# Board Structure And Firm Performance: Evidence From Non-Bank Financial Institutions In Jordan

Dr. Suhaib Al-Khazaleh[1], Dr. Haslindar Ibrahim[2], Dr. MD ASLAM MIA[3], Dr. Nemer Badwan[4]

[1]School of Management, Universiti Sains Malaysia (USM); George Town; Malaysia]
suhaibkh74@gmail.com
https://orcid.org/0000-0003-2591-2172
[2]School of Management, Universiti Sains Malaysia (USM); George Town; Malaysia
haslindar@usm.my
https://orcid.org/0000-0002-0134-1486
[3]School of Management, Universiti Sains Malaysia (USM); George Town; Malaysia
aslammia@usm.my
https://orcid.org/0000-0002-6452-1126
[4]Palestine Economic Policy Research Institute – (MAS); Ramallah; State of Palestine
nemerbadwan.economics.finance@gmail.com
Corresponding author: [Dr. Suhaib Al-Khazaleh]
[School of Management, Universiti Sains Malaysia (USM); George Town; Malaysia]
suhaibkh74@gmail.com
https://orcid.org/0000-0003-2591-2172
[suhaibkh74@gmail.com]

Abstract

Purpose – This study aims to examine the correlation between the board structure and the performance of Non-Bank Financial Institutions (NBFIs) in the context of Jordan.

Methodology/approach/design – As a result, the researcher constructed a multiple linear regression model to explore the nature of this association, utilizing return on assets (ROA) and Tobin's Q as indicators to assess the performance of listed NBFIs in Jordan over the timeframe spanning from 2017 to 2021.

Findings – The outcomes show a positive relationship between board structure and the performance of NBFIs in Jordan.

Practical implications – The analytical results support the notion that adopting board structures, particularly those aimed at reducing agency costs, can contribute to improved performance among expanding global companies.

Originality/value – The researcher suggests that regulatory bodies overseeing NBFIs in Jordan should establish stringent criteria for appointing independent board members and consider reducing the frequency of board meetings to mitigate information preparation costs and information asymmetry, ultimately enhancing overall performance.

Keywords: Board structure, firm performance, board size, board independence, board meetings.

## 1. Introduction

Bad corporate governance has been identified as one of the primary causes of the global financial crisis. Furthermore, before several corporate scandals, corporate governance was not considered a significant issue in many jurisdictions outside the United States and Europe (Li, Crook, Andreeva, & Tang, 2021). In Jordan, corporate governance became a significant and contentious issue only at the beginning of the twenty-first century when the Jordanian government began introducing and implementing several corporate governance reforms. Among the reforms aimed at improving corporate governance are amendments to the Company Act, the Securities and Exchange Act, and other relevant laws, implementing an independent director system and audit committee, and promoting shareholders' rights (Alshhadat, 2017). The primary aim of this paper is to empirically assess the effects of board structure on the firm performance of NBFIs using a data set listed on Amman Stock Exchange (ASE).

The previous scandals have raised increasing concern for corporate governance in developing countries, resulting in better practices (Alabdullah, 2018; Salhi, Riguen, Kachouri, & Jarboui, 2020). Furthermore, achieving improved firm performance, a favorable investment climate, accelerated economic growth, and protected shareholder interests are significant (Alaali et al., 2021). Even though the issue has received due attention in developing countries, many continue to face challenges due to poor governance (Ciftci, Tatoglu, Demirbag & Zaim, 2019). Furthermore, several unexpected corporate failures documented since the 1990s have highlighted the importance of corporate governance. As a result, further research is required to be conducted in developing countries (Georgiev, 2021).

The relationship between corporate governance and firm performance is critical when developing effective corporate management and public regulatory policies. On the other hand, earlier research has primarily focused on the corporate governance practices in the United Kingdom, the United States, and other Western

developed countries (El-Bassiouny & El-Bassiouny, 2019; Mattera, Soto Gonzalez & Gava, 2020; Syofyan & Putra, 2020).

However, in other regions, particularly in Asia, firms operate in a distinct cultural and institutional environment, which may have a considerable effect on the relationships between corporate governance and firm performance (Al Farooque, Buachoom & Hoang, 2019). Even though some studies have looked at new growing economies in Malaysia, Singapore, and Korea, this research focuses on Jordan. This newly industrialized economy has grown at an impressive rate and has a distinctive corporate governance framework with a supervisory system different from most other countries (Kao, Hodgkinson & Jaafar, 2019). Furthermore, it has been some time since Jordan implemented corporate governance reforms in early 1997 (Saidat, Silva & Seaman, 2019). As a result, it is a worthwhile research agenda to determine whether the new regulations are improving the performance of Jordanian public firms.

Regarding the Jordanian corporate governance code (JCGC), two were introduced in 2009 and 2017 to promote good governance practices in listed companies. The first JCGC was introduced in 2009 by the JSC. This code was developed in response to the need for a legal framework to improve corporate governance procedures in Jordanian-listed companies. The code established several guidelines for board composition and organization, the role of independent directors, board member responsibilities, and information disclosure to stakeholders (Abu Qa'dan & Suwaidan, 2019). The code also established the corporate governance unit of JSC to promote and monitor corporate governance mechanisms in publicly traded companies.

However, in order to improve and strengthen corporate governance procedures in Jordanian-listed companies, the JSC introduced an updated version of JCGC in 2017. The updated code includes new rules on the role of the board chairman, the formation of board committees, and the remuneration of board members. The code required businesses to establish a code of conduct outlining the moral principles and values that the firms would uphold (Mansour, Al Amosh & Saleh, 2022). Implementing these corporate governance codes has improved corporate governance procedures in Jordanian-listed companies. These companies have become more transparent in their reporting and disclosure practices, and the number of independent board directors has increased (Goel, 2018). However, there are still issues with putting these codes into action, particularly in terms of rule compliance and enforcement.

Many companies in Jordan need transparent reporting practices, manipulation of existing reports have made it difficult for investors to understand the financial capacity and prospects of companies. Moreover, the boards of many Jordanian companies need to be more independent from the management, which can lead to conflicts of interest and decisions that do not serve the best interests of shareholders (Alrawashedh, 2021). Furthermore, shareholders in Jordanian firms often have limited rights and must be adequately represented in decision-making

processes. However, by implementing strong corporate governance mechanisms, Jordanian firms can address these issues and improve their long-term sustainability and success.

The board of directors is an important part of the corporate governance system of the company, and board structure is essential to its effective functioning. Firstly, the size of the board is important because it affects board decision-making capacity (Al-khazaleh & Zulkafli, 2022a). A board that is too small may not have the necessary diversity of skills, knowledge, and perspectives to make informed decisions. At the same time, a board that is too large may be difficult to manage and may become less effective in decision-making (Jebran & Chen, 2023). Secondly, board independence is important because it ensures board ability to act impartially and, in the best interests of the company and its shareholders without being swayed by management or other stakeholders (Merendino & Melville, 2019). Independent directors can bring fresh perspectives and challenge the status quo, essential for effective decision-making (Khan, Khidmat, & Awan, 2021).

Finally, regular board meetings are essential because they allow board members to discuss and make decisions on critical business issues. Regular meetings can keep the board informed and involved in the company's operations while allowing quick decision-making (Min & Chizema, 2018). Furthermore, the composition of a board, including its size, independence, and frequency of meetings, is critical for good corporate governance. A well-structured board can help companies ensure that their decision-making processes are transparent, objective, and in the best interests of their shareholders (Sikandar & Society, 2019).

The effectiveness of corporate governance mechanisms such as the board of directors significantly impacts the performance and competitiveness of Jordanian firms (Mansur & Tangl, 2020). This study aims to improve the effectiveness and efficiency of Jordanian boards and to understand how different board structures affect firm performance. Specifically, the study focuses on board structures, including board size, independence, and meetings. By examining these mechanisms, the study seeks to identify potential issues and areas for improvement in corporate governance practices in Jordan. Board structure can identify potential issues with board size, independence, and meetings and educate policymakers, investors, and other stakeholders on creating and implementing efficient governance frameworks (Al-khazaleh & Zulkafli, 2022). It aims to develop best practices and recommendations to help Jordanian firms improve board effectiveness, decision-making processes, performance, and competitiveness.

In conclusion, this study adds to the existing literature on corporate governance mechanisms by examining their effectiveness in the specific context of Jordan. The findings of this study can be used to improve corporate governance practices in Jordan and other similar contexts, ultimately contributing to the growth and development of firms and economies.

