

# The Impact of Ownership Structure and Corporate Governance on Capital Structure of Jordanian Industrial Companies

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*Abstract:* - This study investigates the impact of ownership structure and corporate governance (CG) on the capital structure using 798 firm-year observations of listed companies in the Amman Stock Exchange (2005-2018). The Ordinary Least Squares is utilized to examine the relationships between the dependent variable (i.e., leverage) and a set of independent variables, including ownership concentration factors (proxied by the institutional and largest shareholder) and CG factors (proxied by board size, CEO/chairman duality, board composition, a committee of nominations and remuneration, meetings number). Empirical The data reveal a strong negative (positive) relationship between the largest shareholder (institutional shareholder) and capital structure. Regarding the CG factors, the regression results show that board size, composition, and several meetings are the only factors correlated significantly positively with capital structure. Our examination is primarily motivated by the inconclusive and limited empirical evidence on the association between ownership and governance factors and capital structure. It enriches the literature by providing an updated model on capital structure factors from a non-Western setting. This study adds new evidence by capturing the effect of the unique characteristics of developing countries and the institutional environment. Using data from one of the Middle Eastern nations (Jordan), this study is the first to examine ownership and governance elements in capital structure research over an extended period. The results of this investigation benefit regulatory authorities in monitoring and regulating the corporates. This led to considering the factors affecting Jordanian firms' capital structure. The evidence generated in our study supports the development of strict CG schema rules by protecting the safety of stakeholders and policymakers.

*Key-Words:* - corporate governance, leverage, CEO duality, capital structure, ownership.

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## 1 Introduction

We are examining the purpose of this research to examine the effect of Corporate Governance (CG) and ownership structure factors on the capital structure of Jordanian Industrial Companies. CG has

been a critical concept since the global financial crises and the collapse of major companies and international banks. Financial statement fraud resulted in the demand for better governance protocols [7] and [46]. Therefore, CG is essential to

companies' shareholders and stakeholders [5]. It protects stakeholders by defining the board of directors functions and improving confidence and trust in stakeholders [33]. CG and capital structure are related through their association with agency costs. Many factors go into how a company's capital structure is set up. Still, one of the most important is how much it costs to hire an agent. CG is structured to reduce agency issues and enhance a company's capability to achieve stability.

An essential part of a company's CG is ensuring management is keen on adopting decisions that protect shareholders' interests and improve the firm's performance. CG includes several codes that can be fulfilled using a subset of tasks (rules). One of the essential codes is related to the Board of Directors (i.e., duties and responsibilities, Committees formed by the Board of Directors, and several meetings). Noncompliance with such codes might lead to the problem of asymmetric information caused by agency conflict and could significantly influence making well-informed business decisions such as debt structure [2].

Hence, CG and ownership structure factors and capital structure are related to their association with agency costs. Agency cost is one of the most significant factors affecting capital structure in contemporary corporate finance literature. At the same time, CG and ownership structure are all factors that reduce agency issues to enhance the capability of a company to achieve stability. A few kinds of research have investigated the relationship between CG and ownership structure on capital structure, even in developed countries [23]. So, it is vital to understand such a relationship to provide a good investment climate for all parties.

Ownership concentration is a critical CG tool for evaluating managers' discretion and improving the reliability of financial information available to the public [7]. According to some experts [24], CG results in high-quality information since one of the essential strategies to enhance CG operations is to concentrate ownership. [6]'s experiments demonstrated a statistically significant positive correlation between government ownership and earnings quality. In this regard, government owners want lower profit margins to reduce the probability of business resources being tunnelled to preserve their political interests and evade scrutiny by minority shareholders [51]. The actual well-known agency conflict may be solved through such rules, processes, and mechanisms. In line with this argument, a relation is well founded theoretically and empirically. On the one hand, CG and ownership structure are linked, according to the

study; on the other hand, capital structure is connected, according to research. The influence of CG and ownership on capital structure in a developing country like Jordan has never been examined.

Traditional accounting regulatory systems are becoming less likely to match the expectations and demands of international stakeholders in an age of globalization. Developing nations always attempt to link their economy with the global one due to their more closely aligned trading interests, economic cooperation and political integration among developing countries [36]. These factors, in turn, lead to more transparent and harmonized financial information being required and delivered [1]. These changes are significant in developing countries more than in developed countries [8], as the traditional accounting regulations and practices restrict countries' opportunities to attract foreign investors [5]. In this respect, international stakeholders seek harmonized and transparent accounting information to serve their modern needs.

There is a high concentration of ownership among companies in the Middle East and Jordan [13]. According to agency theory, Shareholders and management have a built-in conflict of interest. This conflict is due to owners appointing managers to serve their interests and objectives of wealth maximization. The ownership structure is deemed one of the main factors that cause higher financial risks for firms [45].

