The Impact of Ownership Structure and Investment Decisions on Capital Structure
An empirical study from Jordan

Dr Dua'a Fawzi Shaker Shubita

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The Impact of Ownership Structure and Investment Decisions on Capital Structure
Evidence from Jordan

University of Bedfordshire

By
Dua'a Fawzi Shubita

A dissertation submitted to the University of Bedfordshire, in fulfilment of the requirements of the degree of Doctor of Philosophy in Finance, University of Bedfordshire Business School, Luton, United Kingdom.

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Abstract

The issue of capital structure is of great importance in corporate finance as it is affected by ownership structure and investment. However, the influence of the interaction between ownership structure and investment on a firm’s capital structure remains unresolved. This study seeks to address this issue by investigating the impact of concentrated ownership and company investments on a firm’s capital structure as well as the interaction between the identity of the concentrated owner and investment. It uses Jordan as an example and includes firm performance and firm size as control variables.

This study adopts a deductive approach and employs quantitative methods involving statistical analysis of the study variables. The sample includes 111 non-financial companies listed on the Amman Stock Exchange from 2010–2019. The study's findings indicate that total concentrated ownership and local ownership have a negative impact on capital structure, while Arab and foreign ownership play an insignificant negative role. The results also reveal that the interaction between concentrated ownership and investment is crucial to a firm’s capital structure, with local ownership and investment having a more substantial and precise effect than other ownership components.

The study recommends that both investment and ownership level be considered jointly when examining capital structure decisions and that policymakers re-evaluate the investing process to consider the lack of investment opportunities available for Jordanian companies. Moreover, the findings identified a negative impact of a firm’s performance and a positive effect of firm size for the effect of firm performance and size on its capital structure. The results also highlighted that it would be more effective to consider the total debt to total assets ratio instead of evaluating long- and short-term components separately when examining capital structure decisions. Furthermore,
in the case of assessing the firm performance effect on capital structure, the return on asset (ROA) should be considered instead of the return on equity (ROE) as a proxy of firm performance.

Overall, the study’s findings shed light on the importance of considering the interaction between ownership structure and investment when making capital structure decisions and provide valuable insights for managers and policymakers. This study is the first empirical study to estimate the interaction between investment and ownership issue using different statistical methods, and the results contribute to the existing literature on capital structure.

**Keywords:** Capital Structure, Ownership Structure, Investment, Interaction, Jordan.
Declaration

I declare that this thesis is my own unaided work. It is being submitted in partial fulfilment of the pre-mentioned research degree at the University of Bedfordshire. It has not been submitted before for any degree or examination in any other University.

Dua’a Fawzi Shubita

2023
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"In the name of Allah, the Most Merciful, the Most Compassionate."

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This thesis is lovingly and respectfully dedicated to them.
CHAPTER ONE: INTRODUCTION
1.1 Introduction

The capital structure of a firm refers to how it finances its operations through a combination of equity and debt. Capital structure is considered a significant issue in corporate finance theory as it can have a significant impact on a company's financial performance and strategic decision-making. For instance, capital structure can impact a firm's cost of capital and ultimately its profitability. Higher levels of debt can result in lower borrowing costs but may also increase the risk of default, potentially leading to higher interest rates and reduced access to financing. On the other hand, higher levels of equity financing can result in higher costs of capital due to the need to provide shareholders with a return on their investment.

Capital structure can also affect the overall value of a company as a firm's mix of debt and equity may influence its ability to invest in growth opportunities, pay dividends, and generate earnings for shareholders. Furthermore, capital structure can play a role in corporate governance as the level of debt financing may impact the control and decision-making power of company management versus outside investors.

Given the potential impact of capital structure on a company's financial performance, profitability, and strategic decision-making, it is an important topic worthy of study. By examining the factors that influence a firm's capital structure, researchers and practitioners can gain a better understanding of the optimal mix of debt and equity financing for different types of firms, industries, and economic environments. Previous studies have tested the effect of several variables on capital structure for different types of companies. The analysis of these studies found that ownership structure and investment decision had distinct impacts on capital structure. For example, (Omet, 2006; Khan, 2016; Al-Thuneibat, 2018; Kharabsheh et al., 2019; and Mbanyele,
tested the impact of ownership structure on capital structure, while (Park and Jang, 2013; Arafat et al., 2014; Sulistiono and Yusna, 2020; and Hechmi, 2020) examined the relationship between investment decision and capital structure. When analysing the Jordanian market, (Omet, 2006) found that ownership structure negatively affects total liabilities to total assets while positively affecting leverage. Moreover, (Al Najjar, 2008) found a negative relationship between leverage and ownership. According to the relationship between capital structure and investment (Aivazian, 2005; Ahn, 2006; Vo., 2019) also found a negative relationship between a firm’s level of leverage and its investment.

Previous studies have investigated the effect of different types of ownership structure and investment decisions for both devolved countries and developing countries, particularly Jordan as a frontier market. They have found that the degree of concentrated ownership and the ownership of the largest stockholders may be a useful signal that could aid managers in identifying investment opportunities that would add the most value to the company and ultimately lead to an increase in its stock price. By understanding the ownership structure of the company and the incentives of the largest stockholders, managers can make more informed decisions about which investment opportunities to pursue, therefore improving economic growth.

Moreover, investigating the overall ownership concentration without considering each type of shareholder separately may result in misleading interpretations (Niemi, 2005). Thus, in addition to investigating the interaction between concentrated ownership and investments, this study will focus on common types of owner’s identities. Indeed, previous studies have found a positive influence of the stock market’s development on economic growth (Ndikumana, 2005; Arestic et al., 2001; and Levine and Zervos, 1990).
This argument is supported by the empirical findings of (Jensen and Meckling, 1976), which found that investment sensitivity increased as the degree of ownership increased. However, a concentrated ownership structure allows the largest stockholder to exert control over the company. This structure applies to companies in Jordan, where the largest stockholders are obliged to the head of the company's board (Abdel- Halim and Bino, 2013).

As a frontier market, Jordan's gross domestic product (GDP) is moderate at $44.4 billion (World Bank, 2019). For 2019, there were 220 publicly traded firms on the ASE with a total trading value of JD 1.6 billion, a decrease of 6.31 percent from the previous year. The (Amman Stock Exchange Annual Report, 2019: p.43) shows that, in 2019, the market capitalization of all listed businesses was 49.7 percent of the GDP. As of February 1, 2017, ASE became a publicly traded company. The Jordanian market should expect an improvement in quality due to this decision.

Furthermore, approximately 43 percent of Jordanian enterprises are majority-owned, which means that large stockholders usually approve the essential issues while minority shareholders are ignored (ROSC, 2004). The World Bank Group's "Doing Business 2018" report ranked Jordan 10th in the region regarding the ease of conducting business. This results from implementing regulations designed to protect investors and improve Jordan’s investment environment. Furthermore, Jordan treats Jordanian and non-Jordanian investors equally; non-Jordanian investors may own any enterprise or part of it and participate in any economic activity. Investors benefit from the assistance provided by the Investment Law; there are no restrictions on non-Jordanian ownership except in a few economic activities where a local partner is essential. They have rights and protections, such as national treatment, protection against takeover, and free movement of capital. In addition to other services, visa and residency permit assistance is provided.
to investors, their families, and staff. In the industrial and service sectors, 117 nationalities own firms in Jordan (CCI France Jordanie report, 2018).

The Jordanian market consists of three main sectors: financial, industrial, and services. The financial sector companies were excluded from this study sample due to their differentiation in the nature of investments and the financial data from non-financial companies (Tayem, 2015). The industrial and service companies were used to represent the sample of this study for the following reasons: the industrial sector in Jordan is considered an economically important sector in terms of its contribution to the national economy and one of the vital economic sectors that investors find attractive. Moreover, Jordan offers specific locational advantages relevant to investments in the industrial sector which facilitate trade with countries in the region and the rest of the world. At the same time, the services sector includes companies responsible for the country's infrastructure and thus has a significant fixed capital, which enhances access to credit due to the greater availability of collateral. This sector makes the most significant contribution to Jordan's GDP growth rate. As a result, this study aims to shed light on what drives the capital structure in the Jordanian service sector and the industrial sector companies.

Therefore, this research attempts to contribute to existing research by providing a greater understanding of the effect of a firm’s identity, investments, and overall ownership on its capital structure, using Jordan as an example. Furthermore, it investigates other potential factors that might impact capital structure.
1.2 Research Aims and Objectives

This research focuses on Jordanian companies listed on the Amman stock exchange as an example. It will address the following objectives. First, it aims to measure and evaluate the impact of ownership structure and investment on the capital structure separately. Second, it seeks to explore how the interaction between ownership structure and investment affects the firm’s capital structure, in addition to investigating the interaction between the identity of the concentrated owner, namely local, Arab, and foreign owners and investment. Third, it plans to determine the possible impact of firm size and other factors, such as firm performance, on capital structure in order to capture differences in competitive conditions.

1.3 Research Questions

In order to fulfil these research aims and objectives, the following questions are examined:

1. Does ownership concentration significantly impact the firm’s capital structure?
2. Does the investment have a significant impact on the firm’s capital structure?
3. Is there a potential impact of the interaction between ownership structure and investment on the firm’s capital structure?
4. Does concentrated ownership identity have a significant impact on the role of the interaction between ownership structure and investment?
   4.1 Does local concentrated ownership have a significant impact on the role of the interaction between ownership structure and investment?
   4.2 Does Arab concentrated ownership have a significant impact on the role of the interaction between ownership structure and investment?
4.3 Does foreign concentrated ownership have a significant impact on the role of the interaction between ownership structure and investment?

5. Does the firm's performance significantly impact the firm’s capital structure?

6. Does firm size significantly impact the firm’s capital structure?

1.4 Contribution and Motivation of the Study

The interaction effect between concentrated ownership and investment on capital structure is a valuable area of research since ownership structure and investment decisions are crucial determinants of a company's capital structure. While prior research has examined the link between ownership structure and investment decisions, as well as between investment decisions and capital structure, the interaction effect between concentrated ownership and investment on capital structure has not been sufficiently explored in the existing literature.

The hypothesis of this study is that the interaction between concentrated ownership and investment decisions has a significant impact on a firm's capital structure. Concentrated ownership can influence investment decisions by providing decision-making power and control to the largest shareholders. As a result, these shareholders may impact a company's investment decisions and ultimately affect its capital structure.

Furthermore, investment decisions can also impact a company's capital structure. For instance, a firm that invests heavily in new projects may require additional funds through debt or equity issuance, potentially affecting its leverage and capital structure. Therefore, it is vital to investigate the interaction effect between concentrated ownership and investment decisions to comprehend how these variables jointly influence a firm's capital structure. Overall, examining the interaction
effect between concentrated ownership and investment on capital structure can enhance the understanding of how ownership structure and investment decisions can jointly influence a company's financing decisions. This investigation may provide useful insights for managers and investors in making more informed decisions.

Moreover, Jordan has been used as an example and ranked tenth in the region in terms of ease of conducting business (The World Bank Group's "Doing Business 2018" report). This results from implementing regulations designed to protect investors and improve Jordan’s investment environment. Furthermore, the treatment of foreign investors compared to domestic investors varies across countries and can depend on factors such as a country's level of economic development, political stability, and legal framework. Some countries may provide more favourable treatment to foreign investors to encourage foreign investment and economic growth, while others may prioritize the protection of domestic investors and firms. In the case of Jordan, treating Jordanian and non-Jordanian investors equally could promote a fair and transparent business environment. Such behaviour sends a positive message to foreign investors that they will receive the same treatment as domestic investors, which can encourage foreign investment and boost economic growth. Additionally, it prevents discrimination against foreign investors and promotes competition in the market. This study attempts to fill a research gap by analysing capital structure evidence from Jordan, which differs from the developing countries that have been investigated. As such, the Kingdom of Jordan is considered a suitable location in the region for operations related to manufacturing. It is secure, and business-friendly companies may find business support as well as a willing government partner in this dynamic nation, which will help facilitate companies' growth into the region and beyond. This nation thus provides a stable
environment in which businesses can operate. This study will be distinguished from other studies as follows:

First, concentrated ownership and the ownership of the largest stockholders can be used as a signal to assist managers in allocating capital to the most value-added investment for both developed and developing countries, particularly Jordan as a frontier market, according to previous studies that have examined the effect of different types of ownership structure and investment (Omet, 2006; Park and Jang, 2013; Arafat et al., 2014; Kharabsheh et al., 2019; Hechmi; and 2020 Mbanyele, 2020). Therefore, this study will investigate the potential impact of the interaction between ownership structure and investment on a firm’s capital structure using different statistical methods. It will also assess the direct effect of these variables on a firm’s capital structure. Second, this study will examine the long- and short-term components of capital structure measurement in order to determine whether it is preferable to examine capital structure decisions using total debt as compared to individual long- and short-term components (Khasawneh and Staytie, 2017; Hegde et al., 2020). Third, previous research on ownership concentration has primarily focused on analysing the overall concentrated ownership (Habib and Jiang, 2015; Tee et al., 2017; and Barroso et al., 2018) without taking the identities of concentrated owners into account. On the other hand, focusing on the overall ownership concentration rather than on each type of shareholder individually may result in inaccurate judgements (Niemi, 2005). As a result, this study will focus on common types of owner identity in Jordan, namely local, Arab, and foreign owners, in addition to investigating the interaction between the overall concentrated ownership and investments. This study will contribute to the academic field an add to existing financial literature by providing empirical evidence on the relationship between the ownership structure, investment, and capital structure of Jordanian firms. Specifically, it examines the impact of ownership structure and
investment on the capital structure of Jordanian firms and how this impact differs depending on
the type of ownership and investment.

Furthermore, the findings of this study are expected to guide firms’ managers to consider the level
and identity of ownership types during their financing and investment decisions. Moreover, it is
expected to assist other involved parties, such as expected investors.

1.5 Structure of the Thesis

The main goal of this study is to examine empirically whether the interaction between ownership
structure and investment affects a firm’s capital structure by using Jordan as an example. To
achieve this goal, the effect of ownership structure and firm investments on capital structure is
investigated separately and jointly. The study then closely examines the interaction between the
identity of the concentrated owner (i.e., local, Arab, foreign) and investment. Furthermore, effect
of firm size and performance on capital structure is investigated to determine differences in
competitive conditions. This section provides an overview of the thesis.

Chapter one overviews the study’s background, objectives, contribution, and motivation.

Chapter two reviews the theoretical and empirical literature on capital structure, beginning with
(Modigliani and Miller’s, 1958) theory and then discussing alternative theories, such as trade-off
theory, pecking order theory, and agency theory. This chapter also presents some previous studies
that have examined these theories empirically and briefly discusses empirical studies on the
determinants of capital structure in both developed and developing countries. Moreover, this
chapter reviews the outcomes of earlier studies that have examined the relationship between capital
structure, ownership structure, owner identity, investment decision, firm size, and performance.
The last section of this chapter evaluates previous empirical literature findings in this area and identifies research gaps.

**Chapter three** explains the methodological approach of this study and describes the data collection procedure and sample selection criteria in depth. It discusses the definitions and measurements of the study variables and describes the empirical models used in this research. This chapter also presents potential econometrics issues and the analytical methods used in this study.

**Chapter four** presents the outcomes of the empirical analysis on the effect of the firm’s concentrated ownership, investments, and the interaction of the overall concentrated ownership and its identity with investments, as well as the control variables of firm performance and size, on capital structure. It uses Jordanian listed companies in the Amman Stock Exchange as an example. This chapter begins by exploring the preliminary analysis, which presents and discusses descriptive data for each variable, applies the correlation matrix, and evaluates the correlation between variables. Furthermore, it presents potential econometric problems and the statistical measures the study uses to deduct them. Finally, it describes the tests applied to the study data compatibility with the regression model assumptions before running the study regression models.

The second section of this chapter reports the econometrics analysis results, including the results of the pooled ordinary least squares (OLS), Hausman and Lagrange multiplier tests, fixed effect approach, and Granger causality.

Moreover, this chapter discusses and evaluates findings based on the fixed effect approach, which is the estimating approach for this study. Finally, it discusses the interaction results using the interaction term and the Wald test and presents both robustness and further analysis results.

Finally, **chapter five** summarizes the overall content. It assesses whether the study objectives were achieved by answering the research questions and considers its contribution to current knowledge.
It also discloses the empirical finding’s main conclusions and recommendations based on these conclusions. Finally, it specifies the study's implications, limitations, and suggestions for future research.

1.6 Summary

This chapter discusses the background, aims, and objectives of the research as well as the research questions, the problem statement, and the significance of the study. Additionally, the contributions of the study in academics and in practice are also discussed.
CHAPTER TWO: LITERATURE REVIEW
2.1 Introduction

This chapter aims to perform a comprehensive literature review of capital structure to establish its applicability to Jordanian companies. It attempts to review a stream of research that has presented insights into the concepts and theoretical and empirical research conducted previously on the significance and determinants of capital structure. Previous studies, such as (Ahn, 2006; Daskalakis and Psillaki, 2008) and others, prove that effective capital structure principles improve a company's value. This chapter provides a broad discussion and analysis of capital structure theories. It begins with the purely theoretical approach conducted by (Modigliani and Miller, 1958) and is followed by real-world theories: trade-off theory, pecking order theory, and agency theory. It also explores some previous studies that have empirically examined the main theories of capital structure to not only more fully understand the insides of capital structure but also to determine which theories would be most effective for interpreting the empirical results of this study. This chapter also aims to investigate the relevance of previous studies to this study and provide a perspective on different overviews of issues related to capital structure. Specifically, it considers past research on the effect of ownership structure and investment decisions on capital structure, the interaction between ownership structure and investment, and the identity of concentrated ownership. As such, this chapter identifies a lack of research relating to capital structure issues, particularly in Jordan, which proves the originality of this work and its significant contribution to current knowledge. Figure 2.1 illustrates the plan for this chapter.

Figure 2.1: The plan for Literature Review Chapter
2.2 Capital Structure
This section presents the main theories of capital structure relevancy, starting with (Modigliani and Miller, 1958) and followed by alternative theories, such as trade-off theory, pecking order theory, and agency theory. Furthermore, it discusses some previous studies that have examined these theories empirically. This discussion will help determine which of these theories are supported by the outcomes of examining the empirical models of this study. Moreover, the empirical studies of the firm’s capital structure determinants will be reviewed at the end of this section.

2.2.1 Main Theories of Capital Structure and Their Empirical Examination

This subsection reviews the capital structure theories that guide the decisions concerning a firm’s capital structure. These theories assist the interpretation of the potential impact of a firm’s ownership structure and its investment decisions on capital structure. This subsection also explores some previous studies that have examined the main theories of capital structure empirically.

(Modigliani and Miller, 1958) introduced capital structure theory with a purely theoretical approach and under restrictive assumptions representing the perfect market, such as no taxes, bankruptcy costs, or hidden information between investors and managers about a firm's future investments. The theory argues that, in the ideal market, how capital is financed is irrelevant to a firm's market value. Under these assumptions, Modigliani and Miller proposed that a firm’s value is independent of the way it finances its capital; as a result, the value of the leveraged firm is equal to the value of unleveraged one. Therefore, the leveraged firms cannot have an advantage over the unleveraged ones (Ross et al., 2012). If the way a firm finances its projects is irrelevant to the firm's value in an ideal world, then circumstances that exist in the real world may result in its
relevance. This analysis motivated the examination of real-world circumstances that make capital structure relevant, as found in trade-off theory, pecking order theory, and agency theory.

I. The Trade-off Theory
This theory was initiated by (Kraus and Litzenberger, 1973), who argued that there should be a balance between the benefits of carrying more debt in a firm's capital structure, which is the tax shield on the interest, and the cost of using more debt, which is represented by bankruptcy costs. As demonstrated in marginal-cost benefit analysis in economics, a positive net benefit occurs when the marginal benefit exceeds the marginal cost. Consequently, this theory is used practically to assist a company's decision-makers in deciding what percentage of debt to have in their firm capital structure by balancing the costs and benefits of debt. As clarified by (Myers, 1984), the company that follows this theory must set a target debt ratio and continuously move toward achieving a balance between the interest tax shield and the cost of bankruptcy, as shown in figure 2.2

Figure 2.2: The Trade-off Theory*

* Source: Ross et al. 2012, page 555
Some studies provide empirical proof to support the trade-off theory. For example, (Hovakimian et al., 2001) found that, when making financing decisions, firms adjust their debt ratios to their target ratios to achieve a balance between the cost and benefit of carrying more debt. (Fama and French, 2002) also found that firm leverage only adjusts to a specific level as firms balance the costs of bankruptcy against the interest tax shield to approach their target debt ratio. This theory was also examined by (Haugen and Senbet, 1978; Gonenc, 2003; Pandey and Chotigeat, 2004; Leary and Roberts, 2005; Yu and Aquino, 2009; Kharabsheh et al., 2019) and others.

II. The Pecking Order Theory:
This theory, presented by (Myers, 1984; and Myers and Majluf, 1984), states that any company that follows this theory should enter the financing process in three stages. First, they are to consider internal financing sources, like retained earnings. If they need more funds, they then issue debt as a second stage. Finally, when issuing debt is no longer suitable for the company, they adopt the final stage of issuing equity.

This theory prefers issuing debt over equity for two reasons. The first is because they adopt the rule that a company should issue more safety securities prior to the risky ones. The second reason is to consider the cost of asymmetric information, which affects the decision maker's choice of internal versus external sources of funds and the choice between debt and equity as such external sources. Because managers have more inside information about a company's operations than investors, when they issue equity, they provide a signal to the investors that the company stock is overvalued. Managers will take advantage of this situation, so the investors will assign a lower price to the newly issued stocks, which leads to a drop in the company's stock price (Myers, 1984).

Furthermore, various empirical studies have found substantial support for the pecking order theory. (Ang et al., 1997) found that the firms in their sample used retained earnings due to the lowest cost
among the financing alternatives. The survey of (Graham and Harvey, 2001) supports the pecking order theory since most firms avoid issuing equity because they believe their stock is undervalued. Additionally, (Frank and Goyal, 2003) found that the pecking order theory performs more effectively among small companies than large companies. This theory was also examined by (Miguel and Pindado, 2001; Gonenc, 2003; Caglayan and Sak, 2010) and others.

**III. Agency Cost Theory**

The agency cost theory was proposed by (Jensen and Meckling, 1976). This theory is used to explain a company's capital structure relevancy by classifying the problem of agency costs into three types.

The first type is **the asset substitution effect**. Managers are motivated to take on more risky projects as leverage increases. The authors explained this attitude by assuming that if the project succeeds, stockholders acquire all benefits, but if it is unsuccessful, debt holders bear the whole loss. This type represents the conflict between shareholders and bondholders.

The second type is **the under-investment problem**. When a company faces an over-debt situation, and it is not easy to take more debt, the company may have an opportunity to invest in a profitable project with a positive net present value (NPV). However, the shareholders will refuse to take this project due to the high-interest rate required by the bondholders, even if this opportunity has a chance to increase the firm value. This type is also considered an example of the conflict between shareholders and bondholders because the stockholders refuse to give the benefit of investment to the bondholder.

The third type is **the free cash flow**, which illustrates the conflict between shareholders and managers. This problem occurs when the company has excess cash after satisfying all necessary
expenditures. The company prefers carrying more debt to avoid managers wasting the cash on unnecessary activities, such as a redecoration of offices or buildings. Increasing debt will enforce financial management as self-controlled. The agency theory thus attempts to describe a company's capital structure as a result of efforts to reduce the costs conflicts that arise from the separation of managers and owners.

Moreover, most ownership-related literature supports the agency theory (Fama and Jensen, 1983), which indicates that the structure of equity ownership is an important proxy for a manager's motivations. (Eisenhardt, 1989) significantly contributed to the field of agency theory, providing a valuable overview of the agency problem and highlighting the key issues that must be addressed. (Kiser, 1999) also presented a critical analysis of agency theory as it is applied in different disciplines, specifically economics, political science, and sociology, with a focus on state policy implementation. The author argues that while agency theory offers a useful framework for understanding principal-agent relationships in different contexts, the theoretical assumptions and concepts used in each discipline are often different, resulting in variations in the application of agency theory. As such, this study highlights the importance of considering the specific context and actors involved in a principal-agent relationship. By comparing the use of agency theory in different disciplines, the author shows that, while the basic assumptions of agency theory remain the same, the application and interpretation of the theory varies depending on the specific context and actors involved. This highlights the need for a greater understanding of agency theory, and the importance of considering how the specific context and actors involved in a principal-agent relationship may influence the behaviour of the agents.

(Al Najjar and Taylor, 2008) argued that, according to agency theory, the most effective selection of ownership structure and capital structure would reduce the agency cost. The study of (Margaritis
and Psillaki, 2010) also makes an important contribution to the literature on agency theory by providing empirical evidence for the relationship between equity ownership, capital structure, and firm performance. Furthermore, (Sun et al., 2016) examined the effect of the degree of agency conflict in ownership on a firm's financing structure. Moreover, (Song et al., 2018) found that when the conflict between managers and owners is high, the manager overinvests in projects and takes on more debt to finance them.

Additionally, ownership concentration establishes a different agency perspective where the conflict exists between two categories of owners: minority and majority (concentrated) stockholders. As such, this conflict-of-interest concerns majority shareholders who hold a significant proportion of the company's shares and the minority shareholders who own fewer shares. A concentrated ownership structure can lead to majority shareholders engaging in actions that benefit them at the expense of the minority shareholders (Dharwadkar et al., 2000). The main issue arising from this conflict is the exclusion of minority owner's value, which occurs when majority shareholders use their power to divert the company's resources towards their own interest, leaving the minority shareholders with limited or no returns on their investments. This action is a manifestation of the principal-agent problem where the majority shareholders act as the agents and the minority shareholders as the principals. A concentrated ownership structure can thus increase agency costs and decrease a firm's value as the minority shareholders lose their confidence in the management. This, in turn, may lead to a decline in the firm's overall performance (Bao et al., 1997).
This discussion and analysis of capital structure theories and previous empirical studies that have implement them encourage other such studies to consider the factors determining a firm’s capital structure, as shown in the following section.

2.2.2 Empirical Studies of Capital Structure

The previous section outlined capital structure theories and some previous studies that have examined the main theories of capital structure empirically. These main theories and their examination suggest other empirical studies consider the factors determining a firm’s capital structure. The review of these studies highlights that, in general, the analysis of capital structure determinants in developing counties has received less attention than developed countries.

(Schwartz, 1959) attempts to analyse the definition of firm capital structure theoretically. He begins with the basic restricted definition adopted by many researchers, such as (Guthann and Dougall, 1955), which only uses securities sources of funds (i.e., stocks and bonds). Subsequently, he expands the definition to broader aspects by describing the capital structure component as a total liabilities and ownership equity side of the firm balance sheet. As a result, the capital structure contains all types of external debt, such as bank loans and any type of borrowing in addition to bonds and stocks. He also concludes that a firm’s optimal capital structure will vary between firms according to their asset structure and industry type. Nevertheless, a firms’ manager should consider several variables when determining capital structure. In doing so, they will be able to choose an optimal capital structure that can increase the market value of the company's shares and maximize shareholders’ wealth.
Moreover, some researchers have examined determinant factors of capital structure in developing countries. For example, (Love, 2005) provided a comprehensive analysis of the finances of Egyptian-listed firms using data from the World Bank Enterprise Survey to investigate the capital structure determinants of these firms. The study found that the size, profitability, and growth opportunities of the firms are the most important determinants of their capital structure. Moreover, the results indicate that leverage is negatively related to firm size and profitability but positively related to growth opportunities. The researcher argued the need for developing an active debt market in Egypt to provide firms with access to different sources of financing. However, the study uses cross-sectional data, which limits the ability to make causal inferences about the relationship between the independent variables and capital structure.

For Jordanian firms (Al Najjar and Taylor, 2008) aimed to investigate the relationship between capital structure and ownership structure. The study used panel data from 48 non-financial firms listed on the Amman Stock Exchange for 2000–2005. The researchers employed several econometric techniques, including fixed effects and random effects models, to examine the impact of ownership structure on capital structure.

The study found that ownership concentration, as measured by the largest shareholder's ownership stake, has a positive and statistically significant impact on the use of debt in Jordanian firms. The researchers also found that the size of the firm, profitability, growth opportunities, and non-debt tax shields have a significant impact on capital structure.

For Kuwaiti firms, (Gharaibeh, 2015) aimed to identify the determinants of capital structure using a sample of 48 firms listed on the Kuwait Stock Exchange (KSE). The study found that profitability, tangibility, firm size, and liquidity have a significant positive impact on the leverage
of Kuwaiti firms, while growth, non-debt tax shields, and inflation have a significant negative impact on leverage. The study also found that the relationship between asset structure and leverage is statistically insignificant. Furthermore, (Koksal and Ormen, 2015) aimed to identify the determinants of capital structure in Turkey’s manufacturing firms from 1996–2009 using panel data analysis. They found that the significant determinants of capital structure were firm size, tangibility, profitability, growth opportunities, non-debt tax shields, liquidity, inflation, and macroeconomic stability. They also found that leverage is positively correlated with profitability and tangibility while it is negatively correlated with liquidity and growth opportunities.

(Al-Smadi, 2019) also examined the determinants of capital structure decisions for small and medium-sized enterprises (SMEs) in Jordan. The study used a sample of 77 SMEs operating in different sectors in Jordan and analysed the relationships between capital structure and various firm-specific factors, including profitability, size, tangibility, growth opportunities, and liquidity. For investigating the determinants of capital structure, two models were constructed: one for long-term debt and the other for short-term debt. The findings of the long-term debt model revealed that asset structure, growth, size, and liquidity positively influence the long-term debt ratio, while profitability has a negative impact. On the other hand, the short-term debt model demonstrated that asset structure, size, and profitability have a negative effect, while growth has a positive influence.

Recently, (Gharaibeh and Al-Tahat, 2020) investigated the determinants of capital structure in Jordanian service companies using only 45 companies. The study concluded that factors such as company size, profitability, business risk, non-debt tax shields, and institutional ownership play a crucial role in shaping the capital structure of Jordanian service companies.
Additionally, determinants in the Asia Pacific region were studied by (Dessomask et al., 2004). Using data from different developing countries, (Booth et al., 2001) stated that "[i]n general, debt ratios in developing countries seem to be affected in the same way and by the same types of variables that are significant in developed countries. However, there are systematic differences in how these ratios are affected by country factors, such as GDP growth rates, inflation rates and capital market development" (Booth et al., 2001, p. 118). This analysis is supported by (Love, 2005).

Many researchers have examined the capital structure determinant factors of developed countries. For example, (Titman and Wessels, 1988) explored the determinants of capital structure for a sample of US companies and introduced a new technique for analysing the impact of unobservable attributes on corporate debt ratios. The results suggest that firms with a unique line of business have lower debt ratios, which is consistent with existing theory. The study also suggests that transaction costs may play an important role in capital structure decisions, particularly for smaller companies. The results do not support the impact of non-debt tax shields, volatility, collateral value, or future growth on debt ratios, but it remains unclear whether the measurement model used captures all relevant attributes suggested by the theory. Overall, the study provides a systematic analysis of capital structure decisions and suggests that future research should focus on developing stronger linkages between observable variables and relevant attributes.

(Bennett and Donnelly, 1993) aimed to explain why non-financial UK firms have different capital structures using variables that represent characteristics suggested by capital structure theories. They found that non-debt tax shields, profitability, size, and asset structure are related to capital structure, as suggested by theory. However, earnings volatility is positively related to leverage,
which supports the hypothesis that the riskiest companies could borrow more. Finally, they found that there is variation in capital structures based on industrial classification.

(Rajan and Zingales, 1995) also examined the factors that determine capital structure in the G-7 countries: the USA, Canada, Japan, France, the UK, Italy, and Germany. They found that firm leverage is relatively similar across these countries with factors identified in previous studies affecting firm leverage in all countries. However, a more in-depth examination suggests that the underlying theoretical reasons for these correlations remain unresolved. The study suggests two areas for future research: improving the relationship between theoretical models and empirical specifications and gaining a deeper understanding of the effects of institutional differences. The paper argues that these research issues are related and that a better understanding of the actual determinants of capital structure decisions can help to uncover the possible impact of institutional environments and vice versa.

Furthermore, (Ozkan, 2001) examined the factors that influence firms' target capital structure and their adjustment process. The researcher used a panel data set of 390 UK companies and a dynamic model to examine the long-term target debt ratio of companies and their adjustment to this target. The analysis controlled for firm-specific fixed effects and endogeneity problems. The findings of the study indicated that companies have a preferred or targeted level of debt, which they tend to achieve quickly. This suggests that the costs of being too far from this target level, as well as the costs of adjusting, are both significant considerations for firms. The results also revealed that profitability, liquidity, and growth opportunities have a negative impact on a firm's choice of capital structure. Moreover, the results support the theory that non-debt tax shields are inversely related to a firm's borrowing ratio. However, the evidence for a positive effect arising from firm size is limited. The study contributes to the literature by using a dynamic model and effectively
controlling for unobservable firm-specific effects and endogeneity problems. However, the study only focuses on UK companies, and the generalizability of the results to other countries or industries may be limited.

