Saudi economy, particularly in providing credit and ensuring liquidity (Abraham, 2013). Moreover, the Saudi banking sector is almost domestically owned (Mousa et al., 2023) with different types of ownership, including board ownership, which are expected to have a significant impact on governance and bank performance.

Since the sample is relatively small, this study performs an extensive analysis using various statistical techniques, including OLS, FGLS, PCSE, random-effects, fixed-effects, 2SLS, GMM, and hierarchical analysis to substantiate the study hypotheses, ensure robustness of results, and control for potential endogeneity issues.

Despite the observations are enough for estimation purposes and extensive robust analysis has been done, inferences from results should be made with caution.

Data on the variables under scrutiny is sourced from the Tadawul website and banks' annual reports, ensuring the robustness of the study's empirical foundation.

### 3.2. Variable definitions

The variables included in the study regression models are defined in Table 1.

In this investigation, bank performance serves as the dependent variable, evaluated through three metrics, ROA, ROE, and TO, encapsulating both financial and market-based performance. To scrutinize the study hypotheses, board independence and the ratio of bank shares held by independent directors are the independent variables, while the interactive term between independent directors and their ownership of bank shares acts as the moderating effect of independent directors' ownership on the correlation between their independence and bank performance.

To mitigate potential bias stemming from omitted variables (Gujarati, 2003; Ntim et al., 2013a; Wooldridge, 2010; Zha & He, 2017) and minimize alternative interpretations of the main outcomes (Singh et al., 1986), various control variables are incorporated. These include board characteristics, such as size, education; ownership structure factors, including government and family ownership; and firm-specific attributes, such as bank size. The study refrains from establishing arguments and formulating hypotheses regarding the link between the control variables and bank performance. This decision is based on extensive theoretical and empirical evidence of the influence of such factors on FP (e.g. Al-Jaifi et al., 2023; Al-Saidi, 2021; Altuwaijri & Kalyanaraman, 2020; Amadi et al., 2023; Boadi & Osarfo, 2019; Fayyaz et al.,

**Table 1.** Variable definitions.

Variable name	Acronym	Measurement	References
<i>Dependent variable (FP)</i>			
Return on assets	ROA	Net income/Book value of total assets	(Ali et al., 2024; Al-Jalahma, 2022; Boshnak et al., 2023)
Return on equity	ROE	Net income/Book value of total equity	(Ali et al., 2024; Al-Jalahma, 2022; Boshnak et al., 2023)
Tobin's q	TQ	(Market value of total equity + Book value of debt)/Book value of total assets	(Al-Jalahma, 2022; Andoh et al., 2022; Boshnak et al., 2023)
<i>Independent variables (IVs)</i>			
Board independence	BI	Total number of independent nonexecutive members/Total board members	(Benaguid et al., 2023; Saha & Maji, 2022; Tarighi et al., 2023)
Independent board members' ownership	BIO	Total shares held by independent nonexecutive directors on the board/Total outstanding shares	(Im & Chung, 2017; Tleubayev et al., 2020)
<i>Control variables (CVs)</i>			
Board size	BS	Total board members	(Benaguid et al., 2023; Saha & Maji, 2022; Tarighi et al., 2023)
Board education	BE	Total board members having at least a university degree	(Boadi & Osarfo, 2019; Habtoor, 2022; Khidmat et al., 2020)
Governmental ownership	GO	Total shares held by government/Total outstanding shares	(Bajaher et al., 2022; Koji et al., 2020; Mousa et al., 2023)
Family ownership	FO	Total family members on the board	(Al Nasser, 2020; Alanezi & Albuloushi, 2011; Comino-Jurado et al., 2021)
Bank size	FS	Book value of total assets	(Benaguid et al., 2023; Saha & Maji, 2022; Tarighi et al., 2023)

2023; Habtoor, 2020, 2022; Hu et al., 2023; Issa et al., 2021; Kao et al., 2019; Karim et al., 2020; Koji et al., 2020; Latif et al., 2020; Leyva-Townsend et al., 2021; Nimer et al., 2023; Saha & Maji, 2022; Shahrier et al., 2020; Tran, 2021).

### 3.3. Data analysis

Before selecting the appropriate analysis method, a comprehensive examination of the underlying assumptions of the multivariate analysis was conducted. This scrutiny encompasses normality, linearity, multicollinearity, heteroscedasticity, and autocorrelation. Normality, assessed using Shapiro-Wilk and Jarque-Bera tests, yielded significant results, indicating a non-normal data distribution. Van der Waerden's transformation approach was applied to convert the observed data into their corresponding standard distributions. This process is effective in mitigating the impact of outliers and addressing nonlinearity (Cooke, 1998). Post-transformation, normality was re-evaluated, with insignificant Shapiro-Wilk and Jarque-Bera results for Models 2 (ROE) and 3 (TQ) (refer to Table 2), signifying a normal distribution. However, Model 1 (ROA) remained non-normally distributed, based on the results of the normality test. Notably, skewness and kurtosis values gauged against accepted thresholds (Table 3) affirmed the normal distribution of the data (Hoyle, 1995; Kline, 2011).

Examination of the scatter plots revealed no discernible deviation from the linearity. Furthermore, outcomes from Ramsey's RESET test affirmed the precise model specification because the null hypothesis was not rejected at the 5% significance level (refer to Table 2). Concerning multicollinearity, the findings of the variance inflation factor (VIF) and correlation matrix shown in Table 4 suggest that the main

