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# Board Characteristics and Bank Stock Performance: Empirical Evidence from the MENA Region

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**Abstract:** This study examined the relationship between the board characteristics and stock performance of commercial banks. Our analysis is based on a sample of 65 banks across 10 MENA countries and their quantitative data extracted between 2013 and 2022. This research employed pooled OLS, and fixed and random effect regression to confirm the association between board size, board independence, number of board meetings, and CEO duality with stock performance measured by the bank's share price and market-to-book ratio. Further, several control variables were utilized such as the bank's capital adequacy, profitability, and size. The empirical findings reveal that board independence positively affects the bank stock performance while the board size shows a negative relationship. This suggests that banks with fewer board members and high independence levels have their shares outperforming others. However, we found that having frequent board meetings per year and separate roles for the CEO and chairman have no impact on bank stock performance. Moreover, the findings indicate that the bank's capital adequacy, size, and profitability have a positive effect on the stock performance. To test the robustness of our analysis, we implemented a one-limit Tobit model, which enables lower-bound censoring, and obtained similar findings thus confirming our hypotheses. From a practical perspective, our findings highlight the importance of the board size and the directors' independence to MENA regulators and policymakers in an effort to implement an effective corporate governance system. Specifically, MENA banks are advised to decrease the number of board members, and this should reduce the number of annual board meetings which, in turn, should maximize performance.

**Keywords:** corporate boards; stock performance; market-to-book ratio; capital adequacy; profitability; tobit regression; censored regression

**JEL Classification:** C01; C12; C33; C44; G12; G21; G30



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## 1. Introduction

Global investors face the risk of significant financial losses if they lack sufficient knowledge about the securities they are purchasing. This is due to a string of scandals and corporate collapses such as Enron, Tyco, Parmalat, WorldCom, Health South, and One Tel, as well as the worldwide financial and economic crisis that has affected the United States and numerous other countries. Consequently, investors sought to ascertain the individuals responsible for making decisions on behalf of their companies and the principles that guided these individuals. This is when the concept of corporate governance was developed. From an investor's perspective, corporate governance refers to a mechanism that allows capital providers to ensure a profitable return on their investment (Shleifer and Vishny 1997). The Cadbury Committee (1992) defines corporate governance as the "system by

which companies are directed and controlled". The significance of implementing corporate governance arises mostly from the implications of the division between ownership and control. Effective corporate governance is crucial in managing and mitigating the agency problem. Bekiaris et al. (2013) argued that the financial crisis was caused, in part, by corporate governance failure, which occurred when two key principles, accountability and transparency, were violated. International committee reports, such as the 2002 Sarbanes–Oxley Act in the U.S., the Cadbury Committee Report of 1992, the Toronto Stock Exchange Corporate Governance Guidelines of 1994, and the Australian Stock Exchange's principles of good corporate governance and best practice recommendations, regulate corporate governance practices.

Banking governance plays a crucial role in resolving problems by complying with the set principles and provisions that ensure the safety and security of the banks and their shareholders. According to El-Chaarani et al. (2023), banking governance is defined as the mechanism to take and improve performance, enhance the internal control operation, and set the standards of disclosure and transparency. The banking sector has continually evolved given the recent developments in financial globalization and the expansion and introduction of new services. As a result, the Middle East and North African (MENA) banks stood to benefit since banking governance has become vital in ensuring economic stability, financing, and the well-being of the banking system (Abu Khalaf et al. 2024; Osei-Baidoo et al. 2023). Even though banking governance is an economic growth indicator, it seeks to address the different risks accompanying the operations of the banks (AlSagr et al. 2018). Bank management's primary goal is to achieve maximum efficiency while safeguarding the interests of the shareholders, minimizing risks, and promoting transparency and disclosure (Shahrour and Awad 2024; Bui and Krajcsák 2023).

Enhancing and improving the financial performance of commercial banks is a major area of consideration. Banking governance can address these issues by developing and utilizing principles and provisions that help ensure the banks' safety and protection (Athar et al. 2023). Previous research (Ben Fatma and Chouaibi 2023; Abubakar et al. 2023; Dang et al. 2019; Assenga et al. 2018; Kılıç and Kuzey 2016) on the relationship between corporate governance mechanisms and bank performance has found mixed results. For instance, a study by AlSagr et al. (2018) raised substantial concerns over the possible ineffectiveness of some governance mechanisms in improving Saudi Arabian bank performance. Further, the study of Athar et al. (2023) revealed that corporate governance significantly impacts bank performance in Pakistan, and affects the banks' profitability, efficiency, and productivity even though the impact varies across the mechanisms.

This study makes several important contributions to the literature when investigating the relationship between banking corporate boards and stock performance in the MENA countries. Firstly, the originality of this research is reflected by implementing two proxies to measure stock performance, namely the share price and market-to-book ratio. Secondly, limited empirical evidence about MENA commercial banks is currently found in the literature. To the best of our knowledge, this is the only study that involves 65 commercial banks from ten different MENA countries for the period of 2013–2022. Thirdly, this study aims to analyze if the board characteristics affect the bank's stock performance and how board structure and other bank-related factors impact key performance metrics such as the market-to-book ratio. Fourthly, the novelty of this research is demonstrated through the use of a lower-limit Tobit regression to test for the robustness of our findings. To be precise, this is the only study that has applied a censored regression to estimate the bank stock performance using the share price and the market-to-book ratio.

This study is structured as follows: Section 2 includes a comprehensive examination of existing literature. Then, Section 3 encompasses the methodology used by which we introduce our two econometric models along with the list of hypotheses. Section 4 presents the study's empirical findings and analysis. Lastly, the final section of the report highlights the conclusion and limitations.

## 2. Literature Review

### *2.1. Theoretical Background*

#### 2.1.1. Agency Theory

The agency theory posits that the separation of ownership and control in modern corporations can lead to conflicts of interest between shareholders (principals) and managers (agents) (Jensen and Meckling 2019). This controversy exists as a result of a conflict of interest and arises when agents abuse their job roles and power to maximize their self-interests at the expense of the shareholders and thus increase agency costs (Lee and Tulcanaza-Prieto 2024). The study by Osei-Baidoo et al. (2023) examined how certain corporate governance attributes, such as board diversity, board size, and CEO duality, can help mitigate agency problems and enhance bank performance. Agency theory is relevant in explaining the relationship between corporate governance mechanisms and the bank managers' behavior, their accountability to the shareholders and, consequently, the banks' financial resource utilization and performance (Uchenna Okoye et al. 2020).

Effective corporate governance is positively associated with bank performance and risk mitigation to minimize agency conflicts. A study by Bui and Krajcsák (2023) discussed agency theory by providing proper monitoring that could lead to minimum agency costs. According to Daily et al. (2003), other problems might come out as a result of the required monitoring such as the board size, independence of directors, and CEO–chairman role duality. Furthermore, Kyereboah-Coleman (2007) observed other strategies that may assist in reducing agency conflict. These include the necessity to have the majority of the board as non-executives and involve two separate persons to become the CEO and the chairman. This is expected to improve the level of independence and reduce the conflict of interest between owners and managers (La Porta et al. 2020).