Moreover, (Voulgaris et al., 2004) examined the determinants of capital structure for a sample of Greek manufacturing firms. They found that firms with greater asset tangibility, growth opportunities, size, and liquidity tend to have higher debt ratios. In the study of (Gaud et al., 2005), a panel of 104 Swiss firms listed on the Swiss stock exchange was analysed to identify the determinants of their capital structure from 1991–2000. The findings indicate that the size of companies and the significance of tangible assets are positively correlated with leverage whereas growth and profitability are negatively related to leverage. Moreover, the results suggest that both the pecking order and trade-off theories are involved in explaining the capital structure of Swiss companies. Furthermore, the study reveals that Swiss companies do have a target debt ratio and adjust their leverage level towards it. However, the speed of this adjustment process is slower compared to other countries. The study also proposed that the institutional context could be a reason for the slower adjustment process.

In addition to the examination of capital structure determinant factors, some previous studies have analysed the differences in these determinants according to either firm or country. For instance, (Joeveer, 2013) used data from 9 European countries during 1995–2002, and his findings stated that "country-specific factors are the main determinants of variation in leverage for small unlisted companies, while firm-specific factors explain most of the variation in leverage for listed and large unlisted companies" (Joeveer, 2013, p.294). However, some possible country-specific factors that could influence leverage in Jordan include the availability of financing options, the quality of the regulatory environment, the level of economic development, and the stability of the political and
economic climate. For example, Jordan has a well-developed banking sector that provides financing to businesses, which could impact leverage. Additionally, the legal and institutional environment in Jordan may affect firms' ability to borrow, and the level of economic development may affect the availability of capital. Finally, the stability of the political and economic climate may also influence firms' willingness to take on debt. It is important to note that the relative importance of these factors in explaining leverage in Jordan may vary depending on the industry, size, and ownership structure of a firm.

Similarly, the study of (Daskalakis and Psillaki, 2008) on Greek and French companies found that differences in capital structure are due to firm factors. This result may be explained by the similarity between firm characteristics and laws in these two countries.

On the other hand, (Turk, 2015) found that differences in firm structure differences between developing countries affect the company's financial and investment decisions. This result corresponds with the study of (Omet et al., 2015), which compared Saudi and Palestinian firms’ capital structure determinant factors and found that they are the result of country factors.

Past findings may explain the differentiation of economic environments and political issues across developing countries. This dynamic adds novelty to this research in terms of studying the joint effect of capital structure determinants on the level leverage of Jordanian Firms.

Based on (Harris and Raviv, 1991), the selection of capital structure determination factors and uniform estimation for each factor is complex. As such, the previous studies suggest many factors that affect a firm's capital structure, such as firm size, profitability, tangibility, tax-shield, ownership structure, liquidity, investment decisions, and asset structure.
In conclusion, while studies on capital structure determinants in developed countries have made significant contributions to the field, there is a need for further research that examines the unique factors which influence financing decisions in developing countries. The economic, political, and cultural context of developing countries can differ significantly from developed countries. Therefore, further research that examines the unique factors which impact capital structure decisions in developing countries is needed.

In Jordan, for instance, the economic structure as well as political and cultural context are different from that of developed countries. Hence, the lack of effective governance mechanisms in Jordan may affect the financing decisions of firms.

Therefore, studying the determinants of capital structure in Jordan is critical to providing a more comprehensive understanding of the factors that influence capital structure decisions in developing countries. Previous studies of the Jordanian market have mainly examined the traditional determinants of capital structure. For example, (Al-Smadi, 2019, and Al-Najjar and Taylor, 2008) investigated the impact of a broad set of factors including profitability, asset tangibility, ownership structure, and firm size without focusing on connecting the impact of these factors, which could provide valuable insights into their influence on capital structure. Therefore, this study intends to provide a deeper understanding of the impact of both firm investment and ownership structure on capital structure. It also aims to examine the potential interaction effect between these two factors because investment and concentrated ownership are crucial variables that may affect the financing decisions of firms. Investment decisions can influence the need for external financing and affect a firm's capital structure choices. Meanwhile, concentrated ownership can impact the agency costs of firms, which may affect their financing decisions. Therefore, examining the interaction between
these variables and their impact on capital structure can provide new insights into the financing
decisions of firms in Jordan, which has not been fully explored in the literature.

Moreover, previous studies have generally focused on specific sectors or types of firms. For example, (Gharaibeh and Al-Tahat, 2020) focused on services companies, and (Al-Smadi, 2019) analysed small and medium-sized Jordanian companies (SMEs). This reflects the sample size and narrows the outcomes to a specific category of firms.

However, as far as is known, no study has explored the impact of the interaction between investment and concentrated ownership on capital structure for both service and industrial sectors in Jordan. Therefore, the research presented here aims to fill this gap by adding to existing literature on the determinants of capital structure in Jordan and providing new insights into the role of a firm’s ownership structure and investments in shaping its financing decisions.

Thus, the following section will review the outcomes of earlier studies that have examined the study variables to highlight the lack of research relating to capital structure issues, particularly in Jordan. This proves the originality of this study and its significant contribution to current knowledge.

2.3 Previous Studies of the Study Variables

This study focuses on investigating the impact of the interaction between investment and concentrated ownership on capital structure, in addition to controlling for the effects of firm size and performance, which are considered to be important determinants of capital structure in the existing literature.
Investment and concentrated ownership are chosen as the main factors to be investigated in this study since they are both significant determinants of a firm's capital structure, as indicated by previous studies. For instance, investment is one of the main factors that affect a firm's decision to use debt financing because firms with high investment opportunities tend to rely more on debt financing to take advantage of these opportunities. On the other hand, concentrated ownership, which refers to the degree of control exerted by large shareholders over a firm's decision-making process, can influence a firm's capital structure by affecting its risk-taking behaviour and agency costs. While previous studies have considered various factors as a control variable, such as, liquidity, tangibility, and firm size and performance, this study uses only firm size and performance as control variables for analytical and conceptual reasons. Including too many control variables can lead to multicollinearity, where the variables are highly correlated and may affect the precision of the coefficients estimated. Therefore, including only a few control variables may help to minimize this issue and make the interpretation of the results more straightforward. Furthermore, the impact of firm size and performance on capital structure is investigated because both trade-off theory and packing order theory suggest that a firm's financial performance and size are important factors to consider when making financing decisions. For example, a larger and financially stable firm may have more access to debt financing as it might be seen as less risky by lenders. Similarly, a firm with strong financial performance may be more likely to have access to equity financing because investors might see it as a more attractive investment opportunity. Therefore, investigating the impact of firm size and financial performance on capital structure is important to understanding how firms make financing decisions and whether they follow the predictions of these theories.
However, this section will present the outcomes of earlier studies that have reviewed the relationship between firm capital structure and ownership structure, including ownership identities, investment decisions, firm size, and performance.

2.3.1 Capital Structure and Ownership Structure

In reviewing the relevant literature, two lines of research can be identified according to the classification of ownership structure. The first defines ownership by the contribution percentage of capital while the second classifies ownership according to different types of owners.

To begin with the first line, researchers such as (McConnell and Servaes, 1995; Omet, 2006; Lee and Lee, 2014; Kharabsheh et al., 2019; and Mbanyele, 2020) define the concentrated ownership structure by the contribution percentage of the capital of blockholders, which are the stockholders who own 5 percent or more of the company’s shares. These studies found a significant effect of concentrated ownership on firm leverage.

For example, (McConnell and Servaes, 1995) divided a large sample of US firms for the years 1976, 1986, and 1988 into two groups of high- and low-growth firms to examine the relationship between leverage and equity ownership. They found that the stockholder’s equity ownership significantly affected low-growth firms and also identified a positive effect of leverage on firm value for low-growth firms, whereas the effect was negative for high-growth firms.

(Omet, 2006) also examined the impact of blockholders on two measures of leverage (total liabilities/total assets and long-term liabilities/total assets) for the finances of Jordanian industrial companies over the period 1995–2003 using three-panel data methodology alternatives: the random effect model, fixed effect model, and pooled ordinary least squares. He found that the ownership structure has a negative effect on total liabilities to total assets while it has a positive
effect on the other measurement of leverage. According to the analysis of the findings, the researcher argued that the reason for the positive effect on the long-term debt to total assets might be that blockholders force their company to adopt a higher level of long-term debt. He also highlights the importance of suitable corporate governance mechanisms to resolve potential conflicts between managers and owners as well as controlling owners and minority owners.

Similarly, (Lee and Lee, 2014) examined the relation between Korean firms’ concentrated ownership and their performance and the interaction effect of firm leverage on this relationship from 2010–2012. They found a negative effect between concentrated ownership and the performance of the firms. They also found that this negative relationship is weaker for the firms with a high level of leverage measured by the ratio of total debt to total assets. In the same year, (Santos et al., 2014) also examined the relationship between concentrated ownership, the identity of ownership, and capital structure in 12 Western European countries from 2002–2006. They found a negative impact of the principal controlling stockholders on firm leverage.

Moreover, (Farooq, 2015) investigated the impact of concentrated ownership on capital structure for various MENA countries’ listed firms during the period of 2005–2009. He found that concentrated ownership is negatively related to capital structure measured by total debt to the total asset. The researcher argued that since concentrated owners in the MENA region are usually families who avoid the risk of bankruptcy, they try not to conduct debt in their firm’s capital structure.

(Kharabsheh et al., 2019) also examined the relationship between controlling owners and leverage measured by both total debts to total assets and long-term debt to the total asset for Jordanian firms from 2010–2015. The study showed that most of the sample consists of family-controlled companies which have higher ratios of leverage than non-family companies. The findings also
revealed that, at a lower ownership rate, controlling stockholders prefer to use more leverage to remain in control. However, after around 53 percent, they reduced the leverage level to avoid bankruptcy risk. These findings are similar to (Bruslerie and Latrous’s, 2012) investigation of ownership and leverage in France.

Recently, (Mbanyele, 2020) investigated the effect of insider- and outsider-concentrated owners on an Italian firm’s capital structure measured by total debt to total assets between 2002–2013 with the aim of shedding light on the effect of the global crisis on capital structure. The results indicate a significant negative effect of concentrated ownership on firm leverage with a higher effect of concentrated outside shareholders. It also found a significant impact of the global crisis on the firm’s leverage. This effect influences the investors to target companies with high concentrated ownership as they protect stockholder wealth from the insolvency risk by having less debt in the capital structure during such a crisis.

The second line of research classifies ownership according to the percentage of stocks held by different types of owners, such as institutions, managers, and governments. In terms of institutional ownership, which is determined by the percentage held by other firms, (Al Najjar and Taylor, 2008) examined the determinants of capital structure, such as profitability, firm size, growth, and assets structure in Jordanian firms from 1994–2003 using panel data methodology. First, the study found that these determinants affect the firm’s capital structure in the Jordanian market as in developed markets. The study also investigated the effect of institutional ownership on the level of leverage measured by the total debt to total asset and found a significant negative relationship between these two variables. This result suggests that institutional investors prefer choosing low debt level firms. The researchers also argued that, according to agency theory, the most effective ownership and capital structure selection would reduce agency costs. Finally, the
study recommended that the firm’s management consider the interaction between ownership and capital structure when making their investing decisions. However, (Agyei and Owusu, 2014; and Sun et al., 2016) both used institutional ownership and managerial ownership when they examined the effect of ownership structure on a firm’s capital.

The findings of (Agyei and Owusu, 2014) suggest that corporate governance and ownership structure significantly affect the firm debt to equity ratio by analysing randomly selected Ghanaian manufacturing firms from 2007–2011 using cross-sectional and time series methodology. They found a significant positive effect of managerial and institutional ownership measurement on capital structure. The study argued that an effective corporate governance system might influence major financial decisions, such as capital structure. As such, they recommended investigating a larger sample of firms to shed light on the effect of corporate governance on the firm's capital mix combination. Subsequently, (Sun et al., 2016) examined the effect of the degree of agency conflict in ownership structure on a UK firm's capital structure from 1998–2012 using ordinary least squares (OLS) models. Initially, when they measured the ownership structure with the level of managerial share ownership (MSO), they found that varying degrees of MSO affect leverage differently. They argued that the positive effect of low MSO on leverage is caused by owners attempting to align the interests of the firm’s managers and shareholders, which helps reduce the cost of debt. As a result, the firm will tend to increase the level of debt.

On the other hand, firms with higher MSO will attempt to protect their interest in the company from the threat of bankruptcy caused by a high level of debt in capital structure and choose equity over debt financing. This is why the relationship between high MSO and the level of debt is negative. The researchers then found a positive effect of institutional ownership as a second ownership structure measurement on the debt level. They explained this finding by the
incentivization of institutions to issue bonds or other types of debt over equity. These findings agree with (Agyei and Owusu's, 2014) results.

The following studies define ownership structure by the percentage held by the government (state ownership) and found a significant effect on the firm leverage.

(Wang et al., 2009) examined the effect of state ownership on the leverage level measured by total liabilities to total assets of Chinese manufacturing firms for the period of 2000–2004 using panel data regression methodology. They argued that the positive effect of state-ownership on leverage is due to the ability of this type of owner to access more long-term debt, which is used to invest in long-term investment. They also used foreign ownership as another measure of ownership structure and found a negative effect of this type of ownership on firm leverage. The result also found that firm size positively correlates to firm leverage whereas firm profitability is negatively correlated to leverage.

Furthermore, (Thai, 2017) investigated the determinants of the capital structure of Vietnamese firms from 2007–2014 using ordinary least squares (OLS), fixed effects (FEM), and random effect (REM) methodology. He focused solely on state ownership as the largest shareholder and its effect on the financial capital mix. The study found that when state ownership is low, firms use more short-term debt, but when the percentage of state shares increases, the debt level decreases systematically.

In the following year, (Huang et al., 2018) examined whether government ownership influences firm capital structure measured by total debt and long-term debt after applying a split share structure. The reform of 2005 allowed the trading of government shares to reshape the government position in the ownership structure of Chinese listed firms. After analysing a sample of Chinese
listed firms from 2007–2012 using ordinary least squares (OLS) and time-averaged ordinary least squares methodology, they found that the effect of government ownership on the degree of leverage is significant only if the government is the largest shareholder in the firm. Otherwise, government ownership does not influence firm capital structure. They also found a significant positive impact of the non-government controlling shareholder on the capital structure of Chinese firms.

Regarding family ownership, (Nicodano and Regis, 2019) used structural analysis to examine the effect of controlling shareholders, whether family group or multinational group ownership, on the capital combinations of debt and equity of US and EU firms. They found that the advantage of full ownership of a firm may appear when the controlling investors use the cash inflow from dividends to pay for the interest resulting from financing using debt instruments. In this case, controlling shareholders will reduce the default risk in these firms. However, full ownership will no longer be optimal when the dividends are subject to taxes. Family ownership was also examined by (Hegde et al., 2020) for Indian firms. Moreover, (Kharabsheh et al., 2019) found that controlling shareholders in Jordanian firms are often family members and that family ownership has a significant impact on the capital structure decisions of firms in Jordan. Specifically, family-owned firms tend to use more financial leverage in order to maintain control of a company. This finding is in line with the agency theory, which suggests that controlling shareholders may use debt financing to maintain their control over a firm while minimizing the costs associated with equity financing. Furthermore, family ownership is closely related to local ownership in Jordan. In many
cases, family-owned firms are also locally owned and operated. This local ownership can provide several benefits, such as a better understanding of local market conditions and stronger ties to local customers and suppliers. However, local ownership can also have drawbacks, such as a lack of access to global capital markets and a tendency towards insularity. Overall, the relationship between family ownership and local ownership in Jordan is complex and multifaceted. While family ownership can provide benefits in terms of control and local knowledge, it may also lead to a reliance on debt financing and a lack of diversification. These issues should be carefully considered by policymakers and investors when evaluating the capital structure decisions of family-owned firms in Jordan.

Regarding foreign ownership, (Khasawneh and Staytieh, 2017) investigated the impact of foreign owners on a Jordanian firm’s leverage estimated by three measurements: the ratio of total leverage, long-term leverage, and short-term leverage. They also considered sector types. The results suggested a negative impact of foreign ownership on the firm’s leverage, which was higher for the short-term measurement of leverage and service sector firms.

Moreover, (Al-Thuneibat, 2018) combined four different types of ownership: foreign, institutional, managerial, and concentrated ownership (large shareholder ownership). He examined the relationship between ownership structure, capital structure measured by total debt to total asset, and firm performance measured by return on asset (ROA) of Jordanian firms from 2010–2014 using multiple regression models. The study found variation in the effect of ownership structure on firm performance caused by using different ownership measures as expected by the researcher.
He found a negative effect on foreign and institutional ownership while concentrated and managerial ownership had a positive effect. The study also found a positive effect on the degree of financial leverage on the relationship between ownership structure and firm performance. Recently, (Gharaibeh and Al-Taht, 2020) investigated the determinants of capital structure for Jordanian service firms from 2014–2018 using the fixed-effect approach to test the regression model. This study found that institutional ownership is one of the major capital structure determinants, confirming the results of (Ramadan, 2016) concerning Jordanian firms. The researchers argued that when the percentage of stocks owned by institutional owners increased by 1 percent, the debt ratio decreased by 119 percent, indicating that institutional investors do not prefer using leverage to fund their investments. Based on the literature review, this study investigates the direct impact of ownership structure on a firm's capital structure.

In conclusion, after reviewing previous literature, it is notable that studies which investigated the impact of ownership structure on capital structure for developed countries mainly focused on the separation between ownership and control (Agyei and Owusu, 2014, Sun et al., 2016) and the impact of the overall ownership concentration (Lee and Lee, 2014, Farooq, 2015). Additionally, they investigated the impact of family ownership on the financial leverage of firms (Nicodano and Regis, 2019, Hegde et al., 2020), and the role of other ownership variables, such as the presence of state ownership (Wang et al., 2009, Thai, 2017, and Huang et al., 2018). While the literature on the impact of ownership structure on capital structure in developed countries has made significant contributions to the field, it is important to consider the unique economic, political, and cultural contexts of developing countries when examining these relationships. Therefore, studying the impact of concentrated ownership and the identities of owners on capital structure in Jordan is important for several reasons. First, Jordan has been considered a unique economic, political, and
cultural context that may influence the financing decisions of firms differently than developed countries. Therefore, studying the impact of ownership structure on capital structure in Jordan can provide insights into the factors that influence financing decisions in developing countries.

Second, previous studies on the impact of ownership structure on capital structure in Jordan have mainly focused on either the impact of overall concentrated ownership on capital structure, such as (Omet, 2006), or on specific types of ownership, such as (Kharabsheh et al., 2019) for family owners, (Al Najjar and Taylor, 2008 and Gharabiueh and Al-Tahat, 2020) for institutional owners, and (Khasawneh and Staytieh, 2017) for foreign owners. Moreover (Al-Thuneibat, 2018 and Gharabiueh and Al-Tahat, 2020) investigated this impact for a short period of time, which reflects the sample size and narrows the outcomes to a specific category of owner types. These studies provide important insights into the relationship between ownership structure and capital structure in Jordan. However, there is a lack of research on the impact of concentrated ownership and the identities of concentrated owners on firm capital structure. Therefore, this study aims to fill this research gap and provide a more comprehensive understanding of the impact of ownership structure on capital structure in Jordan.

Third, concentrated ownership can have a significant impact on the agency costs of firms, which may affect their financing decisions. Moreover, the identities of owners can also affect the financing decisions of firms as different types of owners may have various preferences for risk and return. Therefore, studying the impact of concentrated ownership and the identities of owners on capital structure in Jordan can provide important insights for investors, policymakers, and firms.
2.3.2 Capital Structure and Investment Decisions

Investment decisions refer to the choices made by firms regarding the acquisition of assets, such as capital expenditures, research and development, and mergers and acquisitions. According to (Hitt, Ireland, and Hoskisson, 2017), investment decisions involve evaluating various investment opportunities and determining which ones are most likely to increase a firm's long-term profitability and competitive advantage. These decisions are crucial to a firm's success as they determine the allocation of resources and the direction of the firm's growth strategy.

The relationship between a firm’s capital structure and its investment decisions has been investigated in previous literature. To begin with, the explanatory study of (Hutchison, 1995) examined the factors that affect the financing mix for small owner-managed firms. He recommended that owner-managed firms should carefully balance their investment and financing decisions, considering the expected returns on investment, the cost and availability of debt and equity financing, and the firm's risk profile. He further suggested that owner-managers may benefit from seeking advice from financial professionals to help them make informed investment and financing decisions. This explanatory study was followed by several empirical studies that examined the impact of firms’ capital structures on their investments. (Aivazian et al., 2005) assessed the relationship between leverage measured by two ratios (total liabilities/total assets and long-term liabilities/total assets) as well as investment decision measured by net investment divided by fixed assets for Canadian industrial firms. They compared the results with U.S. firms from 1982–1999 using panel data methodology. The study divided the firms into two groups: those with low-growth opportunists and others with high-growth opportunists. After analysing the two groups using both fixed-effect and pooled regression, they only found a negative relation between leverage and investment decisions in the firms with low growth. They also noticed that the pooled
regression underestimated this relationship, so they preferred fixed effect regression. After comparing these findings with previous studies, they found that the Canadian firm’s leverage was affected in the same way as U.S. firms. The findings of (Ahn, 2006) combined the two positive and negative relationships due to high and low growth rates. This study examined the relationship between the excess leverage level measured by the difference between the company’s total liabilities to total asset ratio and investments in firms that diversify their investment. It then compared this relationship with other focused firms on American firms for the period of 1982–1997 using cross-sectional regression analysis. He found that in high-growth diversified firms the relationship was negative while the relationship was positive in low-growth diversified firms. He also found that the positive relation between leverage and firm value was weaker for firms with multiple lines of business than in focused firms.

Moreover, (Arafat et al., 2014) investigated the relationship between leverage, measured by the ratio of total liabilities to total equity, and investment decisions, measured by the market to book value of the asset, for Indonesian firms from 2008–2010 using a multivariate regression model. They argued that as the firms increased their debt level, the firm value also increased, and a firm's investment decisions positively affected its value. As such, they found that investors assumed the firm management’s decisions to raise funds through debt to invest in profitable investments were suitable.

On the other hand, (Omet et al., 2015) findings showed no significant relationship between a company’s capital structure and investments when investigating Jordanian industrial firm’s investment determinants from 2000–2013 using ordinary least square (OLS), random, and fixed-effect models. The authors considered growth, leverage, and liquidity as the main determinants of investments. Due to the low debt ratio for these firms, they found no significant relationship
between leverage level measured by total debt to total assets and investments measured by net fixed investments to net fixed assets. Consequently, managers could still invest in the required projects despite the low level of leverage. Furthermore, (Song et al., 2018) examined the effect of agency problems on the leverage level of Chinese firms and how the presence of debt in agency conflicts influences investment policies. They found that when the conflict between managers and owners is high, the manager overinvests projects and carries out more debt to finance these projects, although the findings differ when the conflict is low. Additionally, (Phan, 2018) examined the relationship between debt level and a Vietnam's firm's investment decisions from 2010–2016 using static and dynamic fixed-effect models. He found a negative relationship between leverage and private firm investments. (Vo., 2019) also examined the relationship between leverage measured by book value and market value of liabilities, as well as investments measured by the ratio of net investment of a firm divided by net fixed asset, for most non-financial Vietnamese firms listed over the period of 2006–2015 using fixed-effect analysis to the multiple regression model. Despite having analysed different time periods, he found the same result as in (Phan, 2018) for private firms. In addition to the negative relation between leverage and firm investments, he also determined that firms with higher values invested more than other firms. This result highlights a significant problem because bank loans are one of Vietnam's primary financing sources. Recently, (Sulistiono and Yusna, 2020) investigated the relationship between funding decisions, dividend policies, firm value, and investment decisions of manufacturing companies listed on the Indonesia Stock Exchange. The study employed a mediation analysis to examine the mediating effect of investment decisions on the relationship between funding decisions, dividend policies, and firm value. The data were collected from 73 companies over the period of 2013–2018. The results of the study revealed a significant positive relationship between funding
decisions, dividend policies, and firm value. The study also found that investment decisions mediate the relationship between funding decisions and firm value and that investment decisions have a direct positive effect on firm value. Moreover, (Zubair et al., 2020) investigated the relationship between financing sources and investments for European firms from 2004–2012 to capture the effect of the financial crisis on this relationship. They found a positive impact of leverage as the measurement of external financing on the firms’ investments before, during, and after the financial crisis. Simultaneously, the internal financing effect on the investments was significant only before and after the financial crisis. Based on these findings, the researchers encouraged the firms’ manager to conduct more debt in their capital structure during any economic crisis to reduce the adverse impact on investments. Additionally, (Hechmi, 2020) investigated the effect of various variables, including the leverage measured by long-term debt, on the Saudi firm’s investments from 2009–2018. This study found a positive impact of leverage on the firm’s investment. The researcher attributed this positive relationship to the Saudi firm’s ability to handle debt financing expenses.

These studies are significant as they shed light on the relationship between capital structure and investment. Understanding how a firm's capital structure affects its investment decisions can help managers make informed financing and investment decisions. Additionally, the results of these studies can provide useful insights for investors, creditors, and other stakeholders in evaluating a firm's financial health. However, it is also important to examine the reverse relationship (i.e., the impact of investment on capital structure) to facilitate an understanding of the dynamic nature of the relationship between financing and investment decisions.

Several empirical studies have investigated the impact of firms’ investment on their capital structure choices. For US companies, (Long and Malitz, 1985) examined the relationship between
investment patterns and financial leverage for a sample of 49 firms from 1954–1976. The researchers investigated the impact of investment on leverage using both theoretical and empirical analysis. Their study focused on investment patterns, which is a more direct measure of firm investment than other proxies commonly used in the literature. They used regression analysis to investigate the relationship between investment patterns and financial leverage, controlling for other factors that may impact capital structure, such as size, profitability, and tax rates. In doing so, they found that investment patterns have a significant impact on leverage. Specifically, the firms that invest heavily in fixed assets, such as property, plant, and equipment, have higher levels of leverage while those that invest heavily in research and development have lower levels of leverage. They argued that these different investment patterns reflect differences in the availability of internal funds, with firms that have more internal funds relying more heavily on debt to finance their investments. As a result, investment decisions play an important role in shaping a firm's capital structure, and firms tend to rely on debt financing to fund their investment activities, particularly for growth opportunities. However, the relationship between investment and leverage is also influenced by firm-specific factors, such as size, profitability, and asset tangibility. Moreover, (Rajan and Zingales, 1995) examined the impact of various firm characteristics on capital structure decisions using a sample of 526 firms from 14 countries. In particular, they used the market-to-book (MTB) ratio as a proxy for investment opportunities and investigated its impact on leverage using a range of statistical techniques, including regression analysis and correlation analysis, to examine the factors that drive capital structure decisions. They found that leverage is negatively related to the market-to-book (MTB) ratio, suggesting that firms with a higher MTB ratio tend to have lower leverage. They also noted that this negative relationship may be driven by several factors, such as growth opportunities and asymmetric information, which makes it more
difficult for these firms to raise external financing. However, using the MTB ratio as a proxy of investments may not capture all the factors that drive investment decisions. As such, their findings indirectly suggest that the impact of investment on leverage is important to consider when analysing capital structure decisions.

However, (De Miguel and Pindado, 2001) examined the impact of a Spanish firm’s characteristics, including investments, on capital structure measured by long-term debt during the period of 1990–1997. This study found a positive leverage impact on the firm’s investment, proving the simultaneity of financing and investment decisions. They also discussed the issue of endogeneity between capital structure and investment decisions, arguing that capital structure and investment decisions are likely to be endogenous. This means that firms’ investment decisions may be influenced by their capital structure, and their capital structure decisions may also be influenced by their investment opportunities.

(Byoun, 2011) investigates the relationship between financial flexibility and capital structure decisions with a specific focus on the impact of investment on capital structure. He argued that firms with greater financial flexibility have greater access to debt financing, which allows them to pursue investment opportunities and adjust their capital structure accordingly. The study used a sample of US firms over the period of 1990–2007 and employed a range of empirical techniques to examine the relationships between financial flexibility, investment, and capital structure. By using research and development (R&D) as a proxy for the company's investment opportunities, the outcomes reveal that R&D has a negative impact on leverage ratio. This finding reflects the impact of investment on capital structure by indicating that firms with more investment opportunities, such as R&D, may prefer to keep their financial leverage low to have more financial flexibility to pursue future investment projects. In other words, the results suggest that investment
opportunities play a critical role in determining a firm's capital structure decisions. Firms with more investment opportunities may choose to use less debt financing to maintain the financial flexibility necessary to pursue future investments. The study also controls for a range of other factors that may affect capital structure decisions, including profitability, growth opportunities, and firm size.

For US firms, (Grundy and Verwijmeren, 2020) examined the effect of different characteristics of investments on capital structure from 1995–2017. They found that investments in tangible assets, such as property, plant, and equipment, are more likely to be financed with debt. Conversely, investments in intangible assets, such as research and development, are more likely to be financed with equity. The authors argue that tangible assets provide collateral that can be used to secure debt financing while intangible assets are more difficult to value and therefore may not be as effective as collateral. The authors argue that their study provides new insights into the external financing decisions of firms and sheds light on the relationship between investment decisions and financing choices.

In conclusion, after reviewing the previous literature, it is crucial to examine the impact of investment on capital structure, not vice versa. This is because investment decisions are typically made before capital structure decisions, making investment decisions exogenous to capital structure decisions (Myers, 1984). Focusing on the impact of capital structure on investment can result in endogeneity bias as the choice of capital structure may be influenced by investment decisions (Rajan & Zingales, 1995). Therefore, the focus of this study is to examine the impact of investment on capital structure rather than the reverse. Studying the impact of investment on capital structure allows for a clearer understanding of the relationship between these two variables and provides insights into the factors that determine a firm's financing decisions. Understanding
the determinants of capital structure is crucial as it can affect a firm's ability to raise capital, its risk profile, and its overall financial health (De Miguel & Pindado, 2001). However, the impact of firm investment on capital structure in Jordanian firms has not been sufficiently explored in the existing literature. Therefore, this study aims to contribute to filling the gap in the literature and provide valuable insights for both academic researchers and firm managers in Jordan. This is particularly important given the role of investment in the economic development of this country and the need for firms to adopt an optimal capital structure that supports their growth and sustainability.

### 2.3.3 Ownership Structure and Investments

Several theoretical hypotheses have explained the interaction between investment and ownership structure in firms. Two of the most prominent theories are agency theory and pecking order theory. Agency theory suggests that the ownership structure of a firm affects the investment decisions made by managers. When a firm has a dispersed ownership structure, managers may have more discretion in making investment decisions. This can lead to conflicts between managers and owners as managers may prioritize their own interests over those of the owners. However, when a firm has a concentrated ownership structure, owners may have more control over investment decisions, which can lead to a more efficient use of resources. Therefore, agency theory suggests that a concentrated ownership structure can lead to more efficient investment decisions.

Pecking order theory, on the other hand, argues that the financing decisions of a firm are influenced by its ownership structure. Specifically, firms with concentrated ownership structures may rely more on internal financing than external financing. This is because external financing can dilute the ownership stakes of existing shareholders, which may not be desirable for firms with
concentrated ownership structures. Therefore, pecking order theory suggests that ownership structure can influence the financing decisions of a firm, which can in turn impact its investment decisions.

While these theoretical hypotheses provide potential explanations for the interaction between investment and ownership structure, they have also been subject to criticism. For example, agency theory has been criticized for its assumption that managers always act in their own self-interest and for overlooking the potential benefits of dispersed ownership structures. Pecking order theory has been criticized for its assumption that internal financing is always cheaper than external financing and for failing to account for the potential advantages of external financing.

Therefore, while these theoretical hypotheses can provide valuable insights into the interaction between investment and ownership structure, it is important to critically assess their limitations and potential biases. Additionally, it is important to consider other factors, such as institutional and cultural context, which can significantly impact the relationship between investment and ownership structure in firms.

Therefore, the empirical literature on investment decisions has focused on many aspects, such as the link between investment and liquidity (Fazzari et al., 1987), the link between investment and firm value (McConnell and Muscarella, 1985; and Chan et al., 1990), and the link between capital structure and investment (Aivazian et al., 2005; and Phan, 2018).

However, little empirical evidence exists concerning the link between ownership structure and investment. Ownership structure has been found to play a crucial role in a company's investment decisions and financial performance. Understanding this relationship is thus important for both
companies and investors because it can inform decisions about structuring ownership and allocating resources effectively and provide insight into the mechanisms that drive the relationship. Thus, the findings of these studies vary between a positive and negative impact. This implies that the interaction between ownership structure and investment decisions must be examined and the findings explained within its context (Al-Thuneibat, 2018).