## 2. Institutional Background

Corporate governance began in Jordan in 1997 when the government launched a privatization program overseen by the World Bank and the IMF. The privatization program was one of the most important stages in Jordan's economic development. The program aimed to reduce government spending while encouraging private-sector investment and accelerating economic growth (Tahat, 2018). As a result of this program, many state-owned enterprises were privatized, and the effect of government over the economy was reduced. The program also aimed to improve transparency and accountability in the private sector to attract foreign investment and foster economic growth (Athamneh, Al-Balas & Taamneh, 2018).

One of the key components of privatization program was implementing corporate governance mechanisms for companies (Elbayoumi, Awadallah & Elbayoumi, 2019). The government recognized that strong corporate governance was required to ensure proper management and control of these businesses and protect the best interest of the stakeholders. With this plan in mind, the government established the Jordan Securities Commission (JSC), which was tasked with regulating the securities market and promoting corporate governance in listed companies in 1997 (Aburous, 2019).

Further the JSC introduced several corporate governance regulations and guidelines that listed companies had to comply with. These regulations included requirements for the composition and structure of the board of directors, the role and responsibilities of board members, and the disclosure of information to stakeholders (Kabara & Amosh, 2023). The JSC also introduced regulations on the rights of shareholders, such as the right to vote on important matters and access information about the company. Since implementing these regulations, corporate governance practices of Jordanian-listed companies have significantly improved (Nsour & Samer, 2022). For example, the proportion of boards with independent directors has increased, and corporate reporting and disclosure practices have improved. The JSC has also established a corporate governance unit that promotes and oversees corporate governance practices in listed companies (Alkayed, 2022).

However, despite these advancements, there are still challenges to developing corporate governance in Jordan. One challenge is the prevalence of family-owned businesses, which can limit board independence and reduce the effectiveness of corporate governance mechanisms (Idris & Nassar, 2018). Another challenge is the lack of awareness and understanding of corporate governance principles among stakeholders, such as shareholders and board members (Amosh & Khatib, 2021). In addition, there is a need for further efforts to promote and strengthen corporate governance practices in Jordan.

This study provides awareness and understanding of corporate governance principles among stakeholders, promotes the role of independent directors on boards, and improves the accountability and transparency of companies. The government and the JSC can play a crucial role in this process by introducing more robust regulations and guidelines and promoting good governance practices among companies.

## 3. Literature Review

### 3.1 Theoretical Background

As previously stated, the possibility of conflict between shareholders and the board of directors poses a challenge to implementing good corporate governance. This has been addressed by agency and stewardship theories (Donaldson & Davis, 1991).

#### 3.1.1 Agency Theory

Agency theory is a framework used to analyze the relationship between principals, such as shareholders or owners and agents, such as managers or employees in organizations (Solomon, Marvel & Mcdowell, 2021). It concerns potential conflicts of interest when decision-making is delegated from principals to agents with differing objectives, incentives, and knowledge (Krafft, Zweig, & König, 2022). The central tenet of agency theory is that agents may act in their self-interest rather than in the best interests of the principals because their goals differ from those of the latter. This is referred to as the principal-agent problem (Profile, 2023). According to agency theory, mechanisms can be put in place to help principals and agents align their interests and reduce agency costs associated with the principal-agent dilemma.

The concept of information asymmetry is critical in agency theory. There is information asymmetry when one party has more information than the other (Usman et al., 2019). According to agency theory, agents frequently know more than the principals. This could lead to the agents taking advantage of their superior knowledge, possibly at the principal's expense. The agency theory suggests that principals invest in information-gathering tools like market research (Hornuf et al., 2020). Finally, agency theory is a framework for analyzing how principals and agents interact in organizations. It emphasizes the potential conflicts of interest that can arise when two parties have opposing objectives, incentives, and knowledge (Cunningham & Menter, 2019). The agency theory proposes several mechanisms: incentive alignment, monitoring, and information-gathering. These mechanisms can aid in the reduction of agency costs and the alignment of principals' and agents' interests. Moreover, agency theory suggests that board structure should be designed to reduce agency costs and improve the effectiveness of the board's oversight function. An optimal board structure can align the interests of the principal shareholders and the agent management and ensure that the company is run in the best interests of the shareholders (Monther, Hanefah, & Marzuki, 2023).

### 3.1.2 Stewardship Theory

Stewardship theory is a management theory that focuses on the positive interaction between managers and their subordinates and how it can improve organizational performance (Torfing & Bentzen, 2020). According to stewardship theory, managers should act as stewards who are concerned with the interests of the organization and its stakeholders rather than their own. The central tenet of stewardship theory is that most people are inherently motivated to act morally and in the best interests of their organization. This drive is supported by a sense of ownership and responsibility for the success of organization (Ogbanufe, Crossler & Biros, 2023). The theory posits that if managers are given a degree of autonomy and responsibility for decision-making, they will act in the best interest of organization~~'s~~ and its stakeholders (Steinfeld & Joshua, 2023).

Stewardship theory emphasizes the importance of trust between managers and subordinates. When there is trust between them, managers are more likely to delegate decision-making authority and allow subordinates to act independently (Dumay, La Torre & Farneti, 2019). Employee performance, motivation, and satisfaction may all improve as a result. Another important concept in stewardship theory is the importance of goal alignment between managers and subordinates. When there is alignment, managers are more likely to act as stewards and take actions that benefit the organization as a whole (Obiose, Nwajei, Trond & Mikael, 2022). According to stewardship theory, managers should be evaluated based on their contribution to the success of organization rather than their ability to meet personal goals.

Stewardship theory has many implications for management practice. One important implication is that managers should delegate decision-making authority to their employees. This can increase employee motivation and satisfaction, and managers may have more time to focus on strategic issues (Jasir, Khan & Barghathi, 2023). Another implication is that managers should foster a culture of trust and cooperation within the company. This can help managers and employees have similar goals and foster a sense of shared responsibility for the success of organization (Steinfeld & Joshua, 2023). Stewardship theory emphasizes the importance of managers acting as stewards who take accountability for the well-being of organization and its stakeholders. The theory emphasizes the importance of employee empowerment, goal alignment, and trust in creating a positive workplace culture and improving organizational performance (Sama, Stefanidis, & Casselman, 2022).

However, stewardship theory has many implications for board structure. The theory suggests that the board structure must be designed to promote a sense of ownership and responsibility among board members for the well-being of organization (Wijethilake & Ekanayake, 2020). According to stewardship theory, a

smaller board is more successful at instilling a sense of ownership and responsibility in its members. With a smaller board, each member feels more responsible and inclined to participate actively in decision-making. Furthermore, independent directors can be critical in encouraging a sense of accountability and responsibility among board members. By providing an objective viewpoint, independent directors can add a second level of oversight and monitoring to board discussions (Rejeb, 2019).

Furthermore, stewardship theory suggests that board structures should be designed to foster a sense of responsibility and ownership among board members. A board structure that includes board size, and independence can foster this sense of ownership and responsibility. By encouraging collaboration, participation, and accountability, a well-structured board can improve organizational performance and ensure that the company is run in the best interests of its stakeholders (Jasir et al., 2023).

### 3.1.3 Resource Dependence Theory

The resource dependence theory emphasizes the importance of various resources in firm performance. Even though agency theory is primarily concerned with managers, it also addresses access to resources, a critical issue in the corporate governance debate (Galvão, Marques & Mascarenhas, 2019). Pfeffer and Salancik (2003), emphasized the importance of the relationship between power and exchange within and around organizations and served as the foundation for resource dependence theory. In resource dependence theory, proposed by Pfeffer in 1972, it is asserted that firm performance is determined by its ability to exert the greatest control over specific resources required for efficient operations. The resource dependence theory focuses on the role of board of directors in assisting the organization in securing and acquiring vital resources through their connections to the outside business environment. These connections allow it to access various resources, including knowledge, expertise, and access to key stakeholders such as raw material suppliers, output purchasers, public policymakers, and social groups, as well as legitimacy (Farooq, Noor & Ali, 2022). As a result, according to this theory, the board of directors is the primary source of numerous resources that increase the value of the company.

Biermann and Harsch (2017) highlighted the main aspect of resource dependence theory. They claim that having independent directors on their boards allows them to obtain more desirable resources. According to resource dependence theory, boards involved in resource accessibility have effective skills. While resource dependence theory emphasizes board directors' additional function as resource providers, agency theory emphasizes the importance of boards in overseeing managerial activities. According to Hakimah and Fitri (2019), while other corporate governance theories address the constraining assumptions of the agency perspective, they need to provide a more comprehensive understanding of corporate governance that links it to various organizational contexts. As a result, resource dependence theory has been developed to address this issue.