#### 2.1.2. Stakeholder Theory

Stakeholder theory is a framework in which organizations should angle everything toward the interests and concerns of different stakeholders, not only their shareholders or owners (Mahajan et al. 2023). Stakeholder theory is used in the literature in examining the link between corporate governance and bank performance while aiming to preserve the stakeholders, including regulators, customers, employees, etc. (Anginer et al. 2018). Stakeholder theory suggests that governance decisions and their implications on bank performance should reflect the interests and concerns of more stakeholders, which may include shareholders and potential investors (Dike and Tuffour 2021; Muhammed 2020).

#### 2.1.3. Stewardship Theory

Stewardship theory suggests that the board of directors plays a crucial role in creating a control system that improves the general efficacy of a firm. This theory is supported by considerable academic and practical research such as Contrafatto (2014). The basis of this is that board members act as stewards, with the responsibility of safeguarding and promoting the interests of shareholders. The research findings of Awad et al. (2023) and Assenga et al. (2018) emphasize the importance of board diversity, in terms of both gender and expertise, in boosting business value and ensuring morally acceptable decision-making by boards. Furthermore, this concept highlights the role of the board in serving as a conduit that links a company's activities to its external environment. This enables the board to effectively manage external dependencies and acquire necessary resources (Lei and Song 2012; Ghabayen et al. 2018). Consequently, the board functions as a caretaker, working in the optimal long-term interests of the company and its shareholders, due to the congruence of its interests with those of the owners, sometimes facilitated by equity ownership. In summary, the stewardship theory proposes that effective corporate governance, long-term firm prosperity, and the enhancement of shareholder value are achieved when the board fulfills its role as a responsible steward.

### 2.2. Previous Studies

A global study by Al-Shaer et al. (2023) studied the interaction between the board structure and company value, emphasizing the role of firm strategy in shaping board structures. A panel dataset from 2013 to 2018 for 36 countries and 5250 firms was used to discover that cost leadership strategy is positively correlated with board size and gender diversity but negatively with board skills. In contrast, the differentiation strategy showed a positive link between board size and diversity. Furthermore, using a two-step GMM model, the authors found that variables like board independence, board size, and the presence of women on board significantly increase firm value. However, other factors, like the frequency of board meetings, were found to be statistically insignificant in affecting the firm's value.

In addition, a study by Nguyen et al. (2016) about the relationship between the board size and firm value in Australia confirmed that board size negatively impacts the firm's Tobin's Q. Additionally, the size of the firm was determined to positively impact the firm value, unlike the firm's leverage position which does not show any robust statistical relationship. This study utilized 7999 observations obtained from Australian firms over the period of 2001–2011. Moreover, another research by Johl et al. (2015) looked at a variety of factors, including board meetings, board size, board skills, and board independence to determine the association between board traits and business value. The study used financial and non-financial data obtained from the annual reports of the 700 publicly listed firms in Malaysia for 2009, resulting in 731 observations. Empirical findings revealed that firm size and number of board members are positively related to firm performance, while leverage and number of board meetings are negatively related. In addition, the study failed to prove an association between board independence and company performance.

Furthermore, another study by Osei-Baidoo et al. (2023) examined the relationship between corporate boards and the performance of commercial banks listed on the Ghana Stock Exchange. A dataset for the period of 2009–2019 and a sample of 23 banks were used to study board diversity, ownership concentration, board size, CEO duality, firm age, and firm size. The findings showed that board diversity, firm age, and size positively influence bank performance, while a larger board size, CEO duality, and ownership concentration had negative effects, leading to a reduction in bank performance. Such conclusions highlight the need for policies to improve the governance practices in Ghana's banking sector, such as increased female and independent director representations on boards. These findings align with much of the prior literature. Consequently, another study involving Nigerian financial institutions indicated that banks are expected to operate under accepted governance norms to consistently run successful operations (Uchenna Okoye et al. 2020). This study investigated the relationship between bank performance and governance practices to confirm that board size has a positive influence on financial performance without any statistical significance to board independence and gender diversity.

Other studies in the Asian markets examining the relationship between bank performance and corporate governance documented a negative association between board size and the performance of commercial banks in Pakistan (Athar et al. 2023). This study encompassed a dataset for the period of 2013–2020 to investigate board size, CEO duality, audit committee size, gender diversity, and foreign ownership as key independent variables influencing multiple measures of bank performance. Performance was measured through return on assets and earnings per share. The methodology involved panel data analysis related to 19 commercial banks using pooled OLS to verify that the board size and audit committee size have a positive impact on bank performance. Gender diversity measures, like women on boards and in audit committees, have proved to have a negative impact on performance, likely due to marginal representation.

To examine the determinants of enterprise value (EV) in Vietnam, Dang et al. (2019) analyzed data extracted from 214 listed companies between 2012 and 2016. They identified a positive relation between firm size and profitability with EV, while the capital structure negatively affected the firm's value. Interestingly, growth showed no influence on the EV.

Additionally, when comparing EV with Tobin's Q, certain inconsistencies arose, leading to the endorsement of EV as a more appropriate measure. In contrast, Mishra and Kapil (2017) pinpointed that Tobin's Q is more affected by the Indian board characteristics. A sample of 391 firms listed on the national stock exchange and a panel dataset for the period of 2010–2014 were utilized to reveal that the board size and number of annual meetings have a positive impact on firm value. Separating the CEO and chairman of the board creates value, but overworked directors negatively impact corporate performance.

Furthermore, Ben Fatma and Chouaibi (2023) examined how the board of directors and ownership structure affect European financial institutions' stock pricing. This study involved 111 publicly traded financial institutions from 12 different European countries between 2007 and 2019. Panel data were analyzed using multivariate regression to examine the relationship between European bank value and various board proxies such as gender diversity, board size, ownership concentration, independence, and CEO ownership. The authors confirmed that women on board and CEO ownership increase the share's market-to-book ratio. Conversely, the bank's value is negatively associated with board size and ownership concentration. Interestingly, board independence and leverage did not show a significant relation with the bank's market-to-book ratio. Likewise, a study by Bouteska (2020) studied the association between the corporate board structure and bank performance using financial data between 2000 and 2019. The author analyzed 50 banks in the Eurozone using the pooled OLS, panel fixed/random effect regression, and GMM and proved that the board size, CEO duality, annual board meetings, and board independence positively impact the performance of the EU banks. An interesting research outcome is that the presence of financial professionals has a substantial impact on the performance of banks.

To investigate the association between corporate board traits and firm performance in the Middle East, several studies were further analyzed. AlSagr et al. (2018) examined the relationship between corporate governance mechanisms and bank performance in Saudi Arabia. The authors employed a quantitative research approach on nine Saudi banks using a dataset for the period 2011–2016. The findings of the study identified a significant association between bank performance and the quality of corporate governance mechanisms. Effective board composition, including the presence of independent directors, was associated with deteriorated performance. Ownership structure, particularly the presence of institutional investors, played a role in enhancing bank performance. In contrast, another research involving all the 12 Saudi Arabian banks conducted by Habtoor (2022) for a longer time period of 2009–2018 revealed dissimilar findings. The findings showed that board independence, board size, and gender diversity do not statistically influence the Saudi banks' performance.

