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The Relation between Capital Structure, Governance, Ownership Structure, and Performance: Evidence from Jordanian Industrial Corporations

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ABSTRACT

This study utilizes panel data from 50 industrial corporations listed in the Amman Stock Exchange (ASE) during the period from 2012 to 2020 to investigate the relationship between capital structure, as measured by debt ratio, short-term debt to total assets, and long-term debt to total assets, governance as measured by the board of directors' size, ownership structure, and corporation's performance, measured by return on assets and earnings per share. A random effect regression analysis is conducted to test the study's hypotheses. The findings revealed that financial leverage has a negative association with firm performance. This negative relationship is observed with total leverage, short-term leverage, and long-term leverage. Additionally, the study found that both the board of directors' size and foreign ownership have a negative relationship with firm performance. These results have significant implications for governments, practitioners, and management, especially in emerging markets like Jordan. In all the models used in this study, the Breusch and Pagan results reject the null hypothesis stating that there are significant differences across the years, the modified Wald test for heteroscedasticity rejects the null hypothesis of heteroscedasticity, and the Variance Inflation Factor (VIF) test indicates no impact of multi-collinearity.

Keywords: Capital structure, Performance, BOD size, Ownership structure.

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العلاقة بين هيكل رأس المال والحوكمة وهيكل الملكية والأداء: دليل من الشركات الصناعية الأردنية

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ملخص

استخدمت هذه الدراسة 50 شركة صناعية مدرجة في سوق عمان المالي خلال الفترة من 2012 إلى 2020 لدراسة العلاقة بين هيكل رأس المال؛ الذي تم قياسه بنسبة المديونية والديون قصيرة الأجل إلى إجمالي الأصول والديون طويلة الأجل إلى إجمالي الأصول، والحوكمة؛ التي تم قياسها بعدد أعضاء مجلس الإدارة، وهيكل الملكية، وأداء الشركة؛ الذي تم قياسه بالعائد على الأصول وربحية السهم. وقد تم إجراء تحليل انحدار الأثر العشوائي لاختبار فرضيات الدراسة. وأظهرت النتائج أن نسبة المديونية لها علاقة سلبية بأداء الشركة. هذه العلاقة السلبية بأداء الشركة ترتبط بنسبة إجمالي الديون، والديون قصيرة الأجل، والديون طويلة الأجل. بالإضافة إلى ذلك، أظهرت النتائج أن كلاً من عدد أعضاء مجلس الإدارة، ونسبة الملكية الأجنبية، لهما علاقة سلبية بأداء الشركة. هذه النتائج لها آثار مهمة على الحكومة والممارسين وإدارات الشركات في الأسواق الناشئة مثل السوق الأردني.

الكلمات الدالة: هيكل رأس المال، أداء الشركات، عدد أعضاء مجلس الإدارة، هيكل الملكية.

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1. Introduction

Financing decisions are among the most critical areas for financial managers, forming an integral part of the corporation, due to their importance in ensuring business continuity. The aim of financing decisions is to minimize costs and maximize benefits. Corporations utilize various financing options to fund current operations and future growth, often tailored to the nature of the industry and operations, leading to variations among corporations within a given sector. This financing mix typically includes a combination of debt and equity, with varying proportions used to support operations, investments, and activities, thereby enhancing the corporation's market competitiveness and market share. This is commonly referred to as the capital structure.

The relationship between a corporation's capital structure and its performance is a crucial topic that significantly influences the corporation's overall value and drives decisions, such as financing and investing. The performance of an organization depends largely on managerial skills, strategic choices, and resource utilization. Eriotis et al. (2007) argued that "a good decision of capital structure can positively affect financial performance and value of the corporation, while a bad decision may lead to financial distress and eventually to bankruptcy". Several theories, including Modigliani and Miller (1958) and (1963), trade-off theory, agency theory, and pecking order theory, have highlighted the link between capital structure and corporation performance.

The purpose of the capital structure is to strike a balance between risks and returns in a corporation's operations. Its significance lies in its connection to the corporation's ability to meet stakeholders' needs and align incentives to maximize corporate value. Öztekin (2015) suggested that institutional characteristics can influence capital-structure decisions by altering the costs and benefits associated with different leverage ratios.

Some studies supported the use of more leverage, such as Adewale and Ajibola (2013), who found that capital structure has a positive effect on firm performance. However, Gleason et al. (2000), Tripathi (2021), and Abdel-Jalil (2014) found a negative impact of debt on performance. Moreover, Phillips and Sipahioglu (2004) found no significant relationship between the level of debt in the capital structure and financial performance. Abor (2005) argued that short-term debt is less expensive and yields higher profit. On the other hand, Low and Chen (2004) found that product diversification allows firms to use more leverage, as it lowers their risk exposure. Nawaz et al. (2011) argued that the capital structure of a firm has a significant influence on its revenues and determines the earnings that will go to shareholders. Managers can use either debt or equity, or both, but the best choice is a mix of them by balancing the costs and benefits. They must also take into consideration how this will affect the performance and value of the corporation.

Corporation performance is an important indicator of corporations' activities and operations, and its significance lies in providing corporations with several opportunities and investments. Organizational performance must always be measured to ensure alignment with business goals and objectives. It can be measured by various indicators and metrics. Gleason et al. (2000) argued that the utilization of different levels of debt and equity is one of the specific strategies used by managers in the pursuit of improved performance. Deloof (2003) argued that firms' performance can be enhanced by providing trade credit. Le et al. (2019) tested whether SMEs' credit risk affects the relationship between capital structure and firm performance. They found that this relationship exists only in low-credit-risk SMEs, while it is not significant in high-credit-risk SMEs. Abd Al-Lateif and Al-Debi'e (2019) examined the effect of a firm's life cycle on its capital structure. The results showed a statistically significant negative relationship between a firm's life-

cycle stages and financial leverage. The pecking-order theory and the trade-off theory are unable to explain the firms' funding. Pestana et al. (2021) investigated the relationship between capital-structure decisions and agency conflicts in family-owned firms under trade-off and pecking order theories. The results showed that family-owned firms adjust debt to the target ratio to stay far from optimum and use sources other than debt when a financial deficit occurs.

In addition, this study tested the relationship between corporate governance and firm performance. Anderson et al. (2004) examined the relationship between the size of the board of directors and performance, as it plays an important role in controlling managers. They expected and found a positive relationship, since a larger board of directors would likely have a better decision-making process due to the diversity of experience and knowledge. On the other hand, Mak and Kusnadi (2005) found a negative relationship between board size and firm performance. Their explanation for this result is that larger boards in the corporation lead to less communication between members, resulting in poorer decisions.