There has been a wealth of empirical research on the effect of CG on a business's performance and the impact of ownership structure on firm value. However, the link between capital structure and CG has received little attention. (Bodaghi and Ahmadpour, 2010; Feng et al. 2020). A few papers on the effects of CG on capital structure choices made by enterprises in established or developing markets have been referenced [50] and [23]. We are unaware of any published effort indicating whether ownership concentration and CG factors could affect firms' capital structure, especially in developing countries like Jordan. As a result, the primary goal of this study is to analyze the influence of ownership structure on financial performance (i.e., most extensive ownership and institutional ownership) and CG (i.e., Board Size, Board Composition, CEO/Chair Duality, Number of Meeting and Committee of Nomination and Remuneration) on capital structure proxied by the leverage ratio.

The Ordinary Least Squares regression (OLS) was used to test the developed hypotheses using hand-collected data from 57 (798 firm-year observation)

Jordanian-listed [30] 's models to suit the current study's context characteristics and meet its objectives and test its proposed hypotheses. The OLS regression analysis confirms a significant negative (positive) relationship between the largest shareholder (institutional shareholder) and capital structure. Regarding the CG factors, the regression results show that board size, board composition and meeting number are the only factors correlated significantly positively with capital structure.

Again, our examination is primarily motivated by the inconclusive and limited empirical evidence on the association between ownership and governance factors and capital structure. The study is an opportunity to document crucial empirical evidence from a country with varied economic features, regulations and an environment considered representative of Arab countries and the Middle East (ME) [29]. This addition makes the study's conclusions more practical and relevant to various contexts. Thus, increasing its validity and generalisability to those ME countries with similar cultural and institutional characteristics. Jordan clearly illustrates the significance of upgrading and adopting superior CG schemas, with ever-increasing interest from foreign investors and organizations [2]. Therefore, the evidence generated in this study contributes to compliance with government CG requirements/or regulations. This examination, moreover, is a trustworthy opportunity to explore to what extent the ownership concentration proxies would affect Jordanian firms' capital structure. Because the ownership structure is often used to create CG frameworks, the results of this analysis are supposed to assist policymakers and regulatory authorities operating in Jordan in improving legislations and regulations that could improve CG practices in Jordan. Such legislation might play a critical role in safeguarding investors/shareholders by imposing harsh penalties on firms that breach the regulations [13].

## 2 Theoretical Foundation of the Study

The present investigation explores the association between the factors of CG and ownership structure on capital structure through integrating several related theories, such as Agency Theory, Trade-off Theory, Signalling Theory, and Pecking Order Theory [8], [46], [26] and [23].

CG has become more prominent nowadays than ever before. [35] indicates that good CG maximizes the profitability and long-term value of the firm for shareholders. [35]'s, view CG as a set of mechanisms through which outside investors protect

themselves against expropriation by insiders. CG is generally connected with agency problems, which result from the separation of ownership from control (managers), leading to conflict of interests within the firm. It may be traced back to the separation of ownership and corporate management. Conflicts of interest between shareholders and managers give rise to agency issues [28]. As a result of this conflict of interest between company management and owners, interest has grown to find laws and rules that can govern the relationship between the two parties. Therefore, the primary purpose of applying CG is to ensure a framework that balances shareholders' and managers' interests appropriately. CG principles set by Organisation for Economic Co-operation and Development (OCED) (2004) are now considered an essential universal indicator for policy decision-makers, investors, corporations and other stakeholders. They have strengthened CG and improved firms' performance and value. They are related to shareholders' rights or stakeholders' in general [18], the board's responsibilities [48], and disclosure and transparency [16] and [17]. CG's ownership structure is essential because it affects managers' incentives and efficiency [32].

Pecking Order Theory suggests a hierarchical pyramid in the various selection techniques to obtain funds through different means. Naturally, companies first utilize internal funds; then, they may use debt, and when such a method is no longer there, they use new equity finance. According to the pecking order model, developed by [40], a strict ordering or hierarchy of sources of finance is set and fixed. This results from adverse selection issues, which occur when the firm possesses more information about firm value than fund providers. These issues disappear when retained earnings are employed as marginal funding sources and are more extensive for equity than debt financing.

[40] contrast this with the static trade-off theory, an explanation of corporate leverage that eventually proved to be sound, based on the Pecking Order model (POT) by [20], among others. The Model's explanation is based on actual observations of firms which do not tend to issue stocks (shares); instead, they prefer to have large cash reserves in their holdings. [40] the conclusion that excessive financial asset holding is due to a conflict of interests between management and old and new shareholders. [20] tends to consider that companies go to outside funding only when challenging conditions force them, and in all cases, debt precedes equity. [34] Another way to say this is that the pecking order theory shows that a company's profitability plays a role in its financing decisions.

The study says that businesses that have not already decided how much debt and equity they want prefer to get money from inside their own company. One notices that the pecking order framework tends to mix with theories about asymmetric information and the cost of having an agent.