Further research exclusively involving MENA countries were examined by various scholars. For instance, a study by Başar et al. (2021) studied the impact of corporate governance on bank performance using a sample of 33 Turkish and MENA countries such as Lebanon, Morocco, and Tunisia. Using a dynamic GMM and a panel dataset for the period of 2012–2017, the authors proved that both the board characteristics index and the bank size do not statistically influence the stock's return. Another study by Habash and Abuzarour (2022) employed a panel regression on 30 Palestinian firms and confirmed that the firm size and leverage are negatively associated with the stock performance, unlike the board size which appeared to be statistically insignificant. However, the findings of Boussaada and Karmani (2015) were almost different. Their study encompassed 38 MENA commercial banks with a dataset from 2004 to 2011 and confirmed that board independence, CEO duality, and GDP growth do not impact the bank's financial performance. Also, the bank's capital ratio and size showed a positive relationship with bank performance while the board size showed a negative association. Similar results were obtained by Trad (2023), who verified that the board size in the MENA banks negatively influences their performance. Further, the findings highlighted the positive impact of the bank's capital adequacy and size on its performance. Other research involving 80 banks from 11 MENA countries pinpointed that having additional directors sit on the board results in better

financial performance. Interestingly, other variables such as independence, number of board meetings, CEO duality, and firm size did not show any statistical influence over the bank's stock performance (Issa et al. 2021). Furthermore, Table 1 presents a summary of the different literature studying the relationship between corporate boards and firm/bank performance in various countries and regions.

**Table 1.** Supplementary Empirical Findings.

| Research | Country/Region | Sample Size | Time Frame | Summary of Major Findings |
|---|---|---|---|---|
| Perdana and Adriana (2018) | Indonesia | 7 Banks | 2010–2014 | • Board Size: Sig. Positive<br>• Board Independence: Not. Sig. |
| Sarkar and Sarkar (2018) | India | 46 Banks | 2003–2012 | • Board Size: Not Sig.<br>• Board Independence: Sig. Negative<br>• CEO Duality: Sig. Negative |
| Darwanto and Chariri (2019) | Indonesia | 14 Banks | 2014–2017 | • Board Size: Sig. Positive<br>• Board Independence: Sig. Positive |
| Uddin et al. (2021) | Bangladesh | 63 Firms | 2005–2019 | • Board Size: Sig. Positive<br>• Board Composition: Sig. Negative<br>• CEO Duality: Not Sig.<br>• Board Independence: Sig. Positive |
| Kılıç and Kuzey (2016) | Turkiye | 149 Firms | 2008–2012 | • Board Size: Not Sig.<br>• Board Independence: Not Sig. |
| Obradovich and Gill (2013) | USA | 333 Firms | 2009–2011 | • CEO Duality: Sig. Positive<br>• Board Size: Sig. Negative |
| Awad et al. (2023) | GCC | 354 Firms | 2010–2022 | • Board Size: Sig. Positive<br>• Gender Diversity: Sig. Positive |
| Usman and Yahaya (2023) | Nigeria | 112 Firms | 2009–2021 | • Board Size: Sig. Negative<br>• Board Independence: Sig. Negative |
| Salem et al. (2019) | USA and Egypt | 27 USA<br>84 Egypt | 2012–2017 | • CEO Duality: Sig. Positive in Egypt and Sig. Negative in USA<br>• Board Size: Sig. Negative<br>• Board Meetings: Sig. Positive<br>• Board Independence: Sig. Positive |
| Nguyen and Huynh (2023) | Vietnam | 52 Firms | 2006–2020 | • Board Size: Sig. Positive<br>• Board Meetings: Sig. Positive<br>• Board Independence: Not Sig. |
| Ararat et al. (2021) | Egypt | 50 Firms | 2005–2014 | • Gender Diversity: Sig. Negative<br>• Foreign Board Members: Sig. Positive |
| Mishra et al. (2024) | India | 420 Firms | 2016–2021 | • Board Size: Sig. Negative<br>• Board Meetings: Not Sig.<br>• Board Independence: Sig. Negative |
| Andoh et al. (2023) | Ghana | 21 Firms | 2004–2016 | • Board Size: Not Sig.<br>• Board Independence: Not Sig. |

Source: Authors' Analysis.

Lastly, numerous scholars have studied the relationship between corporate boards and stock performance in emerging countries; however, very limited research has been conducted on the MENA banks. To the best of our knowledge, this research fills in the gap to empirically investigate a comprehensive sample of ten MENA countries (65 banks).

Being limited to the financial sector, in particular, our study is unique and expected to enrich the literature with up-to-date research findings.

## 3. Methodology

### 3.1. Sample of the Study

The study population consists of commercial banks operating in the MENA countries. The MENA financial markets display a comprehensive count of 106 listed commercial banks as of the beginning of 2024. Financial data for the banks are collected from their respective annual reports and financial databases such as LSEG Data and Analytics Platform for the period of 2013–2022. A group of 41 banks were eliminated from the initial sample due to undisclosed data; thus, the final sample comprised 65 institutions, which accounts for approximately 61% of the total listed banks. The sample includes banks from ten different countries as shown in Table 2.

**Table 2.** Sample Breakdown.

| Country | Bank Population | Missing Data | Final Sample |
|---|---|---|---|
| **Middle East** | | | |
| Bahrain | 9 | 5 | 4 |
| Jordan | 14 | 6 | 8 |
| Kuwait | 11 | 3 | 8 |
| Oman | 7 | 2 | 5 |
| Qatar | 9 | 3 | 6 |
| Saudi Arabia | 10 | 3 | 7 |
| United Arab Emirates | 18 | 7 | 11 |
| **North Africa** | | | |
| Egypt | 10 | 4 | 6 |
| Morocco | 7 | 3 | 4 |
| Tunisia | 11 | 5 | 6 |
| Total | 106 | 41 | 65 |

Source: Authors' Analysis.

### 3.2. Model Development

The model development discussed in the following section incorporated multiple variables that have been strongly advocated in the literature for their substantial influence on the association between board characteristics and the bank's stock performance.

While these relationships have been widely studied in non-financial firms, empirical evidence in the banking sector is more limited. Financial institutions, and specifically commercial banks, differ from other corporations because they are subject to stringent regulations and high levels of monitoring. This raises questions on whether governance mechanisms operate differently for banks and thus examining whether the connections between board characteristics and stock prices can provide meaningful insights into the appropriate governance practices for the banking industry. Table 3 presents the variables of the study along with their abbreviations.

**Table 3.** Variables of the study.

| Variable | Abbreviation | Measurement | Reference |
|---|---|---|---|
| ***Dependent Variable*** | | | |
| Stock Price | SPRI | End-of-Year Closing Price per Share | • Usman and Yahaya (2023)<br>• Di Pietra et al. (2008) |
| Market-to-Book Ratio | MBR | End-of-Year Market Capitalization divided by the Total Book Value of Common Equity | • Ben Fatma and Chouaibi (2023)<br>• Ararat et al. (2021) |
| ***Independent Variables*** | | | |
| CEO Duality | CEOD | CEO Duality Dummy Variable | • Awad et al. (2022)<br>• Dogan et al. (2013) |
| Board Independence | BIND | Percentage of Independent Board Members obtained from LSEG Data and Analytics Platform | • Ben Fatma and Chouaibi (2023)<br>• Guest (2009) |
| Board Size | BS | Number of Board Members obtained from LSEG Data and Analytics Platform | • Awad et al. (2023)<br>• Guest (2009) |
| Number of Board Meetings | NBM | Number of Board Meetings per year obtained from LSEG Data and Analytics Platform | • Nguyen and Huynh (2023)<br>• Al-Daoud et al. (2016) |
| ***Bank Control Variables*** | | | |
| Capital Adequacy | CAP | End-of-Year Total Equity divided by End-of-Year Total Assets | • Jheng et al. (2018)<br>• Brastama and Yadnya (2020) |
| Profitability | ROA | Net Income divided by End-of-Year Total Assets | • Uddin et al. (2021)<br>• Seissian et al. (2018) |
| Bank Size | BAS | Natural Logarithm of Bank's End-of-Year Total Assets | • Andoh et al. (2023)<br>• Habtoor (2022) |

Source: Authors' Analysis.