Finally, the study examined the relationship between ownership structure and firm performance to find an interpretation for the high agency cost problem. Denis et al. (1997) argued that concentration of ownership in the hands of main shareholders will encourage managers to pursue their interests. Ducassy and Guyot (2017) found that main shareholders have an effective mechanism for monitoring managers and aligning their interests, which impacts the firm value. However, it is important to note that the relationship between governance, ownership structure, and firm performance in emerging markets has not been extensively studied. Therefore, further research in this area could provide valuable insights into the dynamics of corporate governance and its impact on firm performance in these markets.

This study relies on the agency theory to investigate the association between capital structure, measured by debt ratio, short-term debt to total assets ratio, and long-term debt to total assets ratio, board of directors' size, and foreign ownership on industrial listed Jordanian corporations' performance. The results of this study are expected to reveal empirical implications for managers in choosing between leverage and equity for corporations' financing. The study also has implications for investors and practitioners regarding governance variables and ownership structure. The remainder of this paper is organized as follows: after this introduction, Section two introduces the theoretical framework and literature review. Section three develops the research hypotheses, while Section four describes the methodology and data collection methods. Section five discusses the data analysis and study findings, and finally, Section six summarizes the conclusions, limitations, and suggestions for further research.

2. Theoretical Framework and Literature Review

2.1 Capital Structure and Performance

Corporations' performance is affected by various factors, and capital structure is one of them. The impact of capital structure on corporations' performance has been studied for years. Corporations aim to maximize their performance and minimize their financing costs by maintaining an appropriate or optimal capital structure (Ayaz et al., 2021). Managers employ different strategies to improve corporations' performance, as it influences the prospects of the corporation and determines how much financing should come from equity and debt. Each source of finance has a specific cost, and the performance of the corporation can be differently influenced by each composition. Cole et al. (2015) stated that "once the relationship between capital structure and corporation performance is understood, corporations will have a better understanding of how to finance their operations to maximize performance and minimize risk."

Several studies have investigated the relationship between capital structure and corporation

performance. Franco Modigliani and Merton Miller (hereafter MM) were pioneers in modern capital-structure theory when they published an influential article in 1958. Their study was based on strong assumptions, and according to their findings, a corporation's value is unaffected by its capital structure (Brigham & Ehrhardt, 2011). In other words, the capital structure was considered irrelevant in determining the firm's value and future performance. Thus, the value of the levered firm is equal to the value of the unlevered firm (Ebaid, 2009). However, this theory was based on unrealistic assumptions not applicable in the real world.

Five years later, in 1963, MM introduced new evidence with modified and more realistic assumptions, including the consideration of taxes. With the inclusion of debt tax shield, the value of the levered firm was found to be higher than the value of the unlevered firm, indicating a positive relationship between the market value of the firm and the amount of long-term debt used in its capital structure.

In contrast to MM's theorems, the trade-off theory suggests that corporations choose how much to finance their operations with debt and equity by balancing the costs and benefits. Brigham and Ehrhardt (2011) defined the trade-off theory as "in which firms trade off the benefits of debt financing (favorable corporate tax treatment) against higher interest rates and bankruptcy costs." The trade-off theory expects that corporations with better profitability should favor debt financing rather than equity financing to take advantage of the tax shield. Therefore, a more profitable corporation is predicted to have a higher leverage ratio. Berger and di Patti (2006) argued that more efficient corporations have a higher tendency to generate a higher return on their investment, which can alleviate their financial distress and create opportunities for them to choose more debt than equity. However, the use of more debt in a corporation's capital structure is associated with bankruptcy costs, which discourage corporations from borrowing a high level of debt. Bankruptcy costs have two components: (1) the probability of financial distress and (2) the costs that would be incurred if financial distress occurs. These costs can be either direct or indirect. Direct costs include legal and administrative expenses, while indirect costs include the loss of confidence by customers, suppliers, and employees. Shah et al. (2017) stated that "taxes, agency costs, and financial distress are the three main factors that influence a firm's optimal capital structure according to the trade-off theory."

Jensen and Meckling (1976) developed the concept of agency theory. In a corporation, the principals would be the shareholders, and the agents would be the managers. Agency theory is based on the assumption that there are two main conflicts between parties in a corporation. The first one is that the agents may not always act in the interest of the principals, and there is a conflict of interests between them, because they have different goals and different tolerances toward risk. The manager, who is responsible for the operations of the corporation, tends to achieve his/her personal goals rather than maximizing the profitability of the corporation and returns to the shareholders. The second one is a conflict between the shareholders and the creditors as a result of debt providing shareholders with the incentive to invest sub-optimally. Abeywardhana (2015) stated that agency theory suggests that capital-structure decisions should be taken to minimize agency conflicts (agency cost). The agency costs are the internal costs incurred from conflicts of interests and include any fees associated with managing the needs of conflicting parties and with the process of evaluating and resolving the conflict. To mitigate the effect of this problem, debt can be used as a control of managers' behavior by reducing the free cash flows through interest payments, and the corporation can own managers some of the corporation's shares, so that they will behave according to the corporation's objectives.

Myers and Majluf (1984) introduced the pecking order theory. According to this theory, a corporation

assigns an order to its financing sources. First, it prefers to use internal financing by retained earnings, and second external sources by debt and perhaps preferred stock; at last, the corporation will use common stock. There are many reasons why companies prefer to use one type of financing over another; the main reason is that the cost of financing tends to increase as the degree of asymmetric information increases. Turner (2010) argued that the fundamental reason for these preferences is the ease of administration and an effort to limit the financial impact on equity holders. According to this theory, equity should be the last option, because shareholders of the corporation will think that their part of ownership is reduced, and there is also a potential for losing control of the enterprise by the original owners. Abeywardhana (2015) stated that corporations issue equity when they exhaust their debt capacity, thus corporations' debt capacity plays a significant role in the choice and the size of debt financing.

There has been a large number of empirical studies that examined the relationship between capital structure, measured by financial leverage, and firm performance. Some empirical studies provided evidence suggesting a positive relationship between leverage and a firm's performance. For example, Taub (1975) and Abdeljawad and Abed-Rabu (2019) found a significant positive association between debt and profitability. In addition, Williams (1987), Roden and Lewellen (1995), Margaritis and Psillaki (2010), and Hadlock and James (2002) found that high leverage reduces agency costs and increases firm value. On the other hand, a number of studies provided a significant negative association between leverage and a firm's performance. For example, Kester (1986) found a negative association between leverage and performance in the USA firms and Japanese firms. Rajan and Zingales (1995) revealed similar results in the USA, Japan, Germany, France, Italy, the UK, and Canada, Gleason et al. (2000) in European retail firms, Booth et al. (2001) for a set of ten developing countries, Goddard et al. (2005) in Belgium, France, Italy, and the UK, and Nunes et al. (2009) in Portuguese firms. Finally, some studies reported both positive and negative effects of leverage on firm performance.

