



# Do ownership structure and board composition matter in firm performance? Regulatory influence in developing economy

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## Abstract

This empirical study investigates the influence of ownership structure and board characteristics on firm performance in emerging market economies, with a focus on Bangladesh. By using data from DSE30 listed firms on the Dhaka Stock Exchange and applying accounting and market performance measures including return on assets, return on equity, market-to-book, and Tobin's Q, the study provides comprehensive insights. The research employs industry fixed effects panel analysis, two-stage least squares (2SLS), and lagged variables to explore these relationships through the lens of agency theory. The results reveal that ownership structures and board characteristics have a mixed impact on firm performance. ROA is positively associated with foreign ownership, sponsor ownership, and board independence but negatively associated with institutional ownership, government ownership, and family firms. ROE is positively influenced by gender diversity and board expertise, whereas government ownership, board size, and family firm ownership have a negative impact. Similarly, Tobin's Q is positively significant in relation to board size, board independence, gender diversity, and board expertise, while ownership structure shows a negative significance. Our results also confirm that government ownership and family firms negatively impact performance metrics. The primary implication for stakeholders is to contemplate both dimensions of firm performance when making investment and financing decisions.

**Keywords** Accounting- and market-based firm performance · Ownership · Board characters · Family control · Director education

## Introduction

Corporate board and ownership structures stand as critical pillars shaping the success and stability of modern businesses. Despite significant advancements in our understanding of the effectiveness of corporate governance mechanisms over the past four decades, there remains a pressing need for further research in this domain (Erena et al. 2021). The advent of corporate scandals and financial crises has underscored the paramount importance of robust governance mechanisms in fostering investor confidence, upholding ethical conduct, and driving sustainable growth. Consequently, researchers, policymakers, and practitioners have increasingly focused on exploring the intricate relationship between corporate governance elements and firm performance.

While some studies have investigated the connection between corporate governance and firm performance in isolation, few have delved into the underlying dynamics by combining market- and accounting-based performance measures (Das et al. 2023; Pathak and Chandani 2023). Both

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measures were explored separately by Kyere and Ausloos (2021) in the UK, Saha and Khan (2024a) in the Nordic, Christensen et al. (2010) in Australia, and Sehrawat et al. (2020) in the Indian contexts to advocate for reconciling observed differences through governance structures. Building upon these calls, our paper addresses the combination of accounting-based and market-based performance measures, providing novel insights from the perspective of a developing country.

In the early stages of research in this domain, investigations primarily employed a limited set of variables related to firm performance. Commonly used market-based performance ratios included Tobin's Q, while accounting-based metrics encompassed return on equity, return on assets, and economic value added, as noted by Pintea and Fulop (2015). Despite the extensive duration of corporate governance research, certain aspects still lack consensus, underscoring the necessity to scrutinize the missing links among various variables. As a result, the subsequent generation of performance measures in governance literature should adopt a more comprehensive approach tailored to specific contexts. Historically, prior studies were predominantly oriented towards either market-based (Baboukardos et al. 2021; Das et al. 2023; Demsetz and Villalonga 2001; Kapopoulos and Lazaretou 2007; Rashid 2018a, b) or accounting-based (Das et al. 2023; Nuzul and Diyanty 2024; Rouf and Hossain 2018; Sobhan 2021) assessments of company performance to analyse the impact of ownership on corporate outcomes. Notably, the number of studies that have concentrated on both accounting-based and market-based performance to analyse the association is notably scarce, as highlighted by Rashid (2020) and Tam and Tan (2007). In our examination of corporate board attributes, we consider board size, independence, gender diversity, board expertise, directors' education and family control with a view to uncovering their influence on the interplay between firm performance and ownership structure.

This type of study is relatively limited in Bangladesh, as earlier research has only covered a few board characteristics, such as board size and independence. However, our study extends beyond these parameters by considering additional attributes, including gender diversity, board expertise, directors' education, and family control. Moreover, our study delves into the role of ownership structure, examining institutional ownership, sponsor ownership, foreign ownership, and government ownership. Bangladesh, as an emerging economy, has been diligently crafting its corporate governance framework by drawing inspiration from established best practices. This journey began in 2006 with the introduction of initial corporate governance rules, followed by the adoption of Corporate Governance Guidelines in 2012 and the implementation of the Corporate Governance Code in 2018 (Biswas 2015). However, directly transplanting models from

developed countries raises practical concerns, given the significant variations in legal and economic systems, cultural norms, capital market dynamics, and governance practices (Kang et al. 2007; Zulkifli et al. 2017). Consequently, conducting research specific to Bangladesh's unique context becomes crucial for unravelling the intricate nuances of its evolving corporate governance landscape (Mangena et al. 2012).

Bangladesh was selected as the focus of this study due to its remarkable economic growth, making it a standout player in Asia and the Pacific (Asian Development Bank 2020). However, concerns about government interference in the private sector underscore the need for effective corporate governance practices to sustain this growth (Muttakin et al. 2015; Rashid 2018a, b). As Bangladesh transitions from a least developed country to a lower-middle-income country, projections place it among the world's top 23 economies by 2050, with significant influence on the global stage (Saha and Khan 2024b). The study's examination of the DSE30 index fills a critical gap in the literature, offering insights into how board attributes influence firm performance in Bangladesh's market. Furthermore, this research facilitates comparisons with other economies, presenting valuable findings for investors and academics worldwide (Islam 2021). Understanding the impact of board qualities on a company's success can lead to improved corporate governance practices, contributing to sustainable economic growth in Bangladesh and beyond.

The rest of this paper is organized as follows: "Background" Section provides an overview of the regulatory influence through the revisions in corporate governance laws in Bangladesh. Following that, the conceptual framework is delineated, highlighting the key relationships to be investigated. "Literature Review and Hypothesis Development" section systematically organizes the literature review and the development of hypotheses. "Research Methods" section delves into the research methodology. Subsequently, "Results and Discussions" section presents and discusses the findings, culminating in the conclusion in "Discussion", section where we discuss implications and suggest avenues for future research.

## Background

The institutional background of corporate practices in Bangladesh has been shaped by its historical ties and regulatory framework. During its 200 years under British rule, the country's corporate governance system adopted several elements from the UK, including parliamentary democracy, the Companies Act, and a centralized bureaucracy (Al Farooque et al. 2007). Family businesses have emerged as the dominant ownership model, and political affiliations play



a significant role in the corporate landscape (Muttakin et al. 2015). The board of directors, as insiders, wields substantial control over most companies in Bangladesh, with many directors holding significant ownership stakes.

In a bid to enhance corporate governance practices, the Bangladesh Securities and Exchange Commission (BSEC) introduced several corporate governance codes, undergoing revisions in 2006, 2012, and 2018. Noteworthy among these codes is the stipulation that one-fifth of the board should consist of non-investor members, to augment external oversight (BSEC 2018). Additionally, the codes mandate the segregation of the roles of the chairman of the board and the CEO, a measure aimed at promoting accountability (BSEC 2018). Furthermore, specific qualifications for directors are outlined, and there are specified ranges for the minimum and maximum number of individuals on the board (BSEC 2018). This amalgamation of internal and external control mechanisms contributes to the overall corporate governance structure in Bangladesh, as noted by Rashid (2020) and Saha and Khan (2024b).

## Theoretical framework

Agency theory provides a crucial lens through which to understand corporate governance mechanisms, particularly in the context of emerging markets like Bangladesh (Boshnak 2023; Bachiller, 2015). In such environments, where economic, legal, and cultural factors may differ significantly from those of developed economies, the agency problem takes on unique dimensions. Previous research has highlighted the challenges faced by shareholders in monitoring and controlling managers, particularly in environments with weak institutional frameworks and information asymmetry (Boshnak 2023).

In Bangladesh, where corporate governance practices are still evolving, agency theory offers valuable insights into the challenges and opportunities inherent in balancing the interests of shareholders and managers. As the nation strives to align its governance practices with international standards, understanding the role of ownership structures and corporate boards becomes paramount (Boshnak 2023; Bachiller, 2015).

One of the key dilemmas facing investors in emerging markets like Bangladesh is ensuring that their investments are safeguarded and utilized effectively. The agency problem, rooted in the separation of ownership and management, exacerbates these challenges by creating potential conflicts of interest between principals and agents (Boshnak 2023; Shleifer and Vishny 1997). Effective corporate governance mechanisms, including robust ownership structures and competent corporate boards, are essential for mitigating

these agency costs and enhancing firm performance in the Bangladeshi context.

Figure 1 illustrates the agency relationship between ownership structure, director characteristics and firm performances used in this study.