#### 3.2.1. Dependent Variables

This study aims to examine the impact of various board metrics on the performance of the bank's stock in the MENA region. Thus, two different proxies are utilized to measure the stock performance, which are the bank's share price and market-to-book ratio following Usman and Yahaya (2023) and Ben Fatma and Chouaibi (2023), respectively.

##### Stock Price

This study uses the stock price (SPRI) as a proxy for the bank's stock performance and is measured as the end-of-year closing price per share. This follows Di Pietra et al. (2008) who examined the effects of board size and director busyness on the value of Italian companies using the share price as a proxy for market valuation. Other studies have utilized stock prices as a dependent variable such as Perdana and Adriana (2018) who aimed to examine the factors that influence bank stock prices in Indonesia. Similar research by Narayan et al. (2014) considered the bank stock price when they examined its determinants in the Indian banking sector. Furthermore, Usman and Yahaya (2023) conducted a study in Nigeria using the share price of 112 firms to investigate the relationship between the board traits and firm value.

##### Market-to-Book Ratio

The market-to-book ratio (MBR) is a financial metric that measures the firm's market performance (Aras and Yilmaz 2008; Pontiff and Schall 1998). Prior research has considered different proxies to measure the firm's value and stock performance. For instance, Andoh et al. (2023) and Jayanti et al. (2023) utilized Tobin's Q to measure the firm's value while Usman and Yahaya (2023) and Perdana and Adriana (2018) used the share price to assess the stock performance. This paper considers another proxy for stock performance which is the

market-to-book ratio. According to Pinto (2020), the market-to-book ratio is an appropriate financial metric to value financial institutions, especially commercial banks, because their balance sheets are primarily composed of liquid assets. We define the market-to-book value as the firm's market capitalization divided by the book value of common equity (Ben Fatma and Chouaibi 2023). When the ratio is less than one, the market price is less than the book value, and companies face financial challenges. In contrast, a ratio greater than one is associated with favorable financial success. In other words, a negative difference between market and book value is a sign of value destruction, especially if it persists over time. But when the market value exceeds the book value, it signifies an increase in value for the shareholders, indicating better stock performance.

#### 3.2.2. Independent Variables

##### Board Size

This study uses board size measured by the total number of directors as an independent variable, following Awad et al. (2023), Ciftci et al. (2019), and Johl et al. (2015). These studies proved that board size positively influences company valuation and performance, and larger boards provide a greater capacity for monitoring and advising managers (Guest 2009). More directors mean a wider range of expertise to leverage in decision-making and oversight, while the resource dependency theory posits that larger boards link the firm to more external resources like information, supplies, capital, and legitimacy. Similarly, the resource dependency theory considers that additional board members can boost the firm's access to the required know-how and financial resources. Other studies such as Amedi and Mustafa (2020) and Salem et al. (2019) contradict the positive relation and show an inverse relation between the board size and firm performance.

**H1.** *There is a relation between the board size and the bank's stock performance.*

##### CEO Duality

According to Kim et al. (2010), the role duality problem exists when the board's chair is also the firm's Chief Executive Officer (CEO). As a result, the same person who manages the firm will call the board meetings and set the meeting agenda. Hence, this reflects a conflict of interest that prevents the board from firing the CEO in the case of bad performance. This variable is considered a dummy variable where a 1 is assigned when a firm's CEO is also the chair of the board and 0 otherwise. A study by Dogan et al. (2013) suggested that CEO duality indicates entrenchment, reducing governance quality, and agency theory contends that joint leadership reduces monitoring effectiveness as the CEO–chair controls agendas and information flows, thereby enabling managerial entrenchment and the pursuit of self-interests at shareholder expense. Al-Matari et al. (2012) proved that the CEO duality positively influences the firm performance thus supporting the stewardship theory. However, Assenga et al. (2018) and Salem et al. (2019) identified a negative relation between CEO duality and financial performance supporting the recommendations of the agency theory. Despite the above significant relationships, Salameh et al. (2023) failed to prove a significant association between CEO duality and firm value.

**H2.** *There is a negative relation between the CEO Duality and the bank's stock performance.*

##### Board Independence

Board independence is measured by the proportion of independent directors out of all the board members. A study by Guest (2009) involving UK firms stated that independent directors theoretically provide objective oversight to prevent expropriation by insiders. Amedi and Mustafa (2020), Pucheta-Martínez and Gallego-Álvarez (2020), and Salem et al. (2019) found that board independence positively affects firm value in an attempt to enhance the monitoring of the management activities. Nevertheless, other researchers such as Aqabna et al. (2023), Johl et al. (2015), and Al-Matari et al. (2012) failed to

identify a significant statistical relation between the independence level and firm financial performance.

**H3.** *There is a positive relation between the board's independence and the bank's stock performance.*

Number of Board Meetings

This variable reveals the number of times a corporation's board meets in one fiscal year. This information was obtained from the LSEG Data Analytics platform. Previous research shows that the frequency of board meetings benefits the shareholders and enables the directors to meet, plan, and execute future value-creating projects. A study by Salem et al. (2019) and Pucheta-Martínez and Gallego-Álvarez (2020) examined the impact of board characteristics on firm value and confirmed that the number of board meetings has a positive influence on firm value. Another study by Lipton and Lorsch (1992) considered that frequent board meetings enhance the oversight of board members over the operations. On the contrary, Johl et al. (2015) considered that frequent board meetings will reduce the firm's financial performance. This is due to the failure of financially distressed firms to recover even after frequent board meetings post poor performance.

**H4.** *There is a relation between the number of board meetings and the bank's stock performance.*

3.2.3. Control Variables

Profitability

This study utilizes return on assets (ROA) as a proxy for profitability. It is measured as the bank's net income divided by the end-of-year total assets. The return on assets is used as an accounting measure of bank profitability which many previous researchers (Awad et al. 2023; Ben Said 2022) have already considered. Previous studies by Jayanti et al. (2023), Uddin et al. (2021), Jonnius and Marsudi (2021), and Alghifari et al. (2013) have identified ROA as an important factor in determining the firm value and stock price thus supporting the trade-off theory which considers that profitability creates more value for the shareholders.