**Table 2.** Regression analysis using FGLS technique.

Variables	Model (1) ROA	Model (2) ROA	Model (3) ROE	Model (4) ROE	Model (5) TQ	Model (6) TQ
<i>Independent variables</i>						
BI	−0.0890 (0.0706)	−0.0962 (0.0710)	−0.304*** (0.0782)	−0.347*** (0.0725)	−0.0173 (0.0887)	−0.0207 (0.0851)
BIO	0.144** (0.0712)	0.134* (0.0722)	0.239*** (0.0788)	0.179** (0.0736)	−0.0768 (0.0894)	−0.130 (0.0864)
<i>Interactive term</i>						
BIO*BI		0.0533 (0.0677)		0.315*** (0.0691)		0.279*** (0.0811)
<i>Control variables</i>						
<i>Board characteristics</i>						
BS	0.556*** (0.131)	0.559*** (0.131)	0.626*** (0.145)	0.644*** (0.133)	0.634*** (0.164)	0.650*** (0.156)
BE	−0.269*** (0.0936)	−0.270*** (0.0933)	−0.324*** (0.104)	−0.327*** (0.0952)	−0.318*** (0.117)	−0.321*** (0.112)
<i>Ownership structure</i>						
GO	0.124 (0.117)	0.0920 (0.123)	0.112 (0.129)	−0.0781 (0.126)	−0.00245 (0.146)	−0.172 (0.148)
FO	−0.0871 (0.126)	−0.0783 (0.126)	−0.0754 (0.139)	−0.0235 (0.129)	0.147 (0.158)	0.193 (0.151)
<i>Firm characteristics</i>						
FS	0.473*** (0.110)	0.482*** (0.110)	0.208* (0.122)	0.260** (0.112)	0.0413 (0.138)	0.0873 (0.132)
Constant	0.00495 (0.0599)	−0.0106 (0.0630)	0.00498 (0.0663)	−0.0870 (0.0642)	−0.00822 (0.0752)	−0.0899 (0.0754)
Model F	6.25***	5.03***	7.33***	3.67***	70.87***	36.88***
Chi <sup>2</sup>	150.94***	152.39***	102.40***	141.95***	54.50***	72.09***
N	113	113	113	113	113	113
Normality test (p-value)		0.000		0.313		0.812
Ramsey test for linearity (p-value)		0.678		0.405		0.137
Random-effects test (p-value)		1.000		0.205		0.001
Fixed-effects test (F- test)		0.012		0.000		0.000
Hausman test (P- value)		0.014		0.004		0.000
Heteroskedasticity test (p-value)		0.000		0.000		0.000
Autocorrelation test (p-value)		0.000		0.044		0.000

Notes: \*, \*\*, \*\*\* statistically significant at 10, 5, and 1 percent levels, respectively. Standard errors clustered at the bank level are in brackets.

results are unlikely to be affected by multicollinearity issues because the highest values observed in both tests are far below the thresholds suggested by Gujarati (2003) and Hair et al. (2010).

Choosing the appropriate test to evaluate heteroscedasticity depends on the primary estimation method used to analyze the study dataset. To discern the suitability between pooled ordinary least square (OLS) and panel data using fixed-effects and random-effects techniques, the Breusch-Pagan Lagrange Multiplier (LM) test (Breusch & Pagan, 1980) was executed. The results of the LM are insignificant for the ROA and ROE Models, as shown in Table 2, suggesting the superiority of pooled OLS over random-effects models. Conversely, the LM test yielded a significant p-value for the TQ Model, favoring the random-effects model. To ensure the selection of the best model for data analysis, an F-test was conducted within each model, revealing that fixed-effects models outperformed OLS models because P-values were highly significant. This superiority is further corroborated by the significant P-values derived from the Hausman test (Hausman, 1978). Nevertheless, it is crucial to highlight that both the Wooldridge test for serial correlation and the Modified Wald heteroskedasticity test for groupwise heteroskedasticity are performed within fixed-effects regression models and display noteworthy p-values, signifying the existence of heteroscedasticity and autocorrelation across all models. Despite the fixed effects technique is a commonly used method to control unobserved heterogeneity in panel data, it may not fully address all aspects of autocorrelation (Hoechle, 2007; Vo & Nguyen, 2014).

Alternatively, to address these issues comprehensively, feasible generalized least squares (FGLS) can be employed as it more efficient estimator to provide stable and reliable estimates and unbiased standard errors in the existence of both heteroscedasticity and autocorrelation (Wooldridge, 2010). Following previous research, the FGLS is performed as the baseline estimator approach (e.g. Bajary et al., 2023; Khan et al., 2021; Mousa et al., 2023; Vo & Phan, 2013).

To examine the study hypotheses, this study uses the following Equations. Equation (1) examines the impact of independent variables with control variables on bank performance. In Equation (2), the interactive term BIO\*BI between BIO and BI is added to all variables included in Equation (1) to test the moderating effect of BIO on the relationship between BI and bank performance.

$$\text{Performance}_{it} = \beta_0 + \beta_1 \text{BI}_{it} + \beta_2 \text{BIO}_{it} + \beta_3 \text{BS}_{it} + \beta_4 \text{BE}_{it} + \beta_5 \text{GO}_{it} + \beta_6 \text{FO}_{it} + \beta_7 \text{FS}_{it} + \varepsilon_{it} \quad (1)$$

**Table 3.** Summary statistics.

Variables	N	Using original scores						Using normalized scores	
		Mean	SD	Min	Max	Skewness	Kurtosis	Skewness	Kurtosis
ROA (%)	113	0.018	0.007	-0.014	0.04	-0.614	7.175	0	2.66
ROE (%)	113	0.123	0.049	-0.083	0.235	-0.743	5.347	0	2.66
TQ (%)	113	1.079	0.089	0.949	1.51	2.082	9.483	0	2.66
BI (%)	113	0.501	0.159	0.222	1	1.037	4.095	0.02	2.615
BIO (%)	113	0.097	0.135	0	0.635	1.768	5.924	0.005	2.645
BS	113	9.788	0.796	7	11	-0.351	3.322	-0.137	2.695
BE	113	8.823	1.276	4	11	-0.986	4.405	-0.077	2.751
GO (%)	113	0.209	0.194	0	0.644	0.771	2.261	0.22	2.309
FO	113	0.814	1.573	0	6	2.135	6.958	1.329	3.298
FS	113	151	99.800	17.3	453	1.14	4.314	0	2.66

**Table 4.** Results of Pearson correlation analysis and VIF.

Variables	VIF	ROA	ROE	TQ	BI	BS	BE	GO	FO	FS	BIO	BIO*BI
ROA		1.000										
ROE		0.806**	1.000									
TQ		0.536**	0.534**	1.000								
BI	1.295	-0.129	-0.265**	-0.004	1.000							
BS	3.488	0.385**	0.420**	0.481**	-0.051	1.000						
BE	2.033	-0.087	-0.095	-0.036	-0.084	0.459**	1.000					
GO	3.681	0.320**	0.090	-0.111	0.000	-0.238*	0.006	1.000				
FO	2.222	0.330**	0.345**	0.452**	0.126	0.612**	-0.062	-0.157	1.000			
FS	3.226	0.644**	0.419**	0.143	-0.160	0.123	-0.078	0.705**	0.142	1.000		
BIO	1.378	0.201*	0.248**	0.096	0.320**	0.119	-0.232*	-0.170	0.290**	0.015	1.000	
BIO*BI	1.382	0.079	0.178	0.076	0.195*	-0.245**	-0.042	0.432**	-0.181	0.188*	0.083	1.000
Mean VIF	2.338											