## Literature review and hypothesis development

### Institutional ownership and firm performance

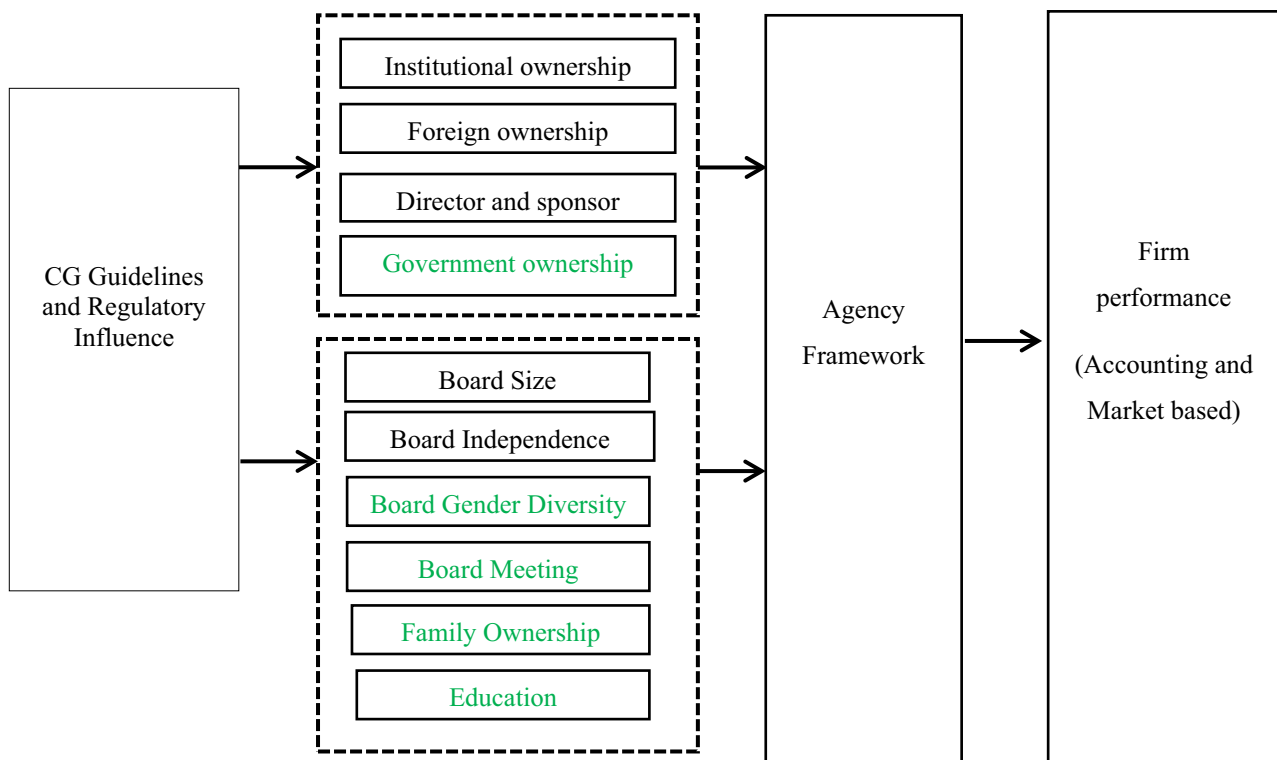
Institutional investors, entrusted with managing funds on behalf of beneficial owners, play a crucial role in monitoring portfolio performance and ensuring the financial stability of invested companies (Andreou et al. 2022; Das et al. 2023; Nuzul and Diyanty 2024; Kaimal & Uzma 2024). By actively overseeing managerial activities and aligning interests with stakeholders, institutional investors help minimize information asymmetry, manage agency costs, and ultimately reduce the likelihood of financial distress (Gerged et al. 2022; Kaimal & Uzma 2024).

Research consistently advocates for concentrating ownership among select shareholders to regulate management conduct and enhance overall company performance (Andreou et al. 2022; Colpan and Yoshikawa 2012; Nuzul and Diyanty 2024; Schnatterly et al. 2008). This concentrated control shifts the agency problem from owners and managers to non-controlling and controlling owners (Hutchinson et al. 2015; Shleifer and Vishny 1997; Yeh 2019), thereby promoting transparency, accountability, and stakeholder value (Da Silveira, 2010;; Fama and Jensen 1983).

However, contrasting perspectives exist regarding the impact of ownership structure on company performance. While institutional ownership is often associated with better monitoring and reduced financial distress (Gerged et al., 2023), it may also lead to managerial dominance, potentially affecting company performance and investor perceptions (La Porta et al. 1999; Wei et al. 2005). Despite these debates, the literature generally supports the notion that robust corporate governance, including institutional ownership, positively influences capital market outcomes (Black et al. 2015).

Drawing on these discussions and agency theory, our study hypothesizes a positive relationship between institutional ownership and firm performance. This hypothesis is supported by previous research suggesting a correlation between institutional ownership and favourable company performance outcomes. Given the professional nature and extended investment horizons of institutional shareholders, alongside the benefits of good corporate governance, their presence is expected to enhance market perceptions and lead to positive firm performance. Hence, our first hypothesis posits:





**Fig. 1** The agency framework works through ownership structure and board characteristics on financial performance *Source:* Authors' own work

**Hypothesis 1** *Ceteris paribus*, institutional ownership has a positive relationship with firm performance.

### Foreign ownership and firm performance

In the view of potential investors, the involvement of foreign investors in a company's capital structure typically garners positive regard (Das et al. 2023; Kaimal and Uzma 2024; Khanna and Palepu 2000; Douma et al. 2006; Kao et al. 2018). An extensive body of prior research consistently supports the idea that foreign ownership correlates positively with company performance (Douma et al. 2006; Kaimal & Uzma 2024; Omran et al. 2008; Ferreira and Matos, 2008; Bentivogli and Mirenda 2017; Kao et al. 2018). Moreover, foreign ownership enhances firm performance and eliminates agency problems (Nugroho et al. 2020). For instance, Douma et al. (2006) demonstrated that substantial foreign stock investors, displaying strong commitment and engagement with the firm, tend to exert a positive influence on company performance.

Based on agency theory, foreign institutional ownership will mitigate asymmetric agency and information problems by improving transparent corporate and financial governance

(Nugroho et al. 2020). Studies suggest that in emerging economies, the involvement of foreign investors in monitoring and controlling managerial activities reduces agency conflict (Jusoh 2015). Furthermore, Demsetz and Leh (1985) state that agency costs can be decreased and activity monitoring enhanced through foreign ownership with substantial control. Foreign owners are typically single block shareholders who make long-term investments, thereby stabilizing governance structures and fostering sustained performance improvements (Demsetz and Leh, 1985; Douma et al. 2006).

Foreign investors, often less connected to domestic shareholders and possessing comparatively limited company information, exhibit increased motivation to closely monitor the firm's operations (Chen et al. 2009). They specifically seek companies with market liquidity, significant assets, and substantial media exposure (Saha 2019). Before making investments, foreign investors conduct meticulous analyses due to their constrained information access compared to their domestic counterparts. This thorough scrutiny and commitment towards the company's stocks, evidenced by increased stock prices, result from foreign investors' diligent monitoring and active engagement with the firm.

Consequently, this study posits a positive relationship between company performance and foreign ownership. The

commitment and analytical skills of foreign investors, along with their inclination towards firms with substantial assets, liquidity, and media coverage, attract other investors and enhance overall firm performance and stock prices. Therefore, the second hypothesis for this study is:

**Hypothesis 2** *Ceteris paribus*, foreign ownership has a positive relationship with firm performance.

### Director and sponsor ownership and firm performance

Previous studies have presented varying findings regarding the impact of director and sponsor ownership on company performance (Al Farooque et al. 2007; Boshnak 2023; Tam and Tan 2007; Muttakin et al. 2012; Yeh 2019). For example, Al Farooque et al. (2007) discovered no significant relationship between company performance and director ownership, whereas Muttakin et al. (2012) reported a negative correlation between company performance and board ownership, employing return on assets (ROA) as a measure. However, contrasting outcomes have been more prevalent in earlier literature, with numerous studies suggesting a positive impact on profitability attributable to director ownership (Ahmed & Gábor 2012; Westman 2011). This positive impact was further supported by Bhagat and Bolton (2013) and Farrer and Ramsay (1998), who documented a notably positive influence on company performance arising from direct ownership.

Recent research has reiterated this positive relationship, encompassing both market and accounting-based company performance with director ownership (Kao et al. 2018; Hanafi et al. 2018). The impetus to concentrate a significant stock portion among a few stakeholders lies in their capacity to oversee and govern managerial activities, aligning with stakeholder interests and mitigating agency problems (Schnatterly et al. 2008; Colpan and Yoshikawa 2012). Board members, vested with a direct interest in the company's well-being, are inclined to closely monitor and manage the firm's operations to augment its value (Farrer and Ramsay 1998; Bhagat and Bolton 2013).