While the evidence in developed markets that examined the association between leverage and firm performance is mixed, few studies examined this association in emerging markets and found mixed results too. For example, Majumdar and Chhibber (1999) reported a negative relation between leverage and performance for Indian firms, Chiang et al. (2002) for Hong Kong firms, Zeitun and Tian (2007) and Abdel-Jalil (2014) for Jordanian firms, Onaolapo and Kajola (2010) for Nigerian firms, Sadeghian et al. (2012) for Iranian firms, and Rao et al. (2007) for Omani firms.

On the other hand, Abor (2005) found a positive relationship between short-term debt (a negative relationship for long-term debt) and the performance of firms in Ghana, while Abu-Tapanjeh and Abdussalam (2006) reported a significant positive relation for Jordanian firms, Kyereboah-Coleman (2007) for South African firms, and David and Olorunfemi (2010) for the Nigerian petroleum industry.

In sum, different theories in the literature have found a relationship between profitability and leverage. This study investigates the relationship between leverage and firms' performance, assuming that leverage drives profitability. The causality could be reversed, which means that both profitability and leverage may affect each other. Since our primary focus is on establishing a correlation between leverage and firms' performance, we do not consider the direction of causality as a significant concern in this study.

2.2 Corporate Governance and Performance

Corporate governance is a system designed to direct and control a corporation, aiming to reduce conflicts between managers and shareholders. It is

closely related to the agency problem and may influence the corporation's capital structure. Chang et al. (2014) claimed that the level of corporate leverage is affected by conflict of interests between managers and shareholders. Some researchers (e.g. Wen et al., 2002) have studied the relationship between corporate governance and capital structure. Jiraporn et al. (2012) found that corporations with stronger governance have less leverage and higher performance than those with weak governance, because they can reduce agency costs. Wen et al. (2002) argued that managers with good governance of the board of directors will have lower leverage. Strong corporate governance helps resolve disputes between managers and shareholders, which decreases costs and ultimately improves performance.

Ehikioya et al. (2021) examined the impact of corporate board characteristics on capital structure. The authors found that board size has a negative, but insignificant, influence on capital structure. Shahid and Bajaber (2021) investigated the impact of corporate governance on firms' performance in GCC countries. The results indicated that the board size has a positive significant impact on firms' performance. Queiri et al. (2020) examined the relationship between board characteristics and firms' performance, and the results showed that the board size has a positive effect on firms' performance.

Different studies in the literature have examined the relationship between governance and performance. In this study, the board of directors' size is used as a driver to examine this relationship. The board of directors' size is considered an important variable that can control managers. With a larger board of directors, the corporation will have a diversity of experience and knowledge, which will simplify the decision-making process. Various studies have used the board of directors' size to test the relationship between governance and performance, and their results were mixed. For example, Yermack (1996), Eisenberg et al. (1998), Ehikioya et al. (2021), and Mak and Kusnadi (2005) repoted a negative relationship between the board of directors' size and firm performance. On the other hand, Coles et al. (2008), Jackling and Johl (2009), Shahid and Bajaber (2021), and Queiri et al. (2020) found a positive relationship. We are motivated to test the relationship between governance factors and corporations' performance, given the mixed results from previous studies.

2.3 Ownership Structure and Performance

In the past, the perception of ownership structure was associated with a corporation's inefficiencies due to the agency problem, market failure, and underinvestment (Grashuis & Su, 2019). However, this perception has changed in the new modern system, especially in countries with ownership diffusion, such as the Anglo-Saxon countries. In emerging countries, like Arab countries, ownership concentration is common. In these countries, ownership concentration includes different priorities and preferences due to economic instability (Douma et al., 2006). Morck et al. (2005) argued that the diversity in ownership concentration creates conflict control among shareholder groups.

Feng et al. (2020) examined the relationship between ownership structure and capital structure, finding a negative relationship between capital structure and state ownership and firm performance. Shahid and Bajaber (2021) examined the impact of institutional ownership on firms' performance in GCC countries, and the results indicated that size and institutional ownership have significant impacts on a firm's performance. Kiran and Narender (2021) tested the relationship between capital structure and institutional ownership, finding a negative association between leverage levels and institutional ownership; institutional investors preferred to invest in firms with low debt levels. Queiri et al. (2020) examined the relationship between ownership and firms' performance, and the results showed that state ownership and concentrated individual ownership have negative effects on firm performance, while institutional ownership has a positive effects on firm performance.

Therefore, this study focuses on two popular types of ownership groups: foreign ownership and domestic ownership. In developing countries, like Jordan, attracting foreign investors is important to provide a corporation with additional capital, technologies, and experience, thereby improving the corporation's performance. On the other hand, Barbosa and Louri (2005) argued that because foreign owners are not familiar with the environments that they invest in, this may negatively affect the corporations' performance. Due to weak policies for attracting foreign investors in Jordan, foreign investment in the ASE is still low (about 16%, on average, during the last decade, as shown in Table 3). The effect of foreign ownership on performance in Arab countries has yielded mixed results. Amin and Hamdan (2018) found a negative relationship in Saudi Arabia, Elghuweel et al. (2017) and Queiri et al. (2020) found the same in Oman, while Talab et al. (2018) found the same in Iraq, and Abdallah and Ismail (2017) found a positive relationship in GCC countries. However, this relationship has not been studied in Jordan, which serves as a motive for our study.

3. Development of Hypotheses

3.1 Capital Structure and Firm Performance

Corporations' performance is affected by various factors, and capital structure is one of them. The impact of capital structure on corporations' performance has been studied for years. Corporations aim to maximize their performance and minimize their financing costs by maintaining the appropriate capital structure or the optimal capital structure. Managers use different strategies to improve corporations' performance, as it influences the prospects of the corporation and is used in determining how much to finance through equity and debt. Since each source of finance has a specific cost, the performance of the corporation can be influenced differently by each composition. Cole et al. (2015) stated that "once the relationship between capital structure and corporation performance is understood, corporations will have a better understanding of how to finance their operations to maximize performance and minimize risk”."

We follow the pecking-order theory and the agency theory; thus, we expect a negative relationship between leverage and profitability. According to the pecking-order theory, the cost of financing tends to increase as the degree of asymmetric information increases, implying a negative relationship between leverage and corporation performance. Additionally, according to the agency theory, the internal costs incurred from conflicts of interests in the relationship between capital structure and corporation performance lead to a negative relationship. Hence, we hypothesize that:

H1: Capital structure measured by debt ratio negatively affects performance.