Notes: \*\*, \*\*\* statistically significant at 5, and 1 percent levels, respectively.



$$\text{Performance}_{it} = \beta_0 + \beta_6 \text{BI}_{it} + \beta_7 \text{BIO}_{it} + \beta_7 \text{BIO} * \text{BI}_{it} + \beta_1 \text{BS}_{it} + \beta_2 \text{BE}_{it} + \beta_3 \text{GO}_{it} + \beta_4 \text{FO}_{it} + \beta_5 \text{FS}_{it} + \varepsilon_{it} \quad (2)$$

where bank performance (ROA, ROE, TQ) is denoted as Performance, BS represents board size, BE stands for board education, GO signifies governmental ownership, FO denotes family ownership, FS indicates bank size, BI represents board independence, BIO indicates independent board members' ownership, BIO\*BI signifies the interactive term between independent directors and their ownership of bank shares, and  $\varepsilon$  represents the error term.

While this study primarily employs the FGLS regression model as the baseline method of analysis, it incorporates various analytical methods to assess the robustness of the main findings and control for potential endogeneity issues in Equation (2) (see Section 4.4 Robustness and endogeneity checks).

## 4. Results and discussion

### 4.1. Descriptive statistics

The descriptive statistics of the sample data are reported in Table 3. For the dependent variable measures, the mean of ROA is 0.018 with a range from -0.014 to 0.04 and a standard deviation of 0.007. The average ROE is 0.123 and ranges between -0.083 and 0.235 with a standard deviation of 0.049. The mean of TQ is 1.079 with a minimum of 0.949 and a maximum of 1.51, while the standard deviation is 0.089.

For independent variables, the average of BI is 0.501 and ranges between 0.222 and 1.00 with a standard deviation of 0.159. This average of BI indicates that more than half of the board members are independent (i.e. more than 5 members on average). This average is considered much higher than the thresholds of the SCGRs and PCGB, which require that at least one-third or 2 members of the board must be independent. The mean BIO is 0.097 with a range from 0 to 0.635 and a standard deviation of 0.007. This average of 0.097 reflects the relatively low level of ownership owned by all independent members on the board of directors (the average of independent members on the board is more than 5 members), which means that the average of ownership owned by an independent member is less than 2% of bank shares (i.e. 0.097/5). This low level may indicate banks' commitment to the SCGRs and PCGB rules regarding the percentage of bank shares held by an independent board member, which shall not exceed 5%.

With respect to control variables, the average BS is approximately 10 members (9.788) and ranges between 7 and 11 members with a standard deviation of 0.796. The mean BE is around 9 members (8.823) and ranges from 4 to 11 members, whereas the standard deviation is 1.276. GO average is 0.209 with a minimum of 0 and a maximum of 0.644, and the standard deviation is 0.194. The mean FO is approximately 1 board member (0.814) with a range from 0 to 6 members on the board, whereas a standard deviation is 1.573. The mean of FS is 151 billion Saudi Riyal with a range from 17.3 billion to 435 billion and a standard deviation of 99.800.

Except for the bank size, the standard deviations of the study variables are relatively low, meaning that most banks have similar scores. The high score of standard deviation of bank size reflects the significant gap in the total assets among listed banks.

The skewness and kurtosis values of the original data are almost within the accepted threshold of normality distribution of the data (Hoyle, 1995; Kline, 2011). However, the normalized scores of original data produce very low skewness and kurtosis values, which effectively mitigate the impact of outliers and address nonlinearity (Cooke, 1998).

The variability within the sample, as evidenced by the summary statistics, serves to alleviate concerns about potential biases in sample selection.

### 4.2. Correlation analysis

The correlation matrix outcomes presented in Table 4 alleviate concerns about significant multicollinearity as the highest correlation value remains below the 0.80 threshold, affirming that there are no noteworthy issues.

### 4.3. Multivariate analysis

The outcomes of the FGLS regression analysis to test the study hypotheses and scrutinize the moderating effect of BIO on the correlation between their independence and bank performance are shown in Table 2.

As shown in Table 2, Models 1, 3, and 5 report the impact of the independent variables BI and BIO alongside control variables on bank performance. The outcomes reveal a significant adverse impact of BI on ROE. However, the negative influence on ROA and TQ is not significant. These results clearly depict the inability of independent board members to bolster performance, contrary to agency theory, while concurrently affirming the tenets of stewardship and institutional theories that consider independent board members to be less experienced and competent than managers, and their presence may only be for regulatory considerations.

These findings are consistent with prior evidence (e.g. Al-Faryan, 2017; Al-Gamrh et al., 2020; Anas et al., 2023; Boshnak et al., 2023; Koji et al., 2020). The detrimental effect of BI on Saudi banks' performance can be partly ascribed to the structure of ownership and the formidable sway of controlling shareholders, encompassing family, institutional, and government owners, on Saudi corporate boards who have a significant influence on board composition with a tendency to assign board members with less independence, such as their friends, relatives, or loyalists, to better serve their best interests at the expense of the rights of minority shareholders. Thus, in an environment characterized by ownership concentration, the mere existence of independent and non-executive board members does not automatically guarantee genuine independence.

This phenomenon was observed by Boshnak (2021), Boshnak et al. (2023), and Habtoor (2020), among others in the Saudi context. This implies that conventional governance mechanisms such as BI may fail to meet their objectives in the context of highly concentrated ownership in the corporate world. For example, Article 12 of the SCGRs (CMA, 2006) states that the number of independent directors shall not be less than two members or one-third of the board members, whichever is greater. Moreover, Principle 2 of the PCGB (SAMA, 2014) stipulates that at least two board members must be independent. In this regard, the descriptive statistics indicate that the mean of BI is 0.501 (i.e. more than 5 members are independent) with a maximum of 1.00 (i.e. all board members are independent) and a minimum of 0.22 (i.e. 2 members are independent). This means that more than half of the board members are independent on average. Despite the high compliance of the study sample with Saudi CG requirements regarding the representation of independent members on the board of directors, they negatively affect bank performance.

This result may shed light on the effectiveness of Saudi CG mechanisms, especially independent board members, as an important governance tool to monitor and direct management towards better performance and higher protection of the rights of all stakeholders, notably minority shareholders. This finding would be of interest to the Saudi regulatory authorities to assess the effectiveness of current governance mechanisms and identify the necessary reforms.