Signalling theory indicates that external stakeholders can quickly learn about firms' activities. Any information managers possess concerning a firm's prospects (which markets do not have access to) might be made public by these managers' choices of capital structure choice. The need to obtain some indications through specific pointers within the financing structure. The reasoning for information asymmetry theory can be interpreted as the firm's value will necessarily increase when leverage increases. This, in turn, indicates the size and stability of future investments. Based on the signalling theory, rising debt reveals poor indications for future earnings and cash flow, with less internal financing available to finance development [36]. [49] verified that information asymmetry may indicate a favourable association between debt and asset structure regarding a high fixed asset ratio; the more the loan amount, the greater the value of the assets [49].

Modigliani and Miller developed the Trade-off Theory in 1958 by arguing that Any company's market value is distinct from its capital structure. Their reasoning was founded on the premise that a firm's capital structure has no effect on its cash flow [34]. When interpreting their logic, we find that capital structure is supposed to remain the same even if we change companies [39] altered their first position that the financing decisions of firms do not influence their value; this indicates that firms which realize higher profits are liable to use more debt. This results in the debt being substituted for equity to take advantage of interest-induced tax shelters. The trade-off theory describes how a corporation determines its debt-to-equity ratio under the premise that an ideal capital structure exists, which allows the firm to work and run efficiently and make sure that external cash flow claims are minimized. Firms are encouraged to expand their debt values [38]. [49] contend that a trade-off between tax gains and increased bankruptcy costs bolsters a firm's cost of capital. Bankruptcy costs go simultaneously with the increase in the firm's debt level [40]. The study's findings imply that businesses should make considerable efforts to achieve an optimum capital structure that strives to enhance the firm's worth by striking a balance between tax advantages and bankruptcy expenses that are generally associated with rising debt levels.

### 3 Institutional Background

Jordan sought to integrate itself into the global economy and, to do that, joined the World Trade Organization and signed a European partnership agreement and the Free Trade Agreement with the United States. It also sought trade liberalization, removing tariff barriers, and abolishing government support policy, calling on market forces to determine prices and economic competitiveness [2]. The laws and regulations of Jordan required sufficient commitment by local companies linked to the rights of owners. The Companies Act of 1997 and its later amendments have organized the essential matters related to the company's management and the role of each of the directors', shareholders' and stakeholders' Councils [29].

CG in Jordan represents a set of laws, including the Banking Act of 2002, the regulations and instructions issued by the capital market institutions, securities issuance, registration and education on the listing of Securities on the Stock Exchange [55]. CG regulations have introduced into the Jordanian financial market framework in 2005 as an attempt toward better governance effectiveness for companies to maintain shareholders' equity, activate the principle of justice among them, guarantee full disclosure and openness for all parties, and emphasize the responsibility of the Board of Directors and its role in protecting the company, its shareholders and stakeholders. The Central Bank of Jordan is also keen on the framework of its efforts to strengthen CG practices in the Jordanian banking system through developing the CG of banks in the Jordan Guide for the year 2007, to provide a standard for the best international practices in this field, based on what was stipulated in the principles of CG issued by the Organization for Economic Co-operation and Development (OECD) [55]. The number of companies that applied and fully complied with CG regulations has increased since 2007 based on the government noncement published in the Second Forum of CG and social corporate in the Middle East and North Africa.

The Jordan Securities Commission (JSC) also prepared a directory containing the rules for CG to establish a framework for managing and interacting with others and for defining and protecting one's interests, duties and responsibilities to achieve the company's goals and objectives. The JSC also seeks to preserve the rights of individuals with related interests through rules based on the Securities Law and Companies Law, in addition to international principles set by the organization for Economic Co-operation and Development [54].

## 4 Literature Review

The findings of previous studies investigating the effect of ownership structure and CG on capital structure were mixed and inclusive. Knowledge in this field is discussed in this analysis as follows: developed and developing nations' evidence. Regarding the developed countries' published effort, [43] examine the link between the ownership structure, capital structure, and agency costs of cooperatives. For 160 cooperatives in New Zealand companies during (2005-2011) using OLS regression. According to the statistics, the number of independent directors and board member experience has increased, and size decreases agency costs in cooperative and mutual organizations in New Zealand.

Additionally, obtaining loans or cash from non-bank members lowers agency costs and boosts profitability in co-ops and mutuals. [21] examines the influence of capital structure quality on CG quality. 67 European soccer teams are included in the sample. Of (2005-2009). The authors use panel data approaches and discover a negative association between leverage and board size; nevertheless, they find a positive relationship between ownership structure and force. [24] establish a significant association between executive ownership and power and confirm the considerable effect of CG on the leverage ratio in several UK corporations. The findings indicate that the CG structure of a firm determines the nature of the relationship between executive ownership and leverage.