Given the arguments from agency theory and the outcomes of these studies, the current research is inclined to posit that company performance positively relates to director and sponsor ownership. The ability to oversee managers, coupled with the directors' vested interest in the company's well-being, is seen as contributing to a reduction in agency problems. Thus, this leads to the formulation of the third hypothesis:

**Hypothesis 3** *Ceteris paribus*, director and sponsor ownership have a positive relationship with firm performance.

### Government ownership and firm performance

Government ownership refers to the scenario where the government holds a stake in a company by controlling shares and appoints several influential representatives on its board of directors (Jaffar and Abdul-Shukor 2016; Kaimal and Uzma 2024). The government plays a crucial role in enhancing the country's economic development by creating new avenues and strengthening and supporting businesses (Jaffar and Abdul-Shukor 2016; Kaimal and Uzma 2024). From the agency theory perspective, the government can maintain strong relationships with powerful stakeholders, which might help achieve positive financial outcomes as government ownership influences firms' decisions (Kaimal and Uzma 2024; Zulkifli et al. 2017). However, government ownership sometimes negatively impacts firms' wealth, as it has long been considered controversial by investors, especially when the government appears to use firms' wealth for its own purposes (Zulkifli et al. 2017).

There are prior studies that found a positive and significant association between government ownership and firms' market performance (Kaimal and Uzma 2024; Lau and Tong 2008; Bhatt 2016). Moreover, existing research reports that government-owned firms' performance is sometimes jeopardized because most political persons appointed as board members might not have the right experience and expertise to effectively monitor firms' activities (Jaffar and Abdul-Shukor 2016). In contrary, government intervention can be useful in assisting to solve firms' problems earlier than usual, such as easier access to financial assistance from inside and outside of the country, assisting firms in obtaining large-scale government projects, and other assistance that can enhance firm performance more quickly.

Nevertheless, prior studies also found evidence indicating inefficiency in managing government-owned firms (Zulkifli et al. 2017). One possibility could be that firms' management on behalf of the government was represented by individuals not serious about undertaking their responsibilities because they did not have the relevant experience or expertise to do the job (Jaffar and Abdul-Shukor 2016). Other studies have found that firms with government ownership showed poorer performance compared to other ownership structures (Mollah et al. 2012). Additionally, studies have found that an increase in government ownership results in lower firm performance (Jaffar and Abdul-Shukor 2016), which also shows the possibility of stakeholders not being convinced about the supporting role of the government as firms' owners. Based on these discussions, the fourth hypothesis of this study is formulated as follows:

**Hypothesis 4** *Ceteris paribus*, government ownership has a positive relationship with firm performance.



## Board size and firm performance

As indicated by earlier research, a firm's performance can be significantly influenced by board characteristics. Larger boards with diverse experiences and knowledge from different backgrounds contribute to enhanced observation and oversight of management actions (Saha 2019). The corporate board is recognized as a key internal corporate governance mechanism (Brennan 2006) with substantial authority to monitor and supervise the actions of managers (Jonsson 2005; Terjesen et al. 2016). The board of directors assumes various roles, including liaising with the external environment, setting goals and strategies, allocating resources, and regulating executive actions (Bachiller, 2015; Vu et al. 2018). Several board characteristics, such as board size and the proportion of independent/external members, serve as determinants of the effectiveness of corporate boards in influencing company performance.

Previous studies (Kaimal and Uzma 2024; Muttakin et al. 2012; Terjesen et al. 2016; Kao et al. 2018) have documented significant effects on company performance resulting from various board characteristics. Larger boards, for instance, have been associated with favourable impacts on a company's performance by observing and supervising management actions, as found by Choi et al. (2007), Coles et al. (2008), and Adeabah et al. (2019). Coles et al. (2008) discovered that a sizable board of directors, due to their heightened observation and oversight of executive actions, can positively contribute to the advancement of company performance. Moreover, larger corporate boards typically comprise members from diverse backgrounds with various experiences and knowledge, which can assist a company in acquiring critical assets and resources and also mitigate uncertainties stemming from the environment in various situations (Bachiller, 2015; Kaimal & Uzma 2024; Kao et al. 2018).

On the other hand, several studies have shown that large boards are not as efficient as small ones in terms of company performance. An unfavourable correlation between board size and business results has been highlighted, indicating that larger boards might suffer from inefficiencies (Bachiller, 2015). When a board has many directors, it is more likely that some of them will adopt a "free rider" mentality and refrain from actively participating in board activities (Bachiller, 2015). Based on these discussions, the fifth hypothesis of this study is formulated as follows:

**Hypothesis 5** *Ceteris paribus*, board size has a positive relationship with firm performance.

## Board independence and firm performance

In corporate governance, agency theory highlights concern about managers prioritizing their interests over stakeholders'. Independent board members play a crucial role in safeguarding shareholders' interests by addressing unexpected management actions (Lahyani and Ayadi 2024). According to the Bangladesh Securities and Exchange Commission (BSEC) Corporate Governance codes, independent board members are expected to bring expertise gained from at least 12 years of experience in business, accounting, legal, or economic fields. This expertise is aimed at enhancing the board's oversight capabilities, as mandated by regulatory standards and supported by theoretical perspectives. Moreover, a board with a significant number of external directors is deemed independent and capable of providing impartial advice to managers to further shareholder interests. However, Rashid (2018a, b) suggested that the relationship between board independence and firm economic performance might not always be positive, raising questions about the effectiveness of independent directors. Given these considerations, we propose the following hypothesis:

**Hypothesis 6** *Ceteris paribus*, board independence has a positive relationship with firm performance.

## Gender diversity and firm performance

Board gender diversity is a framework that encompasses a range of attributes that may exist among members of the board who provide knowledge, expertise, and experiences that influence management effectiveness and have an impact on business decisions, particularly those related to firm performance (Ali, 2014; Kaimal and Uzma 2024; Mazumder 2024; Liu et al. 2014; Loulou-Baklouti 2023). So, diversity characteristics can be those which are apparent in terms of gender, ethnicity, age, and nationality as well as those that are less obvious such as religion, education, employment or culture) (Fernández-Temprano and Tejerina-Gaite 2020; Vairavan and Zhang 2020); however, we consider the proportion of female directors in our current study (Haque 2017). Agency theory suggests that boards with diverse gender backgrounds can enhance shareholder efficiency by improving managerial monitoring, stakeholder engagement, resource attraction, and corporate governance (Brennan 2006). Studies by Carter et al. (2003) and Terjesen et al. (2009) support this notion, demonstrating that boards with higher gender diversity tend to outperform others and facilitate firms with various resources, including financing. However, contemporary literature presents



mixed findings on the impact of gender diversity on decision-making and firm performance, including positive, negative (Hassan 2024), or limited effects (Kaimal & Uzma 2024; Liu et al. 2014; Rahman and Saima 2018). Notably, there is no minimum requirement for the number of female directors under the corporate governance guidelines in Bangladesh. Nevertheless, we anticipate that more diverse boards exert greater pressure on corporate managers to enhance firm performance. Thus, we propose the following hypothesis:

**Hypothesis 7** *Ceteris paribus*, board gender diversity has a positive relationship with firm performance.

### Board expertise and firm performance

Existing literature measures the board's expertise by the number of meetings they conduct (Saha and Khan 2024a). The frequency of board meetings can influence board efficiency and transparency (Karim et al. 2021). However, the relationship between board meetings and firm performance requires further exploration, particularly in the context of Bangladesh, where the significance of board meetings is emphasized in the CG Code 2018 (Saha and Khan 2024a). From the perspective of agency theory, firms conduct frequent meetings to handle increased competition, operational complexity, and uncertainty, which helps address the concerns of various stakeholders and better assess firm performance.

The nature of the relationship between board expertise and firm performance is complex, as scholars hold differing views. Some argue that more frequent meetings positively impact board efficiency, enhance supervision, and increase organizational transparency, especially during crises and periods of uncertainty. Such meetings may also align with shareholders' expectations and improve firm performance (Karim et al. 2021; Buchdadi et al. 2019). Conversely, other scholars suggest that more frequent meetings may indicate an ineffective and intrusive board, potentially harming firm performance (Frias-Aceituno et al., 2013).

Given these contrasting perspectives, we propose that regular board meetings are essential for effective supervision and integration of the board, ultimately impacting firm performance. Therefore, we propose the following hypothesis:

**Hypothesis 8** *Ceteris paribus*, board expertise (measured by the number of board meetings) has a positive relationship with firm performance.