To begin, (Cho, 1998) examined the relationship between ownership structure, investment, and firm value, focusing on whether ownership structure affects investment. He found a significant relationship between insider ownership and investment where both R&D expenditure and capital expenditure measure investment. The relationship between insider ownership and investment is positive for ownership levels above 38 percent. Nevertheless, it is negative for levels between 7 and 38 percent. Based on these results, he concludes that ownership structure affects investment and, consequently, corporate value due to control benefits for the stockholders with the most significant proportion of ownership. This study was followed by that of (López-Iturriaga and Rodríguez-Sanz, 2001), which found a positive relationship between a Spanish firm’s ownership structure and investment decisions.

Furthermore, (David et al., 2006) found a positive impact of foreign ownership on Japanese firms’ investment decisions. (Gugler et al., 2008) determined a similar impact when they examined the effect of concentrated ownership on the investment decision of European and US companies using different categories of ownership like institutional ownership, family ownership, and others. The following studies also found a similar result: (Jianhui and Yunyun, 2010) for Chinese Firms, (Jiang et al., 2011) for East Asian firms, (Andres, 2011) for family ownership of German firms, and recently (Derouiche et al., 2018) and (He et al., 2018) when examining French firms and Chinese Firms, respectively. Studies from Arab countries are limited. (Balbol and Orman, 2005)
investigated the possible determinants of investment decisions for only 83 companies from five Arabian markets and found that ownership structure significantly influences investment as one of the determinants. This result was also found by (Alfaraih et al., 2012) for Kuwait-listed companies in 2010. Additionally, (Tayem's, 2015) study aimed to investigate the effect of ownership structure on Jordanian companies' investment decisions using the theory of (Tobin's q, 1969), which links a company's market value to its investments. As Jordanian-listed corporations are described mainly by high concentration ownership structures (Tayem, 2015), the study examined the impact of other dimensions of ownership structure. Specifically, it investigated the impact of the level of ownership and largest stockholder ownership on enhancing the link between market value and the capital investment of a company. The research findings demonstrated a positively significant response of Jordanian company’s investments to market signals. Moreover, the findings showed that a firm responds more effectively to market signals as the concentration of ownership increases. Additionally, (Tleubayev et al., 2020) investigated the effect of ownership concentration on Russian firms’ performance and investments from 2012–2017. The researchers found that when the firm reduced the level of concentrated ownership to around 50 percent, would offer new investments, and affecting the firm's performance positively.

Recently, (Vijayakumaran, 2021) investigated managerial ownership's direct and indirect effect on Chinese firms' investments from 2003–2010 using panel data analysis. The result of this study indicated that managerial ownership has a significant positive impact on a firm's investment decisions. He recommended investigating the effects of other ownership types, such as foreign ownership, on investment.

On the other hand, many studies have found a negative impact of the firm’s ownership structure on their investment decisions. (Filatotchev et al., 2001) examined the impact of ownership of the
largest stockholders on Russian privatized manufacturing firms’ investment decisions and performance. The main findings of this study are that (1) the largest stockholder negatively influences the company’s investment and performance and (2) this impact does not rely on the type of controlling stockholder. They argued that these findings are compatible with the fact that the rights of minor stockholders in Russia are not sufficiently protected, and the largest stockholders may have powerful incentives to turn resources into forms that make them superior on account of other stockholders. This result was also found by (Gedajlovic et al., 2005) for the largest Japanese firms. Furthermore, (Mykhayliv et al., 2013) analyse the effect of ownership structure on Ukrainian firms’ investment behaviour. They found a negative impact of government ownership on investment, and they argued that this impact is due to the benefits of the largest stockholder controlling on account of minor stockholders. Moreover, several previous studies have investigated ownership concentration (Habib and Jiang, 2015; Tee et al., 2017; Barroso et al., 2018). However, the identity of the stockholders has received less attention when examining concentrated ownership. Notably, focusing on overall ownership concentration without taking into consideration each type of shareholder separately could lead to incorrect judgments (Niemi, 2005). Many studies encourage considering the types of shareholders when investigating ownership structure, such as (Lim et al., 2014; Alhababsah, 2019) and others.

In conclusion, after reviewing the previous literature, it can be observed that most empirical studies focused on the relationship between ownership structure and investment decisions in the US and other developed markets. However, few studies examined this relationship in the Jordanian market. Thus, the findings from investigating the interaction between ownership structure and investment decisions in Jordanian companies can apply to countries characterized by concentrated ownership and with a similar economic environment (Al-Thuneibat, 2018).
However, the owner's identity impacted company outcomes above and beyond the concentration of ownership. The firms not only varied in their growth, profit objectives, and capital structure but also relied on whether different shareholders pursue different ways of generating firm value (Thomsen and Pedersen, 2000). Therefore, the lack of exploration of the interaction between firm investment and ownership structure in Jordanian firms, and not considering the identities of their owners, highlights a significant gap in the literature. This study aims to add to this area of research by investigating the interaction between concentrated ownership and investments, and it will focus on common types of owners’ identities. This investigation may provide firms’ managers with helpful feedback by considering the common types of ownership in terms of their rule-making processes. This is because different owners have different incentives and investment strategies (Alhababsah, 2019).

2.3.4 Capital Structure and Firm Performance

Many researchers have examined the effect of firm performance on capital structure, and the outcomes of these studies have varied between negative and positive (Rajan and Zingales, 1995; Booth et al., 2001; Flannery and Ragan, 2006; Al Najjar and Taylor, 2008; Chang and Dasgupta, 2009; Agyei and Owusu, 2014; Jeleel and Olayiwola, 2017; Nguyen et al., 2019). Others found a negative effect of firm performance on its leverage. These results are compatible with the pecking order theory, which prefers using the internal source of financing (i.e., retained earnings) to fund a firm's activity over issuing external sources of financing (debt and equity). Higher performance generates greater internal cash flow, so profitable firms should have a lower leverage ratio. Recently, (Hatane et al., 2020) advised decision-makers to reduce the level of debt in a firm's capital structure to improve its performance based on the significant negative relationship between an Indonesian firm's leverage and its performance. This result was also found by (Murtaza et al.,
2020), who examined the relationship between ROA and the leverage of Pakistan firms, and by (Nguyen and Nguyen, 2020) while measuring a firm's performance using ROA and ROE Ratios as well as the Vietnam firm's capital structure measured by total debt, long-term debt, and short-term debt ratios.

On the other hand, (Omet, 2006; Al-Thuneibat, 2018) and others found a positive effect of firm performance on leverage. The researchers argued this finding because higher profitable companies have lower bankruptcy and distress costs. Therefore, high profitability firms use more debt in their financing decisions. These results were also found in other studies, such as (Simerly and Li, 2000; Weill, 2008; Tripathy and Shaik, 2020). However, these mixed results encourage investigating the relationship between a firm's capital structure and its performance.

2.3.5 Capital Structure and Firm Size

Many researchers have proposed that the size of a company may monitor the impact of capital structure. (Omet, 2006) examined the effect of Jordanian firm size on firm leverage and found that firm size has a larger positive effect on total liabilities to total assets than the other measurement of leverage. Additionally, (Al Najjar and Taylor, 2008) found a positive effect of firm size as measured by total assets on capital structure. Most previous studies also found a positive relationship between firms’ leverages and their size (Harris and Raviv, 1991; Rajan and Zingales, 1995; Ozkan, 2001; Hovakimian et al., 2004; Antoniou et al., 2008; Wang et al., 2009; Agyei and Owusu, 2014; Trang et al., 2016; Nguyen et al., 2019; Albart et al., 2020; Mbanyele, 2020; Meshack et al., 2020; Gharaibeh and Al-Tahat, 2020). These studies examined the relationship between firm size and capital structure using different methodologies and data sources, but their findings were consistent in showing that larger firms tend to have higher leverage ratios compared to smaller firms. The studies were conducted in different countries and contexts, suggesting that
the positive relationship between size and leverage may be a general phenomenon across different settings. Overall, these studies provided valuable insights into the determinants of capital structure, particularly the role of firm size, and their findings have been used to inform both academic research and practical decision-making in the business world.

The reason behind investigating firm size is that large firms are further diversified and have a lower possibility of bankruptcy as well as potentially having a lower cost of borrowing (Titman and Wessels, 1988). Therefore, larger firms may have privilege over small ones in terms of better access to debt and borrowing funds in better conditions, which is compatible with the trade-off theory (Nguyen et al. 2019). However, the impact of firm size on capital structure encourages further investigation of the relationship between a firm's capital structure and its size.

### 2.4 Literature Gaps

From the analysis of the previous studies, capital structure empirical studies have investigated several factors that are possible determinants of capital structure. As such, there is no definitive list of determinants. Therefore, different researchers have considered different variables. According to (Harris and Raviv, 1991), the selection of capital structure determination factors and standardized estimation for each factor are complex.

Because of this complexity, researchers from previous studies have proposed a variety of factors that may affect a firm's capital structure. These factors include firm size, profitability, tangibility, tax shield, ownership structure, liquidity, investment decisions, asset structure, and more. In this context, following the works of (Singh and Hamid, 1992; and Singh, 1995), many studies have examined the capital structure choice in developing economies (Booth et al., 2001; Love, 2005; Al Najjar and Taylor, 2008; Koksal and Ormen, 2015; Omet et al., 2015; Gharabeh and Al-Tahat, 2020). Additionally, the factors of the Asia-Pacific area were investigated by (Dessomask et al.,
2004; Booth et al., 2001). They considered the choice of capital structure in developing economies by using data from various emerging nations. Notably, the outcomes of previous studies on the determinant factors of capital structure vary between developing and developed countries and across developing counties due to different economic and political environments (Booth et al. (2001).

Alternatively, (Turk, 2015) determined that differences in the business structures between emerging countries affect a company’s financial and investment decisions. This result is in line with the findings of (Omet et al., 2015), in which the authors evaluated the capital structure determinant factors of Saudi and Palestinian firms and concluded that these characteristics are due to factors that are specific to the respective countries. These previous findings may explain the difference in economic conditions and political difficulties across developing nations, which in turn enhances the originality of this study as it investigates the joint effect of capital structure determinants on the amount of leverage that firms use.

Furthermore, (Omet, 2006) argued that Jordanian companies financing their assets with short-term finance resources, and the negative effect of ownership structure on total liabilities to total assets (first measurement of leverage) are explained by the influence of large stockholders on the companies’ management toward decreasing their dependency on short-term sources of financing as an additional controlling source over those firms which also support the positive impact of ownership structure on long-term liabilities to total assets (second measurement of leverage). This observation sheds light on the significant impact of ownership structure on a firm's financing decisions, which in turn affects its capital structure.

However, investigating the joint impact of concentrated ownership and investment on capital structure is important as it can illuminate how the ownership structure and investment decisions
of a firm interact to affect its financing decisions. The previous literature has highlighted the importance of studying the impact of investment on capital structure as investment decisions are typically made before capital structure decisions, meaning investment decisions are exogenous to capital structure decisions (Myers, 1984). However, by exploring the joint impact of ownership structure and investment on capital structure, it is possible to gain a deeper understanding of the factors that influence a firm’s financing decisions. This is especially important in the context of concentrated ownership where large shareholders may have a significant impact on the investment decisions and financing choices of a firm. By examining this relationship, the unique factors that influence capital structure decisions in firms with concentrated ownership can be identified, providing valuable insights for both academic researchers and firm managers in Jordan.

Additionally, previous studies of ownership concentration mainly focus on investigating overall concentrated ownership (Habib and Jiang, 2015; Tee et al., 2017; and Barroso et al., 2018) without considering the identity of concentrated owners. However, it is notable that focusing on the overall ownership concentration without concentrating on each type of shareholder separately may lead to incorrect judgments (Niemi, 2005). As such, this study will focus on common types of owner’s identity in addition to investigating the interaction between concentrated ownership and investments.

Moreover, various studies have hypothesized that a company's size might moderate the effect of its capital structure (Omet, 2006; Trang et al., 2016; Nguyen et al., 2019; Albart et al., 2020; Mbanyele, 2020; Meshack et al., 2020; Gharaibeh and Al-Tahat, 2020). Others suggest the function of firm size in conducting its capital structure is consistent with trade-off theory (Omet, 2006; Trang et al., 2016; Nguyen et al., 2019). However, the significance of the impact of firm size on capital structure motivates this research to investigate the relationship between a firm's
capital structure and its size. This is because large firms are more diversified and have a lower likelihood of bankruptcy, and they may have a lower cost of borrowing (Titman and Wessels, 1988). Additionally, this research considers whether trade-off theory is supported by the empirical outcome of the function of firm size in determining its capital structure, as described in earlier studies.

Several researchers have explored the impact of firm performance on capital structure, and the conclusions of these investigations varied between positive impact (Omet, 2006; Al-Thuneibat, 2018) and negative impact (Booth et al., 2001; Flannery and Ragan, 2006; Chang and Dasgupta, 2009; Jeleel and Olayiwola, 2017; Nguyen et al., 2019). These negative results are consistent with the pecking order theory, which supports the use of retained earnings, a firm's internal funding source, over the issuance of external sources of financing (debt and equity). Higher performing firms provide more significant internal cash flow, and profitable companies should have a lower leverage ratio. Based on the significant negative association between leverage and performance, (Hatane et al., 2020) recently encouraged decision-makers to reduce the degree of debt in the firm's capital structure in order to increase performance. On the other hand, the researchers argued that there is a positive impact because profitable companies have lower insolvency and distress costs. Consequently, organizations with high profitability utilize more debt in their financing selections (Simerly and Li, 2000; Weill, 2008; Tripathy and Shaik, 2020). Nonetheless, these conflicting findings suggest further investigation of the relationship between a company's capital structure and performance is needed. Additionally, it is important to establish whether the empirical results of this study support the pecking order theory, as described in previous studies.

Finally, this study attempts to fill the research gap by examining empirically whether the interaction between ownership structure and investment affects a firm’s capital structure using
Jordan as an example. Previous literature on the subject has generally focused on the separate effects of ownership structure and investment on capital structure, but there is a lack of research on how these two variables interact and jointly influence a firm's capital structure decisions. To achieve this goal, the researcher investigates the effect of ownership structure and firm investments on capital structure separately and jointly. The study then looks further into the interaction between the identity of a concentrated owner and investment. The reasons behind using Jordan as an example are explained in the following section.

2.5 The Jordanian Context

The Kingdom of Jordan is a suitable location for operations related to engineering, manufacturing, and technology since it is secure, business-friendly, modernized, and well-prepared. Companies may find vital talent, business support, and a willing government partner in this dynamic nation, which will help facilitate a company’s growth in the Middle East region and beyond. This nation provides a stable environment wherein businesses can operate. Furthermore, Jordan is considered a politically stable country compared to the region's surrounding countries (The Jordan Economic Growth Plan 2018 – 2022).

Using the Morgan Stanley Capital International (MSCI) Index, Jordan is considered an example of a frontier market, which are "smaller countries in the developing world, less accessible, yet still investable" (Berger et al., 2011, p.227). For the classification of frontier markets, there are different methods and indexes. The classification is based on size, economic growth, liquidity, and market accessibility (MSCI, 2016), which corresponds with the elements of the concept of frontier markets developed by (Berger et al., 2011).

However, while frontier markets and developing economies are both used to describe emerging economies, there are differences between the two. According to (Kraay and Ventura, 2007),
Frontier markets are a subset of developing economies that are characterized by their relatively small size, lower levels of liquidity, and less established institutional and regulatory frameworks. Frontier markets are often considered to be the least developed of the emerging economies with less access to capital, fewer established industries, and lower levels of economic development.

In contrast, developing economies are a broader category of emerging economies that includes both frontier markets and larger more established economies. Developing economies are characterized by a range of economic development levels with some countries experiencing rapid growth and others still struggling to develop their economies. Developing economies may have more established industries and regulatory frameworks as well as more access to capital and other resources compared to frontier markets.

Overall, the key difference between frontier markets and developing economies is the level of economic development and the degree of institutional and regulatory maturity, with frontier markets generally being considered the least developed subset of the larger group of developing economies. While smaller than emerging and developed stock markets, Jordan, as a frontier market, provides companies with significant investment opportunities (Groot et al., 2012). Despite the investment community’s important consideration of frontier markets, scant attention has been devoted to discussing these markets (Berger et al., 2011).

The goal of the Jordanian government is for the country to have a free and open economy. In order to build up a progressive and successful investment, new laws and policies have been implemented. Despite being challenged by an unstable Middle Eastern region and a lack of resources such as water, oil, and other natural resources, Jordan has managed to sustain its stability despite these challenges. Jordan’s investment and business regulations have been reformed over
the previous decade, increasing its attractiveness to investors, diversifying the economy, and supporting corporate growth. Fixed exchange rates of the Jordanian dinar and the link to the US dollar ensure stability, strengthen public confidence, and attract international investment. Everyone is allowed to invest and create a business in Jordan, but there are several restrictions depending on the sector, type of investment, and enterprise location (WANA Institute, 2017). According to (Regulation No. 77; Regulating Non-Jordanian Investments Regulation No. 77, 2016) foreign investors are requested to submit additional information and financial documents not required for domestic investors, and registration procedures take longer due to language obstacles.

Regardless of the country's stability, political, economic, and social regional instability has a negative impact on Jordan's economy, reducing investing security, restricting tourism, and increasing the pressure on public resources. Despite these constraints, Jordan remains able to attract international investment due to its relative stability compared to other countries in the Middle East region. This claim is supported by the data presented in the Amman Stock Exchange (ASE) report for 2019. Non-Jordanian investors owned 50.5 percent of the overall market value whereas Arab investors made up 35.5 percent, and non-Arab investors 15.0 percent, of companies listed at the ASE by the end of 2019. For the services and industrial sectors, non-Jordanian ownership was 19.3 percent and 59.9 percent, respectively (ASE report, 2019). Although Arab investors invest in Jordan at a higher rate than non-Arab foreign investors due to the country's geographically close location and the absence of language obstacles, they nonetheless make up a smaller percentage of total Jordanian investments than local investors. This is because Arab investors prefer to invest in their own countries to take advantage of the privileges their countries offer for national investors, and they do so as part of their international diversification strategy.
However, when discussing ownership incentives in the context of Jordan, it is important to distinguish between local owners who are of Jordanian nationality, Arab owners who are from other Arab countries, and foreign owners who are non-Arab nationals. While local owners may share the same national identity as Arab owners, there may still be differences in their incentives due to factors such as regional or cultural differences, ownership concentration, and the nature of their business activities.

For instance, Arab owners from other countries may have different cultural norms and business practices that influence their investment and financing decisions compared to local owners in Jordan. Additionally, foreign owners may have varied incentives and preferences when it comes to investment decisions and capital structure due to differences in their home country's legal and regulatory frameworks or their global business strategies.

Furthermore, even among local owners there may be differences in ownership concentration and business activities that influence their incentives. Thus, family-owned businesses in Jordan may have different ownership structures and governance mechanisms compared to publicly listed firms, which can lead to differences in investment and financing decisions.

Accordingly, investigating the interaction between investment and ownership structure in Jordan is interesting for many reasons. First, Jordanian firms are distinguished by a concentrated ownership structure with the largest stockholders exercising control over a company. This structure can modify a large stockholder's interest with a company's interest (Tayem, 2015).

Second, one of the primary purposes of establishing the Jordanian stock market in 1978 was to encourage savings and direct these savings to investments to develop the economy (Omet et al., 2015). Third, over the last decade, Jordan has offered significant improvements to reorganize its stock market and enhance its role in investment promotion and efficient capital allocation.
(Tayem, 2015). Fourth, the capital market in Jordan is less developed and provides a narrower range of financial instruments, and the problem of information asymmetry is more severe in Jordan due to lax accounting and auditing standards (Omet, 2006).

2.6 Summary

This chapter presented a review of the literature on capital structure theories and some of the previous studies that have empirically examined the main theories of capital structure. Empirical studies on the determinants of capital structure in both developed and developing countries were briefly discussed. It was found that most of these studies have been conducted in developed economies, leaving a significant gap in knowledge regarding capital structure determinants in developing countries. Despite the wealth of research on capital structure theories and its determinants, the literature has not yet explored the impact of ownership structure and investment decision on capital structure. Furthermore, while previous studies on the Jordanian market have examined a wide range of determinants of capital structure, they have not adequately assessed the interplay between these factors. This lack of analysis has prevented researchers from gaining valuable insights into how these factors influence capital structure decisions. Therefore, this study aims to provide a deeper understanding of the impact of both firm investment and ownership structure on capital structure decisions. Additionally, this study explores potential interaction effects between the two variables since investment and concentrated ownership are critical factors that may affect a firm's financing decisions. Figure 2.3 display the conceptual framework of this study.
Figure 2.3 Conceptual Framework

Independent Variables

Ownership Structure

Investment Decisions

Direct Effect

Capable Structure

Two-Way Interaction

Direct Effect

Control Variables (Size and Performance)
CHAPTER THREE: RESEARCH METHODOLOGY
3.1 Introduction

This chapter provides a framework for the methodological structure employed in this study. Following (Saunders et al., 2019) research onion, this chapter will contain the following sections: research philosophy, research approach, methodological choice, research design, and finally analytical procedures and estimation methods.

3.2 Research Philosophy

Research philosophy involves what the researcher estimates of knowledge development (Saunders et al., 2009). As an introduction to describing the general framework of the methodology used in this study, it is essential to define the philosophical approach that will be adopted.

The research philosophy presents methods to choose the most suitable approach to implement satisfactory solutions to the research questions (Blaikie, 2007). This stage of recognizing the proper research philosophy is essential for either developing a new theory or implementing existing theories and models in the research. This will be based on applying the research methods according to the research objectives.

There have been several research philosophies used in previous literature. Based on (Saunders et al., 2019), this research will adopt the two main philosophical approaches: ontology and epistemology. Each includes significant differences influencing how the researcher thinks about their research process. Objective or subjective viewpoints can be used to identify the extreme positions of these philosophical assumptions. As such, it will be helpful to distinguish between these two extremes before presenting the philosophical assumptions.
3.2.1 Ontology

Ontology is related to the nature of reality. In this context, it means the researcher's understanding of the ways the world operates. The two ontology classifications are objectivism and subjectivism (Saunders et al., 2009). Objective or subjective viewpoints can be used to identify the extreme positions of these philosophical assumptions.

A) **Objectivism** explains how social entities have an existence independent of social actors, so the object being studied has a reality separate from the researcher who observes that reality.

B) **Subjectivism** describes how social phenomena are generated from social participants’ understandings and consistent actions. In other words, reality does not exist as an object but is distinguished and explained by an individual's attitudes and actions, and it is dependent on the condition being examined (Burrell and Morgan, 1979; Saunders et al., 2009; and Saunders et al., 2019).

3.2.2 Epistemology

Epistemology is concerned with identifying the nature of knowledge and the source of that knowledge. It also addresses the methods of collecting knowledge. (Saunders et al., 2009; Bryman and Bell, 2015). Epistemology is divided into two assumptions: positivism and interpretivism (Saunders et al., 2009).

A) **Positivism**: This assumption seeks to explore the causal relations concerning a given phenomenon. The researchers attempt to prove a theory and express knowledge about a research issue through quantitatively measurable models and hypothesis testing with the aim of improving their understanding of the phenomena (Blaikie, 2007). Positivism considers how
to generate a research strategy for collecting specific data. The researcher is expected to develop hypotheses using previous studies conducted by other researchers. These hypotheses are to be tested using quantitative methods and either approved or denied, thus driving improvement of the theory, which later may be examined again through more research (Burrell and Morgan, 1979; Saunders et al., 2009).

**B) Interpretivism:** This assumption is concerned with the idea that the researcher must understand the differences between humans as social actors. This highlights the difference between research conducted between researchers rather than on objects (Saunders et al., 2009). This study is based on the ontological orientation of objectivism because the researcher considered that reality is external and independent of the researcher's control. Finally, the epistemological approach is positivism. The focus of positivism is to explore the causal relations concerning a given phenomenon. In this study, the researcher attempts to develop hypotheses using previous studies to better understand the research topic based on the influence of firm ownership structure and investment on capital structure. These hypotheses will be tested using quantitatively measurable models.

### 3.3 Research Approach

Research has two main approaches: the deductive and the inductive (Saunders et al., 2009). Deductive research begins with a theory, then develops hypotheses, and finally designs the research to test these hypotheses empirically through collecting and analysing data. Inductive research, however, starts with collecting and analysing data to develop or generate a theory based on this analysis (Saunders et al., 2009; Bryman and Bell, 2015).
This study is based on the deductive research process. Therefore, it starts by reviewing the literature to more fully understand the research field, then the hypotheses and study regression model are developed based on this literature. Finally, quantitative data will be collected and analysed to test these hypotheses, verify the validity and reliability of the research framework, and assist with the replication of the study findings (Gill and Johnson, 2002).

3.4 Research Methodology

There are two main types of methodologies in research: quantitative and qualitative. Each philosophical approach that is adopted has its conducting methodological frameworks. Consequently, determining the right philosophical approach is essential to identifying the appropriate method based on the research goals.

To begin, **qualitative** research is the approach that aims to answer questions of how and why people act the way they do. It provides in-depth knowledge about human behaviour. Moreover, it is associated with the interpretivism philosophical approach and deals with understanding the researched phenomena based on the researcher's perceptions and intentions. Usually, this research design is associated with an inductive approach (Collis and Hussey, 2003; Saunders et al., 2009).

On the other hand, **quantitative** research is defined as describing phenomena by gathering numerical data to be analysed using different mathematical methods (Saunders et al., 2009). It is usually associated with the positivist philosophical approach and ordinarily involves collecting numerical data to measure the study variables and test the hypotheses so that conclusions will be made based on statistical estimations (Meyers et al. 2006). Usually, this research design is associated with a deductive approach (Burrell and Morgan, 1979; Saunders et al., 2009; Bryman and Bell, 2015).
When comparing the quantitative and qualitative approaches, one of the main advantages of a quantitative approach is that the researcher can generalize the outcomes generated by analysing the study data. This is because of the ability to use a representative sample, which differs from a qualitative approach. On the other hand, the main limitation of using a quantitative approach is that the researcher may not be able to examine the concepts in-depth in terms of how and why they occurred.

Therefore, to answer the research questions and meet the research objectives, this study adopts a quantitative approach. This method is suitable for collecting the necessary data and analysing the developed hypotheses having identified the significance of understanding reality objectively, which will lead to answering the research questions and filling the knowledge gap.

### 3.5 Research Design

Research design is the general plan and procedure used by the researcher to answer the research questions. The research design is categorized into three types: explanatory, descriptive, and exploratory (Saunders et al., 2009).

Explanatory studies "emphasise studying a situation or problem to explain the relationships between variables. to get a clearer view of the relationship" (Saunders et al., 2012, p. 172). The explanatory type of research is a deductive approach and relies considerably on statistical analysis to determine the outcome and approve or deny the research hypothesis (Meyers et al. 2006). Therefore, this study will adopt the explanatory type of research to justify the existence of relationships between the study variables.

This section also outlines the research plan by determining the study sample and time horizon, designing the empirical study model to test the research hypotheses, exploring the definition and
measurements of the study variables, and presenting the data collection and data analysis processes.

3.5.1 Hypotheses Development, Empirical Model, and Operational Definitions of The Variables

I. Hypotheses Development

Based on the review of previous studies and the identification of a literature gap mentioned in chapter 2, these study hypotheses were formed in order to achieve the primary study objectives and answer the research questions as follows.

Existing literature has attempted to analyse the relationship between ownership and capital structure, and two streams of literature have developed to examine it. The first line of research has examined the impact of firm-concentrated ownership and capital structure. The researchers defined concentrated ownership as the capital contribution percentage of blockholders who control 5 percent or more of the company's shares (McConnell and Servaes, 1995; Omet, 2006; Lee and Lee, 2014; Kharabsheh et al., 2019; Mbanyele, 2020) and others.

The ownership structure of Jordanian industrial companies negatively influences total liabilities to total assets but positively affects long-term debt to total assets (Omet, 2006). The researcher argued that blockholders force their company to acquire more long-term debt because they want to reduce the risk of losing control over the company. By acquiring more long-term debt, concentrated owners may be able to secure their control over the firm by reducing the likelihood of external financing being available to challengers seeking to acquire their shares. This would enable concentrated owners to maintain their dominant position, retain control, and maximize their own interests, even at the expense of the firm's value. In 12 Western European countries, (Santos et al.,
evaluated the relationship between concentrated ownership, ownership identity, and capital structure. The authors define ownership identities by the different types of owners, including family owners, institutional investors, blockholders, and the state. Controlling stockholders impacted firm leverage negatively. Farooq (2015) found that concentrated ownership for MENA companies affects capital structure negatively. He argued that as concentrated owners in MENA are mainly families avoiding bankruptcy, they avoid debt in their firm’s capital structure.

Moreover, previous studies have shown that ownership structure is a crucial determinant of a firm's capital structure. (Kharabsheh et al., 2019) found that controlling stockholders of Jordanian firms tended to employ more leverage at lower ownership rates to remain in control, which was also supported by (Bruslerie and Latrous, 2012) in France. (Mbanyele, 2020) revealed a negative effect of concentrated ownership on an Italian firm's leverage and suggested that investors prefer companies with high concentrated ownership because they protect stockholder wealth from insolvency risk by having less debt in the capital structure.

Another line of research focuses on classifying ownership according to the percentage of stocks held by different types of owners, such as institutions, managers, and governments. (Al Najjar and Taylor, 2008) found a negative relationship between institutional ownership and capital structure for Jordanian firms, arguing that optimal ownership and capital structure selection would lower agency expenses. (Wang et al., 2009) evaluated the influence of state ownership on the leverage level of Chinese manufacturing firms, while (Agyei and Owusu, 2014) suggested that corporate governance and ownership structure significantly affect Ghanaian firm leverage. (Sun et al., 2016) determined that different degrees of managerial share ownership affect a UK firm's capital structure differently, and (Khasawneh and Staytieh, 2017) found a negative impact of foreign and
in institutional ownership on Jordanian firms' leverage, which was higher for the short-term measurement of leverage and service sector firms. Conversely, concentrated and managerial ownership had a positive effect (Al-Thuneibat, 2018).

Moreover, institutional ownership has been found to be one of the primary capital structure determinants for Jordanian service firms (Gharaibeh and Al-Tahat, 2020), confirming (Ramadan's, 2016) findings for Jordanian firms. The authors argued that as the percentage of stocks owned by institutional owners increases the debt ratio decreases, indicating that institutional investors do not prefer using leverage to fund their investments. Thus, based on the discussions above, the first hypothesis that ownership structure has a direct impact on a firm's capital structure can be formulate as follows:

**H1: There is a significant relationship between concentrated ownership and a firm's capital structure.**

The relationship between a firm's capital structure and investment has been investigated in previous studies. These studies shed light on how a firm's capital structure affects its investment decisions, which can help managers make informed financing and investment decisions. Furthermore, the results of these studies provide useful insights for investors, creditors, and other stakeholders in evaluating a firm's financial health. However, it is equally important to examine the reverse relationship (i.e., the impact of investment on capital structure) to understand the dynamic nature of the relationship between financing and investment decisions.

Several empirical studies have investigated the impact of a firm's investment on its capital structure choices. For example, Long and Malitz (1985) found that investment patterns have a significant impact on leverage for US companies: firms that invested heavily in fixed assets had higher levels
of leverage while firms that invested heavily in research and development had lower levels of leverage. Rajan and Zingales (1995) determined that the market-to-book (MTB) ratio is negatively related to leverage, suggesting that firms with higher MTB ratios tend to have lower leverage. De Miguel and Pindado (2001) found a positive leverage impact on a firm's investment, which indicates the simultaneity of financing and investment decisions. Byoun (2011) demonstrated that investment opportunities play a critical role in determining a firm's capital structure decisions. Firms with more investment opportunities may choose to use less debt financing to maintain the financial flexibility necessary to pursue future investments. Zubair et al. (2020) identified a positive impact of leverage as the measurement of external financing on a firm's investments before, during, and after the financial crisis.

In conclusion, previous studies have shown that investment decisions play an important role in shaping a firm's capital structure. Thus, it is necessary to consider the impact of investment on a firm's capital structure when analysing capital structure decisions. These findings are critical to firms' decision-makers as they provide insights into the relationship between financing and investment decisions, which can help firms make informed decisions about their capital structure and investment opportunities. Therefore, based on the discussion above, the second hypothesis is proposed to investigate the direct impact of investment decisions on a firm's capital structure as follows:

**H2: There is a significant relationship between the investments and the firm's capital structure.**

The correlation between ownership structure and investment is supported by limited empirical evidence. However, these investigations have found both positive and negative results. This implies that the connection between ownership structure and investment decisions must be investigated further and the findings explained within its content (Al-Thuneibat, 2018).
Ownership structure influences investment and, subsequently, corporate value due to the benefits of private control accruing to the stockholders holding the largest proportion of shares (Cho, 1998). Numerous studies have found a positive relationship between a company's ownership structure and its investment: (López-Iturriaga and Rodríguez-Sanz, 2001) in Spanish firms, (David et al., 2006) in Japanese firms, (Gugler et al., 2008) in European and US companies, and (Jianhui and Yunyun, 2010) for Chinese firms. (Tleubayev et al., 2020) found that if a Russian company reduced its level of concentrated ownership to approximately 50 percent, new investments would be attracted, thereby positively impacting the company's performance.

