The impact of Ownership Structure on Firm Performance: A Comparative Multi-Country Analysis

Israa Kishk

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Essex Business School

University of Essex

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Abstract

This thesis examines the impacts of five ownership structure types, namely family ownership, government ownership, institutional ownership, managerial ownership, and employee ownership, on firm performance building on agency theory in a multi-country context. It also studies the extent to which the nature of the relationship between different ownership structures and firm performance is affected by investor protection level, degree of capitalism, and industry average performance. The study uses data of 1511 firms from 20 countries over the period 2011-2020. The dynamic GMM is used to test the study hypotheses.

The thesis results suggest that institutional ownership has a significant positive impact on firm performance in developed countries, especially in developed countries with higher investor protection levels or higher degrees of capitalism. Government and employee ownership have significant positive relationships with firm performance in developing countries. Government ownership is more significant in developing countries with lower investor protection levels or lower degrees of capitalism, while employee ownership is more significant in developing countries with higher investor protection levels or higher degrees of capitalism. Family ownership has more significant positive relationship with firm performance in countries with higher investor protection levels or lower degrees of capitalism, and in highly performing industries. Managerial ownership has more significant positive impact on firm performance in developing countries with lower investor protection levels or lower degrees of capitalism, and in industries with lower average performance.

The study extends agency theory boundaries by suggesting that the various settings in which the firm operates significantly impact the effectiveness of different ownership structures in solving the agency problem and improving firm performance. The study contributes to

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literature by explaining the inconclusive results on the relationship between ownership structure and firm performance through considering the impacts of three moderating variables and by using data from both developed and developing countries. The thesis contributes to practice by providing recommendations to investors, board of directors, executive managers, and policy makers.

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Chapter One

Introduction

1.1. Introduction

This chapter provides background and motivation behind the study. It also presents the theoretical framework of the study, and its aims and questions. A brief description of the study design and methodology is also provided. Then, the significance of the study is discussed, followed by a presentation of the thesis structure.

1.2. Background and study motivation

Corporate governance has attracted the interest of academics, practitioners, and regulators all over the world over the past few decades (Boyd & Solarino, 2016; Di Vito & Trottier, 2022). Corporate governance refers to the set of mechanisms, rules, and procedures that owners and governments put in place to align the incentives of shareholders and managerial agents to effectively monitor and control the agents and their strategic decisions so that firm's financial and human capital is efficiently managed for the best interests of shareholders (Jensen & Meckling, 1976). The agency theory is built on the assumption that most corporations are owned by dispersed shareholders, while the control of these corporations is in the hand of professional management appointed by the board of directors to run the corporation (Shleifer & Vishny, 1997). The separation of ownership and control results in an agency problem due to the conflict of interest between shareholders and managers, which is the principle-agent problem (Williamson, 1963; Jensen & Meckling, 1976). Therefore, there is an ongoing debate in corporate governance literature on the best corporate governance mechanisms that help in the alignment of interest between shareholders and managers which reduces the

agency problem and improves firm performance (Dahya, Dimitrov, & McConnell, 2008; Kumar & Zattoni, 2014).

Ownership structure is one of the main internal corporate governance mechanisms influencing firm performance as it is found that different ownership types have different effects on firm performance and corporate policies (Gisbert & Navallas, 2013; Isakov & Weisskopf, 2014; Hawas & Tse, 2015; Boyd & Solarino, 2016; Federo, Ponomareva, Aguilera, Saz-Carranza, & Losada, 2020; Iwasaki, Ma, & Mizobata, 2022; Iwasaki, Ma, & Mizobata, 2022; Boachie, 2023). The concept of ownership structure emerged from the existence of various owners or shareholders in modern corporations as suggested by Berle and Means (1932).

The role of ownership structure and its impact on corporate performance has been a debated topic (Boyd & Solarino, 2016; Iwasaki et al., 2022; Sarpong-Danquah, Oko-Bensa-Agyekum, & Opoku, 2022). The lack of effective monitoring of managerial actions by shareholders may lead to decline in firm performance, so better firm performance requires strong ownership control (Shleifer & Vishny, 1997). Therefore, firm ownership structure is considered as an important tool that can resolve the conflict of interest between shareholders and managers leading to higher firm performance (Perrini, Rossi, & Rovetta, 2008; Filatotchev & Nakajima, 2010; Ogabo, Ogar, & Nuipoko, 2021).

Since the ownership structure of corporations consist of different types of owners, it is important to find out whether differences in the ownership structure influence corporate performance. If the owners of corporations consist of different groups such as families, institutions, governments, and insiders, to what extent each ownership type will affect firm performance? And which combinations of investors are more effective in improving corporate performance? The answers to such questions will provide insights on how to

improve corporate performance, which help decision makers and investors understand the role of ownership structure in bringing optimal performance to economic units.

There are mixed results in the literature on the impact of different ownership types on firm performance (Boyd & Solarino, 2016). There is wealth of ownership types, and each type has its own objectives, investment horizon and risk preferences (Federo et al., 2020). Moreover, the relationship between ownership structure and firm performance differs according to the settings in which the firm operates, which means that the same ownership type can have different effects across countries (Boyd & Solarino, 2016; Federo et al., 2020). It is suggested that the country's institutional context and economic system can significantly affect firms' ownership structure and its performance (Peng, Sun, Vlas, Minichilli, & Corbetta, 2018; Ghabri, 2022). Moreover, the factors external to the firm, such as the industry characteristics in which the firm operates, can have a significant impact on ownership structure-firm performance relationship (Porter, 1980; Ramaswamy, 2001; McGahan & Porter, 2002; Makino, Isobe, & Chan, 2004; Foroughi & Fooladi, 2011; Pathak & Pradhan, 2012; Fitza & Tihanyi 2017; Kim & Patel, 2021).

Therefore, this study aims to fill this gap by examining the relationship between different ownership types and firm performance while contributing to the agency theory using multi-country sample. First, the study examines the nature of the relationship between five ownership structure types (family ownership, institutional ownership, government ownership, managerial ownership, and employee ownership) and firm performance. Then, it examines the extent to which the nature of the relationship between the five ownership types and firm performance is affected by three moderating variables (the level of investor protection, degree of capitalism, and industry average performance). The study uses data of 1511 firms

from 20 countries over a period of 10 years, from 2011 to 2020, to formulate three samples (combined sample, developed countries sample, and developing countries sample).

1.3. Theoretical framework

The agency theory is utilized in this study as the theoretical foundation to examine the relationship between the five ownership types and firm performance, and in investigating the extent to which ownership structure-firm performance relationship is affected by the three moderating variables.

The agency theory is concerned with the conflict of interest between shareholders and managers. It suggests that shareholders with large stakes of ownership helps in solving the agency problem as they are generally interested in profit maximization, and their large ownership size gives them enough control over the firm to have their interventions and interests respected (Shleifer & Vishny, 1997). Therefore, concentrated ownership can be used as a monitoring mechanism that solves the agency problem (Al-Najjar & Taylor, 2008). In addition to that, the agency problem can also be solved if managerial compensation became performance-based rather than fixed compensation, in that way managers will exert more efforts to achieve higher firm performance (Grossman & Hart, 1988). Therefore, the agency theory suggests that agency problem can be solved if managers own some stakes in the firm as the interests of shareholders and managers will be aligned. The agency theory suggests that incentive alignment mechanisms, such as managerial ownership, and effective monitoring mechanisms, such as concentrated ownership, should be in place to maximize firm value and improve firm performance.

The agency theory directly links firm ownership structure with its performance, which provides theoretical justification for the study aim and allow for developing testable hypothesis on the extent to which the nature of the relationship between the five ownership

structures and firm performance is affected by level of investor protection, degree of capitalism, and industry average performance.

1.4. Research aims and questions

The aim of this study is to examine the nature of relationship between ownership structure and firm performance while contributing to agency theory. The study examines the extent to which firm performance is affected by different ownership structure types, namely, family ownership, government ownership, institutional ownership, managerial ownership, and employee ownership. Moreover, it aims to examine the moderating impacts of the level of investor protection, degree of capitalism, and industry average performance on the nature of the relationship between the five ownership structure types and firm performance.

Derived from the research aim, the thesis aims to answer the following key research question: What is the nature of the relationship between ownership structure and firm performance?

This question is divided into five empirical research questions as follows:

1) Are family, government and institutional ownership effective monitoring instruments that reduce the agency problem, therefore improving firm performance?
2) Are managerial and employee ownership effective incentive alignment mechanisms that reduce the agency problem resulting in higher firm performance?
3) What is the moderating impact of the level of investor protection on the nature of the relationship between the five ownership structure types and firm performance?
4) What is the moderating impact of the degree of capitalism on the nature of the relationship between the five ownership structure types and firm performance?
5) What is the moderating impact of the industry average performance on the nature of the relationship between the five ownership structure types and firm performance?

1.5. Research design and methodology

This study implements objectivist ontological approach and positivist epistemological approach. Quantitative research approach is used, and secondary data is collected over a period of 10 years (2011-2020). The final sample consists of 1511 non-financial companies from 20 countries, 15 developed countries and 5 developing countries. The data is collected using Data stream database (Zhong, Chourou, & Ni, 2017; Khan & Baker, 2022; Ahmed, Hussin, & Pirzada, 2022; Bissoondoyal-Bheenick, Brooks, & Do, 2023). Data analysis is conducted using STATA software package.

Data analysis starts with descriptive statistics to describe the basic features of the data used in the study and to identify any outliers. Outliers found are treated using winsorizing. Then, the relationships between constructs are tested using Pearson's correlation analysis to examine the extent to which the analysis dimensions are correlated with each other. This is followed by using the generalized method of moments (GMM) to analyse the extent to which the relationship between ownership structure and firm performance is affected by the five ownership types, level of investor protection, degree of capitalism, and industry average performance. The generalized method of moments is used to control for the endogeneity problem in the relationship between ownership structure and firm performance.

1.6. Significance of the study

This study aims to provide comprehensive examination of the extent to which the nature of the relationship between ownership structure and firm performance is affected by ownership type, the level of investor protection, degree of capitalism, and the industry average performance using data from 1511 non-financial companies from 20 countries. This will contribute to the literature in several ways. First, many studies in the literature, such as Boyd & Solarino (2016), Federo et al. (2020) and Solarino & Boyd (2020), suggested that there are

mixed results in the literature on the relationship between different ownership types and firm performance as each ownership type has its own objectives, investment horizon and risk preferences. Thus, each ownership type is expected to have different impact on firm performance. Therefore, the study provides an extension to ownership structure literature by examining the extent to which firm performance is affected by five of the most common ownership types around the world, which are family ownership, government ownership, institutional ownership, managerial ownership, and employee ownership.

Second, according to several studies in the literature, corporate ownership structure has unique features in each country, which means that the same ownership type can have different effects on firm performance across countries (Boyd & Solarino, 2016; Ciftci et al., 2019; Federo et al., 2020; Solarino & Boyd, 2020). For example, some studies suggest that the country's institutional context and its economic system can have a moderating impact on the nature of the relationship between the ownership structure of the firm and its performance (Peng, Sun, Vlas, Minichilli, & Corbetta, 2018; Ciftci et al., 2019; Ghabri, 2022). It is also well-developed in the literature that the characteristics of the industry in which the firm operates has a significant impact on its performance (Porter, 1980; Ramaswamy, 2001; McGahan & Porter, 2002; Makino, Isobe, & Chan, 2004).Thus, several researchers suggested that the relationship between ownership structure and firm performance can be affected by the firm's industry characteristics (Foroughi & Fooladi, 2011; Pathak & Pradhan, 2012; Fitza & Tihanyi 2017; Lahiri et al. 2020; Kim & Patel, 2021). Therefore, this study examines the relationship between different ownership structure types and firm performance using a sample from 20 developed and developing countries to find out the extent to which the ownership structure-performance relationship differs across developed and developing countries. Moreover, the study examines the extent to which this relationship is affected by

three moderating variables, the level of investor protection, degree of capitalism, and industry average performance.

Third, most empirical studies in the corporate governance literature have serious issues with the endogeneity problem (Boyd & Solarino, 2016; O'Boyle et al., 2016; Bhagat & Bolton, 2019). In regression models, endogeneity problem occurs when an endogenous variable correlates with error term leading to inconsistent estimates and wrong signs of coefficients, which result in wrong inferences, deceptive conclusions, and improper theoretical interpretation (Ju & Zhao, 2009; Le & O'Brien, 2010; Ullah, Akhtar, & Zaefarian, 2018). Therefore, this study uses the generalized method of moments for data analysis in order to mitigate the endogeneity problem and produce more reliable results.

1.7. Structure of the thesis

The thesis is organised as follows. Chapter 1 includes introduction and motivation for the study, the theoretical framework, description of the research aims and questions, research design and methodology, and the significance of the study. Chapter 2 is the literature review which presents a review of the theoretical and empirical literature on the relationship between ownership structure and firm performance from the agency theory perspective. It starts with a review of the agency theory. Then, a review on the relationship between different ownership structure types and firm performance is presented including concentrated ownership, family ownership, government ownership, institutional ownership, managerial ownership, and employee ownership. Finally, the moderating impacts of the level of investor protection, degree of capitalism, and industry average performance on the ownership structure-firm performance relationship is reviewed. Chapter 3 presents the study testable hypotheses driven by the agency theory. Chapter 4 explains the research methodology. The chapter discusses the research philosophy, research logic, methodology and methods of data collection,

measurement of study variables, methods of data analysis, and reflexivity and ethics. Chapter 5 presents and discusses the study empirical results. The results of descriptive statistics and correlation analysis are presented and discussed. After that, the results of the two-step generalised method of moments are presented, which is followed by a discussion of the GMM results. Finally, the hypotheses testing results are summarized. Chapter 6 includes summaries of the research aims, research methodology, and empirical results. Then, the study implications, contributions, limitations, and avenues for future research are presented.

Chapter Two

Literature review

2.1. Introduction

Corporate governance is one of the most important topics that concern academics, practitioners, and regulators as there is a debate on the best corporate governance mechanisms that solve the agency problem and improve firm performance (Boyd & Solarino, 2016). Such debate results in a series of studies that examine the relationship between corporate governance mechanisms and firm performance. Many empirical studies found that certain governance structures positively affect firm performance (Dahya et al., 2008; Aghion et al. 2013; Kumar & Zattoni, 2014; Sun et al. 2016; McCahery, Sautner et al. 2016; Amore, Miller et al. 2017; Kim and Patel 2020; Chen, Chen et al. 2022).

The dawn of the field of corporate governance most likely came when Berle and Means (1932) published their classic book 'The Modern Corporation and Private Property', which raised concerns over the separation of ownership and control in modern public corporations. Corporate governance mechanisms are market and non-market processes, involving corporate rules and measures, that aim to mitigate the agency problem.

One of the most important corporate governance mechanisms is ownership structure as different structures of ownership has varying effects on firm performance and corporate policies (Gisbert & Navallas, 2013). Several studies have examined the relationship between different ownership structures and firm performance and mixed results are found (Boyd & Solarino, 2016; Federo et al., 2020).

The agency theory is utilized in this study as the theoretical foundation. The agency theory is chosen because it directly links firm ownership structure with its performance (Shleifer & Vishny, 1997), which provides theoretical justification for the study aim and allow for developing testable hypothesis. The agency theory is concerned with the conflict of interest between shareholders and managers suggesting that incentive alignment mechanisms, such as managerial ownership, and effective monitoring mechanisms, such as family and institutional ownership, should be in place to maximize firm value and improve firm performance (Grossman & Hart, 1988; Al-Najjar & Taylor, 2008). Moreover, the agency theory fits all five ownership types included in this study.

This chapter provides a review of the theoretical and empirical literature on the relationship between ownership structure and firm performance from the agency theory perspective. It starts with a review of the agency theory. Then, a review of different ownership structures will be presented including concentrated ownership, family ownership, institutional ownership, government ownership, managerial ownership, and employee ownership. After that, the moderating impacts of the level of investor protection, degree of capitalism, and industry average performance on the ownership structure-performance relationship will be reviewed. The final section will conclude the chapter.

2.2. Agency Theory

2.2.1. Introduction

Agency theory is one of the most established theories in the management literature (Daily, Dalton, & Cannella, 2003;Wasserman, 2005). It discusses the problems that face firms due to the separation of ownership and control, and helps in implementing various governance mechanisms to control the agents' action in jointly held corporations (Shleifer & Vishny,

1997). Agency theory is concerned with the agency relationship, in which the principal delegates work to the agent who performs that work (Shleifer & Vishny, 1997).

Agency theory aims at mitigating two main problems. First, the agency problem that occurs due to the conflict of interests between principals and agents when it is difficult or expensive for the principal to verify that the agent has behaved appropriately (Carney, Gedajlovic, Heugens, Van Essen, & J. Van, 2011). Second, the problem of risk sharing that occurs due to the differences in the principal and agent attitudes toward risk (Barako, Hancock, & Izan, 2006; Adams, Hermalin, & Weisbach, 2010; Holmström, 2017). The principal and the agent have different risk preferences, so they may prefer different actions. Principals or shareholders are willing to invest in risky projects to acquire economic benefits, while agents or managers are risk averse and more concerned with short-term profits to maximize their private benefits (Adams, Hermalin, & Weisbach, 2010; Holmström, 2017).

The nature of the agency problem differs depending on the ownership structure of the corporation or the extent of separation between corporate ownership and control (Mallin, 2007). Bainbridge (2008) suggested that there are three forms of control that can be found in publicly held firms. The first form is majority control where a corporation is controlled by a single shareholder who owns more than 50 percent of its shares and has full control on the firm, which means that there is no separation between ownership and control. In such case, other shareholders share in firm ownership, but not in its control. The second form is minority control where the largest shareholder in the corporation owns less than 50 percent of its shares, so there is a partial separation between ownership and control. The third form is managerial control where corporate ownership is dispersed among various shareholders, and there is not any shareholder who can have a significant effect on managerial actions, so there is a complete separation between ownership and control (Bainbridge, 2008).

The role of corporate ownership structure in the reduction of agency problems has been greatly emphasized in corporate governance literature. It is suggested that shareholders with large stakes of ownership address the agency problem for two main reasons. First, major shareholders are generally interested in profit maximization (Pukthuanthong, Turtle, Walker, & Wang, 2017; Baghdadi, Bhatti, Nguyen, & Podolski, 2018). Second, the large ownership percentage held by major shareholders gives them enough control over the firm to have their interventions and interests respected (Shleifer & Vishny, 1997; Pukthuanthong et al., 2017; Buchanan, Cao, & Chen, 2018). Thus, concentrated ownership can be used as a monitoring mechanism to reduce the agency problem (Al-Najjar, 2008; Edmans & Manso, 2011; McCahery, Sautner, & Starks, 2016; Ma & Ren, 2021). Therefore, the agency theory provides a theoretical basis for testing the impact of ownership structure in the mitigation of the agency problem which leads to higher firm performance.

2.2.2. Evolution of the Agency Theory

Smith (1776) suggests that the separation between ownership and control increases the probability that managers will not work for the best interest of owners. Similarly, Berle and Means (1932) found that most modern corporations are characterized by dispersed ownership, in which corporate ownership is shared among various shareholders (principles) who delegate firm's management to professional managers (agents) (Ross, 1973; Jensen & Meckling, 1976), but the major issue is whether these managers are performing for the owners' interest or they are pursuing their self-interest.

Alchian & Demsetz (1972) and Jensen & Meckling (1976) suggested that the agency relationship is a contract between the principal and the agent, where both parties work for their self-interest leading to the agency problem. Thus, the best way to solve such problem is to allow managers to own some stakes in the firm leading to alignment of interests of

shareholders and managers. In addition to that, Grossman & Hart (1983) suggested that the agency problem can be solved if managerial compensation became performance-based rather than fixed compensation, in that way managers will exert more efforts to achieve higher firm performance.

Eisenhardt (1989) categorized the agency theory into two models: the positivist agency model and principal–agent model. The positive agency theory suggests that the solution to the agency problem is two folds. First, the contract between principles and agents should be incentive based; in that case the agent will work for the best interest of the principle (Fama, 1980; Feldmann & Schwarzkopf, 2003; Chau & Leung, 2006). Second, the principle should be able to obtain sufficient information about the firm that will allow them to monitor managerial actions efficiently and to discipline management for inappropriate actions (Pukthuanthong et al., 2017; Baghdadi et al., 2018). Principal–agent model suggests that the agency problem emerge from the different risk preferences of principles and agents, as it implies that principals are risk-neutral and profit seekers, while agents are risk averse and rent seekers (Adams et al., 2010; Holmström, 2017).

2.2.3. Agency Problem types

The agency problem is not limited to conflicts between principals and agents, rather it has gone beyond and covered other parties like creditors, major shareholders, and minority shareholders.