For BIO, the results demonstrate a significant positive effect of BIO on ROA and ROE, while TQ is insignificantly correlated with BIO, which indicates that bank shares held by independent board members lead to higher bank operational and financial performance. This outcome provides support for Hypothesis 2 of the study and the hypothesis of the convergence of interests stemmed from agency theory (Jensen & Meckling, 1976), which suggests that ownership by independent directors can enhance the bank operational and financial performance due to the alignment of their interests with those of other shareholders. This finding suggests that independent director's ownership can be used as an effective governance mechanism that acts as an incentive for directors to take actions and make decisions that maximize firm value and benefit all stakeholders. The positive impact BIO on FP is supported by previous studies, such as Sheikh & Alom (2021) who found that board members' ownership enhances FP, while the study by Allam (2018) confirmed the positive role of non-executive directors' ownership on FP. The results are also consistent with prior evidence on the superiority of the convergence of interests hypothesis against the entrenchment hypothesis, notably at a low level of director ownership, leading to better FP (Chau & Gray, 2010; Johari et al., 2008; Morck et al., 1988; Shan, 2019; Shan et al., 2021). In this regard, the descriptive statistics show that the average level of ownership owned by all independent members on

the board is less than 10% (0.097) of bank shares. At such a low level of director ownership, Morck et al. (1988) and Shan (2019), among others, found an increase in FP due to the alignment of interests between directors and other shareholders.

This result confirms the positive effect of the convergence of interests on Saudi bank performance when ownership by independent board members at a low level because of the alignment of interests between independent board members and other shareholders, especially minority owners.

Regarding control variables, the analysis indicates substantial results consistent with previous evidence that larger banks (Alajmi & Worthington, 2023; Ali et al., 2024) with expansive boards (Ali et al., 2024; Saha & Maji, 2022) and lesser educated board members (Boadi & Osarfo, 2019; Habtoor, 2022) experience an increase in their overall performance.

Models 2, 4, and 6 in Table 2 incorporate the results of the impact of the interactive term BIO\*BI on the link between BI and bank performance. The results indicate that the interactive term BIO\*BI has a significant positive impact on ROE and TQ. However, the positive effect of BIO\*BI on ROA is not significant. The significant outcomes suggest that BIO mitigates their adverse impact on bank financial and market performance. The determinantal impact of BI on performance is attenuated in banks in which independent board members hold a higher proportion of bank shares. This means that the adverse and weak role of independent board members on bank performance can be eliminated or moderated positively by having a certain amount of bank shares, enabling them to function as influential minority owners who have aligned interests with other shareholders. They are no longer just outsiders, but also owners who may be more inclined to take a long-term view of the company's performance and to push for strategies that will benefit all shareholders in the long run. In other words, BI would be efficient when the convergence of interests between independent board members and other shareholders is engaged. This outcome robustly validates the study's argument grounded in agency theory and the convergence of interests hypothesis, thereby lending support to the third hypothesis of the study.

In an environment characterized by ownership concentration and controlling shareholders' dominance, as is the case of Saudi Arabia, agency conflicts between majority and minority shareholders may be exacerbated by controlling entities owning a significant portion of bank shares and placing their representatives in critical positions to entrench themselves and serve their private benefits on the expense of minority shareholders. Therefore, it is in their interest to prevent independent directors from carrying out their monitoring and supervisory duties (Anderson & Reeb, 2004; Barako et al., 2006; Boshnak, 2021) and act in the best interests of all shareholders (Shan, 2019). Specific conventional governance mechanisms, such as BI, may falter in such a situation (Guney et al., 2020). Thus, the effectiveness of the board of directors in overseeing executives and restraining the greedy impulses of controlling shareholders may be compromised.

However, when independent board members hold a certain amount of bank share, at a low level, they are less subject to the overpowering control of dominant shareholders. This enhanced ownership status fosters a greater sense of autonomy, prompting them to assume a more active role akin to that of owners. Consequently, they become more vigilant and proactive in monitoring and steering executive management actions toward higher FP. The affirmative moderation effect of BIO underscores the prevalence of a convergence of interests between these board members and shareholders, predominantly minority shareholders. This alignment mitigates the adverse influence of independent board members—often swayed by dominant shareholders—on bank performance. This argument is supported by the findings of the study of Shan (2019) who found that when the convergence of interests effect predominated at a low level of 0%–20% of director ownership, BI would be effective and favorably connected to FP.

The positive effect of the convergence of interests on the relationship between BIO and bank performance is confirmed by the observed low level of bank shares owned by independent board members (0.097), which falling within the category of low ownership (i.e. 0-20%), where the effect of the convergence of interests are particularly pronounced (e.g. Chau & Leung, 2006; Park & Jang, 2010; Shan, 2019).

In this regard, Article 20 of the SCGRs and the definition of board member by the PCGB (CMA, 2006; SAMA, 2014) stipulate among other things, that the ownership of an independent board member shall not exceed 5% of the company's shares. This governance rule may reflect the aim of Saudi regulatory authorities to keep this type of ownership low as an incentive for independent board members to perform their monitoring duties effectively and act in the best interests of all shareholders due to the

prevalent effect of the convergence of interests between them and all shareholders, leading to better FP (Morck et al., 1988; Shan, 2019).

Accordingly, the findings of this study confirm the positive effect of the convergence of interests on the link between BI and Saudi bank performance when ownership by independent board members is low. This is an important finding for Saudi regulators, companies, and market participants to evaluate and understand the dual and conflicting effects and roles of ownership on CG mechanisms and FP.

The results of the independent and control variables are similar to those reported in Models 1, 3, and 5.

#### 4.4. Robustness and endogeneity checks

Since the results of the independent and control variables in Models 1, 3, and 5 in Table 2 remain unchanged when adding the interactive term in Models 2, 4, and 6, therefore supplementary analyses will be conducted to ascertain the robustness and validation of the main outcomes reported on the interactive term Models 2, 4, and 6 in Table 2.

First, following the appropriate analytical methods outlined in the data analysis section, OLS is applied to the ROA and ROE Models, whereas the random-effects technique is employed for the TQ Model. Panel A of Table 5 details the regression outcomes of the OLS and random-effects analyses. The findings are almost the same as those reported in Models 2, 4, and 6 of Table 2, which enhances the robustness of the initial results.

