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OWNERSHIP STRUCTURE AND RISK-TAKING BEHAVIOR IN IRANIAN LISTED COMPANIES

Master Thesis

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Abstract

This thesis examines the relationship between ownership structure and risk-taking behavior in an Iranian context. Ownership structure is categorized into ownership concentration, government ownership, and institutional ownership. We applied fixed effect regression models using a sample of 256 Iranian firms listed on the Tehran Stock Exchange (TSE) over 5 years from 2018 to 2022. The findings provide significant insights.

The research supports the hypothesis that higher government ownership has a positive relationship with risk-taking behavior, aligning with resource dependency theory. The study emphasizes the advantages government-linked corporations possess, including protection from market forces and favorable financing conditions. Interestingly, the Materials sector exhibits an even stronger influence of government ownership on risk-taking.

Contrary to the hypothesized negative relationship, models indicate a positive and statistically significant association between ownership concentration and risk-taking. The unique economic conditions of Iran, characterized by persistent high inflation and negative real interest rates, provide potential explanations for this result.

Regarding institutional ownership, the study finds a positive but statistically insignificant relationship with risk-taking. This unexpected result suggests that fiduciary responsibilities and regulatory constraints associated with institutional investors may not be the primary drivers of risk aversion in the Iranian context. Additionally, control variables such as Return on Assets (ROA), tangibility, and Firm Size demonstrate consistent relationships with risk-taking behavior, providing further insights into the financial dynamics of Iranian companies.

The research limitations, such as sampling restrictions, variable endogeneity, and model simplifications, are addressed in the conclusion.

Keywords: ownership structure, ownership concentration, institutional ownership, government ownership, Risk-taking behavior, agency theory, resource dependency theory, Iran

Contents

1 Introduction

This thesis is about how ownership structure, particularly government ownership, affects the risk-taking behavior of companies listed in Iranian stock exchanges. The first chapter provides background information about these concepts, risk-taking behavior, and their relevance in theory and practice. It also introduces the research question and relevance of the study. Lastly, the last section of this chapter gives an overview of what to expect in the thesis proposal.

1.1 Background information

1.1.1 Iran's Economic and corporate landscape

In the distinctive economic setting of Iran, with high inflation and negative real interest rates, this thesis delves into how ownership structures, particularly government ownership, shape the risk-taking behavior of companies listed on Tehran Stock Exchange. With a unique government system and a complex interplay between public and private sectors, the study provides insights into economic decision-making within Iran's specific governance framework. Beyond contributing to academic understanding, this research carries practical implications for policymakers, investors, and corporate governance regulations in navigating the challenges and opportunities posed by Iran's economic conditions.

1.1.2 Ownership structure

Ownership structure refers to the distribution of ownership and control rights among shareholders within a corporation. It encompasses the composition of the ownership base, including the identity of major shareholders, the concentration or dispersion of shareholdings, and the presence of institutional investors or government ownership. Understanding ownership structure is crucial in corporate governance as it influences decision-making, accountability, and the alignment of interests between shareholders and management. In this regard, studies highlight the significance of ownership structure in corporate governance. Ownership concentration, government ownership, managerial ownership, institutional ownership, and family ownership are key factors that influence decision-making, firm performance, and governance outcomes.

1.1.3 Risk-taking behavior

During their financial decisions, managers face choices that involve taking on some level of risk. These decisions can impact market value of a company which is determined by

the expected future cash flows of a firm and risk is considered when discounting these cash flows. If a company takes too much risk, it can have a negative effect on future cash flows and potentially decrease market value. Therefore, managers need to a tradeoff to balance between high returns. In this regard, there are some factors that can affect firm's risk such as Leverage, R&D investments, Acquisitions and Dividend ratio.

1.2 Research questions and relevance

Corporate Governance (CG) is not a new concept for the transition economies of the Middle East, but corporate governance is especially important since these economies do not have the long-established institutional infrastructure to deal with corporate governance issues (Braendle et al,2013).

After privatization of many government-owned enterprises and the emergence of a huge number of private sector firms, the ownership structure of firms has become complex in Iran's economy. However, the government still maintains dominant role in many industries and majority ownership of some of namely private companies is government and government related companies. research shows that privatization has not had a positive effect on the profitability of the firms listed on the Tehran Stock Exchange; rather, the effect has been negative. Moreover, privatization of these firms has had no effect on their sales effectiveness and efficiency. instead, the debts and risks of these firms has increased (Alipour,2013). A study highlights the political connections of interest groups and political interventions as the principal issues relating to Iranian CG mechanisms in a designed framework. Moreover, it is concluded that specific CG characteristics of the political economy in Iran, have a negative impact on the quality of CG, including state ownership, state board, state CEO, concentrated ownership, board and CEO alignment with controlling shareholders (Mohammadrezaei et al, 2013). In addition, Iran's economy is currently under sanctions that have limited foreign investment in the country. However, this condition will not be consistent and Iran's stock exchanges could become an attractive destination for foreign investors in the future as an emerging market. These issues raise important questions about how different ownership structures affect firms' risk-taking behavior.

There is no empirical research on the relationship between government structure and risk-taking behavior in Iran stock exchanges. previous studies have focused on the impact of ownership concentration on firm performance, with mixed results. Lotfi and Mohammadi (2014) found that there is a significant positive correlation between the Management Ownership and Risk Management; Also there is a significant negative

correlation between the Ownership Concentration and Risk Management. Rezai and safarzadeh (2022) found that the CG has a positive association with earnings quality. More precisely, better CG mechanisms cause lower earnings smoothness, more predictable and persistent earnings, and higher levels of timeliness, conservatism and value relevance. Mashayekhi and Bazaz (2008) found that board size is negatively associated with firm performance. Moreover, the presence of outside directors strengthens the firms' performance.

There are limited studies about relationship in government ownership and performance and corporate risk taking around the world. Boubakri et al (2013) had research with sample of 26 emerging markets and 31 industrialized countries. They found that in newly privatized firms, relinquishment of government control, openness to foreign investment, and improvement of country-level governance institutions are key determining factors of corporate risk-taking. In another study, Uddin (2016) found a non-linear U-shaped relationship between government ownership and risk taking in UAE listed companies.

This study aims to fill this gap by examining "how ownership structure, and specifically government ownership, influence firms' risk-taking behavior in Iranian listed companies?"

This Study in Iran is interesting and relevant for several reasons:
- Unique government system: Iran has a specific government system, with a Supreme Leadership Authority that have significant power. Understanding the implications of government ownership in this system can provide valuable insights into the dynamics between public authorities and private interests and also how they influence economic decisions and outcomes.
- Complex relationship between public and private sectors: The Iranian economy is characterized by a complex combination between state-own enterprises, revolutionary foundations, and a (para)governmental sector controlled by security and military organizations. Exploring the effects of government ownership in this context can provide inside the challenges and opportunities faced by the private sector and the potential impact on economic growth and competition.
- Policy implications: Policymakers involved in corporate governance and regulation can use the findings to design effective rules. They can consider the benefits and drawbacks associated with different ownership structures and create

regulations that encourage responsible risk-taking while protecting shareholder interests.

- Investment considerations: The findings are also relevant for investors, such as venture capitalists, private equity firms, and institutional investors. Investors can consider how ownership structure affects risk-taking behavior when evaluating investment opportunities. Understanding this relationship helps identify companies with appropriate risk profiles that match investors' preferences and expectations.

1.3 Outline of study

The subsequent sections of this paper are organized as follows. Chapter 2 provides a comprehensive literature review on corporate governance theories and related literatures to enhance our understanding of the concepts explored in this study. Chapter 3 then formulates the hypotheses that will be tested and beside variables and type of their measurement.

2 Literature review and hypothesis development

2.1 Main theories of corporate governance

2.1.1 Agency theory

Agency theory is a main conceptual framework used in financial and economic research to analyze the relationships between owners and managers (Jensen & Meckling, 1976; Fama & Jensen, 1983). It has a deep concentration on the conflicts of interest that arise when the principal gives authority to the agent to act on their behalf. The principal-agent relationship is characterized by a wide variety of goals and asymmetric information, leading to potential agency problems.

In agency theory, the principal's objective is to maximize the value of company, while the agent aims to pursue their own self-interests. This conflict arises due to the differing risk preferences, information asymmetry, and moral hazards between the principal and agent. The principal may not have complete knowledge about the agent's actions and decisions, creating an agency cost to monitor and control the agent's behavior.

Agency theory helps to achieve the interests of principals and agents by establishing contractual relationships that specify the agent's responsibilities, performance measures, and incentives. Principals can encourage agents to act in their best interests and reduce agency costs by creating appropriate contracts. (Jensen & Meckling, 1976). Moreover, agency theory provides insights into the design of incentive structures to encourage desired agent behavior. It can include performance-based compensation, stock options, and other financial incentives to connect agent incentives with achievement of main objectives (Holmström, 1979). In addition, Agency theory emphasizes the importance of governance mechanisms in reducing agency costs. These mechanisms include monitoring, control mechanisms, information systems, and the role of the board of directors in overseeing managerial actions (Fama & Jensen, 1983; Shleifer & Vishny, 1997).

Agency theory has been widely studied and also applied in various fields such as finance, economics, and management. It has contributed to our understanding not only corporate governance and executive compensation, but also organizational behavior and the design of incentive systems (Jensen & Meckling, 1976).

Although its widespread use, agency theory has also faced criticism due to some limitations. Researchers have highlighted limitations such as the assumption of rationality, the focus on financial incentives, and the neglect of social and psychological factors influencing behavior (Donaldson & Davis, 1991; Foss & Klein, 2021). In this regard, academics have improved the theory by using behavioral perspectives, addressing contextual factors, and considering alternative governance mechanisms (Haleblian & Finkelstein, 1993; Jensen, 1993).

2.1.2 Stakeholder theory

In addition to agency theory, stakeholder theory is a widely recognized with influential perspective in corporate governance. It focuses on identifying and analyzing different stakeholders who have an obvious interest or are affected by the activities and decisions of an organization (Freeman, 1984; Freeman, Harrison, Wicks, Parmar, & Colle, 2010). According to the stakeholder theory, organizations should not only prioritize the interests of shareholders but also consider the needs, concerns, and expectations of all relevant stakeholders.