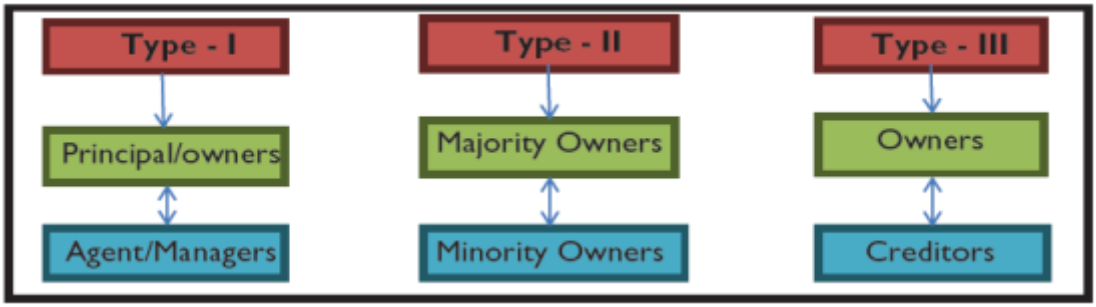

Figure 2.1: Types of the Agency Problem

Source: (Panda & Leepsa, 2017)

Type-1: Principal–Agent Problem

This problem occurs between shareholders and managers when there is a separation of ownership and control. In such case, shareholders aim at maximizing their own wealth and managers aim at maximizing their personal benefits. The misalignment of interest between principals and agents, in addition to the lack of proper monitoring due to dispersed ownership structure leads to the conflict, which is known as the principal–agent problem (Shleifer & Vishny, 1997).

Type-2: Principal–Principal Problem

This problem occurs between major shareholders and minority shareholders. Major shareholders are investors holding most of the firm's shares, while minority shareholders are those investors holding small portion of the firm's shares. Major shareholders or block holders have higher voting rights which enable them to control the firm, so they may take decisions that serve their own interests at the expense of minority shareholders (Fama & Jensen, 1983).

Type-3: Principal–Creditor Problem

This problem occurs between shareholders and creditors due to the financing decisions taken by shareholders (Damodaran, John, & Liu, 1997). Shareholders prefer to invest in risky projects that yield higher return. The risk involved in such projects raise the cost of finance

and decreases the value of outstanding debt, which affects creditors. If the project succeeds, then the owners will enjoy higher returns, while the creditors will get the pre-specified fixed interest rate. On the other hand, if the project fails, the creditors will be enforced to share some of the losses.

2.2.4. Agency costs

Agency costs are the value loss to shareholders, resulting from the conflict of interests between shareholders and managers. Jensen & Meckling (1976) defined agency costs as the sum of monitoring costs, bonding costs, and residual loss.

Monitoring costs are expenses paid by the principal to measure, observe, and control agent's behaviours. Generally, such costs are paid by the principal, but Fama & Jensen (1983) suggested that monitoring costs also affects agents' compensation as their compensation will be adjusted to cover these costs. Denis, Denis, & Sarin (1997) argued that effective monitoring will be restricted to certain groups or individuals in the sense that monitoring managerial actions requires adequate expertise and incentives to fully monitor management. Moreover, those who monitor managers must have enough power to discipline management in case of poor performance. However, Burkart, Gromb, & Panunzi, (1997) suggested that too much managerial monitoring will have an adverse impact on managerial initiative. Similarly, Himmelberg, Hubbard, & Palia (1999) suggested that increased level of monitoring may act as an obstacle to managerial entrepreneurship.

Given that agents ultimately bear monitoring costs, they are likely to set up structures that will reward them when they act in shareholder's best interests or compensate them if they do not. Bonding costs are the cost of establishing and adhering to these systems. They are not always financial, for example such costs may include the cost of additional information

disclosures to shareholders. Denis & Kruse (2000) argue that the optimal bonding contract should aim to motivate managers to take decisions that are in the shareholder's best interests.

Even if managerial actions are being monitored and there are some bonding initiatives with managers, the interest of managers and shareholders are still unlikely to be fully aligned. The losses incurred due to conflict of interests after monitoring and bonding are known as the residual loss. It arises because the costs of fully enforcing principal-agent contracts would far outweigh the benefits derived from doing so (Schroeder et al. 2009).

2.2.5. Controls on Agency Problem

Previous studies have suggested several internal and external controls that can reduce the agency problem, such as concentrated ownership, managerial ownership, debt, managerial labour market, and independent directors. Concentrated ownership may help in mitigating the agency conflict as major owners or block holders have better abilities and higher incentives to monitor managerial actions due to the significant impact of firm performance on their own wealth (Burkart et al., 1997). Debt can be used as a discipline for managers because the periodic payments of interest and principle will make managers take more efficient decisions to maintain high level of profitability to be able to meet such obligations (Frierman & Viswanath, 1994).

Managerial ownership is also considered as one of the mechanisms that reduces the agency problem. When agents acquire stocks in the firm, their incentives toward maximizing firm performance increase (Jensen & Meckling 1976). Moreover, Managerial compensation might help in solving the agency problem. Adequate compensation packages can prevent managers from exploiting shareholders property for their private benefit (Core, Holthausen, & Larcker, 1999).

Managerial labour market is considered one of the controls on agency problem as it estimates the ability of managers with their previous performance, so managers searching for better opportunity and remuneration from the market will work in a more efficient way to prove their worth through maximizing firm value (Fama, 1980). Independent directors are one of the agency problem controls. Independent directors are able to monitor managerial actions and ensure that managers are working for the best interest of shareholders which will help in reducing the agency problem (Rosenstein & Wyatt, 1990).

Dividends as a mean of profit distribution can help in reducing the agency problem (Park, 2009). Dividends reduce internal funds, so external funds will be needed to finance. As a result, managers should maintain high performance to attract external funds. In addition to that, dividends play a role in solving the agency conflict between inside and outside shareholders (Jensen, 1986; Myers, 2000). Finally, poor performing firms may be taken over by more efficient firms and the acquiring firm may eradicate the inefficient management (Panda & Leepsa, 2017), which encourage managers to perform efficiently to avoid takeovers. Therefore, the market for corporate control can also be considered as one of the agency problem controls.

2.2.6. Summary

The agency theory aims at solving the conflict of interest between different parties in an agency relationship (Jensen & Meckling, 1976). There are three types of agency problems; principle-agent problem that emerges between shareholders and managers (Shleifer & Vishny, 1997), principle-principle problem that emerges between major shareholders and minority shareholders (Fama & Jensen, 1983), and principle-creditor problem emerging between shareholders and creditors (Damodaran et al., 1997). There are three types of agency costs. First, monitoring costs that are incurred to monitor managerial behaviours (Conyon &

Florou, 2002; Rahman, 2021). Second, bonding costs that help in aligning interests of parties to the agency conflict (Denis & Kruse, 2000). Third, residual costs incurred due to conflict of interests after monitoring and bonding (Schroeder et al. 2009). In order to solve the agency problem, researchers suggested different measures that can be used such as concentrated ownership and managerial ownership (Jensen & Meckling, 1976).

2.3. Concentrated ownership

2.3.1. Introduction

Barle and Means (1932) classical work suggested that the ownership of modern corporations is dispersed among small shareholders and its control is concentrated in the hands of professional management. The agency theory emerged based on this view which suggests that the separation of ownership and control leads to an agency problem resulting from conflict of interest between shareholders and management (Jensen & Meckling, 1976).

However, several studies examined the view of Barle and Means (1932) and found that widely held corporations are not the most common ownership structure worldwide, rather concentrated ownership is more common. For example, La Porta, Lopez-De-Silanes, & Shleifer (1999) suggest that concentrated ownership is the most common form of ownership in most countries around the world, except for those with high levels of minority shareholders protection. Therefore, the principle-principle problem resulting from the conflict of interest between major shareholders and minority shareholders is more significant worldwide. The same result was also found by Faccio & Lang (2002) and Claessens, Djankov, & Lang (1999) in European countries and East Asian countries, respectively. In US, Gadhoum, Lang, & Young (2005) found that around 60% of US corporations have controlling shareholders which suggests that dispersed ownership is not the most common ownership structure even in the US, suggesting that the high levels of investors protection in the US are in place to protect

minority shareholders rights from controlling shareholders, rather than to prevent professional managers from exploiting dispersed shareholders rights.

Kim (2012) argues that an explanation that concentrated ownership is common in most countries around the world, although the fact that concentrated ownership exposes the owner to diversifiable risk, is two folds. First, the pursuit of private benefits can lead to concentrated ownership when the levels of investor protection in a country are inadequate. Second, concentrated ownership can be considered as substitute for weak external corporate governance mechanisms.

The argument that ownership structure of most firms around the world is concentrated rather than dispersed as suggested by Barle and Means (1932), challenges all theories in portfolio management and asset pricing that are based on Markowitz (1952) portfolio theory. The portfolio theory suggests that investors are only compensated for market risk assuming that rational investors should diversify their investments to reduce firm specific risk. However, in concentrated ownership where there are imperfect diversification benefits, the required rate of return on an investment could be different from that suggested by the Capital Asset Pricing Model or other asset pricing models.

2.3.2. Concentrated ownership and agency theory

According to the agency theory, the conflict of interest between shareholders and managers results in an agency problem that adversely impact firm performance (Fama, 1980). The separation between ownership and control may motivate managers to work for their own interest rather than the best interest of the owners, so close monitoring is required in order to mitigate the agency problem and ensure that firm performance is optimized and shareholders wealth is maximized (Fama, 1980).

Consequently, it is suggested that when the ownership of a corporation is concentrated in the hands of major shareholders, rather than being dispersed among various shareholders, the principle-agent problem will be mitigated. Major shareholders will have better ability to monitor managerial actions because they can discipline the managers by utilizing their voting rights leading to better corporate governance quality and higher firm performance (Shleifer & Vishny, 1997; Berle & Means, 1932). Owners with small ownership percentage do not have enough incentives to monitor managerial actions, or discipline poor performing managers (Grossman & Hart, 1980).

On the other hand, concentrated ownership can have a negative impact on firm performance in the sense that it may result in principle-principle agency problem. Major shareholders may exploit minority shareholders rights when the interests of major shareholders are not aligned with the interests of minority shareholders, so principle-principle agency problem will arise which adversely affects firm value (Shleifer & Vishny, 1997).

2.3.3. Empirical studies on the impact of concentrated ownership on firm performance

The impact of concentrated ownership on firm performance has been examined by several studies. Some found positive relationship, while others found that ownership concentration negatively impacts firm performance.

Those who found a positive relationship between ownership concentration and firm performance include Earle, Kucsera, & Telegdy (2003) and Krivogorsky & Grudnitski (2010) who examined the effects of ownership concentration in European countries, and a positive relationship between ownership concentration and firm performance is found. The same result is found by Javid & Iqbal (2008) in Pakistan, Hu & Izumida (2008) in Japan, Boone, Colombage, & Gunasekarage (2011) and Bathula & Singh (2015) in New Zealand, and

Desoky & Mousa (2013) in Egypt. They interpreted their findings by arguing that ownership concentration reduces monitoring costs which improves firm performance. In addition to that, large shareholders have higher motivation and abilities to monitor managerial actions. Outstanding firm performance and higher profitability have higher impact on major shareholders wealth compared with those having small shareholdings in the firm.

However, other studies found that ownership concentration negatively impacts firm performance (Demsetz & Villalonga, 2001; Jiang & Habib, 2009; Dzanic, 2012; and Al-Saidi & Al-Shammari, 2015; Panda & Bag, 2019). They suggested that ownership concentration negatively impacts firm performance as it results in a principle-principle agency problem. Major shareholders work for their own interests and exploit minority shareholders rights which adversely impact firm performance.

2.3.4. Summary

Concentrated ownership is a common ownership structure around the world. However, it is more common in countries having low levels of investor protection (Kim, 2012). The most common concentrated ownership structures worldwide are institutional ownership, government ownership, family ownership and corporate ownership (De La Cruz, Medina, & Tang, 2019; OECD 2021).

According to the agency theory, concentrated ownership can be considered as an internal mechanism for mitigating the agency problem between shareholders and managers in the sense that major shareholders are more able to monitor managerial actions and ensure that managers are working for the best interest of shareholders (Fama, 1980). Consequently, concentrated ownership can help in solving the principle-agent problem. However, concentrated ownership may result in principle-principle problem as major shareholders will have enough controlling power allowing them to extract private benefits at the expense of

minority shareholders (Shleifer & Vishny, 1997), especially in countries having low levels of investor protection (La Porta et al., 1999).

2.4. Family Ownership

2.4.1. Introduction

Family ownership was the most common ownership structure around the world for decades. It is found by many researchers that family ownership was a distinguishing characteristic of corporate ownership in many countries around the world (La Porta et al., 1999; Claessens et al., 1999; Faccio & Lang, 2002; Anderson & Reeb, 2003; Gadhoum et al., 2005). For example, La Porta et al. (1999) examined the ownership structure of 27 countries and found that family ownership is common in most of them, especially in those countries with weak shareholders protection. They justified their findings by the argument that family ownership can be a substitute for investor protection mechanisms in countries that have weak legal protection. Similarly, Claessens et al. (1999) provided evidence that more than half of East Asian firms are controlled by families, and that the wealth of East Asia is concentrated among few families. Faccio & Lang (2002) revealed that 44.29% of western European firms are family owned. Anderson & Reeb (2003) found that one-third of American companies are family controlled.

Table 2.1. gives some typical examples of firms with family ownership around the world. It is noticeable that family ownership is a widely common ownership type in both developed and developing countries. According to the OECD (2021), family ownership is the fourth most common ownership structure in the world with 9% of the global market capitalisation is owned by family investors.

Table 2.1 Examples of firms with family ownership around the world

Country	Company	Overview	Source
The US	WalMart Incorporation	It is the world's largest retailer founded by Sam Walton in 1962. Walton family owned around 50% of the companies' total shares in 2019.	WalMart Annual Report in 2019
The UK	Stemcor	The world's largest independent steel trader. It was Formed in 1951 by Hans Oppenheimer. Most shares are still held by Oppenheimer family.	Stemcor Annual Report in 2019
Egypt	ElSewedy Electric	It was founded in 1938 by the ElSewedy family. The company manufactures and sells integrated energy products and services. ElSewedy family owned 67.7% of total shares in 2019.	ElSewedy Electric Annual Report in 2019.
Germany	Volkswagen AG	It was founded by Ferdinand Porsche. It is the largest carmaker in Europe. Porsche family owned around 30% of total shares in 2018.	Volkswagen Annual Report in 2018
Italy	EXOR SpA	It was founded by Giovanni Agnelli in 1899. Assets of the company include Fiat, Ferrari, Lancia, Alfa Romeo, soccer	EXOR SpA Annual Report in 2019

		club Juventus and the Economist Group. Agnelli family had a 53% controlling stake in the company in 2019.	
India	ArcelorMittal	It was founded by Mohan Lal Mittal in 1950s. It is the world's largest steel producer. Lal Mittal family owns 37.4% controlling stake.	ArcelorMittal Annual Report in 2019
Switzerland	Roche Holding AG	Fritz Hoffmann-La Roche founded the company in 1896. It is the world's third largest pharmaceutical company. La Roche family owned 45.01% of issued shares in 2019.	Roche Holding Annual Report in 2019.
South Korea	LG Corporation	Electronics giant LG Corporation was founded by Koo In-Hwoi. It accounts for nearly 70% of the Koo family fortune who owned around 30% of its shares in 2018.	LG Corporation Annual Report in 2018
France	Groupe Auchan	Groupe Auchan is majority-owned by the Mulliez family (95%). The retail business was founded in Roubaix, France in 1961 by Gérald Mulliez.	Groupe Auchan Annual Report in 2019
Mexico	América Móvil SA de CV	It was founded by Carlos Slim in 2000 that has a 61.4% controlling stake in the company. It is the largest mobile operator in Mexico	América Móvil SA de CV Annual Report in 2019

		and has a significant market share throughout Latin America	
Brazil	JBS SA	It was founded by José Batista Sobrinho in 1953 as an animal meat processing company. In 2019, the Batista family had a 41.9% stake in the firm	JBS SA Annual Report in 2019
China	China Evergrande Group	China Evergrande Group is a real estate behemoth and is one of the world's largest property companies. It was founded by Hui Ka Yan in 1996. In 2019, the family owned 77.17% of the business.	China Evergrande Group Annual Report in 2019
Qatar	Salam International Investment Limited (SIIL)	SIIL is a Qatari family-founded conglomerate run by Issa Abdul Salam Abu Issa. Abu Issa family holds a 35 per cent stake in SIIL. The company has interests in contracting, energy and industry, technology, retail distribution and hospitality and real estate.	SIIL Annual Report in 2019

Family ownership can have a positive impact on firm performance in the sense that it reduces the principle-agent agency problem. Family ownership well-aligns the interests of owners and managers because family members have high incentives to maximize firm value and monitor

managerial actions (Shleifer & Vishny, 1986; Anderson, Mansi, & Reeb, 2003; Burkart, Panunzi, & Shleifer, 2003; Morck, Wolfenzon, & Yeung, 2005; Martínez, Stöhr, & Quiroga, 2007; Allouche, Amann, Jaussaud, & Kurashina, 2008; Yoshikawa & Rasheed, 2010; Ray, Mondal, & Ramachandran, 2018; Ciftci, Tatoglu, Wood, Demirbag, & Zaim, 2019).

However, major family owners may exploit minority shareholders rights when the interests of family owners are not aligned with the interests of minority shareholders, so principle-principle agency problem arises which adversely affects firm value (Shleifer & Vishny, 1997; Kowalewski, Talavera, & Stetsyuk, 2010; Sciascia, Mazzola, Astrachan, & Pieper, 2012; Solarino & Boyd, 2020; Liu, Luo, & Tian, 2015; Ray et al., 2018; Andersson, Johansson, Karlsson, Lodefalk, & Poldahl, 2018; Chen, Chen, He, & Patel, 2022).

For example, Morck et al. (2005) suggested that family ownership has a positive impact on firm performance in the sense that it may aid in overcoming market inefficiencies through efficient monitoring, control and capital allocation. However, it may have negative impacts on three levels. On the firm level, the agency problem between major shareholders (family members) and minority shareholders emerges. On macroeconomic level, if few families control the economy of a country, this may affect innovation, resource allocation and economic growth. On the political level, those controlling family investors will have political connections that may affect the capital market institutional development and impose more entry barriers in the market.

2.4.2. Family ownership and agency theory

According to agency theory, the separation of ownership and management leads to agency costs due to different preferences and information asymmetries between owners (principal) and management (agent) (Jensen & Meckling, 1976). In other words, agents take decisions

based on their individual preferences (e.g., short-term, financial gains) instead of the owners' preferences (e.g., long-term, sustainable development).

Family ownership is expected to help in alignment of interests among owners and management (Chua, Chrisman, & Sharma, 1999). This alignment would lead to the avoidance of agency costs (Jensen & Meckling, 1976). However, the influence of family-related issues aside from business interests in family firms creates a more complicated structure of individual preferences (Corbetta & Salvato, 2004). For example, family members may use their power in terms of votes and insider knowledge to extract private benefits through special dividends, excessive compensation, related-party transactions, and limiting top management positions to family members rather than employing qualified professional managers (Corbetta & Salvato, 2004).

Agency theory can be divided into three main types in family business research. First, the principal-agent approach which focuses on the interaction between owners and management (Shleifer & Vishny 1997; Mitchell & Meacheam, 2011; Bendickson, Muldoon, Liguori, & Davis, 2016; Holmström, 2017; Rahman, Zhu, & Hossain, 2023). Second, the principal-principal approach which focuses on the conflict of interest among major and minority shareholders (Fan & Wong, 2005; Ho & Kang, 2013; Holmström, 2017; Habib, Wu, Bhuiyan, & Sun, 2019; Rahman et al., 2023). Third, the behavioural agency approach which focuses on differences in risk preferences among principles and agents (Wiseman & Gomez-Mejia, 1998; Adams et al., 2010; Holmström, 2017; Poletti-Hughes & Briano-Turrent, 2019).

The principal-agent branch (agency problem type 1) is the most common agency theory branch and focuses on information conflicts and asymmetries between owners and managers (Bendickson et al., 2016). Three major sources of agency costs that have been found in prior research from this perspective are costs through monitoring agents; costs from aligning the

interests of agents with those of the principal; and the remaining costs for the non-efficient practice of diverging goals (Shukla, Sr, & Gedajlovic, 2014). Proponents of this approach argue for the lack of agency costs when ownership and management are aligned, which is the case in family firms (Chua et al., 1999). Since family wealth depends on firm welfare, families either manage the firm directly or closely monitor management in order to ensure the survival of the firm (Demsetz & Lehn, 1985; Anderson and Reeb, 2003; Isakov & Weisskopf, 2014). In addition to that, family firms have long-term orientations and give importance to their reputation in order to transfer the family wealth to following generations (Lumpkin, Brigham, & Moss, 2010; Berrone, Cruz, & Gomez-Mejia, 2012; D'Aurizio, Oliviero, & Romano, 2015; Tsao, Chang, & Koh, 2019). Consequently, they tend to invest more in long-term projects and avoid boosting uncertain short-term earnings.