To guarantee the robustness of the initial findings obtained from the FGLS, this study applies the OLS coefficients with panel-corrected standard errors (PCSE), because Beck & Katz (1995) caution against overreliance on FGLS when the cross-sectional dimension (N) is larger than the time dimension (T), as in the current study, where N is 12 and T is 10. Therefore, Beck & Katz (1995) advocated employing the PCSE. The results in Panel B of Table 5, derived using OLS coefficients with PCSE, are almost identical with those reported in Models 2, 4, and 6 of Table 2, which confirms the robustness of the initial findings against heteroskedasticity and autocorrelation challenges (Beck & Katz, 1995).

Second, it is crucial to address endogeneity problems inherent in research on the interaction between CG and FP (Giraldez-Puig & Berenguer, 2018; Latif et al., 2020; Valenti et al., 2011; Wintoki et al., 2012, among others). Many possible causes require careful analysis, including heterogeneity, omitted variable bias, simultaneity or reverse causation, and dynamic endogeneity. The tactics suggested by Li (2016) include a variety of econometric techniques, such as fixed-effects estimations, instrumental variables, Generalized Method of Moments (GMM), lagged values, and control variables. Prior studies employed each of these techniques to varying degrees to mitigate the challenges posed by endogeneity bias.

While the fixed effects regression model may yield biased and inconsistent results in the presence of autocorrelation problems, it can be partially used to handle some aspects of endogeneity, such as omitted variables bias (W. Abdallah et al., 2015; Ali et al., 2024; Chatterjee & Nag, 2023; Dodd & Zheng, 2022; Khidmat et al., 2020; Li, 2016; Nimer et al., 2023). Panel A of Table 6 presents the results of the fixed effects regression models. Although the results on the impact of the interactive term BIO\*BI are consistent with those reported in Models 2, 4, and 6 of Table 2, there are some differences in the results for some independent and control variables. For example, the insignificant negative impact of BI on ROA and TQ becomes significant, supporting Hypothesis 1 that posits that BI would lead to lower bank performance. Moreover, the significant positive impact of BIO on ROA becomes insignificant.

For control variables, the results show that the significant positive effect of BS on all bank performance measures becomes significantly negative. Furthermore, the significant negative influence of BE on all bank performance measures becomes insignificant. In addition, the significant positive correlation between FS and all bank performance measures becomes significantly negative only with TQ, while ROA and ROE are negatively but insignificantly related to BS. These results may indicate that larger banks with expansive boards experience a decline in their performance. As these findings are obtained in the presence of autocorrelation which may not be effectively dealt with using fixed effects regression analysis, inferences from these results should be made with caution.

This study further addresses endogeneity and omitted variable issues through the instrumental variables approach (e.g. Abdallah et al., 2015; Angrist & Krueger, 2001; Besim, 2023; Hu et al., 2023; Nimer

**Table 5.** Robustness checks using OLS, RE, and PCSE.

Variables	Panel A			Panel B		
	OLS	OLS	RE	PCSE	PCSE	PCSE
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	ROA	ROE	TQ	ROA	ROE	TQ
<i>Independent variables</i>						
BI	−0.0962 (0.0741)	−0.347*** (0.0756)	−0.0478 (0.0903)	−0.0870 (0.0659)	−0.286*** (0.0844)	−0.0520 (0.106)
BIO	0.134* (0.0752)	0.179** (0.0767)	−0.0879 (0.0980)	0.140*** (0.0506)	0.177*** (0.0567)	−0.106 (0.0823)
<i>Interactive term</i>						
BI*BIO	0.0533 (0.0706)	0.315*** (0.0720)	0.295*** (0.0884)	0.0151 (0.0409)	0.241*** (0.0428)	0.188*** (0.0667)
<i>Control variables</i>						
<i>Board characteristics</i>						
BS	0.559*** (0.136)	0.644*** (0.139)	0.564*** (0.181)	0.410*** (0.124)	0.513*** (0.131)	0.510** (0.209)
BE	−0.270*** (0.0973)	−0.327*** (0.0993)	−0.342*** (0.127)	−0.247*** (0.0922)	−0.291*** (0.102)	−0.265* (0.140)
<i>Ownership structure</i>						
GO	0.0920 (0.129)	−0.0781 (0.131)	−0.111 (0.165)	0.0870 (0.106)	−0.0927 (0.118)	−0.0829 (0.154)
FO	−0.0783 (0.131)	−0.0235 (0.134)	0.271 (0.174)	0.0115 (0.142)	0.0348 (0.124)	0.230 (0.187)
<i>Firm characteristics</i>						
FS	0.482*** (0.115)	0.260** (0.117)	−0.0117 (0.146)	0.529*** (0.0943)	0.338*** (0.109)	0.0680 (0.177)
Constant	−0.0106 (0.0656)	−0.0870 (0.0670)	−0.0978 (0.104)	0.0124 (0.115)	−0.0688 (0.119)	−0.0162 (0.250)
<i>Model F</i>	17.53***	16.33***	39.06***	231.00***	291.72***	45.14***
<i>R<sup>2</sup></i>	0.574	0.557	0.661	0.414	0.426	0.206
<i>N</i>	113	113	113	113	113	113

Notes: \*, \*\*, \*\*\* statistically significant at 10, 5, and 1 percent levels, respectively. Standard errors are in brackets.

et al., 2023). According to Wooldridge (2010), a reasonable instrumental variable should be correlated with a relevant independent or endogenous variable (relevance condition), but uncorrelated with the model's error term (exclusion condition).

Considering the dataset and variables, this study employs instrumental variables estimation using the two-stage least squares (2SLS) method with lagged values of potential endogenous variables correlated with board characteristics, ownership structure, and bank-specific characteristics, while remaining uncorrelated with the model's error term. More specifically, the lagged values of board independence, board size, board education, independent board members' ownership, governmental ownership, family ownership, and bank size were used as instruments by this study. These lagged variables were adopted as good instruments to address the endogeneity issue in prior studies dealing with the association between CG mechanisms and FP (e.g. Allam, 2018; Andres, 2008; Assenga et al., 2018; Guney et al., 2020; Kanapathippillai et al., 2019; Kao et al., 2019; Shan, 2019; Y. Wang et al., 2019; Xu et al., 2023).

Brown et al. (2011) justify using past values as instruments for current values because they are less likely to be endogenous to the dependent variable than current values. However, they are also likely to be weaker and thus less relevant than current values.