Recent research (Vijayakumaran, 2021) has indicated that managerial ownership positively impacts Chinese firms' investment decisions. The authors recommends investigating the effects of other ownership types on investment, such as foreign ownership.

Moreover, several studies from Arab countries (Balbol and Orman, 2005) explored the potential determinants of investment decisions for only 83 companies from five Arabian markets and concluded that ownership structure affects investment significantly as one of the variables. This conclusion was also found by (Alfaraih et al., 2012) for companies listed on the Kuwait Stock Exchange in 2010. Additionally, (Tayem, 2015) indicated a positive reaction of Jordanian firms’ investments to market signals, and the corporation responded to market signals more effectively as the concentration of ownership increased.

On the other hand, many studies found a negative impact of a firm’s ownership structure on their investment decisions (Filatotchev et al., 2001), indicating that the largest stockholder’s negative influence on the firm's investment and performance is independent of the type of controlling stockholder. The authors stated that these findings are consistent with the fact that the rights of minor stockholders in Russia are not adequately protected and that the largest stockholders may
have strong incentives to turn resources into forms that give them an advantage over others. This outcome was also discovered by (Gedajlovic et al., 2005) for the largest Japanese corporations. Additionally, (Mykhayliv et al., 2013) suggested that ownership structure's negative impact on Ukrainian companies' investment is a result of the benefits of the largest stockholder controlling on account of minor stockholders. Most empirical studies have focused on the correlation between ownership structure and investment decisions in the US and other developed markets. Nonetheless, few studies have explored this relationship in the Jordanian market. Thus, investigating the relationship between ownership structure and investment decisions in Jordanian firms can be applied to nations with a comparable ownership structure and economic environment (Al-Thuneibat, 2018).

However, the interaction effect between concentrated ownership and investment on capital structure is an important area of research because ownership structure and investment decisions are both key determinants of a firm's capital structure. While previous studies have explored the relationship between ownership structure and investment decisions and between investment decisions and capital structure, the interaction effect between concentrated ownership and investment on capital structure has not been sufficiently explored in the existing literature. Concentrated ownership can affect investment decisions by providing a clear line of control and decision-making power to the largest shareholders. This control may enable the largest shareholders to influence the company's investment decisions, which can have a significant impact on a company's capital structure.

On the other hand, investment decisions may also affect a company's capital structure. For instance, a company that invests heavily in new projects may need to raise additional funds through debt or equity issuance, which can increase its leverage and affect its capital structure. Therefore,
it is crucial to investigate the interaction effect between concentrated ownership and investment decisions to understand how these factors may jointly influence a firm's capital structure.

Overall, investigating the interaction effect between concentrated ownership and investment on capital structure can provide a better understanding of how ownership structure and investment decisions may jointly impact a firm's financial performance and provide insights for managers and investors to make more effective decisions. Based on the discussion above, the third hypothesis is offered to study whether a firm’s ownership level reduces or enhances the relationship between leverage and firm investments:

**H3: There is a significant relationship between the interaction of concentrated ownership and investments on a firm's capital structure.**

Significant research has been conducted on ownership concentration (Habib and Jiang, 2015; Tee et al., 2017; Barroso et al., 2018). However, insufficient attention has been given to the identity of stockholders when analysing concentrated ownership. Failing to consider each type of shareholder separately while assessing the overall concentration of ownership may lead to misleading conclusions (Niemi, 2005). Prior studies, such as those conducted by (Lim et al., 2014) and (Alhababsah, 2019), have highlighted the importance of considering different categories of shareholders when examining a firm's ownership structure. However, investigating the interaction between concentrated ownership and investments while accounting for the various identities of owners may offer valuable insights to firms’ management. Beyond the effects of ownership concentration, the identities of companies’ owners affect business’ performance. Firms differ not only in terms of their growth, profit objectives, and capital structure but also the type of investors who have ownership and control over them. The behaviour and objectives of these investors may
vary significantly, which can have a significant impact on how a firm is managed and how it generates value.

(Thomsen and Pedersen, 2000) argued that various types of shareholders pursue different strategies for generating value for a firm. This suggests that understanding the ownership structure of a company is crucial for knowing how the company operates and performs. However, this issue is often overlooked as many studies tend to focus only on the overall concentration of ownership without considering the identities of the different types of shareholders. Therefore, it is important to account for the type of owner when examining the ownership structure of a company. Local and non-local investors may have different incentives and investment strategies, which can affect how a company is run and how value is generated. By considering the identity of the owners, decision-makers can gain a better understanding of the factors that influence a firm's performance and make more informed decisions. Based on the discussions above, the following sub-hypothesis is proposed to investigate whether the identity of the concentrated ownership (i.e., local, Arab, and foreign owners) as classified in (Rousan and Al-Khour, 2005) affects the relationship between leverage and firm investments:

**H3.a:** There is a significant relationship between the interaction of local-concentrated ownership and investments on a firm's capital structure.

**H3.b:** There is a significant relationship between the interaction of Arab-concentrated ownership and investments on a firm’s capital structure.

**H3.c:** There is a positive relationship between the interaction of foreign-concentrated ownership and investments on a firm’s capital structure.
Numerous researchers have explored the impact of a company's performance on its capital structure, and the results of these studies were both negative and positive. (Rajan and Zingales, 1995; Booth et al., 2001; Flannery and Ragan, 2006; Al Najjar and Taylor, 2008; Chang and Dasgupta, 2009; Agyei and Owusu, 2014; Jeleel and Olayiwola, 2017; Nguyen et al., 2019) and others found that firm performance has a negative impact on its leverage. These findings are consistent with the pecking order theory, which prefers using the firm's internal source of financing over issuing external sources (debt and equity) to fund its activities. Higher performance provides larger internal cash flow; hence, profitable firms should have a lower leverage ratio.

Recently, (Hatane et al., 2020) advised Indonesian firm decision-makers to minimize the degree of debt in their company’s capital structure in order to improve performance. This result was also found by (Murtaza et al., 2020), who examined the relationship in Pakistan and (Nguyen and Nguyen, 2020) in Vietnam.

Conversely, (Omet, 2006; Al-Thuneibat, 2018) and others, found a positive relationship between a company's performance and its leverage, arguing that more profitable companies have lower bankruptcy and distress costs. Consequently, firms with high profitability rely more on debt financing (Simerly and Li, 2000; Weill, 2008; Tripathy and Shaik, 2020). Based on the impact of firm performance on capital structure and the encouragement of the mixed results of the previously mentioned studies, the fourth hypothesis is formed as follows:

**H4: There is a significant relationship between a firm's capital structure and its performance.**

Previous research suggests that the size of a company plays a crucial role in determining the impact of its capital structure. Several studies have found a positive relationship between firm size and leverage. Harris and Raviv (1991), Rajan and Zingales (1995), Ozkan (2001), Hovakimian et al. (2004), Omet (2006), Antoniou et al. (2008), Wang et al. (2009), Agyei and Owusu (2014), Trang
et al. (2016), and Nguyen et al. (2019) have all documented this correlation. Therefore, it is evident that the relationship between a firm's size and its capital structure is a crucial factor that needs to be considered while making financial decisions. The reason for investigating firm size is that large firms are more diverse and have a lower risk of bankruptcy, and large firms may have a lower cost of borrowing (Titman and Wessels, 1988). As a result, larger firms may have an advantage over smaller firms in terms of greater access to debt and borrowing funds under more effective terms, which is consistent with trade-off theory (Nguyen et al., 2019). The impact of a firm's size on its capital structure, on the other hand, encourages researchers to explore the relationship between a firm's capital structure and its size. Finally, based on this discussion of the role of firm size in conducting capital structure mentioned in the literature, the fifth hypothesis is proposed as follows:

**H5: There is a significant relationship between a firm's capital structure and its size.**

II. Model Design

Based on previous empirical studies, including (Rajan and Zingales, 1995; Booth et al., 2001; Chen, 2004; Omet, 2006; and Degryse et al., 2012), models will be estimated in order to achieve the study objectives. The study models will be tested as follows:

**First model:** This empirical model aims to analyse the impact of investments and total concentrated ownership regardless of the ownership component to investigate the direct effect among the study variables:

\[
CS_{it} = \alpha + \beta_1 \text{Total Own5\%}_{it} + \beta_2 \text{Inv}_{it} + \beta_3 \text{ROA}_{it} + \beta_4 \text{Size}_{it} + \varepsilon_{it}
\]

**Where:**

\(CS_{it}\) is company i's capital structure in period t, which can be measured by total debt to total assets, as measured by (Le and Phan, 2017; Najjar 2008).
**Total Own5%**<sub>it</sub> is company i’s total concentrated ownership measured as the sum of the proportion of shares held by those who own 5 percent or more of the company’s shares in period t as measured by (Chen 2003; Omet, 2006; and Tayem 2015).

**Inv**<sub>it</sub> is company i’s investments measured as a net fixed investment to fixed assets in period t as measured by (Omet et al., 2015; Vijayakumaran, 2021).

**ROA**<sub>it</sub> is denoted for company i’s performance, which is calculated as the net income on the total assets in period t.

**Size**<sub>it</sub> is the company i’s logarithm of the total asset in period t.

**Second Model:** This empirical model aims to analyse the impact of the interaction between investments and total concentrated ownership on capital structure:

\[ CS_{it} = \alpha + \beta_1 \text{Total Own 5\%}_{it} + \beta_2 \text{Inv}_{it} + \beta_3 (\text{Inv}_{it} * \text{Total Own 5\%}_{it}) + \beta_4 \text{ROA}_{it} + \beta_5 \text{Size}_{it} + \epsilon_{it} \]

Where:

- **Inv**<sub>it</sub> * **Total Own 5%**<sub>it</sub> is the cross product of the total concentrated ownership and investment variables for company i’s in period t to test the interaction of these variables. This method of using the effect of the interaction between independent variables on the dependent variable is applied in the previous literature, such as (Lee and Lee, 2014; Gazdar and Cherif, 2015).

**Third Model:** This empirical model aims to analyse the impact of the interaction between investments and concentrated local ownership on capital structure to investigate the impact of the concentrated ownership identity on the role of the interaction between ownership structure and investment:

\[ CS_{it} = \alpha + \beta_1 \text{LO Own5\%}_{it} + \beta_2 \text{Inv}_{it} + \beta_3 (\text{Inv}_{it} * \text{LO Own5\%}_{it}) + \beta_4 \text{ROA}_{it} + \beta_5 \text{Size}_{it} + \epsilon_{it} \]
Where:

$LO_{Own5\% t}$ is company i’s concentrated local ownership measured as the sum of the proportion of shares held by Jordanian owners who own 5 percent or more of the company's shares in period t.

$Inv_{it} \times LO_{Own5\% t}$ is the cross product of the local concentrated ownership and investment variables for company i’s in period t.

**Fourth Model**: This empirical model aims to analyse the impact of the interaction between investments and Arab-concentrated ownership on capital structure to investigate the impact of the concentrated ownership identity on the role of the interaction between ownership structure and investment:

$CS_{it} = \alpha + \beta_1 Arab_{Own5\% t} + \beta_2 Inv_{it} + \beta_3 (Inv_{it} \times Arab_{Own5\% t}) + \beta_4 ROA_{it} + \beta_5 Size_{it} + \epsilon_{it}$

Where:

$Arab_{Own5\% t}$ is company i’s Arab-concentrated ownership measured as the sum of the proportion of shares held by Arab owners who own 5 percent or more of the company's shares in period t.

$Inv_{it} \times Arab_{Own5\% t}$ is the cross product of the Arab-concentrated ownership and investment variables for company i’s in period t.

**Fifth Model**: This empirical model aims to analyse the impact of the interaction between investments and foreign-concentrated ownership on capital structure to investigate the impact of concentrated ownership identity on the role of the interaction between ownership structure and investment:

$CS_{it} = \alpha + \beta_1 Foreign_{Own5\% t} + \beta_2 Inv_{it} + \beta_3 (Inv_{it} \times Foreign_{Own5\% t}) + \beta_4 ROA_{it} + \beta_5 Size_{it} + \epsilon_{it}$
Where:

*Foreign Own5%*<sub>it</sub> is company i's foreign-concentrated ownership measured as the sum of the proportion of shares held by foreign owners who own 5 percent or more of the company's shares in period t.

*Inv<sub>it</sub> * *Foreign Own5%*<sub>it</sub> is the cross product of the foreign-concentrated ownership and investment variables for company i’s in period t.

**III. The Operational Definition of the Study Variables**

This section displays definitions of all the variables in the study. The discussion begins with the dependent variable, capital structure, and then the independent variables, including ownership structure and investment. Additionally, it defines the control variables and presents information about the measures of all the variables.

**A. Dependent variable:**

**Capital Structure**

Capital structure refers to the way a company finances its operations and investments through a combination of equity, debt, and other securities. In 1959, Schwartz analysed the theoretical definition of capital structure, starting with a restricted definition used by many researchers that only considers securities sources of funds, such as stocks and bonds. He expanded the definition to include all types of external debt, such as bank loans and borrowing, in addition to bonds and stocks. The capital structure is defined as the total liabilities and ownership equity side of a company's balance sheet.
The total-debt-to-total-assets ratio has been chosen as the proxy for capital structure. This ratio measures the proportion of a company's assets that are financed by debt. It is calculated by dividing the total debt of the company by its total assets.

The choice of this particular proxy is supported by previous research including the studies of (Omet, 2006), (Al Najjar and Taylor, 2008), (Omet et al., 2015), (Gharaibeh, 2015), (Al-Thuneibat, 2018), and others. These studies used the total-debt-to-total-assets ratio as a proxy for capital structure in their analyses of the relationship between capital structure and various firm-level variables.

Using this ratio as a proxy for capital structure has several advantages. First, it provides a simple and straightforward measure of the degree to which a company relies on debt financing. Second, it is widely used in previous studies, which facilitates comparisons across studies. Finally, it captures the full range of debt obligations that a company may have, including short-term and long-term debt, and it is able to provide a comprehensive measure of a firm's financing choices. Overall, the use of total-debt-to-total-assets ratio as a proxy for capital structure in the main models of this study is well-supported by prior research and provides a useful measure of the extent to which a company relies on debt financing to fund its operations and growth.

Capital structure measurement consists of two parts: long-term and short term. The long-term part of the debt is measured by the ratio of long-term debt to total assets while the short-term part of the debt is measured by the ratio of current liabilities to total asset. It can be argued that the dependence of Jordanian companies on long-term debt is limited. This can be concluded due to the limited demand for bonds in Jordan (Omet 2006). As a result, this study will examine the long-term and short-term components of capital in the robustness analysis.
B. Independent variables:

Ownership

Ownership is defined as "the source of power that can be used to either support or oppose management depending on how it is concentrated and used" (Salancik and Pfeffer, 1980: 655). Additionally, ownership concentration establishes a different agency perspective where the conflict is between two categories of owners: minority and majority (concentrated) stockholders. (Dharwadkar et al., 2000). The main issue arising from this conflict is the exclusion of the minority owner's value (Bao et al., 1997).

However, previous studies have measured ownership using different proxies. Jordanian firms are distinguished by a concentrated ownership structure with the largest stockholders exercising control over the company. Following (McConnell and Servaes, 1995; Chen, 2003; Omet, 2006; Tayem, 2015) and others, this study will be using concentrated ownership as a proxy of ownership measured by the sum of the proportion of shares held by shareholders who own 5 percent or more of the company's shares. However, it should be noted that different countries hold different cut-off criteria for large stockholders (Iskandarani, 2015). Moreover, shareholders are corporations' owners. These investors have invested in the company by purchasing stock shares. The percentage of a firm's stock that a person or institution owns influences how much of the company they can claim as their own. The ownership of a company is thus divided into two groups: local ownership, which refers to the proportion of shares in a company that is owned by individuals or entities based within the country in which the company operates, and foreign ownership, which typically occurs when the shares of a domestic company are owned by individuals or companies from outside the country (Skripak et al., 2018). Most of these non-Jordanian owners are either Arab owners
(individuals or corporations from another Arab country) or non-Arab owners (those from beyond the Arab world).

In order to investigate the potential role of the interaction between ownership and investments more deeply, this study will consider the component of concentrated ownership where local, Arab, and foreign ownership is included in separated models to determine whether ownership identity reduces or enhances the impact of the interaction on a firm's capital structure.

**Investment**

The investment decision is defined as "the decision taken by the Financial managers concerning both the mix and type of assets held by the firm" (Gitman, 2009: 13).

More specifically, firm investments refer to the expenditures made by a company with the aim of acquiring or improving long-term assets such as property, plant, and equipment as well as investments in research and development, patents, and trademarks. These investments are typically made with the goal of generating future income or other long-term benefits for the firm (Brealey, et. al., 2017).

The ratio of net fixed investment to fixed assets is commonly used as a measure to evaluate a company's investment. This ratio provides insight into the extent to which a company is investing in its long-term growth and development as opposed to relying solely on short-term assets to generate revenue. For instance, a company with a high ratio of net long-term investment to fixed assets is likely prioritizing long-term growth and may be more willing to take on debt to finance these investments. On the other hand, a company with a low ratio may be more focused on short-term profitability and less willing to take on additional debt.
Because company investment is one of the main indicators of economic growth and wealth, the Jordanian market was mainly created to promote savings and guide them to investment to assist the development of the Jordanian economy (Omet et al., 2015). This study will use net fixed investment to fixed assets as a measurement of investment decisions following (Omet et al., 2015; Vijayakumaran, 2021) and others. This measure is preferred because it provides a clear understanding of a company's investment activities, particularly its long-term investment in fixed assets. It helps to identify the proportion of a company's total assets that are committed to long-term investments, which can be indicative of the company's future growth potential. Moreover, this measure is useful for comparing investment activities across firms and industries as it standardizes the calculation by using a fixed asset base.

C. Control variables

This study will provide control variables to address the several factors that may also affect capital structure. (Harris and Raviv, 1991; Al Najjar and Taylor, 2008; Wang et al., 2009; Agyei and Owusu, 2014) and others proposed that a company's size may monitor the impact of capital structure. Therefore, following these studies, the researcher will use the company's total assets log as a proxy for company size.

Many researchers also indicate that there may be a relationship between a firm’s capital structure and performance through industrial effects (Morck et al., 1988). Thus, to evaluate such a probability, this study will include company performance as a control variable. According to the previous literature, the most common performance measurements are return on assets (ROA), as in (Omet, 2006; Agyei and Owusu, 2014; Al-Thuneibat, 2018) and others, as well as the return on equity (ROE), as in (Al Najjar and Taylor, 2008). As a proxy of firm performance, this study
will use the ROA in the main models and the ROE in the robustness analysis to choose the most suitable measure and determine a more effective model fit with a significant coefficient.

**IV. Robustness and Further Analysis**

This study will be using the following robustness tests to confirm the outcome of the main model’s analyses. **First**, it will examine the component of the capital structure measurement, which consists of two parts: long term as measured by the ratio of long-term debt to total assets (as measured by Hegde et al., 2020) and short term as measured by the ratio of current liabilities to total assets (as measured by Khasawneh and Staytieh, 2017). **Second**, it will use the return on equity (ROE) as a second proxy of firm performance to choose the most suitable measurement and a more effective model fit.

**3.5.2 Sample Selection and Data Collection Criteria**

Recent studies, such as (Akbar et al., 2013; Poon et al., 2013) and others, which have investigated the effect of the global financial crisis on the economy define the crisis period as 2007–2009 and the post-crisis period as starting from 2010. This study will follow this definition of the post-crisis period and examine the years 2010–2019.

The study population is all Jordanian companies listed on the Amman Stock Exchange for the industrial, service, and financial sectors. The population contains 220 firms according to the company guide of 2019, which was published by the Amman stock exchange. Moreover, the study sample will be the companies in the industrial and service sectors during the period of 2010–2019. However, this study requires various screening criteria for the population before conducting the empirical tests:

**First**, financial companies will be excluded from the study sample due to their differentiation in the nature of investments and the financial data from non-financial companies (Tayem, 2015).
Second, this study excludes companies with missing data for the study's variables.

Third, the firm must be listed on the Amman Stock Exchange over the period of 2010–2019. According to the above criteria, 111 firms will be considered as the study sample. The sample represents almost 51 percent of the population. Table 3.1 shows the classification of the final sample company sector.

<table>
<thead>
<tr>
<th>Main Industry</th>
<th>Number of Firms</th>
<th>Percentage from the final study sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td>56</td>
<td>50.5%</td>
</tr>
<tr>
<td>Service</td>
<td>55</td>
<td>49.5%</td>
</tr>
<tr>
<td>Total</td>
<td>111</td>
<td>100%</td>
</tr>
</tbody>
</table>

As mentioned above, the financial sector companies were excluded from the study sample, which indicates that the sample contains only industrial and services companies. The reasons behind selecting these two industries are that the industrial sector in Jordan is regarded as the most economically significant sector in terms of its contribution to the national economy. This sector is comprised of 11 subsectors that offer substantial investment prospects and contributed 24.45 percent to the country's GDP in 2019 (Amman Stock Exchange Annual Report, 2019: p.42). Moreover, according to the Department of Statistics in Jordan's report on employment in 2021, the industrial sector employed about 245,000 workers in the second quarter of 2021, making it the second-largest employer after the services sector. This highlights the significant role that the industrial sector plays in providing job opportunities to Jordanians.
Additionally, many of the goods produced in the industrial sector are consumed by the services sector, such as office equipment and machinery, while the agricultural sector also relies on the industrial sector for equipment and inputs like fertilizers and pesticides. This interdependence between sectors highlights the importance of the industrial sector in supporting the overall growth and development of the Jordanian economy as well as its level of technical expertise. Furthermore, according to the United Nations Industrial Development Organization (UNIDO, 2019), Jordan is considered a regional leader in the areas of information and communications technology, electrical machinery, and metalworking, among others. This demonstrates the importance of the industrial sector as a source of innovation and knowledge transfer, which can ultimately contribute to the country's economic growth and development. Moreover, it is one of the vital economic sectors that investors find attractive since Jordan offers specific locational advantages relevant to investments in the industrial sector. For instance, air transit, railroads, and highway infrastructure of greater quality facilitate trade with countries in the Middle East region and globally (Industry sector profile, 2017: p.3). Furthermore, the service sector includes companies that are responsible for the country's infrastructure and thus have a wide range of characteristics, such as large fixed capital, which enhances access to credit due to the greater availability of collateral. According to the Amman Stock Exchange (ASE) website, there are 55 companies in the service sector out of 220 listed companies, making it a key part of the ASE. It is also worth noting that, according to the Central Bank of Jordan's annual report (2019), the service sector continued to account for the largest contribution to the GDP growth rate, representing 60.49 percent of Jordan's GDP. The same report shows that the service industry employs most of Jordan's labour force, with the majority working in transportation and education. As a result, this study aims to shed light on what drives
the capital structure in Jordanian service sector enterprises and identify what elements must be considered when creating the capital structure in this sector along with the industrial sector.

In each year, the financial data was manually collected for each listed industrial and service company in that year during the study period from the companies' guides published by the ASE from the firm’s financial statements. The ownership data is extracted from different sources, and the percentage of shares held by stockholders who own 5 percent or more are hand collected from the annual reports of all Jordanian companies listed on the ASE. Whereas data regarding the breakdown of ownership type between the percentage of shares each held by local, Arab, and foreign stockholders who own 5 percent or more is extracted from Securities Depository Center (SDC) database.

3.6 Data Analysis

This section will explore the potential econometrics problems and how they will be deducted and addressed if they occur. Moreover, the analytical procedures used in this study will be presented. Finally, this section discusses the methods of estimation and the analytical strategies that will be used in this study.

3.6.1 Econometric Problems

This section discusses the potential econometric problems established by previous studies and the statistical measures this study will be using to address them.

1. Multicollinearity

Multicollinearity is a significant econometric problem that researchers need to consider when assessing a multiple regression model. According to (Field, 2012), multicollinearity refers to "a situation in which two or more variables are very closely linearly linked" (p.790). In other words,
if there is a high correlation between independent variables, it will be difficult to interpret the regression coefficients. Additionally, it is essential to consider this problem when analysing the data.

When multicollinearity occurs, it implies that there is an intercorrelation between the model determinants, which causes unreliability in the coefficient and results in difficulty evaluating the relative value of independent variables due to the inflation in standard errors. As a result, in this study, two standard techniques will be used to detect the problem of multicollinearity. First, the variance inflation factors (VIF) test will be conducted and the tolerance factor and VIF of each regression model will be computed. This is defined as

$$\text{VIF} = \frac{1}{1-R^2}$$

where tolerance =1- $R^2$, and $R^2$ is the coefficient of determination.

The problem of multicollinearity in the model will exist in cases where the tolerance factor is close to zero and the VIF is more than 10. The second technique is the Spearman correlation, which indicates that multicollinearity exists if the correlation coefficient between the variables is more than 0.80. As a result, both the VIF test and the Spearman correlation tests will be conducted to determine whether there is an intercorrelation between the study's independent variables.

2. Serial correlation

Serial correlation is an econometrics issue defined as the "correlation between two different series of observations" (Gujarati 2003, p. 443). The estimation results will be affected by the existence of serial correlation. Accordingly, the results from estimation could be misleading (Gujarati 2003). To detect this problem, this study will use the Durbin-Watson test.
3. Heteroscedasticity

The critical assumption of the least square (OLS) method is that the error term in the model has equal variances across all observations (homoscedasticity). However, if this is not the case, the problem of heteroscedasticity occurs, which is an unequal variance of the error term. When this problem is present, the OLS estimators are no longer efficient, and “t” and “f” statistics will not be reliable. As a result, the conclusions drawn by the analysis could be misleading (Gujarati 2003). There are several ways to deduct this problem, both graphically and numerically. This study will apply the widely employed Breusch-Pagan and White's tests to detect a possible heteroscedasticity problem.

4. Outliers

Another econometrics issue that could reduce the statistical model significantly are outliers (Gujarati 2003), which are defined by extremely high or extremely low values that are numerically distant from the entire data set. There are different ways to deduct outlier values. Consistent with (Stehlik-Barry, and Babinec, 2017), this study will identify an outlier for each variable if the value is greater than (3rd quartile+1.5*interquartile range) or less than (1st quartile–1.5*interquartile range).

Outliers can affect the values of the regression coefficients. Therefore, the researcher should deal with outliers before analysing the regression model (Field, 2005). There are different ways to address outlier values. The first is trimming or removing the extreme values. However, this method may affect the analysis results by increasing the missing data. The second is Winsorisation. In this method, the values higher than or lower than a specific point are replaced by a new value, such as the mean or the median of the data set. This study will substitute the outlier's values with the mean of each variable to mitigate the influence of outliers.
3.6.2 Analytical Procedures

This section presents the analytical procedures that will be used in this study. First, the models will be estimated using the panel data method. It should be noted that the benefit of using panel data instead of time series or cross-sectional analysis is that it usually provides a vast number of observations. These are created by combining time-series observations across several cross-sectional units that raise the degree of freedom and thus improve the efficiency of empirical estimates (Baltagi, 2012). In the following two sections, the regression model assumptions and the stages of establishing the regression model will be discussed.

Before running the study regression models, several tests will be used to evaluate the compatibility of the study data with the regression model assumptions. According to Gujarati (2004), these assumptions are normality, linearity, homoscedasticity, and independence of error terms. This part will explain these assumptions and present the tests that will be applied in this study. First, normality is addressed. This assumption requires that the distribution of the study sample is normal. Two tests, skewness and kurtosis, will be used to assess the normality of the study variables. According to (Gujarati, 2003), the variables data will be considered normally distributed if the value of skewness is zero and the value of kurtosis is 3.

Second, linearity is considered. This assumption requires that the relationship between the model-dependent variable (X) and independent variables (Y) should be linear. Linearity will be tested graphically and numerically using SPSS. Third, homoscedasticity is assessed. Under this assumption, the error term in the model should have equal variances across all observations; if not, the problem of heteroscedasticity, which is an unequal variance of the error term, exists. Breusch-Pagan and White's tests will be used to assess this assumption. Fourth, the independence of error terms is addressed. Under this assumption, the error terms in the model should be independent of
each other; if not, a serial correlation exists. Durbin-Watson and correlogram tests will be used to assess this assumption. These assumptions will be examined to address any violation using the appropriate statistical techniques to avoid misleading regression model findings.

After assessing the study data compatibility with the previous assumptions, this study establishes a regression model to test whether the research hypotheses will be ready to run in the following steps.

The first step of the regression procedure is to separately examine the direct effect of ownership structure and investment on firm capital structure to answer the first two research questions. For the next step, the interaction between the different components of ownership and investment will be tested. To the best of the author’s knowledge, this study is the first to examine this interaction’s impact on company capital structure. Two methods will establish this analysis.

The first method is multiplying the different components of the ownership variable and investment variable \((Inv_{it} \times Own_{it})\). If the result of the interaction variable is statistically significant, the interaction effect is verified, and the level of ownership might enhance or reduce the relationship between a firm’s capital structure and their investment. As such, the third research question will be answered. This method has been applied in previous literature, such as (Lee and Lee, 2014; Gazdar and Cherif, 2015).

The second method is using the Wald test. This is a statistical test used to assess the significance of the explanatory variables of the study model by assessing the parameters associated with these variables. First, it estimates the study variables using OLS, and second, it runs the Wald coefficient restriction. Finally, the main hypothesis is tested for the following function:

\[
CS = f (Own, Inv).
\]

The null hypothesis is \(C(2)=0, C(3)=0\) where
C(2) is donated to the coefficient of ownership, and C(3) is donated to the coefficient of investment.

Thus, if the F-statistic and Chi-square for the Wald test are significant, then it can be concluded that the parameters associated with the variables are not zero, so these variables will add something to the model (Kyngäês and Rissanen, 2001). As a result, the investment and ownership variables are jointly important to the capital structure.

In the third step, the relationship between the control variables (size and performance) and the dependent variable (capital structure) will be tested to answer the fourth research question.

**3.6.3 Methods of Estimation**

The models of this study will be estimated using the panel data method. There are three types of methods that have been used to analyse the panel data set in most of previous studies: pooled ordinary least squares, fixed effect, and random effect (Gujarati, 2003).

**Pooled ordinary least squares (OLS)**

The pooled OLS is the most basic model for analysing panel data. This approach pools all the cross-sectional data over a sequence of years. The main benefit of pooling the data is increasing the study sample size. On the other hand, this approach ignores the existence of unobservable variables that could cause bias. According to (Gujarati, 2003), unobservable variables are defined as variables that are not included in the study model and which affect the dependent variable and its correlation to the independent variables. Consequently, the pooled OLS is not a common approach in dealing with panel data, so alternative estimators for panel data called fixed effect and random effect are used in this study.
Fixed Effects Versus Random Effects Approach

The fixed effect model is an approach that treats the unobserved individual effects of the dependent variable to be correlated with independent variables in the model. Thus, this technique removes the unobserved effect before estimates by controlling for the variation caused by the unobserved variables. This process helps to remove the bias caused by these variables that are correlated with the dependent variable of the model. The fixed effect model is designed to address causality change within the study entity, so the study conclusions can generalize within the study context (Greene, 2008).

The random effect model assumes that the unobserved individual effects are random and not correlated with the independent variables in the model. Thus, the model statically depends on the observed variables in the study sample. Unlike the fixed effect model, which is based on the random effect model, conclusions can be generalized outside the study sample (Greene, 2008).

The Hausman specification test (1978) will be used to choose between the fixed and random effect approaches statistically. Based on (Green, 2008), the Hausman test is used to determine whether there is a correlation between model-dependent variables and unique errors. As such, the results of this test can be interpreted as follows:

- If the p-value of the test is less than 0.05, the fixed-effect model will be used.
- If the p-value of the test is more than 0.05, the random effect model will be used.

This study will run the Hausman test to decide between fixed or random effects approaches.
3.7 Summary

The main goal of this study is to examine empirically whether the interaction between ownership structure and investment affects a firm’s capital structure by using Jordan as an example. To achieve this goal, the researcher investigates the effect of ownership structure and firm investments on capital structure separately and jointly. The study then closely examines the interaction between the identity of the concentrated owner (i.e., local, Arab, foreign) and investment. Furthermore, the researcher investigates the effect of firm size and performance on capital structure to capture differences in competitive conditions.

By identifying the importance of understanding reality objectively, this study adopts a positivist philosophical assumption. Furthermore, this study implements a deductive approach to understand the relevance and effect of the researched variables and their relationship significance. Based on the purpose of this research, the methodological position of this study is to use quantitative methods involving statistical analysis of the study variables. Furthermore, the empirical study model will be a multiple regression model to test the research hypotheses, and the data collection method will be annual financial reports.