### Family control and firm performance

Family control refers to a situation where the board is composed predominantly of family members who have significant control over decisions, and literature suggests that family

control affects firm performance (Amrah et al. 2015; Bachiller, 2015). Previous research presents mixed findings regarding family ownership's effect on financial distress (Nuzul and Diyanty 2024). The presence of family control is likely to influence the monitoring effectiveness of the board and control over the appointment of board members (Adigüzel 2013). Family members constitute a distinct group with a unique incentive structure and the authority to make long-term strategic decisions by treating the company as their own enterprise (Desender 2009). According to agency theory, family directors benefit from open lines of communication among family members, which allow them to share perspectives and supervise management tasks (Fama and Jensen 1983; Kaimal and Uzma 2024). Additionally, a family-controlled business can resolve agency issues, lower agency costs, and improve business performance (Bartholomeusz and Tanewski 2006; Kaimal and Uzma 2024). In contrast, the presence of family members could make the board less effective and result in poorer business success (Desender 2009; Gottardo and Moisello 2017; Makhoul et al. 2018) because, despite their abilities and qualifications, board members may be chosen based on kinship and preference (Omran et al. 2008; Tai et al., 2020). Furthermore, minority shareholder rights may be compromised, and expropriation may occur when a family is in charge (Al-Dubai et al. 2014) because family members have significant influence and control over the business. This can result in the expropriation of company resources through self-interested practices that may not align with the best interests of minority shareholders and the extraction of private benefits at the expense of minority shareholders (Din et al. 2022; Amrah et al. 2015; Haddad et al. 2015). Typically, this expropriation decreases the performance and value of the company and heightens the conflict between minority and majority shareholders (such as family members) (Liew et al., 2017).

After reviewing the literature regarding family control and its effect on firm performance, this study proposes the following hypothesis:

**Hypothesis 9** *Ceteris paribus*, family control has a positive relationship with firm performance.

### Director's education and firm performance

A board with directors possessing higher education levels is associated with open-mindedness, enhanced information processing capacity, and a tolerance for changes (Hambrick and Mason 1984). Extensive literature has established a link between board members' educational qualifications and financial performance (Hambrick and Mason 1984; Kagzi and Guha 2018). However, despite substantial empirical research on this link, findings have been conflicting and ambiguous. While some studies support the existence of a



positive relationship, other empirical works, though rare, confirm a negative correlation.

For instance, Cheng et al. (2010) found a positive correlation between the educational background of the board chairman and performance measures such as the increase in return on assets (ROA) in China. Bantel and Jackson (1989) also suggest that more educated board members are more proactive in developing technical innovations. In contrast, other research indicates a negative correlation between the financial performance of the board and the educational variety of its members (Kagzi and Guha 2018; Hafsi and Turgut 2013). Similarly, Ujunwa (2012) and Fernández-Temprano & Tejerina-Gaite (2020) report that boards with higher educational diversity negatively impact firm performance. Tacheva and Huse (2006) also support an inverse relationship between the educational background of top management and the firm's financial performance. Additionally, Adnan and Dar (2006) conclude that the performance of a company is negatively impacted by the educational diversity of the board, particularly in government-affiliated businesses, where the culture of selecting directors places more emphasis on the network's governance qualities than on education. Considering these arguments, this study formulates the following hypothesis:

**Hypothesis 10** *Ceteris paribus*, directors' education has a positive relationship with firm performance.

## Research methods

### Sample and data

The study sample consisted of firms listed in the DSE30 index, sourced from the Dhaka Stock Exchange (DSE) in 2020, covering the financial years 2016–2022. The primary data sources included audited financial statements from annual reports and stock market data obtained from the DSE website. Additionally, data on family control and the educational qualifications of directors were manually collected by researchers from various sources, including company websites, annual reports, LinkedIn profiles, and other external media platforms.

Table 1 presents the sample distribution by sector, providing a fair understanding of the sample distribution. The Banks, Engineering, Fuel and Power, and Pharmaceuticals & Chemicals sectors were the most represented, each with 35 observations (17% in each of the categories), followed by the Financial Institutions, Cement, Food & Allied Products, and Telecommunication sectors, each with 14 observations (7% in each). We found data for all firms in our sample, so no firms needed to be dropped. The following table summarizes the sample companies included in the study:

### Variable definition

Table 2 defines the variables used to test our research hypotheses. Previous studies on corporate governance suggest that various dimensions such as shareholder concentration and identity influence the decisions of the firm (Kumar and Zattoni 2015; Zattoni 2011). Common types of shareholding patterns include institutional ownership, foreign ownership, sponsor and directors' ownership, and government ownership. In the current study, the ownership structure is represented by institutional, foreign, director and sponsor ownership, and government ownership. The corporate board characteristics, as one of the most prominent internal corporate governance mechanisms, may substantially influence company performance. These characteristics include the size of the board, the independence of the board, gender diversity, board expertise, family ownership in a board, and the educational qualification of directors. These variables serve as key indicators to explore the relationships between ownership structure, board characteristics, and company performance.

This study uses accounting and market-based performance measures as dependent variables, as seen in Eqs. 1, 2, 3 and 4, which are widely applied by investors and financial analysts in making investment decisions. For accounting-based performance measures, we use the firms' return on asset (ROA) (Eq. 1) and return on equity (ROE) (Eq. 2).

**Table 1** Sample selection process of DSE 30. *Source:* Dhaka Stock Exchange during the period 2014–2021

Industries	Firms	Observations	Percentage (%) <sup>*</sup>
Banks	5	35	17
Engineering	5	35	17
Fuel and power	5	35	17
Pharmaceuticals and chemicals	5	35	17
Financial institutions	2	14	7
Cement	2	14	7
Food and allied product	2	14	7
Telecommunication	2	14	7
Textile	1	7	3
Miscellaneous	1	7	3
Total initial sample	<b>30</b>	<b>210</b>	100
Less: firms and observations with insufficient data	0	0	0
Final sample size firm-years	<b>30</b>	<b>210</b>	<b>100</b>

A noteworthy fact is that insurance agencies, banks, non-bank finance institutions listed under the Finance Act 2015 must have their account books closed every year on December 31; and books of accounts closing date for every listed other firm is June 30 of every year (Finance Act, 2015)

<sup>†</sup> % is rounded up



**Table 2** Variable measurement. *Source:* Authors' own work

Name of variable	Symbol	Measurement	Expected relation	Use in current literature
Firm performance—accounting-based (dependent variable)				
Return on asset	ROA	$\frac{\text{Net Income after Tax}}{\text{Book Value of Total Assets}}$		Boshnak, (2023), Bachiller (2015)
Return on equity	ROE	$\frac{\text{Net Income after Tax}}{\text{Book Value of Equity}}$		Boshnak, (2023), Bachiller (2015)
Firm performance – market-based (dependent variable)				
Tobin's Q	TOBINQ	$\frac{\text{Book value of total Assets} + \text{Market value of Equity} - \text{Book value of Equity}}{\text{Total Assets}}$		Boshnak, (2023);
Market-to-book ratio	MTB	$\frac{\text{Market value of Equity}}{\text{Book value of Equity}}$		Boshnak, (2023), Zulkifli et al. (2017)
Ownership structure (independent variable)				
Institutional ownership	INST	Proportion of shares held by institutional investors	+	Andreou et al. (2022), Kaimal & Uzma (2024)
Foreign Ownership	FOREIGN	Proportion of shares held by foreign investors	+	Kaimal & Uzma (2024), Zulkifli et al. (2017)
Directors' ownership	SPDIRECT	Proportion of shares held by directors and sponsors	+	Zulkifli et al. (2017)
Government ownership	GOVT	Proportion of shares held by government entities	+	Kaimal & Uzma (2024), Zulkifli et al. (2017)
Board characteristics (independent variable)				
Board Size	BSIZE	Total number of directors on the board	±	Bachiller (2015), Kaimal and Uzma (2024)
Board independence	BIND	Proportion of independent directors on the board	+	Bachiller (2015), Kaimal & Uzma (2024)
Board gender diversity	GENDER	Proportion of independent directors on the board	+	Kaimal & Uzma (2024), Xing & Sila (2021)
Board expertise	MEETING	Natural log of the frequency of board meetings as an indicator of board activity	+	Karim et al., (2021), Saha and Khan (2024a)
Family control	FAMILY	Proportion of family members on the board	±	Bachiller (2015), Kaimal & Uzma (2024)
Education	EDU	Average educational qualification score of directors, where scores are allocated as below. 1 = highest undergraduate degree by individual directors. 1 for each undergraduate degree holder 2 = highest master's or postgraduate degree by individual directors. 2 for each master's degree holder 3 = highest foreign master's or postgraduate degree by individual directors. 3 for each of such qualified directors 4 = highest PhD degree by individual directors. 4 for each of PhD holder directors 4 = Professional Accounting Degree by individual directors. Professional accounting degree refers to CA or CMA or ACCA or CIMA degree and is calculated on 4 for each professional	+	Fernández-Temprano & Tejerina-Gaite (2020)
<b>Control variable</b>				
Total assets	TA	Natural logarithm of total assets of the firm	+	Rashid (2018a, b), Boshnak, (2023)
Industry	INDUS	Industry belongingness. Dummy variable		Bachiller (2015), Rashid (2018a, b)
Year	YEAR	Sample year. Dummy variable		Rashid (2018a, b), Saha and Khan (2024a)

For market-based performance measures, we use the firms' market-to-book ratio (Eq. 3) and the firm's Tobin's Q ratio (Eq. 4).