The main principle of stakeholder theory is that organizations exist in a complicated structure of relationships with multiple stakeholders, including employees, customers,

suppliers, local communities, government entities, and the environment (Freeman, 1984). These stakeholders can largely influence an organization's performance, reputation, and long-term sustainability. Stakeholder theory argues that organizations should actively manage and balance the interests of all stakeholders in order to achieve long-term success.

Studies in stakeholder theory has emphasized the importance of understanding and engaging with stakeholders to address their diverse needs and interests (Mitchell, Agle, & Wood, 1997). It also emphasizes the importance of stakeholder identification, analysis, and prioritization, as well as effective communication and collaboration with stakeholders. Organizations can improve their decision-making processes, mitigate risks, and build mutually beneficial relationships by considering the perspectives and concerns of stakeholders.

Furthermore, stakeholder theory emphasizes the long-term perspective of organizational success. Stakeholder theory suggests that organizations take a more comprehensive approach by taking into account the impact of their actions on all stakeholders rather than just concentrating on maximizing shareholder wealth in the short term (Freeman et al., 2010). Organizations can do this by creating sustainable value and contributing the well-being of society as a whole.

Stakeholder theory recognizes that stakeholders have different levels of power, legitimacy, and urgency, which influence their ability to affect organizational outcomes (Mitchell et al., 1997). Power refers to the ability of stakeholders to influence organizational decisions and actions and legitimacy refers to the perceived relevance or validity of stakeholders' claims. In addition, urgency reflects the time sensitivity and importance of stakeholders' concerns. By understanding these factors, organizations can prioritize stakeholder engagement and allocate resources properly.

Implementing stakeholder theory requires organizations to adopt stakeholder-oriented practices, such as stakeholder engagement, dialogue, and responsiveness (Valentinov and Chia, 2022). Organizations which are engaged with stakeholders can take advantage of improved relationships, enhanced reputation, increased trust, and better risk management. Stakeholder theory also complies with the concept of corporate social responsibility (CSR), as it encourages organizations to go beyond legal and economic obligations and embrace ethical, social, and environmental responsibilities.

2.1.3 Stewardship theory

In addition to two mentioned theories, stewardship theory is another prominent perspective used in corporate governance research. Stewardship theory emphasizes the strong alignment of interests between principals and agents and highlights the inherent motivation of managers to act as stewards of the firm (Donaldson & Davis, 1991; Davis, Schoorman, & Donaldson, 1997). Unlike agency theory, which assumes a conflict of interest between principals and agents, stewardship theory suggests that managers have a natural tendency to act in the best interests of the organization and its stakeholders.

The core principle of stewardship theory is that managers possess intrinsic motivation and a sense of responsibility towards the firm's well-being (Donaldson & Davis, 1991). They are motivated by a desire to protect the long-term interests of the organization, enhance its reputation, and ensure its sustainability (Waldman & Siegel, 2008). Stewardship theory states that managers are more likely to put organizational goals ahead of personal interests when they see themselves as stewards. (Davis et al., 1997).

The factors that affect managerial behavior and motivate stewardship-oriented actions within organizations have been investigated by stewardship theory research. For instance, trust between principals and agents is considered a vital element in motivating stewardship behavior (Davis et al., 1997). Principals are more willing to delegate decision-making and give managers more freedom when they have trust in their agents. As a result, this trust empowers managers to act responsibly and in the best interests of the organization.

Furthermore, stewardship theory suggests that certain organizational practices and structures can support and enhance stewardship behavior. For instance, fostering a participatory and inclusive organizational culture, where employees feel valued and involved in decision-making processes, can contribute to stewardship-oriented behaviors (Davis et al., 2007). Additionally, providing managers with long-term incentives such as stock ownership or profit-sharing plans can align their interests with those of the organization and encourage stewardship behavior (Agarwal, 2010).

It is important to note that the possibility of conflicts of interest or agency issues within organizations is not entirely dismissed by stewardship theory. On the other hand, it suggests that managers under certain conditions can be motivated to act as responsible

stewards and align their actions with the interests of the organization and its stakeholders (Davis et al., 1997).

2.1.4 Resource dependency theory

Resource Dependency Theory is an influential theoretical framework in the field of organizational and business research. it focuses on understanding relationships between organizations and their external environment, particularly in terms of resource acquisition and dependence (Pfeffer & Salancik, 2003).

In the context of corporate governance and agency theory, Resource Dependency Theory presents valuable insights to the dynamics between organizations and their stakeholders. it suggests that organizations are dependent on external resources such as capital, information, technology, and human expertise to survive and thrive (Pfeffer & Salancik, 2003). The theory emphasizes that organizations interested in reducing uncertainty and secure necessary resources to maintain their operations to achieve their goals.

In relation to the agency problem, Resource Dependency Theory offers a perspective on how organizations address their resource dependencies and manage the conflicting interests between principals and agents. The separation of ownership and control creates asymmetry between shareholders and managers which leads to potential agency conflicts. However, Resource Dependency Theory suggests that managers also face resource dependencies, and their actions may be influenced by the need to acquire and control critical resources.

Companies can employ a variety of governance mechanisms based on Resource Dependency Theory to reduce agency costs and align the interests of shareholders and managers. For instance, the board of directors can play a crucial role in monitoring and controlling managerial behavior to ensure alignment with shareholder interests. By monitoring management's actions and decisions, the board acts as a mediator between the firm and its resource providers, reducing uncertainty and ensuring resource availability (Hillman & Dalziel, 2003).

Additionally, this theory highlights the importance of strategic partnerships and interorganizational relationships for resource acquisition. Firms can form partnerships or alliances with other organizations to gain access to specific resources or expertise to reduce their dependence on internal managers or external markets (Pfeffer & Salancik,

2003). These partnerships can enhance a firm's resource base, improve its competitive position, and mitigate agency problems.

2.1.5 Institutional theory

Institutional theory is an important framework in the field of corporate governance that helps explain how formal and informal rules and norms shape the behavior of organizations. This theory emphasizes the role of institutional environments in influencing the governance structures and practices adopted by firms (Scott, 1995).

According to institutional theory, organizations seek legitimacy by following the established institutional norms, rules, and expectations within their environment (DiMaggio & Powell, 1983). These institutional pressures can influence corporate governance mechanisms and practices, as organizations strive to gain acceptance and support from stakeholders such as shareholders, employees, customers, and regulatory bodies.

One key aspect of institutional theory in corporate governance is the focus on isomorphism, which refers to the tendency of organizations to adopt similar structures and practices to enhance their legitimacy and reduce uncertainty (DiMaggio & Powell, 1983). Isomorphism can occur through three main mechanisms:

Coercive isomorphism: Organizations conform to external pressures and expectations to avoid penalties or legal sanctions. For example, firms may comply with corporate governance regulations imposed by government authorities or stock exchanges to avoid fines or loss of reputation (Krause, Semadeni, & Cannella Jr, 2014).

Mimetic isomorphism: Organizations imitate the practices of successful or reputable firms in their industry. They do so because they believe that mimicking these practices increases their legitimacy and reduces uncertainty. For instance, firms may adopt governance structures and practices similar to those of industry leaders or well-regarded companies to gain acceptance from shareholders and other stakeholders (Zajac & Westphal, 1994).

Normative isomorphism: Organizations conform to professional standards, industry norms, or social expectations. These norms and standards may not be legally enforced, but they are widely accepted and followed within a particular industry or professional community. For example, firms may adopt governance practices that are consistent with

industry best practices or conform to socially responsible investment guidelines to enhance their reputation and attract socially conscious investors (Suchman, 1995).

Institutional theory suggests that the adoption of specific governance mechanisms and practices is influenced by the institutional context in which firms operate. This theory highlights the importance of external factors and social influences in shaping corporate governance arrangements.

2.2 Underlying concepts related to government ownership
2.2.1 Rent seeking behavior

Rent-seeking activities in any country can have significant implications for the economy and the quality of accounting information. Rent-seeking refers to the practice of firms manipulating public policies or economic conditions to gain favors and economic benefits from the government (Liu et al, 2018). While rent-seeking can provide advantages to individual firms, it often leads to misallocation of resources and has negative consequences for the overall economy.

Studies have shown that rent-seeking activities by firms can result in various economic benefits. For example, firms engaged in rent-seeking may receive better government services, subsidies, and lower tax rates (Cai, Fang, & Xu, 2011). Rent-seeking can also lead to increased revenue (Wang & You, 2012), approval of initial public offerings (Liu, Tang, & Tan, 2013; Piotroski & Zhang, 2014), reduced threat of government extraction (Kusnadi, Yang, & Zhou, 2015), avoidance of guilt by association spillover (Jia & Zhang, 2016), and increased access to bank credit and loan approvals (Chen, Liu, & Su, 2013; Fan, Rui, & Zhao, 2008; Khwaja & Mian, 2005).

However, while rent-seeking activities may benefit individual firms, they can also come with costs. Several studies have highlighted the adverse impacts of rent-seeking on firm productivity, revenue, corporate investment, employment, and capital structure. These negative effects suggest that the economic benefits derived from rent-seeking activities are often accompanied by drawbacks for the firm (Cai, Fang, & Xu, 2011; Wang & You, 2012).

2.2.2 State capture

State Capture is a phenomenon that powerful individuals or groups within a state gain significant control on state institutions and resources to advance their own interests, often with expense of public welfare and effective corporate governance. This theory examines the impact of state capture on corporate decision-making, accountability, and the overall governance environment. (Hellman et al., 2003)

State capture occurs when private interests, such as influential individuals or companies, exert inappropriate influence over government officials, regulators and public institutions to shape policies and decisions in their favor (Hellman et al., 2003). This influence can also apply to corporate governance processes and outcomes, affecting the allocation of resources, appointment of key personnel, and the enforcement of regulations within companies.

The presence of control of the state in the corporate governance context can lead to a range of negative consequences. First, it may threaten transparency and accountability, as decision-making processes become subject to bias and manipulation. This can result in the decline of public trust, weakened institutional capacity, and increased corruption risks within the corporate sector.

Control of state can also distort market competition by giving some businesses preferential treatment, limiting fair market access, and hindering the entry of new competitors. This leads to reduced efficiency, innovation, and overall economic growth.

studies have examined the impact of control of state on corporate governance and firm performance within the context of government ownership. For instance, research has explored the influence of state-owned enterprises (SOEs) on the political economy, highlighting the potential for collusion, rent-seeking behavior, and the concentration of economic power (Shleifer & Vishny, 1997). Other studies have investigated the impact of state capture on corporate boards, executive compensation, and the behavior of managers, highlighting the potential for conflicts of interest and misalignment with shareholder value (Hellman et al., 2003).