This chapter also presented the study’s analytical procedures, including potential econometric problems and the statistical measures it will use to deduct these problems. Finally, the analytical strategies and estimation methods that will be used in this study were also explored.
CHAPTER FOUR: EMPIRICAL ANALYSIS AND RESULTS
4.1 Introduction

The purpose of this chapter is to report empirical analysis results of the effect of firm concentrated ownership, investments, and the interaction between the overall concentrated ownership and its identity with investments, as long as the control variables (firm performance, firm size) on capital structure by using Jordan as an example. This chapter contains two main sections. The first section is the preliminary analysis, which discloses the descriptive statistics calculated and discussed for each variable. The correlation matrix is applied, and the correlation between variables is discussed. Subsequently, potential econometric problems and the statistical measures the study will be using to deduct these problems are presented. Finally, the tests applied to the study data compatibility with the regression model assumptions are described before running the study regression models.

The second section is the econometrics analysis results, which report the results of the pooled ordinary least squares (OLS), Hausman and Lagrange multiplier tests, fixed effect approach, and granger causality.

Furthermore, the interaction results will be discussed using the interaction term and the Wald test.

Finally, this chapter will display the results of robustness and further analysis. The EViews and SPSS are the statistical packages used to perform the statistical analysis.

4.2 Preliminary Analysis

4.2.1 Descriptive Statistics

This section presents and discusses the descriptive statistics for the study variables. Table 4.1 uses mean, median, and standard deviation as well as minimum and maximum values over the period of 2010–2019 to describe the study data. The number of observations for all variables is 16650 representing 111 companies:
Table 4.1: Descriptive Statistics of the Whole Sample

Table 4.1 presents the descriptive statistics of means, medians, standard deviations, minimum, and maximum for Jordanian companies during the sample period from 2010 to–2019 where:

TD/TA is the ratio of Total Liabilities to Total Asset.
LD/TA is the ratio of Long-term Debt to Total Asset.
CD/TA is the ratio of Current Liabilities to Total Asset.
Total Own 5% is the Total Ownership percentage of owners who own more than 5 percent of the company's shares.
LO own 5% is Ownership percentage of Local Owners who own more than 5 percent of the company's shares.
Arab own 5% is Ownership percentage of Arab Owners who own more than 5 percent of the company's shares.
Foreign own 5% is Ownership percentage of Foreign Owners who own more than 5 percent of the company's shares.
INV is the ratio of Net fixed Investment to Fixed assets.
Size is the Logarithm of the Total Asset.
ROA is the ratio of Net income on the Total assets.
ROE is the ratio of Net income on the Total equity

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD/TA</td>
<td>0.3525</td>
<td>0.308</td>
<td>0.237</td>
<td>0.0002</td>
<td>0.9248</td>
</tr>
<tr>
<td>LD/TA</td>
<td>0.0327</td>
<td>0.003</td>
<td>0.046</td>
<td>0.0000</td>
<td>0.1905</td>
</tr>
<tr>
<td>CD/TA</td>
<td>0.2560</td>
<td>0.240</td>
<td>0.162</td>
<td>0.0002</td>
<td>0.7343</td>
</tr>
<tr>
<td>Total Own 5%</td>
<td>0.6362</td>
<td>0.671</td>
<td>0.244</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>LO own 5%</td>
<td>0.4891</td>
<td>0.483</td>
<td>0.288</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>Arab own 5%</td>
<td>0.0951</td>
<td>0.000</td>
<td>0.198</td>
<td>0.0000</td>
<td>0.9832</td>
</tr>
<tr>
<td>Foreign own 5%</td>
<td>0.0519</td>
<td>0.000</td>
<td>0.152</td>
<td>0.0000</td>
<td>0.9871</td>
</tr>
<tr>
<td>INV</td>
<td>0.1252</td>
<td>0.031</td>
<td>0.277</td>
<td>0.0000</td>
<td>1.5813</td>
</tr>
<tr>
<td>Size</td>
<td>7.3917</td>
<td>7.416</td>
<td>0.569</td>
<td>5.9178</td>
<td>8.9017</td>
</tr>
<tr>
<td>ROA</td>
<td>0.0168</td>
<td>0.019</td>
<td>0.061</td>
<td>-0.1547</td>
<td>0.1806</td>
</tr>
<tr>
<td>ROE</td>
<td>0.0301</td>
<td>0.032</td>
<td>0.091</td>
<td>-0.2449</td>
<td>0.2907</td>
</tr>
</tbody>
</table>

Based on Table 4.1, the researcher obtains the following points. First, the average of the measurement of capital structure (the ratio of total liabilities to total asset) equals 35 percent, which is relatively low. Moreover, the median of this variable is 30 percent, which suggests that the total liabilities to the total asset have not changed significantly during the study period (2010–2019), as shown in Figure 4.1. In conclusion, Jordanian companies rely less on debt as an external source of financing in their capital structure. These figures are consistent with previous studies of the Jordanian market, such as (Tayem, 2015; Al Najjar and Taylor, 2008) and others.
Second, the measurement of capital structure (the ratio of total liabilities to total asset) consists of two parts, long-term and short-term. The average of the long-term part of the debt (the ratio of long-term debt to total asset) equals 3 percent while the average of the short-term part of the debt (the ratio of current liabilities to total asset) equals 25 percent. In conclusion, most of the debt of Jordanian Companies is short-term. These figures are consistent with previous studies on the Jordanian market, such as (Al-Fayoumi et al., 2010; Alkhawaldeh, 2012).

Third, the stockholders who own 5 percent or more of the company's shares (blockholders) own a mean of 64 percent of the shares, where, on average, 77 percent are owned by local (Jordanian) owners, and the rest are owned by Arab owners (15 percent) and foreign owners (8 percent), as shown in Figure 4.2.
Fourth, the mean and median for the investment measurement (the ratio of net fixed investment to fixed assets) are 12.52 percent and 3 percent, respectively. The high difference between these numbers indicates that there is a variation in investments between the study sample companies. By reviewing the annual mean values of investment, it can be observed that the main decrease in mean values occurred between 2014 (when the mean is 15 percent) and 2017 (when the mean is 8 percent). This could be relevant to the decline in economic growth noticed during the same period; that is, the mean values of the annual GDP growth rates in 2014 and 2017 were 3 percent and 2 percent, respectively, as shown in Figure 4.3.
Fifth, concerning control variables, firm size has a mean and median of 7.393 and 7.416, respectively. Notably, the small difference between these numbers indicates that the variation of size between the study sample companies is low, as shown in Figure 4.4.

**Figure 4.4: Average Values of Log of Total Assets During the Study Period (2010–2019)**
Finally, return on assets (ROA), used as the main proxy for a firm’s performance, has a mean of 1.7 percent. Moreover, it has a minimum and maximum value of -15.47 percent and 18.06 percent, respectively. The disparity between the minimum and the maximum values for these two measurements of performance is due to the high volatility in companies’ earnings throughout the study period, as shown in Figure 4.5. The second proxy of firm performance, return on equity (ROE), has a mean of 3 percent and a minimum and maximum value of -24.49 percent and 29.07 percent, respectively.

Figure 4.5: Average values of ROA during the study period (2010–2019)

<table>
<thead>
<tr>
<th>Year</th>
<th>Avg ROA %</th>
<th>Linear (Avg ROA %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>0.025</td>
<td>0.01</td>
</tr>
<tr>
<td>2011</td>
<td>0.02</td>
<td>0.015</td>
</tr>
<tr>
<td>2012</td>
<td>0.015</td>
<td>0.02</td>
</tr>
<tr>
<td>2013</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>2014</td>
<td>0.015</td>
<td>0.02</td>
</tr>
<tr>
<td>2015</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>2016</td>
<td>0.015</td>
<td>0.02</td>
</tr>
<tr>
<td>2017</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>2018</td>
<td>0.015</td>
<td>0.02</td>
</tr>
<tr>
<td>2019</td>
<td>0.02</td>
<td>0.01</td>
</tr>
</tbody>
</table>

### 4.2.2 Correlation Matrix

This section discusses the correlation between the study variables. Table 4.2 presents the Pearson correlation matrix.
Table 4.2: Pearson Correlations Matrix

Table 4.2 presents the correlation between the variables used in the study. TD/TA is the ratio of Total Liabilities to Total Asset, LD/TA is the ratio of Long-term Debt to Total Asset, CD/TA is the ratio of Current Liabilities to Total Asset, and Total Own 5% is the Total Ownership percentage of Owners who own more than 5 percent of the company's shares. LO own 5% is the Ownership percentage of Local Owners who own more than 5 percent of the company's shares, Arab own 5% is the Ownership percentage of Arab Owners who own more than 5 percent of the company's shares, and Foreign own 5% is the Ownership percentage of Foreign Owners who own more than 5 percent of the company's shares. INV is the ratio of Net fixed Investment to Fixed assets, size is the Logarithm of the Total Asset, ROA is the ratio of Net income on the Total assets, ROE is the ratio of Net income on the Total equity. P-values are in parentheses.

<table>
<thead>
<tr>
<th></th>
<th>TD/TA</th>
<th>LD/TA</th>
<th>CD/TA</th>
<th>Total OWN 5%</th>
<th>LO OWN 5%</th>
<th>ArabOWN 5%</th>
<th>ForeignOWN 5%</th>
<th>NFI/FA</th>
<th>Size</th>
<th>ROA</th>
<th>ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD/TA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD/TA</td>
<td>.455&quot;</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD/TA</td>
<td>.790&quot;</td>
<td>.274&quot;</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total OWN 5%</td>
<td>-0.010</td>
<td>.067&quot;</td>
<td>-0.005</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.736)</td>
<td>(0.026)</td>
<td>(0.880)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LO OWN 5%</td>
<td>-.076&quot;</td>
<td>.091&quot;</td>
<td>.071&quot;</td>
<td>.591&quot;</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.002)</td>
<td>(0.018)</td>
<td>(0.000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arab OWN 5%</td>
<td>-.127&quot;</td>
<td>-.070&quot;</td>
<td>-.127&quot;</td>
<td>.183&quot;</td>
<td>-.506&quot;</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.020)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign OWN 5%</td>
<td>-.038</td>
<td>0.026</td>
<td>0.024</td>
<td>.244&quot;</td>
<td>-.287&quot;</td>
<td>-0.050</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>(0.209)</td>
<td>(0.379)</td>
<td>(0.430)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.095)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFI/FA</td>
<td>-0.063&quot;</td>
<td>.073&quot;</td>
<td>-0.021</td>
<td>-0.040</td>
<td>-.068&quot;</td>
<td>0.005</td>
<td>.059&quot;</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td>(0.015)</td>
<td>(0.476)</td>
<td>(0.188)</td>
<td>(0.024)</td>
<td>(0.877)</td>
<td>(0.049)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>.387&quot;</td>
<td>.268&quot;</td>
<td>.265&quot;</td>
<td>.117&quot;</td>
<td>0.024</td>
<td>-0.025</td>
<td>.173&quot;</td>
<td>0.016</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.415)</td>
<td>(0.409)</td>
<td>(0.000)</td>
<td>(0.594)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>-.248&quot;</td>
<td>-.195&quot;</td>
<td>-.217&quot;</td>
<td>.143&quot;</td>
<td>.113&quot;</td>
<td>-0.013</td>
<td>0.031</td>
<td>0.037</td>
<td>.177&quot;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.677)</td>
<td>(0.296)</td>
<td>(0.214)</td>
<td>(0.000)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE</td>
<td>-.065&quot;</td>
<td>-.127&quot;</td>
<td>-.064&quot;</td>
<td>.146&quot;</td>
<td>.138&quot;</td>
<td>-0.036</td>
<td>0.020</td>
<td>-0.006</td>
<td>.216&quot;</td>
<td>.827&quot;</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.032)</td>
<td>(0.000)</td>
<td>(0.032)</td>
<td>(0.000)</td>
<td>(0.226)</td>
<td>(0.503)</td>
<td>(0.852)</td>
<td>(0.000)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).
From reviewing table 4.2, it is notable that most of the study variables have low correlation coefficients. On the other hand, some of these variables are relatively highly correlated. The highest correlation coefficients among variables were found between TD/TA and CD/TA (79 percent), between total own 5 percent and LO own 5 percent (59.1 percent), and between LO own 5 percent and Arab own 5 percent (50.6 percent). These variables will not be used in the same model according to the analysis process used in this study. As a result, this relatively high correlation is not expected to cause a problem.

Table 4.2 also reports that the measurement of capital structure (TD/TA) is negatively correlated with Arab ownership by 12.7 percent at a 1 percent significance level and with investment by 6.3 percent at a 5 percent significance level. Additionally, it negatively correlates with Jordan ownership by 7.6 percent at a 5 percent significance level. Thus, it is insignificantly correlated with total ownership and foreign ownership. Simultaneously, the long-term part of leverage (LD/TA) is positively correlated with total ownership by 6.7 percent at a 5 percent significance level, with Jordan ownership by 9.1 percent at a 1 percent significance level, and with investment by 7.3 percent at 5 percent significance level. However, it is insignificantly correlated with foreign ownership. Furthermore, the short-term part of leverage (CA/TA) is negatively correlated with Arab ownership by 12.7 percent at a 1 percent significance level. Thus, it is insignificantly correlated with investment, total, local, and foreign ownership.

Another distinguishable observation is the correlation between investment and ownership variables. The investment is negatively and significantly correlated with local ownership by 6.8 percent at a 5 percent significance level. On the other hand, it positively and significantly correlated to foreign ownership by 5.9 percent at a 5 percent significance level.
Simultaneously, it is insignificantly correlated to other measurements of ownership. Regarding the control variables, firm size, ROA, and ROE are significantly correlated with most study variables.

### 4.2.3 Econometric Problems

This section discusses the potential econometric problems established by previous studies and the statistical measures that this study uses address them.

#### I. Multicollinearity

As mentioned in chapter 3, multicollinearity is a significant econometric problem that must be considered when assessing a multiple regression model. Based on (Gujarati 2003), multicollinearity is defined as the existence of a high correlation between some or all independent variables of the regression model.

When a multicollinearity problem exists, the intercorrelation between model-independent variables causes unreliability in the coefficient and results difficulty evaluating the relative value of these variables due to the inflation in standard errors. As a result, in this study, two common techniques were used to detect the problem of multicollinearity.

**First**, a variance inflation factors (VIF) test was conducted, which is defined as

\[
VIF = \frac{1}{1 - R^2}
\]

where tolerance = 1 - R², and R² is the coefficient of determination.

According to (Frost, 2019), the existence of the interaction term in the model may lead to high values of VIF because this term is generated by multiplying two independent variables. Centring the variables reduces the multicollinearity problem in these models. In this study, the mean of each independent variable included in the interaction term was calculated and then subtracted from all
values of this variable. Subsequently, these centred (standardized) values were used in the regression models to calculate each model's tolerance factor and VIF, as shown in tables 4.3–4.7.

<table>
<thead>
<tr>
<th>Table 4.3: Tolerance and Variance Inflation Factors (VIF) for Model 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coefficients a</strong></td>
</tr>
<tr>
<td>Model 1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
</tr>
<tr>
<td>Total Ownership 5%</td>
</tr>
<tr>
<td>INV</td>
</tr>
<tr>
<td>Size</td>
</tr>
<tr>
<td>PER (ROA)</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Total debt to total Asset

<table>
<thead>
<tr>
<th>Table 4.4: Tolerance and Variance Inflation Factors (VIF) for Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coefficients a</strong></td>
</tr>
<tr>
<td>Model 2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
</tr>
<tr>
<td>Total Ownership 5%</td>
</tr>
<tr>
<td>INV</td>
</tr>
<tr>
<td>Total own 5%* INV</td>
</tr>
<tr>
<td>Size</td>
</tr>
<tr>
<td>PER (ROA)</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Total debt to total Asset
Table 4.5: Tolerance and Variance Inflation Factors (VIF) for Model 3

Coefficients

<table>
<thead>
<tr>
<th>Model 3</th>
<th>Collinearity Statistics</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local Ownership 5%</td>
<td>.915</td>
<td>1.093</td>
<td></td>
</tr>
<tr>
<td>INV</td>
<td>.945</td>
<td>1.058</td>
<td></td>
</tr>
<tr>
<td>Local own 5%* INV</td>
<td>.906</td>
<td>1.104</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>.948</td>
<td>1.054</td>
<td></td>
</tr>
<tr>
<td>PER (ROA)</td>
<td>.948</td>
<td>1.055</td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Total debt to total Asset

Table 4.6: Tolerance and Variance Inflation Factors (VIF) for Model 4

Coefficients

<table>
<thead>
<tr>
<th>Model 4</th>
<th>Collinearity Statistics</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arab Ownership 5%</td>
<td>.912</td>
<td>1.096</td>
<td></td>
</tr>
<tr>
<td>INV</td>
<td>.977</td>
<td>1.023</td>
<td></td>
</tr>
<tr>
<td>Arab own 5%* INV</td>
<td>.900</td>
<td>1.112</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>.952</td>
<td>1.051</td>
<td></td>
</tr>
<tr>
<td>PER (ROA)</td>
<td>.959</td>
<td>1.042</td>
<td></td>
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</table>

a. Dependent Variable: Total debt to total Asset
Table 4.7: Tolerance and Variance Inflation Factors (VIF) for Model 5

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>Model 5</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td></td>
</tr>
<tr>
<td>Foreign Ownership 5%</td>
<td>.917</td>
</tr>
<tr>
<td>INV</td>
<td>.894</td>
</tr>
<tr>
<td>Foreign own 5%* INV</td>
<td>.860</td>
</tr>
<tr>
<td>Size</td>
<td>.878</td>
</tr>
<tr>
<td>PER (ROA)</td>
<td>.964</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Total debt to total Asset

The problem of multicollinearity in the model will exist in cases where the tolerance factor is close to zero, and the VIF is more than 10. However, the values of the tolerance factor and VIF of each regression model reported in the previous tables indicate that the problem of multicollinearity does not exist between the independent variables.

Second, the Spearman correlation indicates that the problem of multicollinearity will exist if the correlation coefficient between the variables is more than 0.80. Table 4.8 presents Spearman's correlation matrix.
Table 4.8: Spearman's Correlations Matrix

Table 4.8 presents Spearman's correlation between the variables used in the study. TD/TA is the ratio of Total Liabilities to Total Asset, LD/TA is the ratio of Long term Debt to Total Asset, CD/TA is the ratio of Current Liabilities to Total Asset, and Total Own 5% is the Total Ownership percentage of Owners who own more than 5 percent of the company's shares. LO own 5% is the Ownership percentage of Local Owners who own more than 5 percent of the company's shares, Arab own 5% is the Ownership percentage of Arab Owners who own more than 5 percent of the company's shares, and Foreign own 5% is the Ownership percentage of Foreign Owners who own more than 5 percent of the company's shares. INV is the ratio of Net fixed Investment to Fixed assets, size is the Logarithm of the Total Asset, ROA is the ratio of Net income on the Total assets, and ROE is the ratio of Net income on the Total equity. P-values are in parentheses.

<table>
<thead>
<tr>
<th></th>
<th>TD/TA</th>
<th>LD/TA</th>
<th>CD/TA</th>
<th>Total OWN 5%</th>
<th>LO OWN 5%</th>
<th>ArabOWN 5%</th>
<th>ForeignOWN 5%</th>
<th>NFI/FA</th>
<th>Size</th>
<th>ROA</th>
<th>ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD/TA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD/TA</td>
<td>.562&quot;</td>
<td>1</td>
<td></td>
<td>- .015</td>
<td>.078&quot;</td>
<td>- .023</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CD/TA</td>
<td>.843&quot;</td>
<td>.320&quot;</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total OWN 5%</td>
<td>0.612</td>
<td>0.009</td>
<td>0.437</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>LO OWN 5%</td>
<td>- .041</td>
<td>.086&quot;</td>
<td>.032</td>
<td>.581&quot;</td>
<td>1</td>
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<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Foreign OWN 5%</td>
<td>-.129</td>
<td>.053</td>
<td>.067</td>
<td>.192&quot;</td>
<td>-.212&quot;</td>
<td>.085&quot;</td>
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</tr>
<tr>
<td>NFI/FA</td>
<td>-.020</td>
<td>.102&quot;</td>
<td>.029</td>
<td>-.325&quot;</td>
<td>-.140&quot;</td>
<td>.049</td>
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<td></td>
</tr>
<tr>
<td>Size</td>
<td>.332&quot;</td>
<td>.343&quot;</td>
<td>.191&quot;</td>
<td>.112&quot;</td>
<td>- .033</td>
<td>.011</td>
<td>.317&quot;</td>
<td>.150&quot;</td>
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</tr>
<tr>
<td>ROA</td>
<td>-.252&quot;</td>
<td>-.180&quot;</td>
<td>-.214&quot;</td>
<td>.161&quot;</td>
<td>.129&quot;</td>
<td>- .046</td>
<td>0.012</td>
<td>0.031</td>
<td>.183&quot;</td>
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<tr>
<td>ROE</td>
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<td>-.112&quot;</td>
<td>-.086&quot;</td>
<td>.167&quot;</td>
<td>.147&quot;</td>
<td>-.086&quot;</td>
<td>0.020</td>
<td>0.016</td>
<td>.260&quot;</td>
<td>.922&quot;</td>
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</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
According to table 4.8, most of the study variables have a correlation coefficient of less than 0.8. On the other hand, there are only two variables with a correlation coefficient greater than 0.8, which are between TD/TA and CD/TA (0.843) and between ROA and ROE (.922). These variables will not be used in the same model according to the analysis process. TD/TA and ROA will be used in the main study models, while CD/TA and ROE will be used in the robustness analysis models. As a result, according to Spearman's correlation test, the problem of multicollinearity does not exist between the independent variables.

II. Serial correlation
Serial correlation is an econometrics issue defined as the "correlation between two different series of observations" (Gujarati 2003, p. 443). The estimation results will be affected by the existence of serial correlation. Accordingly, the results from estimation may be misleading (Gujarati 2003). To detect this problem, this study used the Durbin-Watson test. According to the scale of this test, if the result of the Durbin-Watson (D.W.) is between 1.5–2.5, no serial correlation problem exists (Wooldridge, 2006).

After applying the Durbin-Watson test to the study sample models, the results of this test were all less than 1.5, which indicates a serial correlation problem. One common way to address this problem is using a lagged variable (Gujarati 2003). This study included a one-period lagged of the dependent variable as an independent variable. However, the values of the Durbin-Watson statistics became around 2 after implementing this solution, which is in the range between 1.5–2.5. This indicates that there is no longer a problem with a serial correlation.
III. Heteroscedasticity

As mentioned in chapter 3, the problem of heteroscedasticity exists when the error term in the regression model has unequal variances across all observations. In this case, the standard errors that are shown in the regression output table may be unreliable.

When this problem is present, the OLS estimators are no longer efficient, and “t” and “f” statistics will not be reliable; as a result, the conclusions drawn by the analysis can be misleading (Gujarati 2003). There are several ways to deduct this problem. This study applied the widely employed Breusch-Pagan test to detect the heteroscedasticity problem, and the results are presented in table 4.9.

<table>
<thead>
<tr>
<th>Model</th>
<th>chi2(1)</th>
<th>Prob &gt; chi2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>27.11</td>
<td>0.0000</td>
</tr>
<tr>
<td>Model 2</td>
<td>27.28</td>
<td>0.0000</td>
</tr>
<tr>
<td>Model 3</td>
<td>24.62</td>
<td>0.0000</td>
</tr>
<tr>
<td>Model 4</td>
<td>32.51</td>
<td>0.0000</td>
</tr>
<tr>
<td>Model 5</td>
<td>24.94</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

As presented in table 4.9, the results of the Breusch-Pagan test showed that the probabilities are less than 5 percent for the five models. As a result, a heteroscedasticity problem exists. To solve this problem, this study transformed the variables through the natural logarithm of the original data (Rosopa et al., 2013).
IV. Outliers

Another econometrics issue that may significantly reduce a statistical model is outliers (Gujarati 2003), which are defined by extremely high or extremely low values that are numerically distant from the entire data set. There are different ways to deduct outlier values. Consistent with (Stehlik-Barry, and Babinec, 2017), this study identified an outlier for each variable if the value was greater than (the 3rd quartile+1.5*interquartile range) or less than (1st quartile–1.5*interquartile range). There are various methods to address outlier values. This study used the Winsorisation method, which replaces values higher or lower than a specific point with a new value such as the mean or the median of the data set. This study substituted the outlier's values with the mean of each variable to mitigate the influence of outliers.

4.2.4 Regression Model Assumptions

As mentioned in chapter 3, several tests evaluate study data compatibility with regression model assumptions before running study regression models. According to Gujarati (2004), these assumptions are normality, linearity, homoscedasticity, and independence of error terms. This section will present the tests applied in this study to address these assumptions.

I. Normality

This assumption requires that the distribution of the study sample be normal. Two common techniques are used to test the normality of data.

First, the histogram test graphically represents the frequency distributions of the data. According to Gujarati (2004), this test uses the following hypotheses to assess the normality of the data:

H₀: the residuals are normally distributed.

H₁: the residuals are not normally distributed.
According to the histogram test, if the probability is less than 5 percent, the null hypothesis is rejected. As shown in figures 4.6–4.10, the probabilities of the histogram test for the five models are less than 5 percent; as a result, the data is not normally disturbed.

Figure 4.6: Histogram test for Model 1

<table>
<thead>
<tr>
<th>Series: Standardized Residuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample 2010 2019</td>
</tr>
<tr>
<td>Observations 1110</td>
</tr>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>Median</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Std. Dev.</td>
</tr>
<tr>
<td>Skewness</td>
</tr>
<tr>
<td>Kurtosis</td>
</tr>
<tr>
<td>Jarque-Bera</td>
</tr>
<tr>
<td>Probability</td>
</tr>
</tbody>
</table>
Figure 4.7: Histogram test for Model 2

Series: Standardized Residuals
Sample 2010 2019
Observations 1110

Mean      -2.32e-16
Median    0.000119
Maximum   0.262628
Minimum   -0.160261
Std. Dev. 0.062856
Skewness  0.210902
Kurtosis  2.817586
Jarque-Bera 9.767706
Probability 0.007568

Figure 4.8: Histogram test for Model 3

Series: Standardized Residuals
Sample 2010 2019
Observations 1110

Mean      -1.88e-16
Median    0.000984
Maximum   0.261708
Minimum   -0.153198
Std. Dev. 0.062293
Skewness  0.158111
Kurtosis  2.825323
Jarque-Bera 6.036022
Probability 0.048898
Figure 4.9: Histogram test for Model 4

Series: Standardized Residuals
Sample 2010 2019
Observations 1110
Mean -2.11e-16
Median -0.000415
Maximum 0.257903
Minimum -0.162948
Std. Dev. 0.062233
Skewness 0.176230
Kurtosis 2.859520
Jarque-Bera 6.658310
Probability 0.035823

Figure 4.10: Histogram test for Model 5

Series: Standardized Residuals
Sample 2010 2019
Observations 1110
Mean -1.99e-16
Median 0.000201
Maximum 0.264537
Minimum -0.150136
Std. Dev. 0.062668
Skewness 0.234410
Kurtosis 2.857862
Jarque-Bera 11.09977
Probability 0.003888
Second, the Shapiro-Wilk normality test conducted. As displayed in table 4.10, the probability of this test is less than 5 percent for all study variables, so the null hypothesis is rejected. As a result, according to Shapiro-Wilk, the data is also not normally disturbed.

<table>
<thead>
<tr>
<th></th>
<th>Shapiro-Wilk</th>
<th>df</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total debt to total Asset</td>
<td>.968</td>
<td>1110</td>
<td>.000</td>
</tr>
<tr>
<td>Long term debt to Total Asset</td>
<td>.750</td>
<td>1110</td>
<td>.000</td>
</tr>
<tr>
<td>Current debt to Total Asset</td>
<td>.976</td>
<td>1110</td>
<td>.000</td>
</tr>
<tr>
<td>Total Ownership 5%</td>
<td>.926</td>
<td>1110</td>
<td>.000</td>
</tr>
<tr>
<td>Local ownership 5%</td>
<td>.956</td>
<td>1110</td>
<td>.000</td>
</tr>
<tr>
<td>Arab ownership 5%</td>
<td>.592</td>
<td>1110</td>
<td>.000</td>
</tr>
<tr>
<td>Foreign ownership 5%</td>
<td>.428</td>
<td>1110</td>
<td>.000</td>
</tr>
<tr>
<td>INV (NFI/FA)</td>
<td>.570</td>
<td>1110</td>
<td>.000</td>
</tr>
<tr>
<td>Size (total asset)</td>
<td>.983</td>
<td>1110</td>
<td>.000</td>
</tr>
<tr>
<td>PER1 (ROA)</td>
<td>.978</td>
<td>1110</td>
<td>.000</td>
</tr>
<tr>
<td>PER2 (ROE)</td>
<td>.982</td>
<td>1110</td>
<td>.000</td>
</tr>
</tbody>
</table>

II. Linearity

This assumption requires that the relationship between the model-dependent variable (X) and independent variables (Y) should be linear. Linearity was tested graphically using P-P plots in SPSS. As shown in Figure 4.11, the relationship between the dependent variable (total debt/total asset) and the independent variables in the five models of the study is almost linear.
Figure 4.11: P-P Plots for the five models

Model 1

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Total debt to total Asset

Model 2

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Total debt to total Asset

Model 3

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Total debt to total Asset

Model 4

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Total debt to total Asset

Model 5

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Total debt to total Asset
III. Homoscedasticity

Under this assumption, the error term in the model should have equal variances across all observations. If not, the problem of heteroscedasticity, which is an unequal variance of the error term, exists. As discussed in the previous section, the Breusch-Pagan test results indicate that the problem of heteroscedasticity existed. Consequently, the natural logarithm of the original data will be used before running this study's regression models to overcome this problem.

IV. Independence of error terms

Under this assumption, the error terms in the model should be independent of each other. If not, serial correlation exists. One common way used to assess this assumption is the Durbin-Watson test. As discussed in the previous section, after applying the Durbin-Watson test to the study sample models, the results indicated a serial correlation problem. Moreover, the lagged variable was used to address this problem.

After assessing study data compatibility with the previous assumptions and applying appropriate statistical techniques to address any violation that had been determined, this study established regression models to test whether the research hypotheses were ready to run and to avoid misleading regression model findings.
4.3 Econometrics Analysis

4.3.1 Pooled ordinary least squares (OLS) results

The pooled OLS is a model for analysing panel data. This approach pools all cross-sectional data over a sequence of years. The main benefit of pooling data is increasing the study sample size. On the other hand, this approach ignores the existence of unobservable variables that may cause bias. According to Gujarati (2003), unobservable variables are defined as variables that are not included in the study model, affect the dependent variable, and are correlated to the independent variables. Consequently, pooled OLS is not a common approach in dealing with the panel data, which leads to alternative estimators for panel data: fixed effect and random effect.

This section presents the empirical results of the effect of a firm's concentrated ownership and investments as well as the interaction between ownership and investments, as long as the control variables (firm performance, firm size) on its capital structure, during the period 2010–2019 using the pooled OLS approach developed by Poon et al. (2013).

The results of the first model are presented in table 4.11. This model aims to analyse the impact of investments and total concentrated ownership regardless of the ownership component and investigate the direct effect among the study variables.
Table 4.11: Results of Estimation for the First Model using the OLS approach

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.042368</td>
<td>0.010851</td>
<td>-3.904468</td>
<td>0.0001</td>
</tr>
<tr>
<td>TOS</td>
<td>-0.010823</td>
<td>0.013392</td>
<td>0.808125</td>
<td>0.4192</td>
</tr>
<tr>
<td>INV</td>
<td>-0.004709</td>
<td>0.011399</td>
<td>-0.413082</td>
<td>0.6796</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.227411</td>
<td>0.039316</td>
<td>-5.784194</td>
<td>0.0000</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.007978</td>
<td>0.001529</td>
<td>5.216949</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared   | 0.849003    | F-statistic | 1116.658
Adjusted R-squared | 0.848243 | Prob(F-statistic) | 0.000000
Durbin-Watson stat | 2.371928

The dependent variable is CS measured as the ratio of Total Liabilities to Total Asset, and the independent variables are TOS - measured as the Total Ownership percentage of owners who own more than 5 percent of the company's shares. INV - is measured as the ratio of Net fixed Investment to Fixed assets, ROA - as the ratio of Net income on the Total assets, and SIZE - as the Logarithm of the Total Asset.

Source: Author calculation using EViews.

Table 4.11 illustrates that both the total concentrated ownership and investment are insignificant negative effects on capital structure. On the other hand, the ROA has a negative effect on capital structure at a significant level of 1 percent, and firm size positively affects capital structure at a significant level of 1 percent. However, the adjusted R² for the second model is 84.8 percent, and the P-value is less than 5 percent, which indicates that this model is statistically significant.