ROA is calculated by dividing net income after tax by the book value of total assets (Boshnak 2023; Islam 2021), while ROE is obtained by dividing net income after tax by

the book value of equity (Boshnak 2023; Omran et al. 2008; Kao et al. 2018). Although ROE and ROA are backward indicators and heavily reliant on internal information, they were necessary for comparison with other previous studies (Boshnak 2023).



To assess company performance on a market basis, the market-to-book ratio is calculated by dividing a company's equity's book value by its market value (Boshnak 2023). Additionally, Tobin's Q serves as a representative metric (Akhter and Hassan 2024; Boshnak 2023). Tobin's Q is justified as it mitigates endogeneity concerns by using a forward-looking external measure, reflecting investor perceptions and the impact of their actions on a company's capital market share (Akhter and Hassan 2024; Boshnak 2023). Tobin's Q captures potential future performance, contrasting with historical cost-based measurements in accounting metrics such as ROA or ROE. The book value of assets and debts, being more stable over time and between companies, results in greater cross-sectional and temporal fluctuations in Tobin's Q. Table 2 defines all variables, including independent, control, and dependent variables, used in the study.

## Research model

Based on prior studies by authors such as Kyere and Ausloos (2021), Saha and Khan (2024a), and Sehrawat et al. (2020), this study employs four different regression models to determine relations between corporate governance mechanisms and financial performance-

$$\begin{aligned} ROA_{i,t} = & \beta_0 + \beta_1 INST_{i,t} + \beta_2 FOREIGN_{i,t} + \beta_3 SPDIRECT_{i,t} \\ & + \beta_4 GOVT_{i,t} + \beta_5 BSIZE_{i,t} + \beta_6 BIND_{i,t} \\ & + \beta_7 GENDER_{i,t} + \beta_8 MEETING_{i,t} + \beta_9 FAMILY_{i,t} \\ & + \beta_{10} EDU_{i,t} + \beta_{11} TA_{i,t} + \sum Year + \sum Industry + \epsilon_{i,t}. \end{aligned} \quad (1)$$

$$\begin{aligned} ROE_{i,t} = & \beta_0 + \beta_1 INST_{i,t} + \beta_2 FOREIGN_{i,t} + \beta_3 SPDIRECT_{i,t} \\ & + \beta_4 GOVT_{i,t} + \beta_5 BSIZE_{i,t} + \beta_6 BIND_{i,t} + \beta_7 GENDER_{i,t} \\ & + \beta_8 MEETING_{i,t} + \beta_9 FAMILY_{i,t} + \beta_{10} EDU_{i,t} \\ & + \beta_{11} TA_{i,t} + \sum Year + \sum Industry + \epsilon_{i,t}. \end{aligned} \quad (2)$$

$$\begin{aligned} MTB_{i,t} = & \beta_0 + \beta_1 INST_{i,t} + \beta_2 FOREIGN_{i,t} + \beta_3 SPDIRECT_{i,t} \\ & + \beta_4 GOVT_{i,t} + \beta_5 BSIZE_{i,t} + \beta_6 BIND_{i,t} \\ & + \beta_7 GENDER_{i,t} + \beta_8 MEETING_{i,t} + \beta_9 FAMILY_{i,t} \\ & + \beta_{10} EDU_{i,t} + \beta_{11} TA_{i,t} + \sum Year + \sum Industry + \epsilon_{i,t} \end{aligned} \quad (3)$$

$$\begin{aligned} TOBINQ_{i,t} = & \beta_0 + \beta_1 INST_{i,t} + \beta_2 FOREIGN_{i,t} + \beta_3 SPDIRECT_{i,t} \\ & + \beta_4 GOVT_{i,t} + \beta_5 BSIZE_{i,t} + \beta_6 BIND_{i,t} \\ & + \beta_7 GENDER_{i,t} + \beta_8 MEETING_{i,t} + \beta_9 FAMILY_{i,t} \\ & + \beta_{10} EDU_{i,t} + \beta_{11} TA_{i,t} + \sum Year + \sum Industry + \epsilon_{i,t} \end{aligned} \quad (4)$$

Notes: Here i and t stand for the firm and the time period, respectively;  $\beta_0$  = intercept;  $\beta_1$  and  $\beta_{10}$  = coefficient

of slope parameters, and  $\epsilon$  = error term. All the variables are defined and measured in Table 2.

## Results and discussions

### Descriptive statistics

Table 3 summarizes the descriptive statistics related to the sample firms' independent variables, dependent variables and control variables. Table 3 presents mean value, standard deviation, and minimum and maximum values that generate valuable insights about the sample companies' existing ownership structure, board characteristics, and profitability. According to Panel A of Table 3, the sponsors and directors are the majority shareholder who holds the highest percentage of average value 47.78%, with a minimum value of 2.67% and a maximum value of 90%. As sponsor and directors are the pioneer of a firm and focus on maximum holding as a part of corporate norm. On the other hand, the institutional ownership holds the second position where the average value of institutional ownership is 18.15%, with a minimum value of 0.24% and a maximum value of 54.36%. As the institutional ownership always focuses on the safety and required return, they always grab the investment opportunities in various firms. Our results reveal that government ownership and foreign ownership are very close to each other with the average ownership 8.61% and 6.95%, respectively. The reason behind the lower government ownership is that government always cares about the state run firms rather than other commercial firms. On the other hand, the least amount of foreign ownership in a firm might be for many reasons including macro-economic stability, long run goal and investment safety for their investment. This result indicates that not all firms in the sample are robust enough to attract foreign investors interested in them. However, some firms have enough foreign ownership almost to take over the whole operation and even Bangladesh has lots of room for improvement in attracting foreign investment. Regarding the board characteristics, the average board size is 9.41, ranging from a minimum of 5 to 18, indicating that the board of directors is mostly in line with corporate governance (CG) guidelines (Bangladesh Securities and Exchange Commission, 2018). Additionally, companies nominate independent directors at a rate ranging from 7 to 70%, with an average of 24.37% during the period. This is also consistent with CG guidelines, where the requirement number of independent directors is 1/5th or 20% of the total board members (Bangladesh Securities and Exchange Commission, 2018). Even though CG rules do not specify any requirement for the number or proportion

**Table 3** Descriptive statistics.  
Source: Authors' own work

Variable	Mean	SD	Minimum	Maximum
<i>Panel A: Ownership structure and board characteristics</i>				
Sponsor and Directors (%)	47.78	21.1	2.67	90
Institutional Ownership (%)	18.15	12.54	0.24	54.36
Government Ownership (%)	8.61	6.32	0.21	23.47
Foreign Ownership (%)	6.95	5.75	0.12	29.84
Board Size	9.41	2.55	5	18
Board Independence (%)	24.37	15.65	7	70
Gender Diversity (%)	16.69	6.81	0	50
Board Meetings	13.13	6.92	4	44
Family Ownership (%)	23.22	18.11	0	87.5
Directors' Education	2.31	0.7	1	3.5
<i>Panel B: Accounting and market-based profitability</i>				
Return on Assets (%)	7.3	5.9	1	43.1
Return on Equity (%)	17.3	14.8	1	90
Market-to-Book Ratio	7.68	4.32	1.2	21.5
Tobin's Q	2.33	1.05	0.5	5.2
<i>Panel C: Control variables</i>				
Total Assets	92,191million	172,034 million	35.35 million	475,011.91 million

See Table 2 for variable definitions

of female directors, we find an average of 16.69% female directors, which is higher than the existing international literature of 7% (Terjesen et al. 2009). In addition, during the period, firms follow the provision of board meetings, where the average number of board meetings is 13.13 times, with a minimum value of 4 and a maximum value of 44. Additionally, the findings demonstrate that the average percentage of family ownership in a board is 23.22, with a minimum value of 0 and a maximum value of 87.5. We find that the average value of directors' education is 2.31, with a minimum value 1 and a maximum value 3.5.