A combination of measures is required to mitigate state capture and improve effective corporate governance. Strengthening institutions, such as regulatory bodies and anti-corruption agencies, is crucial to ensure independence, accountability, and transparency. Enhancing the enforcement of regulations and corporate laws can help mitigate the

influence of captured interests and promote fair market competition (Hellman et al., 2003). In addition, promoting civil society engagement, whistleblower protection, and media freedom can open doors for identifying and addressing instances of state capture.

2.3 Literature on Financial leverage

Financial leverage refers to the use of debt financing in a firm to fund its operations and investments. The level of financial leverage used by a company can have significant implications for its performance and value.

Several theories and factors have been explored in the literature to explain the determinants of financial leverage. One widely studied determinant is the trade-off theory, which suggests that firms weigh the benefits of debt, such as tax advantages and also increased financial flexibility, against the costs, such as bankruptcy risk and agency costs, when deciding on their optimal capital structure (Myers, 1984). According to this theory, factors influencing financial leverage include profitability, growth opportunities, firm size, asset tangibility, and business risk.

Profitability has been found to have a negative association with financial leverage (Titman & Wessels, 1988). Firms with higher profitability may have less need for external financing and may prefer to rely on internal funds, reducing their reliance on debt. Growth opportunities are also negatively related to leverage, as firms with greater growth prospects may face higher investment risk and prefer to use less debt to maintain financial flexibility (Graham & Harvey, 2001).

Firm size has been found to have a positive impact on leverage, indicating that larger firms tend to use more debt (Titman & Wessels, 1988). This may be because larger firms have easier access to debt markets and can benefit from economies of scale in managing debt. Asset tangibility, referring to the proportion of tangible assets in a firm's total assets, is positively related to leverage (Rajan & Zingales, 1995). Tangible assets provide collateral for debt, reducing the agency costs associated with debt financing.

Business risk, measured by factors such as volatility of earnings or industry risk, is expected to have a positive impact on leverage (Graham & Harvey, 2001). Riskier firms may be more likely to use debt to take advantage of the tax shield provided by interest payments and to exploit growth opportunities. However, the relationship between risk

and leverage can be nonlinear, with highly risky firms facing constraints in accessing debt due to their higher bankruptcy risk.

In addition to these determinants, other factors such as market conditions, corporate governance, and institutional factors have also been examined in the literature. Market conditions sush as interest rates and the availability of credit, can influence a firm's borrowing decisions (Frank & Goyal, 2009). Corporate governance mechanisms, such as board independence and ownership structure, can affect the monitoring and control of debt usage (Mehran, 1995). Institutional factors, such as legal and regulatory frameworks, can shape the overall financial environment and influence leverage choices (La Porta et al., 1998).

2.4 Literature on Corporate governance in Iran
2.4.1 Iran economy and privatization

Iran has a specific government system. There is a Supreme Leadership Authority which is highest position in Islamic republic of Iran and is a life tenure post. According to article 110 and 57 of the constitution, the Supreme Leader delineates the general policies of Islamic republic Iran he is the commander-in-chief of the Armed Forces and Also the Executive and the Judiciary system shall operate under the superintendence of him. (Papan-Matin,2014).

The Iranian economy under the Islamic Republic is heavily influenced by the state and has complex relationships between public authorities and private interests. Corporation management, credit allocation, subsidization, and price control are often politicized. Despite attempts at economic liberalization and privatization over the past two decades, state-run enterprises, unregulated revolutionary foundations, and a (para)governmental sector controlled by security and military organizations continue to dominate. This has hindered the growth of an independent and competitive private sector. (Shirzad,2010)

Despite efforts to promote efficiency and economic growth through privatization, political interference in business is likely to persist. In some cases, the change of ownership has mainly benefited politically connected business elites who may not even be potential entrepreneurs. This is because a minority in the top echelons of society holds the real economic power, and reform policies, including privatization, have served to uphold and advance their interests. (Shirzad,2010)

It should be noted that after Islamic revolution, in 1979 most of private companies declared nationalized by government being owned by government and government

related foundations. In 1989 Iranian government declared its intention to privatize most state industries and prosess of privatization continued till now in different periods. However, the type of privatization is different with other parts of the world.

Regarding ownership structure, there is ministries, political and military organizations, and foundations that directly or indirectly considered governmental. Most of these institutions have its own companies such as holdings and banks. Additionally, holding and banks owned some public companies and a lot of listed companies which named Khosoulati.

Kosoulati corporation (semi-private entity) is a terminology entered in Iranian vocabulary after privatization that led to a high number of companies that are not really private companies and managed indirectly by other government linked companies. During privatization most of companies namely privatized by listing in Iraninan stock exchanges but controlling stakes transfers to government linked companies. So khosoulati is a combination of "private" and "governmental" in persian language. (Nemch,2023)

2.4.2 Regulatory and stock exchanges in Iran

There are two stock exchanges in Iran, Tehran stock exchange (TSE) and Iran Fara Bourse Co. (IFB). Tehran stock exchange is Iran's largest and oldest stock exchange, which established in 1967. Iran Fara Bourse Co. (IFB), also known as Farabourse, is an exchange for securities and other financial instruments in Tehran . The establishment of Iran Fara Bourse Company is one of the main steps for developing the capital market in Iran and diversifying financial instruments traded in the securities market. One of main differences among these exchanges is IFB has more convenient requirements for listing companies. So, TSE has a higher level in companies' structure, size and profitability and companies who improve themselves among years transfer from IFB to TSE.

 All stock exchanges and other exchanges are operates under the official supervision of Securities and Exchange Organization (SEO). SEO is the sole regulatory entity for the regulation and development of the capital market in Iran.

2.4.3 Corporate governance in Iran

Corporate governance in Iran has undergone some improvements in recent decades, although it is still not well developed. The establishment of the Tehran Stock Exchange (TSE) in 1967 marked a significant step in the process of developing financial markets in

Iran. However, it was not until the early 2000s that the Iranian government recognized the importance of corporate governance in enhancing the competitiveness of Iranian companies and attracting foreign investment. (Mashayekhi & Bazaz, 2008)

Efforts to improve corporate governance in Iran were initiated by the TSE management, the Islamic Parliament Research Center, and the Economic and Finance Ministry. The government's focus on privatization and expanding the capital market through the Third and Fourth Economic Development Plans has shown an interest in incorporating external governance structures. Despite these efforts, Iranian firms still exhibit weak internal and external corporate governance compared to companies in industrialized nations. (Mashayekhi & Bazaz, 2008)

As discussed earlier, ownership structure in Iran has traditionally been dominated by the government, either directly or indirectly. Usually, indirect ownership of companies is by government linked institutional investors. However, recent policies have aimed at increasing external control mechanisms. Currently, institutional investors, such as pension funds, mutual funds, and insurance companies, which most of them owned by government or government related companies and organizations, hold a significant share of publicly traded stocks on the TSE. Major shareholders, including institutional investors, exert influence on management decisions and executive appointments, while minority shareholders have limited protection of their interests. Table 1 illustrates the type of ownership in listed and non-listed companies in Iran

Table 1: Type of ownership in listed and non-listed companies is Iran

Ownership	Listed companies	Non listed
institutional	directly	directly
Government	Directly, or "indirectly via institutional"	"Directly", or "indirectly"
Private or family	"Directly", or "indirectly via institutional"	"Directly", or "indirectly"
Indivisuals	Minority owners	-
Managerial	Directly	Directly

Internal control supervision mechanisms in Iran are inadequate, with poorly defined and communicated roles and responsibilities within organizations. This often results in managers prioritizing personal gain over corporate interests. Despite these inefficiencies, public companies listed on the TSE are required to have their financial statements reviewed by an external auditor and audit committees (Mashayekhi & Bazaz,

2008). Although based on Iranian business law, corporations have board of directors and they should choose CEO, in government linked companies this process is only sort of formality and in most of the times, CEO appoints by upper authorities and do not have any real accountability to boards.

2.5 Hypothesis development

2.5.1 Government ownership and risk-taking

Hypothesis 1: Government ownership has a positive effect on risk-taking behavior.

The hypothesis suggests that companies with government ownership are more interested in engaging in higher levels of risk-taking compared to privately owned companies. This assertion finds support in the resource dependency theory, where government-linked corporations can have advantages that encourage increased risk-taking behavior.

Government-linked corporations have several advantages, such as better protection from the market for corporate control, easier access to alternative sources of financing, and guaranteed (implicit) solvency (Deesomsak et al. ,2004). This framework aligns with the state capture theory, as government ownership can facilitate an environment in which companies are more willing to take on risks due to the protective influence of the state.

To avoid the dilution of state control, government linked companies tend to borrow rather than issue stocks which leads to higher leverage in government ownership (Dewenter and Malatesta, 2001). These actions are also consistent with the resource dependency theory, where companies utilize various financial avenues, including borrowing, to secure their operations and strategic positioning.

Furthermore, the availability of implicit or explicit loan guarantees for government-linked companies allows them to secure loans at favorable interest rates, reducing the potential risk of financial distress. This dynamic corresponds to the principles of both theories, as resource dependency theory posits that government partnership provides access to favorable financing, while state capture highlights the collaborative bond between firms and the government.

Research by Boubakri et al. (2013), Abobakr & Elgiziry (2016), Liu et al. (2011), and Ang & Ding (2006) found the connection between government ownership and increased risk-taking. For instance, Liu et al. (2011) found that state-owned enterprises in China

exhibit a higher inclination toward debt utilization and maintain elevated leverage ratios compared to non-SOEs. These findings lend empirical support to the hypothesis by illustrating how government ownership can indeed foster a climate conducive to heightened risk-taking behavior.

Regarding this hypothesis there is another motivation which is specific to Iran. Iran has a constant high inflation beside negative real interest rates that provide a superior situation for companies who have access to financial resources (Hogg, 2022; World Bank Open Data, n.d.). Due to the mentioned above benefits of government ownership, it can highlight relationship between government ownership and financial leverage among Iranian companies. 2.5.2 ownership concentration and risk-taking

Hypothesis 2: Ownership concentration has a negative effect on risk-taking behavior.

The hypothesis suggests that companies with concentrated ownership, where a small number of shareholders hold a significant proportion of the ownership, tend to exhibit lower levels of risk-taking compared to companies with more dispersed ownership structures. There are several reasons to support this hypothesis. First, concentrated ownership may lead to a higher degree of control and influence by a small group of shareholders. These major shareholders often have a more conservative risk appetite as they have a substantial stake in the company and may prioritize wealth preservation over riskier investments (Morck et al., 2005).