However, this argument is criticized as other potential sources of agency costs due to relational issues were found (Chrisman, Chua, & Litz, 2004; Villalonga & Amit, 2006; Liu et al., 2015; Ray et al., 2018; Andersson et al., 2018; Chen et al., 2022). These sources encompass self-control problems (Jensen, 1994; Filatotchev, Lien, & Piesse, 2005; Sciascia & Mazzola, 2008; Li & Daspit, 2016), Generous behaviours within the family and their exploitation, as well as the employment of family members instead of more qualified non-family managers (Shleifer & Vishny, 1986; Barclay & Holderness, 1989; DeAngelo & DeAngelo, 2000; Gomez-Mejia, Nunez-Nickel, & Gutierrez, 2001; Schulze, Lubatkin, & Dino, 2003; Andres, 2008; Stewart & Hitt, 2012).

The principal-principal approach (agency problem type 2) focuses on agency costs arising through conflict of interests between owners, being equally authorized, or between major and minority shareholders. In family firms, this situation can additionally be complicated by the emotional and relational attitudes of the involved family members (Schulze et al., 2003),

which can lead to inefficient resource allocation (Villalonga & Amit, 2006; Dekker, Lybaert, Steijvers, & Depaire, 2015). Family members holding management positions may pursue interests of the controlling family instead of the non-controlling shareholders (Morck et al., 2005). As an example, large family shareholders may give more attention to firm growth and survival instead of shareholder value maximization (Anderson & Reeb, 2003). Moreover, they can extract private benefits at the expense of minority shareholders through providing special dividends, creating high-paying jobs to themselves, favouring family members to fill managerial positions and restricting labour pool (DeAngelo & DeAngelo, 2000; Cacciotti & Ucbasaran, 2017). Moreover, family ownership can lead to managerial entrenchment emerging from keeping managerial positions within the family even if sufficient competencies do not exist in family members (Shleifer & Vishny, 1986; Barclay & Holderness, 1989; Shleifer & Vishny, 1997; DeAngelo & DeAngelo, 2000; Gomez-Mejia et al., 2001; Schulze et al., 2003; Andres, 2008; Stewart & Hitt, 2012).

Behavioural agency model focuses on that family investors have different risk preferences than non-family investors. The concept is based on the assumption that the decision-makers' risk preferences depend on the situation and are not consistent (Wiseman & Gomez-Mejia, 1998). For example, agency costs sometimes stem from prioritizing non-financially oriented goals, such as keeping control in the family instead of pursuing more promising business opportunities (Chrisman & Chua, 2004; Gomez-Mejia, Makri, & Kintana, 2010; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011; Cennamo, Berrone, Cruz, & Gomez–Mejia, 2012; Gedajlovic, Carney, Chrisman, & Kellermanns, 2012).

2.4.3. Empirical Evidence on the relationship between family ownership and firm performance

Several studies have empirically examined the impact of family ownership on firm performance. It is found that family firms create value and are more profitable than non-family firms in some settings, while family ownership may adversely affect firm performance in other settings. For example, Villalonga & Amit (2006) found that family ownership has a positive impact when the founder is the CEO as the conflict of interest is at its minimum level, while it negatively impacts firm performance when the descendants become the CEOs because of possible conflicts between family members themselves. Consequently, the agency problem is higher when the family firm is run by descendants.

The impact of family ownership on firm performance has been examined in several developed countries. For example, Hamadi (2010) found that family ownership has a positive impact on firm performance in Belgian listed firms unless they are organized in voting blocks. In Switzerland, Isakov & Weisskopf (2014) implied that there is a positive relationship between family ownership and firm performance as family presence lowers the conflict of interest between managers and shareholders from one side, and majority and minority shareholders from the other side. They interpreted their results by that Switzerland has strong law and order tradition as well as low corruption levels. However, they found that if family control exceeded 80%, the relationship turns negative as the possibility of family opportunism becomes higher. They argued that such result is highly related to the corporate governance environment in Switzerland that is characterized by poor levels of investor protection. Saleh, Halili, Zeitun, & Salim, (2017) examined family ownership-firm performance relationship in Australia in pre- and during the financial crisis in 2008. The findings showed that family firms performed better than non-family firms that have dispersed ownership structures. They interpreted their results by the argument that family businesses

are more risk-averse business organizations which reduce their exposure to financial crises negative implications. When examining the impact of family ownership in Germany, France, Italy and Spain, Lepore, Paolone, & Cambrea (2018) found that family ownership positively affects firm performance when there is a degree of investor protection that reduces principle-principle agency problem. A possible explanation for such positive impact is that family members tend to choose long-term investments, in contrast to other investors who focus mainly on short-term profits. In contrast, Cacciotti & Ucbasaran (2017) found that family ownership-firm performance relationship is negative when multiple generations of family members are participating in firm ownership which leads to greater diversity of perspectives that generates potential conflict over the distribution of resources and misalignment of interests. In Japan, Sakawa & Watanabel (2018) suggested that family ownership positively impact firm performance as family members hold an effective monitoring role and behave for the interest of all shareholders leading to higher profitability and better firm performance. They argued that the principle-principle agency problem is not existent in Japan as the collectivism culture prevents major shareholders from exploiting minority shareholders rights.

The relationship between family ownership and firm performance has also been examined in some developing countries. In Taiwan, Chu (2011) found that family ownership positively affects firm performance when family members are actively involved in management because of the close alignment between owners and managers. Otherwise, it negatively impacts firm performance. Similar result is found by Shyu (2011) who suggested that family ownership positively affects ROA and Tobin's Q in Taiwan. However, they argued that when families own more than 30 percent of the firm, the probability of entrenchment and poor performance increases. This argument was contradicted by Buren et al. (2016) who also found positive family ownership-performance relation in Brazil, and it was suggested that family ownership

impact is maximized when it reaches 60-70 percent. Siddik & Kabiraj (2016) found a positive relationship between family ownership and firm performance in Chinese firms implying that the interests of shareholders and managers are well aligned in such ownership structure. Similarly, Ciftci et al. (2019) examined the same relationship in Turkey and found that firms perform better when the ownership is concentrated in the hands of a family as such concentration provides incentives for family members to optimize performance because smaller proportion of outsiders will share the benefits of success or the costs of failure. In addition to that, it provides incentives for other actors that have links with the family to facilitate the activities of the firm.

Using data from twenty-eight countries from both developed and developing countries, Bennedsen, Huang, Wagner, & Zeume (2019) found that family firms outperforms non-family firms especially in countries that have less regulated labour markets as they argued that family firms provide higher job security and are better in labour management than non-family firms, which motivates employees to work harder leading to higher firm performance.

2.4.4. Summary

Family ownership has been the most common ownership structure around the world for decades (Gadhoum et al., 2005). From the agency theory view, family ownership can reduce the principle-agent problem as family members will have higher motivation to monitor managerial actions and ensure high firm performance (Cacciotti & Ucbasaran, 2017).

Most empirical studies found that family ownership can bring firm performance improvements in both developed and developing countries (Isakov & Weisskopf 2014; Buren et al. 2016; Siddik & Kabiraj 2016; Saleh, Halili, et al 2017; Lepore, Paolone, et al. 2018; Sakawa & Watanabel 2018; Ciftci et al. 2019; Bennedsen, Huang, et al. 2019). It was found that family ownership can positively impact firm performance when family investors hold

effective monitoring roles and have longer investment perspectives (D'Aurizio et al., 2015; Ray et al., 2018; Ciftci et al., 2019; Tsao et al., 2019). However, it is also found that some moderating variables can affect the nature of the relationship between family ownership and firm performance, such as the level of investor protection (Isakov & Weisskopf 2014; Lepore, Paolone, & Cambrea 2018), percentage of family shareholdings (Isakov and Weisskopf, 2014; Boyd and Solarino, 2016; Murro & Peruzzi, 2019) and family involvement in management (Chu, 2011; Hoffmann et al., 2016; Li and Daspit, 2016; Daspit et al., 2018).

2.5. Government ownership

2.5.1. Introduction

Government ownership is very common across the world, especially in those industries that have national or public interest, or in response to institutional voids (Inoue, Lazzarini, & Musacchio, 2013; Nash, 2017; Boubakri, El Ghoul, Guedhami, & Megginson, 2018; Tihanyi et al., 2019; Clò, Florio, & Rentocchini, 2020). Moreover, the financial crisis in 2008 has led to a large increase in government ownership in many countries, especially emerging ones (Borisova, Brockman, Salas, & Zagorchev, 2012; Boubakri et al., 2018).

Governments around the world have transformed the well-known model of state capitalism, in which governments own and manage wholly owned state enterprises into new models in which the government works hand in hand with domestic and foreign private investors to develop new strategic capabilities using novel governance arrangements (Wehrheim, Dalay, Fosfuri, & Helmers, 2020). For example, the government may participate as a major shareholder, minority shareholder or as a strategic supporter of specific sectors (Musacchio, Lazzarini, & Aguilera, 2015).

Many researchers have argued that government ownership leads to inefficient corporate governance and that government ownership is less efficient than private ownership (Martin & Parker, 1995). It is argued that firms owned by private shareholders are more motivated to increase their profits and reduce their costs, while the government peruses social and political goals rather than maximization of shareholders' wealth (Okhmatovskiy, 2010; Bruton, Peng, Ahlstrom, Stan, & Xu, 2015; Musacchio et al., 2015). Moreover, the government considers political decisions in choosing managers and other personnel of the company, regardless of their competences and abilities, which negatively impact firm performance (Boycko, Shleifer, & Vishny, 1996).

Table 2.2 gives some examples of corporations with government ownership around the world. Government ownership is the third most common ownership structure type in the world with 10% of the global market capitalisation owned by governments (OECD 2021).

Table 2.2 Examples of firms with government ownership around the world

Country	**Corporation**	**Overview**	**Source**
Brazil	Petrobras	It is a Brazilian oil and gas company that was founded in 1953. The Brazilian government directly owns 54% of Petrobras' common shares.	https://www.investidorpetrobras.com.br/en/results-and-notices/annual-reports. accessed 3/3/2020
Saudi Arabia	SABIC	SABIC is a public company based in Riyadh, Saudi Arabia. It is ranked among the world's largest petrochemicals manufacturers, 70%	https://www.sabic.com/en/about. accessed in 3/3/2020.

		of the Company's shares are owned by the Saudi Arabian government.	
Austria	Verbund	VERBUND is Austria's leading electricity company, 51% of the company's ownership is owned by the Republic of Austria.	https://www.verbund.com/en-de/about-verbund/investor-relations/share-information. accessed 3/3/2020
Egypt	Telecom Egypt	Telecom Egypt is Egypt-based corporation that provides telecommunication services, 80% of the company's ownership is owned by the Egyptian government.	http://ir.te.eg/en/CorporateNews/PressRelease/103/Telecom-Egypt-s-BOD-appointed-for-the-next-term-of-three-years. accessed 3/3/2020
France	Eramet SA	Eramet is a French multinational mining and metallurgy company. The government of France owns 29.59% of the company's shares.	Eramet SA ownership structure report 2020.
Germany	Deutsche Telekom AG	Deutsche Telekom AG is a German telecommunications company and is one of	Deutsche Telekom AG ownership structure report 2020.

		the largest telecommunications providers in Europe. The government of Germany owns 14.50% of the company's shares.	
India	NTPC Ltd	NTPC Limited, is an Indian central public sector undertaking under the ownership of the Ministry of Power, Government of India with 51.11% ownership percentage.	NTPC Ltd ownership structure report 2020.
South Africa	Telkom SA SOC Ltd	Telkom SA SOC Limited is a South African telecommunications provider, where 40.51% of the company shares are owned by the government of South Africa.	Telkom Ltd ownership structure report 2020.

2.5.2. Government ownership and agency theory

Based on agency theory, government ownership increases both principle-agent problem and principle-principle problem. From the principle-agent problem perspective, government ownership has negative impact on firm performance as governments lack the expertise and

resources to monitor managers effectively, so the agency problem emerges which adversely affects firm value (Qi, Wu, & Zhang, 2000). Government as a principal plays weak monitoring role because it is not clear who acts as principal on behalf of the state (Okhmatovskiy, 2010; Boubakri, Cosset, & Saffar, 2013).

Furthermore, managers in state-owned-firms are less efficient than those in private firms for several reasons. State ownership creates incentives and regulatory backing for self-serving purposes, thus motivating agents to manipulate accounting numbers (Liu, Saidi, & Bazaz, 2014). Soft budget constraints tend to weaken managers' incentives to improve firm performance (Kornai, Maskin, & Roland, 2003). Besides, in state-owned firms, managers are poorly selected compared with private firms that are mainly driven by profit-maximization objective (Dharwadkar, George, & Brandes, 2000). Moreover, it is generally unclear to managers in state-owned firms whether the relevant principal is the ruling government, investors who own shares in the firm, or the society as whole (Megginson & Netter, 2001).

From principle-principle problem perspective, an agency problem arises between state and non-state shareholders because both parties have different goals and interests. Governments usually have other goals than profit maximization which creates misalignment of interests between state and other private shareholders (Shleifer & Vishny, 1997). When state shareholders are the major shareholders, they will have a significant impact on the goals and strategies pursued by the firm which may not be in favour of minority shareholders (Thomsen & Pedersen, 2000). Increasing state ownership allows the government to achieve many non-economic objectives, such as maximizing its own interests and securing political support, which contradicts which firms' economic objectives (Cheung, Jing, Lu, Rau, & Stouraitis, 2009; Jiang, Peng, Yang, & Mutlu, 2015).

Consequently, it is suggested that in order to reduce government ownership negative impact, governments can have an active involvement in corporate ownership, but a significant proportion of firm ownership should be concentrated in the hands of some non-state shareholders in order for them to have enough influence on managerial actions (Charles & Snell, 1989).

2.5.3. Empirical studies on the relationship between government ownership and firm performance

Many empirical studies have examined the impact of government ownership on firm performance in both developed and developing countries.

Some studies provided evidence on the negative impact of government ownership on firm performance including La Porta, Lopez-De-Silanes, & Shleifer, (2002) who showed that government ownership has a negative impact on firms' efficiency. They justified these findings by that government control firms to provide benefits to supporters and to gain votes. Zeitun & Tian (2007) studied the effect of government ownership on firm performance in Jordon. They found that state ownership has a significant negative relationship with firm performance. The study suggests that if firms aim to increase their profitability, they should reduce state ownership. Gunasekarage, Hess, & Hu (2007) and Shen & Lin (2009) found that there is a significant negative relationship between state ownership and firm profitability in China, and they recommended that privatization should continue in China in order to improve corporate performance. Similarly, Lin, Liu, & Zhang (2009) and Dixon, Guariglia, & Vijayakumaran (2015) found that production efficiency and export intensity are negatively affected by government ownership in China. Song, Wang, & Cavusgil (2015) suggest that state-controlled firms have lower degree of market orientation resulting in lower performance relative to privately controlled firms in China. In Iran, Alipour (2013) found that government

ownership is negatively related to firm performance, which implies the failure of government ownership in improving firm value and underlines the significance of accelerating privatization in Iran.

Such negative results are justified by that state-owned firms have social and political goals that are not consistent with the goals of maximizing profits and share price value (Ding, Zhang, & Zhang, 2007; Shen & Lin, 2009; Cheung et al., 2009; Jiang et al., 2015). Governments consider political decisions in choosing managers and other personnel of the company, regardless of their competences and abilities, which negatively impact firm performance (Boycko, Shleifer, & Vishny, 1996; Frydman, Gray, Hessel, & Rapaczynski, 1999; Estrin, Hanousek, Kocenda, & Svejnar, 2009; Wang, Hong, Kafouros, & Wright, 2012). Moreover, there is great difficulty in government-owned firms to monitor managerial actions by other shareholders (Estrin et al., 2009; Boubakri et al., 2018).

Other studies found that government ownership negatively impacts firm performance when there are high levels of government shareholdings. Wei (2007) found that the relationship between government ownership and firm performance is not negative until government ownership percentage exceeds 50 percent, where government ownership negatively impacts firm performance. Tian & Estrin (2008) found that the relationship between government ownership and firm performance in China is positive up to a certain point where it decreases thereafter. Similar result is found by Phung & Mishra (2016) in Vietnam. Eforis (2018) found positive effect of government ownership on firm financial performance in Indonesia, but the effect decreases as the percentage of government ownership increases.

A third group found that in countries with weak regulatory systems, government owned firms receive more advantages than private firms (Inoue et al., 2013), have more access to information (Okhmatovskiy, 2010; Gaio & Pinto, 2018), and enjoys higher levels of

ownership stability which improves investor's confidence in the firm and improves its performance (Borisova & Megginson, 2011; Chen, Sun, Tang, & Wu, 2011; Hope, 2013; Shailer & Wang, 2015; Wang, Yi, Kafouros, & Yan, 2015; Borisova et al., 2015). For example, Sun & Tong (2003) studied the performance of 634 companies listed in the Chinese stock market and found that companies owned by governments have better performance than private ones. Iwasaki & Kočenda (2017) performed a meta-analysis on the impact of government ownership on firm performance in Czech companies and found a positive relationship between these two variables. Similarly, Haider, Liu, Wang, & Zhang, (2018) suggested that government ownership reduces financial constraints on firms which increase financial performance using data from 81 countries. The same result was found by Kubo & Phan (2019) in Vietnam and justified their findings by governments' superior ability to obtain insider information and to influence policies and regulations. Moreover, state-owned firms can attract more talented employees as they pay higher salaries and provide additional incentives than private firms (Borisova, Fotak, Holland, & Megginson, 2015). It was also found that government ownership improves firm's market position and can be considered as a competitive advantage, which positively impact firm value (Okhmatovskiy, 2010; Benito, Rygh, & Lunnan, 2016; Boubakri et al., 2018; Boateng, Du, Bi, Kwabi, & Glaister, 2022). Additionally, it is argued that managers in firms with government ownership pursue long-term objectives, have better attitudes toward innovation, and are more risk-takers which positively impact firm long-term performance and value (Clò et al., 2020).

2.5.4. Summary

According to the agency theory, government ownership adversely impacts firm performance, as it increases both principle-agent and principle-principle problems. This is confirmed by many empirical studies that found a negative relationship between government ownership and firm performance in the sense that governments peruse social and political goals that may

reduce the efficiency of corporate decisions resulting in lower firm performance (Estrin et al., 2009; Huyghebaert & Wang, 2012; Nash, 2017). Other studies found that government ownership negatively impacts firm performance when the government shareholding percentage is high (Phung & Mishra, 2016; Eforis, 2018).

Consequently, it is suggested that to gain the advantages of government ownership and at the same time avoid its negative consequences, government ownership should be combined with other ownership structure types. For example, Qi et al. (2000) suggest that the more private ownership of state-owned firms, the lower the agency cost. The same view is held by Eforis (2018) who stated that the best practice is to combine other forms of ownership with government ownership.

2.6. Institutional ownership

2.6.1. Introduction

Institutional ownership is the most common ownership type around the world, with 43% of the global market capitalization is held by institutional investors (OECD 2021). Institutional investors held about 50% to 60% of the capital of large-listed companies in Europe (Lavigne, 2013) and approximately 70% of the UK equity market in 2012 (Hawas & Tse, 2016). This came at the expense of family and government ownership that were the most common ownership structures in most countries around the world (Kim, Pevzner, & Xin, 2019; Erhemjamts & Huang, 2019; Ma & Ren, 2021). The recent significant increase in institutional ownership enhanced the importance of studying the effect of institutional ownership in corporate governance context, especially the monitoring role of institutional investors in mitigating the agency problem.

With such increase in institutional ownership, monitoring is expected to become more effective. Institutional shareholders have the incentive and ability to monitor management and mitigate agency conflict (Pukthuanthong et al., 2017; Buchanan et al., 2018). Furthermore, the large shareholdings of institutional investors are expected to mitigate the free-rider problem resulting from the dispersion of ownership and control (Shleifer & Vishny, 1997). Through their large stake in the company, it is cost-effective for institutional shareholders to monitor management as the return would be sufficient to cover their monitoring costs (Rahman, 2021). Given that institutional investors are obliged to maximize the long-term value of their investments, they effectively monitor managerial actions to ensure that managers are adopting strategies that enhance long-term firm value (Pukthuanthong et al., 2017; Baghdadi et al., 2018). Consequently, it is suggested that institutional investors have a positive impact on firm performance in the sense that they have the ability and motivation to monitor management actions and to discipline them directly through exerting pressure on management or indirectly through stock market trading (Gillan & Starks, 2003; Edmans & Manso, 2011; McCahery et al., 2016; Ma & Ren, 2021). In addition to that, institutional investors can persuade managers to implement good corporate governance practices (Aggarwal, Erel, Ferreira, & Matos, 2010; Aggarwal, Erel, Ferreira, & Matos, 2011; Dyck, Lins, Roth, & Wagner, 2019; Rahman, 2021). Even though institutional investors may not be seen to have a direct impact on strategic decisions of firms where they invest, many studies found that they have a significant effect on the choice of firm strategies (Aghion, Van Reenen, & Zingales, 2013; Connelly, Lee, Tihanyi, Certo, & Johnson, 2018, 2019; Clò et al., 2020).