### 3.2 Existing Empirical Studies

#### 3.2.1 Board Size and Firm Performance

Much research has been conducted over the last few decades on the relationship between board size and firm performance (Yan, Hui & Xin 2021; Altass, 2022; Le, Kweh & Ngo, 2023). Because board size is an important aspect of corporate governance, many academics have worked to understand how it affects firm performance. Larger corporations have larger boards, while smaller corporations have smaller boards. Kesner and Johnson (1990), conducted one of the first studies investigating the relationship between board structure and firm performance. They discovered a negative relationship between board size and firm performance, indicating that smaller boards are better at running management and making strategic decisions. Similarly, Siyal and Ahmad (2021) investigated the performance of family-owned businesses in emerging markets concerning board size. They discovered that larger board sizes are associated with higher firm performance in family-owned businesses, contrary to previous research that suggested smaller boards are more effective. They argue that larger boards can provide family-owned businesses with more resources and diverse experience, improving decision-making and firm performance. Pucheta-martínez and Gallego-álvarez (2020) examined the effect of board size on firm performance in the context of CEO power. They discovered that when the CEO has more power, the negative relationship between board size and firm performance is less pronounced, implying that CEOs with more power may compensate for any potential disadvantages of a larger board. They also discovered that the relationship between board size and firm performance is more nuanced than previously thought and is influenced by a variety of contextual variables. Ali, Sial & Hwang (2020) investigated the relationship between board size and firm performance regarding CSR. They discovered a link between larger boards and higher levels of CSR performance, implying that larger boards may be more effective at addressing CSR issues. They argue that larger boards provide more oversight and knowledge, which would improve CSR performance and firm performance.

Nawaz et al. (2019) tested the relationship between board size and firm performance through the lens of firm innovation. They discovered a link between smaller boards and higher innovation performance, indicating that smaller boards are more effective at encouraging business innovation. They argue that smaller boards provide a more adaptable and agile decision-making structure, fostering innovation and improving performance. Finally, Kanakriyah (2021) examined how board size affected firm performance with firm age. They discovered a U-shaped relationship between board size and firm performance, with the ideal board size varying by company age. They argue that larger boards are beneficial to young businesses. On the other hand, older companies benefit from smaller boards, demonstrating the importance of considering the firm's life stage when determining board size.

These recent studies add to the complexity of the relationship between board size and firm performance, suggesting that the impact of board size may be context-specific and dependent on various factors, such as firm type, CEO power, CSR, innovation, and innovation firm age. While some studies suggest that larger boards may be more effective, others suggest that smaller boards may be more effective in certain contexts. Companies should carefully consider their specific circumstances when determining the optimal board size to maximize firm performance.

Hypothesis (H1). There is a positive relationship between board size and firm performance.

### 3.2.2 Board Independence and Firm Performance

Board independence refers to the extent to which a company's board of directors comprises independent directors who are not affiliated with the company in any other capacity (Elly, Tulung & Ramdani, 2018). In recent years, the role of board independence in corporate governance has received significant attention in research and the relationship between board independence and firm performance has been the subject of research. XLi and Li (2020) analyzed the impact of board independence on firm performance in China. The study discovered that board independence positively impacts firm performance and independent directors significantly impact profitability and the cost of an agency in Chinese companies. This finding may be explained by the ability of independent directors to provide unbiased guidance and oversight to management, which improves decision-making and firm performance. Uribe-bohorquez and García-sánchez (2018) investigated the relationship between Board independence and firm performance along with the effect of institutional context. The study revealed that board independence has a positive impact on firm performance in family businesses. These findings imply that independent directors can improve firm performance by providing objective advice and oversight, thereby mitigating the negative effects of family control.

Waqar et al. (2014) investigated the relationship between board independence and firm performance in Pakistan. The study found that board independence improves the performance of Pakistani companies as independent directors serve as a check on the authority of executive directors, improving overall firm performance. Furthermore, it was shown that the effects of board independence on firm performance are more pronounced in businesses with higher levels of outside funding. Amosh et al. (2023) examined the impact of board independence on firm performance in the context of environmental, social, and governance (ESG) performance. The beneficial effect of board independence on ESG performance was reported suggesting that independent directors can provide better oversight and monitoring of ESG issues, leading to improved ESG performance.

However, the result was not supported in similar research in another context. Shaji and Althaf (2020) investigated the effect of board independence on firm performance in the context of family-owned businesses in the United States. The study discovered that board independence has a negative impact on firm performance in family-owned businesses. They argue that the conflict between family owners and independent directors is to blame for this negative effect. It can lead to a lack of trust and communication, obstructing decision-making and harming firm performance. The literature on board independence and firm performance continues to evolve, with recent studies providing nuanced insights into the relationship between these variables. Nonetheless, the findings of these studies underscore the importance of board independence as a key determinant of firm performance.

Hypothesis (H2). There is a positive relationship between board independence and firm performance.

3.2.2 Board Meetings and Firm Performance

Board meetings are a critical aspect of corporate governance, providing a forum for board members to discuss and make decisions on important matters that impact firm performance. Puni and Anlesinya (2019) investigated the relationship between the frequency of board meetings and firm performance in developing countries and uncovered a link between board meeting frequency and firm performance, indicating that companies with more meetings outperform. The authors propose that this beneficial relationship results from increased communication and information sharing among board members. Danoshana and Ravivathani (2019) looked at the impact of the connection between corporate governance and firm performance on financial institutions in Sri Lanka and found that the frequency with which the board meets positively impacts the performance of firms. The authors suggest this beneficial relationship may result from increased monitoring and oversight by board members. Chou, Chung, and Yin (2013) investigated the relationship between the effectiveness of board meetings and firm performance in Taiwan and proved that board meetings have a positive impact on firm performance. They went on to elaborate their argument by saying that active and productive discussion among board members during meetings is associated with improved firm performance. According to the authors, this positive relationship is due to improved decision-making and accountability that come with high-quality board meetings.

However, board meetings can also reduce firm performance for a reason that was highlighted in a study. Al-matari et al. (2014) examined the relationship between the characteristics attributed to the board of directors and firm performance in Oman and uncovered that longer board meetings were associated with lower firm performance in the study. According to the authors, longer meetings indicate that board members are less effective at managing their time and discussing important matters efficiently, which can harm firm performance. Nonetheless, these studies highlight the critical role of board meetings in corporate governance and suggest that

firms should prioritize effective communication and decision-making during board meetings to improve firm performance.

Hypothesis (H3). There is a positive relationship between board meetings and firm performance.

## 4. Methodology

This section describes the techniques used to examine the data in this study, such as how the sample and data were selected, how variables were measured and defined, in addition to the specifications of the model.

### 4.1 Sample and Data Collection

The research population of the current study includes all NBFIs listed on ASE from 2017 through 2021. The market in Jordan is dependent on other markets such as Syrian and Lebanese ones, as well as other external environmental factors resulting from the Arab Spring that have had an impact on the performance of Jordanian financial enterprises in recent years (Alshirah et al., 2022). One of the issues that has changed the number of firms in Jordan, particularly in NBFIs was the coronavirus outbreak. Nonetheless, the Jordanian government has strongly encouraged this sector to boost production and contribute to economic development by providing financial incentives, improving infrastructure, providing specialized training, streamlining regulations, promoting research and development, improving market access, encouraging entrepreneurship, and enacting sector-specific policies (ILO, 2021).

This study focuses on the financial sector, which includes insurance, diversified financial services, and real estate. As a result, the 76 NBFIs listed on ASE were chosen as the study sample. Based on the observations, it was determined that 380 were conveniently accessible and suitable for analysis. Companies with insufficient data were excluded. The data came from the annual reports of the enterprises, which were available on the ASE website. The sample size of this study is larger than other corporate governance studies conducted in developing countries (Assenga, Aly & Hussainey, 2018).