Two main specification tests were conducted to justify and validate the selected instrumental variables. First, the Cragg-Donald test of weak instruments related to the relevance condition yielded an F-statistic value of 37.68 with a significant P-value at 1%, as shown in Panel B of Table 6. This value surpasses the tabulated critical values of the Stock-Yogo weak ID test, confirming the relevance of the selected instrumental variables and dismissing concerns about weak instruments. Second, the Sargan test of over-identification restrictions related to the exclusion condition yielded insignificant results, as reported in Panel B of Table 6, which fails to reject the null hypothesis that instrumental variables do not correlate with the error term, affirming the validity of instrumental variables in the models.

Panel B of Table 6 presents the results of the 2SLS regression models. The outcomes are very similar to the primary results in Models 2, 4, and 6 of Table 2, suggesting that the results are unlikely to be subjected to endogeneity.

**Table 6.** Endogeneity control using FE, 2SLS, and GMM analyses.

Variables	Panel A			Panel B			Panel C		
	FE	FE	FE	2SLS	2SLS	2SLS	GMM	GMM	GMM
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE	TQ
<b>Independent variables (main effect)</b>									
BI	−0.220** (0.0805)	−0.393*** (0.0843)	−0.181** (0.0720)	−0.110 (0.0708)	−0.327*** (0.0751)	−0.0739 (0.0910)	−0.0566 (0.0754)	−0.144** (0.0710)	−0.0440 (0.0820)
BIO	0.138 (0.126)	0.287** (0.120)	−0.0900 (0.116)	0.187** (0.0859)	0.202** (0.0912)	−0.00390 (0.110)	0.0961 (0.101)	0.101 (0.0674)	−0.121 (0.0896)
Interactive term									
BIO*BI	0.0648 (0.0867)	0.149* (0.0790)	0.199** (0.0853)	0.0457 (0.0710)	0.262*** (0.0754)	0.273*** (0.0913)	0.00428 (0.0633)	0.126** (0.0522)	0.149* (0.0797)
<b>Control variables</b>									
<b>Board characteristics</b>									
BS	−0.240** (0.100)	−0.353*** (0.113)	−0.539** (0.197)	0.666*** (0.159)	0.781*** (0.169)	0.712*** (0.204)	0.324** (0.161)	0.253* (0.130)	0.503** (0.235)
BE	−0.126 (0.0854)	0.129 (0.149)	0.0424 (0.212)	−0.280*** (0.108)	−0.397*** (0.114)	−0.339** (0.138)	−0.172* (0.0900)	−0.163* (0.0888)	−0.337** (0.156)
<b>Ownership structure</b>									
GO	0.129 (0.102)	−0.0257 (0.159)	−0.164 (0.218)	0.125 (0.127)	0.0359 (0.134)	−0.145 (0.163)	0.0650 (0.0817)	0.00102 (0.0799)	−0.00618 (0.111)
FO	0.253 (0.199)	0.177 (0.149)	0.0541 (0.124)	−0.164 (0.136)	−0.0976 (0.144)	0.127 (0.174)	−0.0945 (0.0885)	0.0306 (0.0745)	−0.118 (0.161)
<b>Firm characteristics</b>									
FS	0.304 (0.305)	−0.341 (0.410)	−1.063*** (0.213)	0.411*** (0.116)	0.0983 (0.123)	0.0600 (0.149)	0.311** (0.133)	0.0303 (0.105)	−0.0474 (0.117)
L.ROA							0.368** (0.145)		
L.ROE								0.492*** (0.0964)	
L.TQ									0.490*** (0.106)
Constant	−0.0389 (0.0230)	−0.0402 (0.0235)	−0.0610** (0.0246)	−0.0134 (0.0616)	−0.0531 (0.0654)	−0.132* (0.0792)	−0.00974 (0.0669)	−0.0393 (0.0543)	0.00539 (0.0784)
Model F	6.56***	13.47***	44.78***	16.94**	12.56***	7.12***	28.19***	26.23***	18.87***
R <sup>2</sup>	0.135***	0.238***	0.278***	0.586***	0.518***	0.381***	0.626***	0.656***	0.513***
N	113	113	113	101	101	101	101	101	89
Random-effects test (p-value)	1.000	0.205	0.001						
Fixed-effects test (F- test)	0.012	0.000	0.000						
Hausman test (P- value)	0.014	0.004	0.000						
Heteroskedasticity test (p-value)	0.000	0.000	0.000						
Autocorrelation test (p-value)	0.000	0.044	0.000						
Cragg–Donald test				37.68***	37.68***	37.68***	42.64***	39.42***	11.040***
Sargan test (p-value)				0.520	0.651	0.792			
AR (1) test (p-value)							0.666	−0.824	0.084
AR (2) test (p-value)							0.716	−0.893	−0.710
Hansen test (p-value)							0.820	0.285	0.615

Notes: \*, \*\*, \*\*\* statistically significant at 10, 5, and 1 percent levels, respectively. Standard errors clustered at the bank level are in brackets.

Despite the widespread use of the 2SLS approach in empirical studies addressing endogeneity among the investigated variables, there are concerns about the choice of appropriate and valid instruments (Campbell et al., 2008). Therefore, Arellano & Bond (1991) introduced and advanced the GMM as an effective remedy for addressing endogeneity issues, including unobserved heterogeneity, simultaneity, and dynamic endogeneity, which other therapeutic approaches cannot properly address. Moreover, GMM is robust to heteroskedasticity and autocorrelation, even in models with relatively small sample sizes (Soto, 2009). According to Li (2016), GMM is the best remedy for endogeneity, as it has the greatest correction effect on the coefficients among all the proposed econometric remedies for endogeneity.

To further address endogeneity issues and account for heteroskedasticity and autocorrelation, this study applied the two-step system GMM approach using instruments of lagged dependent variable



measures and endogenous variables with appropriate lag(s) (e.g. Ali et al., 2024; Chatterjee & Nag, 2023; Fayyaz et al., 2023; Gull et al., 2023).

Two main tests were carried out to ensure the efficiency of the GMM estimation and verify the validity of the lagged variables used as instruments. First, the results of the Arellano-Bond test for second-order autocorrelation AR (2) reported in Panel C of Table 6 revealed insignificant p-values for all models. These results indicate that the GMM models do not suffer from second-order serial correlations. Second, the Hansen test for over-identification restrictions produced insignificant outcomes for all models, which fails to reject the null hypothesis that the instruments are not correlated with the error term, confirming that the instruments are exogenous, and thus the GMM models are valid.

Panel C of Table 6 presents the results of the GMM regression models. The outcomes are consistent with the primary results in Models 2, 4, and 6 of Table 2.