However, institutional investors are not a monolithic group, they may have different impacts on firm performance (Ma & Ren, 2021). Based on the monitoring role of institutional investors, they can be classified into three categories. First, pressure sensitive investors or

gray investors such as banks, insurance companies and non-bank trusts. Those investors have some business relations with firms where they are investing, so they may be unable to effectively monitor managerial decisions. Moreover, they may exploit minority shareholders rights by overlooking resource misallocation (Brickley, Lease, & Smith, 1988). Such type of institutional investors increases the principle-principle agency problem and reduces firm performance (Brickley, Lease, & Smith, 1988). Second, pressure resistant investors or independent investors who have no business relations with the firms where they are investing, so they have the significant positive influence on managers and tend to reduce the agency problem (Chen, Harford, & Li, 2007). Examples include public pension funds, mutual funds, endowments, and foundations. Third, pressure indeterminate investors are those who have passive monitoring role. They invest in firms to attain short-term capital gains (Brickley, Lease, & Smith, 1988).

Table 2.3 gives some examples of companies that have institutional investors in their ownership structure. Institutional ownership is common in both developed and developing countries, especially foreign institutional ownership (Kim et al., 2019; Erhemjamts & Huang, 2019; Ma & Ren, 2021).

Table 2.3: Examples of companies with institutional ownership around the world

Country	**Company**	**Overview**	**Source**
The UK	British American Tobacco	British American Tobacco is a cigarette and tobacco manufacturing company headquartered in London, England. It is one of the biggest cigarette makers around the world. Institutional investors owned 83% of British American	British American Tobacco Annual Report of 2019.

		Tobacco in 2019.	
The US	Exxon Mobil Corporation	Exxon Mobil Corporation is an American multinational oil and gas corporation, headquartered in Irving, Texas. Institutional investors owned around 25% of its ownership structure in 2019.	Exxon Mobil Corporation Annual Report of 2019.
Egypt	TMG Holdings	Talaat Moustafa Group (TMG) Holding is a leading conglomerate with an emphasis on developing integrated communities. Institutional investors owned around 55% of the company in 2018.	TMG Holding Annual Report of 2019
China	Petro China	Petro China is the largest oil and gas producer and distributor in China. Institutional investors owned around 10% of the company in 2019.	Petro China Annual Report of 2019.
South Africa	Astral Foods Ltd	It is a leading integrated poultry producer. Institutional investors owned around 70% of the company shares in 2020.	Astral Foods Ltd ownership structure report 2020.
India	Zee Entertainment Enterprises Ltd	It is an Indian media conglomerate where 56% of its shares were owned by institutional investors in 2020.	Zee Entertainment Enterprises Ltd ownership structure report 2020.

2.6.2. Institutional Ownership and Agency Theory

Based on the agency theory, the impact of institutional ownership can be viewed from two perspectives: principle-agent problem and principle-principle problem.

First, from principle-agent agency problem (agency problem type 1) perspective, institutional investors hold an effective monitoring role which reduces the agency cost (Shleifer & Vishny, 1997). Institutional investors have the highest motivation, resources, and incentives to monitor managerial actions and influence directors' decisions (Panda and Bag 2019). Institutional investors play an effective role in ensuring that managerial actions improve firm performance and stock return, and that managers are not following any opportunistic behaviour (Martin, Wiseman, & Gomez-Mejia, 2016). In addition to that, institutional investors reduce information asymmetry which reduces exploitation of shareholders rights. The role of institutional investors in mitigating principle-agent agency problem is more significant when these investors hold more concentrated investments and have long-term investment horizons, in such cases they reduces agency cost because they have stronger power to influence corporate policies than other types of investors (Chang, Kang, & Li, 2016). Therefore, institutional investors are expected to bring improvements to firm efficiency, corporate governance, and stock market stability. The role of institutional investors is more significant in markets with weak shareholders protection and strong information asymmetry (Firth, Gao, Shen, & Zhang, 2016).

According to the principle-principle agency problem (agency problem type 2), institutional investors can work for their own interest at the expense of minority shareholders leading to conflicts between institutional shareholders and minority shareholders (Barnhart & Rosenstein, 1998). In addition to that, institutional investors may prefer projects with short-term profits rather than more profitable long-term ones leading to resource misallocation and

exploitation of minority shareholders wealth (Erhemjamts & Huang, 2019). Moreover, when institutional investors control major proportions of voting rights, managers will be appointed by them, and both parties may work together for their self-interests at the expense of minority shareholders (Mura, 2007; Erkens, Hung, & Matos, 2012).

2.6.3. Empirical studies on the relationship between institutional ownership and firm performance

By reviewing the literature on the impact of institutional ownership on firm performance, no agreed relationship is found as there is a strong debate among various studies in different countries, both developed and developing ones.

Some studies argued that institutional investors positively impact firm performance because of the strong influence of institutional investors on managers. Large institutional investors have the incentives, resources and ability to monitor, discipline, and influence managers (Shleifer & Vishny, 1997). For example, McConnell & Servaes (1990), Nesbitt (1994), and Del Guercio & Hawkins (1999) suggested that institutional investors' monitoring increases managerial focus on firm performance and reduce managers' tendency for opportunistic or self-serving behaviour. Cornett, Marcus, Saunders, & Tehranian (2007), Cornett et al., (2007) and Chen, Blenman, & Chen (2008) examined the impact of institutional ownership on corporate operating performance, and a positive relationship was found. Hawas & Tse (2015) examined the relationship between institutional ownership and firm performance in the UK and found that institutional ownership positively affects firm performance. The same result was found by Al-Saeed (2018) in Jordan and Fukuda, Kasuya, & Nakajima (2018) in Japan. Connelly et al. (2019) found that common institutional ownership, when institutional investors own sizable shares in two publicly traded firms, has positive impact on both firms'

performance as those firms tend to engage in dissimilar competitive actions to allow both to achieve high performance levels.

Another group of studies found that the extent to which institutional ownership impacts firm performance depends on the shareholding percentage and the investment horizon of institutional investors. Maug (1998) implied that the extent to which institutional investors effectively monitor managerial actions depends on the size of their shareholdings. If the firm has high percentage of institutional ownership, shares are expected to be less marketable and held for longer time horizon, so institutional investors will have greater incentive to monitor management. The same argument is held by many other studies suggesting that high percentages of institutional ownership result in better firm performance because investors have higher incentive to actively monitor managerial actions (Chen et al., 2007; Fauzi & Locke, 2012; Fich, Harford, & Tran, 2015; McCahery et al., 2016). It is also found that institutional investors with long-term investment horizons positively impact firm value in contrast with short-term investors that discourage long-term investments, which negatively impacts firm value (Erhemjamts & Huang, 2019).

The studies of Pound (1988), Brickley, Lease, & Smith (1988) and Kochhar & David (1996) investigated the impact of institutional ownership on firm performance through classifying institutional investors into two groups; pressure-resistant and pressure sensitive institutional investors. Their findings revealed a negative relationship between pressure sensitive institutional investor and firm performance because of the likely investment and business ties with firms where they hold equity. A positive relationship is found between pressure-resistant institutional ownership and firm performance as those investors are independent from the firm. Such view is supported by Ferreira & Matos (2008) who showed that pressure sensitive investors have negative impact on firm performance using data from 27 countries. They also

argued that the results of studies which found that institutional ownership positively affects firm performance are due to the existence of independent investors in the ownership structure of the firm. Similarly, Guo & Platikanov (2019) found a positive relation between institutional ownership and firm value in China and suggested that the effect is mainly due to independent investors. Panda & Leepsa (2017) also found that institutional ownership through the pressure-resistant institutions has a positive effect on firm financial performance, while institutional ownership by the pressure sensitive institutions has a negative impact on firm financial performance of Indian firms.

The endogeneity bias between performance and institutional ownership has also been considered by several studies. For example, Demsetz & Villalonga (2001) examined the endogeneity issue and found that ownership and performance affect each other in various ways. Alipour (2013) examined the relationship between institutional ownership and firm performance in Tehran Stock Exchange and addressed the endogeneity problem through using 2SLS analysis. The results shows that there is a positive relationship between the two variables. Similarly, Panda & Bag (2019) examined the impact of institutional ownership on both financial and market performance of Indian firms using both static and dynamic panel data models to address the endogenous relationship between ownership and performance. The findings suggested that domestic institutional investors increase firm financial performance and foreign institutional investors increase firm market performance.

In addition to studying the impact of institutional ownership on firm performance, some studies investigated the effect of institutional ownership on other variables that can indirectly affect firm performance such as Hartzell & Starks (2003) who found a positive relationship between institutional ownership and managerial compensation, which can reduce the agency problem and improve firm performance. Choi, Park, & Hong (2012) found a positive

association between institutional ownership and firm technological innovation performance in Korea. Furthermore, Cheng, Su, Yan, & Zhao (2019) revealed that institutional ownership has positive effect on target price accuracy in China. Pérez-Calero, Hurtado-González, & López-Iturriaga (2019) suggested that institutional investors positively impact board independence that can reduce the agency problem leading to improved firm performance.

2.6.4. Summary

According to the agency theory, institutional ownership can reduce the principle-agent problem as institutions have the incentives, resources, and abilities to hold an efficient monitoring role which results in better firm performance (Shleifer & Vishny 1997). On the other hand, institutional ownership may increase the principle-principle problem as institutional investors may peruse their self-interest goals and exploit minority shareholders rights when there is conflict of interest between Institutional investors and minority shareholders (Bernhart & Rosenstein, 1998).

The relationship between institutional ownership and firm performance has been examined empirically by many researchers and mixed results were found. Some studies implied that the mixed results found are because institutional investors are not a homogeneous group (Ferreira & Matos, 2008). Institutional investors can be classified to pressure-sensitive investors, who are more likely to have a negative impact on firm performance, and pressure-resistant investors, who are more likely to have a positive impact on firm performance (Ferreira & Matos 2008; Panda & Leepsa 2017; Guo & Platikanov, 2019). Other studies suggested that such mixed results may be due to differences in institutional shareholding percentage or investment horizons (Maug 1998; Fauzi & Locke, 2012).

2.7. Managerial ownership

2.7.1. Introduction

The separation of ownership and control in modern corporation model leads to the well-known agency problem (Jensen & Meckling 1976; Fama & Jensen 1983). Managers have incentives to exploit firms' resources to serve their self-benefits rather than shareholders (Jensen 1986). Consequently, it is suggested that the agency problem will be solved through aligning the interests of managers and shareholders. Such alignment of interests may be through external pressure when firm ownership is concentrated in the hands of block holders, or through internal motivation when managers hold significant proportion of shares in the firm (Desender, Aguilera, Crespi, & GarcÍa-cestona, 2013). Managerial ownership refers to the ownership of shares held by the company's management who hold an active role in corporate decision making (Sun, Ding, Guo, & Li, 2016; Rashid, 2016).

There are two views on the impact of managerial ownership on firm performance. On one hand, managerial ownership may be considered as one of the most important internal governance mechanisms that are expected to solve the agency problem between managers and shareholders (Jensen & Meckling 1976; Donnelly & Mulcahy, 2008). As the level of managerial ownership increase, the managers will work harder to improve firm performance because they are more motivated to maximize the wealth of shareholders whom they are part of (Fama, 1980; Feldmann & Schwarzkopf, 2003; Chau & Leung, 2006; Bozek 2015). Consequently, high levels of managerial ownership are expected to create alignment of interests between shareholders and managers leading to higher firm performance (Fan & Wong, 2002).

On the other hand, high managerial ownership can negatively affect firm performance as it reduces the impact of external market mechanisms such as managerial labour market and

market for corporate control (Denis et al., 1997). When managers obtain high ownership rights, they become more powerful to secure their position and protect themselves against takeovers (Morck et al. 1988). Demsetz (1983) and Fama & Jensen, (1983) suggested that significant managerial ownership allows managers obtain enough control over the firm that helps them to guarantee their employment at the firm. Therefore, external market mechanisms will not be effective in solving the agency problem. Consequently, it is argued that firm performance is negatively impacted by high levels of managerial ownership (Lins, 2003; Hu, Tam, & Tan, 2010; Kim & Lu, 2011).

Table 2.4 shows some examples of firms with managerial ownership in their ownership structure. Managerial ownership is quite popular in most countries around the world. Although the shareholding percentage of managerial ownership is generally lower than other ownership types, there are some companies that have managers as their major shareholder.

Table 2.4: Examples of companies with managerial ownership around the world

Country	**Company**	**Overview**	**Source**
The UK	Boohoo	It an online fashion retail group serving customers around the globe. Managerial ownership represents around 30% of the company's ownership structure.	Boohoo Annual Report in 2019.
US	CA Technologies	It is a software American multinational corporation . In 2011, managerial ownership	CA Technologies Annual Report in 2011.

		represented 25.28% of the company ownership structure.	
South Africa	Sun International Ltd	Sun International Hotels Limited is a resort hotel chain in South Africa. In 2020, managerial ownership represented 23% of the company's ownership structure.	Sun International Ltd ownership structure report 2020.
France	Essilor Luxottica SA	Essilor Luxottica is a global leader in the design, manufacture and distribution of ophthalmic lenses, frames, and sunglasses. In 2020, managerial ownership represented 32% of the company's total shares.	Essilor Luxottica ownership structure report 2020.
India	Page Industries Ltd	Page Industries is an Indian manufacturer and retailer. In 2020, managerial ownership represented 48% of the company's total shares.	Page Industries Ltd ownership structure report 2020.
Germany	United Internet AG	United Internet AG is a global Internet services company located in Germany. In 2020,	United Internet AG ownership structure report 2020.

		managerial ownership represented 42% of the company's total shares.	

2.7.2. Managerial ownership and agency theory

According to the agency theory, to solve the agency problem resulting from the separation of ownership and control, some mechanisms that align the interests of shareholders and managers should be established (Jensen & Meckling 1976). One of the main mechanisms suggested is incentive alignment through managerial ownership. In other words, in order to solve principle-agent problem, top management should hold a considerable percentage of firm ownership (Achchuthan, Rajendran, & Sivathaasan, 2013). The agency theory suggests that when firm ownership is dispersed among various shareholders, conflict of interest may arise between stockholders and managers. There will be resource misallocation and managers will work for their own interest rather than maximizing shareholders wealth. However, as managerial ownership rises, conflict of interest between managers and shareholders will be reduced because maximizing corporate wealth will have a larger impact on managers (Jensen & Meckling, 1976). When managers hold a significant fraction of company's shares, such holdings will constitute a substantial ratio of their personal wealth, so it is more likely that those managers will have high incentives to improve firm performance and maximize firm value (Jensen & Murphy, 1990). When managers become the main owners of the firm, they will exert their maximum effort to improve firm performance as they became a major player that will be affected by the benefits of good performance or the costs of bad performance (Bauguess, Moeller, Schlingemann, & Zutter, 2009). Moreover, high levels of managerial ownership are expected to reduce managers' manipulations to satisfy their own interests (Li, Moshirian, Nguyen, & Tan, 2007; Puat Nelson & Mohamed-Rusdi, 2015). Consequently,

managerial ownership helps to align interests between shareholders and managers by incentivizing managers to increase firm value (Morck, Shleifer, & Vishny, 1988).

However, managerial ownership may result in poor firm performance, especially when managers become the major shareholders (Berger et al., 1997; Farinha, 2003). High levels of managerial ownership may result in other type of agency problem which is the principle-principle agency problem, as high managerial ownership may allow managers to be powerful enough to exploit minority shareholders rights (Demsetz, 1983; Fama & Jensen, 1983). In such case managers will take corporate decisions that serves their own interests and ignore minority shareholders' interests leading to principle-principle agency problem. High managerial ownership may allow managers to abuse their significant influence in the company to exploit resources of the firm which negatively impact firm performance (Shleifer & Vishny 1997). In addition to that, if managers own a significant shareholding in the firm, they will be powerful enough to run firms for their own interests, and both external market mechanisms and shareholders' monitoring will become ineffective (Lins, 2003).

2.7.3. Empirical studies on the relationship between managerial ownership and firm performance

Several studies have attempted to identify the relationship between managerial ownership and corporate performance. Some studies found positive relationship. Others found a negative one. A third group found a U-shape relationship between these two variables.

Empirical studies that found a positive impact of managerial ownership include Lilienfeld-Toal & Ruenzi (2014) who found a positive relationship between managerial ownership and firm performance in the United States. They suggested that managerial ownership reduces both the effect of weak governance and the tendency of managers for empire building. The same result is found by Cheng, Su, & Zhu (2012) in Hong kong, Al-Saeed (2018) in Jordan

and Cheng et al. (2019) in Taiwan. In India, Kumar & Singh (2013) found that there is a positive relationship between managerial ownership and firm performance. They argued that as managerial ownership increases, the agency problem decreases which enhance firm performance. The same result is also found by Arora & Sharma (2016) who argued that when managers own a high percentage of firm ownership, they will have high incentives to maximize firm value in the sense that they have the same interest of other shareholders. Buachoom (2017) also found that a higher level of managerial ownership leads to an improvement in firm performance in Thai listed companies. Similarly, Farooque, Buachoom, & Sun (2019) used the GMM estimator to examine the relationship between managerial ownership and firm performance in Thailand and found that managerial ownership has a positive impact on firm performance. The authors argued that such result may be due to the recent regulatory changes that were applied by the Thai economy to encourage equity-based managerial incentives to improve performance and reduce agency costs. In China, Boateng, Bi, & Brahma (2017) found that managerial ownership has a positive impact on operating performance of acquiring firms in mergers and acquisitions. Zhou (2019) found that managerial ownership is positively and significantly associated with the decision to voluntarily disclose CSR reports in China.

Studies who found that managerial ownership has negative impact on firm performance include Lins (2003) who investigated the relation between managerial ownership and firm value in 18 emerging markets. The findings showed that managerial ownership negatively impact firm value when the control rights of managers exceed their cash flow rights. They interpreted their findings by arguing that high levels of managerial control over the firm will reduce that effectiveness of external shareholders protection mechanisms in mitigating the agency problem. Such result was confirmed by Hu, Tam, & Tan Jurin (2010) and Shan Yuan (2019) who provide evidence on the negative relationship between managerial ownership and

firm performance in China, and Shan & McIver (2011) who found the same result in Australia.

A U-shape relationship between managerial ownership and firm performance is also found by some studies. For example, Cheng et al. (2012) found that moderate managerial ownership has positive impact on firm performance, while high and low managerial ownership negatively impact firm performance in China. However, Vo (2013) found that firm performance in Vietnam is positively affected by high and law managerial ownership and negatively affected by moderate managerial ownership. Similarly, in Bangladesh, Rashid (2016) found that managerial ownership has a positive impact when it is at very high or low levels, while the impact turns negative at moderate levels of managerial ownership.

2.7.4. Summary

Managerial ownership can be considered as a corporate governance mechanism for solving the agency problem and aligning interests of managers and shareholders. When managers become co-owners in the firm, they become more motivated to improve firm performance and maximize shareholders wealth (Jensen & Meckling 1976). Several empirical studies confirmed the positive relationship between managerial ownership and firm performance (Cheng, Su, & Zhu, 2012; Kumar & Singh 2013; Lilienfeld-Toal & Ruenzi, 2014; Arora et al. 2016; Buachoom 2017; Alsaeed 2018; and Cheng et al. 2019). However, other researchers suggested that the level of managerial shareholding can impact the nature of the relationship between managerial ownership and firm performance. When managers hold substantial shareholdings in the firm, they become powerful enough to peruse private benefits at the expense of other shareholders (Lins 2003; Shan and McIver 2011; Hu, Tam et al 2010; Shan, Troshani, & Tarca, 2019).

2.8. Employee Ownership

2.8.1. Introduction

Employee ownership is gaining more popularity in modern corporations over the last few decades (Basterretxea, Heras-Saizarbitoria, & Lertxundi, 2019; Ren, Xiao, Yang, & Liu, 2019). For example, in 2013, the National Centre for Employee Ownership revealed that 28 million US employees were participating in 11,000 employee ownership plans, resulting in employees controlling 8% of corporate equity in the United States. In addition to that, in 2011, 85% of publicly traded firms in Europe had employee stock ownership plans, and 10 million employees held some of their company stocks. (O'Boyle, Patel, & Gonzalez-Mulé, 2016). Poulain-Rehm & Lepers (2013) defined employee ownership as a situation when employees own a proportion of their company's shares, which are often purchased on preferential terms, in connection with share offer operations that may be restricted to them.