The results of the first model are presented in table 4.12. This model aims to analyse the impact of the interaction between investments and total concentrated ownership on capital structure.
Table 4.12: Results of Estimation for the Second Model using the OLS approach

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.040501</td>
<td>0.010865</td>
<td>-3.727702</td>
<td>0.0002</td>
</tr>
<tr>
<td>TOS</td>
<td>-0.006864</td>
<td>0.010405</td>
<td>0.659709</td>
<td>0.5096</td>
</tr>
<tr>
<td>INV</td>
<td>-0.003958</td>
<td>0.010742</td>
<td>-0.368463</td>
<td>0.7126</td>
</tr>
<tr>
<td>INVTOS</td>
<td>0.004095</td>
<td>0.048010</td>
<td>-0.085290</td>
<td>0.9320</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.227082</td>
<td>0.039428</td>
<td>-5.759411</td>
<td>0.0000</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.007998</td>
<td>0.001552</td>
<td>5.155048</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared 0.848976  F-statistic 929.4136
Adjusted R-squared 0.848062  Prob(F-statistic) 0.000000
Durbin-Watson stat 2.371641

The dependent variable is CS measured as the ratio of Total Liabilities to Total Asset. The independent variables are TOS- measured as the Total Ownership percentage of owners who own more than 5 percent of the company's shares, INV- measured as the ratio of Net fixed Investment to Fixed assets, INVTOS- measured as the cross product of the total concentrated ownership and investment variables, ROA- measured as the ratio of Net income on the Total assets, and SIZE- measured as the Logarithm of the Total Asset.

Source: Author calculation using EViews.

Table 4.12 illustrates that total concentrated ownership and investment both have an insignificant negative effect on capital structure, while the interaction variable has an insignificant positive effect on capital structure. On the other hand, the ROA has a negative effect on capital structure at a significant level of 1 percent, and the firm size positively affects capital structure at a significant level of 1 percent. However, the adjusted $R^2$ for the second model is 84.8 percent, and the P-value is less than 5 percent, which indicates that this model is statistically significant.
The results of the third model are presented in table 4.13. This model aims to analyse the impact of the interaction between investments and local concentrated ownership on capital structure. In doing so, it investigates the impact of concentrated ownership identity on the role of the interaction between ownership structure and investment.

Table 4.13: Results of Estimation for the Third Model using the OLS approach

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.042921</td>
<td>0.010727</td>
<td>-4.001192</td>
<td>0.0001</td>
</tr>
<tr>
<td>LOS</td>
<td>-0.014632</td>
<td>0.009113</td>
<td>1.605672</td>
<td>0.1087</td>
</tr>
<tr>
<td>INV</td>
<td>-0.004479</td>
<td>0.010663</td>
<td>-0.420069</td>
<td>0.6745</td>
</tr>
<tr>
<td>INVLOS</td>
<td>0.025585</td>
<td>0.040287</td>
<td>-0.635079</td>
<td>0.5255</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.234929</td>
<td>0.039421</td>
<td>-5.959500</td>
<td>0.0000</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.008378</td>
<td>0.001537</td>
<td>5.451666</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared 0.849497  F-statistic 933.2065
Adjusted R-squared 0.848587  Prob(F-statistic) 0.000000
Durbin-Watson stat 2.372652

The dependent variable is CS measured as the ratio of Total Liabilities to Total Asset. The independent variables are LOS- measured as the Ownership percentage of Jordanian owners who own more than 5 percent of the company's shares, INV- measured as the ratio of Net fixed Investment to Fixed assets, INVLOS- measured as the cross product of the Local ownership and investment variables, ROA- measured as the ratio of Net income on the Total assets, and SIZE- measured as the Logarithm of the Total Asset.

Source: Author calculation using EViews.

Table 4.13 illustrate that local concentrated ownership and investment both have an insignificant negative effect on capital structure, while the interaction variable has an insignificant positive effect on capital structure. On the other hand, the ROA has a negative effect on capital structure at a significant level of 1 percent, and firm size has a positive effect on capital structure at a significant level of 1 percent. However, the adjusted $R^2$ for the second model is 84.9 percent, and the P-value is less than 5 percent, which indicates that this model is statistically significant.

The results of the fourth model are presented in table 4.14. This model aims to analyse the impact of the interaction between investments and Arab-concentrated ownership on capital structure. As
such, it investigates the impact of concentrated ownership identity on the role of the interaction between ownership structure and investment.

Table 4.14: Results of Estimation for the Fourth Model using the OLS approach

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.041595</td>
<td>0.010687</td>
<td>-3.892109</td>
<td>0.0001</td>
</tr>
<tr>
<td>AOS</td>
<td>-0.009318</td>
<td>0.014090</td>
<td>-0.661336</td>
<td>0.5086</td>
</tr>
<tr>
<td>INV</td>
<td>-0.005115</td>
<td>0.010569</td>
<td>-0.483963</td>
<td>0.6285</td>
</tr>
<tr>
<td>INVAOS</td>
<td>0.083678</td>
<td>0.064254</td>
<td>1.302300</td>
<td>0.1931</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.223193</td>
<td>0.039073</td>
<td>-5.712154</td>
<td>0.0000</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.008181</td>
<td>0.001530</td>
<td>5.348504</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared 0.849378  F-statistic 932.3366
Adjusted R-squared 0.848467  Prob(F-statistic) 0.000000
Durbin-Watson stat 2.373858

The dependent variable is CS measured as the ratio of Total Liabilities to Total Asset. The independent variables are AOS- measured as the Ownership percentage of Arab owners who own more than 5 percent of the company's shares, INV- measured as the ratio of Net fixed Investment to Fixed assets, INVAOS- measured as the cross product of the Arab ownership and investment variables, ROA- measured as The ratio of Net income on the Total assets, and SIZE- measured as the Logarithm of the Total Asset.

Source: Author calculation using EViews.

Table 4.14 illustrate that Arab concentrated ownership and investment both have a negatively insignificant effect on capital structure, while the interaction variable has a positively insignificant effect on capital structure. On the other hand, the ROA has a negative effect on capital structure at a significant level of 1 percent, and the firm size has a positive effect on the capital structure at a significant level of 1 percent. However, the adjusted $R^2$ for the second model is 84.8 percent, and the P-value is less than 5 percent, which indicates that this model is statistically significant.

The results of the fifth model are presented in table 4.15. This model aims to analyse the impact of the interaction between investments and foreign concentrated ownership on capital structure. In doing so, it investigate the impact of concentrated ownership identity on the role of the interaction between ownership structure and investment.
Table 4.15: Results of Estimation for the Fifth Model using the OLS approach

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.043771</td>
<td>0.011243</td>
<td>-3.893079</td>
<td>0.0001</td>
</tr>
<tr>
<td>FOS</td>
<td>-0.016081</td>
<td>0.018327</td>
<td>-0.877436</td>
<td>0.3805</td>
</tr>
<tr>
<td>INV</td>
<td>-0.003141</td>
<td>0.011047</td>
<td>-0.284372</td>
<td>0.7762</td>
</tr>
<tr>
<td>INVFOS</td>
<td>0.017827</td>
<td>0.054731</td>
<td>-0.325711</td>
<td>0.7447</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.224910</td>
<td>0.039067</td>
<td>-5.757059</td>
<td>0.0000</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.008450</td>
<td>0.001605</td>
<td>5.263370</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared 0.849023  F-statistic 929.7557
Adjusted R-squared 0.848110  Prob(F-statistic) 0.000000

Durbin-Watson stat 2.365790

The dependent variable is CS measured as the ratio of Total Liabilities to Total Asset. The independent variables are FOS- measured as the Ownership percentage of Foreign owners who own more than 5 percent of the company's shares, INV- measured as the ratio of Net fixed Investment to Fixed assets, INVFOS- measured as the cross product of the Foreign ownership and investment variables, ROA- measured as the ratio of Net income on the Total assets, and SIZE- measured as the Logarithm of the Total Asset.

Source: Author calculation using EVViews.

Table 4.15 illustrates that foreign concentrated ownership, investment, and the interaction variable have a negatively insignificant effect on capital structure. On the other hand, the ROA has a negative effect on capital structure at a significant level of 1 percent, and firm size positively affects capital structure at a significant level of 1 percent. However, the adjusted R² for this model is 84.8 percent, and the P-value is less than 5 percent, which indicates that this model is statistically significant.
4.3.2 Hausman test and Lagrange multiplier test

This section presents the outcomes of the Hausman and Lagrange multiplier tests that were used to choose an appropriate panel data analysis approach.

Initially, the Hausman specification test (1978) was used to choose between fixed and random effect approaches statistically. Based on (Green, 2008), a Hausman test is used to test whether there is a correlation between model-dependent variables and unique errors. The results of this test can be interpreted as follows:

- If the p-value of the test is less than 0.05, the fixed-effect model will be used.
- If the p-value of the test is more than 0.05, the random effect model will be used.

This study runs the Hausman test to decide between fixed or random effect approaches. Table 4.16 presents the outcome of the Hausman test.

Table 4.16: Results of the Hausman Test for the five Models of the study

<table>
<thead>
<tr>
<th>Correlated Random Effects - Hausman Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test cross-section random effects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random for Model 1</td>
<td>271.423856</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cross-section random for Model 2</td>
<td>274.101256</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cross-section random for Model 3</td>
<td>265.381213</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cross-section random for Model 4</td>
<td>267.619815</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cross-section random for Model 5</td>
<td>267.450542</td>
<td>0.0000</td>
</tr>
</tbody>
</table>
Table 4.16 shows that the probability of the chi-sq for the five models is less than 5 percent, indicating that the fixed effect approach is more appropriate than the random effect approach. To be cautious, it is necessary to test the presence of random effects using Breusch and Pagan Lagrange multiplier test (LM) based on (Green, 2008). The results of this test can be interpreted as follows:

- If the p-value of the test is less than 0.05, the random-effect model will be used.
- If the p-value of the test is more than 0.05, the pooled OLS model will be used.

This study runs the Lagrange multiplier test to decide between fixed or random effects approaches. Table 4.17 presents the outcome of the Lagrange multiplier test.

**Table 4.17: Results of Breusch and Pagan Lagrange multiplier test (LM) for the five Models of the study**

<table>
<thead>
<tr>
<th>Breusch and Pagan Lagrange multiplier test for random effects</th>
<th>Chi-Sq. Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lagrange multiplier test for Model 1</td>
<td>2406.58</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lagrange multiplier test for Model 2</td>
<td>1964.29</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lagrange multiplier test for Model 3</td>
<td>2082.24</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lagrange multiplier test for Model 4</td>
<td>1677.16</td>
<td>0.0000</td>
</tr>
<tr>
<td>Lagrange multiplier test for Model 5</td>
<td>1615.78</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Table 4.17 shows that the probability of the chi-sq for the five models is less than 5 percent, which indicates random effects and refuses the pooled OLS. As the Hausman test eliminates the random effects approach, and the Lagrange multiplier test refuses the pooled OLS approach, the fixed-effect approach is selected. This indicates that the variables which determine a Jordanian
company’s capital structure differences are not randomly determined. As a result, the following section will present the results of the fixed effect approach.

### 4.3.3 Fixed Effect Approach Results

This section presents the empirical results of the effect of a firm’s concentrated ownership, investments, and the interaction between the ownership and investments, as long as the control variables (firm performance, firm size) on its capital structure, during the period of 2010–2019 using the fixed effect approach.

The results of the first model are reported in table 4.18. This model aims to analyse the impact of investments and total concentrated ownership regardless of the ownership component. As such, it investigates the direct effect among the study variables. This study analysed the potential effect of these factors as follows:

**Table 4.18: Results of Estimation for the First Model using the Fixed effect approach**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.205235</td>
<td>0.046316</td>
<td>-4.431210</td>
<td>0.0000</td>
</tr>
<tr>
<td>TOS</td>
<td>-0.050409</td>
<td>0.025875</td>
<td>1.948183</td>
<td>0.0500</td>
</tr>
<tr>
<td>INV</td>
<td>-0.003108</td>
<td>0.014829</td>
<td>-0.209555</td>
<td>0.8341</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.200734</td>
<td>0.047795</td>
<td>-4.199860</td>
<td>0.0000</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.037732</td>
<td>0.006271</td>
<td>6.017344</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

| R-squared | 0.889927 | F-statistic | 57.51422 |
| Adjusted R-squared | 0.874454 | Prob(F-statistic) | 0.000000 |

| Durbin-Watson stat | 2.149486 |

The dependent variable is **CS** measured as the ratio of Total Liabilities to Total Asset. The independent variables are **TOS**- measured as the Total Ownership percentage of owners who own more than 5 percent of the company's shares, **INV**- measured as the ratio of Net fixed Investment to Fixed assets, **ROA**- measured as the ratio of Net income on the Total assets, and **SIZE**- measured as the Logarithm of the Total Asset.

Source: Author calculation using EViews.
The outcomes in Table 4.18 illustrate the following:

**TOS** is a proxy measure of the total ownership percentage of owners who own more than 5 percent of a company’s shares. The results in table 4.18 show that the TOS coefficient is associated negatively with the CS as a dependent variable. This relationship is significant at a 5 percent significance level, meaning that a 1 percent increase in TOS results in a 5 percent decrease in CS. The finding that the total concentrated ownership coefficient is negatively associated with capital structure is consistent with previous studies conducted in the Jordanian market. For example, (Omet, 2006) found that concentrated ownership had a negative impact on debt ratios, indicating that higher levels of ownership concentration lead to lower levels of debt. Similarly, (Farooq, 2015) determined that a negative relationship between concentrated ownership and leverage in the Jordanian market. The study found that concentrated ownership reduces the likelihood of firms relying on debt financing as large shareholders prefer to finance a company’s operations through their own resources. This finding suggests that concentrated ownership can lead to a more conservative capital structure, which may limit a firm’s ability to take advantage of investment opportunities or expand its operations.

In conclusion, the finding that concentrated ownership has a negative impact on capital structure is consistent with previous studies conducted in the Jordanian market. These studies suggest that large shareholders may prefer to finance a company through their own resources rather than rely on debt financing, which may lead to a more conservative capital structure.

Moreover, the negative relationship between concentrated ownership and capital structure found in this study is consistent with previous research in other countries. For instance, (Santos et al., 2014) found a negative association between concentrated ownership and leverage in 12 Western
European countries while (Lee and Lee, 2014) identified a negative relationship between concentrated ownership and debt levels in the Korean market. Similarly, (Mbanyele, 2020) demonstrated a negative relationship between ownership concentration and leverage in the Italian market. These findings suggest that the negative association between concentrated ownership and capital structure may hold across different institutional and market contexts, indicating the robustness of this relationship.

Based on this discussion, the following hypothesis is accepted: $H1$: There is a significant relationship between concentrated ownership and a firm’s capital structure.

INV is a proxy of firm investments. The results in table 4.18 show that the INV has a negatively insignificant effect on CS as a dependent variable. This finding is in line with (Omet et al., 2015), who found that the relationship between investment and capital structure is not significant for Jordanian industrial firms, and therefore managers can still invest in the required projects despite low levels of leverage. This finding suggests that investment may not have a significant impact on capital structure in certain contexts. In addition to (Song et al., 2018) for the Chinese market, they found that firms tend to increase investment levels when their information advantage is high, which may lead to an increase in their optimal debt level. However, this increase in debt level is not due to the direct impact of investment on capital structure but rather the optimal debt level being greater when the information advantage is high. Based on the previous discussion, the following Hypothesis is rejected: $H2$: There is a significant relationship between the investments and the firm’s capital structure.

ROA is a proxy measure for firm performance. The results in table 4.18 show that the ROA coefficient is associated negatively with CS as a dependent variable. This relationship is significant
at a 1 percent significance level, meaning that a 1 percent increase in ROA results in a 20 percent decrease in CS.

The finding that firm performance is negatively associated with capital structure is consistent with several previous studies, both in Jordan and in other countries. For instance, (Al Najjar and Taylor, 2008) found a negative relationship between firm performance and leverage for Jordanian firms. Similarly, (Farooq, 2015) and (Ramadan, 2016) reported a negative association between firm performance and leverage in the Jordanian context. (Gharaibeh and That, 2020) also determined that firm performance was negatively associated with debt levels among Jordanian manufacturing firms.

In other countries, (Booth, 2001) found a negative relationship between profitability and debt in 10 developing countries. (Flannery and Ragan, 2006) also identified a negative relationship between profitability and leverage in the US market. Similarly, (Serrasqueiro and Caetano, 2015) found that firm profitability was negatively associated with leverage for Portuguese SMEs, and (Jeleel and Olayiwola, 2017) demonstrated a negative association between firm performance and leverage in Nigeria. Finally, (Yousef, 2019) found that firm performance was negatively associated with leverage in the context of the real estate industries of both the Gulf Cooperation Council (GCC) and the UK. Overall, these consistent findings across multiple studies and countries suggest that the negative relationship between firm performance and capital structure is a robust phenomenon that is not specific to a particular industry or country. However, one of the most cited reasons for the negative relationship between firm performance and capital structure is the agency theory. According to agency theory, firms with high performance have lower agency costs and, therefore, may prefer to use less debt to maintain financial flexibility (Farooq, 2015). This view is supported by (Al Najjar and Taylor, 2008) who found that financially distressed. Based on this
discussion, the following hypothesis is accepted: \textit{H4: There is a significant relationship between a firm's capital structure and its performance.}

\textbf{SIZE} is a proxy measure for firm size. The results in table 4.18 show that the SIZE coefficient is associated positively with CS as a dependent variable. This relationship is significant at a 1 percent significance level, meaning that a 1 percent increase in SIZE results in a 3.7 percent increase in CS. Several previous studies have reported a positive association between firm size and capital structure, which is consistent with the findings of this study. These include (Omet, 2006; Al Najjar and Taylor, 2008; Farooq, 2015; Omet et al., 2015; Karasneh et al., 2019; Iqbal et al., 2019; Gharaibeh and Tahat, 2020) and others for the Jordanian market and (Bhaduri, 2002; Hovakimian et al., 2004; Wang et al., 2009; Trang et al., 2016; Doan, 2019; Meshack et al., 2020; Mbanye, 2020) and others for other countries. These results suggest that larger firms have more access to external financing sources and may take advantage of economies of scale in their operations, allowing them to take on higher levels of debt. However, it is important to note that the relationship between firm size and capital structure may be influenced by other factors, such as industry type, firm growth prospects, and macroeconomic conditions. Based on this discussion, the following hypothesis is accepted: \textit{H5: There is a significant relationship between a firm's capital structure and its size.}

However, the adjusted R$^2$ for the first model is 87.4 percent, and the P-value is less than 5 percent, which indicates that this model is statistically significant. Additionally, the Durbin- Watson value is around 2. This indicates that there is no longer a serial correlation problem.
In conclusion, model one of this study aims to analyse the impact of investments and total concentrated ownership regardless of the ownership component to investigate the direct effect among the study variables. Examining this model demonstrated that the model variables’ impact on firms’ capital structures were inversely insignificantly impacted by total concentrated ownership, negatively insignificantly affected by firm investment, negatively significantly affected by firm performance, and positively significantly affected by firm size.

The results of the second model are reported in table 4.19. This model aims to analyse the impact of the interaction between investments and total concentrated ownership on capital structure. This study analysed the potential effect of these factors as follows:

Table 4.19: Results of Estimation for the Second Model using the Fixed effect approach

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.216361</td>
<td>0.049635</td>
<td>-4.359076</td>
<td>0.0000</td>
</tr>
<tr>
<td>TOS</td>
<td>-0.048562</td>
<td>0.023898</td>
<td>2.032027</td>
<td>0.0425</td>
</tr>
<tr>
<td>INV</td>
<td>-0.001224</td>
<td>0.014420</td>
<td>-0.084901</td>
<td>0.9324</td>
</tr>
<tr>
<td>INVTOS</td>
<td>0.009490</td>
<td>0.069979</td>
<td>-0.135618</td>
<td>0.8922</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.199005</td>
<td>0.050646</td>
<td>-3.929306</td>
<td>0.0001</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.037753</td>
<td>0.006689</td>
<td>5.644228</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared: 0.889591   F-statistic: 61.26296
Adjusted R-squared: 0.875070   Prob(F-statistic): 0.000000
Durbin-Watson stat: 2.158681

The dependent variable is CS measured as the ratio of Total Liabilities to Total Asset. The independent variables are TOS- measured as the Total Ownership percentage of Owners who own more than 5 percent of the company’s shares, INV- measured as the ratio of Net fixed Investment to Fixed assets, INVTOS- measured as the cross product of the total concentrated ownership and investment variables, ROA- measured as the ratio of Net income on the Total assets, and SIZE- measured as the Logarithm of the Total Asset.

Source: Author calculation using EViews.

The outcomes of Table 4.19 illustrate the following:

TOS is a proxy measure of the total ownership percentage of owners who own more than 5 percent of a company’s shares. The results in table 4.19 show that the TOS coefficient is associated negatively with CS as a dependent variable. This relationship is significant at a 5 percent
significance level, meaning that a 1 percent increase in TOS results in a 4.8 percent decrease in CS.

INV is a proxy of firm investments. The results in table 4.19 show that the INV has a negatively insignificant effect on CS as a dependent variable. Additionally, the interaction term (INVTOS) with CS is positively insignificant. Based on the previous discussion, the following hypothesis is rejected: \( H_3: \text{There is a significant relationship between the interaction of concentrated ownership and investments on a firm's capital structure.} \)

ROA is a proxy measure for firm performance. The results in table 4.19 show that the ROA coefficient is associated negatively with CS as a dependent variable. This relationship is significant at a 1 percent significance level, meaning that a 1 percent increase in ROA results in a 19.9 percent decrease in CS.

SIZE is a proxy measure for firm size. The results in table 4.19 show that the SIZE coefficient is associated positively with CS as a dependent variable. This relationship is significant at a 1 percent significance level, meaning that a 1 percent increase in SIZE results in a 3.7 percent increase in CS.

However, the adjusted \( R^2 \) for the second model is 87.5 percent, and the P-value is less than 5 percent, which indicates that this model is statistically significant. Additionally, the Durbin-Watson value is around 2. This indicates that there is no longer a problem of a serial correlation.

In conclusion, model two of this study aims to analyse the impact of the interaction between investments and total concentrated ownership on capital structure. Examining this model demonstrated that the model variables’ impact on Jordanian firms’ capital structures were inversely insignificantly impacted by total concentrated ownership, negatively insignificantly affected by firm investment, positively insignificantly affected by the interaction term (INVTOS),
negatively significantly affected by firm performance, and positively significantly affected by firm size.

The results of the third model are reported in table 4.20. This model aims to analyse the impact of the interaction between investments and concentrated Jordanian ownership on capital structure to investigate the impact of concentrated ownership identity on the role of the interaction between ownership structure and investment. This study analysed the potential effect of these factors as follows:

Table 4.20: Results of Estimation for the Third Model using the Fixed effect approach

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.035911</td>
<td>0.012305</td>
<td>-2.918299</td>
<td>0.0036</td>
</tr>
<tr>
<td>LOS</td>
<td>-0.013285</td>
<td>0.007111</td>
<td>1.868298</td>
<td>0.0620</td>
</tr>
<tr>
<td>INV</td>
<td>-0.004741</td>
<td>0.006569</td>
<td>-0.721760</td>
<td>0.4706</td>
</tr>
<tr>
<td>INVLOS</td>
<td>0.030754</td>
<td>0.021084</td>
<td>-1.458648</td>
<td>0.1450</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.220467</td>
<td>0.067936</td>
<td>-3.245232</td>
<td>0.0012</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.007196</td>
<td>0.001843</td>
<td>3.905465</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

The dependent variable is CS measured as the ratio of Total Liabilities to Total Asset. The independent variables are LOS- measured as the Ownership percentage of Jordanian Owners who own more than 5 percent the company's shares, INV- measured as the ratio of Net fixed Investment to Fixed assets, INVLOS- measured as the cross product of the Local ownership and investment variables, ROA- measured as the ratio of Net income on the Total assets, and SIZE- measured as the Logarithm of the Total Asset.

The outcomes of Table 4.20 illustrate the following:

LOS is a proxy measure for local owners who own more than 5 percent of a company's share. The results in table 4.20 show that the LOS coefficient is associated negatively with CS as a dependent variable. This relationship is significant at a 10 percent significance level, meaning that a 1 percent increase in LOS results in a 1.3 percent decrease in CS. This finding is consistent with the outcome.
of the total concentrated ownership effect on firms’ capital structures. However, the consistency of these outcomes is expected due to the fact that the Jordanian owners represent the majority of total concentrated ownership: on average, 77 percent of these shares are owned by local owners, as presented in the descriptive statistics. However, (Al Najjar and Taylor, 2008) suggested that the presence of a large shareholder or group of shareholders with a significant stake in the company may lead to lower levels of debt for Jordanian listed companies.

Similarly, (Al-Thuneibat, 2018) argued that large shareholders may prefer to finance the company through equity rather than debt as debt may result in a loss of control over the company. This is consistent with agency theory, which suggests that large shareholders may act in their own interests rather than in the interests of other shareholders.

INV is a proxy of firm investments. The results in table 4.20 show that the INV has a negatively insignificant effect on CS as a dependent variable. Additionally, the interaction term (INVLOS) with CS is positively insignificant. Based on the previous discussion, the following hypothesis is rejected: $H3.a$: There is a significant relationship between the interaction of local concentrated ownership and investments on a firm’s capital structure.

ROA is a proxy measure for firm performance. The results in table 4.20 show that the ROA coefficient is associated negatively with CS as a dependent variable. This relationship is significant at a 1 percent significance level, meaning that a 1 percent increase in ROA results in a 22 percent decrease in CS.

SIZE is a proxy measure for firm size. The results in table 4.20 show that the SIZE coefficient is associated positively with CS as a dependent variable. This relationship is significant at a 1 percent
significance level, meaning that a 1 percent increase in SIZE results in a 0.7 percent increase in CS.

However, the adjusted $R^2$ for the third model is 86.7 percent, and the P-value is less than 5 percent, which indicates that this model is statistically significant. Additionally, the Durbin-Watson value is around 2. This indicates that there is no longer a problem of serial correlation.

**In conclusion**, model three of this study aims to analyse the impact of the interaction between investments and concentrated local ownership on capital structure. In doing so, it investigate the impact of concentrated ownership identity on the role of the interaction between ownership structure and investment. Examining this model demonstrated that the model variables’ impact on firms’ capital structures was inversely insignificantly impacted by local concentrated ownership, negatively insignificantly affected by firm investment, positively insignificantly affected by the interaction term (INVLOS), negatively significantly affected by firm performance, and positively significantly affected by firm size.

The results of the fourth model are reported in table 4.21. This model aims to analyse the impact of the interaction between investments and AOS on capital structure as well as to investigate the impact of concentrated ownership identity on the interaction between ownership structure and investment. This study analysed the potential effect of these factors as follows:
Table 4.21: Results of Estimation for the Fourth Model using the Fixed effect approach

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.041342</td>
<td>0.010701</td>
<td>-3.863448</td>
<td>0.0001</td>
</tr>
<tr>
<td>AOS</td>
<td>-0.008997</td>
<td>0.014116</td>
<td>-0.637376</td>
<td>0.5240</td>
</tr>
<tr>
<td>INV</td>
<td>-0.006062</td>
<td>0.010639</td>
<td>-0.569786</td>
<td>0.5690</td>
</tr>
<tr>
<td>INVAOS</td>
<td>0.087527</td>
<td>0.064362</td>
<td>1.359930</td>
<td>0.1742</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.221292</td>
<td>0.039277</td>
<td>-5.634156</td>
<td>0.0000</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.008104</td>
<td>0.001532</td>
<td>5.289130</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared 0.850295
F-statistic 399.2090
Prob(F-statistic) 0.000000
Durbin-Watson stat 2.384796

The dependent variable is CS measured as the ratio of Total Liabilities to Total Asset. The independent variables are AOS- measured as the Ownership percentage of Arab Owners who own more than 5 percent of the company's shares, INV- measured as the ratio of Net fixed Investment to Fixed assets, INVAOS- measured as the cross product of the Arab ownership and investment variables, ROA- measured as the ratio of Net income on the Total assets, and SIZE- measured as the Logarithm of the Total Asset.

Source: Author calculation using EViews.

The outcomes of Table 4.21 illustrate the following:

AOS is a proxy measure for Arab owners who own more than 5 percent of a company's share. The results in table 4.21 show that the AOS has a negatively insignificant effect on CS as a dependent variable. This outcome of the statistically insignificant impact of Arab owners on capital structure may be attributed to the low proportion of total concentrated ownership they hold, which amounts to only 15%. The negative coefficient on their effect suggests that these owners tend to avoid using debt as a source of financing, possibly due to the lack of control over a firm's operations. Additionally, they may desire to minimize the risks associated with high leverage and avoid diluting their ownership stake in the firm.

INV is a proxy of firm investments. The results in table 4.21 show that the INV has a negatively insignificant effect on CS as a dependent variable. However, the interaction term (INVAOS) with CS is positively insignificant. Based on the previous discussion, the following Hypothesis is...
rejected: *H3.b: There is a significant relationship between the interaction of Arab concentrated ownership and investments on a firm’s capital structure.*

**ROA** is a proxy measure for firm performance. The results in table 4.21 show that the ROA coefficient is associated negatively with CS as a dependent variable. This relationship is significant at a 1 percent significance level, meaning that a 1 percent increase in ROA results in a 22.1 percent decrease in CS.

**SIZE** is a proxy measure for firm size. The results in table 4.21 show that the SIZE coefficient is associated positively with CS as a dependent variable. This relationship is significant at a 1 percent significance level, meaning that a 1 percent increase in SIZE results in a 0.8 percent increase in CS.

However, the adjusted $R^2$ for the fourth model is 84.8 percent, and the P-value is less than 5 percent, which indicates that this model is statistically significant. Additionally, the Durbin-Watson value is around 2. This indicates that there is no longer a problem of serial correlation.

*In conclusion,* model four of this study aims to analyse the impact of the interaction between investments and Arab Concentrated ownership on capital structure. As such, it investigate the impact of concentrated ownership identity on the role of the interaction between ownership structure and investment. Examining this model demonstrated that the model variables’ impact on firms’ capital structures were inversely insignificantly impacted by Arab concentrated ownership, negatively insignificantly affected by firm investment, positively insignificantly affected by the interaction term (INVAOS), negatively significantly affected by firm performance, and positively significantly affected by firm size.
The results of the fifth model are reported in table 4.22. This model aims to analyse the impact of the interaction between investments and FOS on capital structure. In doing so, it investigates the impact of concentrated ownership identity on the interaction between ownership structure and investment. This study analysed the potential effect of these factors as follows:

**Table 4.22: Results of Estimation for the Fifth Model using the Fixed effect approach**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.036512</td>
<td>0.013277</td>
<td>-2.750009</td>
<td>0.0061</td>
</tr>
<tr>
<td>FOS</td>
<td>-0.021785</td>
<td>0.014581</td>
<td>-1.494098</td>
<td>0.1355</td>
</tr>
<tr>
<td>INV</td>
<td>-0.004643</td>
<td>0.007777</td>
<td>-0.597006</td>
<td>0.5506</td>
</tr>
<tr>
<td>INV FOS</td>
<td>0.017562</td>
<td>0.036085</td>
<td>0.486675</td>
<td>0.6266</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.210055</td>
<td>0.042346</td>
<td>-4.960400</td>
<td>0.0000</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.007218</td>
<td>0.001991</td>
<td>3.624656</td>
<td>0.0003</td>
</tr>
</tbody>
</table>

R-squared 0.868347  F-statistic 463.5863
Adjusted R-squared 0.866474  Prob(F-statistic) 0.000000
Durbin-Watson stat 2.363272

The dependent variable is CS measured as the ratio of Total Liabilities to Total Asset. The independent variables are FOS- measured as the Ownership percentage of Foreign Owners who own more than 5 percent of the company's shares, INV- measured as the ratio of Net fixed Investment to Fixed assets, INV FOS- measured as the cross product of the Foreign ownership and investment variables, ROA- measured as the ratio of Net income on the Total assets, and SIZE- measured as the Logarithm of the Total Asset.

Source: Author calculation using EViews.

Table 4.22 outcomes illustrate the following:

**FOS** is a proxy measure for foreign owners who own more than 5 percent of a company's share. The results in table 4.22 show that the FOS has a negatively insignificant effect on CS as a dependent variable. This outcome can be attributed to the relatively small percentage of total concentrated ownership held by these owners, which is 8% for foreign owners. This negative sign of their influence may be explained by their preference to avoid relying on debt as a source of funding to mitigate the risk of bankruptcy because they are non-local owners who tend to invest in firms with low or moderate levels of debt. As such, higher levels of debt are perceived to increase risk, which goes against their investment strategy. This is consistent with the outcome of
(Khasawneh and Staytieh, 2017, and Al-Thunibat, 2018) who show that foreign ownership is negatively related to a firm’s capital structure in the Jordanian market.

**INV** is a proxy of firm investments. The results in table 4.22 show that the INV has a negatively insignificant effect on CS as a dependent variable. However, the interaction term (INVFOS) with CS is positively insignificant. Based on the previous discussion, the following hypothesis is rejected: \( H3.c: \) There is a positive relationship between the interaction of foreign concentrated ownership and investments on a firm’s capital structure.