Regarding the developing countries' evidence, for Malaysian firms, [44] concluded that there is a significant relationship between CG and capital structure. [47] found that Chinese government-controlled firms have less leverage than non government-controlled firms. For firms owned by the government, there is a robust negative relationship between diversification and power and a weak positive relationship between unrelated diversification and leverage. [4] reached the same conclusions based on data from Pakistan's non-financial firms. [23]'s confirmed the significant positive correlation between board size and ownership structure with capital structure in China

Regarding ME and Jordanian markets, [10] investigated the relationship between capital structure and ownership structure for 86 Jordanian non-financial firms from (1994-2003), using a mix of OLS and panel regression analysis. Results show that leverage and institutional ownership have a significantly negative relationship and that there is no significant relationship between dividend policy and influence. However, there is an important

negative relationship between leverage and business risk and profitability and a positive relationship between leverage and asset tangibility, liquidity, growth rate, and firm size [33]. Furthermore, [15], using a sample from 50 financial firms operating at Tehran Stock Exchange, they found that the size of the board of directors is strongly inversely connected to the debt-to-equity ratio, but not the CEO/Chair duality and the participation of non-executive members on the board have a substantial impact. Finally, the Capital structure was significantly influenced by business size and return on assets [27] and [24]. [14] explore the effect of ownership structure and CG on bank performance in the Gulf Cooperation Council (GCC) region in 2008 for 27 banks from GCC countries for the period (2008), excluding Kuwait, using the OLS regression model for analysis. They reported that duality and board size had an insignificant impact on performance. They also confirmed a positive and significant relationship between foreign ownership and performance. However, concentrated ownership was found to be related in a negative way to Return on Assets (ROA).

Evidence-based on Jordan's data is undertaken by a few scholars, such as [37] investigated CG and dividends policy in industrial and financial companies listed in ASE (2007-2009). They found that dividend yields decrease in firms with strong governance structures due to lower information asymmetry and that firm cash flow is retained. Further, [52] investigated the relationship between CG and leverage for the Jordanian stock market (2005-2011). They concluded that an institutional member has a negative association with power. They also found that a significant shareholder has a positive relationship with leverage while a foreign member has no impact. [29] investigates the effect of the board of directors' structure on the performance of Jordanian banks listed in ASE during the period (2005-2018). Ordinary least squares (OLS) analysis is used to examine the relationship between the dependent variables: return on assets and return on equity, as measurements of profitability, and the independent variables, which include two proxies of CG (board size and CEO duality) and board members' ownership mix, nationality, gender diversity, stock beta and family relations [1]. Results show no significant relationship between the board of directors nationality, the board size, family members and bank performance [13]. However, the results show that significant relationships exist between CEO duality, gender diversity, board ownership and bank performance. Recently, Alabdullah et al. (2018)

confirmed the considerable effect of CG factors on the capital structure using data from Jordanian non-financial firms.

In Jordan, institutional investors are an essential instrument for monitoring the economy. ' Because they can oversee the managers and enhance the quality of financial reporting, CG schemes benefit from the presence of large institutional investors [6]. According to [37] and [1], When compared to other segments of the market, such intuitions in Jordan are well-structured, well-organized, and well-developed. The CBJ, for example, enforces rigorous restrictions and is closely monitored. Therefore, financial institution owners in Jordan are more likely to seek higher percentages of CG applications because they have the incentive and authority to ensure that companies' financial reporting is accurate and penalize management who fail to do so [41] and [6]. [12] confirmed the significant effect of ownership structure factors on capital structure in the context of Jordan

Although several studies have emphasized ownership structure and CG in Jordan, this study is distinct from previous studies in Jordan investigating the impact of CG and ownership factors on the capital structure over an extended study period (2005-2018). The type of companies' studies (industrial and service sectors instead of the finance industry) and the investigation of three additional independent variables (most extensive ownership, number of meetings and committee of nominations and remuneration), all unstudied before.

The following hypotheses have been proposed based on the theoretical premises outlined above:

*H1: ownership structure factors have a significant impact on capital structure.*

*H2: Corporate governance factors have a significant impact on capital structure.*

## 5 Research Data and Sample Selection

The researcher hand-collected the data for this study from Jordanian listed businesses' annual reports on the Amman Stock Exchange (ASE) website between 2005 and 2018. (ASE 2021). The current study period is selected to align with the first and more recent CG requirements timelines as requested by the government of Jordan. The subsequent years' data is unavailable or distributed because of the Covid-19 impacts. Table (1) below shows that the initial sample comprised 235 firms. The final sample consisted of 57 firms. After excluding 73 firms with missing data, 105 firms belong to the financial industry. The selection of 57 firms has

been employed to test the effect of each CG and ownership structure variable on capital structure. Table (1) categorizes the final accepted sample into the two main sub-industries presented in Panel A and B.