Second, concentrated ownership able to create agency problems. When ownership is concentrated, there is a greater potential for agency conflicts between controlling shareholders and minority shareholders or managers. Controlling shareholders may exert influence to protect their own interests, leading to a conservative approach to risk-taking to minimize the chances of value erosion (Bebchuk et al., 2002).

Empirical evidence supports the negative relationship between ownership concentration and risk-taking behavior. Studies by Lean, Ting & Qian (2015). Abobakr & Elgiziry (2016). Liu, Tian& Wang (2011) have found that concentrated ownership negatively impacts risk-taking in various industries and countries.

2.5.3 Institutional ownership and risk-taking

Hypothesis 3: Institutional ownership has a negative effect on risk-taking behavior.

The hypothesis suggests that companies with higher levels of institutional ownership tend to exhibit lower levels of risk-taking compared to companies with lower institutional ownership.

There are several reasons to support this hypothesis. First, institutional investors, such as pension funds, mutual funds, and insurance companies, often have fiduciary responsibilities to protect the interests of their clients or beneficiaries. So, they tend to have a more conservative approach to risk-taking to preserve capital (Chung & Wang, 2014).

Second, institutional investors are subject to various regulatory and compliance requirements. These requirements often impose restrictions on the types and levels of risk that institutional investors can undertake. Compliance with these regulations may result in institutional investors adopting a more risk-averse stance (Chung & Wang, 2014).

Additionally, institutional investors are typically large shareholders with significant influence over corporate decision-making. Their involvement can lead to increased monitoring and oversight, which may reduce managerial discretion and mitigate excessive risk-taking by the management team (Black, 2001).

Empirical studies support the negative relationship between institutional ownership and risk-taking behavior. Research by Gompers and Metrick (2001), Chen et al. (2012), Chung & Wang (2014) has found that higher institutional ownership is associated with lower levels of risk-taking and volatility in corporate decision-making.

3 Research method

3.1 Methods

The purpose of this study is to examine the relationship between ownership structure and a firm's risk-taking behavior. It builds on previous research and utilizes balanced panel data. The research in this field has predominantly employed Ordinary Least Squares (OLS) regression analysis (Berger et al., 1997; Detthamrong et al., 2017; Granado-Peiró & López-Gracia, 2017; Sheikh & Wang, 2012; Wen et al., 2002). By applying the OLS regression method, this study aims to test the hypothesis that ownership has an impact on a firm's risk-taking behavior. It allows for the analysis of various independent variables and their influence on the dependent variable.

Additionally, this study adopts a cross-sectional research design that aligns with the OLS regression method.

It is essential to test four statistical assumptions of regression analysis before conducting the regressions: normality of distribution, homoscedasticity, linearity, and absence of correlated errors (Hair et al, 2014; Henseler, 2019). Descriptive and univariate statistics are generated to assess these assumptions. If potential problems arise due to severe deviations, normal probability plots are used to evaluate the approximate normal distribution of variables. Additionally, checking for multicollinearity is crucial, as it can significantly affect the research results (Hair et al., 2014). Multicollinearity is commonly assessed using the variance inflation factor (VIF), with values preferably below 5 or at most below 10 to mitigate substantial multicollinearity (Henseler, 2019). If any variables fail to meet these criteria, appropriate remedies, such as transformation, should be applied. Endogeneity problems refer to the potential issue of reversed causality between the dependent and independent variables. Addressing these endogeneity concerns is crucial when examining the relationship between ownership structure and risk-taking behavior.

3.2 Model specification

The goal of this study is to test the influence of government ownership and ownership concentration on leverage. To achieve this, a fixed effect regression model will be employed. This model investigates the influence of several independent variables, including ownership concentration, government ownership, and institutional ownership. Additionally, the model takes into account control variables such as firm size, return on assets, tangible assets, and sales growth. By utilizing this approach, hypotheses 1,2 and 3 can be tested.

To test the first hypothesis, which examines the impact of government ownership on risk-taking behavior, the following regression equation can be formulated:

Risk-taking behavior = β_0 + β_1 * Government ownership + β_2 * Institutional ownership + β_3 * Ownership concentration + β_4 * Control variables + ε

Where:

Risk-taking behavior represents the dependent variable, capturing the level of risk-taking behavior in companies.

Government ownership is measured as the aggregate percentage of shares held by government-linked shareholders.

Institutional ownership is measured as the aggregate percentage of shares held by institutional shareholder members.

Ownership concentration is measured as the aggregate percentage of shares held by the three largest shareholders.

Control variables (F_SIZE, ROA, TANG, GROWTH, IND) are included to control for potential confounding factors that may influence risk-taking behavior.

$\beta 0$ represents the intercept, capturing the constant term in the regression equation.

$\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$, etc., are the coefficients of the independent and control variables, representing the expected effect of each variable on risk-taking behavior. They will be estimated through regression analysis using ordinary least squares (OLS) regression. The analysis will provide insights into the relationship between government ownership and risk-taking behavior while controlling for the influence of institutional ownership, ownership concentration, and other control variables.

ε represents the error term, accounting for unexplained variation in risk-taking behavior not captured by the included variables.

3.3 Variables

In this study the independent variables are government ownership, ownership concentration and the dependent variable is corporate risk-taking behavior which are explained for non-financial listed companies in Iran.

3.3.1 Dependent variable

As the dependent variable in this research, the level of risk-taking behavior in companies will be examined to test hypotheses 1, 2, and 3. Risk-taking behavior can be measured using various indicators that capture different aspects of risk. Past research has employed different measures to assess risk-taking behavior.

One commonly used measure is firm leverage, which reflects the extent to which companies rely on debt financing. Detthamrong et al. (2017) measured financial leverage as the ratio of total debt to total assets. This measure has been utilized by

several researchers in their studies (Berger et al., 1997; King & Santor, 2008; Margaritis & Psillaki, 2010), predominantly focusing on the book value of leverage.

Different measurements of leverage have been employed in prior research. Managers often consider book value in their decision-making process (de Jong & Veld, 2001), while market value is considered more volatile due to factors such as stock price fluctuations (Graham & Harvey, 2001). In this study, firm leverage will be measured using the book value approach, specifically by calculating the ratio of total debt to total assets (TD)

3.3.2 Independent variables

In this research, the independent variables considered are government ownership (GOV_OWN), institutional ownership (INS_OWN) and ownership concentration (OWN_CON).

Government ownership (GOV_OWN) is measured as the aggregate percentage of shares held by government-linked shareholders. It represents the extent of government influence and control over a company. Previous studies have examined the impact of government ownership on various firm behaviors and performance (Huang et al., 2018; Boubakri et al., 2018).

Institutional ownership (INS_OWN) is the aggregate percentage of shares held by institutional shareholders, such as pension funds, mutual funds, and insurance companies. Institutional ownership has been widely studied in relation to corporate governance and firm outcomes (Acharya et al., 2011; Martínez-Ferrero et al., 2021). It reflects the presence and influence of professional institutional investors on corporate decision-making.

Ownership concentration (OWN_CON) is measured as the aggregate percentage of shares held by the three largest shareholders. It represents the degree of concentration of ownership in a company and the control exerted by a few major shareholders. Ownership concentration has been examined in the context of corporate governance and firm behavior (Shleifer & Vishny, 1997; Kang & Shivdasani, 1995;).

3.3.3 Control variables

In this research, several control variables will be included to account for potential influences on risk-taking behavior. The control variables considered are firm size (F_SIZE), return on assets (ROA), tangible assets (TANG), and growth (GROWTH).

Firm size, measured as the logarithm of a firm's total assets, is commonly used as a control variable in studies examining firm behavior and performance (Demirgüç-Kunt & Maksimovic, 2001; Titman et al., 2004; Detthamrong et al., 2017; Margaritis & Psillaki, 2010; Wen et al.,2002). It provides insights into the scale and resources of a company, which may affect its risk-taking behavior.

Return on assets (ROA), calculated as earnings before interest and taxes (EBIT) divided by total assets, is another control variable that captures a firm's profitability and efficiency. Prior research has recognized the importance of ROA in understanding firm behavior and performance (Detthamrong et al., 2017; Margaritis & Psillaki, 2010; Wen et al., 2002). It helps control for the influence of profitability on risk-taking behavior.

Tangible assets (TANG), expressed as the ratio of fixed assets to total assets, is a control variable that reflects the extent of a firm's investment in physical assets. (Detthamrong et al., 2017; Margaritis & Psillaki, 2010Sheikh & Wang, 2012) Tangible assets have been associated with firm value and risk-taking behavior in prior studies (Fama & French, 1998). Including TANG as a control variable helps account for the impact of asset structure on risk-taking behavior.

Growth (GROWTH) is another control variable that captures the change in sales over a year relative to the sales at the beginning of that year. It provides insights into a firm's expansion and market dynamics. Growth has been examined in relation to firm behavior and risk-taking (Carpenter & Petersen, 2002). Incorporating GROWTH as a control variable helps address the influence of growth opportunities on risk-taking behavior.

Industry dummy (IND): Douma et al. (2006) suggest that differences in industries can influence the relative performance of firms. Hence, industry dummies are used to control for industry differences. Based on the GICS classification finally 9 industry dummies are Formed. These dummy variables are included in each regression analysis.

Year dummy (year): considering year effect in our 5-year research, year dummy is used to control this variable.

3.4 Data & sampling

The desired financial data will be collected from the financial statements and their attached notes and through Rehavard Novin software and the websites of the Securities and Exchange Organization, whose credibility is measured by matching the real information of the companies. Additionally, ownership percentages will be collected by attached notes of financial statements and related website of the Securities and Exchange by hand.

In the selection of the statistical population of this research, the companies admitted to Tehran Stock Exchange (TSE) are used. The information related to the companies admitted to these exchanges are reliable and accessible through the related websites of Stock Exchanges companies and Securities and Exchange Organization (SEO).

The sample is selected based on the research criteria introduced below:

1. According to the time period of the research, which is 5 years (from 2018 to 2022).
2. Since capital structure of some industries are different, these kinds of companies such as service companies, investment, leasing, and insurance companies and also banks should be excluded from the sample.

It is important to note that as in Tehran stock exchange, companies should publish owners more than 1%, our data regarding ownership structure is based on this limitation. On the other hand, there were no refined data and ownership structure data manually collected.