There are two major agency problems that can emerge between employees and shareholders. First, employees and shareholders may have different goals and risk preferences, leading to conflict of interests in corporate decisions. For example, employees may avoid risky decisions that shareholders would prefer them to take (Baysinger, Kosnik, & Turk, 1991). Second, employees usually have more information than shareholders (Zenger, 1994), and they may act passively in revealing it (O'Boyle, Patel et al. 2016). To solve these agency problems, firms need to build up an incentive alignment mechanism to ensure that employees are working for the best interest of shareholders. Employee ownership is considered one form of incentive alignment mechanisms that allow employees to be co-owners of the firm (Pugh, Oswald, & Jahera, 2000).

Employee ownership is clearly tied to firm performance (Jiang, Colakoglu, Lepak, Blasi, & Kruse, 2015; Mullins, 2018). On one hand, employee ownership gives employees an incentive to align their behaviour, motives, and actions with those of shareholders (Blasi,

Freeman, & Kruse, 2016; Kurtulus & Kruse, 2018; Kim & Patel, 2021). In other words, employee ownership allows employees to feel that they are part of the game and performance results will have a direct impact on their own wealth as they have residual rights. Therefore, employees will do their best to maximize the wealth of shareholders who they are part of (Brown et al., 2019). Chen, Guo, & Mande (2003) suggested that employee ownership may be used to motivate employees to achieve high performance levels, and to recruit and retain talented employees. Besides, it is found that employee ownership increases employee responsiveness and cooperation which improves firm performance (Ledford Jr, 2014; Kim & Patel, 2017; Kim & Han, 2019; Bryson & Freeman, 2019). On the other hand, some authors suggested that employee ownership may result in unfair pay which adversely affects performance as it does not consider differences in employees' skills and abilities (Hansmann, 1996). In addition to that, employee ownership may result in high risk aversion among employees. Significant fraction of employee ownership will increase employees' preferences for firm stability and less risk-taking activities (Sanders, 2001; Blasi et al., 2016). Furthermore, Lang, Lins, & Miller (2004) suggested that high employee ownership may increase incentives for withholding information, so the problem of information asymmetry will increase which negatively affects other shareholders. Others have found that employee ownership increases entrenchment and exacerbates agency costs (Park & Song, 1995; McCarthy, Reeves, & Turner, 2010; Pendleton & Robinson, 2010).

Table 2.5 presents some examples of firms having employee ownership in their ownership structure. Employee ownership can be found in both developed and developing countries. Although employee ownership is quite common around the world, the percentage of shareholding is relatively low, compared with other ownership structure forms.

Table 2.5: Examples of companies with employee ownership around the world

Country	**Company**	**Overview**	**Source**

The UK	Admiral Group PLC	It is a British financial services company headquartered in Cardiff, Wales. Employee ownership represents 8% of the company's total shares.	Admiral Group PLC ownership structure report 2020.
South Africa	Sun International Ltd	Sun International Limited is a hotel, gaming, and entertainment group. Employee ownership represents 3% of the company's total shares.	Sun International Ltd ownership structure report 2020.
France	Bouygues S.A.	Bouygues S.A. is a French industrial group headquartered in Paris, France. Employee ownership represents 20% of the company's total shares.	Bouygues S.A. ownership structure report 2020.
India	Larsen & Toubro Ltd	It is an Indian multinational conglomerate company. Employee ownership represents 14% of the company's total shares.	Larsen & Toubro Ltd ownership structure report 2020.
Switzerland	VZ Holding AG	It is a Swiss financial	VZ Holding AG

		services provider headquartered in Zurich. Employee ownership represents 4% of the company's total shares.	ownership structure report 2020.

2.8.2. Employee ownership and Agency Theory

The agency theory suggests that when the goals of principals and agents are misaligned, agency problems may exist at the employee level, where monitoring is more difficult and monitoring costs are higher (Baysinger, Kosnik, & Turk, 1991; Zenger 1994; O'Boyle, Patel, & Gonzalez-Mulé, 2016). Therefore, employee ownership can help mitigate agency problems as it helps in the alignment of employees and shareholders' interests, which reduces the need for external monitoring (Moyer, Chatfield, & Sisneros, 1989). Moreover, employee ownership can provide incentives for employees to improve firm performance, which reduces agency costs (Igalens & Roussel, 1999; Oyer, 2004; O'Boyle et al., 2016).

According to the agency theory, employee ownership is considered as an effective instrument to reduce the agency problem and control employee behaviour (Poutsma, Ligthart, & Schouteten, 2005; Pendleton & Robinson, 2010). Given that misalignment of interests exist between employees and shareholders, becoming co-owners of the firm will reduce the conflict of interest between these two parties because employees' income will depend directly on firm success (Blasi et al., 2016; Kurtulus & Kruse, 2018; Kim & Patel, 2021). In other words, employee ownership improves employees' attitudes and behaviours toward profit maximization and higher firm performance (Whitfield, Pendleton, Sengupta, & Huxley, 2017; Brown et al., 2019). Moreover, employee ownership increases employee responsiveness and cooperation that improves firm performance (Alchian & Demsetz, 1972;

Ledford Jr, 2014; Kim & Patel, 2017; Kim & Han, 2019; Bryson & Freeman, 2019). Employee ownership provides incentives that encourage long-term perspectives and divert employee focus to long-term firm performance instead of short-term financial goals (Pendleton & Robinson, 2010).

In addition to that, employee ownership can mitigate the costs of monitoring individual performance, especially in work environments where misuse of capital equipment is a potential problem, where output is not easily attributable to individuals, where work quality is highly important, where setting pieces rates is costly, and where individual output is costly to measure (Kruse, 1996; Jones & Pliskin, 1997; Pendleton & Robinson, 2010; Basterretxea & Storey, 2018).

2.8.3. Empirical studies on the relationship between employee ownership and firm performance

The relationship between employee ownership and firm performance is examined empirically by many researchers. Some studies found that employee ownership improves firm performance (Welbourne & Cyr, 1999; Jiang et al., 2015; O'Boyle et al., 2016; Richter & Schrader, 2017; Basterretxea & Storey, 2018; Brown et al., 2019; Ren et al., 2019). Other studies found that there is an inverted U-shaped relationship between employee ownership and firm performance and that the marginal effects of employee ownership decline with increasing employee ownership levels (Guedri & Hollandts, 2008; Richter & Schrader, 2017).

Chen & Huang (2006) found a positive relationship between employee ownership and corporate R&D expenditures in Taiwan. They interpreted their findings by arguing that employee ownership help mitigate agency problem between employees and shareholders, which reduces agency costs allowing the firm to spend more on R&D expenditures. In the

US, Kim & Ouimet (2009) found that small percentages of employee ownership, less than 5%, have a positive effect on company value and productivity. However, large percentage of employee ownership has little effect on value or productivity. O'Boyle et al. (2016) conducted a meta-analysis to examine employee ownership-firm performance relationship. It is found that employee ownership has a positive relationship with firm performance. In China, Ren, Xiao, Yang, & Liu (2019) found that firms having employee ownership outperform those without employee ownership.

It is also found that employee ownership engenders cooperation and trust, increases work motivation, improves levels of employee creativity, and reduces perceived inequity (Blasi et al., 2016; Kim & Patel, 2017; Kurtulus & Kruse, 2018; Brown et al., 2019; Kim & Patel, 2020). Moreover, employee ownership boosts employment security, reduce employee turnover, and improves labour productivity (Brown et al., 2019; Kim & Han, 2019). In addition, employee ownership results in more effective coordination and cooperation among employees and encourages them to bring out the best of what they possess (Leung, Yao, Gong, & Chang, 2022). It is also found that employee ownership reduces agency problems which improves firm performance (Chen & Huang, 2006; O'Boyle et al., 2016; Kim & Patel, 2021). Although some studies found that the positive influence of employee ownership on firm performance is relatively small, it was found to be significant enough to bring economic benefits to firms (Kim & Patel, 2017).

Other studies found that there is an inverted U-shaped relationship between employee ownership and firm performance and that the marginal effects of employee ownership decline with increasing employee ownership levels (Guedri & Hollandts, 2008; Richter & Schrader, 2015). For example, Guedri & Hollandts (2008) examined that relationship between employee ownership and firm performance in French firms. The findings showed an inverted

U-shaped relationship between employee ownership and accounting performance, but no significant relation between employee ownership and capital market performance. Richter & Schrader (2015) investigated the effects of employee ownership on firm performance in the five largest European economies (Germany, Spain, France, Italy and the UK). They found that firms having employee ownership have higher market and accounting performance than those without employee ownership. However, they found that the marginal effects of employee ownership decline as the level of employee ownership increases.

Poulain-Rehm & Lepers (2013) examined the impact of employee ownership on value creation in French firms. The results indicated that employee ownership have no effect on value creation. Whitfield et al. (2017) examined the impact of employee ownership on firm financial performance in the UK in two different years, 2004 and 2011. A positive relationship between employee ownership and firm performance was found in 2004, but such relationship disappeared in 2011. The authors interpreted their findings by the argument that during recession the positive effect of employee ownership declines as firms having employee ownership lay off fewer workers during recession which adversely affects performance.

The impact of employee ownership on firm performance is also found to be influenced by other factors. For example, some studies argued that the effectiveness of employee ownership depends on various factors, such as country, industry, year, and firm (Kim & Patel, 2017; Kim & Patel, 2021). It is also found that the relationship between employee ownership and firm performance can be influenced by firm internal factors, such as HRM policies, organizational culture, and work policies (Yoon & Sengupta, 2019; Basterretxea et al., 2019; Ren et al., 2019). The relationship can also be affected by external factors such as industry characteristics (Kim & Patel, 2021), or the existence of a labour union (Sengupta, 2008).

2.8.4. Summary

According to the agency theory, employee ownership can be considered as an incentive alignment mechanism to solve the principle-agent problem and increase firm performance (Jensen & Meckling 1976). This is confirmed by many empirical studies that found a positive relationship between employee ownership and firm performance (Chen & Huang, 2006; Kim & Ouimet 2009; O'Boyle, Patel and Gonzalez-Mulé 2016; Richter & Schrader 2017; Ren, Xiao et al 2019). However, others found a U-shaped relationship (Guedri and Hollandts 2008; Richter & Schrader, 2015), and a third group found that there is no relation between these two variables (Poulain-Rehm & Lepers, 2013; Whitfield et al., 2017).

2.9. Moderating variables

2.9.1. The level of Investor protection

Institutional contexts play a significant role in the relationship between ownership structure and firm performance. It is argued that deficiencies in the institutional system is an indicator of low level of shareholder protection that can be substituted by internal governance mechanisms, such as ownership concentration (La Porta et al., 2002; Boubakri, Cosset, Fischer, & Guedhami, 2005; Dahya et al., 2008; Anderson & Gupta, 2009; Jiang & Peng, 2011; Peng et al., 2018).

Investor protection in a country is defined as the extent to which investors' rights are protected from expropriation through commercial law and its enforcement (La Porta et al., 1999). The level of investor protection is low in a country when commercial laws are either weak or the quality of their enforcement is poor (Anderson & Gupta, 2009). Therefore, the level of investor protection depends on two elements, the laws defining investor rights and the degree to which such laws are enforced (Dahya et al., 2008). In other words, the existence of an efficient judicial system that enforces investor protection laws is essential to ensure

investor protection, and it can be considered as an important external corporate governance mechanism (La Porta et al., 2002).

The level of investor protection is an important base for a good corporate governance system (Isakov & Weisskopf, 2014). Investor protection level in a country is a significant factor that should be considered when explaining the differences in the impact of ownership structure on firm performance as various ownership structures can substitute weak investor protection (Demsetz & Lehn, 1985; Shleifer & Vishny, 1997; La Porta et al., 1999). In weaker judicial systems, large shareholders will hold an effective monitoring role that assures efficient managerial behaviour and protection of shareholders rights (Boubakri et al., 2005; Minichilli, Zattoni, Nielsen, & Huse, 2012; Zhong et al., 2017). On the other hand, some ownership structure types can result in conflicts of interests between major and minority shareholders (Demsetz & Villalonga, 2001; Panda & Bag, 2019). Major shareholders may work for their own interest but not for the interest of minority shareholders. Major shareholders can use their power to extract private benefits at the expense of minority shareholders (Barclay & Holderness, 1989; Burkart et al., 2003; Mura, 2007; Kowalewski et al., 2010; Sciascia et al., 2012; Erkens et al., 2012; Solarino & Boyd, 2020). Therefore, it is suggested that concentrated ownership is more common in countries having low levels of investor protection (La Porta et al., 1999; Boubakri et al., 2005). However, such concentrated ownership is not a guarantee for investor protection as the interests of minority shareholders may not match those of major shareholders.

Therefore, the level of investor protection in a country can explain whether an ownership structure will positively impact firm performance or minority shareholder rights will be exploited which negatively impact firm performance (Guillén & Capron, 2015). Different

levels of shareholder protection change internal governance structure priorities which explain the positive or negative findings in different countries (Peng et al., 2018).

Several studies that examined the role of investor legal protection related the level of investor protection with legal system or legal regime applied in the country (La Porta et al., 1999; La Porta et al., 2002; Laeven & Majnoni, 2005). It is suggested that the type of legal system or commercial law origin affects the relationship between ownership structure and firm performance. For example, it is found that common law countries or countries with English-derived systems have high levels of investor protection, whereas countries having French civil law systems suffer from weak investor protection. La Porta et al. (1999) examined the legal investor protection levels in 49 countries and found that common law countries offer higher shareholder legal protection compared to civil law countries. Similarly, it is argued that common law countries have the ability for economic and social change which allow them to improve investor protection through developing new laws compared with civil law countries that lack such flexibility as its difficult to deviate from statutory law (Reyes & Vermeulen, 2011; Isakov & Weisskopf, 2014).

To sum up, the level of investor protection plays an essential role in moderating the relationship between ownership structure and firm performance, as it is suggested that the efficiency of the laws protecting shareholders rights can explain the conflicting results on the impact of ownership structure on firm performance.

2.9.2. The degree of capitalism

The relationship between corporate ownership structure and the economic system in the country are historically and theoretically related because the economic system in a country affects the structure of corporate ownership (Michie & Lobao, 2012). Therefore, it is

expected that the economic system will affect the nature of the relationship between ownership structure and firm performance.

Economic system refers to the organizational arrangements and processes through which a society makes its production and consumption decisions (Conklin, 1991). During the past century, two main socioeconomic systems existed which are capitalism and socialism. Capitalism is an economic system in which private individuals and corporations own capital goods. The government does not intervene in the economy, and the level of production is determined through market supply and demand. The essential feature of capitalism is the motive to make profits, as it suggests that this rational self-interest can lead to economic prosperity (Michie & Lobao, 2012). On the other hand, socialism is an economic system in which capital goods is owned by the state, which intervene in the economy through central planning to ensure fair distribution of resources (Zalesko, 2015). After the collapse of socialism, capitalism became the most common economic system. However, the basic institutions of capitalism differ from one country to another.

The Varieties of Capitalism (VoC) model explains variations within capitalist systems through its broad dichotomization of institutional contexts into Coordinated Market Economies (CMEs) and Liberal Market Economies (LMEs) (Hall & Soskice, 2001; Acemoglu & Robinson, 2015; MacKenzie, Perchard, Miller, & Forbes, 2021). Japan and Germany are usually typified as examples of Coordinated Market Economies, whereas the UK and the US are examples of Liberal Market Economies (Whitley, 1998; Hall & Soskice, 2001). According to the Varieties of Capitalism assumptions, Liberal Market Economies and Coordinated Market Economies can be considered as the poles of spectrum along which many nations can be arrayed (MacKenzie et al., 2021).

In coordinated market economies (CME), top managers have little capacity to take major decisions on their own. An agreement should be taken from several parties including major shareholders, major suppliers and customers, and employee representatives (Hall, 2018). Therefore, there is a high degree of information sharing in such economic system. Consequently, the principle-agent agency problem is not expected to arise in CMEs because managerial actions are highly monitored. Moreover, the incentives of managers and shareholders are usually aligned in CMEs as managers focus on continuous performance improvements to maintain their reputation. However, the principle-principle agency problem may arise in CMEs as corporate ownership of such economies is characterized by concentrated ownership where major shareholders have more power and abilities to influence managerial decisions and to gain more information that is not available to minority shareholders (Hall & Gingerich, 2009). For example, CMEs allow firms to access finance that is not dependant on publicly available financial data or current returns. Therefore, for investors to monitor firm performance and ensure value of their investments, they should access private or inside information of the company which would be difficult for minority shareholders (Witt & Jackson, 2016).

In liberal market economy (LME), corporate ownership is more dispersed than that in CMEs, therefore top managers have more authority to take major decisions and control firms. Moreover, inside information is harder for outside investors to get, so monitoring managerial actions will depend on publicly available information (Hall, 2018). Consequently, the principle-agent problem is more likely to arise in such economies. To solve such agency problem, corporate governance in these economies encourage managers to focus more on achieving high firm performance and stock return in order to get external finance and avoid takeovers (Witt & Jackson, 2016).

Therefore, it is expected that the relationship between ownership structure and firm performance will be affected by the economic system adopted. For example, the significance of the relationship between family ownership and firm performance is expected to increase in liberal market economies (LMEs) where the market is controlled by private owners for profit. Family investors will effectively monitor managerial actions and ensure that managers are working for the best interest of shareholders which will solve the principle-agent problem (Anderson & Reeb, 2003). However, family investors might peruse their own interest at the expense of minority shareholders if their interests are not aligned which will increase the principle-principle problem (Cacciotti & Ucbasaran, 2018). In coordinated market economies where there is some degree of government intervention, family ownership is expected to have a negative impact on firm performance as family members are more likely to exploit minority shareholders rights in the sense that major shareholders have more power and abilities to influence managerial decisions and to gain more information that is not available to minority shareholders (Witt & Jackson, 2016).

The economic system of a country is also expected to moderate the relationship between institutional ownership and firm performance. In countries having more liberalized economies, pressure sensitive institutional investors are expected to have a stronger positive impact on firm performance based on the principle-agent problem, while they are expected to have a stronger negative impact based on the principle-principle problem (Michie & Lobao, 2012). Pressure-resistant institutional investors are expected to have a more significant positive impact resulting from their positive role in mitigating the principle-agent problem. In countries having more coordinated economies, pressure-sensitive investors are expected to have a negative impact on firm performance in the sense that they are more likely to increase the principle-principle agency problem, while pressure-resistant investors are expected to

have a positive impact on firm performance as they will play an active role in insuring that managerial actions are in the best interest of shareholders.

The relationship between government ownership and firm performance can also be moderated by the economic system of a country. In liberal market economies where the market is controlled by private owners, the negative impact of government ownership on firm performance will be more significant as both types of agency problem will increase (Estrin et al., 2009). In coordinated market economies where there is some degree of government intervention, government ownership will have a positive impact on firm performance because firms in which the government invests will have an advantage over other firms (Gaio & Pinto, 2018).

The economic system adopted in a country can also have an impact on the nature of the relationship between insider ownership and firm performance. In liberalized market economies, managerial ownership can reduce the principle-agent problem as when managers are co-owners, they will work for the best interest of shareholders. However, when managerial shareholdings became so significant, this may encourage managers to extract private benefits at the expense of minority shareholders, which will increase the principle-principle problem. When it comes to employee ownership, the positive relationship between employee ownership and firm performance is expected to be more significant in liberal economies as employees will feel they are co-owners in the firm, while it is expected to be less significant in coordinated economies as employees will have less authority.

2.9.3. The industry average performance

The industry effect is a theoretically and empirically important determinant of firm performance (Dess, Ireland, & Hitt, 1990). The industrial organization economics perspective suggests that factors external to the firm, including industry characteristics, are important

drivers of firm performance (Porter, 1980). From the Industrial organization economics perspective, the characteristics of the industry in which the firm operates determines its performance (Caves, 1980; Porter, 1981; McGahan & Porter, 2002; Makino et al., 2004). The paradigm of structure-conduct-performance (SCP), a dominant theory in industrial economics, has also stressed that the conduct of a firm is determined by the characteristics of its external environment, which are mainly represented by its industry characteristics (Zou & Cavusgil, 2002).

The structural characteristics of the industry in which the firm operates have a considerable impact on firm operations and the strategies it can pursue as the firm is constrained to a certain degree by the opportunities available in the industry (Lenz, 1981; Coles, McWilliams, & Sen, 2001). It is suggested that there are set forces that are faced by all firms in any industry such as competitive forces or supply chain forces. However, each industry has its own unique set of forces that help or impede firms' performance improvements (Porter, 1991). Therefore, performance differences can appear among firms according to the industry in which the firm operates (Mason, 1939). For example, it is found that firms in industries with high growth opportunities are having high performance than firms operating in declining industries (Prahalad & Hamel, 1994).

Many previous studies argued that the industry plays an important role in determining firm performance, and that the industry average performance can be considered as one of the most significant predictors of firm performance (Coles et al., 2001; Cordeiro, He, Conyon, & Shaw, 2016). It is found that industry effect can predict between 9-20% of the firm financial performance (Schmalensee, 1985; Wernerfelt & Montgomery, 1988; Rumelt, 1991; Roquebert, Phillips, & Westfall, 1996; Powell, 1996; McGahan & Porter, 1997; Brush,

Bromiley, & Hendrickx, 1999; Hawawini, Subramanian, & Verdin, 2003; McGahan & Porter, 2002; Misangyi, Elms, Greckhamer, & Lepine, 2006).