**Table 1. The Measurement and Definitions of Variables.**

| Dependent Variables | Acronym | Definition | Authors |
|---|---|---|---|
| **Return on assets** | ROA | Net Income divided by total assets | (Mendoza-vel, Ortuño-barba, & Conde-cortés, 2022; Sethi, Sahu & Maity, 2023; Wu et al. (2021). |
| **TOBINSQ** | TOBINSQ | Market value firm divided by Replacement cost of asset | (Sulaiman, Kasbar & Haslam, 2023; Mobbs, (2015); Ghabri, (2022); Koji et al. (2020); Chaudhry et al. (2020). |

| | | | |
|---|---|---|---|
| **Independent variables** | | | |
| **Board size** | BSIZE | A Total number of directors on the board | (Khatib & Nour, 2021; Dao (2020); Gulzar et al. (2020); Antounian & Harakeh, 2021; Al-khazaleh & Zulkafli, 2022). |
| **Board Independence** | BIND | The Percentage of total number of independent directors on board | (Pucheta-martínez & Gallego-álvarez, 2020); Long, Ahmad & Ting, 2019; Ciftci et al. (2019); Kanakriyah, (2021). |
| **Board meetings** | BMET | A number of meetings held yearly | (Khatib et al. 2021; Dao (2020); Gulzar et al. (2020); Koji et al. (2020); Kanakriyah, (2021). |
| **Control variables** | | | |
| **Firm size** | FSIZE | The natural logarithm of total assets | (Mangudhla, Naa & Dodoo 2023; Muntahanah et al. (2021); Alodat et al. (2022). |
| **Liquidity** | FLIQU | Current assets to current liabilities ratio | (Farooq, Noor & Ali, 2022; Mobbs, (2015) Ciftci et al. (2019); Antounian & Harakeh, 2021) |
| **Firm levarage** | FLEV | Total debt divided by total assets. | (Muntahanah et al., 2021) Hermuningsih, Kusuma, & Cahyarifida, 2020; Bhagat & Bolton (2019); Hussain et al. (2021). |
| **Economics variables** | | | |
| **Gross Domestic Product** | GDP | GDP growth rate per year (%) | Romus et al. (2020); Mursalim, Mallisa & Kusuma, (2017); Vieira, Neves & Dias (2019). |
| **Inflation** | INFL | Consumer Price Index | Forte & Tavares (2019); Almalki & Batayneh, (2015); Matar, Al-Rdaydeh & Odeh, (2018). |
| **Financial sector development** | FSD | Credit to private sector | Almalki & Batayneh, (2015); Atil, Nawaz & Roubaud, (2020). |

Sources: Past studies

4.2 Control Variables

In the current study, six control variables were used: firm size, leverage, liquidity, and macroeconomic variables such as GDP, financial sector development (FSD), and inflation, all of which are assumed to have a direct impact on firm performance. The size of the firm has been used in past studies (Assenga et al., 2018). All firms require liquidity under all conditions. According to Alfawareh et al. (2021), liquidity plays a vital role when firms are in a good situation, but it is also important during troubled periods. They also observed that the liquidity ratio has a significant positive influence on firm performance. Regarding leverage, Nguyen et al. (2020) used leverage for capital structure and firm performance, such as Tobin's Q and ROA, as control variables.

The results indicate that liquidity has a negative and significant

effect on firm performance. In terms of macroeconomics variables, statistics on macroeconomic variables are required. The GDP, inflation, and financial sector development are the three most notable of these variables, but there are many other sorts. The GDP is the total worth of all goods and services produced in a country in a given year. Inflation has both positive and negative effects on firm performance, depending on a variety of factors. A firm that can adapt to changing economic conditions and implement effective inflation management strategies may fare better in an inflationary climate.

Finally, FSD can improve firms' access to financing, encourage competition and innovation, improve risk management, contribute to economic stability, and strengthen the regulatory and governance framework of the financial sector, all of which can improve firm performance. The specific effects, however, will vary based on each firm's individual circumstances as well as the larger economic and political climate in which it operates.

4.3 Regression Models Specification

In corporate governance studies, several models can be used; as a result, this study utilized multiple regression analysis to analyze the link between corporate governance and firm performance by previous studies using the Stata program. As a result of the correlation analysis used in this study to assess whether there was multicollinearity among the independent variables, two regression models were generated. The first model mirrored the market-based indicator Tobin's Q, whereas the second model mirrored the accounting-based measure of return on assets (ROA).

Panel data models are classified into three types: constant-coefficient (pooled) model, fixed effects model and random effects model. As a result, several statistical techniques are used to determine which model is appropriate for a certain investigation. First, the F-test can be used to identify a pooled or fixed model. Second, the Breusch and Pagan Lagrange Multiplier Test is used to select between the pooled and random models. Third, the Hausman specification test can be used to identify whether panel data are adequate for evaluating the data and whether random effects or fixed effects models should be utilized (Baltagi, 2008). To achieve the aim of the study, this research follows two models:

Model 1

$$ROA_{it} = \beta_0 + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 BMET_{it} + \beta_4 FSIZE_{it} + \beta_5 FLAV_{it} + \beta_6 LEIQU_{it} + \\ + \beta_7 GDP_{it} + \beta_8 INFL_{it} + \beta_9 FSD_{it} + \varepsilon_{it}$$

Model 2

$$TobinsQ_{it} = \beta_0 + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 BMET_{it} + \beta_4 FSIZE_{it} + \beta_5 FLAV_{it} + \beta_6 LEIQU_{it} + + \beta_7 GDP_{it} + \beta_8 INFL_{it} + \beta_9 FSD_{it} + \varepsilon_{it}$$

## 5. Results and Discussion

### 5.1 Descriptive Statistics

Table 2 below shows descriptive statistics for the corporate governance, and firm performance and specific variables for the full period (2017-2021) for NBFIs listed in ASE.

In terms of independent variables, the mean value of ROA is -0.283 and a standard deviation of 2.994, this finding indicates that the firm is losing money on its assets. If a firm's ROA is negative, it means it is losing money on every dollar it spends. However, the broad range of fluctuation in the company's profitability over time is reflected in the standard deviation of ROA, which is 2.994. Concerning Tobin's Q with a mean value of 0.773, these outcomes suggest that its assets are worth more than they cost to replace. It means if investors are confident in a firm's long-term profitability and growth potential, the stock price and investment in the company will rise, as measured by a high Tobin's Q.

In terms of independent variables, the main value of the board size is approximately 8 with a standard deviation of 2.143. These findings are consistent with that of previous research (Alshirah et al., 2022; Makhlouf & Basah, 2017; Abdullah, 2016). They found the mean value of board size is 8 with a standard deviation of approximately 2.5 in Jordanian firms. It means that larger boards include more different perspectives and greater knowledge in the decision-making process, but they may be less effective which is consistent with Article (4) of the corporate governance principles (2017) stipulating that the board of directors have no less than five and no more than thirteen elected members, as mentioned in Table 2. Yet several firms appear to have met this criterion by having a maximum and minimum of fifteen and five members, respectively. Further, board independence has a mean value of 0.503 with a standard deviation of 0.238.

These findings are consistent with other findings reported by Altawalbeh, (2020) which found the board independence and firm performance with a mean value of 0.51. It means that on average the board has 50.3% independence of directors. As a result, just half of the board members have a relation to the firm that might imperil their independence. Moreover, board meetings have a mean value of approximately 6.611 with a standard deviation of 1.99. This result indicates that Jordanian firms, on the whole, comply with Article 8 of the Jordanian instructions for JCGC (2017), which states that the board of directors must meet at least six times,

according to the average value used to categorize the degree of adherence to corporate governance guidelines. However, the minimal value of three meetings demonstrates that firms fulfill the instructions of the corporate governance code. These findings are consistent with a study reported by Khatib and Nour (2021), which found the mean value of board meetings at 6 with a standard deviation of 2.1.

In terms of the control variable, firm size has a mean value of 2.974. These findings indicate that the firms were small or medium-sized. This could be due to a variety of factors, including market conditions, industry-specific characteristics, or the regulatory environment which is in line with the finding reported by Idris et al., (2018). Furthermore, the mean liquidity of firms in Jordan is 2.948 indicates a perfect level of liquidity, which helps them in meeting their long-term and short-term obligations. Moreover, firm leverage has a mean value of 0.319 with a standard deviation of 0.258. These outcomes refer that the firms having an average level of leverage. As debt financing was a significant but not disproportionately big component of their capital structure, the firms have had a low level of leverage. However, leverage can increase the financial risks of a firm, such as default or bankruptcy, but it can also bring tax advantages and lower debt financing costs (Al-Zoubi, Al-Khazaleh & Badwan, 2023).