Sample was basically 265 companies, after investigation of data and outliers we removed 9 real estate industry companies due to the fact that based on their main activity (which is only included real estate construction companies) and different accounting standards we had so many outliers only in this industry. So finally, our sample is 256 companies and base on 5 years data for each company it should be 1280 valid data but because of unavailability of new listed companies, I only use data from the year company accepted in Tehran Stock Exchange. So, the total amount of company year is 1255.

it should be mentioned that industry classification in Tehran Stock Exchange is completely different with world recognized classifications. So, companies industries

reclassified manually based on global industry classification standard (GICS) based on main activity of company.

The Global Industry Classification Standard (GICS) is a recognized system to classify and categorizing companies into industry groups and sectors. it provides a standardized framework for researchers, analysts, and all of market participants to analyze companies in a specific industry or sector. GICS was developed jointly by MSCI (Morgan Stanley Capital International) and S&P Dow Jones Indices, and it has become a famous tool for understanding the global financial markets (Bhojraj et al,2003) (Alkan,20323).

The primary objective of GICS is creating a common language for the global investment community, facilitating better communication and analysis across different regions and markets. By classifying companies into hierarchical industry groups, sub-industry groups, sectors, and industries, GICS enables investors to make more informed decisions regarding comparable information.

The GICS structure is organized into four levels:

Sectors: At the highest level, the GICS framework divides the global economy into 11 sectors, each representing a broad segment of the market. These sectors include Information Technology, Health Care, Consumer Discretionary, and others.

Industry Groups: The sectors are further broken down into industry groups, providing a more detailed level of classification. For example, the Information Technology sector includes industry groups such as Software & Services and Technology Hardware & Equipment.

Industries: Industry groups are then subdivided into industries, offering even more granularity. Within the Software & Services industry group, one can find specific industries like Internet Software & Services.

Sub-Industries: The most detailed level of classification is the sub-industry, providing a very specific categorization of companies. For instance, within the Internet Software & Services industry, sub-industries may include Internet Services & Infrastructure and Application Software (CIGS, n.d).

GICS sectors, number of companies and the frequency they occurred in the final sample are given in Table 2.

Table 2: industry - GICS and Frequency

Sector	Company	Frequency
Communication Services	4	17
Consumer Discretionary	37	184
Consumer Staples	39	190
Energy	9	45
Health Care	25	115
Industrials	22	110
Information technology	9	40
Materials	108	541
Utility	3	13
Sum	256	1255

As it has seen, there is a concentration in the manufacturing industry, which compromises about 108 from 256 companies and it includes 42.18% of the sample. here are a number of important reasons for the significant concentration of materials-related businesses among Iran's listed companies. First of all, Iran has a lot of natural resources, especially gas and oil. Because of the abundance of resources, sectors like petrochemicals have grown and become crucial to the nation's economy. Second, the strength of the materials industry can be attributed to Iran's economic structure. The production of materials—such as steel, cement, and chemicals—could logically become more important if manufacturing and industrial operations were prioritized. Furthermore, the nation's significant and constant infrastructure development—which is currently driven by economic growth—is probably going to increase demand for building supplies. Lastly, government policies and regulations can shape industry landscapes. If the Iranian government has implemented policies that encourage specific industries, this explains the high concentration of materials-related sectors among listed companies.

3.5 Outliers

Dealing with outliers usually involves removal or replacement. Previous studies, such as those by Cui & Mak (2002), Dehaene et al. (2001), Del Orden & Garmendia (2008), McConnell & Servaes (1990), Tran et al. (2014), Uddin et al. (2014), Xu & Wang (1999), and Zouari & Taktak (2014), opted for outlier removal. In contrast, studies like Cornett et al. (2007), Cremers & Nair (2005), Khan et al. (2014), and others used trimming, truncating, or winsorizing methods.

Winsorization is a common method in financial literature to take care of outliers. Winsorizing data refers to matching the data above the chosen threshold (e.g. the top 1% and bottom 1%) to the next lowest/highest value found within the threshold. As opposed to trimming or truncating data, which is the deletion of observation and cases, winsorizing preserves data. While we have relatively large sample size of the study in comparison to other aforementioned studies, I choose to winsorize performance variables rather than delete them. In order to mitigate the effects of extreme outliers, performance variables are winsorized at the upper and lower 1% tails, following van Beusichem (2016).

4 Results

This chapter discusses the results of this study. First, the univariate analysis with the descriptive statistics is presented. Second, the bivariate analysis with the correlation matrix is shown. Third, the multivariate analyses with the regression results are presented.

4.1 Descriptive statistics

To get more familiar with the data, this section will examine the descriptive statistics; i.e. the results of the univariate analysis. Besides a description of these results, a comparison will be made with other studies that have investigated the same regarding variables to assess the validity. comparisons are made with research from China, Malaysia, and Egypt. It is because of prominence of government ownership in listed companies in these countries.

The results of the descriptive statistics, after managing the outliers, is presented in table 3. As mentioned earlier, there is a sample of 256 companies and five years which should be 1325 valid data but because of unavailability of new listed companies, I only use data from the year company accepted in Tehran Stock Exchange, so number of observations is 1255.

Table 3. Descriptive Statistics

	Valid	Missing	Median	Mean	SD	IQR	Min	Max	25th percentile	50th percentile	75th percentile
TD	1255	0	0.479	0.484	0.207	0.304	0.026	1.520	0.326	0.479	0.630
GOV_OWN%	1255	0	57.700	47.699	34.053	78.100	0.000	98.700	0.000	57.700	78.100
INS_OWN%	1255	0	1.700	2.990	5.487	3.600	0.000	55.000	0.000	1.700	3.600
OWN_CON%	1255	0	69.900	66.682	18.348	25.250	1.600	98.700	55.700	69.900	80.950
ROA	1255	0	0.252	0.262	0.167	0.238	-0.082	0.682	0.134	0.252	0.372
F_Size	1255	0	6.770	6.883	0.737	0.915	4.950	9.370	6.365	6.770	7.280
TANG	1255	0	0.218	0.256	0.166	0.259	0.010	0.734	0.117	0.218	0.376
GROWTH	1255	0	0.560	0.712	0.514	0.675	0.110	2.145	0.300	0.560	0.975

The average firm leverage is 0.484. It indicates that companies rely on debt financing for approximately 48.4% of their total assets. This is similar to means observed in study from Liu et al. 2011 in Chinese listed companies where State-Owned Enterprises (SOEs) exhibited similar leverage dynamics. In contrast, it is slightly higher than findings of Abobakri and Elgiziry (2016) in Egyptian listed companies with average leverage of 43.22%, showcasing variations in financial structures across regions. The standard deviation of 0.207 suggests moderate variability across the sample, with a diverse range of leverage levels from 0.026 to 1.520. the maximum TD is 1.52 and companies with more TD usually are companies that get loans from government with preferred rate.

The mean government ownership is 47.7%, shows a substantial presence of government-linked shareholders in the Tehran Stock Exchange. This diverges significantly from the Chinese landscape, where government ownership is typically lower. It is also higher than government ownership in Egyptian listed companies of Abobakri and Elgiziry (2016), which also exhibit a relatively high average of 27.71%. The standard deviation of 34.05 indicates a wide variation in government ownership percentages, ranging from 0% to 98.7%.

Institutional ownership has a mean of 2.990%, indicating a comparatively lower presence of institutional shareholders. The standard deviation of 5.487 implies variability in the extent of institutional ownership, spanning from 0% to 55%. It is important to note that in this research, institutional investors are defined to include all mutual funds and only private financial institutions. governmental-linked financial institutions, based on their main structure related to governmental administration, are not categorized as institutional. It is due to the fact that they prioritize benefits of government particularly

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through board members with governmental affiliations. Their decisions are influenced by their connection to government power structures.

The average ownership concentration is 66.68%, signifying a high level of concentration among the three largest shareholders. This is similar to Deesomsak study (2004) for Malaysian companies. It should be mention that this diversity within this concentration is ranged from 1.60% to 98.70% and with a standard deviation of 18.35%, there is some variability in ownership concentration.

Regarding control variables, the mean return on assets (ROA) is 0.262, reflecting the average profitability of the sampled companies. The standard deviation of 0.167 suggests variability in ROA across the dataset, with values ranging from -0.082 to 0.682. ROA in the Malaysian study is lower at 0.050, emphasizing differing economic landscapes.

The logarithm of firm size has a mean of 6.883, providing insights into the scale and resources of companies. The mean tangible assets ratio (TANG) is 0.256, indicating the proportion of fixed assets within total assets. The mean growth rate (GROWTH) is 0.712, reflecting the change in sales over a year relative to the sales at the beginning of that year.

4.2 Correlation

To assess the correlation, a bivariate analysis of the relationship between the variables will be examined. The results of the bivariate analysis, in the form of a correlation matrix, is displayed in table 4.

In this bivariate analysis, we explore the relationships among key variables, utilizing Pearson's correlations. Our focus is on understanding the associations between government ownership (GOV_OWN%), ownership concentration (OWN_CON%), and institutional ownership (INS_OWN%) with the dependent variable, firm leverage (TD), alongside correlations involving firm size, tangibility (TANG), return on assets (ROA), and growth (GROWTH).

Starting with the relationship between and, government ownership shows a positive correlation of 0.071 with firm leverage (p-value = 0.012). Conversely, ownership concentration exhibits an unexpected positive correlation of 0.084 with firm leverage (p-value = 0.003). Institutional ownership displays a significant negative correlation of -0.128 with firm leverage (p-value < 0.001).

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Examining the relation of ownership variables with firm size, correlations show a negative association between firm size and ownership concentration (r = -0.050) and positive associations with government (r = 0.282) and institutional ownership (r = 0.107).

Furthermore, the correlation between tangible assets (TANG) and growth (GROWTH) shows negative coefficient of -0.074 and -0.064, respectively. This suggests that firms with more tangible assets may experience slower growth.