Ngatno et al. (2021) found a different relationship between short-term and long-term leverage and performance. The relationship is positive for short-term leverage and negative for long-term leverage. We expect a similar relationship, since the cost of short-term debt is lower due to its lower risk for creditors. As a result, we break down the firms' debt into short-term debt and long-term debt to examine the relationship of debt with performance. We hypothesize that:

H1.1: Capital structure measured by the short-term debt ratio positively affects performance.

H1.2: Capital structure measured by the long-term debt ratio negatively affects performance.

3.2 Corporate Governance and Performance

Corporate Governance Mechanism, Leverage, and Performance: Cadbury (2000) defined corporate governance as a balance between economic and social goals that requires accountability and encourages management to use resources efficiently. Corporate governance determines the relationship between owners and managers. The owners finance the business, and the managers are responsible for achieving its goals. The agency theory underlies the

practice of corporate governance and assumes that owners and managers act in their interests. The owners want the maximum possible return on their investment, while the managers expect high compensation. To control for corporate governance variables, we incorporate the board of directors' size as a governance mechanism that may affect firm performance. We expect a positive relationship between the board of directors' size and performance, because a board with a large size effectively monitors and applies more levels of management control, which will increase firm performance. Coles et al. (2008), Jackling and Johl (2009), Shahid and Bajaber (2021), Queiri et al. (2020), and Nandi and Ghosh (2012) reported a positive relationship between board size and profitability. Nandi and Ghosh (2012) argued that when the firm has a larger number of directors, it has a greater variety of experiences among directors to produce better decisions, leading to better performance. Therefore, we set the following hypothesis:

H2: The board of directors' size positively affects performance.

3.3 Ownership Structure and Performance

The ownership structure is considered one of the factors that affect firm performance. According to the agency theory, separating ownership from management, causes costs, which will negatively affect performance. The type of ownership and concentration of ownership may guide the management behavior towards their or the owners' interests. Different studies in the literature have examined the relationship between ownership structure and firm performance and found mixed results. For example, Rashid and Nadeem (2014) found a negative relationship between family-concentrated ownership and performance, while Heugens et al. (2009) revealed a stronger positive effect between foreign ownership compared to domestic ownership and performance. We hypothesize that domestic ownership will have a positive effect on firm performance, while foreign ownership will have a negative effect. Domestic investors have a better understanding of the Jordanian culture and environment, enabling them to make informed decisions about when, where, and how much to invest in the stock exchange, compared to foreign investors. In addition, some of them have additional internal information, as they are part of or close to the board of directors. Therefore, we hypothesize that:

H3: foreign ownership negatively affects performance.

To control for our regression model, we include the following control variables: the firm's competition within its industry, tangibility, firm size, and age.

4. Methodology

4.1 Sample Selection

For this study, panel data from 50 industrial corporations listed in the Amman Stock Exchange (ASE) during the period from 2012 to 2020 was used to investigate the relationship between leverage, board of directors' size, foreign ownership, and performance. The selected sample represents approximately 86.2 percent of all publicly-traded industrial firms in the ASE. The data was obtained from the ASE website, and in cases where data was unavailable, we extracted the required information from the annual reports on the corporations' websites. The industrial sector was chosen for this study, as it includes corporations with higher market shares, and focusing on one sector helps avoid confounding effects from diversified sectors (Short et al., 2007) and reduces statistical noise that could arise from firms operating in different sectors (Mauri & Michaels, 1998). Only corporations with complete data throughout the study period were included, and a total of 450 firm-year observations were collected. All variables were measured at the fiscal year-end and expressed in Jordanian Dinars. Table 1 presents the details of the sample selection and the representation of sub-industries within the sample firms.

Table 1
Sample selection and industries' representation

Panel A: Sample Selection for Amman Stock Exchange Firms in the Manufacturing Industry	
Total number of firms listed in the Amman Stock Exchange	222
Excluded non-manufacturing firms	165
Sample before data restrictions	57
Excluded firms without complete data needed for data analysis	7
Total firms with complete data	50
Total firm-year observations (2012-2020)	450
Panel B: Sub-industries' Representation of the Sample Firms	
Sub-industry	**Number of Firms**
Pharmaceutical and Medical	9
Chemical Industries	6
Food and Beverage	10
Mining and Extraction	15
Electrical, Engineering, and Construction	10
Total	50

The study incorporates both return on assets (ROA) and earnings per share (EPS) as dependent variables in the robustness test. These financial ratios have been utilized in prior literature, as seen in studies conducted by Abu-Abbas et al. (2019), Gorton and Rosen (1995), and Mehran (1995). The following variables are considered as independent variables:

1. Financial leverage (LEV) is calculated by dividing the average total debt by the book value of average total assets.
2. Short-term leverage (ST_LEV) is calculated by dividing the average short-term debt by the book value of average total assets.
3. Long-term leverage (LT_LEV) is calculated by dividing the average long-term debt by the book value of average total assets.
4. Board of directors' size (BOD_Size) represents the number of directors on the board during each year of the study period.
5. Ownership is the percentage of foreign ownership in the firm.
6. Competitiveness (Compet) measures the degree of competition that a corporation faces in a specific market. It is calculated using the logarithmic function of the Herfindahl index based on the ASE market's classifications for manufacturing firms.
7. Tangibility (Tang) is determined by the assets' tangibility, calculated as the average net fixed assets divided by the value of average total assets.
8. Size is the natural logarithm of the average total assets.
9. AGE is the natural logarithm of the age of the firm, measured by the number of years of operation since incorporation to each year of the period under study.