Finally, regarding macroeconomic variables, the descriptive statistics show that FSD has a mean value of 4.37. This finding shows that a reasonably high level of financial sector development, indicating that Jordan had well-developed financial systems. This might be attributed to strong regulatory frameworks, efficient financial market infrastructure, and a good macroeconomic situation. Inflation has a mean value of 2.067. This outcome indicates that Jordan suffered relatively minimal inflation during the time period. A low mean value shows that prices were rising more slowly than in the past or in contrast to other countries. Consumers may profit from this since their purchasing power is less likely to be drained and they may have more confidence in price stability. GDP has a mean value of 1.38, which means that economy of Jordan was growing and expanding during the period of study, though perhaps not as swiftly as in other countries.

**Table 2. Descriptive Statistics**

| Variable | Obs. | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| ROA | 380 | -0.283 | 2.994 | -7.59 | 5.07 |
| TOBINSQ | 380 | 0.773 | 0.728 | 0.01 | 3.5 |
| BSIZE | 380 | 7.632 | 2.143 | 5 | 15 |
| BIND | 380 | 0.503 | 0.238 | 0.1 | 0.9 |
| BMEET | 380 | 6.611 | 1.99 | 4 | 13 |

| | | | | | |
|---|---|---|---|---|---|
| FSIZE | 380 | 2.974 | 1.414 | 0.386 | 9.617 |
| FLEV | 380 | 0.319 | 0.258 | 0.01 | 1.23 |
| FLIQU | 380 | 2.948 | 2.313 | 0.84 | 6.91 |
| FSD | 380 | 4.37 | 0.046 | 4.315 | 4.431 |
| INFL | 380 | 2.067 | 1.612 | 0.3 | 4.5 |
| GDP | 380 | 1.38 | 1.509 | -1.6 | 2.5 |

Note: This table provides the descriptive statistics for the study variables. ROA denotes return on assets. TobinsQ measure by the market value of a firm to the replacement cost of firm assets. BSIZE denotes board size. BIND denotes board independence. BMEET denotes board meetings. FSIZE denotes the firm size. FLEV denotes firm leverage. FLIQU denotes firm liquidity. GDP donates gross domestic product. INFL denotes inflation. FSD denotes financial sector development.

The study employed the Pearson correlation test to examine the relationships between variables, as depicted in Table 3. The coefficients derived from this test exhibited a low level of correlation, indicating the absence of multicollinearity issues. Additionally, a variance inflation factor (VIF) test was conducted, revealing that the mean VIF values were below 10, further supporting the conclusion of the no multicollinearity problem.

Furthermore, the study conducted Wald and Wooldridge's tests to assess autocorrelations and heteroscedasticity. These tests indicated that there were no significant issues with autocorrelations or heteroscedasticity in the data. The absence of autocorrelations suggests that the error terms of the model are not correlated, while the absence of heteroscedasticity indicates that the variability of the error terms is constant across different levels of the independent variables. The Pearson correlation test, VIF test, as well as Wald and Wooldridge's tests collectively provide evidence for the absence of multicollinearity, autocorrelations, and heteroscedasticity in the data, ensuring the reliability and validity of the analysis (Franke, 2010; Farahani et al. 2010).

**Table 3. Pairwise correlations**

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | VIF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) ROA | 1.000 | | | | | | | | | | | |
| (2) TOBINSQ | 0.502* | 1.000 | | | | | | | | | | |
| (3) BSIZE | 0.601* | 0.525* | 1.000 | | | | | | | | | 1.45 |
| (4) BIND | 0.334* | 0.341* | 0.310* | 1.000 | | | | | | | | 1.26 |
| (5) BMEET | 0.414* | 0.241* | 0.392* | 0.356* | 1.000 | | | | | | | 1.30 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (6) FSIZE | 0.259* | 0.269* | 0.248* | 0.010 | -0.005 | 1.000 | | | | | | 1.40 |
| (7) FLAV | 0.147* | -0.017 | 0.183* | -0.154* | -0.066 | 0.484* | 1.000 | | | | | 1.82 |
| (8) FLIQU | 0.120* | 0.226* | 0.172* | 0.136* | 0.148* | -0.037 | -0.428* | 1.000 | | | | 1.38 |
| (9) FSD | -0.021 | 0.000 | -0.061 | 0.052 | -0.037 | 0.004 | 0.015 | 0.045 | 1.000 | | | 1.60 |
| (10) INFL | 0.017 | -0.007 | 0.053 | -0.041 | 0.084 | 0.012 | -0.027 | -0.014 | -0.605* | 1.000 | | 1.60 |
| (11) GDP | -0.036 | -0.024 | -0.038 | -0.007 | -0.023 | 0.012 | 0.010 | 0.011 | -0.023 | -0.056 | 1.000 | 1.01 |

**Note:** * Correlation is significant at the 0.05level

### 5.2 Regression Results

To compare the current study with previous studies and draw attention to the potential problem of endogeneity resulting from unobserved differences, simultaneous effects, and dynamic endogeneity, as noted by (Assenga et al., 2018), a thorough investigation of the correlation between board structure and firm performance was conducted using various estimation methods. These methods included a dynamic pooled POLS model, as well as fixed cand random effects models, and a system 2SLS.

If the independent variables are exogenous, POLS and fixed-effects methods can produce more precise approximations. However, if the independent variables are not exogenous, a system 2SLS approach should be used instead. To determine whether there was endogeneity in the model's regression, Durbin-Wu-Hausman (DWH) test was used. The outcomes of the DWH test indicated that the null hypothesis was rejected (p=0), indicating an endogeneity issue between board structure and performance. Therefore, POLS and fixed effects methods would not provide unbiased estimates, and the system 2SLS approach was used in this study.

Table 4 shows the results of panel data regressions for board structure. The model exhibited a good fit and achieved statistical significance at $p < 0.01$. This indicates that the ROA modal was statistically valid. The R2 value within the model was 0.498, implying that approximately 50% of the variation in the dependent variable could be accounted for by variations in the independent variables. Hence, the regression equation provided a satisfactory statistical explanation for the variation in firm performance as assessed by ROA.

**Table 4. Regression Results**

| | **ROA** | **ROA** | **ROA** | **ROA** | **TobinsQ** | **TobinsQ** | **TobinsQ** | **TobinsQ** |
|---|---|---|---|---|---|---|---|---|
| **VARIABLES** | **POLS** | **Fixed** | **Random** | **2SLS** | **POLS** | **Fixed** | **Random** | **2SLS** |

| | | **Effects** | **Effects** | | | **Effects** | **Effects** | |
|---|---|---|---|---|---|---|---|---|
| BSIZE | 0.613*** | 0.590*** | 0.602*** | 0.162*** | 0.147*** | 0.136*** | 0.134*** | 0.142*** |
| | (0.066) | (0.0764) | (0.067) | (0.026) | (0.017) | (0.017) | (0.016) | (0.022) |
| BIND | 1.644*** | 1.368** | 1.420*** | 0.428*** | 0.525*** | 0.478*** | 0.523*** | 0.433*** |
| | (0.553) | (0.559) | (0.513) | (0.155) | (0.142) | (0.123) | (0.122) | (0.153) |
| BMEET | 0.296*** | 0.316*** | 0.307*** | -0.0268* | -0.003 | -0.008 | -0.007 | -0.0311* |
| | (0.067) | (0.064) | (0.059) | (0.022) | (0.017) | (0.014) | (0.014) | (0.013) |
| FSIZE | 0.273*** | 0.525 | 0.359** | 0.171*** | 0.123*** | -0.472*** | 0.033 | 0.128*** |
| | (0.098) | (0.416) | (0.150) | (0.052) | (0.025) | (0.092) | (0.039) | (0.042) |
| FLEV | 0.541 | -2.009 | -0.228 | -0.391* | -0.440*** | -0.249 | -0.191 | -0.404* |
| | (0.613) | (1.290) | (0.800) | (0.283) | (0.157) | (0.285) | (0.204) | (0.276) |
| FLIQU | 0.0296 | 0.0780 | 0.0441 | 0.398 | 0.023 | 0.0149 | 0.027 | 0.356 |
| | (0.059) | (0.088) | (0.068) | (0.024) | (0.016) | (0.019) | (0.017) | (0.014) |
| FSD | -0.753 | -1.840 | -1.558 | -0.493 | -0.056 | 0.0322 | -0.210 | -0.513 |
| | (3.213) | (2.392) | (2.373) | (1.426) | (0.824) | (0.528) | (0.553) | (1.322) |
| INFL | -0.047 | -0.064 | -0.054 | -0.098 | -0.014 | 0.004 | -0.007 | -0.081 |
| | (0.092) | (0.068) | (0.067) | (0.077) | (0.0237) | (0.015) | (0.016) | (0.053) |
| GDP | -0.0340 | -0.037 | -0.035 | -0.071 | -0.0047 | 0.002 | -0.002 | -0.046 |
| | (0.078) | (0.057) | (0.057) | (0.031) | (0.020) | (0.013) | (0.013) | (0.21) |
| Constant | -5.380 | -0.493 | -1.801 | 1.187 | -0.610 | 0.833 | 0.350 | 1.162 |
| | (14.17) | (10.50) | (10.46) | (1.322) | (3.635) | (2.315) | (2.438) | (6.873) |
| # of Observations | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 |
| F-statistic/Chi$^2$ | 101.324*** | 213.221*** | 224.878*** | 52.331*** | 151.465*** | 144.678*** | 158.268*** | 41.668*** |
| $R^2$ | 0.432 | 0.410 | 0.422 | 0.498 | 0.368 | 0.318 | 0.305 | 0.488 |
| Adjusted $R^2$ | 0.254 | 0.231 | 0.242 | 0.234 | 0.198 | 0.171 | 0.163 | 0.212 |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