**H5.** *There is a positive relation between the bank's profitability and its stock performance.*

Capital Adequacy

The bank's capital adequacy is measured by the end-of-year total equity divided by the end-of-year total assets (Brastama and Yadnya 2020). The equity-to-assets ratio represents bank capitalization and according to the study of Jheng et al. (2018), bank capital is positively associated with share prices in Malaysia. A higher capital provides loss absorption capacity against risk exposures like loans and trading assets. Well-capitalized banks signal resilience against financial shocks, promoting investor confidence in times of crisis (Brastama and Yadnya 2020). A study by El Khoury et al. (2023) conducted in the MENAT region revealed that the bank's capital positively impacts financial performance. Similarly, another study by Petria et al. (2015) reported that the bank's capital adequacy positively influences profitability. Nevertheless, other researchers such as Yuan et al. (2022) failed to prove a significant relationship between the bank's equity-to-assets ratio and its profitability. Similarly, Menicucci and Paolucci (2023) did not find any statistical significance between the bank's capital adequacy and each of the firm's value and stock return.

**H6.** *There is a positive relation between the bank's capital and its stock performance.*

Bank Size

The bank size is measured by the natural logarithm of the end-of-year total assets (Menicucci and Paolucci 2016). Several scholars, such as Buallay et al. (2020), consider that larger companies generally possess greater stock prices. The reason for this is that larger

financial institutions possess greater resources and frequently exhibit a higher degree of diversification, rendering them less susceptible to economic volatility and other forms of risk. Previous studies state that larger banks have easy access to capital and can invest in money-making projects that maximize the shareholders' wealth. Studies by Smolina et al. (2023) and Yuan et al. (2022) found that the bank size is positively associated with its economic value added and profitability, respectively. Similarly, Buallay et al. (2020) confirmed that the bank size in the MENA region has a significantly positive impact on the bank's Tobin's Q. Nevertheless, Menicucci and Paolucci (2023) showed that the bank size across Italian banks has an inverse relationship with the stock performance.

**H7.** *There is a positive relation between the bank's size and its stock performance.*

### *3.3. Model Specification*

This study employs two econometric models which are consistent with the existing literature (Ben Fatma and Chouaibi 2023; Awad et al. 2023; Derbali 2021; Koji et al. 2020) about the influence of board characteristics on the bank's corporate value and stock price. For further information about the variables of the study, refer to Table A1 in the Appendix A.

$$\mathbf{SPRI}_{t,i} = \beta_0 + \beta_1\,\mathbf{CEOD}_{t,i} + \beta_2\,\mathbf{BIND}_{t,i} + \beta_3\,\mathbf{BS}_{t,i} + \beta_4\,\mathbf{NBM}_{t,i} + \beta_{5\text{-}7}\,\mathbf{Control\ Variables} + \varepsilon_{t,i} \quad (1)$$

$$\mathbf{SPRI}_{t,i} = \beta_0 + \beta_1\,\mathbf{CEOD}_{t,i} + \beta_2\,\mathbf{BIND}_{t,i} + \beta_3\,\mathbf{BS}_{t,i} + \beta_4\,\mathbf{NBM}_{t,i} + \beta_5\,\mathbf{CAP}_{t,i} + \beta_6\,\mathbf{ROA}_{t,i} + \beta_7\,\mathbf{BAS}_{t,i} + \varepsilon_{t,i} \quad (2)$$

$$\mathbf{MBR}_{t,i} = \beta_0 + \beta_1\,\mathbf{CEOD}_{t,i} + \beta_2\,\mathbf{BIND}_{t,i} + \beta_3\,\mathbf{BS}_{t,i} + \beta_4\,\mathbf{NBM}_{t,i} + \beta_{5\text{-}7}\,\mathbf{Control\ Variables} + \varepsilon_{t,i} \quad (3)$$

$$\mathbf{MBR}_{t,i} = \beta_0 + \beta_1\,\mathbf{CEOD}_{t,i} + \beta_2\,\mathbf{BIND}_{t,i} + \beta_3\,\mathbf{BS}_{t,i} + \beta_4\,\mathbf{NBM}_{t,i} + \beta_5\,\mathbf{CAP}_{t,i} + \beta_6\,\mathbf{ROA}_{t,i} + \beta_7\,\mathbf{BAS}_{t,i} + \varepsilon_{t,i} \quad (4)$$

where:

$t$: The year of study
$i$: The $i$th firm selected
$\varepsilon$: The error term

## 4. Results and Findings

### *4.1. Descriptive Statistics*

Table 4 shows the descriptive statistics for the different variables used in this study. The price per share (SPRI) ranges from \$0.03 to \$90.97, with an average of \$5.17. With a range of such share prices, we can assume that the stocks of MENA commercial banks are priced higher than their book value per share as reported on their balance sheets. Thus, this entails a strong potential for the stock return to be high and to reflect the value-creating opportunities of MENA banks. Likewise, this is also reflected in the market-to-book ratios (MBR) of MENA banks, indicating a mean and standard deviation of 1.29 and 1.32, respectively, with a range of between 0.11 and 20.23.

Moreover, the CEO duality (CEOD) has a mean of 0.040 and a standard deviation of 0.197. The board independence (BIND) in the MENA banks reports a mean value of 0.359 implying that, on average, 35.9% of the board directors are independent within a range from 0% to 100%. Such figures show that the independence level of directors across the MENA banks is not satisfactory especially since the majority of the board directors have to be completely independent as per the corporate governance requirements. As for the board size (BS), the mean board size is around 10, with a range of between 5 and 16 directors.

Moreover, there is a very broad variation in the number of board meetings (NBM) held by the commercial banks on an annual basis with a mean of 8.139 and a range from 3 to 28, which shows an immense range of annual meetings across different banks. The bank's capital (CAP) has a mean of 0.135, which indicates that the bank's capital adequacy is, on average, 13.5% with an adequate buffer above the requirements of Basel II and a range from 11.7% to 19.9%. The bank's return on assets (ROA) varies from −10.07% to 24.09% and has a mean of 8.51%.

**Table 4.** Descriptive Statistics.

| Variables | Mean | Std. Dev | Min | Max |
|---|---|---|---|---|
| *Dependent Variables: Bank Stock Performance* | | | | |
| SPRI (in USD) | 5.17 | 3.504 | 0.03 | 90.97 |
| MBR | 1.29 | 1.32 | 0.11 | 20.23 |
| *Independent Variables: Board Characteristics* | | | | |
| CEOD | 0.040 | 0.197 | 0 | 1 |
| BIND | 0.359 | 0.286 | 0.00 | 1.00 |
| BS | 9.917 | 1.673 | 5 | 16 |
| NBM | 8.139 | 3.832 | 3 | 28 |
| *Control Variables: Bank-Specific* | | | | |
| CAP | 0.135 | 0.036 | 0.117 | 0.199 |
| ROA | 0.0851 | 0.0155 | −0.1007 | 0.2409 |
| BAS | 23.912 | 1.077 | 20.303 | 26.512 |

Source: Authors' Analysis.

### 4.2. Correlation Analysis

The results of Pearson's correlation analysis presented in Table 5 indicate that there exists a positive correlation (0.2273; $p$-value < 0.01) between the CEO duality and the share price, which aligns with the research conducted by Salem et al. (2019). Similarly, there also exists a positive correlation (0.2131; $p$-value < 0.01) between the board size and the share price. This finding supports the conclusions drawn by Perdana and Adriana (2018) and suggests that the inclusion of supplementary directors on the board will have a beneficial impact on the value of the company. Additionally, there was a negative correlation (−0.1708; $p$-value < 0.01) observed between the number of board meetings and the bank's share price. This result suggests that fewer board meetings held on an annual basis help generate greater shareholder value.