4.2 Research Design and Measurement of Variables

We employ a random-effect regression analysis to regress firm performance (dependent variable) on leverage, short-term leverage, long-term leverage, board of directors' size, ownership structure, and firm-specific variables. Table 2 contains the definitions,

measurements, and sources of these variables. Our regression models are as follows:

Model 1:

$$ROA_{it} = \alpha_0 + \alpha_1 LEV_{it} + \alpha_2 BOD\_Size_{it} + \alpha_3 Ownersip_{it} + \alpha_4 Compet_{it} + \alpha_5 Tang_{it} + \alpha_6 Size_{it} + \alpha_7 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

Model 2:

$$ROA_{it} = \alpha_0 + \alpha_1 ST\_LEV_{it} + \alpha_2 LT\_LEV_{it} + \alpha_3 BOD\_Size_{it} + \alpha_4 Ownersip_{it} + \alpha_5 Compet_{it} + \alpha_6 Tang_{it} + \alpha_7 Size_{it} + \alpha_8 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

Model 3:

$$ROA_{it} = \alpha_0 + \alpha_1 Lag\_LEV_{it} + \alpha_2 BOD\_Size_{it} + \alpha_3 Ownersip_{it} + \alpha_4 Compet_{it} + \alpha_5 Tang_{it} + \alpha_6 Size_{it} + \alpha_7 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

Model 4:

$$ROA_{it} = \alpha_0 + \alpha_1 Lag\_ST\_LEV_{it} + \alpha_2 Lag\_LT\_LEV_{it} + \alpha_3 BOD\_Size_{it} + \alpha_4 Ownersip_{it} + \alpha_5 Compet_{it} + \alpha_6 Tang_{it} + \alpha_7 Size_{it} + \alpha_8 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

Model 5:

$$ROA_{it} = \alpha_0 + \alpha_1 Lag\_LEV_{it} + \alpha_2 Lag\_ROA_{it} + \alpha_3 BOD\_Size_{it} + \alpha_4 Ownersip_{it} + \alpha_5 Compet_{it} + \alpha_6 Tang_{it} + \alpha_7 Size_{it} + \alpha_8 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

Model 6:

$$ROA_{it} = \alpha_0 + \alpha_1 Lag\_ST\_LEV_{it} + \alpha_2 Lag\_LT\_LEV_{it} + \alpha_3 Lag\_ROA_{it} + \alpha_4 BOD\_Size_{it} + \alpha_5 Ownersip_{it} + \alpha_6 Compet_{it} + \alpha_7 Tang_{it} + \alpha_8 Size_{it} + \alpha_9 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

Table 2

Variables, measurements, definitions, and sources of information

Variables	Measurements (Denote)	Definitions	Sources of Information
Dependent Variable:			
Performance	Return on Assets (ROA)	Net income before extraordinary items scaled by the average total assets.	Annual report
	Earnings per share (EPS)	Net income is scaled by the number of shares of stock outstanding.	Annual report
Independent Variables:			
1- Capital structure	Leverage (LEV)	Average total debt to book value of average total assets.	Annual report
	Short-term leverage (ST_LEV)	Average short-term debt to book value of average total assets.	Annual report
	Long-term leverage	Average long-term debt to book value	Annual report

	(LT_LEV)	of average total assets.	
2- Governance	Board of directors size (BOD_Size)	Number of directors on the board during each year of the period under study.	Annual report
3- Ownership	Foreign ownership (Ownership)	Percentage of foreign ownership in the firm.	ASE website
Control Variables:			
1- Competition	Competitiveness (Compet)	The degree of competition that a corporation faces in a particular market is calculated as the logarithmic function of the Herfindahl index based on the ASE market's classifications for manufacturing firms.	Calculated
2-Tangibility	Tangibility (Tang)	Average net fixed assets scaled by average total assets.	Annual report
3- Size	Size (Size)	Natural logarithm of average total assets.	Annual report
4- Age	Age (Age)	Natural logarithm of the age of the firm measured by the number of years of operation since incorporation to each year of the period under study	Corporations' websites

5. Data Analysis and Results

5.1 Descriptive Statistics and Correlations

Table 3 presents the distributional statistics and Pearson correlations. In Panel A, the average Return on Assets (ROA) is found to be 0.66%, while the average Earnings per Share (EPS) is 3.46%. The relatively low performance of the sample can be attributed to the impact of both the Arab Spring period and the political events in the Middle East region, along with the decline in oil prices during the study period. This decline in performance is a prevailing phenomenon across all stock exchange markets in the region. To address the skewness in the size and age variables and attain a more symmetrical data distribution, we apply the logarithmic function to these variables. Unpublished results reveal that the Shapiro-Wilk test confirms the normality distribution hypothesis for all variables. Furthermore, the Augmented Dickey-Fuller unit root test indicates the absence of serial auto-correlations in all variables. Additionally, the ARCH LM test supports the null hypothesis, suggesting a constant variance of the disturbance terms over time, signifying homoscedasticity.

Moving to Panel B, the Pearson correlations among the variables employed in the study are displayed. The results indicate relatively low correlations between the variables in each model. Consistent with prior research (e.g. Abu-Abbas et al., 2019; Jermias, 2008), the correlation between leverage and ROA is found to be negative and significant. This finding implies that debt financing may lead to investment issues and encourage shareholders to prioritize their investments over debt holders.

Table 3
Descriptive statistics for the sample of 450 firm-year observations from the Amman Stock Exchange, 2012-2020

Panel A: Distributional Statistics

Variable	N	Mean	Std. Dev.	Min	Max
ROA	450	.0066	.0936	-.3053	.3600
EPS	450	.0346	.2037	-.7000	.8000
LEV	450	.3772	.2340	.0211	.9746
ST_LEV	450	.3069	.1874	.0200	.9400
LT_LEV	450	.0703	.1195	.0000	.6100
BOD_S	450	7.643	2.203	4.000	13.00
Ownership	450	.1578	.2525	.0000	.9872
Compet	450	7.825	.3137	7.352	8.370
Tang	450	.3574	.1972	.0007	.9490
Size	450	16.84	1.503	12.68	20.92
Age	450	31.34	15.00	**2**.000	70.00

Panel B: Pearson Correlations among Variables (n=450)

	1	2	3	4	5	6	7	8	9	10	11
1 ROA	1.00										
2 EPS	.826	1.00									
3 LEV	-.411	-.429	1.00								
4 S_LEV	-.414	-.414	.862	1.00							
5 L_LEV	-.156	-.189	.606	.119	1.00						
6 BOD_S	.062	.095	-.196	-.149	-.149	1.00					
7 Comp	-.164	-.135	.175	.149	.109	-.083	1.00				
8 Own	.095	.051	-.088	-.114	.005	-.050	.081	1.00			
9 Tang	-.237	-.219	.182	.148	.123	-.263	.087	-.007	1.00		
10 Size	.288	.283	.106	-.017	.235	.243	.056	.378	-.137	1.00	
11 Age	.037	.067	-.010	-.026	.020	.126	.019	.104	-.114	.275	1.00

All variables are defined in Table 2.

5.2 Testing the Hypotheses

To determine the suitable regression model for our study, we conducted the Hausman fixed random test on all models. The results of the $\chi 2$ Hausman test indicated that fixed effects are not suitable for our study, as they reject the null hypothesis of no systematic differences in coefficients. Subsequently, we performed the Breusch and Pagan LM test to determine whether random effects are appropriate. In all models, the Breusch and Pagan test results reject the null hypothesis, signifying that there

are significant differences across the years, and thus, random-effect regression is suitable for our data. We also conducted the Modified Wald test for heteroscedasticity, which rejects the null hypothesis of homoscedasticity. Nevertheless, the Variance Inflation Factor (VIF) test indicated no impact of multi-collinearity.