Note ROA is return on assets. TobinsQ measure by market value firm divided by replacement cost of asset. BSIZE is board size. BIND is board independence. BMEET is board meetings. FSIZE is firm size. FLEV is firm leverage. FLIQU is firm liquidity. FSD is financial sector development. INFL is inflation. GDP is gross domestic product. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 5 presents the regression analysis results examining the relationship between firm performance and board structure. The analysis reveals that board size does not significantly impact firm performance, despite showing a positive coefficient. This suggests that the size of the board alone does not directly influence firm performance. This can be attributed to the idea that the effectiveness depends more on the quality and composition of board members rather than the sheer number. Therefore, increasing the board size may not necessarily enhance firm performance. On the other hand, the analysis shows a positive and significant relationship between independence of the board and firm performance. This indicates that a higher

level of independence among board members is associated with better firm performance. Independent directors bring fresh perspectives, unbiased judgment, and increased accountability to the decision-making process, enhancing corporate governance and positively influencing firm performance. Additionally, the analysis reveals a positive and significant relationship between the frequency of board meetings and firm performance. Conducting more board meetings is found to improve firm performance. This finding indicates that frequent board meetings facilitate better communication, decision-making, and oversight. It suggests that active engagement and collaboration among board members contribute to better strategic planning and monitoring of firm performance, ultimately leading to improved performance. Furthermore, the analysis shows that larger firms tend to perform better, with a positive and significant coefficient. This result suggests that larger firms benefit from economies of scale, greater resources, and market power. These advantages allow larger firms to invest in research and development, attract top talent, and withstand market fluctuations more effectively, ultimately leading to improved firm performance. On the other hand, the variables FLEV, FLIQU, FSD, INFL, and GDP do not exhibit significant coefficients, indicating that they do not statistically impact firm performance in the model.

Table 6 shows the relationship between board structure and Tobin's Q, a measure of firm performance, which has yielded intriguing results. Board size does not exhibit a significant relationship with Tobin's Q in this study implying that the size of the board does not directly impact on the market value. Instead, the findings indicate that other factors, such as board composition and quality, may exert a more influential role in explaining Tobin's Q. However, a significant and positive association between independence and Tobin's Q was found. This implies that firms with higher independence on their boards are perceived as having superior governance practices and consequently enjoy a higher market value. The presence of independent directors brings objectivity and accountability to the decision-making process, which is highly valued by investors. Another noteworthy finding is the positive and significant coefficient for board meetings was observed. Conducting more board meetings appears to be linked to a higher Tobin's Q. This indicates that regular and frequent board meetings facilitate better communication, decision-making, and oversight, ultimately leading to enhanced market value and increased investor confidence in the firm. Moreover, the analysis reveals that firm size has a positive and significant coefficient, indicating that larger firms tend to exhibit a higher Tobin's Q. This aligns with economic intuition, as larger firms often benefit from economies of scale, possess greater resources, and enjoy market power. These factors collectively contribute to their higher market value and positive investor perceptions. On the other hand, variables such as leverage (FLEV), liquidity (FLIQU), financial sector development (FSD), inflation (INFL), and GDP did not

exhibit statistically significant coefficients. Therefore, these factors do not appear to have a direct and significant relationship with Tobin's Q in the study. It suggests that other elements not captured by these variables may be the primary drivers of market value or investor perception of firm performance.

Finally, our findings underscore the significance of board independence and the frequency of board meetings in influencing Tobin's Q, a measure of firm performance. Furthermore, firm size plays a crucial role, with larger firms generally demonstrating higher Tobin's Q. These insights contribute to understanding the relationship between board structure and Tobin's Q and can inform corporate governance and investor relations decision-making.

**Table 5. The Relationship between Board Structure and Firm Performance - ROA**

| | ROA | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **I** | **II** | **III** | **IV** | **V** | **VI** | **VII** | **VIII** |
| BSIZE | 0.073 | 0.133 | 0.910 | 0.066 | 0.072 | 0.014 | 0.048 | 0.087 |
| | 0.223*** | 0.214 | 0.876 | 0.211 | 0.226 | 0.034 | 0.018 | 0.029** |
| BIND | 1.089 | 1.042 | 1.019*** | 0.078 | 0.089 | 0.064 | 0.024 | 0.015** |
| | 0.054 | 0.008 | 0.032 | 0.088 | 0.073 | 0.009 | 0.007 | 0.025 |
| BMEET | 0.233*** | 0.301 | 0.311*** | -0.0218 | -0.005 | -0.006 | 0.013 | -0.022 |
| | 0.015 | 0.012 | 0.012 | 0.011 | 0.013 | 0.018 | 0.005 | 0.001 |
| FSIZE | 0.224*** | 0.320*** | 0.341*** | 0.411*** | 0.431*** | 0.416*** | 0.436 | -0.189*** |
| | 0.042 | 0.068 | 0.71 | 0.54 | 0.054 | 0.056 | 0.079 | 0.073 |
| FLEV | 0.413 | −0.113 | −0.106 | -0.122* | -0.121 | -0.177 | -0.161** | -0.118* |
| | 0.568 | 0.347 | 0.368 | 0.448 | 0.347 | 0.417 | 0.515 | 0.327 |
| FLIQU | 0.317 | 0.218 | 0.315 | 0.219 | 0.415 | 0.307 | 0.214 | 0.318 |
| | 0.011 | 0.028 | 0.045 | 0.034 | 0.043 | 0.057 | 0.026 | 0.012 |
| FSD | -0.289 | -0.268 | -0.136 | -0.353 | -0.522 | -0.287 | -0.188 | -0.542 |
| | 3.125 | 2.198 | 2.412 | 3.324 | 1.231 | 0.654 | 0.431 | 0.328 |
| INFL | -0.062 | -0.056 | -0.088 | -0.631 | -0.590 | -0.422 | 0.333 | 0.262 |
| | 0.08 | 0.07 | 0.09 | 0.08 | 0.07 | 0.06 | 0.04 | 0.02 |
| GDP | -0.036 | -0.031 | -0.043 | -0.051 | -0.056 | -0.059 | 0.023 | 0.042 |
| | 0.053 | 0.047 | 0.058 | 0.063 | 0.067 | 0.072 | 0.036 | 0.056 |
| Constant | 2.662 | 2.151 | 2.337 | 2.094 | 1.375 | 1,182 | 2.385 | 2.534 |
| | 6.502 | 5.300 | 4.985 | 5.321 | 4.223 | 4.002 | 5.261 | 4.185 |
| # of Observations | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 |
| F-statistic/Chi$^2$ | 66.397*** | 54.132*** | 51.742*** | 56.721*** | 52.418*** | 51.731*** | 55.633* | 48.738*** |
| $R^2$ | 0.16 | 0.12 | 0.11 | 0.13 | 0.11 | 0.11 | 0.13 | 0.11 |
| Adjusted $R^2$ | 0.09 | 0.07 | 0.05 | 0.06 | 0.06 | 0.07 | 0.9 | 0.08 |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

| | |
|---|---|
| *Significance at 10% | |
| *Significance at 5% | |
| *Significance at 1% | |