Table 4. Pearson's Correlations

Variable		TD	GOV_OWN%	OWN_CON%	INS_OWN%	ROA	Firm size	TANG	GROWTH
1. TD	Pearson's r	—							
	p-value	—							
2. GOV_OWN%	Pearson's r	0.067	—						
	p-value	0.017	—						
3. OWN_CON%	Pearson's r	0.063	0.472	—					
	p-value	0.026	<.001	—					
4. INS_OWN%	Pearson's r	-0.079	0.043	0.036	—				
	p-value	0.005	0.126	0.198	—				
5. ROA	Pearson's r	-0.526	0.162	0.208	0.103	—			
	p-value	<.001	<.001	<.001	<.001	—			
6. F_Size	Pearson's r	-0.026	0.283	0.200	0.083	0.166	—		
	p-value	0.365	<.001	<.001	0.003	<.001	—		
7. TANG	Pearson's r	-0.065	-0.070	-0.064	0.057	-0.279	-0.008	—	
	p-value	0.021	0.013	0.023	0.042	<.001	0.786	—	
8. GROWTH	Pearson's r	-0.012	0.010	-0.014	-0.013	0.076	0.040	-0.059	—
	p-value	0.673	0.726	0.614	0.636	0.007	0.155	0.037	—

Control variables such as firm size, ROA, TANG, and GROWTH are correlated with firm leverage (TD). Firm size exhibits a negative correlation (r = -0.050), while ROA shows a weak positive correlation (r = 0.071).

In conclusion, this bivariate analysis establishes a basis for understanding the initial correlations among key variables. While government ownership aligns with expectations, ownership concentration presents an unexpected positive correlation. Institutional ownership supports our hypothesis. Explorations into firm size, tangible assets, and growth contribute additional information. further multivariate regression analyses will go deeper into the dynamics influencing risk-taking behavior in non-financial listed companies in Iran.

4.3 Regression

The following part is devoted to testing the study hypotheses and discuss the findings.

4.3.1 Main Regression model

4.3.1.1 Effect of Government ownership on leverage (Model 1 and Model 2)

The regression analysis of models 1 and 2 in table 5 aim to investigate the impact of government ownership on risk-taking behavior in Iranian companies. Based on the hypothesis that government ownership positively influences risk-taking, the model incorporates relevant financial variables and considers the specific economic context of Iran. The key difference between Model 1 (GOV) and Model 2 (GOV2) lies in the inclusion of institutional ownership in Model 2.

The models collectively exhibit a robust explanatory power, explaining 36.9% of the variance in risk-taking behavior (R^2 = 0.369). The adjusted R^2, considering the number of predictors, stands at 36.9%.

The Analysis of Variance (ANOVA) results underscore the overall significance of both Model 1 and Model 2. The F-statistics of 44.172 and 41.701 are highly significant (p < .001), indicating that at least one predictor variable significantly contributes to explaining the variance in risk-taking behavior.

The coefficient for government ownership percentage (GOV_OWN%) in both model1 and model 2 are the same and is highly significant which shows a one percent increase in government ownership percentage is associated with a 0.079% increase in the dependent variable. This supports the hypothesis that higher government ownership is linked to increased risk-taking behavior. This aligns with Deesomsak et al. (2004), Aljifri and Moustafa (2007), and Ezeoha and Okafor (2009), indicating a positive relationship, possibly driven by credit facilities guarantees and easier access to borrowing. On the other hand, our results are contradictory to Huang and Song (2006), and Zuoping (2009) who find a significant negative relation.

In both Model 1 (GOV) and Model 2 (GOV2), the coefficient for Return on Assets (ROA) is -0.749 (p < .001), signifying that a 1% decrease in ROA is associated with a 0.749% increase in risk-taking. The negative correlation between ROA and risk-taking aligns with the agency theory's predictions which argues that the more degree of leverage generates agency problems that leads to a negative relationship between leverage and performance (Fama and French, 1998). A decrease in ROA may signal agency problems, indicating that managers are making decisions that prioritize their own interests or short-term gains, leading to higher risk-taking.

Additionally, the coefficient for Tangibility (TANG) in both models is -0.253 (p < .001), suggesting that a 1% decrease in asset tangibility corresponds to a 0.253% increase in risk-taking. This finding underscores that companies with less tangible assets may exhibit higher levels of risk-taking behavior. This finding is consistent with the pecking order theory in corporate finance. According to the pecking order theory, firms prefer internal financing (retained earnings) over external financing (debt or equity) to avoid information asymmetry and signaling costs. Firms with less tangible assets rely more on external financing, which often involves higher risk and financial leverage. Therefore, the negative coefficient indicates that firms with less tangible assets are associated with higher risk-taking behavior, supporting the idea that financial structure influences a firm's risk decisions within the examined governance contexts.

In Models 1 (GOV) and 2 (GOV2), the variable "Firm size" exhibits an impact on the dependent variable, as indicated by its statistically significant coefficient with p-values less than 0.05. The positive coefficient implies that, when controlling for other factors, an increase in firm size corresponds to a positive change in the dependent variable. This result underscores the importance of considering the size of the firms in understanding the variations in the dependent variable, particularly in the context of governance-related factors. The statistical significance of "Firm size" in both models suggests that larger firms may have a distinctive influence on the outcome.

In both Model 1 (GOV) and Model 2 (GOV2), the Growth coefficient is not statistically significant, with p-values greater than 0.1 (p = 0.523 and p = 0.516, respectively). This suggests that this variable does not have a significant impact on risk-taking behavior within the examined governance contexts. The lack of statistical significance implies that variations in the growth rate of the firms do not reliably predict changes in risk taking behavior.

4.3.1.2 Effect of ownership concentration on leverage (Model 3)

Regression analysis of model 3 explores the hypothesis that ownership concentration negatively influences risk-taking behavior in Iranian companies. The premise suggests that when a small group of shareholders holds a significant portion of a company's ownership, it tends to exhibit lower levels of risk-taking. This is attributed to the conservative risk appetite of major shareholders who prioritize wealth preservation and the potential agency problems arising from conflicts between controlling and minority shareholders or managers.

Model 3 in table 5 exhibits a robust explanatory power, explaining 37.9% of the variance in risk-taking behavior (R^2 = 0.379), with an adjusted R^2 of 37.9%. The Analysis of Variance (ANOVA) results underscores the overall significance of Model 3, with a highly significant F-statistic of 45.940 (p < .001), indicating the collective impact of predictor variables on explaining the variance in risk-taking behavior.

Ownership Concentration Percentage (OWN_CON%) exhibits a highly significant coefficient (p < .001), contradicting Hypothesis 2. This suggests that a higher degree of ownership concentration is associated with an increase in risk-taking behavior. the regression analysis not support our hypothesis that ownership concentration has a negative effect on risk-taking behavior in Iranian companies and it contradicts the active monitoring hypothesis (Friend and Lang, 1988). all the same, some researchers find a positive significant relationship, such as Berger et al (1997), Fosberg (2004), Zuoping x. (2009) and Yaseen, and Al-Amarneh (2013).

Coefficient for "Firm size" is 0.015 with a p-value of 0.008. The p-value is greater than the conventional significance level of 0.05, indicating that the "Firm size" variable is not statistically significant in Model 3. This implies that firm size does not reliably predict changes in risk-taking behavior.

4.3.1.3 Effect of institutional ownership on leverage (model 4)

This regression analysis delves into the hypothesis that institutional ownership has a negative effect on risk-taking behavior in Iranian companies. The proposition stems from the notion that companies with higher levels of institutional ownership tend to be more risk-averse due to fiduciary responsibilities, regulatory constraints, and increased oversight. Institutional investors, such as pension funds and mutual funds, are often obligated to prioritize capital preservation for their clients or beneficiaries, contributing to a more conservative risk-taking approach.

Model 4 in table 5 exhibits a robust explanatory power, explaining 35.7% of the variance in risk-taking behavior (R^2 = 0.379), with an adjusted R^2 of 35.7%. The Analysis of Variance (ANOVA) results underscores the overall significance of this Model, with a highly significant F-statistic of 41.581 (p < .001), indicating the collective impact of predictor variables on explaining the variance in risk-taking behavior.

There is positive insignificant correlation between institutional ownership and leverage. Similar results are found in prior research by the work of Hassan and Ali (2009) in Pakistan and Bodaghi and Ahmadpour (2010) in Iran. These studies also identify a

positive insignificant correlation between institutional ownership and certain financial metrics, implying that the inadequacy of corporate governance practices in their respective countries might be a contributing factor to this observed trend. Joher Huson et al. (2006) and Abdoli, M et al. (2012) find to somehow similar conclusions, a positive and statistically significant relationship. Conversely, contrasting findings emerge in studies like Yaseen and Al-Amarneh (2013), which reveal a negatively significant impact on leverage attributed to the high-level monitoring exerted by institutional shareholders. These diverse outcomes show the multifaceted nature of the relationship between institutional ownership and financial dynamics and also reflects variations in governance frameworks and monitoring mechanisms across different geographical contexts.

Table 5. The relationship between ownership structure and leverage

Explanatory Variables	Model 1 (GOV)	Model 2 (GOV2)	Model 3 (CON)	Model 4 (INS)
Intercept	0.717***	0.718***	0.626***	0.678***
	(0.074)	(0.074)	(0.074)	(0.075)
GOV_OWN	0.079***	0.079***		
	(0.015)	(0.015)		
OWN_CON			0.188***	
			(0.027)	
INS_OWN		0.040		0.036
		(0.091)		(0.091)
F_Size	0.016*	0.015*	0.015	0.026***
	(0.008)	(0.008)	(0.008)	(0.008)
TANG	-0.253***	-0.253***	-0.252***	-0.257***
	(0.032)	(0.032)	(0.032)	-0.033
ROA	-0.749***	-0.751***	-0.779***	-0.736***
	(0.034)	(0.035)	(0.035)	(0.035)
GROWTH	0.006	0.006	0.008	0.004
	(0.010)	(0.010)	(0.010)	(0.010)
Industry dummy	Included	Included	Included	Included
Year dummy	Included	Included	Included	Included
Adjusted R²	0.369	0.369	0.379	0.355
N	1254	1254	1254	1254
F-statistic	44.172***	41.701***	45.940***	41.581***

*, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively. Standard errors of the coefficients are displayed between brackets.

4.3.2 Additional analyses

In this extra analysis, we are zooming in on two main types of industries. As mentioned earlier, in data and sampling section, more than 42% of sample which contains 108 companies with 541 frequencies are in Materials sector. The goal is to see if the connections we found between government ownership, ownership concentration, institutional ownership, and risk-taking behavior apply specifically to the Materials industry or if they differ in other sectors. This focused look allows us to understand how these ownership factors might affect risk-taking in specific industries, adding more detailed insights to our understanding of how finances work in Iranian companies. The next part of the analysis will dig deeper into what we find in each sector.