Panel B of Table 3 describes the accounting and market-based profitability matrix. Regarding the accounting-based profitability; the return on assets has a mean of approximately 7.3%, a maximum of 43.1%, and a minimum of 1%. On the other hand, return on equity has a maximum of 90%, a minimum of 1%, and a mean of approximately 17.3%. The mean value of the market-to-book ratio and Tobin's Q are around 7.68 and 2.33, respectively. These statistics illustrate the variability in performance across the sample firms, providing insights into the distribution and range of each dependent variable. These statistics illustrate the variability in performance across the sample firms, providing insights into the distribution and range of each dependent variable.

Regarding the control variables, Panel C of Table 3 describes that total assets have a mean value of 92,191million with a maximum value of approximately BDT 475011.91 million and a minimum value of approximately BDT 35.35 million indicating a considerable level of difference in firm size amidst the Bangladesh market.

## Bivariate analysis

Table 4 shows the Pearson correlations and variance inflation factors (VIF) of the independent variables. The correlation coefficients implied no severe multicollinearity issues (Tabachnick, 2001). The VIF test is a tool for assessing potential multicollinearity among variables within the regression model. A mean VIF exceeding 10 signals the possibility of multicollinearity issues, while a VIF smaller than 1 suggests potential bias in the regression equation (Saha and Khan 2024b). In the present study, the mean VIF is calculated as 1.442, indicating the absence of both multicollinearity and bias in the regression model (Rahman & Saima 2018; Masum & Khan 2019; Sobhan 2021). This finding instils confidence in the robustness of the regression results and assures the independence of variables within the model.

## Multivariate regression results

Table 5 demonstrates the panel FE industry results where Models 1, 2, 3 and 4 are applied to explore how much the dependent variables would be affected for every unit that was to be added to the value of any of the independent variables while keeping the other independent variables constant. Employing regression models, this study assessed the effects of ownership structure and board attributes on the firm performance of DSE30 firms. Specifically, Models 1–2 delineate the accounting-based measures, whereas Models 3–4 encapsulate the market-based measures.



**Table 4** Correlation matrix. *Source:* Authors' own work

Variables	VIF	INST	FOREIGN	SPDIRECT	GOVT	BSIZE	INDPER	GENDER	MEETING	FAMILY	EDU	TA
INST	1.8	1.00										
FOREIGN	1.2	−0.17**	1.00									
SPDIRECT	1.2	−0.4***	−0.3***	1.00								
GOVT	1.7	0.1	−0.26**	0.18**	1.00							
BSIZE	1.8	0.03	−0.3***	0.23***	−0.02	1.00						
INDPER	1.5	0.2**	0.12*	−0.13**	−0.1***	−0.3***	1.00					
GENDER	1.7	0.03	0.28***	−0.11	−0.3***	−0.11	0.13*	1.00				
MEETING	1.7	0.1	0.27***	−0.2**	−0.01	−0.21**	0.22***	0.4***	1.00			
FAMILY	2.3	0.01	0.16**	−0.26***	−0.4***	−0.32***	0.14**	0.5***	0.26***	1.00		
EDU	1.8	0.08	0.26***	0.10	−0.14**	−0.17**	0.11	−0.04	−0.03	−0.15**	1.00	
TA	2.0	0.39***	−0.18**	−0.33***	−0.01	0.25***	−0.04	0.15**	0.29***	−0.03	−0.18**	1.00

(1) \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% confidence levels respectively. (2) See Table 2 for the variable definitions

Model 1 in Table 5 presents the influence of ownership structure and board characteristics on ROA. The results show that foreign ownership and sponsor ownership are statistically positive significant to ROA at the 1% level that supports our Hypotheses 2 and 3. This positive relationship is consistent with the theoretical perception that foreign ownership and sponsor directors tend to improve ROA. The positive association between foreign ownership, director ownership, and firm performance mirrors earlier studies emphasizing the constructive impact of substantial shareholder engagement in the company's decision-making

processes (Schnatterly et al. 2008; Colpan and Yoshikawa 2012). These results uphold the agency theory, positing that shareholders with significant stakes in the company are more likely to align managerial actions with their interests, thereby enhancing firm performance (Jensen and Meckling 1976).

In contrast, institutional ownership and government ownership exhibit a negative significance with respect to ROA, thereby refuting Hypotheses 1 and 4. In terms of board composition, only the presence of independent directors demonstrates a positive and significant association with ROA,

**Table 5** Panel FE Industry  
*Source:* Authors' own work

	Accounting-based measures		Market-based measures	
	(1)	(2)	(3)	(4)
	ROA	ROE	MTB	TOBINQ
INST	−.002*** (0)	0 (0.00)	.83*** (0.25)	−.075*** (0.02)
FOREIGN	.002*** (0)	0 (0.001)	−.006 (0.32)	.032 (0.026)
SPDIRECT	.001*** (0)	0 (0)	.196 (0.13)	−.03*** (0.01)
GOVT	−.002*** (0)	−.007*** (0)	.022 (0.14)	−.045*** (0.01)
BSIZE	.001 (.01)	−.014*** (0.01)	−1.1 (1.01)	.261*** (0.08)
BIND	.001** (0)	−.001*** (0.001)	−.682*** (0.243)	.046** (0.02)
GENDER	0 (0)	.002** (0.001)	.592** (0.23)	.047*** (0.02)
MEETING	0 (0)	.004*** (0.001)	.792** (0.348)	.111*** (0.021)
FAMILY	−.001*** (0)	−.004*** (0.001)	−.611** (0.15)	−.099*** (0.01)
EDU	−.014* (0.01)	−.021 (0.02)	−14.42 (5.2)	−2*** (0.44)
TA	.01*** (0)	0 (0)	0 (0)	0** (0)
INDUS	Y	Y	Y	Y
YEAR	Y	Y	Y	Y
Constant	.124 (0.026)	.394*** (0.059)	19.55 (17)	7.189*** (1.44)
Observations	210	210	210	210
R-squared	0.71	0.59	0.16	0.50

(1) \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% confidence levels, respectively. (2) See Table 2 for the variable definitions



corroborating Hypothesis 6. Independent directors serve as influential agents, playing a pivotal role in enhancing ROA. However, this finding contradicts previous research by Rashid (2018a, b) conducted in Bangladesh, suggesting that board structure has a limited impact on ROA. Consequently, these results challenge the theoretical premise that institutional ownership and government ownership offer an optimal framework for improving ROA.

Conversely, Model 2 presents significant negative evidence regarding the relationship between ROE and government ownership structure, thereby rejecting Hypothesis 4. This outcome contradicts our theoretical expectation, raising concerns about the efficacy of government ownership in ensuring return on equity. This finding aligns with earlier studies that indicated firms with government ownership exhibited poorer performance compared to those with other ownership structures (Mollah et al. 2012; Zulkifli et al. 2017).

Regarding the board composition, our analysis reveals a mixed outcome. Female directors and board meetings demonstrate statistically significant positive associations with ROE, consistent with findings from prior research (Xing and Sil, 2021). However, board size, board independence, and family ownership exhibit negative significant associations, aligning with earlier findings reported by Rashid (2018a, b). The results do not confirm any significant relationship between ROE and board independence, consistent. According to agency theory, independent directors are expected to act in the best interests of shareholders, mitigating agency problems. This unanticipated negative correlation challenges the conventional understanding that independent directors play a beneficial role in safeguarding shareholder interests (Shleifer and Vishny 1997; Yeh 2019). This discovery raises intriguing questions about the effectiveness of board independence within the specific context of Bangladesh, aligning with some prior studies that have shown mixed results regarding the impact of board independence on firm performance (Ruigrok et al. 2006; Terjesen et al. 2016).

In Model 3 and Model 4, we examine the impact of ownership structure and board composition on market-based performance measures, specifically MTB and TOBINQ. Model 3 reveals a positive relationship between institutional ownership and MTB, aligning with Hypothesis 1. However, no significant relationships are found with other ownership structures. As for board characteristics, gender diversity and expertise demonstrate statistically significant positive effects on MTB, consistent with Hypotheses 7 and 8. Conversely, board independence and family control exhibit statistically negative associations with MTB, rejecting the hypotheses posited in Hypotheses 6 and 9.

Finally, Model 4 yields mixed result between TOBINQ and ownership structure as well as board matrix. The results indicate that institutional ownership, sponsor directors and

government ownership are statistically negative to TOBINQ, rejecting Hypotheses 1, 3 and 4. Our results do not find any significant relationship between TOBINQ and foreign ownership. Regarding the board characteristics in Model 4 exhibits a significant positive correlation between TOBINQ and board characteristics where almost all the elements including board size, independent directors, female directors and meeting are statistically positive significant to TOBINQ, thus supporting Hypotheses 5, 6, 7 and 8. Our theoretical prediction is supported by these results. Conversely, family control and directors education are statistically negative significant to TOBINQ, rejecting our Hypotheses 9 and 10. The findings are consistent with earlier suggestion of Din et al. (2022) and Fernández-Temprano and Tejerina-Gaite (2020).