Ownership structure is also found to have a relationship with industry factors (Rumelt, 1991; Roquebert et al., 1996; Thomsen & Pedersen, 2000; McGahan & Porter, 2002; Makino et al., 2004; Foroughi & Fooladi, 2011; Fazlzadeh, Hendi, & Mahboubi, 2011; Pathak & Pradhan, 2012). It is argued that different ownership structure forms have varying impacts across industries. Therefore, firms can benefit differently from certain ownership types depending on the industry characteristics (Thomsen & Pedersen, 2000; Pathak & Pradhan, 2012; Fitza & Tihanyi, 2017).

Based on this framework, the relationship between ownership structure and firm performance is expected to be moderated by the performance of the industry it belongs to. For example, it is expected that industries with high average performance will negatively impact the relationship between each of family and government ownership and firm performance. In highly performing industries, qualified professional managers are essential to prioritize firm economic objectives and achieve high firm performance that matches the industry average performance. However, in firms with high percentages of family ownership, top management positions are restricted to family members rather than qualified professional managers (Carney, 1998; Liu et al., 2015; Ray et al., 2018; Andersson et al., 2018; Chen et al., 2022). Moreover, family interests are more favoured on the firm economic objectives (Gomez-Mejia et al., 2010; Gomez-Mejia et al., 2011; Cennamo et al., 2012; Gedajlovic et al., 2012). The relationship between government ownership and firm performance is also expected to be negatively impacted by the industry average performance as the characteristics of highly performing industries do not go in line with the goals of the government as an investor. When the government invests in a firm it usually peruses social and political goals rather than

economic goals (Okhmatovskiy, 2010; Bruton et al., 2015; Musacchio et al., 2015). Governments usually have non-financial objectives such decreasing unemployment and inflation, rather than maximizing firm performance (Ding et al., 2007; Shen & Lin, 2009).

The industry average performance is expected to have a positive moderating impact on the relationship between firm performance and each of institutional, managerial and employee ownership. In highly performing industries, it is cost-effective for institutional shareholders to monitor managerial actions because the return would be sufficient to cover their monitoring costs (Conyon & Florou, 2002; Rahman, 2021). Moreover, institutional shareholders have the incentive and ability to monitor managerial actions (Pukthuanthong et al., 2017; Buchanan et al., 2018) as they are obliged to maximize the long-term value of their investments (Pukthuanthong et al., 2017; Baghdadi et al., 2018). Managerial ownership is expected to have a more significant positive impact on firm performance in highly performing industries as this will encourage managers to work harder to improve firm performance (Fan & Wong, 2002; Mueller & Spitz-Oener, 2006). However, in low performing industries, managerial ownership is expected to have a less positive impact on firm performance as managers will be more encouraged to extract private benefits and to exploit shareholders rights which increases agency problem leading to lower firm performance (Shleifer & Vishny, 1997).

2.10. Conclusion

This chapter reviewed the agency theory including the different types of agency problem and agency costs, in addition to different controls on the agency problem. The chapter also reviewed the literature that applies the agency theory in examining the relationship between five types of ownership structure and firm performance. The five main ownership structure types reviewed are family ownership, government ownership, institutional ownership,

managerial ownership, and employee ownership. Moreover, a review of the impacts of the level of investor protection, the degree of capitalism, and industry average performance on the nature of the relationship between ownership structure and firm performance is presented.

Chapter Three

Hypotheses Development

3.1. Introduction

This chapter presents the study testable hypotheses**.** The thesis has five main hypotheses for testing the direct relationship between each of the five ownership structure types and firm performance. Each main hypothesis involves three sub-hypotheses representing the moderating impacts of the level of investor protection, the degree of capitalism, and the industry average performance, respectively.

3.2. Family ownership

3.2.1. The relationship between family ownership and firm performance

The agency theory is considered as the theoretical base on which majority of studies examining the impact of family ownership on firm performance is based (among others, (Villalonga & Amit, 2006; Andres, 2008; Allouche et al., 2008; Block, Jaskiewicz, & Miller, 2011; Isakov & Weisskopf, 2014; Hoffmann, Wulf, & Stubner, 2016; Amore, Miller, Le Breton-Miller, & Corbetta, 2017; Chirico, Gómez-Mejia, Hellerstedt, Withers, & Nordqvist, 2020; Chen et al., 2022).

According to the agency theory, the separation of ownership and control leads to agency problem due to the conflict of interest between shareholders and managers (Jensen & Meckling, 1976). It is often assumed that family ownership helps in the alignment of interest between principles and agents, as families either participate in management or closely monitor managerial actions (Anderson et al., 2003), which reduces the principle-agent agency

problem (Chua, Chrisman, & Sharma, 2003). However, the principle-principle agency problem can arise in family firms as family members may pursue interests of the controlling family instead of the non-controlling shareholders (Anderson & Reeb, 2003; Morck et al., 2005). Moreover, they may extract private benefits at the expense of minority shareholders (DeAngelo & DeAngelo, 2000; Cacciotti & Ucbasaran, 2017), in addition to prioritizing non-financially oriented goals, such as keeping control in the family instead of pursuing more auspicious business opportunities (Chrisman & Chua, 2004).

Empirically, several agency theory-driven studies argue that family ownership is positively related to firm performance in the sense that the interests of shareholders and managers are well aligned which solves the agency problem and improves firm performance (Villalonga & Amit, 2006; Hamadi, 2010; Chu, 2011; Siddik & Kabiraj, 2016; Sakawa & Watanabel, 2018, Ciftci et al., 2019; Srivastava & Bhatia, 2022).

Therefore, the thesis argues for the significant positive relationship between family ownership and firm performance as the agency problem will be minimized.

The thesis thus hypothesizes:

H1: There is a significant positive relationship between family ownership and firm performance.

3.2.2. The moderating impact of the level of investor protection on the relationship between family ownership and firm performance

The level of investor protection in a country is considered as an external corporate governance mechanism. It is suggested that different levels of shareholder protection change internal governance structure priorities (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997; Porta, Lopez-de-Silanes,

Shleifer, & Vishny, 1998; Lepore, Paolone, & Cambrea, 2018; Peng, Sun, Vlas, Minichilli, & Corbetta, 2018). Therefore, it is argued that the level of investor protection will have a moderating impact on the relationship between family ownership and firm performance.

Several agency theory-driven studies that examined the impact of family ownership on firm performance found that economies where the level of shareholders protection is high, family ownership is more likely to have a positive impact on firm performance (Lepore et al., 2018). The reason is that the agency problem is minimized as both principle-agent and principle-principle problems will be reduced (Sacristán Navarro, Gomez-Anson, & Cabeza-García, 2011). Family investors will hold an effective monitoring role that will reduce the principle-agent problem, and at the same time the high level of investor protection will protect minority shareholders rights from exploitation (Anderson et al., 2003).

Therefore, it is argued that the level of investor protection has a positive moderating impact on the nature of the relationship between family ownership and firm performance as the agency problem will be minimized.

It is, thus, hypothesized that:

H1a: The level of investor protection has a significant positive moderating impact on the of the relationship between family ownership and firm performance.

3.2.3. The moderating impact of the degree of capitalism on the relationship between family ownership and firm performance

It is argued that corporate ownership structure is affected to a great extent by the degree of capitalism in a country (Michie & Lobao, 2012). Therefore, it is expected that capitalism will have a moderating impact on the nature of the relationship between family ownership and firm performance.

In economies having high degree of capitalism, the main aim of economic activities is generating profits and maximizing self-interest (Witt & Jackson, 2016). In such economies, government intervention is minimal, and managers usually have more authority to take major decisions and control firms (Hall, 2018). Therefore, the principle-agent problem, resulting from conflict of interest between shareholders and managers, is more likely to arise in such economies. Moreover, family ownership can result in exploitation of minority shareholders rights which results in principle-principle agency problem. Family members may use their power in terms of votes to extract private benefits at the expense of minority shareholders which adversely impacts firm performance (Liu et al., 2015; Ray et al., 2018; Andersson et al., 2018; Chen et al., 2022).

Therefore, it is argued that family ownership will have a less significant positive impact on firm performance in countries with high degrees of capitalism, as it is suggested that family investors will pursue their self-interests at the expense of minority shareholders resulting in principle-principle agency problem and lower firm performance.

It is, thus, hypothesized that:

H1b: The degree of capitalism has a significant negative moderating impact on the nature of the relationship between family ownership and firm performance.

3.2.4. The moderating impact of industry average performance on the relationship between family ownership and firm performance

The characteristics of the industry in which the firm operates have a significant impact on its structure, decisions, and performance (Zou & Cavusgil, 2002). The industry average performance is an important industry factor that is used by many researchers to measure industry effect (Sharp, Bergh, & Li, 2013). Therefore, it is argued that industry average

performance has a significant moderating impact on the nature of the relationship between family ownership and firm performance.

Firms operating in industries with high average performance are generally highly performing firms with efficient management that can generate maximum profits from the resources available to the company. Therefore, it is suggested that, in highly performing industries, family ownership will have less positive relationship with firm performance. Firms with family ownership usually prefer managers from the family rather than qualified professional managers and favour family interests over firm economic objectives (Carney, 1998; Liu et al., 2015; Ray et al., 2018; Andersson et al., 2018; Chen et al., 2022). Therefore, firms with family ownership are less likely to compete efficiently in such highly performing industries due to self-control problems (Jensen, 1994), the generous behaviours within the family and their exploitation (Schulze et al., 2003), as well as the emotional and relational attitudes of the involved family members (Schulze et al., 2003). All such problems can lead to inefficient resource allocation, increase in agency costs, and lower ability to compete with highly performing firms leading to lower firm performance (Chrisman et al., 2004).

Therefore, it is argued that the industry average performance has a negative moderating impact on the nature of the relationship between family ownership and firm performance, as it is believed that agency problems will increase.

It is, thus, hypothesized that:

H1.c: the industry average performance has a significant negative moderating impact on the relationship between family ownership and firm performance.

3.3. Government ownership

3.3.1. The relationship between government ownership and firm performance

The relationship between government ownership and firm performance has been studied by many researchers who found that government ownership has a negative impact on firm performance (among others, Martin & Parker, 1995; Ramaswamy 2001; Sun and Tong 2003; Goldeng, Grünfeld et al. 2008; Guedhami, Pittman et al. 2009; Le and O'Brien 2010; Ben-Nasr & Cosset 2014; Boeing, Mueller et al. 2016; Wang and Shailer 2018; Tihanyi, Aguilera et al. 2019; Clò, Florio et al. 2020).

Based on the agency theory, government ownership increases the agency problem resulting lower firm performance. From principle-agent problem perspective, government ownership has negative impact on firm performance as governments lack the expertise and resources to monitor managers effectively, and it is unclear who acts as the principal on behalf of the state (Qi, Wu et al. 2000; Megginson & Netter, 2001). Therefore, the agency problem emerges which negatively affects firm performance. From principle-principle problem perspective, an agency problem arises between state and non-state shareholders because both parties have different goals, so they behave in different directions (Estrin et al., 2009). Governments usually have other goals than profit maximization which creates misalignment of interests between state and non-state shareholders (Shleifer & Vishny, 1997; Thomsen & Pedersen, 2000).

Therefore, it is argued for the significant negative impact of government ownership on firm performance as it is suggested that government ownership increases both types of agency problem.

It is thus hypothesized:

H2: There is a significant negative relationship between government ownership and firm performance.

3.3.2. The moderating impact of the level of investor protection on the relationship between government ownership and firm performance

The level of investor protection in a country is an important factor that explains the mixed results on the impact of different ownership structures on firm performance (La Porta et al. 1997, 1998, 2000). Therefore, it is argued that the level of investor protection moderates the relationship between government ownership and firm performance.

The relationship between government ownership and firm performance has been examined by many studies and it was found that government ownership has more significant negative impact firm performance in countries having high levels of investor protection (Gunasekarage et al., 2007; Lin et al., 2009; Dixon et al., 2015). Other researchers found that the relationship between government ownership and firm performance turns positive in countries having low levels of investor protection (Iwasaki & Kočenda, 2017; Kubo & Phan, 2019). In countries having high levels of investor protection, government ownership negatively impacts firm performance as governments usually have social and political goals rather than profit maximization goals, so the agency problem increases leading to lower firm performance (Estrin et al., 2009). On the other hand, in countries having low levels of investor protection, state-owned firms receive more advantages in the sense that the government is the regulator, enforcer of laws and owner of assets which creates the possibility of a favorable treatment to state-owned firms leading to lower agency cost and better firm performance (Gaio & Pinto, 2018).

Therefore, it is argued for the significant negative moderating impact of the level of investor protection on the nature of the relationship between government ownership and firm performance as it is suggested that both types of the agency problem are likely to increase in countries with high investor protection levels.

It is thus hypothesized:

H2a: The level of investor protection has a significant negative moderating impact on the relationship between government ownership and firm performance.

3.3.3. The moderating impact of the degree of capitalism on the relationship between government ownership and firm performance

The relationship between government ownership and firm performance can also be moderated by the degree of capitalism in the economy.

In economies where there is high degree of capitalism, government ownership is expected to have a more significant negative impact on firm performance as the main aim of such economies is profit maximization which contradicts with the social and political goals of the government as an investor (Estrin et al., 2009). Therefore, both types of agency problem are expected to increase resulting in lower firm performance. On the other hand, in economies with low degree of capitalism and high government intervention, government ownership can bring performance improvements as firms in which the government invests will have an advantage over other firms resulting in lower agency problem and better firm performance (Gaio & Pinto, 2018).

Therefore, it is argued for the negative moderating impact of the degree of capitalism on the nature of the relationship between government ownership and firm performance as it is suggested that the agency problem will increase in countries with high degrees of capitalism.

It is, thus, hypothesized that:

H2b: The degree of capitalism has a significant negative moderating impact on the relationship between government ownership and firm performance.

3.3.4. The moderating impact of the industry average performance on the relationship between government ownership and firm performance

The industry average performance, as an important industry factor, is also expected to moderate the relationship between government ownership and firm performance.

Government ownership is expected have a more significant negative relationship with firm performance in industries with high average performance. Firms' management in highly performing industries are more concerned with maximizing firm performance through efficient use of firm resources. However, firms with government ownership usually peruses social and political goals rather than economic goals (Okhmatovskiy, 2010; Bruton et al., 2015; Musacchio et al., 2015). Governments usually have non-financial objectives such decreasing unemployment and inflation, rather than maximizing firm performance (Ding et al., 2007; Shen & Lin, 2009). Therefore, it is expected that both agency problems will increase as firms with government ownership won't be able to compete with such highly performing firms leading to lower firm performance (Estrin et al, 2009).

Therefore, it is argued for the negative moderating impact of the industry average performance on the nature of the relationship between government ownership and firm

performance as it is suggested that both types of the agency problem will increase in industries with high average performance.

It is, thus, hypothesized that:

H2c: The industry average performance has a significant negative moderating impact on the relationship between government ownership and firm performance.

3.4. Institutional ownership

3.4.1. The relationship between institutional ownership and firm performance

The relationship between institutional ownership and firm performance has been examined by many researchers. It was suggested that institutional investors positively impact firm performance as institutional investors have the incentives, resources and ability to effectively monitor, discipline and influence managers, especially pressure-resistant investors. (among others, Shleifer & Vishny, 1997; Del Guercio & Hawkins, 1999; Cornett et al., 2007; Chen et al., 2008; Hawas & Tse, 2015; Al-Saeed, 2018; Fukuda et al., 2018).

A possible explanation for such positive relationship is that institutional shareholders hold an effective monitoring role that can mitigate agency conflicts and ensure good corporate governance practices (Aggarwal et al., 2010; Connelly et al., 2018). Institutional investors play an effective role in ensuring that managerial actions improve firm performance and stock return, and that managers are not following any opportunistic behaviour which reduces the agency problem (Martin et al., 2016).

Therefore, it is argued that institutional ownership has a significant positive relationship with firm performance as most of the institutional investors in the study sample are pressure-

resistant investors, such as public pension funds and mutual funds, especially in the developed countries sample which represents 72% of the study sample.

The thesis, thus, hypothesizes:

H3: There is a significant positive relationship between institutional ownership and firm performance.

3.4.2. The moderating impact of the level of investor protection on the relationship between institutional ownership and firm performance

The level of investor protection in a country is expected to moderate the relationship between institutional ownership and firm performance.

Some previous studies that examined the relationship between institutional ownership and firm performance suggest that the relationship is more positive in countries with high levels of investor protection (Aggarwal et al., 2011; Zhong et al., 2017). It is suggested that in countries with high levels of investor protection, institutional investors can help in solving the principle-agent problem as they have the opportunity, resources and ability to monitor, discipline, and influence managers (McCahery et al., 2016; Baghdadi et al., 2018). At the same time, high levels of investor protection will protect minority shareholders rights from exploitation which solves the principle-principle agency problem. Thus, both agency problems will be reduced leading to higher firm performance.

Therefore, it is argued for the positive moderating impact of the level of investor protection on the nature of the relationship between institutional ownership and firm performance, as it is suggested that both types of agency problems will be reduced.

The thesis, thus, hypothesizes:

H3a: the level of investor protection has a significant positive moderating impact on the relationship between institutional ownership and firm performance.

3.4.3. The moderating impact of capitalism on the relationship between institutional ownership and firm performance

The degree of capitalism in a country can also have a moderating effect on the nature of the relationship between institutional ownership and firm performance.

In countries having high degrees of capitalism and low government intervention, managers are more likely to pursue their own interests and exploit shareholders wealth leading to agency problem (Hall 2018). Institutional ownership is expected to solve such agency problem as institutional investors have the abilities and incentives to effectively monitor managerial actions which mitigates the agency problem leading to better firm performance (Michie & Lobao 2012). Institutional investors aim at maximizing the long-term value of their investments, so they hold an effective monitoring role to ensure that managers are working for maximizing long-term firm value (Florou & Conyon, 2002). Institutional investors usually have strong impact on managerial actions as they are able to discipline managers directly using their voting rights or indirectly through stock market trading (Gillan & Starks, 2003; Edmans & Manso, 2011; McCahery et al., 2016; Ma & Ren, 2021). In addition to that, institutional investors can persuade managers to implement good corporate governance practices (Aggarwal et al., 2011; Dyck et al., 2019; Rahman, 2021).

Therefore, it is argued for the positive moderating impact of the degree of capitalism on the relationship between institutional ownership and firm performance, as it is suggested that institutional ownership solves the conflict of interest between shareholders and managers that reduces the agency problem and improves firm performance.

It is, thus, hypothesized that:

H3b: the degree of capitalism has a significant positive moderating impact on the relationship between institutional ownership and firm performance.

3.4.4. The moderating impact of the industry average performance on the relationship between Institutional ownership and firm performance

The industry average performance is expected to have a significant moderating impact on the nature of the relationship between institutional ownership and firm performance.

In industries having high average performance, institutional ownership is expected to have a more significant positive relationship with firm performance as institutional investors will be more encouraged to effectively monitor managerial actions to ensure that managers are adopting strategies that enhance the firm competitive position and its long-term value (Gillan & Starks 2003). It is cost-effective for institutional shareholders to monitor managerial actions in highly performing industries as the return would be sufficient to cover their monitoring costs (Conyon & Florou, 2002; Rahman, 2021). Given that institutional investors are obliged to maximize the long-term value of their investments, they have the incentive to monitor managerial actions (Pukthuanthong et al., 2017; Buchanan et al., 2018). Therefore, institutional investors are expected to reduce the agency problem in highly performing industries leading to higher firm performance (Panda & Bag, 2019). However, in industries with lower average performance, institutional investors more likely to exploit minority shareholders rights and extract private benefits leading to lower performance (Brickley, Lease, & Smith Jr, 1988).

Therefore, it is argued for the positive moderating impact of industry average performance on the nature of the relationship between institutional ownership and firm performance as it is suggested that the agency problem will be reduced.

It is, thus, hypothesized that:

H3c: the industry average performance has a significant positive moderating impact on the relationship between institutional ownership and firm performance.

3.5. Managerial ownership

3.5.1. The relationship between managerial ownership and firm performance

Several studies that examined the relationship between managerial ownership and firm performance found that managerial ownership positively impact firm performance as it reduces the conflict of interest between shareholders and managers leading to minimizing the agency problem and improving firm performance (among others, Cheng et al., 2012; Kumar & Singh, 2013; Lilienfeld-Toal & Ruenzi, 2014; Buachoom, 2017; Al-Saeed, 2018; Cheng et al., 2019; Farooque et al., 2019).