**Table 5.** Pearson's correlation matrix.

| Variables | SPRI | CEOD | BIND | BS | NBM | CAP | ROA | BAS | MBR |
|---|---|---|---|---|---|---|---|---|---|
| SPRI | 1.00 | | | | | | | | |
| CEOD | 0.2273 *** | 1.00 | | | | | | | |
| BIND | 0.0312 | 0.0174 | 1.00 | | | | | | |
| BS | 0.2131 *** | 0.1386 ** | 0.0570 | 1.00 | | | | | |
| NBM | −0.1708 *** | −0.0883 | −0.2499 | 0.0619 | 1.00 | | | | |
| CAP | 0.0951 ** | −0.2137 *** | 0.1861 *** | −0.0328 | −0.0831 | 1.00 | | | |
| ROA | 0.2189 *** | 0.1126 * | −0.0038 | 0.1916 *** | −0.1589 ** | 0.1270 *** | 1.00 | | |
| BAS | 0.4607 *** | 0.3873 *** | −0.0865 | 0.2315 *** | −0.1133 | −0.160 *** | 0.3342 *** | 1.00 | |
| MBR | 0.4977 *** | 0.1390 ** | 0.2091 *** | −0.0102 | 0.1720 ** | 0.3561 *** | 0.4112 *** | 0.2309 *** | 1.00 |
| **Collinearity Diagnostics** | | | | | | | | | |
| VIF | | 1.29 | 1.13 | 1.14 | 1.14 | 1.11 | 1.24 | 1.53 | |
| Mean VIF | | | | | 1.23 | | | | |

Note ***, **, and * show statistical significance at 1%, 5%, and 10%, respectively. Source: Authors' Analysis.

A positive correlation (0.0951; $p$-value < 0.01) is observed between the bank's capital and the share price, and this implies that a higher capital will result in a better price per share. Likewise, a positive correlation (0.2189; $p$-value < 0.01) between the bank's return on assets and the share price supports the conclusions drawn by Awad et al. (2023) that profitability influences the shareholders' wealth. The findings additionally show a positive correlation (0.4607; $p$-value < 0.01) between the bank's size and its share price. Consistent

with the findings of Uddin et al. (2021), this result validates that bigger banks have a greater corporate value. Lastly, similar results are viewed between the independent and control variables and the market-to-book ratio, except for the board size which appeared to be statistically insignificant.

The correlation matrix also determines that multicollinearity is not an issue in this study, as all correlation coefficients range between −0.8 and +0.8. Additionally, the VIF results show values around 1 and a mean VIF of 1.23, implying that there is no evidence of any multicollinearity problem within our two regression models (Field 2013).

### *4.3. Multivariate Analysis and Discussion*

The regression analysis in Table 6 reports the results of the two models with several estimation techniques such as pooled OLS as well as fixed and random effect panel regression. The use of pooled OLS in the presence of unobserved entity-specific factors can lead to omitted variable bias and produce biased results. The standard errors in a pooled OLS regression typically overstate the precision gains, leading to underestimated standard errors and overestimated t-statistics. For that reason, we employed the panel regression and used the fixed effect model to test our seven hypotheses based on the significance of the Hausman test results ($\chi^2$ = 18.77 and 21.23; *p*-value < 0.01), which rejects the null hypothesis and considers that the fixed effect is selected over the random effect regression in our two models. The fixed effects model controls for the effects of time-invariant variables along with time-invariant effects, thereby eliminating the impact of the bank's time-invariant characteristics on the predicted outcome (Abu Khalaf et al. 2024).

**Table 6.** Regression results.

| **Panel Regression** | | **SPRI** | | | **MBR** | |
|---|---|---|---|---|---|---|
| **Variable** | **Pooled OLS** | **RE** | **FE** | **Pooled OLS** | **RE** | **FE** |
| CEOD | −0.0254<br>(0.131) | −0.0582<br>(0.075) | −0.0614<br>(0.077) | −0.0118<br>(0.032) | −0.06122<br>(0.322) | −0.0709<br>(0.061) |
| BIND | 0.0022 **<br>(0.001) | 0.0018 **<br>(0.0007) | 0.0019 **<br>(0.0008) | 0.0338 **<br>(0.015) | 0.0477 **<br>(0.021) | 0.0442 **<br>(0.018) |
| BS | 0.0249<br>(0.017) | −0.0177 **<br>(0.007) | −0.0166 **<br>(0.008) | −0.5589 *<br>(0.312) | −0.7132 **<br>(0.347) | −0.9038 **<br>(0.438) |
| NBM | −0.0209 ***<br>(0.007) | −0.0056<br>(0.004) | −0.0050<br>(0.004) | −0.1160<br>(0.094) | −0.1519<br>(0.158) | −0.1405<br>(0.159) |
| CAP | 4.4124 ***<br>(1.183) | 0.9691<br>(0.700) | 1.2904 *<br>(0.719) | 0.9024 *<br>(0.537) | 1.0225 **<br>(0.489) | 0.9823 **<br>(0.374) |
| ROA | 0.5816<br>(0.598) | 0.7920 ***<br>(0.224) | 0.7935 ***<br>(0.229) | 0.8929 ***<br>(0.283) | 0.9801 ***<br>(0.350) | 0.7702 ***<br>(0.296) |
| BAS | 0.3649 ***<br>(0.032) | 0.4320 ***<br>(0.037) | 0.4435 ***<br>(0.045) | 0.4519 **<br>(0.228) | 0.2761 ***<br>(0.027) | 0.5641 ***<br>(1.810) |
| Constant | −8.3529 ***<br>(0.772) | −8.9824 ***<br>(0.921) | −9.2967 ***<br>(1.126) | 0.4427 ***<br>(0.038) | 0.2028 ***<br>(0.017) | 0.1476 ***<br>(0.020) |
| Firm Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Wald $\chi^2$/F-statistic | 34.08 *** | 152.94 *** | 16.51 *** | 29.23 *** | 112.45 *** | 34.87 *** |
| R-squared | 0.4019 | 0.4408 | 0.4801 | 0.3612 | 0.4622 | 0.4971 |
| Hausman Test ($\chi^2$) | | 18.77 *** | | | 21.23 *** | |
| White Test ($\chi^2$) | | 33.00 | | | 21.38 | |
| White Test *p*-value | | 0.4180 | | | 0.2345 | |
| Wooldridge Test | | 24.65 | | | 19.02 | |
| Wooldridge Test *p*-value | | 0.001 | | | 0.006 | |

Note ***, **, and * show statistical significance at 1%, 5%, and 10%, respectively. Standard Errors in parentheses. Source: Authors' Analysis.

The results also reveal that the F-statistic values (F-Stat = 16.51 for SPRI and 34.87 for MBR; $p$-value < 0.01) of both models were statistically significant, implying that all the regression coefficients are unequal to zero. As for the explanatory power, the two econometric models report an R-square of 0.4801 and 0.4971 in the stock price and market-to-book analysis, respectively, indicating that the control and independent variables explain 48.01% and 49.71% of the variation in the respective dependent variables. To test the heteroskedastic problems, the White test is conducted, and it is confirmed that the variance of the errors in both models is constant (White 1980). The findings of this test showed no statistical significance for both models, indicating that there is no sufficient evidence to reject the null hypothesis and thus homoscedasticity exists (Baltagi 2009). We also tested for autocorrelation of panel data using the Wooldridge test (Wooldridge 2002), which showed statistical significance and thus indicated the presence of a serial correlation for the two models that needed to be controlled (Ersoy et al. 2022).