Table 4 presents the results from models 1 and 2, where we regress return on assets (ROA) on the independent variables. Model 1 shows that leverage has a negative and significant association with return on assets. This finding supports the notion that debt financing causes investment problems, leading shareholders to perceive debt as incapable of covering expenses and providing additional returns to enhance corporate performance. The findings in this study corroborate the results reported by Abdel-Jalil (2014), Guizani (2020), Shubita (2020), and Tripathi (2021). Contrary to expectations, the results revealed a negative and significant association between the board of directors' size and return on assets. This may be attributed to the increase in board costs as the number of directors rises. Similar findings have been reported by Ehikioya et al. (2021), Yermack (1996), Eisenberg et al. (1998), and Mak and Kusnadi (2005).

Additionally, Model 1 shows a negative and significant association between foreign ownership and return on assets, indicating that local investors possess more information and knowledge about investment opportunities. Moreover, the results demonstrate that competitiveness negatively affects corporations' return on assets, as higher competitiveness leads to lower prices. Tangibility is negatively associated with return on assets, as corporations with substantial fixed assets incur higher depreciation and maintenance expenses. On the other hand, the size of the corporation, measured in assets, exhibits a positive association with return on assets, suggesting that larger corporations yield higher returns on their assets. This finding corroborates the results of Abdeljawad and Abed-Rabu (2019). Finally, the results indicate that the age of the corporation is not significantly associated with performance, possibly because most corporations in the ASE are of considerable age. Older firms may have had a competitive advantage at some point, which could diminish as other competitors gain prominence in the market. Overall, the control-variable results are consistent with Abu-Abbas et al. (2019).

In conclusion, the results of Model 1 in Table 4 support *H1*, suggesting that leverage negatively and significantly influences the firm's return on assets, indicating that financial leverage is inversely related to corporations' performance. This finding aligns with previous studies by Abu-Abbas et al. (2019) and Jermias (2008). Furthermore, the results support *H3*, indicating that foreign ownership negatively affects performance, which is in line with the pecking-order theory and the agency theory. This result is consistent with our expectation that domestic investors possess a better understanding of the Jordanian culture and environment, along with additional internal information that aids their investment decisions, compared to foreign investors, and aligns with the findings of Rashid and Nadeem (2014). However, *H2*, which posits that "the board of directors' size positively affects performance," is not supported. This result may be attributed to the higher costs associated with a larger board of directors, compared to the benefits derived from their diverse experiences and management control.

Table 4

Regression results of return on assets (ROA) on independent variables

Variables	Model 1		Model 2	
	Coefficients	***Z*-values**	**Coefficients**	***Z*-values**
Intercept	-.0232	-0.21	-.0156	-0.14
LEV	-.1817	-10.21***		
ST_LEV			-.1913	-8.87***
LT_LEV			-.1581	-4.53***
BOD_Size	-.0076	-3.77***	-.0074	-3.63***
Onership	-.0370	-2.16**	-.0364	-2.12**
Compet	-.0302	-2.40**	-.0301	-2.39**
Tang	-.0693	-3.30***	-.0695	-3.31***
Size	.0265	8.45***	.0259	7.98***
Age	-.0004	-1.59	-.0004	-1.55
Adjusted R^2	0.336		0.337	
Wald $\chi 2$	198.21***		198.63***	
Hausman random-effects	$\chi 2$= 2.73, Prob. = 0.950		$\chi 2$= 2.93, Prob. = 0.967	
Sample size	450		450	

All variables are as defined in Table 2.

, * denote the significance level of 0.05 and 0.01, respectively, based on two-tailed tests.

In Model 2, we conducted a regression analysis of return on assets on the same set of independent variables, except that we segmented the leverage into short-term leverage and long-term leverage, following the approach adopted by Rahayu (2020) and Dawar (2014). The results reveal that both short-term leverage and long-term leverage have a negative and statistically significant association with return on assets. These results provide support for *H1.2*, but not for *H1.1*. Additionally, the outcomes demonstrate that the costs associated with both short-term leverage and long-term leverage are relatively high compared to the cost of capital. The results for the other independent variables in Model 2 align with those in Model 1. Thus, we find support for *H1.2* and *H3*, but not for *H1.1* and *H2*.

Table 5 presents the results from Models 3 and 4, where we regress return on assets (ROA) on the independent variables. In Model 3, as the return on assets is a time series, we introduce the lagged leverage variable to obtain robust estimates of the leverage's effects on return on assets. Model-3 results in Table 5 are comparable to those obtained in Model 1 (Table 4), with the exception that the ownership variable becomes insignificant. Model 4, which disaggregates the leverage into short-term and long-term components, yields results identical to those obtained in Model 2.

In conclusion, the results in Models 3 and 4 reinforce and corroborate the findings from Models 1 and 2. Once again, we find support for *H1*, *H1.2*, and *H3*, while *H1.1* and *H2* do not receive support from our analysis.

Table 5.
Regression results of return on assets (ROA) on independent variables

Variables	Model 3		Model 4	
	Coefficients	*Z*-values	Coefficients	*Z*-values
Intercept	-.0637	-0.56	.0559	0.48
Lag_LEV	-.1381	-7.01***		
Lag_ST_LEV			-.1341	-5.83***
Lag_LT_LEV			-.1529	-3.94***
BOD_Size	-.0074	-3.40***	-.0075	-3.43***
Onership	-.0292	-1.60	-.0302	-1.65*
Compet	-.0398	-3.01***	-.0398	-3.00**
Tang	-.0819	-3.69***	-.0812	-3.65***
Size	.0251	7.52***	.0256	7.42***
Age	-.0005	-1.57	-.0005	-1.57
Adjusted R^2	0.253		0.255	
Wald $\chi 2$	132.59***		133.40***	
Hausman random-effects	$\chi 2$= 4.19, Prob. = 0.840		$\chi 2$= 3.95, Prob. = 0.915	
Sample Size	450		450	

Lag-Lev is one-year leverage lag. Lag_ST_LEV is one-year short-term leverage lag. Lag_LT_LEV is one-year long-term leverage lag. All other variables are as defined in Table 2.
*, **, *** denote the significance level of 0.10, 0.05 and 0.01, respectively, based on two-tailed tests.

Table 6 presents the results of regressing ROA on the independent variables, with the addition of the lagged return on assets as an additional independent variable in models 5 and 6. Lagging of independent variables is a widely-used technique aimed at enhancing the regression model's predictive capabilities by accounting for the influence of past values of the same series.