Table 1. Sample selection method

	Total companies	Pooled
Preliminary sample	235	3290
(-) Companies with missing data	(73)	(1022)
(-) Companies belong to the finance industry	(105)	(1470)
<b>Total sample</b>	<b>57</b>	<b>798</b>

Table 2. Final distribution of the sample by industry

Industry & Sub-industry	Firm-Year observations	Number of accepted firms	Per cent
<b>Panel A: A service industry</b>			
Diversified Financial Services	56.00	4.00	0.07
<b>Panel B: Industrial industry</b>			
Chemical Industries	98.00	7.00	0.12
Mining and Extraction Industries	140.00	10.00	0.18
Tobacco and Cigarettes	28.00	2.00	0.04
Paper and Cardboard Industries	56.00	4.00	0.07
Engineering and Construction	98.00	7.00	0.12
Printing and Packaging	14.00	1.00	0.02
Pharmaceutical and Medical Industries	84.00	6.00	0.11
Textiles, Leathers and Clothing	42.00	3.00	0.05
Food and Beverages	126.00	9.00	0.16
Electrical Industries	56.00	4.00	0.07
<b>Total</b>	<b>798.00</b>	<b>57.00</b>	<b>1.00</b>

## 6 Research Design

This analysis extends the quantitative tradition and builds on the research of CG and Ownership structure models. It modifies [30], [6] and [41] models by incorporating the effect of new proxies representing ownership structure and the GC factors into the capital structure model.

Previous studies have employed several classifications for ownership structure. For example, [32] differentiated between owners with inside equity, outside equity, and debt. [19] classified owners as foreign, privately held corporations, legal persons in public law, private persons, insurance companies, banks, pension funds, and mutual funds. For his part, [22] classified owners as majority owners, minority owners, foreign and domestic. [22] also differentiated between ownership by employees, management, state, and local investors. Moreover, [35] classified ownership structure into family-owned, state-owned, and controlled by corporations [13]. For this study, the ownership structure refers to institutional and largest shareholders.

Based on prior studies, many CG proxies have been utilized to strengthen CG and improve firms' performance and value. They are related to shareholders' rights or stakeholders in general [18] board's responsibilities [48], and disclosure and transparency [16]. Overall, for this study, the board size, board composition, CEO/Chair duality, nomination committee, remuneration and number of the meeting are employed as CG codes.

The impact of CG and ownership structure on capital structure for 57 Jordanian industrial companies over the period (2005 – 2018) is examined, and several control variables are incorporated into the current study (including *ROA* and *LOG\_TA*). The relationship between capital structure and the independent variables is tested using OLS regression. The model selection (fixed, random effect model or OLS) is based on the Hausman test results. The adjusted R square is (0.2263) for the Model. Tabular analysis confirmed that the Hausman test has a  $\chi^2$  value of (17.07) and a p-value of (0.047), which indicates that this test is significant and confirms the validity of the random effect model. When determining whether random effects or basic OLS regression is better suited for the multivariate study, the Breusch–the Pagan Lagrange Multiplier test (LM) has been performed... Untabulated LM test p-value is insignificant and greater than 5% ( $P = 0.017$ ). Because of this, the present study's multivariate analysis will benefit from OLS regression.

It is worth noting here that the present study's models were tested using Stata software. We extended the previous studies' models [30] and [15] into the following equations (all variables are defined in Table 3 below):

$$\text{Equation 1 (Model 1): } LEV = \alpha_0 + (\beta_1 * \%Largest) + (\beta_2 * \%INST) + (\beta_3 * LOG\_TA) + (\beta_4 * \%ROA) + \epsilon.$$

$$\text{Equation 2 (Model 2): } LEV = \alpha_0 + (\beta_1 * \%BZ) + (\beta_2 * \%BC) + (\beta_3 * DUALITY) + (\beta_4 * \%NMeeting) + (\beta_5 * CNOM \& REM) + (\beta_6 * LOG\_TA) + (\beta_7 * \%ROA) + \epsilon.$$

$$\text{Equation 3 (Model 3): } LEV = \alpha_0 + (\beta_1 * \%Largest) + (\beta_2 * \%INST) + (\beta_3 * \%BZ) + (\beta_4 * \%BC) + (\beta_5 * DUALITY) + (\beta_6 * \%NMeeting) + (\beta_7 * CNOM \& REM) + (\beta_8 * LOG\_TA) + (\beta_9 * \%ROA) + \epsilon.$$

Table 3. Variables definition and measurements

Variable	Definition
<i>LEV</i>	The leverage ratio is the total debt divided by the total assets.
<i>Largest</i>	The most significant ownership percentage in the company.
<i>INST</i>	Institutional ownership equals the sum of the percentage of ownership of the institutional shareholders of each company.
<i>BZ</i>	Board Size.
<i>BC</i>	Board Composition.
<i>DUALITY</i>	CEO/Chair Duality.
<i>meeting</i>	Number of Meeting
<i>CNOM &amp; REM</i>	Committee of Nomination and Remuneration
<i>ROA</i>	Return on assets is the net income by total assets
<i>LOG_TA</i>	The size of the firm is the Natural Log of a firm's total assets
$\alpha$	The constant.
$\beta$	Coefficients of independent variables (explanatory variables).
$\epsilon$	Residual.