## Robustness analysis

### Lagged effects

As part of a robustness check, we attempt to explore the lagged effect because the influence of independent variables (foreign ownership, institutional ownership, sponsor and directors ownership, government ownership, board independence, board size, female directors, board expertise, family ownership and directors' education) on the dependent variables (ROA, ROE, MTB and TOBINQ) may unfold gradually with changes manifesting over time. Using a lagging dependent variable, ROA, ROE, MTB and TOBINQ, we approximated Models 1–4 in Table 6 for the purposes of exploring this time dynamic. It is important to note that these lagging variable results essentially replicate our original findings, reinforcing the robustness and consistency of the observed relationships. Model 1 in Table 6 shows the results to confirm that there is a favourable and significant impact of foreigners' ownership, sponsor directors, board size, and board independence on ROA while institutional ownership and government ownership are negative significant to ROA which is consistent to our main findings in Table 5. Similarly, Model 2 in Table 6 confirms the significant positive and substantial impact of board gender diversity and board expertise on ROE only while statistically negative to government ownership, board independence, and family control which is consistent with our main findings.

Model 3 in Table 6 exhibits the market-based performance where institutional ownership, female director, and board expertise are statistically positive significant to MTB, supporting our main findings in Table 5. In contrast, board independence, family ownership, and directors' education are negatively significant to MTB which is also similar to our previous findings. Regarding the TOBINQ in Model 4, we find almost all the ownership matrixes are negatively associated with TOBINQ except foreign

ownership that remains neutral. However, we find that almost all the board characteristics are statistically positive to TOBINQ except family control and directors' education which are negatively associated with TOBINQ. These results are consistent to our main findings in Table 5.

### 2Sls Regression effect

We systematically address any endogeneity problems by using the two-stage least squares (2SLS) method, as described in Table 7, following the methodology suggested by Larcker and Rusticus (2010). We used the Cho and Kim (2003) technique because of the interdependence of board qualities, especially the appointment of board or subcommittee members. In this context, the number of independent directors is an endogenous variable that has a bearing on company board size. The strategy takes into consideration the regulatory mandate from the Securities and Exchange Commission (2012) and Bangladesh Securities and Exchange Commission (2018) for boards to maintain a minimum of 20% of independent directors in order to adhere to corporate governance norms. The validity and reliability of our findings are enhanced by the 2SLS results in Table 8, which provide insights into possible endogeneity concerns. The results of Durbin-Wu-Hausman statistics exhibit the range of 9.52 to 0.32. According to Ullah et al.

(2018), models deemed acceptable when the Durbin-Wu-Hausman statistics fall between 1.5 and 6.5.

## Discussion

### Institutional ownership

The analysis produced intriguing findings concerning the relationship between institutional ownership and various performance metrics, offering insights into the complex dynamics between ownership structures and firm performance, as proposed by agency theory. Contrary to our hypothesis (Hypothesis 1), institutional ownership demonstrated a positive and significant association with MTB, a market-based performance measure. However, in contrast to the theoretical expectations outlined in Hypothesis 1, our results indicated a negative and significant relationship between institutional ownership and ROA and TOBINQ. This divergence from the hypothesized direction aligns with prior research suggesting that institutional investors, leveraging their expertise and professional oversight, contribute to enhancing firm profitability (Andreou et al. 2022; Colpan and Yoshikawa 2012; Pfeffer and Salancik, 2003).

One plausible explanation for these divergent outcomes could be the multifaceted nature of firm performance and the complex interactions between ownership structures because institution holding does not necessarily mean that they have control over the firm business decision to accelerate

**Table 6** Lagged effect. *Source:* Authors' own work

	Accounting-based measures		Market-based measures	
	(1)	(2)	(3)	(4)
	ROA	ROE	MTB	TOBINQ
INST	– .001*** (0)	0 (.001)	.76*** (.29)	– .06*** (.03)
FOREIGN	.003*** (.001)	0 (.001)	– .023 (.36)	.046 (.03)
SPDIRECTION	.001*** (0)	0 (0)	.163 (.14)	– .038*** (.012)
GOVT	– .002*** (0)	– .01*** (.001)	.01 (.15)	– .04*** (.013)
BSIZE	.005*** (.002)	– .011*** (.004)	– 1.1 (1.13)	.348*** (.1)
BIND	.001** (0)	– .002** (.001)	– .67*** (.26)	.043** (.023)
GENDER	0 (0)	.002** (.001)	.56** (.26)	.08*** (.022)
MEETING	0 (0)	.003*** (.001)	1.04*** (.39)	.115*** (.03)
FAMILY	– .001*** (0)	– .004*** (.001)	– .62*** (.17)	– .11*** (.01)
EDU	– .03*** (.01)	– .01 (.02)	– 14.6** (6)	– 2.74*** (.52)
TA	0* (0)	0 (0)	0** (0)	0 (0)
INDUS	Y	Y	Y	Y
YEAR	Y	Y	Y	Y
Constant	.11*** (.03)	.36*** (.07)	35.86* (18.67)	7.79*** (1.61)
Observations	210	210	210	210
R-squared	0.75	0.57	0.18	0.52

(1) \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% confidence levels, respectively. (2) See Table 2 for the variable definitions



**Table 7** 2SLS Regression effect. *Source:* Authors' own work

	Accounting-based measures		Market-based measures	
	(1)	(2)	(3)	(4)
	ROA	ROE	MTB	TOBINQ
INST	0 (0)	0 (.001)	.478* (.201)	− .05*** (.02)
FOREIGN	.004*** (.001)	.005*** (.002)	.24 (.34)	.001 (.03)
SPDIRECTION	.001*** (0)	.002* (.001)	− .134 (.16)	− .013 (.012)
GOVT	− .001*** (0)	− .001 (.001)	.465*** (.17)	− .03** (.01)
BSIZE	.004 (.01)	.049** (.02)	8.14** (2.85)	.29 (.29)
GENDER	− .001 (0)	0 (.001)	.037 (.15)	− .013 (.02)
MEETING	0 (.001)	.007** (.002)	1.24** (.54)	.17*** (.039)
FAMILY	− .001** (0)	− .002** (.001)	− .019 (.171)	− .06*** (.013)
EDU	− .0032*** (.01)	− .019 (.03)	− 2.92 (3.95)	− .918** (.4)
TA	0*** (0)	0 (0)	0*** (0)	0*** (0)
INDUS	Y	Y	Y	Y
YEAR	Y	Y	Y	Y
Constant	.07 (.06)	− .19 (.18)	− 18.64 (28.73)	6.18 (2.87)
Observations	210	210	210	210
R-squared	0.57	0.06	0.001	0.33
Durbin–Wu– Hausman	0.32	9.52	6	0.32

(1) \*, \*\*, \*\*\* indicate significance at the 10%, 5%, and 1% confidence levels, respectively. (2) See Table 2 for the variable definitions

ROA and TOBINQ. Therefore, institutional investors are not exposed by a strong commitment and engagement with the company and thus have a positive influence on its performance. Thus, other performance dimensions might be contingent upon additional factors or operate through alternative channels not captured in our analysis. This exerts a discernible suggesting the relationship between institutional ownership and firm performance is context-dependent and warrants further investigation to unravel the underlying mechanisms driving these differential effects (Demsetz and Villalonga 2001; Kapopoulos and Lazaretou 2007).

## Foreign Ownership

In hypothesized (Hypothesis 2), we found a significant positive association between foreign ownership and ROA which is consistent with prior literature (Douma et al. 2006; Ferreira and Matos, 2008; Nguyen et al. 2020; Omran et al. 2008; Zulkifli et al. 2017). Our findings suggest that foreign investors, characterized by their strong commitment and engagement with the firm, exert a positive influence on company performance.

These findings lend support to the notion that foreign investors, by introducing external resources such as knowledge, expertise, and access to global markets, play a pivotal role in driving firm performance (Claessens et al. 2000). Additionally, foreign investors, less connected to domestic shareholders and possessing comparatively limited company

information, exhibit increased motivation to closely monitor the firm's operations (Chen et al. 2009), which may further contribute to the observed positive relationship between foreign ownership and firm performance.