**ROA** is a proxy measure for firm performance. The results in table 4.22 show that the ROA coefficient is associated negatively with CS as a dependent variable. This relationship is significant at a 1 percent significance level, meaning that a 1 percent increase in ROA results in a 21 percent decrease in CS.

**SIZE** is a proxy measure for firm size. The results in table 4.22 show that the SIZE coefficient is associated positively but weakly with CS as a dependent variable. This relationship is significant at a 1 percent significance level, meaning that a 1 percent increase in SIZE results in a 0.72 percent increase in CS.

However, the adjusted \( R^2 \) for the fifth model is 86.6 percent, and the P-value is less than 5 percent, which indicates that this model is statistically significant. Additionally, the Durbin-Watson value is around 2. This indicates that there is no longer a problem of serial correlation.

**In conclusion,** model five of this study aims to analyse the impact of the interaction between investments and foreign-concentrated ownership on capital structure. In doing so, it investigates the impact of concentrated ownership identity on the role of the interaction between ownership structure and investment. Examining this model demonstrated that the model variables' impact on firms’ capital structure were inversely insignificantly impacted by foreign concentrated ownership,
negatively insignificantly affected by firm investment, positively insignificantly affected by the interaction term (INVFOS), negatively significantly affected by firm performance, and positively significantly affected by firm size.

### 4.3.4 Granger Causality

For further analysis, the Granger causality test was run for panel data. Granger causality is a statistical method used to investigate the causality between two variables in a time series. In other words, this test helps to examine whether variable A is the cause of B or whether B is the cause of A (Gujarati, 2004).

According to this test, a variable is said to Granger-cause another variable if the P-value is less than 5 percent. As such, the null hypothesis is rejected, which indicates that this variable will help forecast the other variable. Additionally, the F statistic appoints the direction of the causality if the variables are weakly or strongly Granger-caused by each other. However, the relationship between the variables could be either unidirectional or bidirectional (Gujarati, 2004). Unidirectional causality is one direction relationship that indicates variable A causes variable B. However, B does not cause A. Bidirectional causality is a two-way direction relationship that indicates variable A causes variable B, and B causes A. For this study, the bidirectional Granger causality variables are displayed in table 4.23.

#### Table 4.23: The Bidirectional Granger Causality Variables

<table>
<thead>
<tr>
<th>Null Hypothesis: *</th>
<th>F-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>INV does not Granger Cause AOW</td>
<td>2.50154</td>
<td>0.0414</td>
</tr>
<tr>
<td>AOW does not Granger Cause INV</td>
<td>3.61087</td>
<td>0.0064</td>
</tr>
</tbody>
</table>

*The P-value is less than 5%, so the null hypothesis is rejected.

**Arab own 5%** is the Ownership percentage of Arab Owners who own more than 5 percent, and **INV** is the ratio of Net fixed Investment to Fixed assets.

Source: Author calculation using EViews.
Table 4.23 shows that investment and Arab ownership are bidirectional Granger causality variables, so they have a two-way direction relationship. However, Arab ownership causes more investment due to the higher F-statistic value and lower P-value. The unidirectional Granger causality variables are displayed in Table 4.24.

Table 4.24: The Unidirectional Granger Causality Variables

<table>
<thead>
<tr>
<th>Null Hypothesis: *</th>
<th>F-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW does not Granger Cause INV</td>
<td>3.24562</td>
<td>0.0119</td>
</tr>
<tr>
<td>LONG_D_TA does not Granger Cause JOW</td>
<td>3.17663</td>
<td>0.0134</td>
</tr>
<tr>
<td>CS does not Granger Cause TOS</td>
<td>2.57864</td>
<td>0.0364</td>
</tr>
<tr>
<td>TOS does not Granger Cause ROE</td>
<td>4.20810</td>
<td>0.0023</td>
</tr>
<tr>
<td>LONG_D_TA does not Granger Cause TOS</td>
<td>2.76718</td>
<td>0.0266</td>
</tr>
<tr>
<td>ROA does not Granger Cause SIZE</td>
<td>2.91320</td>
<td>0.0209</td>
</tr>
<tr>
<td>INV does not Granger Cause SIZE</td>
<td>2.42860</td>
<td>0.0466</td>
</tr>
<tr>
<td>SIZE does not Granger Cause FOW</td>
<td>4.59661</td>
<td>0.0011</td>
</tr>
<tr>
<td>SIZE does not Granger Cause CL_TA</td>
<td>5.88343</td>
<td>0.0001</td>
</tr>
<tr>
<td>ROE does not Granger Cause SIZE</td>
<td>3.22681</td>
<td>0.0123</td>
</tr>
<tr>
<td>ROA does not Granger Cause CS</td>
<td>4.58010</td>
<td>0.0012</td>
</tr>
<tr>
<td>ROA does not Granger Cause CL_TA</td>
<td>4.01518</td>
<td>0.0032</td>
</tr>
<tr>
<td>FOW does not Granger Cause INV</td>
<td>6.20962</td>
<td>7.E-05</td>
</tr>
<tr>
<td>INV does not Granger Cause ROE</td>
<td>2.39565</td>
<td>0.0492</td>
</tr>
<tr>
<td>CS does not Granger Cause CL_TA</td>
<td>8.20213</td>
<td>2.E-06</td>
</tr>
<tr>
<td>ROE does not Granger Cause CS</td>
<td>3.11316</td>
<td>0.0149</td>
</tr>
<tr>
<td>CS does not Granger Cause LONG_D_TA</td>
<td>5.85524</td>
<td>0.0001</td>
</tr>
<tr>
<td>ROE does not Granger Cause CL_TA</td>
<td>4.92717</td>
<td>0.0006</td>
</tr>
<tr>
<td>CL_TA does not Granger Cause LONG_D_TA</td>
<td>2.73274</td>
<td>0.0282</td>
</tr>
</tbody>
</table>

*The P-value is less than 5%, so the null hypothesis is rejected.

The study variables: TD/TA is the ratio of Total Liabilities to Total Asset, LD/TA is the ratio of Long-term Debt to Total Asset, CD/TA is the ratio of Current Liabilities to Total Asset, Total Own 5% is Total Ownership percentage of Owners who own more than 5 percent of the company’s shares, LO own 5% is the Ownership percentage of Local Owners who own more than 5 percent of the company’s shares, Arab own 5% is the Ownership percentage of Arab Owners who own more than 5 percent of the company’s shares, Foreign own 5% is the Ownership percentage of Foreign Owners who own more than 5 percent of the company’s shares, INV is the ratio of Net fixed Investment to Fixed assets, size is the Logarithm of the Total Asset, ROA is the ratio of Net income on the Total assets, and ROE is the ratio of Net income on the Total equity.

Source: Author calculation using EViews.

Table 4.24 presents the study variables with a one direction relationship. Therefore, for the rest of the variables with a P-value of more than 5 percent, the researcher failed to reject the null hypothesis. As such, there is no Granger cause between these variables.
4.4 Interaction results

This section presented the results of the interaction between the overall concentrated ownership and different components of ownership with investment. To the best of the author's knowledge, this study is the first to examine the impact of this interaction on company capital structure. The interaction as tested using two methods: the interaction variable and the Wald test.

4.4.1 Interaction Term

The first method is the interaction term, which is established by multiplying the total concentrated ownership variable and investment variable \((\text{Inv}_{it} \times \text{Own}_{it})\). This variable is then used as an independent variable in model 2, in addition to multiplying the local, Arab, and foreign-concentrated ownership variables with investment variable and using these variables as an independent variable in models 3, 4, and 5, respectively. Based on the study sample results presented previously in the panel data analysis section, which showed that the interaction terms are statistically insignificant in the five models, the interaction did not appear using this method. As a result, this method is unsuitable based on the nature of the Jordanian market. Such unsuitability could be due to variation in the investment variable in the Jordanian firms’ data, as presented earlier in the descriptive analysis section the mean and median for the investment measurement (the ratio of net fixed investment to fixed assets) are 12.52 percent and 3 percent, respectively. The high difference between these numbers indicates that there is a variation in investments between the study sample companies during the study period, this fluctuation may lead to inconsistent and unreliable estimates of the interaction effect. However, this study used another method known as the Wald test, presented in the following section, to test the interaction.
4.4.2 Wald Test

As mentioned in chapter 3, the second method of testing the interaction between concentrated ownership and investment and the owner’s identity and investment is the Wald test.

Using this test can be considered an addition to the literature because it is a statistical test that allows for the evaluation of multiple explanatory variables simultaneously. Such a process may be particularly useful in studies that aim to analyse the impact of various factors on a particular outcome or dependent variable. By using a Wald test, researchers can determine whether a combination of explanatory variables is significant in predicting the outcome as opposed to simply assessing each variable's individual effect. In methodological terms, using a Wald test may add to the literature by providing a more comprehensive analysis of the relationship between the dependent variable and explanatory variables. It allows for a more efficient and streamlined approach to model selection and variable inclusion in the analysis. This can lead to more accurate and robust findings and may contribute to the development of more sophisticated and reliable statistical techniques in the field. The Wald test was considered appropriate for this dataset and study rather than other statistical tests, such as the likelihood ratio test, which is typically used for comparing nested models where one model is a restricted version of the other. In this study, the focus was on examining the significance of individual variables in the model rather than comparing different models.

The Wald test is used to assess the significance of the explanatory variables of the study model by testing the parameters associated with these variables. It is performed through the following steps: 1) estimating the study variables using OLS, 2) running the Wald coefficient restriction, and 3) testing the main hypothesis for the following function:
CS= f (Y1, Y2).

The null hypothesis is C (2)=0, C (3)=0 where

C (2) donated to the coefficient of the first independent variable, and C (3) donated to the coefficient of the second independent variable.

Thus, if the F- statistic and Chi-square for the Wald test are significant, it is concluded that the parameters associated with the variables are not zero, so these variables will add something to the model (Kyngas & Rissanen, 2001). As a result, the two independent variables are jointly important to the dependent variable.

1) Testing the interaction between total concentrated ownership and investments:

For testing the interaction between total concentrated ownership and investments using the Wald test, the main hypothesis for the following function is formulated as

CS= f (Total Own, Inv).

The null hypothesis is C (2) =0, C (3) =0 where

C (2) is donated to the coefficient of the total concentrated ownership of owners who own more than 5 percent of the company's shares, and C (3) donated to the coefficient of investment.

The Wald test results of the interaction between total ownership and investments are presented in table 4.25.
Table 4.25: Wald Test for Total Concentrated Ownership and Investment

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>df</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>6.238043</td>
<td>(2, 1105)</td>
<td>0.0020</td>
</tr>
<tr>
<td>Chi-square</td>
<td>12.47609</td>
<td>2</td>
<td>0.0020</td>
</tr>
</tbody>
</table>

Null Hypothesis: C(2)=0, C(3)=0
Null Hypothesis Summary:

<table>
<thead>
<tr>
<th>Normalized Restriction (= 0)</th>
<th>Value</th>
<th>Std. Err.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C(2)</td>
<td>0.011059</td>
<td>0.027721</td>
</tr>
<tr>
<td>C(3)</td>
<td>-0.080982</td>
<td>0.023272</td>
</tr>
</tbody>
</table>

Restrictions are linear in coefficients.

As shown in table 4.25, the probability values of Chi-square and the f-statistic are less than 5 percent, which indicates that the null hypothesis is rejected and the parameters associated with the variables are zero. As a result, there is an interaction between total concentrated ownership and investment.

2) Testing the interaction between the local-concentrated ownership and investments:

For testing the interaction between Jordanian-concentrated ownership and investments using the Wald test, the main Hypothesis for the following function is formulated as

CS= f (LO Own, Inv).

The null hypothesis is C (2) =0, C(3)=0 where

C (2) is donated to the coefficient of the local owners who own more than 5 percent, and C(3) is donated to the coefficient of investment.

The Wald test results of the interaction between local-concentrated ownership and investments are presented in table 4.26.
Table 4.26: Wald Test for Local-concentrated ownership and investment

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>df</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>16.75860</td>
<td>(2, 1105)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Chi-square</td>
<td>33.51720</td>
<td>2</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Null Hypothesis: C(2)=0, C(3)=0
Null Hypothesis Summary:

<table>
<thead>
<tr>
<th>Normalized Restriction (= 0)</th>
<th>Value</th>
<th>Std. Err.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C(2)</td>
<td>0.099969</td>
<td>0.021832</td>
</tr>
<tr>
<td>C(3)</td>
<td>-0.076046</td>
<td>0.023047</td>
</tr>
</tbody>
</table>

Restrictions are linear in coefficients.

As shown in table 4.26, the probability values of Chi-square and the f-statistic are less than 5 percent, which indicates that the null hypothesis is rejected and that the parameters associated with the variables are zero. As a result, there is an interaction between local ownership and investment.

3) Testing the interaction between Arab-concentrated ownership and investments:

For testing the interaction between Arab-concentrated ownership and investments using the Wald test, the main hypothesis for the following function is formulated as

\[ CS = f (\text{Arab Own}, \text{Inv}) \]

The null hypothesis is \( C(2) = 0, C(3) = 0 \) where

\( C(2) \) is donated to the coefficient of Arab owners who own more than 5 percent, and \( C(3) \) is donated to the coefficient of investment.

The Wald test results of the interaction between Arab ownership and investments are presented in table 4.27.
Table 4.27: Wald Test for Arab-concentrated ownership and investment.

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>df</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>17.86459</td>
<td>(2, 1105)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Chi-square</td>
<td>35.72917</td>
<td>2</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Null Hypothesis: C(2)=0, C(3)=0
Null Hypothesis Summary:

<table>
<thead>
<tr>
<th>Normalized Restriction (= 0)</th>
<th>Value</th>
<th>Std. Err.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C(2)</td>
<td>-0.138202</td>
<td>0.028720</td>
</tr>
<tr>
<td>C(3)</td>
<td>-0.079551</td>
<td>0.022997</td>
</tr>
</tbody>
</table>

Restrictions are linear in coefficients.

As shown in table 4.27, the probability values of Chi-square and the f-statistic are less than 5 percent, which indicates that the null Hypothesis is rejected and the parameters associated with the variables are zero. As a result, there is an interaction between Arab-concentrated ownership and investment.

4) Testing the interaction between foreign-concentrated ownership and investments:

For testing the interaction between foreign-concentrated ownership and investments using the Wald test, the main Hypothesis for the following function is formulated as

\[ CS = f(\text{foreign Own}, \text{Inv}) \]

The null hypothesis is \( C(2) = 0, C(3) = 0 \) where

\( C(2) \) is donated to the coefficient of the foreign owners who own more than 5 percent, and \( C(3) \) is donated to the coefficient of investment.

The Wald test results of the interaction between foreign-concentrated ownership and investments are presented in table 4.28.
Table 4.28: Wald Test for foreign-concentrated ownership and investment

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>df</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>7.649350</td>
<td>(2, 1105)</td>
<td>0.0005</td>
</tr>
<tr>
<td>Chi-square</td>
<td>15.29870</td>
<td>2</td>
<td>0.0005</td>
</tr>
</tbody>
</table>

Null Hypothesis: C(2)=0, C(3)=0
Null Hypothesis Summary:

<table>
<thead>
<tr>
<th>Normalized Restriction (= 0)</th>
<th>Value</th>
<th>Std. Err.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C(2)</td>
<td>-0.066830</td>
<td>0.038906</td>
</tr>
<tr>
<td>C(3)</td>
<td>-0.080112</td>
<td>0.023216</td>
</tr>
</tbody>
</table>

Restrictions are linear in coefficients.

As shown in table 4.28, the probability values of Chi-square and the f-statistic are less than 5 percent, which indicates that the null Hypothesis is rejected and that the parameters associated with the variables are zero. As a result, there is an interaction between foreign ownership and investment.

Furthermore, in statistics, the standard error of the coefficient is used to measure the coefficient estimation’s precision. However, a smaller standard error value indicates that the estimate is more precise (Gujarati, 2003). Based on the standard error numbers, it can be concluded that if the variable has a lower standard error, it may have a stronger effect. On the other hand, if the standard error is significantly high, it may reduce the significance of the variable in terms of its statistical impact on the dependent variable in the model under study.

From this point of view, and based on the tables above, it can be inferred that the interaction between local ownership and investment may have a stronger effect than other components of ownership. The standard error of the local ownership coefficient has the lowest value of 0.021832, while the standard errors of the Arab ownership and foreign ownership coefficients are 0.028720 and 0.038906, respectively. As a result, it can be concluded that the interaction between local...
ownership and investments has a stronger and more precise effect than the other ownership component.

4.5 Robustness and Further Analysis

This study used the following robustness tests to confirm the outcome of the main model’s analyses. To check the robustness, this study first examined the component of capital structure measurement, which consists of two parts: long term, as measured by the ratio of long-term debt to total asset (as measured by Hegde et al., 2020), and short term, as measured by the ratio of current liabilities to total asset (as measured by Khasawneh and Staytieh, 2017). Second, the return on equity (ROE) was used as a second proxy of firm performance to choose a suitable measurement with lower standard error and a better model fit. Therefore, each of the five models was re-run in three different scenarios.

First Scenario: In this scenario, the study models were run using long-term debt to total asset (LD/TA) as the dependent variable for each model. The following results were found.

When the study models were run using long-term debt to total asset (LD/TA) as a dependent variable, the values of F-statistics, $R^2$, and Adjusted $R^2$, showed a considerable decline, which reflects a reduction in the model’s efficiency. Additionally, it reflects a problem of serial correlation since DW shows a value less than 1 while the DW was in a normal range around 2.5 in the main models.

Second Scenario: In this scenario, the study models were run using current debt to total asset (CD/TA) as the dependent variable for each model. The following results were found.

Current debt to total asset (CD/TA) as a dependent variable shows lower values of F-statistics, $R^2$, and Adjusted $R^2$. Compared to the main model’s results, the DW value of these models decreased
to less than 1.5, indicating a serial correlation problem. As a result, using the total debt to total asset (TD/TA) as a dependent variable make the study models a better fit.

**Third Scenario:** The main models were re-run using return on equity (ROE) as a performance variable instead of return of asset (ROA), and the following results were found.

The values of F-statistics, $R^2$, Adjusted $R^2$, and DW are similar to the main model results. However, the primary difference is that ROA shows higher explanatory power measured by the value of the coefficient in the study models. If the ROA changes by 1 percent, the value of change in dependent variables is higher than the change caused by ROE. Based on this, ROA is a better performance measurement in the study models except for the model 5, where the results of the robustness test showed that the coefficient of ROE is higher than the coefficient of ROA. This indicates that using ROE as a measurement of performance is better for model 5, as presented in table 4.29.

**Table 4.29: Robustness Results of Model 5**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.035924</td>
<td>0.013663</td>
<td>-2.629269</td>
<td>0.0087</td>
</tr>
<tr>
<td>FOS</td>
<td>-0.025013</td>
<td>0.014555</td>
<td>-1.718519</td>
<td>0.0860</td>
</tr>
<tr>
<td>INV</td>
<td>-0.005644</td>
<td>0.007940</td>
<td>-0.710829</td>
<td>0.4774</td>
</tr>
<tr>
<td>INVFOS</td>
<td>0.001390</td>
<td>0.032222</td>
<td>0.043143</td>
<td>0.9256</td>
</tr>
<tr>
<td>ROE</td>
<td>-0.111170</td>
<td>0.026981</td>
<td>-4.120274</td>
<td>0.0000</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.006886</td>
<td>0.002030</td>
<td>3.391399</td>
<td>0.0007</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>R-squared</th>
<th>F-statistic</th>
<th>Prob(F-statistic)</th>
<th>Durbin-Watson stat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.867056</td>
<td>458.3990</td>
<td>0.000000</td>
<td>2.373925</td>
</tr>
</tbody>
</table>

The dependent variable is CS measured as the ratio of Total Liabilities to Total Asset. The independent variables are FOS- measured as the Ownership percentage of Foreign Owners who own more than 5 percent of the company's shares, INV- measured as the ratio of Net fixed Investment to Fixed assets, INVFOS- measured as the cross product of the Foreign ownership and investment variables, ROA- measured as the ratio of Net income on the Total assets, and SIZE- measured as the Logarithm of the Total Asset.

Source: Author calculation using EViews.
4.6 Summary

The main goal of this study is to examine empirically whether the interaction between ownership structure and investment affects the firms’ capital structure by using Jordan as an example. To achieve this goal, the researcher investigated the effect of ownership structure and firm investments on capital structure separately and jointly. The study then closely examines the interaction between the identity of the concentrated owner (i.e., local, Arab, foreign) and investment. Furthermore, the researcher investigated the effect of firm size and performance on capital structure to capture differences in competitive conditions.

This chapter disclosed both the preliminary analytical procedures and the econometrics analysis of the study. It included the calculation and description of the main descriptive statistics for all the variables, the correlation between the study variables discussed, the statistical measures the study used to deduct the econometric problems presented, and the tests that were applied on the study data compatibility with the regression model assumptions. Moreover, the Hausman test and Lagrange multiplier test outcomes indicated that the fixed effect approach is a suitable panel data approach to analyse the sample data of this study. After the statistical techniques were used to address any violation, this study established regression models to test the research hypotheses and the empirical results of the effect of the firms. Concentrated ownership, investments, and the interaction between the overall concentrated ownership and its identity with investments on its capital structure for the study sample companies are summarized as follows. The first, second, and third models demonstrated that overall concentrated ownership and local concentrated ownership are both inversely linked to capital structure. This is mainly because controlling owners put their wealth in limited investments, so they cannot diversify risk (Maug, 1998). Owners can reduce undiversified risks by making decisions, and one way to reduce this risk is to reduce debt (Friend
As a result, debt reduction helps firms avoid bankruptcy. Another link between concentrated ownership and capital structure is information asymmetry (McConnell and Servaes, 1990). This means controlling owners have more inside information than other entities. Therefore, creditors avoid lending money to highly concentrated ownership organizations to avoid adverse selection, which occurs when a better-informed party takes advantage of a less informed one. Therefore, the debt share in a concentrated company’s capital structure is lowered. This explanation supports (Farooq, 2015). Furthermore, controlling owners might prefer low debt to avoid creditors’ monitoring, which is associated with high debt.

The fourth and fifth models showed that Arab- and foreign-concentrated ownership insignificantly affected the firms’ capital structure. Due to their small proportions of total concentrated ownership (15% for Arab owners and 8% for foreign owners), Arab and foreign ownership had a statistically insignificant effect on capital structure. Arab and foreign owners prefer to invest in enterprises with low or moderate debt levels to minimize uncertainty and bankruptcy risk. This conclusion supports the agency cost theory, which states that ownership concentration creates a conflict between minority and majority stockholders. This conflict derives from excluding minority owners’ values (Bao et al., 1997; Dharwadkar et al., 2000).

Furthermore, the five models indicated that firm investment was negatively and insignificantly linked to capital structure. The descriptive analysis shows that Jordanian enterprises rely less on debt in their capital structure; the average total debt to the total asset is 35%. This outcome supports (Omet, 2015). Moreover, Jordanian firms prefer not to take on more debt due to a lack of investment alternatives and investment procedure obstacles for the institutions in the market (Gharaibeh and Al- Najjar, 2007). As noted in the descriptive analysis section, the difference
between the mean and median of investment measurement in the study sample is relatively high, implying variation in investments amongst research sample companies.

The results of the examination of the interaction effect between concentrated ownership and investment on the firm’s capital structure using two methods showed that the first method is not suitable based on the nature of the Jordanian market since the interaction did not appear in study models from 2–5 using this method. The unsuitability of the interaction variable method for the Jordanian market may be attributed to fluctuations in the investment variable among the sample firms as presented by the high difference between the ratio of net fixed investment to fixed assets mean (12.52 percent) and median (3 percent), which indicates that there is a variation in investments between the study sample companies during the study period. However, the results of the second method, the Wald test, indicate that overall concentrated ownership and investments interact. This outcome suggests that total concentrated ownership and investments are essential to capital structure. As such, while examining capital structure decisions, it will be helpful to evaluate both investment and ownership jointly instead of separately to guarantee the most appropriate decision to generate capital through debt for the firms’ interests. Moreover, the interaction between local ownership and investments has a stronger and more precise influence than other ownership components. Granger causality test results showed that local-concentrated ownership would help forecast investments. Similarly, Wald test results showed that local-concentrated ownership with investments has a more significant effect on capital structure than other ownership identities since local proprietors can provide collateral and guarantees for creditors to obtain greater access to credit facilities than non-local owners. Local controlling owners prefer debt finance over equity financing to maintain control. They avoid new owners who may affect their control (Cespedes et al., 2010). As issuing additional shares can influence market value, local controlling owners may
avoid equity financing and rely more on debt. If corporations wish to influence capital structure policies on investments, their chances are stronger if ownership is largely local.

According to the findings of examining the firms’ performance as measured by return on assets (ROA), the five study models founds that (ROA) is strongly and negatively linked with their capital structure. This result is primarily because profitable firms avoid using debt in their capital structure to reduce the danger of bankruptcy. However, these businesses prefer to rely on their internal funding sources. This result confirms the pecking order theory of capital structure, which implies that corporations prefer to employ internal sources of funds over other sources, and if they are insufficient, they can rely on debt (Farooq, 2015).

Moreover, the five model findings demonstrated that firm size is positively and strongly linked to capital structure. This result explains why larger Jordanian firms are better able to utilize debt in their capital structure than their smaller counterparts; these larger corporations can supply more collateral as their assets are worth more, and they are ready to satisfy the credit requirements. Thus, they have easier access to loans. This result is consistent with the trade-off theory of capital structure since larger enterprises have more flexibility in their capital structure and are better able to meet their debt obligations while reducing their bankruptcy risk (Gharaibeh and Al-Tahat, 2020).

Finally, the robustness analysis findings indicate that using the total debt to total asset (TD/TA) as a dependent variable makes the study models more effective than using long-term and short-term debt separately. These figures are consistent with previous studies of the Jordanian market, such as (Al-Fayoumi et al., 2010; Alkhawaldeh, 2012). This indicates that it will be better to consider the total debt to total assets instead of the long-term and short-term components separately when examining capital structure decisions. Furthermore, the findings of using return on equity (ROE)
as a second proxy of firm performance indicate that the return on asset (ROA) is a better measurement of performance. This is because the (ROA) shows higher explanatory power measured by the value of the coefficient in most of the study models. The study suggests that, in the case of examining firm performance effect on capital structure, it is more effective to consider the return on asset (ROA) instead of the return on equity (ROE) as a proxy of firm performance.
CHAPTER FIVE: STUDY SUMMARY
CONCLUSIONS
5.1 Introduction

The main goal of this study was to examine empirically whether the interaction between ownership structure and investment affects a firm’s capital structure by using Jordan as an example. To achieve this goal, the researcher investigated the effect of ownership structure and firm investments on capital structure separately and jointly. The study then closely examined the interaction between the identity of the concentrated owner (i.e., local, Arab, foreign) and investment. Furthermore, the researcher investigated the effect of firm size and performance on capital structure to capture differences in competitive conditions. This chapter contains the following sections: achieving the research aims and objectives, contribution and research implications, conclusions and findings discussions, limitations of the study, recommendations, and finally, suggestions for future studies.

5.2 Achieving the Research Aims and Objectives

This study focused on Jordanian companies listed in the Amman Stock Exchange as a frontier market. The first objective of this research was to separately measure and evaluate the impact of ownership structure and investment on capital structure. To reach this objective, the following questions were examined:

1. Does ownership concentration significantly impact a firm’s capital structure?
2. Does investment have a significant impact on a firm’s capital structure?

To answer these questions, the study models were tested empirically. The results of examining the direct effect impact of ownership concentration on capital structure showed that total concentrated ownership is inversely and significantly linked with capital structure. As such, the first study hypothesis was accepted: \( H1: \) There is a significant relationship between concentrated ownership and a firm’s capital structure.
Therefore, the first question was answered, and it was determined that ownership concentration significantly impacts a firm’s capital structure.

The results of examining the direct impact of firm investment on capital structure showed that firm investment is inversely and insignificantly linked with capital structure, which led to the second study hypothesis being rejected: $H2$: *There is a significant relationship between investments and a firm’s capital structure*. Thus, the second question was answered, and it was determined that investment does not significantly impact a firm’s capital structure.

The *second objective* of this study was to explore how the interaction between ownership structure and investment affects a firm's capital structure, in addition to investigating the interaction between the identity of the concentrated owner (i.e., local, Arab, foreign) and investment. To reach this objective, the following questions were examined:

1. Is there a potential impact of the interaction between ownership structure and investment on a firm’s capital structure?
2. Does concentrated ownership identity have a significant impact on the role of the interaction between ownership structure and investment?
   2.1 Does the local concentrated ownership have a significant impact on the role of the interaction between ownership structure and investment?
   2.2 Does the Arab concentrated ownership have a significant impact on the role of the interaction between ownership structure and investment?
   2.3 Does foreign concentrated ownership have a significant impact on the role of the interaction between ownership structure and investment?

To answer these questions, the study models were tested empirically. The results of examining the interaction effect between ownership structure and investment on a firm's capital structure showed
that the first method used to test the interaction, which was the interaction term, was not suitable based on the nature of the Jordanian market. This was because the interaction did not appear in study models 2–5 using this method. The second method used to test the interaction, the Wald test, showed that there is an interaction between total concentrated ownership and investments, which led to the third study hypothesis being accepted: \( H_3: \text{There is a significant relationship between the interaction of concentrated ownership and investments on a firm’s capital structure.} \)

Thus, the third question was answered, and it was determined that the total concentrated ownership and investments are jointly crucial to a firm’s capital structure.

When examining the impact of concentrated ownership identity on the role of the interaction between ownership structure and investment, the results of the Wald test showed that there is an interaction between local ownership and investment. This outcome led to the third sub-hypothesis being accepted: \( H_{3.a}: \text{There is a significant relationship between the interaction of local-concentrated ownership and investments on a firm’s capital structure.} \)

Therefore, the fourth sub-question was answered, and it was determined that local-concentrated ownership and investments are jointly important to a firm’s capital structure.

Furthermore, the results of examining the impact of the Arab ownership identity on the role of the interaction between ownership structure and investment showed that there is an interaction between Arab ownership and investment. As such, the third sub-hypothesis was accepted: \( H_{3.b}: \text{There is a significant relationship between the interaction of Arab-concentrated ownership and investments on a firm’s capital structure.} \) Hence, the fourth sub-question was answered, and it was determined that Arab-concentrated ownership and investments are jointly important to a firm’s capital structure.
Similarly, the results of examining the impact of the foreign ownership identity on the role of the interaction between ownership structure and investment showed that there is an interaction between foreign ownership and investment. Consequently, the third sub-hypothesis was accepted: \( H3.c: \) There is a positive relationship between the interaction of foreign-concentrated ownership and investments on a firm’s capital structure. Thus, the fourth sub-question was answered, and it was determined that foreign-concentrated ownership and investments are jointly important to a firm’s capital structure.

Based on the previous discussion, this study answered the fourth question and demonstrated that the identity of the concentrated owner (i.e., local, Arab, foreign) and investment are jointly important to a firm’s capital structure.

Finally, the third objective of this study was to ascertain the possible impact of firm performance and other factors, such as firm size, on capital structure to capture differences in competitive conditions. To reach this objective, the following questions were examined:

1. Does a firm's performance significantly impact a firm’s capital structure?
2. Does a firm size significantly impact a firm’s capital structure?

To answer these questions, the study models were tested empirically. The results of examining the firm performance impact on a firm’s capital structure showed that a firm’s performance is negatively and significantly linked to its capital structure. As such, the fourth study hypothesis was accepted: \( H4: \) There is a significant relationship between a firm’s capital structure and its performance. Thus, the fifth question was answered, and it was determined that firm performance significantly impacts a firm’s capital structure.

Also, the results of examining the firm size impact on the firm’s capital structure showed that the firm’s size is positively and significantly linked to its capital structure, which led to accepting the
fifth study hypothesis: $H5$: There is a significant relationship between a firm’s capital structure and its size. As a result, the sixth question was answered, and it was determined that firm size significantly impacts a firm’s capital structure.