### 6.1 Variables Measurement

#### 6.1.1 Dependent Variable: Capital Structure (Leverage):

Capital structure is measured by using the debt to equity ratio and the ratio of total debt to total assets following [38] and [30].

$$LEV_{it} = \frac{TD_{it}}{TA_{it}}$$

Where:

$LEV_{it}$ : leverage for the company I in year t.

$TD_{it}$ : total debt for the company I in the year t.

$TA_{it}$ : total assets for company I in year t.

### 6.1.2 Independent Variables

#### 6.1.2.1 Board Size

The board of directors, the highest authority in the company structure, is critical in strategic choices such as financial mix. As a result, it is regarded as a significant variable in researching the influence of CG on capital structure. According to [15], board size in the present research is the natural logarithm of the number of board members.

#### 6.1.2.2 Board Composition

The variable board composition is a dummy variable coded as one if the individual is a member for less than five companies, 0 otherwise as agreement with CG codes.

#### 6.1.2.3 CEO/Chair Duality

If a person holds both chief executive officer and chairperson positions, it may cause serious agency problems. The CEO/Chair duality is included as a dummy variable coded if the CEO is chairman; 0 otherwise.

#### 6.1.2.4 Committee Nomination and Remuneration

Committee Nomination and Remuneration is a dummy variable coded one if (CNOM & REM) exists; 0 otherwise.

#### 6.1.2.5 Number of Meetings

The number of meetings is a dummy variable coded one if the number of meetings in the fiscal is 6; 0 otherwise.

#### 6.1.2.6 Institutional Shareholders

The institutional shareholders variable in the current study is the sum of the ownership percentage of each company's institutional shareholders following [6] and [41].

#### 6.1.2.7 Largest Shareholder

The most significant Shareholder variable in the current study is the percentage of the most extraordinary shareholder's ownership in each company following [6] and [41].

### 6.1.3 Control Variables

#### 6.1.3.1 Firm Size (SIZE)

The firm size variable in the present study is a natural log of total assets following [6] and [41] as follows:

$$LOG\_TA_{it} = Ln(TA_{it})$$

Where:

$LOG\_TA_{it}$ : size for the company I in year t.

$TA_{it}$ : total assets for the company I in year t.

$Ln(TA_{it})$ : natural log of total assets for the company I in year t.

#### 6.1.3.2 Profitability- Return on Assets (ROA)

ROA is adopted as an accounting measure of profitability. It is measured as the ratio of net income (after interest and taxes) to total assets [45]:

$$ROA_{it} = \frac{NI_{it}}{TA_{it}}$$

Where:

$ROA_{it}$ : return on assets for the company I in year t.

$NI_{it}$ : net income after interest and taxes for the company I in year t.

$TA_{it}$ : total assets for the company I in year t.

## 7 Descriptive and Correlation Statistics

Table (4) below presents the descriptive statistics of the study variables. The analysis provides the descriptive and statistical data for the variables used in the study model collected manually from 57 Jordanian industrial firms (798 year-firm observations) from 2005 through 2018. It shows the mean, standard, maximum and minimum values.



Regarding the dependent variable, the capital structure, which is proxied by leverage ratio, the variable has a mean value of (5.61), ranging from (0) to (6.614), with a low standard deviation of (0.964). These figures are similar to those reported by [6] and [41]. Furthermore, the capital structure ratio is also apparently close to the ratios presented by some scholars found for the Pakistani market by [30] and [15] for the Iranian market on Teheran Stock Exchange. However, the present study's mean leverage is somehow different from the amount that [53] found for some Jordanian firms. The influence among firms may be due to differences in risk levels and profitability, which may lower external funds and the different timelines of the studies, sectors included in the analysis and sample size.

In terms of the independent variables starting with ownership structure factors, the firm's most extensive ownership has a mean value of (0.910) and a standard deviation of (5.210). Its values range from (0.056) to (0.50), which indicates a shareholding of 50% or more by one contributor. The value 0 shows that a particular variable in the sample is not applicable for this part under the company. The variable of institutional ownership has a mean of (0.370), ranging from (0.0) to (0.98), and a standard deviation of (0.288). This indicates that the contribution by institutions is minimal compared to that of individuals. This finding is consistent with [30] and [15], who found close percentages of institution ownership contributions by institutions in the Pakistani and Tehran markets, respectively.

Regarding the CG factors, the board size variable has been calculated by the LOG of board size, yielding a certain percentage. The mean value is (0.88), ranging from (0.48) to (1.11), and the standard deviation is (0.14). This represents a high percentage of board membership compared to board sizes in developed countries, but it shows similar

results to those documented in other developing countries research, like Pakistan (Hasan and Butt, 2009) and Iran (Bodghani and Ahmadpour, 2010). The rest CG factors *BC*, *CEO/DU*, *CNOM* & *REM*, and *Meeting* have mean values of (0.882), (0.858), (0.534), and (0.231), respectively, with low standard deviation values.