These comprehensive analyses of instrumental variables further substantiate the robustness of the study's findings against endogeneity concerns.

Third, to identify the exact value (computed by the R<sup>2</sup>- change) and check its significance (examined by the P-value of F-change test) that the interactive term BIO\*BI contributes in explaining the variations in bank performance in addition to report the contribution of included variables in the study models, the hierarchical regression analysis is applied following previous studies (e.g. Dankwah et al., 2024; Im & Chung, 2017; Le et al., 2006; Limbasiya & Shukla, 2019; Liu et al., 2022; Zattoni et al., 2017). In addition to its ability to identify the effect of each predictor variable, the hierarchical regression approach assists in pinpointing the precise value that the moderator contributes to the relationship between the predictor and outcome (Aguinis et al., 2008; Odoom & Mensah, 2019).

For each model assessing the bank performance indicators (ROA, ROE, and TQ), a four-step hierarchical regression analysis is conducted to report the regression results along with the R<sup>2</sup>-change, F-change, and P-value of F-change per step. The initial step regresses the dependent variables (ROA, ROE, and TQ) on the control variables. The BI is introduced into the equation model in the second step. In the third step, the BIO is included. Finally, the fourth step incorporates the interactive term BIO\*BI. Table 7 reports the results of the hierarchical regression analysis. By focusing on the interactive term BIO\*BI, the outcomes of model 4 in the fourth step indicate that when BIO\*BI is added, the R<sup>2</sup> increases very slightly from 0.572 to 0.574, yielding an R<sup>2</sup>-change of 0.002. To determine whether this marginal change in the R<sup>2</sup> significantly improves the model prediction, the F-change test which is based on F-test is used. The insignificant P-value of the F-change (0.452) of BIO\*BI in Model 4 clearly suggests that BIO\*BI has no explanatory power over the relationship between BI and ROA.

Moreover, the outcomes of models 8 and 12 show that adding the BIO\*BI increases the R<sup>2</sup> from 0.475 to 0.557 in model 8 and from 0.325 to 0.389 in model 12. These R<sup>2</sup> changes of 0.081 in model 8 and 0.064 in model 12 are highly significant, as evidenced by the significant P-value of the F-change test at the 0.000 and 0.001 level, respectively, suggesting that BIO has a significant explanatory power over the relationship between BI and both ROE and TQ.

## 5. Conclusions

This study aims to scrutinize how independent directors' ownership influences the impact of BI on performance of Saudi banks listed on Tadawul from 2009 to 2018. Employing various statistical methodologies, including FGLS, OLS, random-effects, PCSE, fixed-effects, 2SLS, and GMM, and hierarchical analysis, this study tests its hypotheses and ensures result accuracy while mitigating potential endogeneity issues across the ten-year period.

The findings align with the tenets of CG-related theories, especially agency theory and the convergence of interests hypothesis against the entrenchment hypothesis, lending robust support to the study's theoretical perspective. The results indicate a significant negative influence of BI on bank performance, which may reflect the intervention of controlling shareholders and their representatives in board composition and its independence.

Moreover, the results show a significant positive effect of BIO on ROA and ROE, while TQ is insignificantly correlated with BIO, which confirms the positive effect of the convergence of interests on Saudi bank operational and financial performance when independent board members own a certain amount of bank equity at a low level as evident from the summary of the descriptive statistics.

Table 7. Hierarchical regression analysis.

Variables	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROE	(6) ROE	(7) ROE	(8) ROE	(9) TQ	(10) TQ	(11) TQ	(12) TQ
<i>Control variables</i>												
<i>Board characteristics</i>												
BS	0.564*** (0.137)	0.562*** (0.138)	0.556*** (0.136)	0.559*** (0.136)	0.642*** (0.161)	0.636*** (0.156)	0.626*** (0.150)	0.644*** (0.139)	0.631*** (0.169)	0.631*** (0.170)	0.634*** (0.171)	0.650*** (0.163)
BE	-0.295*** (0.0966)	-0.299*** (0.0972)	-0.269*** (0.0971)	-0.270*** (0.0973)	-0.351*** (0.113)	-0.373*** (0.110)	-0.324*** (0.107)	-0.327*** (0.0993)	-0.301** (0.119)	-0.302** (0.120)	-0.318** (0.122)	-0.321*** (0.117)
<i>Ownership structure</i>												
GO	0.0611 (0.117)	0.0757 (0.120)	0.124 (0.121)	0.0920 (0.129)	-0.0490 (0.137)	0.0316 (0.136)	0.112 (0.134)	-0.0781 (0.131)	0.0204 (0.144)	0.0235 (0.148)	-0.00245 (0.152)	-0.172 (0.154)
FO	-0.0759 (0.129)	-0.0621 (0.132)	-0.0871 (0.131)	-0.0783 (0.131)	-0.110 (0.151)	-0.0337 (0.149)	-0.0754 (0.144)	-0.0235 (0.134)	0.131 (0.159)	0.134 (0.163)	0.147 (0.164)	0.193 (0.157)
<i>Firm characteristics</i>												
FS	0.528*** (0.109)	0.510*** (0.114)	0.473*** (0.114)	0.482*** (0.115)	0.368*** (0.128)	0.270** (0.129)	0.208 (0.126)	0.260** (0.117)	0.0252 (0.135)	0.0214 (0.141)	0.0413 (0.143)	0.0873 (0.138)
<i>Independent variable</i>												
BI	-0.0406 (0.0698)	-0.0406 (0.0698)	-0.0890 (0.0733)	-0.0962 (0.0741)	-0.223*** (0.0790)	-0.223*** (0.0790)	-0.304*** (0.0811)	-0.347*** (0.0756)	-0.00858 (0.0864)	-0.00858 (0.0864)	0.0173 (0.0920)	-0.0207 (0.0887)
BIO			0.144* (0.0739)	0.134* (0.0752)			0.239*** (0.0818)	0.179** (0.0767)			-0.0768 (0.0927)	-0.130 (0.0901)
<i>interactive term</i>												
BIO*BI				0.0533 (0.0706)				0.315*** (0.0720)				0.279*** (0.0845)
Constant	0.00493 (0.0628)	0.00388 (0.0630)	0.00495 (0.0622)	-0.0106 (0.0656)	0.00899 (0.0735)	0.00320 (0.0712)	0.00498 (0.0688)	-0.0870 (0.0670)	-0.00742 (0.0775)	-0.00765 (0.0779)	-0.00822 (0.0781)	-0.0899 (0.0786)
Model F	26.69***	22.16***	20.04***	17.53***	13.67***	13.47***	13.59***	16.33***	10.11***	8.35***	7.23***	8.29***
R <sup>2</sup>	0.555	0.556	0.572	0.574	0.390	0.433	0.475	0.557	0.321	0.321	0.325	0.389
R <sup>2</sup> -change	0.555	0.001	0.015	0.002	0.390	0.043	0.043	0.081	0.321	0.000	0.004	0.064
F-change	26.69	0.338	3.783	0.570	13.67	8.002	8.557	19.092	10.11	0.010	0.686	10.921
Sig. F-change (p-value)	0.000	0.562	0.054	0.452	0.000	0.006	0.004	0.000	0.000	0.921	0.409	0.001
N	113	113	113	113	113	113	113	113	113	113	113	113