4.3.2.1 Materials sector

In Models 1 and 2, focusing on the relationship between government ownership and leverage in the Materials sector, the intercept remains at 0.433, indicating expected leverage when government ownership is zero. The coefficient for GOV_OWN in Model 1 is 0.128, suggesting that a one percent increase in government ownership is associated with a 0.128% increase in leverage. Model 2 have a consistent intercept and statistically significant GOV_OWN coefficients of 0.128. The positive coefficient aligns with the hypothesis that higher government ownership positively influences risk-taking behavior. The adjusted R^2 values are 0.351 and 0.349 for Models 1 and 2, respectively, indicating substantial explanatory power, elucidating 35.1% to 34.9% of the variance in leverage within the Materials sector. The F-statistics of 33.394 and 30.002 confirm the overall significance of both models.

In Model 3, examining the relationship between ownership concentration and leverage, the intercept remains consistent at 0.433, representing expected leverage when ownership concentration is zero. The coefficient for OWN_CON is highly significant at 0.285, suggesting that a higher degree of ownership concentration is associated with a 0.285% increase in leverage. This finding contradicts the initial hypothesis of a negative relationship between ownership concentration and risk-taking behavior. The adjusted R^2 of 0.380 underscores the model's robust explanatory power, explaining 38% of the variance in leverage. The F-statistic of 37.789 emphasizes that at least one predictor variable significantly contributes to explaining the variance in risk-taking behavior.

Model 4 investigates the relationship between institutional ownership and leverage. The intercept remains at 0.433, representing expected leverage when institutional ownership

is zero. However, the coefficient for INS_OWN is not statistically significant at 0.038, suggesting that, in this specific context, institutional ownership may not significantly influence risk-taking behavior in the Materials sector. The adjusted R^2 of 0.309 indicates the model's ability to explain approximately 30.9% of the variance in leverage, and the F-statistic of 27.803 confirms the overall significance of the model, highlighting that at least one predictor variable significantly contributes to explaining the variance in risk-taking behavior. These results suggest that institutional ownership may not play a significant role in shaping risk-taking behavior within the Materials sector.

Table 6. The relationship between ownership structure and leverage in materials sector

Variable	Model 1 (GOV)	Model 2 (GOV2)	Model 3 (CON)	Model 4 (INS)
Intercept	0.433***	0.433***	0.433***	0.433***
	(0.008)	(0.008)	(0.008)	(0.008)
GOV_OWN	0.128***	0.128***		
	(0.022)	(0.022)		
OWN_CON			0.285***	
			(0.036)	
INS_OWN		0.038		0.022
		(0.227)		(0.234)
F_Size	-0.027***	-0.027***	-0.028***	-0.009
	(0.010)	(0.010)	(0.010)	(0.010)
TANG	-0.093**	-0.093**	-0.089**	-0.093**
	(0.042)	(0.042)	(0.041)	(0.044)
ROA	-0.713***	-0.713***	-0.719***	-0.641***
	(0.047)	(0.047)	(0.045)	(0.047)
GROWTH	(0.015)	(0.015)	(0.015)	(0.015)
	(0.795)	(0.791)	(0.934)	(0.248)
Year dummy	Included	Included	Included	Included
Adjusted R^2	0.351	0.349	0.380	0.309
F-statistic	33.394***	30.002***	37.789***	27.803***
N	540	540	540	540

*, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively. Standard errors of the coefficients are displayed between brackets.

4.3.2.2 Other sectors

Analyzing Model 1 and Model 2 investigate the relationship between government ownership and leverage within sectors other than Materials. In Model 1, the intercept value is 0.522, indicating the expected leverage when government ownership is zero. The coefficient for GOV_OWN is 0.047, suggesting that a one percent increase in

government ownership is associated with a 0.047% increase in leverage. Moving to Model 2, where the quadratic effect (GOV2) is introduced, the intercept remains at 0.522, and both GOV_OWN coefficients (0.046 and 0.47 respectively with statistical significance. The positive coefficient for GOV_OWN aligns with the hypothesis that higher government ownership positively influences risk-taking behavior. The adjusted R^2 values of 0.399 and 0.385 for Models 1 and 2, respectively, indicate a substantial explanatory power, elucidating 39.9% to 38.5% of the variance in leverage within these other sectors. The F-statistics of 28.965 and 27.225 confirm the overall significance of both models. These results contribute valuable insights into the nuanced dynamics of government ownership and its impact on leverage outside the materials industry, providing a refined understanding of risk-taking behavior in diverse sectors.

Model 3 explores the relationship between ownership concentration and leverage within sectors other than Materials. The intercept value remains constant at 0.522, representing the expected leverage when ownership concentration is zero. The coefficient for OWN_CON is highly significant at 0.095, indicating that a higher degree of ownership concentration is associated with a 0.095% increase in leverage. This finding contradidcs the hypothesis that elevated ownership concentration positively influences risk-taking behavior outside the Materials sector. The adjusted R^2 of 0.400 underscores the model's robust explanatory power, explaining 40% of the variance in leverage within these other sectors. The F-statistic of 29.034 reinforces the overall significance of the model, emphasizing that at least one predictor variable significantly contributes to explaining the variance in risk-taking behavior.

Model 4 investigates the relationship between institutional ownership and leverage within sectors other than Materials. The intercept value remains consistent at 0.522, representing the expected leverage when institutional ownership is zero. However, the coefficient for INS_OWN is not statistically significant at 0.016in the context of these other sectors. This suggests that, within this specific category, the level of institutional ownership does not significantly influence risk-taking behavior. The adjusted R^2 of 0.395 indicates the model's ability to explain approximately 39.5% of the variance in leverage within sectors outside Materials. The F-statistic of 28.415 confirms the overall significance of the model, emphasizing that at least one predictor variable significantly contributes to explaining the variance in risk-taking behavior. These findings suggest that institutional ownership may not play a significant role in shaping risk-taking behavior specifically within these diverse sectors. The results underscore the importance

of considering sector-specific dynamics when examining the impact of institutional ownership on financial outcomes.

Table 7. The relationship between ownership structure and leverage in other sectors

Explanatory Variables	Model 1 (GOV)	Model 2 (GOV2)	Model 3 (CON)	Model 4 (INS)
Intercept	0.522***	0.522***	0.522***	0.522***
	(0.008)	(0.008)	(0.008)	(0.008)
GOV_OWN	0.047***	0.046***		
	(0.02)	(0.02)		
OWN_CON			0.095***	
			(0.039)	
INS_OWN		0.016		0.020
		(0.098)		(0.099)
F_Size	0.071***	0.071***	0.071***	0.076***
	(0.012)	(0.012)	(0.012)	(0.012)
TANG	-0.428***	-0.429***	-0.428***	-0.432***
	(0.047)	(0.047)	(0.047)	(0.047)
ROA	-0.762***	-0.764***	-0.794***	-0.776***
	(0.051)	(0.052)	(0.051)	(0.051)
GROWTH	0.005	0.005	0.007	0.005
	(0.012)	(0.012)	(0.012)	(0.012)
Industry dummy	Included	Included	Included	Included
Year dummy	Included	Included	Included	Included
Adjusted R^2	0.399	0.385	0.400	0.395
F-statistic	28.965***	27.225***	29.034***	28.415***
N	713	713	713	713

*, **, and *** indicate statistical significance at 10%, 5%, and 1%, respectively. Standard errors of the coefficients are displayed between brackets.

4.3.3 Comparative analyses of regression models

In this section, we conduct a comparative analysis of the regression results between the main model (Models 1, 2, 3, and 4) and the sector-specific models focusing on the Materials sector (Models 1, 2, 3, and 4_Materials) and other sectors (Models 1, 2, 3, and 4_Other). The objective is to identify similarities and differences in the relationships between ownership structure variables and leverage across different sectors.

Government Ownership (Models 1 and 2): In the analysis of government ownership's effect on leverage, both the main model and the Materials-specific model reveal a positive and statistically significant relationship between government ownership (GOV_OWN%) and risk-taking behavior. The main model reports a coefficient of 0.079,

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while the Materials-specific model reveals a slightly higher coefficient of 0.128. This difference in magnitudes suggests that the influence of government ownership on risk-taking behavior is more in the Materials sector.

Ownership Concentration (Model 3): In the analysis of government ownership's effect on leverage, both the main model and the Materials-specific model reveal a positive and statistically significant relationship between government ownership (GOV_OWN%) and risk-taking behavior, contradicting the hypothesis that higher ownership concentration leads to lower risk-taking. The magnitude of the coefficient is higher in the Materials-specific model (0.285) compared to the main model (0.188), suggesting a potentially stronger effect in the Materials sector.

Institutional Ownership (Model 4): In the analysis of institutional ownership's impact on leverage, both the main model and the Materials-specific model show a positive but statistically insignificant relationship between institutional ownership (INS_OWN%) and risk-taking behavior. The lack of significance in both models suggests that institutional ownership may not have a substantial influence on risk-taking behavior in Iranian companies overall and within the Materials sector.

Return on Assets (ROA): Both the main model and the Materials-specific model consistently show a negative and statistically significant relationship. The main model reports a coefficient of -0.749, while the Materials-specific model reports a similar coefficient of -0.713. This indicates strong negative relationship between ROA and risk-taking behavior across all sectors, suggesting that lower financial performance related to higher levels of risk-taking.

Tangibility (TANG): In the analysis of Tangibility's effect on leverage, both the main model and the Materials-specific model consistently show a negative and statistically significant relationship. The main model reports a coefficient of -0.253, while the Materials-specific model reports a similar coefficient of -0.093. This indicates a negative association between Tangibility and risk-taking behavior, suggesting that companies with less tangible assets may engage in higher levels of risk-taking.

The magnitude of the coefficient is higher in the main model, suggesting that the negative impact of Tangibility on risk-taking behavior is more outside the Materials sector.

Firm Size: Analyzing impact of Firm Size on leverage shows different results. The main model reports a coefficient of 0.016, while the Materials-specific model reports coefficient of -0.027. it shows a positive relationship between Firm Size and risk-taking behavior outside the Materials sector while there is negative relationship between Firm Size and risk-taking behavior in Materials sector

Growth: In the analysis of Growth's effect on leverage, both the main model and the Materials-specific model show an insignificant relationship. The lack of statistical significance in both models suggests that in all of our models' variations in the growth rate of the firms do not reliably predict changes in risk-taking behavior.