**Table 6. The Relationship between Board Structure and Firm Performance - TobinsQ**

| | TobinsQ | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **I** | **II** | **III** | **IV** | **V** | **VI** | **VII** | **VIII** |
| BSIZE | 0.081 | 0.142 | 0.933 | 0.087 | 0.083 | 0.022 | 0.058 | 0.063 |
| | 0.248*** | 0.263 | 0.824 | 0.289 | 0.271 | 0.062 | 0.033 | 0.046** |
| BIND | 1.438 | 1.721 | 1.356*** | 0.104 | 0.152 | 0.144 | 0.072 | 0.026** |
| | 0.066 | 0.028 | 0.055 | 0.091 | 0.089 | 0.018 | 0.023 | 0.034 |
| BMEET | 0.285*** | 0.342 | 0.367*** | -0.0321 | -0.018 | -0.031 | 0.032 | -0.048 |
| | 0.018 | 0.022 | 0.027 | 0.034 | 0.025 | 0.032 | 0.017 | 0.016 |
| FSIZE | 0.289*** | 0.403*** | 0.387*** | 0.465*** | 0.490*** | 0.493*** | 0.478 | 0.206*** |
| | 0.053 | 0.071 | 0.086 | 0.064 | 0.073 | 0.081 | 0.091 | 0.088 |
| FLEV | 0.477 | 0.033 | 0.026 | 0.042* | 0.066 | 0.078 | 0.031** | 0.042* |
| | 0.732 | 0.584 | 0.572 | 0.622 | 0.488 | 0.531 | 0.612 | 0.281 |
| FLIQU | 0.275 | 0.284 | 0.242 | 0.281 | 0.263 | 0.206 | 0.252 | 0.296 |
| | 0.014 | 0.034 | 0.052 | 0.043 | 0.058 | 0.068 | 0.033 | 0.018 |
| FSD | -0.186 | -0.188 | -0.142 | -0.211 | -0.287 | -0.336 | -0.246 | -0.224 |
| | 5.026 | 3.621 | 3.871 | 4.142 | 2.687 | 1.245 | 1.162 | 0.879 |
| INFL | -0.032 | -0.022 | -0.041 | -0.262 | -0.316 | -0.204 | 0.211 | 0.201 |
| | 0.09 | 0.08 | 0.08 | 0.07 | 0.05 | 0.08 | 0.06 | 0.05 |
| GDP | -0.012 | -0.021 | -0.024 | -0.028 | -0.034 | -0.036 | 0.011 | 0.018 |
| | 0.068 | 0.077 | 0.081 | 0.087 | 0.093 | 0.096 | 0.063 | 0.071 |
| Constant | 4.262 | 4.521 | 5.216 | 5.355 | 4.188 | 4.578 | 5.190 | 3.113 |
| | 7.416 | 6.244 | 5.237 | 5.986 | 4.841 | 5.712 | 7.109 | 4.026 |
| # of Observations | 380 | 380 | 380 | 380 | 380 | 380 | 380 | 380 |
| F-statistic/Chi$^2$ | 4.156*** | 4.259*** | 5.371*** | 6.138*** | 4.154*** | 5.242*** | 4.864* | 5.319*** |
| $R^2$ | 0.11 | 0.11 | 0.13 | 0.14 | 0.11 | 0.11 | 0.11 | 0.15 |
| Adjusted $R^2$ | 0.07 | 0.08 | 0.06 | 0.05 | 0.08 | 0.09 | 0.8 | 0.05 |
| Year Dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| *Significance at10% | | | | | | | | |
| *Significance at 5% | | | | | | | | |
| *Significance at 1% | | | | | | | | |

### 5.3 Robustness Checks

The DWH test is particularly useful when comparing models with fixed effects and random effects. The null hypothesis of this test assumes that the preferred model is the one with random effects. By conducting the DWH test, the researchers aimed to determine whether the fixed effects or random effects model better accounted for the observed data. In this study, if the t-value resulting from the DWH test was less than 0.05, it indicated that the favored model was the one with random effects. This implies that the random effects model provided a more appropriate representation of the data and should be used for further analysis. The findings presented in Table 8 of the study indicate that the DWH test yielded significant Chi2 statistics for the dependent variables. This suggests that, for each of the dependent variables examined in the study, the random effects model was preferred. The significant Chi2 statistics support the notion that the random effects model better captures the underlying patterns and variations in the data. By favoring the random effects model, the researchers acknowledged the importance of accounting for unobserved heterogeneity or individual-specific characteristics that may influence the dependent variables.

Furthermore, to ensure the robustness of the results, the study also employed an initial probability model, which was likely used as a benchmark or reference point. The results from Table 7, which present the findings of the initial probability model, demonstrated the strength and consistency of the results in this study. Specifically, the majority of the variables retained their statistical significance and exhibited consistent coefficient signs. This indicates that the relationships and associations between the independent and dependent variables remained robust even when applying different models and methodologies. Overall, the utilization of the DWH test, along with the significant Chi2 statistics and the consistency of the initial probability model results, provided strong evidence in support of employing a random effects model in the present study. By choosing this model, the researchers accounted for unobserved heterogeneity and produced reliable findings that help advance the understanding of the relationships and dynamics within the studied variables.

Table 7 shows the findings of a sensitivity test conducted to assess the impact of sensitivity in measuring firm performance by incorporating ROA and Tobin's Q as dependent variables in the model. The findings demonstrate the resilience of the results even after including ROA and Tobin's Q. Specifically, ROA exhibits statistical significance at $p < 0.01$, yielding an adjusted R2 value of 0.278. Additionally, Tobin's Q also displays significance at $p < 0.01$, with an adjusted R2 of 0.263. Furthermore, a significant relationship at the level of $p < 0.01$ is identified between board structure and firm performance. Consequently, these results are in line with the main findings of the study.

However, using the Hausman test, Breusch-Pagan LM test, and first-stage F-test, the robustness of the results was further examined. Breusch-Pagan LM test, Durbin-Wu-Hausman F-test, and Hausman test results in Table 7 demonstrated how reliable the findings were. The majority of the variables kept their statistical significance and coefficient signs.

The study findings demonstrate a statistically significant correlation between board size and ROA, indicating a strong relationship between these variables. Additionally, the observed significant positive association between board size and Tobin's Q aligns with the theoretical framework of the 2SLS (two-stage least squares) approach, implying that larger board size is associated with higher Tobin's Q values, which are indicative of improved firm performance. Moreover, the study establishes a significant link between past and current firm performance, providing empirical support for the intrinsic nature of the relationship between board structure and firm performance. These findings provide support for the hypothesis (H1) and are consistent with prior investigations which also identify a significant positive correlation between board size and firm performance when examining the interplay between board structure and firm performance (Khan et al., 2021; Yadav et al., 2020; Mishra, & Kapil, 2017). By referencing these earlier studies, the present findings gain credibility and contribute to the existing literature on the topic. The convergence between these prior studies and the current analysis enhances the strength and validity of the observed connections between board structure and firm performance.

The findings show a statistically significant and positive association between board independence and firm performance, reaching a significant level of 5%. This finding implies that a higher level of board independence is associated with improved firm performance. Board independence refers to the composition of a company's board of directors, with a greater proportion of independent directors who are not affiliated with the company or its management. This independence can lead to more objective decision-making, better oversight of management actions, and reduced potential for conflicts of interest. The positive association suggests that firms with a higher degree of board independence tend to exhibit better performance outcomes. This may be due to independent directors bringing fresh perspectives, diverse expertise, and a higher level of scrutiny to the decision-making process. Their unbiased assessment of strategic choices and monitoring of management actions can contribute to more effective governance, strategic direction, and ultimately, improved financial performance. It is important to note that while the findings indicate a positive association, they do not establish causality. Other factors not accounted for in the study may also influence firm performance. These results align with the results of previous studies which argue that board independence enhances firm performance through improved monitoring and control functions, as well as the contribution of

independent directors with extensive experience and connections in the industry and business environment (Rashid, 2018; Musleh Alsartawi, 2019; Kanakriyah, 2021). These results provide support for the hypothesis (H2).

The study findings indicate a significant positive relationship between the independent variable board meeting and firm performance, with a significance level of 10%. This implies that an increase in board meeting is associated with improved firm performance. One possible interpretation is that a higher level of board meeting attendance, as represented by board meeting, has a positive impact on the overall performance of the company. For instance, if board meeting represents the percentage of board meetings attended by directors, a higher value of board meeting indicates greater director attendance and active participation in board meetings. This active engagement and involvement of directors in board meetings can contribute to more effective decision-making, better governance practices, and ultimately, enhanced firm performance. However, it is crucial to consider the specific context and nature of the variable board meeting within the study in order to fully comprehend the economic implications and the mechanisms through which it influences firm performance. These findings provide empirical support for the hypothesis (H3) and are consistent with the findings of prior research (Johl & Cooper, 2015; Musleh Alsartawi, 2019; Tejerina-Gaite & Fernández-Temprano, 2021).