The fixed effect regression results prove that the first hypothesis (H1), which expects a robust association between the board size and the bank's stock performance, is accepted ($p$-value < 0.05 for SPRI and MBR) with a significant negative relationship in both models. This indicates that banks with larger boards tend to have lower stock prices and market valuations. The result aligns with studies such as Guest (2009), which found that enlarged boards are less effective for monitoring and oversight, and it suggests that coordination and free-rider issues emerge with bigger boards in MENA banks, reducing governance quality and investor confidence. Furthermore, institutions with smaller boards are favored as larger boards are expected to cause conflicts among the members and consequently complicate the decision-making process (Bansal and Sharma 2016). This is consistent with the findings of Ben Fatma and Chouaibi (2023), Osei-Baidoo et al. (2023), Nguyen and Huynh (2023), Usman and Yahaya (2023), Salem et al. (2019) and Obradovich and Gill (2013), who all obtained an inverse relationship between the board size and the stock performance. Despite our interesting inverse relationship, many researchers (Awad et al. 2023; Uchenna Okoye et al. 2020; Perdana and Adriana 2018) have identified a positive relationship supporting the conclusions of resource dependency and agency theories.

The regression results failed to support our second hypothesis (H2), which considers that CEO duality negatively influences the bank stock performance in both models ($p$-value > 0.10 for SPRI and MBR). Our findings are supported by Athar et al. (2023) and El-Chaarani et al. (2023), who proved that CEO duality does not explain any change in the bank performance in Pakistan and GCC region, respectively. However, other scholars, such as Osei-Baidoo et al. (2023) and Salem et al. (2019), revealed that CEO duality is negatively associated with firm value, which implies that if the title of CEO and board chairman are not held by the same person, this shall result in a higher bank stock performance.

Our third hypothesis (H3), which states that there is a positive association between board independence and the bank stock performance, is confirmed empirically ($p$-value < 0.05 for SPRI and MBR) thus implying that having a higher proportion of independent directors increases the market valuation and investor perceptions of MENA banks. More independent directors on the board provide a higher level of supervision in favor of owners and stakeholders and act in the best interests of shareholders, especially the minority (Khan 2010; Ararat et al. 2010). The result supports the resource dependency and agency theories that independent directors enhance governance quality through objective monitoring and advising to prevent self-dealing by executives at shareholder expense (El-Chaarani et al. 2023; Salem et al. 2019). Conversely, the analysis of Usman and Yahaya (2023) proved that the presence of independent directors on corporate boards adversely influences stock performance. In addition, other scholars did not find sufficient evidence to verify the relationship between board independence and stock performance (Mishra et al. 2024; Ben Fatma and Chouaibi 2023; Nguyen and Huynh 2023; Habtoor 2022; and Kılıç and Kuzey 2016).

Moreover, the expected relationship between the number of board meetings and stock performance in our fourth hypothesis (H4) is not confirmed empirically ($p$-value > 0.10 for SPRI and MBR) and this signifies that board meeting frequency does not affect market-

based valuation and shareholder returns for MENA banks. Our findings are consistent with Mishra et al. (2024), who failed to identify a robust association between the number of board meetings and the Tobin's Q and price-to-earnings ratio in India. Nevertheless, Nguyen and Huynh (2023) and Salem et al. (2019) proved that the number of annual board meetings positively influences the firm's financial performance through frequent meetings in an attempt to enhance the communication between board members.

The findings of this research also confirm the fifth hypothesis (H5), which anticipates an association between the bank's profitability and the stock's performance for both models ($p$-value < 0.01 for SPRI and MBR). This indicates that a high ROA suggests competent executives delivering superior returns for shareholders. This aligns with expectations that superior profitability signals competent management and future growth potential, boosting investor confidence and demand for bank shares. Our findings are supported empirically by Uddin et al. (2021), Awad et al. (2023), and Obradovich and Gill (2013), who proved a significant relationship between the bank's return on assets and the stock performance.

Additionally, the sixth hypothesis (H6) is also supported by the fixed effect regression results and verifies that the bank's capital adequacy positively impacts the stock performance ($p$-value < 0.10 for SPRI and $p$-value < 0.01 for MBR). This result suggests that banks with higher capital adequacy have a buffer to absorb losses arising from unanticipated adverse market movements, thereby leading to higher investor perceptions and market values. Our results are consistent with the findings of Abu Khalaf and Awad (2024) and Isayas (2022) who confirmed that the bank's capital adequacy positively influences the bank's performance in the MENA region and Ethiopia, respectively. Nevertheless, similar studies by Athar et al. (2023) and Menicucci and Paolucci (2023) failed to confirm a significant relationship between the bank's capital and its performance in their studies in Pakistan and Italy, respectively.

Lastly, the seventh hypothesis (H7) proposing a positive association between the bank size and the stock performance is fully confirmed in our empirical analysis ($p$-value < 0.01 for SPRI and MBR). This signifies that large banks' stocks perform better than smaller ones thanks to economies of scale and cost-cutting (Bikker and Hu 2002; Bourke 1989). Also, larger banks enjoy superior operational efficiency (Berger and Humphrey 1997) and higher margins in comparison with smaller banks. Moreover, they also have a higher ability to attract deposits and extend credit facilities on a bigger scale than smaller banks. For this reason, larger banks are more profitable thanks to cost efficiency and a higher asset base, leading to better investor perception and stock performance. Some researchers obtained a similar positive relationship between bank size and stock performance such as Usman and Yahaya (2023), Ben Fatma and Chouaibi (2023), Habtoor (2022), and Menicucci and Paolucci (2016). Nonetheless, other scholars (Athar et al. 2023; Menicucci and Paolucci 2023; Uddin et al. 2021; Fama and French 1995) revealed different results and confirmed that smaller firms perform better than larger ones.

To control the serial correlation and solve the issue of biased standard errors, we utilized a nonparametric covariance matrix estimator suggested by Driscoll and Kraay (1998). Such adjustment is anticipated to produce autocorrelation-consistent standard errors that are robust to general forms of spatial and temporal dependence. Hence, Table 7 shows the regression results of our two models using the Driscoll–Kraay standard errors estimator. The estimation results obtained from the Driscoll–Kraay standard errors estimator for the share price and market-to-book ratio models are quite consistent with those of the fixed effects estimator (Hoechle 2007).

**Table 7.** Fixed Effects Model with Driscoll–Kraay Standard Errors.

| Driscoll–Kraay Standard Errors | | |
|---|---|---|
| **Variable** | **SPRI** | **MBR** |
| CEO | −0.0359<br>(0.076) | −0.1249 ***<br>(0.035) |
| IND | 0.0020 ***<br>(0.0004) | 0.0567 *<br>(0.028) |
| BS | −0.0149 **<br>(0.006) | −0.0130 **<br>(0.005) |
| NMB | −0.0038 *<br>(0.002) | −0.0053<br>(0.003) |
| CAP | 1.4360 ***<br>(0.3536) | 4.8500 ***<br>(0.585) |
| ROA | 1.3350 ***<br>(0.269) | 0.9283 **<br>(0.349) |
| BAS | 0.4978 ***<br>(0.043) | 0.3361 ***<br>(0.016) |
| Constant | −10.4648 ***<br>(1.137) | −9.5709 ***<br>(0.447) |
| F-statistic | 319.11 *** | 254.35 *** |
| R-squared | 0.5161 | 0.5694 |

Note ***, **, and * show statistical significance at 1%, 5%, and 10%, respectively. Standard Errors in parentheses. Source: Authors' Analysis.