As for the control variables, firm size reported a mean value of (16.73), ranging from (13.22) to a maximum of (20.92), and a standard deviation of (1.40). The profitability variable's values show a high variation since they range from (0.000) to (6.539) with a mean of (5.591) and a low standard deviation of (0.954). This demonstrates a high variation in profitability for the Jordanian firms included in the current study's sample during the study period.

Table (5) below presents the Pearson correlation matrix results for the dependent and independent variables. The test for multicollinearity ensures no correlation problem emerges between the independent variables used in the same regression models where the highest value of correlation coefficients is (0.283), which is found for the variables (*ROA*) and (*BZ*). *LEV* variable is shown to negatively correlate with institutional, number of meetings and return on assets. The results for (*BZ*, *ROA*) are consistent with findings by [30] and [16] but are inconsistent with their findings regarding the duality of CEO/chair. The present study's findings positively correlate with CEO duality, firm size, board composition, a committee of nominations and remuneration, and large ownership. The results for (*BC*, *LARGE*, *SIZE*) are consistent with findings by [30], [16] and [13]. The mean of the VIF test of the whole variables utilized in the regression models does not indicate any potentially major multicollinearity concern when each Model's mean VIF is less than 2 [6].

Table 4. Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
<i>LEV</i>	5.609	0.964	0.000	6.614
<i>LARGEST</i>	0.910	5.210	0.056	0.500
<i>INST_OWN</i>	0.370	0.288	0.000	0.987
<i>BZ</i>	0.884	0.139	0.480	1.110
<i>BC</i>	0.882	0.323	0.000	1.000
<i>CEO/DU</i>	0.858	0.349	0.000	1.000
<i>CNOM &amp; REM</i>	0.534	0.499	0.000	1.000
<i>Nmeeting</i>	0.231	0.421	0.000	1.000
<i>LOG_TA</i>	16.792	1.399	13.185	20.924
<i>ROA</i>	5.591	0.954	0.000	6.539

Where: (LEV) is the leverage, (LOG\_TA ) is the size of the company, (ROA) is the return on assets, (most significant) 1 is the biggest shareholder, (INST) is the institutional shareholders, and (BZ) is the board size. Five dummy variables (BC, NM, CEO Duality, CNOMs, and REM) were excluded from the Table.

Table 5. Correlation Matrix

	1-	2-	3-	4-	5-	6-	7-	8-	9-	10-
<i>1-LEV</i>	1.000									
<i>2-LARGEST</i>	-0.031	1.000								
<i>3-INST_OWN</i>	0.0849*	0.069	1.000							
<i>4-BZ</i>	0.051	0.0898*	0.177***	1.000						
<i>5-BC</i>	0.0983**	0.035	0.0813*	0.055	1.000					
<i>6-CEO/DU</i>	-0.015	0.043	0.111**	0.050	0.164***	1.000				
<i>7-Nmeeting</i>	-0.025	-0.115**	0.101**	0.0740*	0.243***	0.110**	1.000			
<i>8-CNOM &amp; REM</i>	-0.027	-0.059	0.012	0.123***	0.025	0.146***	0.279***	1.000		
<i>9-ROA</i>	-0.203***	-0.002	0.050	0.109**	-0.105**	0.031	-0.049	-0.037	1.000	
<i>10-LOG_TA</i>	0.0750*	0.306***	0.258***	0.283***	0.061	-0.0940**	0.054	-0.0816*	0.0905*	1.000

Notes: This Table presents Spearman correlation matrix results between dependent and independent variables.

\*\*, \* Correlation is significant at the 0.01, 0.05 levels (2-tailed), respectively.

## 8 Regression Analysis

Table (6) outlines the regression results regarding the impact of ownership structure and CG on capital using the OLS regression. Based on the outcomes presented in Table (6) in Model (1), first, the results of ownership structure factors in Model (1), there is a significant negative (positive) relationship between the largest shareholder (institutional shareholder) and capital structure. Usually, ownership affects a substantial debt to equity ratio. [30] mention that an increase of 1% in shareholding reduces leverage by about 0.9% because the most significant shareholders' interests encourage them to reduce debt and equity options. However, the present study's results seem to run counter to findings by other researchers like [25], who contend that the tendency to have lower debt to equity ratio will increase in the absence of significant external

ownership, and this will lead to a higher risk of debt for the managers. A significant positive correlation was documented between institutional shareholding and leverage. This outcome is similar to [4] using data from Pakistan's non-financial firms. Moreover, the analysis results are consistent with [12] conclusion in the context of Jordan. More recently, the findings are very close to [23] outcomes, which confirmed the significant positive association between ownership concentration and capital structure in China. By contrast, [30] did not find similar values for Pakistani firms on the Karachi stock market due to the context characteristics and differences in CG regulations applied in both settings. They comment that institutional shareholding typically has a positive correlation with ownership. This results from efficient control by shareholders, which may reduce cost and

managerial exploitation for personal interests. Therefore, *hypothesis 1* is accepted.