However, the findings for firm performance, as presented in Table 8, reveal significant relationships between board characteristics and firm performance indicators. Firstly, the results demonstrate an inverse correlation between board size and ROA, supported by ROA and Tobin's Q models (t-value = -4.123, sig. -0.218). This indicates that larger board sizes are associated with lower ROA values. Similarly, average firm size also exhibits an inverse correlation with ROA (t-value = -2.916), consistent with the findings of models 1 and 2. However, no significant relationships are observed between the fraction of board meetings, the ratio of board size, and the ratio of ROA. Model 2 further supports the negative correlation between board size and ROA (t-value = -3.063, sig. 0.022). These results suggest that larger boards may have a negative impact on firm performance. On the other hand, the study does not find any significant relationship between the fraction of board meetings, board size ratio, and ROA. In conclusion, the study provides valuable insights into the relationship between board characteristics and firm performance in the context of Jordanian firms. The findings indicate that certain performance indicators, such as board meetings, financial leverage, and financial liquidity, exhibit constructive correlations. Additionally, there is evidence of a positive association between board size and firm performance. However, it is important to note that the study reveals an inverse correlation between firm performance and board independence.

**Table 7. The Relationship between Board Structure and Firm Performance – ROA & Tobin's Q**

| | ROA | TobinsQ |
|---|---|---|
| BSIZE | -0.056*** (0.016) | -0.061*** (0.018) |
| | 0.142*** (0.039) | 0.156*** (0.045) |
| BIND | 0.287*** (0.063) | 0.231*** (0.075) |
| | 0.058* (0.032) | 0.043* (0.025) |
| BMEET | 0.062* (0.033) | 0.056* (0.031) |
| | 0.022 (0.041) | 0.012 (0.023) |
| FSIZE | 0.042* (0.021) | 0.037** (0.013) |
| | -0.005 (0.011) | -0.024 (0.008) |
| FLEV | 0.133*** (0.029) | 0.101*** (0.018) |
| | -0.168*** (0.042) | -0.178*** (0.038) |
| FLIQU | -0.112*** (0.023) | -0.022 (0.020) |
| | 0.143*** (0.028) | 0.018 (0.036) |
| FSD | -0.123 (0.024) | -0.015 (0.054) |
| | -0.067 (0.035) | -0.041 (0.032) |
| INFL | -0.037 (0.021) | -0.017 (0.023) |
| | -0.052 (0.028) | -0.026 (0.039) |
| GDP | -0.025 (0.012) | -0.035 (0.022) |
| | -0.045 (0.067) | -0.081 (0.093) |
| Constant | 4.781 (0.087) | 4.183 (0.076) |
| | 5.164 (0.063) | 5.391 (0.052) |
| Observations | 380 | 380 |
| Number of firms | 76 | 76 |
| F-statistic/Chi$^2$ | 6.188*** | 5.642*** |
| $R^2$ | 0.467 | 0.422 |
| Adjusted $R^2$ | 0.278 | 0.263 |
| Breusch-Pagan LM test $\chi^2$ | 226.11*** | 237.81*** |
| Hausman test $\chi^2$ | 18.24 | 21.37 |
| Durbin-Wu-Hausman F-test | 4.42** | 4.26** |
| First stage F-test | 2381.13*** | 2246.38*** |
| Method | POLS-2SLS-IV | POLS-2SLS-IV |

**Table 8. Regression Results for Firm Performance - Durbin-Wu-Hausman (DWH) Test**

| Dependent Variable | Model 1 – ROA | | | Model 2 - TobinsQ | | |
|---|---|---|---|---|---|---|
| | Beta | t-value | Sig. | Beta | t-value | Sig. |
| ROA | 0.298 | 0.322 | 0.288 | -0.008 | -0.056 | 0.987 |
| TOBINSQ | 0.181 | 0.163 | 0.246 | 0.042 | -0.812 | 0.452 |
| BSIZE | -0.312 | - | 0.018 | -0.007 | -3.063 | 0.022 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | 4.123 | | | | |
| BIND | -0.189 | -1.367 | 0.268 | -0.038 | -0.072 | 0.730 |
| BMEET | -0.177 | -0.899 | 0.291 | -0.028 | -0.046 | 0.538 |
| FSIZE | -0.183 | -2.916 | 0.091 | 0.169 | 1.326 | 0.112 |
| FLEV | 0.322 | 2.541 | 0.003 | -0.078 | 0.258 | 0.417 |
| FLIQU | 0.156 | 2.033 | 0.001 | -0.085 | 0.210 | 0.368 |
| FSD | -0.116 | -0.870 | 0.206 | -0.044 | -0.077 | 0.418 |
| INFL | -0.358 | 3.276 | 0.000 | -0.089 | -0.806 | 0.734 |
| GDP | -0.088 | -0.752 | 0.381 | 0.425 | 2.908 | 0.008 |
| Constant | | -0.281 | 0.811 | | 0.863 | 0.433 |
| | $R^2$ = 0.167<br>Adjusted $R^2$ = 0.131<br>$Chi^2$/F-statistic = 2.867 | | | $R^2$= 0.118<br>Adjusted $R^2$ = 0.057<br>$Chi^2$/F-statistic = 1.762 | | |

## 6. SUMMARY AND CONCLUSION

The initial phase of this study involved conducting a descriptive analysis to provide an overview of the variables under investigation, including both dependent and independent variables. The descriptive analysis revealed that most of the NBFIs listed in Jordan demonstrate compliance with corporate governance codes and principles. In Table 3, it was reported that the average board size consists of approximately eight members, which is considered an optimal number for enhancing board effectiveness. It is worth noting that JCGC specify a specific board size or limit on the number of board members. Regarding the independent variable board independence, the descriptive analysis indicated that only 50% of the sampled listed firms in Jordan have independent directors on their boards, while the remaining firms have a non-duality structure as recommended by JCGC (2009/2017). This suggests that listed firms in Jordan have fully complied with the JCGC and adhere to corporate governance principles in their board composition practices. In terms of board meetings, the descriptive analysis revealed that NBFIs in Jordan, in line with the recommendations of the JCGC (2009/2017), typically hold a minimum of six meetings per fiscal year. This indicates that listed NBFIs in Jordan have implemented this corporate governance recommendation concerning board meeting frequency. Overall, the descriptive analysis provides valuable insights into the adherence to corporate governance

principles and practices among the sampled NBFIs in Jordan. These findings contribute to a better understanding of the corporate governance environment in the Jordanian context.

The regression analysis results reveal significant relationships between the dependent variables (Tobin's Q and ROA) and the independent variables (board size, board meeting, and board independence). Specifically, a larger board size is found to have a significant but negative impact on firm performance. On the other hand, the presence of board independence is positively associated with firm performance, suggesting that it has a beneficial effect. Furthermore, the variable representing board meetings also exhibits a significant positive impact on firm performance, aligning with the notion that the structure of the board contributes positively. The findings are summarized in Table 7, which provides an overview of the relationships between the dependent and independent variables. These results contribute to the existing body of literature and support the theoretical framework underpinning the study.

However, this research focuses on examining the impact of board structure on firm performance in the context of Jordan. The study begins with an introduction and background on corporate governance practices, emphasizing adopting, and implementing codes and principles within the operational frameworks of the firms. It is concluded that not all companies in Jordan have embraced corporate governance principles in their practices. Furthermore, this study recommends the selection of at least one governance variable for a longer time period to obtain consistent and more robust results. Additionally, the paper explored the challenges and issues associated with implementing corporate governance practices in Jordan.

Finally, this research sheds light on the importance of studying board structure and its influence on firm performance within the specific context of Jordan. The findings highlight the varying adoption levels of corporate governance principles among companies in the country. It also underscores the significance of selecting appropriate governance variables and considering the unique challenges faced in implementing corporate governance practices in Jordan. Finally, it is important to recognize the limitations of this study, such as the utilization of a relatively small sample size consisting of 380 observations over a 5-year period and the focus on a single country. Therefore, future research could address these limitations by expanding the dataset to include a larger number of years and conducting cross-country investigations. This approach would contribute to a more extensive and thorough comprehension of the relationship between board structure and firm performance.

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