To sum up, this paper makes important empirical contributions to how corporate governance enables MENA banks to remain financially sound and maximize their stock performance. It is also anticipated to fill the gap and enrich the current literature with up-to-date findings, especially since the results were proven to be robust with different estimation techniques and similar to previous existing literature. From a practical consideration, this research sought to provide evidence-based insights to develop policies and practices for strengthening the governance and resilience of the banking sector in the under-studied MENA region.

### *4.4. Robustness Test*

As a robustness test, we used two different metrics to measure stock performance, which resulted in similar results and relationships. Moreover, another estimation technique is utilized to prove the robustness of the results. Two new econometric models are created using censored regression due to the nature of the dependent variables (bank stock price and market-to-book ratio).

This study applies a one-limit Tobit model based on an interesting adjustment conducted on the model developed by Rosett and Nelson (1975) to allow for lower-bound censoring. Censoring at zero is justified as the bank's share price and the market-to-book ratio cannot fall below zero. In other words, the dependent variable is censored to the lower limit of zero (Amore and Murtinu 2021). This is confirmed by the descriptive statistics stated in Table 4. The minimum values of SPRI and MBR are $0.03 and 0.11 respectively. Concerning the symbolizations used by Long (1997), the censored variable $y_i$ is defined by the following equation:

$$y_i = \begin{cases} \tau_L = 0 & \text{if } y_i^* \leq \tau_L \\ y_i^* = x_i\beta + \varepsilon_i, & \text{if } \tau_L < y_i^* < \tau_U \\ \tau_U > 0 & \text{if } y_i^* \geq \tau_U \end{cases}$$

where:

- $y_i$ is the observed censored outcome variable for subject $i$.
- $\tau_L$ and $\tau_U$ are the lower and upper censoring values ($\tau_L = 0$ and $\tau_U > 0$ for this study).
- $y^*$ is observed for outcome values between $\tau_L$ and $+\infty$ and is censored for outcome values less than or equal to $\tau_L$ or outcome values greater than or equal to 0.
- $y^*_i = x_i\beta + \varepsilon_i$ is the structural equation for the Tobit model.
- The $x$s are factors observed for all cases and $\beta$s are regression coefficients.
- $\varepsilon_i \sim N(0, \sigma^2)$.

The results in Table 8, using a lower-bound censored regression, fully confirm the previous findings obtained using fixed-effect regression, except for the number of board meetings which proved to have a significant impact on both the bank's share price and market-to-book ratio.

**Table 8.** Robustness test.

| | **TOBIT Regression** | |
|---|---|---|
| **Variable** | **SPRI** | **MBR** |
| CEOD | −0.0257<br>(0.126) | −0.8761<br>(2.136) |
| BIND | 0.0023 **<br>(0.001) | 0.1459 **<br>(0.062) |
| BS | −0.0212 **<br>(0.008) | −0.1191 **<br>(0.055) |
| NMB | −0.0199 ***<br>(0.006) | −0.0017 **<br>(0.0008) |
| CAP | 0.4276 ***<br>(0.111) | 0.8803 **<br>(0.446) |
| ROA | 1.0830 **<br>(0.456) | 1.4095 ***<br>(0.408) |
| BAS | 0.3535 ***<br>(0.031) | 1.0226 ***<br>(0.101) |
| Constant | −7.9327 ***<br>(0.764) | 0.5938 ***<br>(0.048) |
| LR $\chi^2$ | 169.36 *** | 98.34 *** |
| Pseudo R-squared | 0.5231 | 0.4804 |

Note *** and ** show statistical significance at 1% and 5%, respectively. Standard Errors in parentheses. Source: Authors' Analysis.

## 5. Conclusions

As a means of ensuring improved corporate governance and enhanced financial performance, a greater diversity of directors on corporate boards has gained prominence worldwide in recent years among various stakeholders such as regulators, shareholders, and potential investors. Research involving the board's characteristics and the firm financial performance has been an important topic over the past years; hence, our study aims to further examine corporate boards and contribute to the existing literature with some interesting findings. This research analyzed the relationship between corporate board characteristics and bank stock performance in the MENA region. The final sample included data for 65 commercial banks out of the 106 listed for the period of 2013 through 2022. The OLS and FE/RE econometric analyses were created to study the impact of corporate board traits on the performance of bank stocks with the share price and market-to-book ratio as dependent variables. The independent and control variables used were CEO duality, board independence, board size, annual board meetings, bank capital, profitability, and size. Furthermore, we tested the robustness of our findings using another proxy

for stock performance in addition to the usage of a one-limit Tobit analysis to verify the results obtained.

The empirical results suggest that board independence, as evidenced by a higher proportion of independent directors, is positively and significantly associated with bank stock performance measures like share price and market-to-book ratio, this aligns with the agency theory that independent monitoring by the board ensures managers act in shareholders' interests to enhance performance. The results also underscore the importance of board independence for effective governance and oversight in an attempt to maximize the firm value. Moreover, the analysis also reveals that the corporate board size is inversely related to stock performance. This implies that additional directors on the board will complicate the discussions and cause conflicts between members and thus lead to negative stock performance. Also, the CEO–chairman role duality and annual board meetings do not explain the variation in both dependent variables. Larger banks as measured by total assets size exhibit higher stock returns, likely due to greater capacity to absorb losses and maintain operations through crises. Similarly, capital adequacy and bank profitability positively impact stock performance.

Despite the interesting findings, the paper recognizes multiple limitations that may guide future investigations. To begin with, this study omitted a few board-related variables such as gender diversity and board members' education due to the absence of panel data about these variables. Furthermore, the study exclusively examines the MENA countries, so future research should incorporate banks from Turkiye and Europe. A global study encompassing all commercial banks is encouraged to enrich the literature, especially if conducted on a comparative basis.

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## Appendix A

**Table A1.** Variable Definitions.

| Variable | Abbreviation | Measurement |
|---|---|---|
| Stock Price | SPRI | End-of-Year Closing Price per Share |
| Market-to-Book Ratio | MBR | End-of-Year Market Capitalization divided by the Total Book Value of Common Equity |
| CEO Duality | CEOD | CEO Duality Dummy Variable: 1 if the CEO is also the Chair of the Board and 0 otherwise. |
| Board Independence | BIND | Percentage of Independent Board Members obtained from LSEG Data and Analytics Platform |
| Board Size | BS | Number of Board Members obtained from LSEG Data and Analytics Platform |
| Number of Board Meetings | NBM | Number of Board Meetings per year obtained from LSEG Data and Analytics Platform |
| Capital Adequacy | CAP | End-of-Year Total Equity divided by End-of-Year Total Assets |
| Profitability | ROA | Net Income divided by End-of-Year Total Assets |
| Bank Size | BAS | Natural Logarithm of the Bank's End-of-Year Total Assets |

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