Model-5 results in Table 6 closely resemble the findings from Model 3 in Table 5. Notably, the results indicate a positive and statistically significant association between the lagged return on assets (ROA) and the current ROA. This observation corroborates the expectation that predicting future returns on assets is contingent upon their past values.

Moving on to Model 6 in Table 6, where the leverage is further disaggregated into short-term and long-term components, the results align with those obtained in Models 2 and 4. This consistency confirms the earlier findings that leverage, board of directors' size, ownership structure, competitiveness, tangibility, and corporation size significantly influence firms' performance. Once again, these results provide support for hypotheses *H1, H1.2,* and *H3,* while *H1.1* and *H2* do not receive empirical support.

In conclusion, the inclusion of the lagged return on assets as an independent variable in Models 5 and 6 reinforces the findings obtained in previous models (Models 3 and 4). These results furnish further evidence for the impact of the independent variables on firms' performance, thereby aligning with hypotheses *H1, H1.2,* and *H3,* while not supporting *H1.1* and *H2.*

Table 6

Regression results of return on assets (ROA) on independent variables

Variables	Model 5		Model 6	
	Coefficients	***z*-values**	**Coefficients**	***z*-values**
Intercept	.1169	1.28	.1051	1.15
Lag_LEV	-.0973	-2.38**		
Lag_ST_LEV			-.0687	-2.02**
Lag_LT_LEV			-.0848	-2.32**
Lag_ROA	.5922	15.14***	.5942	15.14***
BOD_Size	-.0030	-1.70*	-.0018	-1.81*
Onership	-.0303	-1.62	-.0367	-1.72*
Compet	-.0239	-2.25**	-.0237	-2.24**
Tang	-.0313	-1.74*	-.0399	-1.96**
Size	.0072	2.48**	.0079	2.66***
Age	-.0001	-0.53	-.0001	-0.54
Adjusted R^2	0.530		0.531	
Wald $\chi 2$	439.36***		440.79***	
Hausman random-effects	$\chi 2$= 9.83, Prob. = 0.364		$\chi 2$= 1.23, Prob. = 0.990	
Sample size	450		450	

Lag-ROA is one-year return on assets lag. All other variables are as defined in Table 2.

*, **, *** denote the significance level of 0.10, 0.05 and 0.01, respectively, based on two-tailed tests.

5.3 Robustness Test

To ensure the robustness of our main regression findings presented in Tables 4, 5, and 6, we conducted additional regressions, this time employing earnings per share (EPS) as the dependent variable, as demonstrated in Table 7. EPS holds significant importance as a tool for evaluating firms' performance and has been widely used in the literature as an alternative to ROA for performance measurement. According to Wet (2013), EPS stands as the single most popular and most widely utilized financial performance benchmark. Moreover, Graham et al. (2005) reported that a majority of financial executives in the USA considered EPS to be the most critical performance measure utilized by external stakeholders. The regression models employed for the robustness test are as follows:

Model 7:

$$EPS_{it} = \alpha_0 + \alpha_1 LEV_{it} + \alpha_2 BOD\_Size_{it} + \alpha_3 Ownersip_{it} + \alpha_4 Compet_{it} + \alpha_5 Tang_{it} + \alpha_6 Size_{it} + \alpha_7 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

Model 8:

$$EPS_{it} = \alpha_0 + \alpha_1 ST\_LEV_{it} + \alpha_2 LT\_LEV_{it} + \alpha_3 BOD\_Size_{it} + \alpha_4 Ownersip_{it} + \alpha_5 Compet_{it} + \alpha_6 Tang_{it} + \alpha_7 Size_{it} + \alpha_8 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

Model 9:

$$EPS_{it} = \alpha_0 + \alpha_1 Lag\_LEV_{it} + \alpha_2 BOD\_Size_{it} + \alpha_3 Ownersip_{it} + \alpha_4 Compet_{it} + \alpha_5 Tang_{it} + \alpha_6 Size_{it} + \alpha_7 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

Model 10:

$$EPS_{it} = \alpha_0 + \alpha_1 Lag\_ST\_LEV_{it} + \alpha_2 Lag\_LT\_LEV_{it} + \alpha_3 BOD\_Size_{it} + \alpha_4 Ownersip_{it} + \alpha_5 Compet_{it} + \alpha_6 Tang_{it} + \alpha_7 Size_{it} + \alpha_8 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

Model 11:

$$ROA_{it} = \alpha_0 + \alpha_1 Lag\_LEV_{it} + \alpha_2 Lag\_ROA_{it} + \alpha_3 BOD\_Size_{it} + \alpha_4 Ownersip_{it} + \alpha_5 Compet_{it} + \alpha_6 Tang_{it} + \alpha_7 Size_{it} + \alpha_8 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

Model 12:

$$EPS_{it} = \alpha_0 + \alpha_1 Lag\_ST\_LEV_{it} + \alpha_2 Lag\_LT\_LEV_{it} + \alpha_3 Lag\_ROA_{it} + \alpha_4 BOD\_Size_{it} + \alpha_5 Ownersip_{it} + \alpha_6 Compet_{it} + \alpha_7 Tang_{it} + \alpha_8 Size_{it} + \alpha_9 AGE_{it} + Year + Subindustry + \varepsilon_{it}$$

The results of regressing EPS on the independent variables using Model 7 are presented in Table 7. The findings reveal a negative and significant association between leverage and EPS. Additionally, the board of directors' size, foreign ownership, and tangibility exhibit negative and significant associations with EPS, while the size of the corporation demonstrates a positive association with EPS. However, the variable for competitiveness is found to be insignificant. Model 7's results confirm the findings observed in Model 1, with the exception of the competitiveness variable, which is found to be insignificant.

Moving on to Model 8 in Table 7, the results indicate that short-term leverage, long-term leverage, board of directors' size, foreign ownership, and tangibility have negative and statistically significant association with EPS, while the size of the corporation shows a positive association with EPS. Once again, the competitiveness variable is found to be insignificant. Model 8's findings align with those obtained in Model 2.

Next, the results of Model 9 in Table 7 demonstrate that lag leverage, board of directors' size, competitiveness, foreign ownership, and tangibility are all negatively and significantly associated with EPS, while the size of the corporation shows a positive association with EPS. These findings mirror those observed in Model 3.

Similarly, Model 10's results in Table 7 reveal that lag short-term leverage, lag long-term leverage, board of directors' size, competitiveness, foreign ownership, and tangibility are negatively and significantly associated with EPS, while the size of the corporation demonstrates a positive association with EPS. Model 10's findings confirm the results observed in Model 4.