## Sponsor and director ownership

In hypothesized (Hypothesis 3), we find a mixed result revealing ROA is statistically positive and while TOBINQ is negative significant. The results of the study align with previous research such as Bhagat and Bolton (2013) and Farrer and Ramsay (1998), which documented a positive impact of director ownership on company performance (ROA). Similarly, the positive association between sponsor ownership and firm performance is in line with the arguments from agency theory, where sponsors, as significant shareholders, have a vested interest in overseeing managerial activities to mitigate agency problems. Furthermore, the significant relationship between sponsor ownership with firm performance supports the notion that governance mechanisms play a crucial role in enhancing company performance. This is consistent with the broader literature on corporate governance, where institutional ownership is often associated with better firm performance (Han and Suk, 1998; Omran et al. 2008; Zulkifli et al. 2017). The positive impact is also consistent with studies such as those by Kansil and Singh (2018) and Yeh (2019), which highlighted the professionalism and expertise of institutional directors in driving positive outcomes for companies. Conversely, we find sponsor



ownership is negative significant to TOBINQ which is not align with our theoretical expectation. The findings indicates that sponsor and directors' ownership negatively.

### Government Ownership

The results found a statistically negative relationship between government ownership and firm performances including ROA, ROE and TOBINQ. The outcome is inconsistent with the hypothesis derived from agency theory (Hypothesis 4). The findings revealed that firms with more government holdings negatively associated with ROA, ROE and TOBINQ. The possible reason might be that firms' management on behalf of the government were represented by individuals not serious in undertaking their responsibilities because they might not have the relevant experience or expertise to do the job or they are politically chosen (Jaffar and Abdul-Shukor 2016; Zulkifli et al. 2017).

### Board size

The results found a positive relationship between board size and TOBINQ suggesting that larger boards, with their diverse experiences and backgrounds, are more effective in overseeing management actions and contributing to enhanced company performance, aligning with previous research findings (Saha and Khan 2024a; Choi et al. 2007; Adeabah et al. 2019; Bachiller, 2015; Coles et al. 2008). Conversely, board size negatively influences return on equity, which is consistent with earlier studies (Guest 2009).

### Board independence

Our analysis of the sample data reveals that the presence of independent directors significantly impacts firm performance, particularly in terms of ROA and TOBINQ. This finding supports Hypothesis 2 and aligns with prior empirical research (Bachiller, 2015; Brickley and Zimmerman 2010). According to agency theory, a board comprising a substantial number of external directors is considered independent and capable of impartially monitoring and advising managers, thereby advancing shareholders' interests (Brickley and Zimmerman 2010). Conversely, our results indicate a negative and significant relationship between ROE and MTB and board independence. This outcome is consistent with previous findings by Rashid (2018a, b), suggesting that the independence of the board does not necessarily lead to improved firm financial performance.

### Gender diversity

The empirical findings confirm the presence of a significant positive relationship between gender diversity and firm performance including ROE, MTB and TOBINQ, thereby substantiating Hypothesis 7. The finding is similar to Terjesen et al. (2009) and Xing and Sila (2021) who reported that boards with distinctive female directors facilitate firms with a variety of resources. However, there is no significant influence of gender diversity on ROA.

### Board expertise

The study reveals a significant positive relationship between the board expertise and firm performance (ROE, MTB and TOBINQ), consistent to the expectations outlined in Hypothesis 8. The findings is supported by many existing research researchers who suggest that the number of meetings a board member attends may often be used to explain their level of effort and diligence (Karim et al. 2021; Alnabsha et al. 2018). However, empirical results show that ROA is not associated with the expertise.

### Family control

Our analysis consistently reveals a significant negative correlation between family control and all the accounting and market-based firm performance indicators. This finding is supported by existing studies that have explored the impact of family members on board effectiveness and business success (Bachiller, 2015; Desender 2009; Makhoul et al. 2018). These studies suggest that the presence of family members on the board may compromise its effectiveness, as board members may be selected based solely on familial ties and preferences (Omran et al. 2008). Additionally, the significant influence and control exerted by family members over the business may lead to the compromise of minority shareholder rights and instances of expropriation (Al-Dubai et al. 2014). Overall, our findings align with the literature and underscore the detrimental impact of family control on firm performance.

### Directors education

The study consistently demonstrates a negative and significant relationship between directors' education and firm performances including ROA and TOBINQ, contradicting Hypothesis 10. The finding is consistent with earlier research that indicated a negative correlation between the financial performance of the board and the educational variety of its members (Fernández-Temprano & Tejerina-Gaite 2020; Kagzi and Guha 2018; Hafsi and Turgut 2013 and Ujunwa



2012). Moreover, the findings suggest that educational qualification does not have any influence on ROE and MTB.

Overall, the study findings highlight the significant influence of ownership structure and board characteristics on firm profitability, contributing valuable insights into the complex interplay between ownership structure, corporate governance and financial transparency. Specifically, foreign ownership, directors' ownership, larger boards, the presence of independent directors, existence of female directors, and board expertise were identified as positive and significant factors associated with increased specific firm value, consistent with previous research (Benjamin and Biswas 2022; Karim et al. 2021; Bhagat and Bolton 2013; Brickley and Zimmerman 2010; Ferreira and Matos, 2008; Nguyen et al. 2020; Saha and Khan 2024a; Terjesen et al. 2009). In contrast, greater government ownership, more family control and education were identified as strongly negative significant to firm performance, consistent with previous research (Jaffar and Abdul-Shukor 2016; Kagzi and Guha 2018; Makhoul et al. 2018). These findings suggest that regulatory bodies may need to scrutinize further to understand the reasons behind the limited influence of institutional ownership, government ownership and some other CG attributes.

## Conclusion

This research delved into the intricate relationship between a firm's ownership structure, board characteristics, and various performance metrics in Bangladesh, using return on asset (ROA), return on equity (ROE), Market-to-book value, and Tobin's Q as indicators. Notably, foreign ownership and sponsor director ownership were found to positively impact return on asset, indicating a focus on optimizing asset utilization. Conversely, government ownership showed a negative significant association with ROA, ROE, and TOBINQ, suggesting inefficient management mechanisms hindering firm performance.

Furthermore, the study highlighted that not all board characteristics positively influence firm profitability. While a larger board positively influenced Tobin's Q, it had a negative statistical impact on ROE, raising questions about effective board composition. Although Bangladesh's corporate governance guidelines recommend a requisite number of directors for efficiency, our findings suggest a nuanced understanding of the impact of board composition on firm performance.

Independent directors emerged as crucial contributors to accountability and transparency, positively influencing ROA and Tobin's Q. Despite not being mandatory under CG guidelines, female directors positively influenced ROE and TOBINQ, indicating a propensity for responsible management, potentially mitigating agency problems. Surprisingly,

family control exhibited a strongly negative association across all performance metrics, indicating that family dominance may impede firm growth and financial progress.

Overall, the study's results align with agency theory, illuminating the complex interplay between ownership structure, board characteristics, and firm performance in the context of Bangladesh. It underscores the importance of carefully considering the specific context and factors influencing corporate governance practices and their ultimate impact on firm performance. This nuanced understanding is crucial for stakeholders and policymakers seeking to enhance corporate governance frameworks and promote sustainable business performance in the region. As brought up, the capability of shareholders to influence managerial actions is minimal if they are not part of the corporate board. Nevertheless, they have the exclusive power to form and change the board's structure using the right to vote to elect board members at the annual general meeting. At any moment, if they perceive the board not governing the firm's actions towards the shareholder's interests, the shareholders can convene an extraordinary general meeting to make essential alterations to the firm's board. Therefore, the role of the board of directors, which is ultimately formed by the votes of the shareholders, is significant in order to accomplish better performance and to guide managerial actions towards the interests of the owners. We also seek to concentrate on the problem of appointing independent directors. Regulators like BSEC and Bangladesh Bank must guarantee the designated independent directors' genuine independence. Despite the difficult circumstances in Bangladesh, strong implementation of regulations and adequate monitoring may assist. Instead of just copying other nations' corporate governance structures, Bangladesh's corporate culture and business climate should be changed according to its own corporate climate. Although independent directors should be strong and resolute, they should be independent of thought as well as prepared to question the CEO and other directors constructively— notions that may not be entirely expressed in black-and-white regulations. At the same time, directors should avoid becoming divisive or pursuing their own interests. Collaboration and collegiality are also necessary for a healthy and functional board of directors. Individual independent directors should be strong and steady, free of political or ideological bias, and prepared to confront the CEO and other directors in a constructive manner— ideas that may not be completely reflected in black-and-white laws and regulations. At the same time, directors should avoid becoming divisive or pursuing their own interests as collaboration and collegiality are necessary for a healthy and functional board of directors.

Several limitations warrant consideration when interpreting the study findings. The analysis was based on data spanning only seven years, and future studies could benefit



from a longer timeframe. Data availability constraints for some firms and the lack of consideration for the moderating function of the corporate board on company performance suggest avenues for future research. By addressing these limitations, future studies can provide a more comprehensive understanding of the dynamics between ownership structure, board characteristics, and firm performance in Bangladesh.

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## Declarations

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