An explanation for such positive relationship is that managerial ownership is an important internal governance mechanism that is expected to solve the agency problem between managers and shareholders (Jensen & Meckling 1976; Achchuthan et al., 2013). When managers become owners in the firm, they are more motivated to work harder to improve firm performance and maximize shareholders wealth (Jensen & Murphy, 1990; Bożek, 2015; Arora & Sharma, 2016). In addition to that, managerial ownership reduces managers' manipulations to serve their own interests at the expense of shareholders (Li et al., 2007; Bauguess et al., 2009; Puat Nelson & Mohamed-Rusdi, 2015).

Therefore, it is argued for the positive relationship between managerial ownership and firm performance as it is suggested that the agency problem will be minimal.

The thesis, thus, hypothesizes:

H4: There is a significant positive relationship between managerial ownership and firm performance.

3.5.2. The moderating impact of the level of investor protection on the relationship between managerial ownership and firm performance

The level of investor protection in a country is expected to have a significant moderating effect on the relationship between managerial ownership and firm performance.

In countries having high levels of investor protection, managerial ownership is expected to have a stronger positive relationship with firm performance. The alignment of interests of shareholders and managers resulting from managerial ownership is expected to solve the principle-agent agency problem (Bożek, 2015). When managers become owners in the firm, they will be more motivated to work for the best interest of shareholders as the interests of both parties are aligned (Jensen & Meckling, 1976; Bożek, 2015; Puat Nelson & Mohamed-Rusdi, 2015; Arora & Sharma, 2016). The high level of investor protection will prevent managers from pursuing their own interests at the expense of minority shareholders, which reduces the principle-principle agency problem (La Porta et al. 2002). Therefore, in countries with high levels of investor protection, managerial ownership is expected to be more positively related with firm performance.

Therefore, it is argued for the positive moderating impact of the level of investor protection on the relationship between managerial ownership and firm performance as it is suggested that both agency problems will be reduced resulting in higher firm performance.

The thesis, thus, hypothesizes:

H4a: The level of investor protection has a positive moderating impact on the nature of the relationship between managerial ownership and firm performance.

3.5.3. The moderating impact of the degree of capitalism on the relationship managerial ownership and firm performance

The degree of capitalism adopted in a country can also have a significant moderating impact on the nature of the relationship between managerial ownership and firm performance. In countries having low degrees of capitalism where government intervention is high (Hall, 2015), managerial ownership is expected to have a more significant positive impact on firm performance. In countries with low degrees of capitalism, top managers have little capacity to take major decisions on their own and higher degree of information sharing exists in such economies (Hall, 2018). Thus, the agency problem will be minimized as managerial actions are highly monitored. Moreover, mangers in economies with low degrees of capitalism usually work to improve firm performance to maintain their reputation which helps in aligning the incentives of managers and shareholders.

However, in countries with high degrees of capitalism where government intervention is minimal, the significance of the relationship between managerial ownership and firm performance is expected to be weaker as managers in those economies have more authority to take major decisions which motivates them to pursue their self-interest at the expense of other shareholders (Hall 2018).

Therefore, it is argued for the negative moderating impact of the degree of capitalism on the relationship between managerial ownership and firm performance as it is suggested that the agency problem will be minimized in countries with low degrees of capitalism.

It is, thus, hypothesized that:

H4b: the degree of capitalism has a negative moderating impact on the relationship between managerial ownership and firm performance.

3.5.4. The moderating impact of industry average performance on the relationship between managerial ownership and firm performance

The industry average performance can have a significant moderating effect on the relationship between managerial ownership and firm performance. Managerial ownership is expected to have a more significant positive impact on firm performance in industries having high average performance as the effectiveness of managerial ownership increases with the increase in the industry average performance (Mueller & Spitz-Oener, 2006). However, in low performing industries, managerial ownership is expected to have a less significant positive impact on firm performance as the low industry average performance may encourage managers to extract private benefits and to exploit shareholders rights which increases agency problem leading to lower firm performance (Shleifer & Vishny, 1997).

Therefore, it is argued for the positive moderating impact of the industry average performance on the relationship between managerial ownership and firm performance as it is suggested that agency problem will be reduced leading to higher firm performance.

It is, thus, hypothesized that:

H4c: The industry average performance has a significant positive moderating impact on the relationship between managerial ownership and firm performance.

3.6. Employee ownership

3.6.1. The relationship between employee ownership and firm performance

Many studies that examined the relationship between employee ownership and firm performance found that employee ownership help in solving the agency problem resulting in higher firm performance (among others, Welbourne and Cyr 1999; Jiang, Colakoglu et al.

2015; O'Boyle, Patel et al. 2016; Richter and Schrader 2017; Basterretxea and Storey 2018; Brown, McQuaid et al. 2019; Ren et al., 2019).

An explanation for such positive relationship is that employee ownership can be considered as an important incentive alignment mechanism that solves the agency problem between employees and shareholders (Oyer, 2004). When employees become owners in the firm, they will work for improving firm performance and maximizing long-term firm value leading to shareholders wealth maximization (Chen et al., 2003; Pendleton & Robinson, 2010; Ledford Jr, 2014).

Therefore, it is argued for the positive relationship between employee ownership and firm performance as it is suggested that the agency problem will be reduced.

The thesis, thus, hypothesizes:

H5: There is a significant positive relationship between employee ownership and firm performance.

3.6.2. The moderating impact of the level of investor protection on the relationship between employee ownership and firm performance

The relationship between employee ownership and firm performance is argued to be moderated by the level of investor protection in a country. In countries with high levels of investor protection, employee ownership is expected to solve the principle-agent problem as employees will have higher incentives to align their behaviour, motives and actions with those of shareholders (Blasi et al., 2016; Kurtulus & Kruse, 2018; Kim & Patel, 2021). Moreover, the high levels of investor protection will reduce employees' tendency to pursue their own interests at the expense of other shareholders. However, in countries having low levels of investor protection, employee ownership is expected to have a less significant

relationship with firm performance. When the level of investor protection is low, employees are more likely to pursue their own interests at the expense of shareholders which results in the principle-principle agency problem (La Porta et al. 2000).

Therefore, it is argued for the significant positive moderating impact of the level of investor protection on the relationship between employee ownership and firm performance as it is believed that both agency problems will be reduced in countries with high levels of investor protection.

The researcher thus hypothesizes:

H5a: the level of investor protection has a significant positive moderating impact on the nature of the relationship between employee ownership and firm performance.

3.6.3. The moderating impact of the degree of capitalism on the relationship between employee ownership and firm performance

Capitalism can also have a moderating impact on the relationship between employee ownership and firm performance. The positive relationship between employee ownership and firm performance is expected to be more significant in economies with high degrees of capitalism. In highly capitalistic countries, maximizing self-interest is the main purpose of all economic activities (Michie & Lobao, 2012), so an agency problem can arise between employees and shareholders because of the conflict of interests. Thus, employee ownership can help in aligning the interests of those two parties as employees will be co-owners in the firm, thereby the need for external monitoring will decrease (Moyer et al., 1989) and employees will be motivated to work for the best interest of shareholders and to improve firm performance (Ledford Jr, 2014; Whitfield et al., 2017).

Therefore, it is argued for the positive moderating impact of the degrees of capitalism on the relationship between employee ownership and firm performance as it is suggested that employee ownership will help in solving agency problem.

It is, thus, hypothesized:

H5b: the degree of capitalism has a significant positive moderating impact on the relationship between employee ownership and firm performance.

3.6.4. The moderating impact of industry average performance on the relationship between employee ownership and firm performance

The relationship between employee ownership and firm performance can also be moderated by the industry average performance. Employee ownership is expected to have a more significant impact on firm performance in industries having high average performance as the effectiveness of insider ownership, including employee ownership, increases as the industry average performance increase (Mueller & Spitz-Oener, 2006). In highly performing industries, it is important that employees and shareholders pursue the same goals and risk preferences. Employee ownership can help in achieving such alignment (Baysinger et al., 1991). In addition to that, employees usually have more information than shareholders and they may act passively in revealing it which adversely affect firm performance. Therefore, employee ownership can help solving such problem by encouraging employees make their best to improve firm performance (Zenger, 1994).

Therefore, it is argued for the positive moderating impact of the industry average performance on the relationship between employee ownership and firm performance as it is suggested that the agency problem will be minimal.

It is, thus, hypothesized that:

H5c: The industry average performance has a significant positive moderating impact on the relationship between employee ownership and firm performance.

3.7. Summary

This chapter presented the development of the study hypotheses. The thesis has five main hypotheses for testing the direct relationship between each of the five ownership types and firm performance. Each main hypothesis involves three sub-hypotheses representing the moderating impacts of the level of investor protection, the degree of capitalism, and the industry average performance, respectively. A summary of the study hypotheses is presented in table 3.1.

Table 3.1: summary of the study hypotheses

No.	Hypothesis
H1	There is a significant positive relationship between family ownership and firm performance.
H1a	The level of investor protection has a significant positive moderating impact on the relationship between family ownership and firm performance.
H1b	The degree of capitalism has a significant negative moderating impact on the relationship between family ownership and firm performance.
H1c	The industry average performance has a significant negative moderating impact on the relationship between family ownership and firm performance.
H2	There is a significant negative relationship between government ownership and firm performance.
H2a	The level of investor protection has a significant negative moderating impact on the relationship between government ownership and firm performance.
H2b	The degree of capitalism has a significant negative moderating impact on the relationship between government ownership and firm performance.
H2c	The industry average performance has a significant negative moderating impact on the relationship between government ownership and firm performance.

H3	There is a significant positive relationship between institutional ownership and firm performance.
H3a	The level of investor protection has a significant positive moderating impact on the relationship between institutional ownership and firm performance.
H3b	The degree of capitalism has a significant positive moderating impact on the relationship between institutional ownership and firm performance.
H3c	The level of industry average performance has a significant positive moderating impact on the relationship between institutional ownership and firm performance.
H4	There is a significant positive relationship between managerial ownership and firm performance.
H4a	The level of investor protection has a significant positive moderating impact on the relationship between managerial ownership and firm performance.
H4b	The degree of capitalism has a significant negative moderating impact on the relationship between managerial ownership and firm performance.
H4c	The industry average performance has a significant Positive moderating impact on the relationship between managerial ownership and firm performance.
H5	There is a significant positive relationship between employee ownership and firm performance.
H5a	The level of investor protection has significant positive moderating impact on the relationship between employee ownership and firm performance.
H5b	The degree of capitalism has a significant positive moderating impact on the relationship between employee ownership and firm performance.
H5c	The industry average performance has a significant positive moderating impact on the relationship between employee ownership and firm performance.

The first hypothesis of the thesis suggests a significant positive relationship between family ownership and firm performance (Villalonga & Amit, 2006; Hamadi, 2010; Chu, 2011; Siddik & Kabiraj, 2016; Sakawa & Watanabel, 2018, Ciftci et al., 2019; Srivastava & Bhatia, 2022). It is argued that the higher the level of investor protection or the lower the degree of capitalism in a country, the more significant the positive relationship between family

ownership and firm performance (Lepore et al., 2018; Hall, 2018). It is also expected that the lower the industry average performance, the more significant the relationship between family ownership and firm performance.

It is argued for a significant negative relationship between government ownership and firm performance in the second hypothesis (Qi, Wu et al. 2000; Megginson & Netter, 2001; Estrin et al., 2009). It is suggested that the lower the level of investor protection or the lower the degree of capitalism in a country, the more significant the relationship between government ownership and firm performance. Moreover, the lower the industry average performance, the more significant the relationship between government ownership and firm performance.

A significant positive relationship between institutional ownership and firm performance is expected in the third hypothesis (Cornett et al., 2007; Chen et al., 2008; Hawas & Tse, 2015; Al-Saeed, 2018; Fukuda et al., 2018). The said relationship is more significant in countries with high levels of investor protection or high degrees of capitalism, and in industries with high average performance.

The relationship between managerial ownership and firm performance is suggested to be significantly positive (Cheng et al., 2012; Kumar & Singh, 2013; Lilienfeld-Toal & Ruenzi, 2014; Buachoom, 2017; Al-Saeed, 2018; Cheng et al., 2019; Farooque et al., 2019). The higher the level of investor protection or the lower the degree of capitalism in a country, the more positive the relationship between managerial ownership and firm performance. It is also expected that the higher the industry average performance, the more significant the relationship between managerial ownership and firm performance.

Employee ownership is hypothesized to have a significant positive relationship with firm performance, where the relationship is more significant in countries with high levels of

investor protection or high degrees of capitalism, and in industries with high average performance (O'Boyle et al., 2016; Ren et al., 2019).

Chapter Four

Research Methodology

4.1. Introduction

This study aims to find out the endogenous relationship between ownership structure and firm performance using a sample of 20 countries. The study examines the extent to which firm performance is affected by five main forms of ownership structure, family ownership, government ownership, institutional ownership, managerial ownership, and employee ownership. Moreover, it aims to examine to extent to which the relationship between ownership structure and firm performance is affected by three moderating variables, the level of investor protection, degree of capitalism, and industry average performance.

This chapter explains the methodology that is used to address the research aim, starting from the research philosophy, research logic and paradigm, methodology and methods of data collection, measurement of study variables, methods of data analysis, and reflexivity and ethics.

4.2. Research Philosophy

4.2.1. Ontological underpinning

There are two main branches in ontology, objectivism and constructivism. Objectivism depicts the situation that social entities are objective reality that exist independently of social actors (Saunders, Lewis, & Thornhill, 2009; Bryman & Bell, 2015), while constructivism suggests that reality is socially constructed, so a social phenomenon is based on the perception of social actors (Guba & Lincoln, 1994).

The study adopts an objectivist ontological approach as the study focuses on the structural and formal aspects of the firm rather than focusing on organizational beliefs, values, and cultures. It assumes that the study variables are external reality that are objectively defined based on specific quantitative rules, which goes in line with objectivism assumptions. For instance, government ownership is measured independently of the researcher as the percentage of government shareholdings in the firm to total shares outstanding. Consequently, the assumptions of objectivism better match the assumptions that the study has regarding reality.

4.2.2. Epistemological underpinning

Epistemology has two main branches, positivism and interpretivism. Positivism assumes that the researcher is independent from the data, and that knowledge is acquired by gathering facts that provide the basis for testable hypotheses (Collis & Hussey, 2014). From positivists view, large data sets should be collected in order to test hypotheses generated from a theory (Bryman, 2012). On the other hand, Interpretivism assumes that the researcher interacts with what is being researched, so knowledge is subjective and multiple as seen by participants (Saunders et al., 2009; Bryman, 2012).

In this study, a positivist approach is adopted as it best matches the aim of the study. The study has the same assumptions of positivism regarding what constitutes knowledge as it assumes that the impact of ownership structure on firm performance can be observed independently from the researcher so the results can be generalized to large number of firms in different countries, which is the essence of positivism. In addition to that, the study aims to collect quantitative data about different ownership types across countries and to examine the relationship between these ownership types and firm performance from agency theory perspective, which goes in line with positivism assumptions. The positivist approach will

help in testing the agency theory against a large sample of observations that makes findings more generalizable to the entire population of the thesis.

However, Positivist approach is criticized for assuming that social phenomena cannot be explained via quantitative measures. Such criticism is based on the argument that the social world is too complex to build theories using definite laws, unlike physical sciences (Saunders et al., 2009). For example, ownership structure has unique features in each country, so the results of a study in one country cannot be generalized to other countries, and it is difficult to find out cross-country settings by studying one or two countries.

To address such limitation, a sample of 20 countries, both developed and developing ones, is selected to generalize the findings to other countries having similar conditions. In addition to that, the thesis examines the extent to which the relationship between ownership structure and firm performance is impacted by three moderating variables which are investor protection level, capitalism degree, and industry average performance. Thus, the study results will provide clear guidelines on the extent to which the nature of the relationship between different ownership structure forms and firm performance varies depending on the different settings in which the firm operates.

4.3. Research logic

There are two main research logics, the deductive approach and the inductive approach. The deductive approach involves collecting data for testing established theories (Saunders et al., 2009). The researcher identifies a theory from the literature and develops hypotheses based on the theory. Then, data is collected and analysed to confirm or reject the hypotheses, and the theory can be revised based on the study results (Bryman & Bell, 2015). On the other hand, the inductive approach involves collecting data to build a theory, so the theory is the outcome of the research process (Saunders et al., 2009; Bryman & Bell, 2015).

In this study, the deductive approach is adopted in which the researcher deduces hypotheses on the foundation of what is already known. Then, these hypotheses are empirically investigated for validation or rejection (Bryman & Bell, 2015). The study aims to provide evidence supporting the agency theory through proving that alignment of interest between both shareholders and managers on one hand and major shareholders and minority shareholders on the other hand will solve the agency problem leading to better firm performance.

4.4. Research paradigm

There are four main research paradigms in management research which are functionalism, interpretivism, radical structuralism, and radical humanism. Functionalism is concerned with studying objective social relations in a scientific way to maximize effective functioning. Radical structuralism is more concerned about people through analysing objective social relations to improve the human condition. Interpretivism is concerned with studying subjective social relations in an interpretative way to gain better understanding of a social phenomenon. Radical humanism is concerned with promoting freedom and wellbeing of individuals through analysing subjective social structures and providing new ways for living and working (Burrell & Morgan, 1979).

In this study, functionalism paradigm is adopted as the study aims to find out the role of different ownership types in reducing agency conflicts leading to improved firm performance. Consequently, the study aims to maximize effective functioning of the firm in addition to ensuring fair treatment for both major and minority shareholders, which goes in line with the assumptions of functionalism.

4.5. Methodology

There are two types of research approaches employed by researchers, the quantitative and the qualitative research methods. Quantitative research is generally related to positivism and deductive approaches where hypothesis built on a theory are tested and analysed. This type of research involves data collection and data analysis methods that use numerical data. In quantitative research, the researcher will be an objective observer that does not participate in or influence what is being studied. On the other hand, qualitative research is generally related to interpretivism and inductive approaches, data collection and data analysis methods used involves non-numerical data. The researcher in qualitative research participates in the situation being studied in order to learn the most about it (Lin, 1998). However, the qualitative approach suffers from some problems. For instance, it uses small samples that do not represent the whole population (Hakim, 1987). Furthermore, transparency and reliability are still low in qualitative methods (Berg, 2004).

This thesis adopts positivism and deductive approaches and uses quantitative data collected from firms' annual reports and ownership structures. Therefore, quantitative research approach is used as it is related to the philosophical approach adopted in the study and the type of data that will be collected. In addition to that, the quantitative methods deal with longer time periods and large samples which provides stronger forms of measurement, reliability and ability to generalize (Berg, 2004; Collis & Hussey, 2014; Bryman & Bell, 2015).

There are three types of data that are used for empirical analysis: cross-section, time-series, and panel data. In cross-section data, values of one or more variables are collected for several sample entities or units at the same point in time. In time-series data, values of one or more

variables are collected over a period. In panel data, the same cross-sectional units is surveyed over time, so panel data have space as well as time dimensions (Gujarati, 2003).

Consequently, the research design adopted in this study is panel design in which data from the companies in the sample are collected over a period of 10 years. The reason for using panel dataset is that it combines the cross sectional and time series designs. It can control for the heterogeneity problem and provide more accurate inference of model parameters and clearer outcomes (Hsiao, Hammond, Holly, Chesher, & Jackson, 2003). In addition to that, most of studies that are based on agency theory, adopted panel methodology for large number of firms to test the developed hypotheses, so as to gain greater generalisability of the research findings (among others, Filatotchev & Nakajima, 2010; Munari, Oriani, & Sobrero, 2010; Mangena, Tauringana, & Chamisa, 2012; Aghion et al. 2013; Isakov and Weisskopf 2014; Azeez, 2015; Sun et al. 2016; Ren et al. 2019; Healey and Mintz 2021). Figure 4.1 presents the research onion of the thesis.

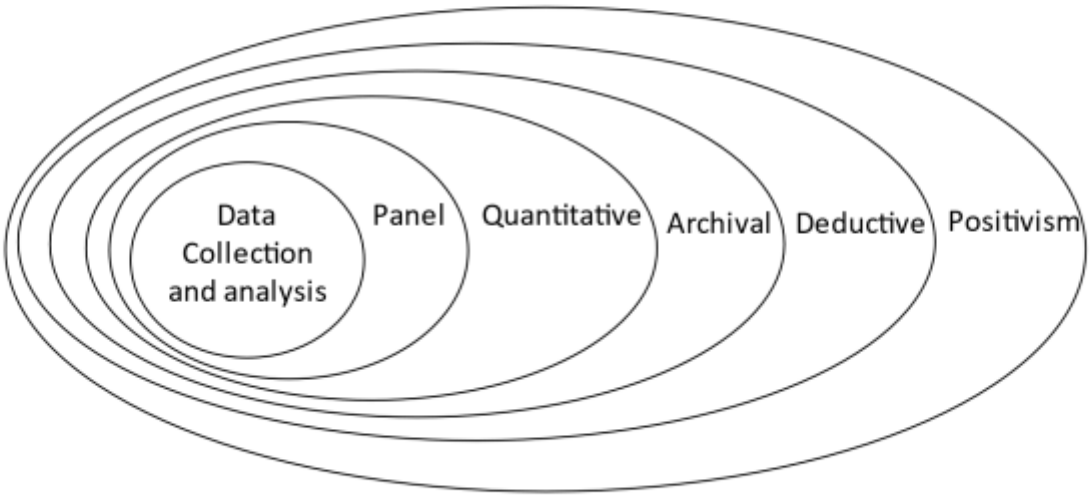

Figure 4.1 study's research onion

4.6. Sample selection

This study aims to examine the nature of the relationship between five main ownership structure types and firm performance. It also examines the extent to which the relationship between ownership structure and firm performance is affected by level of investor protection, degree of capitalism, and industry average performance. To achieve such aims, the study uses three samples for the empirical analysis. The first sample, combined sample, consists of 1511 companies from 20 developed and developing countries over the period from 2011 to 2020. This 10-year period is selected to avoid the impacts of the global financial crisis in 2008, that has a significant impact on data over the period from 2008 to 2010. Moreover, increasing the period covered by the study will lead to reducing the number of companies included in the sample due to data unavailability.