Continuing to Model 11, the results in Table 7 indicate that lag leverage, lag EPS, board of directors' size, competitiveness, and tangibility are all negatively and significantly associated with EPS, while the size of the corporation shows a positive association with EPS. Model 11's findings align with those obtained in Model 5.

Finally, Model 12's results in Table 7 demonstrate that lag short-term leverage, lag long-term leverage, lag EPS, board of directors' size, competitiveness, and tangibility are all negatively and significantly associated with EPS, while the size of the corporation shows a positive association with EPS. However, the foreign ownership variable does not exhibit a significant association. Model 12's findings, except for the foreign ownership variable, confirm the results observed in Model 6.

Overall, the findings in Table 7 reaffirm the results obtained in Tables 4, 5, and 6, providing empirical

support for the hypotheses *H1*, *H1.2*, and *H3*, while *H1.1* and *H2* do not receive empirical support.

Table 7
Regression results of earnings per share (EPS) on independent variables

Variables	Model 7		Model 8		Model 9		Model 10		Model 11		Model 12	
	Coeffi.	*z*-values	Coeffi.	*z*-values	Coeffi.	*z*-values	Coeffi.	*z*-values	Coeffi.	*z*-values	Coeffi.	*z*-values
Intercept	-.2347	-1.00	-.2348	-0.99	-.0520	-0.21	-.0865	-0.35	-.5295	2.61***	.5079	2.48**
LEV	-.4182	-10.84***										
Lag_LEV					-.3418	-8.03***			-.1500	-4.09***		
ST_LEV			-.4182	-8.92***								
LT_LEV			-.4185	-5.53***								
Lag_ST_LEV							-.3227	-6.51***			-.1376	-3.28***
Lag_LT_LEV							-.4138	-4.95***			-.1923	-2.78***
Lag_EPS									.3514	-14.63***	.3498	14.51***
BOD_Size	-.0149	-3.39***	-.0149	-3.36***	-.0150	-3.18***	-.0155	-3.30***	-.0140	-3.70***	-.0143	-3.76***
Compet	-.0416	-1.52	-.0416	-1.52	-.0621	-2.17**	-.0616	-2.15**	-.0675	-2.93***	-.0673	-2.92***
Onership	-.1263	-3.40***	-.1263	-3.39***	-.1128	-2.87***	-.1168	-2.97***	-.0299	-0.93	-.0323	-1.00
Tang	-.1246	-2.74***	-.1246	-2.73***	-.1501	-3.13***	-.1466	-3.06***	-.1125	-2.91***	-.1107	-2.86***
Size	.0595	8.75***	.0595	8.46***	.0573	7.94***	.0594	7.99***	.0165	2.56***	.0178	2.68***
Age	-.0006	-0.95	-.0006	-0.95	-.0006	-1.00	-.0006	-1.01	-.0008	-1.54	-.0008	-1.55
Adjusted R^2	0.340		0.340		0.264		0.269		0.525		0.525	
Wald $\chi 2$	201.48***		200.97***		139.88***		143.18***		430.22***		430.72***	
Hausman random-effects	$\chi 2$= 3.68, Prob. = 0.885		$\chi 2$= 3.76, Prob. = 0.926		$\chi 2$= 6.93, Prob. = 0.544		$\chi 2$= 5.19, Prob. = 0.817		$\chi 2$= 3.58, Prob. = 0.937		$\chi 2$= 3.33, Prob. = 0.972	
Sample size	450		450		450		450		450		450	

Lag-EPS is one-year earnings per share lag. All other variables are as defined in Table 2.

*, **, *** denote the significance level of 0.10, 0.05 and 0.01, respectively, based on two-tailed tests.

6. Conclusion, Implications, Limitations, and Future Research

In the domain of investigating the relationship between capital structure, governance variables, ownership structure, and firm performance, numerous studies have been conducted in developed countries, leaving only a few empirical examinations in developing countries, such as Jordan. This study explores the relationships between leverage, governance variables, ownership structure, and firm performance in listed corporations in the Amman Stock Exchange, an emerging economy.

Based on a sample of 50 industrial corporations spanning from 2012 to 2020, we analyzed the association between leverage (measured by debt ratio), governance (measured by the board of directors' size), ownership structure (measured by foreign ownership), and firm performance. The industrial sector was chosen due to its significant market share compared to

other sectors, and this approach was favored to avoid any confounding effects arising from diversified sectors, as suggested by Short et al. (2007). Similarly, Mauri and Michaels (1998) argued that utilizing data from different sectors may introduce statistical noise.

The findings indicate a negative relationship between financial leverage and firm performance, which holds true for total leverage, short-term leverage, and long-term leverage. This negative relationship persists when we consider lagged leverage variables, lending support to hypotheses *H1* and *H1.2* while not supporting *H1.1*. These results align with the findings of Abdel-Jalil (2014), Guizani (2020), Shubita (2020), and Tripathi (2021). Surprisingly, we observe a negative relationship between the board of directors' size and leverage, which contradicts the results of Ehikioya et al. (2021), Nandi and Ghosh (2012), Coles et al. (2008), and Jackling and Johl (2009). However, this finding is consistent with Yermack (1996), Eisenberg et al. (1998), and Mak and Kusnadi (2005), suggesting that a larger board size may result in lower profits due to higher costs outweighing the benefits of diverse experiences and management control. Additionally, as expected, we find a negative relationship between foreign ownership and firm performance, indicating that higher foreign ownership leads to lower profits, possibly due to local investors possessing better knowledge of the Jordanian investment market. This result aligns with Rashid and Nadeem's (2014) findings and supports hypothesis *H3*. As a robustness test, we replaced the dependent variable ROA with EPS, and the results confirmed the ROA findings.

The implications of our study are significant for the government, practitioners, management, and investors. The government can leverage the findings to attract more foreign investors, while practitioners can better comprehend the relationship between capital structure and performance in emerging economies, like Jordan. Management can benefit from understanding the optimal board size, balancing costs and benefits. Moreover, this study contributes to the literature by examining the relationship between leverage and a corporate governance variable (board of directors' size) in an emerging market, like Jordan. Lastly, investors can make informed decisions about the relationship between ownership structure and leverage based on the results of this study.

However, our study has some limitations that present opportunities for future research. Firstly, the study's focus on one sector, the industrial sector, may yield different results when considering all sectors or other sectors. Secondly, exploring the relationship by dividing corporations into small, medium, and large sizes may provide further insights. Therefore, future investigations that explore the relationship by dividing corporations into small, medium, and large sizes may provide further insights.

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