Second, the analysis results of the CG factors shown in Model (2) confirm that the board size, board composition, and meeting number are the only factors correlated significantly positively with capital structure. This translates into more giant boards resulting in less leverage because more members on the board allow for more expertise in firm management and interests. Similarly, [30] reached the same conclusion and found negative results for Pakistani firms. The results also agree with the findings by [3], who affirm that larger boards will struggle for lower debt levels. According to the latter theoretical foundations, such boards make clear to the managerial staff that using more equity capital is essential to improve the firm's performance. Recently, [4] reached the same conclusion based on data from Pakistan's non-financial firms. The same outcome is also confirmed by [5] in the context of Jordanian non-financial firms. More recently, the findings are similar to those reported by [23], which confirmed the significant positive association between board size and capital structure in China.

No statistical correlation was found between the duality of CEO/chairman and leverage. This

partially agrees with [15] results, which saw an insignificant relationship between duality and influence. It is preferable not to have the same person occupy both CEO and chairman of board positions to avoid agency problems. High control by the CEO may cause opportunistic managerial manipulation [30]. Thus, a negative correlation between duality and leverage is preferable. There is an insignificant relationship between the nominations committee and remuneration and influence. Such a committee in the firms studied is helpful for the companies since it exercises a monitories and supervisory role, leading to more controls on spending and remunerations. The overall justification of these results is that CG is still in its early stages in Jordan and lacks satisfactory/or full compliance with CG regulations. Therefore, *hypothesis 1* is accepted regarding the board size, composition, and meeting number.

Third and finally, the control variables analysis results have the expected size and signs, which is what previous research has shown [23]. Regression findings of pooled regression of all CG and ownership structure factors presented in Model (3) are not substantially different from those reported in Models (1 – 2).

Table 6. OLS regression results

DV = LEV Variables	Model (1) OLS Coeff. (Robust t)	Model (2) OLS Coeff. (Robust t)	Model (3) OLS Coeff. (Robust t)
Intercept	246.621 (2.11)**	97.189 (0.92)**	80.706 (0.68)**
<i>LARGEST</i>	-2.135 (2.45)**		-2.582 (2.84)***
<i>INST</i>	64.813 (2.08)**		33.660 (-1.040)
<i>BZ</i>		305.986 (4.58)***	286.388 (4.14)***
<i>BC</i>		61.270 (2.45)**	61.562 (2.47)**
<i>DUALITY</i>		-0.241 (-0.010)	-0.161 (-0.010)
<i>CNOM &amp; REM</i>		-26.620 (-1.290)	-23.902 (-1.160)
<i>NMeeting</i>		-35.648 (2.21)**	-42.033 (2.55)**
<i>SIZE</i>	13.643 (-1.830)*	7.761 (-1.110)	9.331 (-1.190)
<i>ROA</i>	-0.241 (6.04)***	-0.243 (6.16)***	-0.241 (6.12)***
Robust	Yes	Yes	Yes

Industry and Year Effects	Controlled	Controlled	Controlled
N	798	798	798
F - Statistics	(3.44)***	(4.68)***	(4.61)***
Adj. R <sup>2</sup>	10%	12%	12%
Mean VIF	1.98	1.97	1.99

*Note: This Table provides the findings of OLS regression of the capital structure (LEV) on the ownership structure and CG factors. Robust t – year and industry fixed effects control statistics.*

*\*\*\*, \*\*, \* Indicate statistical significance at the 0.01, 0.05, and 0.10 per cent levels using a two-tailed test. All Variables are defined in Table (1).*

## 9 Robustness and Additional Analysis

### 9.1. Excluding GFC year

It is necessary to do further research since the study's period (2005–2018) coincides with the Great Recession of 2008, which might significantly impact the primary regression findings. Hypotheses were re-evaluated after omitting 2008 from the overall sample set of data (57 firm-year observations). According to loosely defined research, the regression findings are consistent with our first analyses.

## 10 Conclusion

Finally, this study empirically explores the link between CG and ownership structure, as well as capital structure, for Jordanian listed industrial enterprises from 2005 to 2018. The regression findings demonstrate a substantial negative (positive) link between the most significant shareholder (institutional shareholder) and capital structure in terms of ownership structure elements. The only CG characteristics substantially positively connected with the capital structure are board size, board makeup, and meeting frequency. The outcomes of this examination significantly contribute to evaluating the firm's attitudes against CG codes application in Jordan. This will aid future policy improvements by government authorities in creating favourable financial reporting circumstances and, as a result, ensuring the optimal deployment of CG schemas. Therefore, strengthening stakeholder protection and assisting policymakers in developing comprehensive CG rules. This contribution makes the findings more viable and applicable to more comprehensive settings, such as ME countries with similar cultural and institutional characteristics which follow the accurate accounting and CG practices framework. It will be interesting to extend this examination to other countries in the ME and a longer time frame to capture the potential effect of economic volatility

during the devastating COVID-19 pandemic. Future research could extend the current study to different industries and sub-industries, like the finance industry.

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