Notes: \*, \*\*, \*\*\* statistically significant at 10, 5, and 1 percent levels, respectively. Standard errors clustered at the bank level are in brackets.

Furthermore, the results demonstrate a significant positive impact of the interactive term  $BIO*BI$  on the link between BI and both ROE and TQ. However, the positive influence of  $BIO*BI$  on BI-ROA link is not significant. These findings indicate that bank shares owned by independent directors positively affect the negative correlation between BI and bank financial and market performance. This emphasizes the crucial role of ownership structure, notably ownership by independent directors in shaping the dynamics of BI and their subsequent impact on performance.

The results of the control variables almost align with the theoretical perspectives and findings from prior empirical research, enhancing the robustness of the study's theoretical underpinnings.

One notable limitation of this study lies in its relatively constrained sample size, encompassing the entirety of 12 listed banks in Saudi Arabia from 2009 to 2018. Therefore, this study performs various statistical techniques, including OLS, FGLS, PCSE, random-effects, fixed-effects, 2SLS, and GMM to substantiate study hypotheses, ensure robustness of results, and control for potential endogeneity issues. Despite the observations are enough for estimation purposes and extensive robust analysis has been done, inferences from results should be made with caution.

Future inquiries could enhance the robustness of the dataset by incorporating unlisted Saudi banks or extending the analysis to include listed banks across GCC countries given the analogous ownership structures and institutional frameworks in these regions.

Second, while this study illuminates the moderating role of shares owned by independent directors in the link between their independence and bank performance, future research might explore additional moderating and mediating variables, such as diverse ownership types; CEO/chairperson characteristics; and board education, experience, and diversity. Third, despite implementing remedies to address various endogeneity concerns, it is crucial to recognize that these measures may only comprehensively mitigate some facets of endogeneity, potentially impacting the study outcomes.

## 6. Contributions/implications

This study adds valuable insights into the existing literature and provides significant implications by delving into the nuanced factors that may explain the inconsistent findings observed in prior research regarding the correlation between BI and FP. Notably, the moderating role of BIO is a critical determinant of this association. This study broadens the scope of scant investigations into the factors shaping the direct link between CG mechanisms and FP. The unique focus on Saudi Arabia is noteworthy, making this study a pioneering endeavor to address these critical issues in this business context.

The study's contributions and implications can be summarized as follows. First, while the negative impact of BI on bank performance contradicts the agency theory perspective, it lends support for the stewardship and institutional theories that consider independent board members to be less experienced and competent as outsiders than insider managers, and that their presence may only be for regulatory considerations. Moreover, the observed weak role of BI may reflect the negative effect of the entrenchment hypothesis in the Saudi context where Saudi controlling shareholders and their representatives control the board composition, and they may seek to weaken its effectiveness to better serve their own interests.

These results may shed light on the effectiveness of Saudi CG mechanisms, especially independent board members, as an important governance tool to monitor and direct management towards better performance and higher protection of the rights of all stakeholders, notably minority shareholders. Despite high compliance of Saudi listed banks with Saudi CG requirements regarding the representation of independent members on the board, they negatively affect the bank performance. Accordingly, these findings would be of interest to the Saudi regulatory authorities and market participants to assess the effectiveness of current governance mechanisms and identify the necessary reforms to strengthen BI and limit the excessive influence of controlling shareholders on company boards.

Second, the positive influence of BIO on bank performance enriches the literature by providing empirical evidence about the significant role of BIO on FP, which attracted little attention by previous research. Moreover, the result supports the convergence of interests effect in the Saudi context when independent directors own shares in the bank. Saudi regulatory bodies and corporate decision-makers can explore various strategies to achieve the convergence of interests hypothesis, with one such approach being the manipulation of directors' ownership through contingent payments, such as stock options.

Third, the study contributes to the literature by using the convergence of interests hypothesis to examine the moderating effect of BIO on the association between their independence and Saudi bank performance. The results show a positive impact of BIO on the relationship between BI and FP, which suggests that BI would be efficient when the convergence of interests between independent board members and other shareholders is engaged. This is an interesting outcome confirming the significance of BIO as an important governance mechanism affecting BI and FP. This outcome may provide Saudi regulators, companies, and market participants with new insights to understand and evaluate the dual roles and conflicting effects of ownership on CG mechanisms and FP.

In sum, these findings highlight the importance of considering not only the independence of board members but also their ownership stake in the company. The two governance mechanisms can come together to create a deeper impact on board effectiveness in monitoring the actions of the controlling owners and their representatives in corporate managements and board, in a way that ensures the protection of the rights of all shareholders. The results of this study would be of interest to regulatory bodies, companies, shareholders, and investors in Saudi Arabia and countries characterized by concentration of ownership and suffer from the excessive influence of controlling shareholders and entrenched managers on CG effectiveness, especially the board of directors and its independence.

### Authors' contributions

Conceptualization, Omer Habtoor; methodology, Omer Habtoor and Osama Alowaimer; software, Omer Habtoor; validation, Omer Habtoor, Osama Alowaimer, and Sami Waked; analysis and interpretation of the data, Omer Habtoor, Osama Alowaimer, Sami Waked, and Rayed Alobaid; drafting the work and reviewing it critically for important intellectual content, Omer Habtoor, Osama Alowaimer, Sami Waked, and Rayed Alobaid; funding acquisition, Omer Habtoor and Osama Alowaimer. All authors have read and agreed to the published version of the manuscript. All authors agree to be accountable for all aspects of the work.

### Disclosure statement

The authors report there are no competing interests to declare.

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## Data availability statement

The data that support the findings of this study are available from the corresponding author, Omer Saeed Habtoor, upon reasonable request.

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