5 Conclusion

5.1 Main Results

5.1.1 Financial Hypotheses and Theoretical Framework

In this comprehensive analysis, we investigated the relationships between different ownership structures and risk-taking behavior in Iranian companies. Therefore, we focus on government ownership, ownership concentration, and institutional ownership. Each hypothesis was examined through regression models and results was interpreted. In this part we have a discussion about results and casual reasons that may cause reasons

The first hypothesis assumed that government ownership has a positive effect on risk-taking behavior. The regression analysis supported this hypothesis, revealing that companies with higher government ownership percentages tend to exhibit increased risk-taking. This aligns with resource dependency theory and rent seeking behavior. It emphasizes the advantages government-linked corporations have which includes better protection from market forces and favorable financing conditions. The findings are consistent with existing literature and emphasize the unique dynamics of government involvement in Iranian corporate risk-taking.

Government-linked corporations shields from market control and supports with financial advantages which lead to accepting more risk. State capture theory illustrates this link, as government ownership fosters an environment favorable to risk-taking. these firms prefer borrowing over stock issuance aligns with both theories, securing operational stability. Additionally, the implicit or explicit loan guarantees provided to government-

linked companies connect with the content of resource dependency and state capture theories.

Empirical evidence from diverse studies, including Boubakri et al. (2013) and Liu et al. (2011), emphasize the connection between government ownership and heightened risk-taking, affirming our hypothesis. In the specific context of Iran's economic conditions, which has persistent high inflation and negative real interest rates (Ture & Khazaei,2022), government ownership emerges as a crucial driver of financial leverage among Iranian companies.

The second hypothesis explored the impact of ownership concentration on risk-taking behavior, suggesting a negative relationship. The regression results do not support this hypothesis that indicates companies with concentrated ownership, three main shareholders, tend to engage in higher levels of risk-taking. This is contradicted to the conservative risk appetite of major shareholders and the potential agency problems arising from conflicts between controlling and minority shareholders or managers. It should be noted that there is a strong correlation between government ownership and ownership concentration, as we saw in correlation section. It might be indicative of a relationship where government ownership influences ownership concentration. As most of Iranian companies are governmental related companies, and we can see in descriptives that median and mean of government ownership are 57.7% and 47.7% respectively.

As mentioned in literature, resource dependency theory emphasizes that concentrated ownership often results in a more conservative risk approach. Major shareholders, with significant stakes in the company, prioritize wealth preservation over riskier ventures (Morck et al., 2005). While results of this hypothesis do not aligns with corporate governance theories, it is similar to some empirical evidence from some studies such as Berger et al (1997), Fosberg (2004), Zuoping x. (2009) and Yaseen, and Al-Amarneh (2013).

One explanation lies in the specific economic structure of Iran. Iran has persistent high inflation and negative real interest rates in recent years that is showed by table 8 which can cause the tendency to more borrowing. As ownership concentration is associated with better monitoring and control of managerial behavior, more concentrate companies should have stronger monitoring. Considering economic structure of Iran, there is a high

tendency for companies to have more leverage. Higher leverage shows firms with concentrated ownership use higher level of debt as a tool to discipline management.

Table 8. Inflation and interest rate in Iran[1]

year	inflation %	interest rate%	real interest rate%
2018	31.2	18	-13.2
2019	41.2	18	-23.2
2020	47.1	18	-29.1
2021	46.2	18	-28.2
2022	46.5	18	-28.5

In this regard Research by Fosberg (2004) in the context of U.S. firms suggests that block holders of a company's shares can play a crucial role in monitoring and controlling the firm's capital structure. His findings reveal a positive correlation between the level of debt and the ownership percentage of block holders which shows that these major shareholders effectively monitor and control the firm's debt usage and under certain conditions it can have a positive relation with increasing debt.

Similarly, studies by Zuoping (2009) and Ganguli (2013) provide further support for the idea that concentrated ownership can serve as a monitoring mechanism, influencing the debt-equity ratio and, consequently, the risk-taking behavior of companies. Considering these results, it becomes evident that ownership concentration can result in a risk-taking behavior that deviates from the expectations of resource dependency theory.

The third hypothesis proposed a negative relationship between institutional ownership and risk-taking behavior. However, the regression analysis revealed that the level of institutional ownership did not significantly impact risk-taking in Iranian companies. This unexpected result suggests that fiduciary responsibilities and regulatory constraints associated with institutional investors might not be the primary drivers of risk aversion in this setting. This nuanced finding emphasizes the importance of considering regional variations and regulatory environments when examining the relationship between institutional ownership and risk-taking.

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[1] Data extracted from Central Bank of Iran and Tradingview.com
https://www.cbi.ir/simplelist/10807.aspx
https://tradingeconomics.com/iran/interest-rate

Contrary to expectations, the study aligns with some prior research in Pakistan and Iran, where institutional ownership showed a positive but statistically insignificant correlation with financial metrics. So, we need a critical examination of corporate governance practices in these countries which suggest that the observed trend may stem from inadequacies in governance frameworks. Studies by Hassan and Ali (2009) and Bodaghi and Ahmadpour (2010) aligns with these sentiments and indicates high need for more comprehensive understanding of governance dynamics.

The multifaceted nature of the relationship between institutional ownership and financial dynamics, as evidenced by diverse outcomes in studies like Yaseen and Al-Amarneh (2013), underscores the importance of contextual factors. It raises the possibility that existing governance frameworks may not be universally applicable or effectively executed in the Iranian context.

In contrast, there are studies in Iran that provide results opposing the findings of this research. Abdoli et al (2012) and Bahrami(2021) found positive relationship between institutional ownership and leverage and Asadi et al (2013) found negative relationship between institutional ownership and leverage. Bahrami (2021) found that government ownership does not have statistically significant relationship with leverage. Foroughi and Fooladi (2012) found that there is negative relationship between ownership concentration and risk-taking behavior. It's worth noting that this difference may be caused by two main factors. Firstly, the period of research, as the average inflation in Iran before our study period was lower, and there were less negative real interest rates and, in some years, positive real interest rates. This economic context may have influenced the risk-taking behavior differently compared to the conditions prevalent during our investigation. Secondly, variations in the measurement of government ownership and institutional ownership contribute to the contrasting outcomes. Unlike some studies that measure government ownership by considering only direct ownership, our approach involves indirect government ownership which considers the multi-layered structure of ownership in government-owned companies. Also, regarding institutional ownership measurement, we differentiate governmental institutional ownership from private institutional ownership. This approach provides a more precise categorization beyond the conventional classifications. This advanced methodology ensures a more accurate reflection of ownership structures, adding depth to our analysis and contributing to the better understanding of the relationship between ownership structures and risk-taking behavior in Iranian companies.

5.1.2 Dynamic Forces in Financial Decision-Making

In countries with lower levels of economic liberalism macroeconomic indicators play a key role. In this regard a crucial factor to think about in finance is negative interest rates. When interest rates are lower than inflation, the usual ideas in corporate governance might change a lot. The usual thoughts about how companies borrow money_ which are part of regular corporate governance_ not work like when interest rates are negative. This shows that we need to understand how economic conditions and money decisions are connected which is more related to capital structure.

Capital structure is really important in how a company deals with financing. It affects things like how much money costs and how much risk there is. Economic things that change how much it costs to get money, especially when interest rates are negative, can have a big and quick effect on how companies deal with money. This can be more important than what people usually think about indirect influence of corporate governance.

Companies often need to adapt their financial strategies based on the prevailing economic environment. In times of economic anomalies, the adaptability provided by capital structure theories becomes crucial for making financially sound decisions that align with the company's goals and objectives. However, it's important to acknowledge that corporate governance and capital structure are interconnected, and both play essential roles in ensuring the overall health and sustainability of a company. Corporate governance sets the framework for decision-making processes, ethical considerations, and stakeholder relationships, which are foundational elements for effective financial management.

5.2 Limitations and Future research
5.2.1 limitations

While this analysis provides valuable insights, it is necessary to consider the limitations of the research. Limitations of this research are related to sampling, endogeneity of variables, and the simplification of the model.

1. Sampling limitations: The sample used in the study may not fully represent the entire population of companies, potentially introducing sampling bias. The study only covers data of firms of the Tehran Stock Exchange (TSE). However, this index

is considered a preferable index for investors in the Iranian market. therefore, it does not represent the other Iranian stock exchange, Iran Farabourse and unlisted companies,

2. Endogeneity of variables: Government ownership and ownership concentration may be endogenous, meaning that they are influenced by other factors that are not accounted for in the study. The presence of endogeneity can cause bias or affect the estimated relationships between variables. Endogeneity arises when the variables of interest are influenced by unobserved factors or reciprocal relationships with other variables within the model, leading to a violation of the assumption of exogeneity. In this research the endogeneity issue is rooted in the possibility that government ownership and ownership concentration may be influenced by external factors that are not explicitly considered in the model. Failure to account for these hidden determinants leads to bias into the estimated relationships and compromise the internal validity of the research.

3. Simplification of the model: the model used to analyze the relationships between variables are a simplified representation of reality. It is impossible to account for all possible factors that may interfere with the analyzed relationships. Consequently, it can be additional unidentified factors that could affect the results.

5.2.2 Future research

Based on the results and the limitations of this study, several recommendations for future research are provided. In the Following, there is plenty of topics suggested for future research to develop ideas and fill gaps in understanding how ownership structures affect risk-taking behavior in Iranian companies.

1. Exploring the Impact of Different Stock Exchanges: Future research could expand the scope by including data from other Iranian stock exchanges, such as Iran Farabourse, and comparing the findings across these exchanges.

2. Impact of Iranian-Specific Economic Conditions: Investigate how unique economic factors in Iran, such as high inflation rates and negative real interest rates, influence the relationship between ownership structures and risk-taking behavior.

3. Incorporating Qualitative Data: Complement quantitative findings with qualitative data, such as interviews or surveys with corporate decision-makers. This qualitative

approach can provide deeper insights into the motivations behind certain risk-taking behaviors and offer a more holistic understanding of the decision-making process.

4. Regulatory Environment and Institutional Ownership: Further explore the role of the regulatory environment in shaping the relationship between institutional ownership and risk-taking. Understanding how specific regulations impact institutional investors' risk preferences can contribute to more specific understanding of institutional ownership dynamics.

5. Exploring Ownership Types: Investigate how different types of ownership structures, such as state-owned enterprises versus private ownership, influence risk-taking behavior.

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