Most previous studies found that ownership structure and investment had an impact on capital structure separately (Omet, 2006; Khan, 2016; Al-Thuneibat, 2018; Kharabsheh et al., 2019; Mbanye, 2020). Others tested the impact of ownership structure on capital structure, while (Park and Jang, 2013; Arafat et al., 2014; Omet et al., 2015; Sulistiono and Yusna, 2020; Hechmi, 2020) and others examined the relationship between investment and capital structure. Thus, this study filled the research gap by examining the joint impact of these factors beyond their direct impact only using two methods: the interaction term and the Wald test. Moreover, although previous literature has investigated ownership concentration (Habib and Jiang, 2015; Tee et al., 2017; and Barroso et al., 2018), the identity of stockholders has received less attention. This study investigated the interaction between concentrated ownership and investments, and it focused on common types of owner’s identities. Finally, many researchers have examined the effect of firm performance on capital structure using ROA and ROE either separately or together without comparing them (Booth et al., 2001; Flannery and Ragan, 2006; Al Najjar and Taylor, 2008; Chang and Dasgupta, 2009; Jeleel and Olayiwola, 2017; Nguyen et al., 2019). However, this study compared the findings of these two measurements of performance, which is crucial because it helps to identify the most appropriate measure for the specific context and research question. In this study, the comparison of the findings of ROA and ROE was undertaken to determine the more suitable measurement for assessing the impact of firm performance on capital structure. The decision to choose the most appropriate measurement was based on finding a more effective model fit. This process of comparing and selecting the most suitable measurement is essential for ensuring
the validity and reliability of the results. It also highlights the need to carefully consider the choice of measurement when investigating the relationship between firm performance and capital structure, as different measurements may yield different results. Having achieved the research objectives, the contribution of this study is discussed in the following section.

5.3 Contribution and Research Implications

The choice of capital structure between debt and equity has been considered a key issue in corporate finance over the past several years. The importance of this topic has encouraged researchers to develop several theories and a range of empirical studies to examine these theories and investigate the factors that affect this choice. The significance of such a financial decision encouraged this study to investigate the impact of primary factors, such as ownership structure and investments, on the choice of capital structure both separately and mutually. Examining the combined impact of ownership structure and investment on capital structure is critical because these factors are interrelated and can have a mutually reinforcing effect on a company's financial performance. For instance, if a company has a concentrated ownership structure with a controlling shareholder or group of shareholders, it may have a significant influence over investment decisions. This dynamic might result in a higher level of investment in projects that align with the interests of the controlling shareholders, which could impact the company's capital structure. Furthermore, the identity of concentrated owners may also impact the combined effect of ownership and investment on a company's capital structure. Understanding this interplay can provide valuable insights into a company's financial management strategies and inform decisions related to financing and investment. By considering the identity of local and non-local owners, companies can make informed decisions that will enable them to optimize their capital structure,
manage financial risk, and drive long-term success. This study is distinguished from other studies by several factors, as described below.

First, to the best of the researcher's knowledge, this study is the first empirical study that investigates the impact of the interaction between the level and identity of concentrated ownership and investment on the firm’s capital structure using different statistical methods. It also found that the Wald test method is suitable to the nature of the Jordanian market since the interaction appears using this method. The superiority of the Wald test method lies in its ability to test the significance of individual coefficients in a regression model. The Wald test allows researchers to determine whether the coefficient estimate for given variables are significantly different from zero, indicating whether those variables have a statistically significant effect on the outcome variable. This makes it a suitable method for examining the interaction effect between concentrated ownership and investment on a firm's capital structure as it allows researchers to test whether these variables will add something to the model. As a result, the investment and ownership variables are jointly important to capital structure. Furthermore, the Wald test is generally considered more powerful than other tests, such as the likelihood ratio test, when dealing with particularly large sample sizes (Davidson & MacKinnon, 1993). Therefore, the use of the Wald test method in this study provides a robust and reliable way to examine the interaction effect and its significance. While previous studies have also investigated the impact of concentrated ownership on capital structure, this study is unique in its examination of the interaction between ownership and investment and its use of different statistical methods to analyse the data. Additionally, the findings of this study contribute to helping investors in their investment decisions since it suggests that investors who prioritize shareholder-friendly management and aim to have a leading role in the companies they invest in may want to avoid investing in firms with highly concentrated ownership. This is because firms
with highly concentrated ownership tend to have an information asymmetry problem (McConnell and Servaes, 1990) where controlling owners have access to more information about the company than other parties. This information advantage may place outside investors at a disadvantage as they may not have access to the same level of information as the controlling owners. As a result, these investors may be more likely to make decisions based on incomplete or inaccurate information, which could lead to suboptimal investment decisions. By contrast, investors with other objectives, such as investing in firm stocks to earn dividends, purchasing these stocks to resell them quickly while hoping to benefit from the fluctuation of the prices, and purchasing firm stocks to diversify their portfolios, will have no problem with the controlling role of concentrated owners. In brief, this study's findings are expected to provide essential and more specific information than the general information investors receive from a firm’s published financial statements, which could help in their portfolio management process to ensure that they are selecting the right stocks. Thus, this study saves investors time spent on evaluating and choosing companies for their investments.

Additionally, this study found that the interaction between concentrated ownership and investment had a significant impact on capital structure. Due to this combined effect of ownership structure and investment on firm capital structure, financial managers should consider both the investment and level of ownership when making external financing decisions to ensure the best interests of their firms. Moreover, to avoid conflict between the minority and majority owners, a firm’s decision-makers must conduct a strict controlling system to guarantee that this conflict will not adversely affect the company's future.

Second, this study examined the composition of capital structure measurement, which consists of two parts: long-term and short term. In doing so, it found that the total debt to total asset (TD/TA)
measurement is more relevant when examining capital structure decisions than assessing long-term and short-term components separately. This is because using the TD/TA measurement captures both long-term and short-term debts, making it a more comprehensive and reliable measurement of capital structure. Additionally, using separate measurements for long-term and short-term debts may not accurately reflect a firm's overall financial situation, especially if the firm has a mix of short-term and long-term debts. Additionally, the separate analysis of long-term and short-term components may not be appropriate for all companies as some firms may have a different mix of long-term and short-term debt. Therefore, using the TD/TA ratio can help to provide a consistent basis for comparing the capital structure decisions of different firms. Thus, this study contributes by suggesting that the total amount of debt be considered instead of its separate components when examining capital structure decisions in firms with low debt levels. This low level may encourage firms’ boards of directors to monitor their manager’s actions to determine whether their level of debt is caused by the manager’s extreme attitude to avoid the risk of bankruptcy to protect their job. Such behaviour may prevent the company from having an external source of funding that will affect the company’s interest.

Third, this study focused on common types of owner’s identity (i.e., local, Arab, and foreign owners) in addition to investigating the interaction between overall concentrated ownership and investments. It found that the local identity of concentrated owners has a stronger influence than Arab and foreign concentrated owners on firm capital structure and interaction effect, which suggests that the cultural, political, and institutional factors that shape local business practices and norms play a significant role in determining how firms in Jordan finance their operations. It is possible that local-concentrated owners have more access to information and resources within the local business community, giving them more influence over capital structure decisions.
Additionally, local-concentrated owners may be more closely tied to local financial institutions and have a better understanding of the local regulatory environment, which could affect their decision-making regarding capital structure. Furthermore, the findings of the study regarding the influence of owner identity have implications for investment and portfolio management decisions. The study found that the local identity of concentrated owners has a stronger effect on a firm's capital structure compared to Arab- and foreign-concentrated owners. This suggests that investors who wish to avoid the potentially negative impact of controlling owners’ power may want to direct their investments away from firms with mainly local-concentrated ownership.

This information can be valuable for investors who are seeking to diversify their portfolios or seeking investment opportunities in specific regions or industries. By considering the identity of concentrated owners in their investment decisions, investors can potentially reduce their exposure to risk and increase the likelihood of achieving their investment objectives. Furthermore, this information may also be useful for investment managers who are responsible for managing portfolios on behalf of their clients.

Overall, the study's findings regarding the influence of owner identity on a firm's capital structure provide valuable insights for investors and investment managers, which can help them make more informed investment decisions and potentially achieve better investment outcomes. As a result, investors should consider not only the level of concentrated ownership but also the identity of these owners.

Moreover, the outcome of the more substantial interaction effect of local owners compared to Arab and foreign owners may encourage firms’ decision-makers to increase the presence of local owners on their companies’ boards to have more influence on financing decisions.
Fourth, the results of this study can be generalized within the same context because this study used a quantitative approach. One of the main advantages of this approach is that the researcher can generalize the outcomes by analysing the study data because of the ability to use a representative sample, unlike a qualitative approach.

Finally, this study also contributes to existing financial literature and makes suggestions for future studies based on the findings by providing insights into the influence of concentrated ownership and owner identity on a firm's capital structure decisions. It fills a gap in the literature by examining the effect of different owner identities (local, Arab, and foreign) on a firm's capital structure decisions, which has not been extensively studied before. The study also highlights the importance of considering the total debt to total asset (TD/TA) measurement of structure when examining capital structure decisions, as opposed to analysing the long-term and short-term components separately. By providing new empirical evidence, the study adds to the understanding of the factors that affect a firm's capital structure decisions and can serve as a basis for further research in this area. Moreover, the outcomes of this research should be helpful to many involved parties, such as investors, firm managers, and government regulators. This study's findings shed light on essential aspects regarding the implication of concentrated ownership and its identities on firm capital structure. The findings may encourage the adjustment of investment regulations to motivate firms to invest more. Certainly, the adjustment of investment regulations could take several forms, such as regulators providing tax incentives for companies that invest in certain types of projects or industries that are deemed important for economic growth. Regulators could also ease regulatory burdens on companies that seek to invest in research and development, innovation, or other areas that are critical for enhancing productivity and competitiveness. Additionally, they could provide
subsidies or grants to companies that invest in socially responsible initiatives, such as clean energy or environmental sustainability. Thus, by providing incentives and creating a favourable regulatory environment, policymakers could encourage firms to make long-term investments that would contribute to economic growth and development.

Additionally, improving the availability of new leverage instruments to address the lack of debt conducted by the companies in this study is worth considering. Specifically, the lack of debt instruments may be a problem for companies that want to take advantage of debt financing to fund their investments or operations. If there are limited debt instruments available, companies might have to rely on other sources of financing, which may not be as favourable in terms of interest rates, repayment terms, or other conditions. Additionally, limited availability of debt instruments may limit competition among lenders, which can result in higher borrowing costs for companies. Therefore, improving the availability of new leverage instruments could potentially help to address these issues and provide more financing options for companies. However, the extent to which this is a problem may vary depending on the specific market and regulatory environment. Moreover, government regulators could encourage smaller firms to conduct more leverage in their capital structure by adjusting the credit policy to require affordable collateral since larger firms can fulfil credit requirements more remarkably than smaller ones. One way to do achieve this is by adjusting credit policy to make it easier for smaller firms to offer affordable collateral. The idea is that larger firms have more assets and resources to meet credit requirements and offer collateral, while smaller firms may struggle with these requirements. The government can take many actions to make it easier for smaller firms to offer affordable collateral, for example: expand collateral options, instead of limiting collateral to real estate, expand the range of assets accepted as collateral, such as equipment, merchandise, or intellectual property rights. Also, they could simplify collateral
evaluation by using technology-based solutions or standardized methodologies to streamline and standardize the evaluation process. For smaller firms, this decreases the burden and costs involved with collateral assessment. Furthermore, establish initiatives to assist smaller firms in understanding collateral requirements, delivering asset valuation information, assisting with documentation, and providing training programs for effective collateral management. Smaller firms can benefit from such actions by having a broader selection of assets to offer as collateral, as well as an easier assessment procedure. By making it simpler for these firms to offering affordable collateral, the government can create a more level playing field for all firms and encourage more firms to use leverage in their capital structure. This, in turn, could lead to more investment and economic growth. However, it is important to note that adjusting credit policy comes with its own risks and trade-offs, and any changes must be carefully considered and implemented to avoid unintended consequences. The conclusions and arguments of the findings are discussed in the following section.

5.4 Conclusions and Findings Discussions

This section presents the main conclusions related to the empirical examination of this study models.

1. In terms of the impact of ownership concentration on capital structure, the results of the first and second models show that the total concentrated ownership is inversely and significantly linked with capital structure measured as total debt to total assets in the Jordanian market during the period of 2010–2019. The main explanation for this outcome is that controlling owners tied up their significant amount of wealth in limited investments. Therefore, they would be unable to diversify their risk (Maug, 1998). As a result, these owners can make decisions that will reduce undiversified risks. Moreover, one of the
mechanisms used to minimize this risk is by reducing the debt level (Friend and Lang, 1988). Therefore, reducing debt helps reduce a firm’s risk of bankruptcy. Another explanation of the relationship between concentrated ownership and capital structure is the argument of the link between concentrated ownership and information asymmetry (McConnell and Servaes, 1990). This indicates that controlling owners have greater access to a company’s inside information than other parties. Therefore, creditors avoid lending money to highly concentrated ownership firms to avoid the adverse selection that occurs when a better-informed party uses this information to take advantage of a less informed one. As a result, the debt proportion is lowered in the concentrated ownership firm’s capital structure. This argument is supported by (Farooq, 2015). Additionally, controlling owners may prefer having a low level of debt to avoid the creditor’s monitoring associated with a high level of debt, which is considered a disciplined cost of having debt in the capital structure.

2. After examining the total concentrated ownership, this study examined the identities of concentrated owners: local, Arab, and foreign. When individuals or organizations from outside a country acquire a significant percentage of a domestic company's stock, this is known as "foreign ownership" (Skripak et al., 2018). Both Arab owners (those who are citizens of another Arab country) and non-Arab owners (those from beyond the Arab world) represent these non-Jordanian owners. The government of Jordan has introduced new regulations to attract more successful foreign investment. Jordan has maintained its stability despite facing difficulties due to its location in the unstable Middle Eastern region as well as its lack of natural resources like water and oil. Over the past decade, improvements to Jordan's investment and business regulations have made the country more
desirable to investors, increased economic diversification, and encouraged business expansion. This stability has increased public trust and international investment resulting from the fixed exchange rate of the Jordanian dinar and its link to the US dollar. However, while anyone can legally establish a company or make an investment in Jordan, many regulations must be followed (WANA Institute, 2017).

The results of the third model show that local ownership is negatively and significantly related to capital structure measured as total debt to total assets in the Jordanian market during the period of 2010–2019. This is consistent with the findings of the total concentrated ownership effect on firms’ capital structures. These outcomes could be explained by the fact that the Jordanian owners represent most of the total concentrated ownership, as shown in the descriptive statistics. On average, 77 percent of these shares are owned by local owners.

However, registration procedures take longer for foreign investors due to language barriers, and they are required to provide more information and financial documentation than domestic investors (Regulation No. 77; Regulating Non-Jordanian Investments Regulation No. 77, 2016). Even though Arab investors are more likely to put money into Jordan than those from other countries due to the closeness of the two regions and the lack of language barriers, local Jordanian investors still account for a larger share of the country's total investment. This is because Arab investors typically prefer investing in their home countries to take advantage of the privileges their home countries offer for national investors. The results of the fourth and fifth models show that the other two identities of concentrated ownership, Arab and foreign, negatively insignificantly affected Jordanian firm’s capital structure during the period of 2010–2019. These outcomes could be
explained by the fact that the Arab and foreign owners represent a low proportion of total concentrated ownership, 15 percent for Arab owners and 8 percent for foreign owners. Due to these small weights of both Arab and Foreign ownership, they statistically insignificantly affect capital structure. However, the negative sign is caused by the intention of Arab and foreign owners to avoid relying on debt as a source of funding to avoid the uncertainty and risk of bankruptcy. Because they are non-local owners, they prefer to invest in firms with low or moderate levels of debt. Thus, a higher level of debt increases the risks. This result supports the outcome of the agency cost theory, where ownership concentration establishes a different agency perspective and the conflict is between two categories of owners: minority and majority (Jordanian concentrated) stockholders (Dharwadkar et al., 2000). The main issue arising from this conflict is the exclusion of the minority owner’s values (Bao et al., 1997).

3. Regarding the outcomes of the impact of firm investment on capital structure, the results of the five models showed that firm investment is inversely and insignificantly linked with capital structure measured as total debt to total asset in the Jordanian market during the period of 2010–2019. This outcome can be explained by Jordanian companies relying less on debt in their capital structure, as mentioned in the descriptive analysis. The average total debt to total asset is 35 percent, which according to (Omet, 2015) is a relatively low ratio. Another explanation is that because of the lack of investment opportunities and investment procedure obstacles in the Jordanian market, Jordanian firms tend to not burden themselves with more debt because there are no encouraging investments to be financed (Gharaibeh and Al- Najjar, 2007). Finally, as mentioned earlier in the descriptive analysis section, the diffidence between the mean and median of investment measurement in the study sample
is relatively high, indicating a variation in investments between the study sample companies.

4. This study examined the interaction effect between concentrated ownership and investment on Jordanian firms’ capital structures during the period of 2010–2019. In doing so, it used two methods. The first method is the interaction term, which is established by multiplying the total concentrated ownership variable and investment variable (Inv it * Own it), and used this variable as an independent variable in model 2, in addition to multiplying the local, Arab and foreign concentrated ownership variables with investment variable and used these variables as an independent variable in models 3, 4, and 5, respectively. In contrast, the second method is the Wald test. The results of these two methods show that the first method is not suitable based on the nature of the Jordanian market since the interaction terms are statistically insignificant in study models 2–5 using this method. However, the Wald test shows an interaction between total concentrated ownership and investments. This indicates that the total concentrated ownership and investments are jointly crucial to capital structure. Such an outcome suggests that in the case of examining the capital structure decisions it will be helpful to consider both the investment and level of ownership jointly instead of separately to guarantee the most appropriate decision of raising capital using debt for a firm’s interests.

Moreover, the findings indicate that the interaction between Local ownership and investments has a stronger and more precise effect than the other ownership component. As the Granger causality test results show that concentrated Local ownership would help forecast investments, the Wald test suggests that concentrated Local ownership with investments has a more substantial effect on capital structure than other ownership
identities. The main explanation for this outcome is that since this identity of the concentrated ownership is local owners they can provide collateral and guarantees for the creditors to obtain better access to credit facilities than non-local owners. Furthermore, the existing Jordanian controlling owners prefer maintaining control by relying on debt financing instead of equity financing. In this case, they avoid the access of new owners that may affect their control. This argument is consistent with (Cespedes et al., 2010). Finally, as issuing more stocks can affect the stock's current market value, the local controlling owners may avoid this type of external financing and rely more on debt. The arguments above explain the stronger and more precise effect of Jordanian controlling ownership than the other ownership component.

It is concluded that if the companies want to have a more effective influence of investments on capital structure policy, their chance will be better in cases where the ownership is mainly locally concentrated.

5. In terms of firm performance, the results of the five study models show that a firm’s performance measured by return on assets (ROA) is negatively and significantly linked to its capital structure measured by the total debt to total assets in the Jordanian market during the period of 2010–2019. The main explanation for this outcome is that the profitable Jordanian firms avoid relying on debt in their capital structure to minimize the risk of bankruptcy. However, these companies prefer relying on their internal sources of funds instead. This result supports the outcome of the pecking order theory of capital structure, which indicates that companies prefer using internal sources of funds instead of other sources, and if this is not enough, they can use debt (Farooq, 2015).
6. The results of the five models show that firm size is positively and significantly linked with capital structure measured as total debt to total asset in the Jordanian market during the period of 2010–2019. This outcome suggests that larger Jordanian companies can use the debt in their capital structure more than smaller ones. It can be explained by the fact that larger firms can provide more collateral by having a higher value of assets and the ability to fulfilling credit requirements, which gives these companies more accessible access to the debt. This outcome supports the trade-off theory of capital structure since larger firms have the resources required to fulfil debt commitment and minimize the risk of bankruptcy (Gharaibeh and Al-Tahat, 2020).

7. Regarding examining the capital structure components, the findings of the robustness tests indicate that using the total debt to total asset (TD/TA) as a dependent variable makes the study models a better fit than using long-term debt and short-term debt separately. When the researcher re-ran the study models using short-term debt (CD/TA) and long-term debt (LD/TA) separately as dependent variables it showed lower values of F-statistics, $R^2$, and Adjusted $R^2$ compared to the main model’s results. These figures are consistent with previous studies of the Jordanian market, such as (Al-Fayoumi et al., 2010; Alkhawaldeh, 2012). This indicates that it is better to consider the total debt to total assets instead of the long-term and short-term components separately when examining capital structure decisions.

8. Finally, according to the use of return on equity (ROE) as a second proxy of firm performance, the findings of the robustness tests indicate that the values of F-statistics, $R^2$, Adjusted $R^2$ and DW are similar to the main model results. However, the primary difference is that ROA shows higher explanatory power measured by the value of the
coefficient in the study models. Based on this finding, ROA is a better measurement of performance. The study suggests that in the case of examining firm performance effect on capital structure, it will be better to consider the return on asset (ROA) instead of the return on equity (ROE) as a proxy of firm performance.

Despite these conclusions, several limitations should be considered, as shown in the following section.

5.5 Limitation of the Study

There are several potential limitations of this research that must be considered when evaluating the outcome of this study.

1. While this study identified relatively low leverage ratios for Jordanian firms, it did not explain the underlying reasons behind this observation.

2. The findings of this study argued that the reason behind the negative effect of concentrated ownership on firms’ capital structures is due to their attitude toward avoiding bankruptcy risk. However, it does not consider the influence of this type of risk on the effect of the firm’s ownership structure and investment on its capital structure.

3. Previous studies have shown mixed outcomes concerning capital structure determinants. This study also cannot determine a clear theoretical explanation of firms’ capital structure choices.

4. This study investigated the effect of ownership structure and investment decisions on the capital structure of firms in Jordan as a frontier market. However, it could be replicable in other markets with a similar ownership structure to the Jordanian firms and the results compared with the outcomes of this study.
5. Financial firms were excluded from the study sample due to their unique characteristics and different nature. Moreover, this study focused on the Jordanian firms listed on the Amman Stock Exchange (ASE); it did not include the unlisted firms.

6. Total concentrated ownership data was not readily available in the companies' financial statements and had to be hand-collected from various sources. The percentage of shares held by stockholders owning 5 percent or more was obtained from annual reports of all Jordanian companies listed on the ASE, while information on the ownership breakdown between local, Arab, and foreign stockholders was extracted from the Securities Depository Center (SDC) database.

7. Using the sample screening criteria, this study excluded companies with missing data for the study's variables, which minimized the sample size used in the empirical tests.

8. One of the limitations of quantitative research is its narrow focus, which means that it could miss larger contexts. However, the possibility of replicating the study using another setting provides an escape for quantitative studies; using standardized methods makes it possible for the research to be replicated in a variety of settings or across time while attaining similar results. This study is based on the deductive approach of research, which starts by reviewing the literature to thoroughly understand the research field, developing the hypotheses, conducting the regression model based on the literature, and collecting and analysing quantitative data to test the hypotheses. Adopting this standardized procedure enables this study to be replicated in different contexts or throughout time while generating comparable outcomes.
9. This study followed the definition of previous studies for the post-crisis period, which began in 2010, and adopted a ten-year data collection timeframe. However, a longer time frame could better encompass and indicate the relationship between variables.

10. The final limitation concerns the calculation of concentrated ownership. This study used the percentage of shares held by stockholders who own 5 percent or more. Future research could focus on exploring other methods of estimating concentrated ownership, such as using a threshold of 10 percent or more. Comparing the results obtained from different estimation methods could provide valuable insights into the limitations of using a particular threshold and the sensitivity of the results to different estimation methods. After considering these limitations, this study introduces many recommendations to assist interested parties, as shown in the following section.

5.6 Recommendations

After reviewing the outcomes and the limitations of this study, the researcher recommends the following:

1. Regarding the empirical results of the interaction effect, the study suggests that, in the case of examining capital structure decisions, it will be helpful to consider both the investment and level of ownership jointly instead of separately. This will guarantee decisions regarding raising capital using debt are made in a firm’s best interest. The study also indicates a stronger effect of local-concentrated ownership on capital structure compared with other concentrated owner identities as well as a stronger effect of the interaction between local-concentrated ownership and investments than the other ownership components. As such, it is recommended that companies’ decision-makers maintain a higher local ownership component than other components to have a more
effective influence on capital structure policy and a more effective influence of capital structure policy on investments.

2. This study recommended that government policymakers re-evaluate the investing process to consider the lack of investment opportunities available for Jordanian companies.

3. Relative to the low level of debt conducted by the Jordanian companies, this study recommends investigating the reasons behind this relatively low ratio, which may be due to either credit policies of the Jordanian economy and available leverage instruments or the companies’ managing policies.

4. This study recommends that policymakers encourage local ownership structure due to the influence of this type of ownership on a firm’s capital structure and its joint importance effect with firm investments.

5. According to the positive effect of firm size on capital structure, this study recommends that credit policymakers in Jordan consider the availability of debt to smaller Jordanian firms.

6. Finally, on an academic level, based on its empirical outcomes, this study recommends that the researcher investigate essential aspects in their future studies, as suggested in the future research section.

Based on these recommendations, the researcher encourages other researchers to consider several aspects that could motivate and improve their future studies, as shown in the following section.

5.7 Suggestions for Future Studies

This study’s outcome may encourage future studies to consider the following aspects:
1. This study encourages future investigations to shed light on the reasons for the relatively low leverage ratios for the Jordanian firm. A survey instructed to the financial managers of these firms could facilitate an understanding of the reasons behind this observation.

2. The result of the local-concentrated ownership having a more substantial effect on firms’ capital structure decisions compared with other identities of concentrated ownership encourages future studies to consider whether this identity of ownership is also family ownership to better understand the reasons behind the more substantial effect of this type of concentrated ownership.

3. It is also worth considering the influence of other variables on the effect of firms’ ownership structures and investment on their capital structures, such as bankruptcy risk and corporate governance variables (i.e., board size and CEO duality).

4. This study could be replicable in other markets with a similar ownership structure to the Jordanian firms and the results could be compared with the outcomes of this study.

5. This study suggests that, in the case of examining capital structure decisions in future studies, it will be better to measure the capital structure by the ratio of total debt to total assets (TD/TA) instead of the ratio of long-term debt to total assets (LD/TA) or short-term debt to total assets ratio (CD/TA).

6. Furthermore, because this study excludes the financial sector, an opportunity for replicating this research into the impact of ownership structure and investment on capital structure in financial firms may arise.

7. Finally, this study applied the quantitative approach to investigate firms’ ownership structures and investment impact on their capital structures. Future studies could utilize
qualitative techniques, such as interviews with the Jordanian firm’s financial managers, to examine this impact in depth and understand how it occurred.

5.8 Summary

The main goal of this study was to examine empirically whether the interaction between ownership structure and investment affects a firm’s capital structure by using Jordan as an example. To achieve this goal, the researcher investigated the effect of ownership structure and firm investments on capital structure separately and jointly. The study then closely examined the interaction between the identity of the concentrated owner (i.e., local, Arab, foreign) and investment. Furthermore, the researcher investigated the effect of firm size and performance on capital structure to capture differences in competitive conditions.

This chapter demonstrated how the researcher achieved the study objectives by answering the research questions and contributing to existing knowledge. It also disclosed the main conclusions and recommendations based on the empirical findings. Furthermore, the implications for investors, managers, and the government were discussed. Finally, the limitations of the study and suggestions for future studies were also presented.
Bibliography


Byoun, S., 2011. Financial flexibility and capital structure decision. Available at SSRN:


Appendices

Appendix I: Research Ethics Scrutiny (Postgraduate Research Students)

UNIVERSITY OF BEDFORDSHIRE Research Ethics Scrutiny (Postgraduate Research Students) When completing this form please ensure that you read and comply with the following:

Researchers must demonstrate clear understanding of an engagement with the following:

1. Integrity - The research has been carried out in a rigorous and professional manner and due credit has been attributed to all parties involved.

2. Plagiarism - Proper acknowledgement has been given to the authorship of data and ideas.

3. Conflicts of Interest - All financial and professional conflicts of interest have been properly identified and declared.

4. Data Handling - The research draws upon effective record keeping, proper storage of date in line with confidentiality, statute and University policy.
5. Ethical Procedures - Proper consideration has been given to all ethical issues and appropriate approval sought and received from all relevant stakeholders. In addition the research should conform to professional codes of conduct where appropriate.

6. Supervision - Effective management and supervision of staff and student for whom the researcher(s) is/are responsible

7. Health and Safety - Proper training on health and safety issues has been received and completed by all involved parties. Health and safety issues have been identified and appropriate assessment and action have been undertaken

The Research Institutes are responsible for ensuring that all researchers abide by the above. It is anticipated that ethical approval will be granted by each Research Institute. Each Research Institute will give guidance and approval on ethical procedures and ensure they conform to the requirements of relevant professional bodies. As such Research Institutes are required to provide the University Research Ethics Committee with details of their procedures for ensuring adherence to relevant ethical requirements. This applies to any research whether it be, or not, likely to raise ethical issues. Research proposals involving vulnerable groups; sensitive topics; groups requiring gatekeeper permission; deception or without full informed consent; use of personal/confidential information; subjects in stress, anxiety, humiliation or intrusive interventions must be referred to the University Research Ethics Committee. Research projects involving participants in the NHS will be submitted through the NHS National Research Ethics Service (NRES). The University Research Ethics Committee will normally accept the judgement of NRES (it will never approve a proposal that has been rejected by NRES), however NRES approval will need to be verified before research can commence and the nature of the research will need to be verified. Where work is conducted in collaboration with other institutions ethical approval by the University and the collaborating partner(s) will be required. The University Research Ethics Committee is
a sub-committee of the Academic Board and is chaired by a member of the Vice Chancellor’s Executive Group, appointed by the Vice Chancellor and includes members external to the University Research
Misconduct: Allegations of Research Misconduct against staff or post graduate (non-taught) research students should be made to the Director of Research Development.

UNIVERSITY OF BEDFORDSHIRE Research Ethics Scrutiny (Annex to RS1 form) SECTION A To be completed by the candidate Registration No: 1827185

Candidate: Dua’a Fawzi Shaker Shubita

Degree of: MPhil/PhD Research

Institute: Business and management Research Institution.

Business School/ Finance, Accounting and Economics

Research Topic: The Impact of Ownership structure and Investment decision on Capital Structure

External Funding: No

The candidate is required to summarise in the box below the ethical issues involved in the research proposal and how they will be addressed. In any proposal involving human participants the following should be provided:

- clear explanation of how informed consent will be obtained,
• how will confidentiality and anonymity be observed,

• how will the nature of the research, its purpose and the means of dissemination of the outcomes be communicated to participants,

• how personal data will be stored and secured

• if participants are being placed under any form of stress (physical or mental) identify what steps are being taken to minimise risk.

If protocols are being used that have already received University Research Ethics Committee (UREC) ethical approval then please specify. Roles of any collaborating institutions should be clearly identified.

Reference should be made to the appropriate professional body code of practice.

The empirical data source of this study will be from financial records and documents that are publicly available and will not deal with human beings.

Answer the following question by deleting as appropriate:

1. Does the study involve vulnerable participants or those unable to give informed consent (e.g. children, people with learning disabilities, your own students)? No

If YES: Have/will Researchers be DBS checked? No

2. Will the study require permission of a gatekeeper for access to participants (e.g. schools, self-help groups, residential homes)? No

3. Will it be necessary for participants to be involved without consent (e.g. covert observation in non-public places)? No

4. Will the study involve sensitive topics (e.g. sexual activity, substance abuse)? No
5. Will blood or tissue samples be taken from participants? No

6. Will the research involve intrusive interventions (e.g. drugs, hypnosis, physical exercise)? No

7. Will financial or other inducements be offered to participants (except reasonable expenses)? No

8. Will the research investigate any aspect of illegal activity? No

9. Will participants be stressed beyond what is normal for them? No

10. Will the study involve participants from the NHS (e.g. patients) or participants who fall under the requirements of the Mental Capacity Act 2005? No

If you have answered yes to any of the above questions or if you consider that there are other significant ethical issues then details should be included in your summary above. If you have answered yes to Question 1 then a clear justification for the importance of the research must be provided

*Please note if the answer to Question 10 is yes then the proposal should be submitted through NHS research ethics approval procedures to the appropriate NRES. The UREC should be informed of the outcome.

Checklist of documents which should be included:

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<th>Document</th>
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<td>Project proposal (with details of methodology) &amp; source of funding</td>
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<td>Documentation seeking informed consent (if appropriate)</td>
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<td>Information sheet for participants (if appropriate)</td>
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<td>Questionnaire (if appropriate)</td>
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Applicant declaration I understand that I cannot collect any data until the application referred to in this form has been approved by all relevant parties. I agree to carry out the research in the manner specified and comply with the statement of ethical requirements on page 1 of this form. If I make any changes to the approved method I will seek further ethical approval for any changes.

Signature of Applicant: Dua’a Fawzi Shubita
Date: 8/6/2020

Signature of Director of Studies: Prof. David Crowther
Date: 8/6/2020

This form together with a copy of the research proposal should be submitted to the Research Institute Director for consideration by the Research Institute Ethics Committee/Panel Note you cannot commence collection of research data until this form has been approved

SECTION B To be completed by the Research Institute Ethics Committee:
Approved

Signature Chair of Research Institute Ethics Committee:
Date: 12 June 2020

This form should then be filed on the student’s record
If in the judgement of the committee there are significant ethical issues for which there is not agreed practice then further ethical consideration is required before approval can be given and the proposal with the committees comments should be forwarded to the secretary of the UREC for consideration.

There are significant ethical issues which require further guidance Signature Chair of Research Institute Ethics Committee: Date

This form together with the recommendation and a copy of the research proposal should then be submitted to the University Research Ethics Committee.