The second sample, developed countries sample, consists of 1083 companies from 15 developed countries over the period from 2011 to 2020. The sample includes The US and all Western Europe countries covered by DataStream database, except countries with less than 20 listed firms (Zhong et al. 2017). Some Western Europe countries are excluded from the sample. Italy is excluded from the sample due to data unavailability in DataStream database. Liechtenstein and Monaco are excluded because they do not have stock exchange. Luxembourg is excluded as it has 9 listed companies. The study focused on Western Europe countries for two main reasons. First, there are few cross-country variations in this region which will facilitate final conclusions (Borisova et al., 2012). Second, data is widely available for most Western Europe countries.

The third sample, developing countries sample, consists of 428 companies from 5 developing countries over the period from 2011 to 2020. The study aimed at including the BRICS countries, in addition to Egypt. However, data for Russia is unavailable in DataStream

database. Therefore, the final developing countries sample consists of Brazil, India, China, South Africa, and Egypt. Egypt is added to the developing countries sample because the Egyptian stock market is considered one of the most significant emerging markets in Africa and the Middle East due to the number of investors, listed securities, and trading volume (Abdelfattah & Aboud, 2020). Moreover, it is well-established better than other MENA region markets and has attracted domestic and foreign investors over the last decades (Ragab, Abdou, & Sakr, 2019; Metawa, Hassan, Metawa, & Safa, 2019).

For each country, an index of companies with the highest market capitalisation is selected, which resulted in 2443 companies. After excluding financial companies and companies with missing data, 932 companies are excluded. Financial firms are excluded as the nature of its financial statements differ from non-financial companies (Zhong et al. 2017; Bena, Ferreira, Matos, & Pires, 2017; Gaio & Pinto, 2018). By this exclusion, the thesis will avoid bias that could affect the results of the analysis and will deliver more accurate sample (Bena et al., 2017; Gaio & Pinto, 2018). More details on the number of companies included in each country and the indexes used for data collection are presented in table 4.1.

Table 4.1: description of the study sample

Country	Development Status*	Index Used	Index % of Country's Total Market Capitalization	Number of Companies
Austria	Developed Country	WIENER BRSE INDEX	100%	36
Belgium	Developed Country	BEL all share index	100%	81
Brazil	Developing Country	Sao Paulo SE IBX Index	54%	53
China	Developing Country	Shanghai SE 180 Index	40.5%	162
Denmark	Developed Country	OMX Copenhagen_PI	100%	55
Egypt	Developing Country	EGX 100 index	73%	67

Finland	Developed Country	OMX Helsinki all share index	100%	94
France	Developed Country	SBF120	61%	84
Germany	Developed Country	DAX 30 & MDAX 60	60%	45
India	Developing Country	S&P BSE-100	40%	65
Ireland	Developed Country	All shares ISEQ overall price index	100%	19
Norway	Developed Country	Oslo SE all share index	100%	68
Portugal	Developed Country	PSI All share gross return index	100%	99
South Africa	Developing Country	FTSEJSE SA All Share Index	99%	30
Spain	Developed Country	Madrid SE General Index	86%	81
Sweden	Developed Country	OMX Nordic Large Cap EUR GI Index	99%	62
Switzerland	Developed Country	SPI Swiss Performance Index	99%	131
The Netherlands	Developed Country	AEX all share index	100%	136
The UK	Developed Country	FTSE 100 Index	82%	59
The US	Developed Country	NASDAQ 100 INDEX	43%	84
Total Number of Companies				1511
Total Number of Observations				15110

*Source of Development Status: The International Monetary Fund Classification

The study sample covers 1511 firms from 9 different industry sectors. It is worth to note that the industrials sector includes the largest number of firms in the study sample, followed by consumers cyclicals sector. Table 4.2 summarizes the industry sectors included in the study and the number of companies in each industry sector.

Table 4.2: Industry sectors included in the study sample.

Industry	No. of firms
Basic materials	200
Consumer Cyclicals	237
Consumer Non-Cyclicals	153
Energy	89
Healthcare	131
Industrials	310
Real Estate	144
Technology	195
Utilities	52
Total Firms	1511

4.7. Methods of data collection

The archival research method is used in data collection in which secondary data are gathered. Archival research is used for several reasons. First, it is a common methodology in corporate governance research. It is also normally connected to the deductive approach and a commonly used methodology for theory testing (Saunders et al., 2009). Second, archival research has two main advantages. It provides a description of the most common ownership structures in different countries through the large-scale secondary data available. It also provides an explanation of how different ownership structures can have varying effects on firm performance. Third, the archival research method is particularly useful in its ability to examine trends in large-scale data and help produce credible data to test the developed hypotheses. Thus, external validity is particularly high in studies using archival research methods due to the use of objective data that are not influenced by factors of the research process (Hageman, 2008).

Study data are obtained from secondary sources for the period from 2011 to 2020. The aim is not to compare each year with another but to explore the overall impact of different ownership types, level of investor protection, degree of capitalism and industry average

performance on the nature of the relationship between ownership structure and firm performance.

Ownership data are collected from ownership history reports of companies in the sample using DataStream database. Data for firm performance and controlling variables are collected from financial statements of sample companies using DataStream database. Data for the level of investor protection and degree of capitalism are collected from the World Bank official website. The study relies on annual reports for many reasons. First, annual reports are legal documents where both mandatory and voluntary information about a corporation are provided to the public. Second, annual reports are within the public domain, thus they are easily accessible and are considered a primary source for corporate information.

4.8. Measurement of study variables

4.8.1. Measurement of the dependent variable (firm performance)

Empirical studies investigating the relationship between corporate governance mechanisms and firm performance have employed three main performance measures which are Tobin's Q, a market-based measure of performance, as well as return on assets (ROA) and return on equity (ROE), which are financial-based performance measures (Maury & Pajuste, 2005; Schmid & Zimmermann, 2008; David, 2011; Tang, Walsh, Lerner, Fitza, & Li, 2018; Ibrahimy, Ahmad, & Albaity, 2019). Thus, this thesis uses Tobin's Q, return on assets, and return on equity as the dependent variable measures.

There are several reasons for selecting these three measures of firm performance. Firstly, Tobin's Q offers a forward-looking perspective, as it is influenced by investors' forecasts of future corporate profitability, which can be influenced by their psychological factors and estimations of forthcoming events. On the other hand, ROA and ROE are influenced by

accounting standards and practices, which impacts the reported levels of profitability. Secondly, these measures effectively control for variations in financial information, allowing for comparisons between different firms even when their assets and liabilities are not comparable (Rinkevičiūtė & Martinkute-Kauliene, 2014). Lastly, each measure comes with its own strengths and weaknesses, and there is no consensus in the literature on a single measure as the best proxy for financial performance (Haniffa & Hudaib, 2006). Hence, utilizing all three measures serves to examine the robustness of the findings when considering both market and financial-based measures of firm performance.

4.8.1.1. Market based measure: Tobin's Q

In this study, Tobin's Q is defined as the market value of common stock plus the book value of preferred stock and book value of debt, divided by the book value of total assets (Chung and Pruitt, 1994; Butt, Baig, et al., 2023). A higher Tobin's Q value indicates superior quality of the firm's internal corporate governance mechanisms and better market perception of firm performance (Haniffa & Hudaib, 2006). Throughout the literature, Tobin's Q has been widely used as a measure of firm performance (among others, Morck et al., 1988; Hermalin & Weisbach, 1988; McConnell & Servaes, 1990; Yermack, 1996; Agrawal & Knoeber, 1996; Loderer & Martin, 1997; Cho, 1998; Demsetz & Villalonga, 2001; Gompers, Ishii, & Metrick, 2003; Villalonga & Amit, 2006; Henry, 2008; Kim & Ouimet 2009; Javid & Iqbal 2010; Isakov & Weisskopf 2014; Richter & Schrader 2017; Ciftci et al. 2019; Ren et al., 2019).

4.8.1.2. Accounting based measures: ROA and ROE

The thesis also uses two accounting-based measures, ROA (Return on Assets) and ROE (Return on Equity). According to the agency theory, managers may misuse firm assets for their self-interest at the expense of shareholders. Therefore, accounting-based measures, such as ROE and ROA, helps in reflecting management's ability to efficiently utilize firm assets to

the best interest of shareholders. Lower ROE and ROA values suggest management inefficiency. Therefore, both two measurements are important from the view of the shareholders to measure firm performance.

In this study, ROA is defined as the ratio of net income at the end of a financial year to the book value of total assets at the end of the same financial year (Yermack, 1996; Beiner, Drobetz, Schmid, & Zimmermann, 2006; Fich & Shivdasani, 2006). It measures how effectively and efficiently a firm uses its assets to generate profits (Ross et al., 1998). Higher ROA value suggests that management is effectively utilizing the firm's assets to maximize shareholders' investments. ROA is an effective performance measure as it enables comparisons across firms, neutralizing the effect of size (Lev & Sunder, 1979). Previous corporate governance studies have widely employed ROA as a performance measure (among others, Shrader, Blackburn, & Iles, 1997; Qi, Wu et al. 2000; Wu & Cui 2002; Klapper & Love, 2004; Haniffa & Hudaib, 2006; Villalonga & Amit, 2006; Brown & Caylor, 2009; Kim & Ouimet 2009; Javid & Iqbal 2010; Isakov & Weisskopf 2014; O'Boyle et al., 2016; Kim and Patel 2017; Richter & Schrader 2017; Andersson et al., 2018; Ciftci et al. 2019; Ren et al., 2019).

The Return on Equity (ROE) measures the management's effectiveness and efficiency in utilizing shareholder equity to generate profits. ROE is calculated by dividing net income by book value of total equity, reflecting the accumulation of amounts received by the company from stock issues and retained earnings. From the shareholders' perspective, ROE is a significant ratio for measuring firm performance, as it focuses on the return for shareholders (Demsetz & Lehn, 1985; Mehran, 1995). Several previous studies in the corporate governance literature have used ROE as a firm performance measure (among others, Xu and Wang 1999; Qi, Wu et al. 2000; Kuznetsov & Muravyev 2001; Wu & Cui 2002; Filatotchev

et al., 2005; Zeitun & Tian 2007; Lin et al., 2008; Omran 2009; Ehikioya 2009; Javid & Iqbal 2010; O'Boyle et al., 2016; Wang & Shailer 2018; Ren et al., 2019).

4.8.2. Measurements of Independent Variables

This study measures the impact of five independent variables on firm performance, which are family ownership, government ownership, institutional ownership, managerial ownership, and employee ownership.

Family ownership is measured as the percentage of shares owned by two or more family members by either blood or marriage (Anderson et al., 2003; Wennberg, Wiklund, Hellerstedt, & Nordqvist, 2011; Wiklund, Nordqvist, Hellerstedt, & Bird, 2013; Yang, Li, Stanley, Kellermanns, & Li, 2020; Pittino, Chirico, Henssen, & Broekaert, 2020). This measure is widely used in studies examining the impact of family ownership on firm performance. Due to the differences in the way of reporting ownership structures across countries, the researcher followed two different ways to detect family investors in each firm. In some countries such as France, the firm's ownership history report indicates the total shareholding of the whole family which helps in specifying the percentage of family ownership in the firm. In other countries, such as India, where the total shareholding of the family is not indicated in the ownership history report, identifying family ownership involved two steps. First, the researcher used investors' last name as the standard to detect family members as persons holding the same surname are most probably from the same family, in accordance with previous literature. Second, the researcher ensured that the detected investors belong to the same family using the company's annual reports.

Government ownership is measured as the percentage of shares owned by the state, government, or other governmental related institutions (Choi, Lee, & Williams, 2011; Hou, Kuo, & Lee, 2012; Song et al., 2015; Zhou, Gao, & Zhao, 2017).

Institutional ownership is measured as the percentage of shares owned by institutional investors such as banks, insurance companies, pension funds, mutual funds, investment trusts, and sovereign wealth funds (Brickley et al., 1988; Cornett, Marcus, Saunders, & Tehranian, 2007; Choi, Park, & Hong, 2012).

Managerial ownership is measured as the percentage of shares owned by both executive managers and board of directors (Ghosh & Sirmans, 2003; Sun et al., 2016; Rashid, 2016). Managerial ownership is the percentage of shares owned by the company's management who participate actively in corporate decision-making. The shareholdings of the members of the board of directors are included in the percentage of managerial ownership as the board of directors has an active role in the decision-making processes of the corporation. The board of directors plays a prominent and decisive role in setting the strategic goals and approving the general strategies and policies in the corporation (Herdjiono & Sari, 2017). Therefore, the decisions that the board of directors makes have a significant effect on corporate performance.

Employee ownership is measured as the percentage of shares owned by nonexecutive employees (Gamble, 2000; O'Boyle, Patel et al. 2016; Kim and Patel 2017).

4.8.3. Measurement of the moderating Variables

4.8.3.1. Level of investor protection

The level of investor protection is measured by the country's score in the strength of investor protection index provided by the World Bank Group. The index covers 151 countries, each country gets a score between 0 and 10 depending on the strength of investor protection in the country. For example, Switzerland has a score of investor protection strength that ranges between 3 and 5.5. On the other hand, the UK has score of investor protection strength that

ranges between 7.8 and 8, indicating higher level of investor protection in the UK than in Switzerland.

4.8.3.2. Degree of capitalism

The degree of capitalism is measured by the country's score in the Index of Economic Freedom provided by the World Bank Group. Index of Economic Freedom reports on economic policy developments in 183 economies. Based on ten measures that evaluate openness, the rule of law, and competitiveness. The Index provides score and rankings to economies according to their economic freedom degree. For example, The US has economic freedom score that ranges from 75 to 77.8, while Brazil has a score of economic freedom ranging between 51.4 and 57.9. This means that Brazil has lower degree of economic freedom than the US.

4.8.3.3. Industry average performance

Many previous empirical studies found differences in companies' stock returns according to their industry (Schmalensee, 1985; Wernerfelt & Montgomery, 1988). These studies reported that industry effect is a major factor when determining company's success. Furthermore, Lim et al., (2007) argued that the impact of corporate governance compliance on firm performance could vary between industries, where the impact of economic factors can influence some industries more than others.

The industry effect is measured by the industry average ROA, which is measured as the summation of return on assets for all companies in the industry divided by the number of companies in the industry. Industry average ROA is used as an industry performance measure in several previous studies (e.g., Schmalensee 1985; Wernerfelt & Montgomery 1988; Rumelt 1991; Roquebert et al., 1996; McGahan & Porter, 1997; Brush et al., 1999; Arend, 2009; Sharp et al., 2013).

4.8.4. Measurement of Control Variables

To address endogeneity concerns and consider the impact of firm characteristics, this thesis includes some control variables. The control variables used are firm size, capital structure, innovative potential, leverage, liquidity, firm growth, risk, as well as industry and year dummies. These variables have been widely used in previous studies as controls, and correlations between them and corporate performance have been identified (Hermalin & Weisbach, 1991; Vafeas & Theodorou, 1998; Xie, Davidson, & DaDalt, 2003; Bonn, Yoshikawa, & Phan, 2004; Brown & Caylor, 2006).

The thesis acknowledges that other relevant factors may also exist. However, by reviewing the literature, it is found that the control variables included in this thesis are the most widely used in most studies that examined the relationship between ownership structure and firm performance (among others, Choi et al., 2012; Poulain-Rehm & Lepers, 2013; Richter & Schrader, 2017; Andersson et al., 2018; Ray et al., 2018;Ren et al., 2019; Ciftci et al., 2019; Bennedsen et al., 2019; Mani & Durand, 2019; Murro & Peruzzi, 2019; Kim & Han, 2019; Denicolai, Hagen, Zucchella, & Dudinskaya, 2019; Yang et al., 2020; Madanoglu, Memili, & De Massis, 2020; Pittino et al., 2020; Kim & Patel, 2021; Berrone, Gomez-Mejia, & Xu, 2022; Leung et al., 2022). By considering these control variables, the thesis aims to enhance the robustness of the analysis and account for potential confounding factors that could influence the study results.

4.8.4.1. Firm size

Firm size has been identified as having a significant impact on firm performance in various studies (Agrawal & Knoeber, 1996; Himmelberg, Hubbard, & Palia, 1999; Nenova, 2003; Durnev & Kim, 2005; Chen et al., 2014; Ray et al. 2017; Mani & Durand, 2019; Murro & Peruzzi, 2019; Madanoglu et al., 2020; Yang et al., 2020; Kim & Patel, 2021). There is no

consensus in the literature on the impact of firm size on firm performance. Some researchers argue that larger companies tend to have higher performance due to their ability to access cheaper external funds, create and generate funds internally, and benefit from economies of scale resulting in better firm performance (Jensen, 1986; Beiner et al., 2006; Serrasqueiro & Maçãs Nunes, 2008).

On the other hand, others argue that larger companies may have fewer growth opportunities compared to smaller companies, leading to higher external funding costs. Smaller companies are more motivated to strictly comply with corporate governance codes to attract investors leading to a negative correlation between firm size and firm performance (Garen, 1994; Agrawal & Knoeber, 1996; Klapper & Love, 2004).

Empirical findings on the relationship between firm size and its performance are mixed, but most studies agree that a relationship exists. Many studies in the literature have used firm size as a control variable (Yermack, 1996; Short & Keasey, 1999; Bhagat, Black, & Blair, 2004; Coles, Daniel, & Naveen, 2008; Guest, 2009; Chen et al., 2014; Ray et al. 2017; Mani & Durand, 2019; Murro & Peruzzi, 2019; Madanoglu et al., 2020; Yang et al., 2020; Kim & Patel, 2021). In this thesis, firm size is measured by the natural logarithm of the company's total assets, following many studies in the literature (Muth & Donaldson, 1998; Zahra, 2003; Elsayed, 2007; Lehn, Patro, & Zhao, 2009; Topak, 2011; Al-Matari, Al-Swidi, Fadzil, & Al-Matari, 2012; Amann, Jaussaud, & Martinez, 2012; Zhang et al., 2014; Azeez, 2015; Shapiro, Tang, Wang, & Zhang, 2015; Choi & Lee, 2018).

4.8.4.2. Firm’s innovative potential

There are mixed results in the literature on the impact of the innovative potential of a firm on its performance. On one hand, firms with higher innovative potential are often associated with faster growth rates, leading to higher valuation and better overall firm performance

(Klapper & Love, 2004; Durnev & Kim, 2005). Such firms also need to raise external capital, which can incentivize them to adopt better corporate governance practices to attract investors and reduce the cost of capital (Gompers et al., 2003; Beiner et al., 2006; Drobetz & Grüninger, 2007; Henry, 2008; Cui & Jiang, 2009). Furthermore, companies that heavily invest in innovation and technology often gain a competitive advantage by introducing new processes, products, and services to the market (Jermias, 2007; Brown & Kaewkitipong, 2009). This, in turn, allows them to charge premium prices and achieve higher long-term performance (Jermias, 2007).

On the other hand, innovation is capital-intensive with potential future returns, which might have a negative impact on a firm's current performance (Weir, Laing, & McKnight, 2002). Additionally, firms that invest significantly in technology and innovation may require stronger monitoring and control measures, as intangible assets are easier to theft or misuse compared to physical assets (Durnev & Kim, 2005).

Given these mixed findings, there is no agreement among researchers on the nature of the relationship between firm's innovative potential and its performance. Following prior research (Durnev & Kim, 2005; Black, Love, & Rachinsky, 2006; Brown & Kaewkitipong, 2009), innovative potential of firms, as proxied by the ratio of capital expenditure to total assets, is used as a control variable in this study.

4.8.4.3. Capital structure

The impact of firm capital structure on its performance has been examined by several studies (Modigliani & Miller, 1963; Myers, 1977, 1984; Rajan & Zingales, 1995; Bevan & Danbolt, 2002, 2004). On one hand, having higher debt-to-equity ratio can result in tax advantages, as interest payments on debt are tax-deductible, potentially leading to higher financial performance (Modigliani & Miller, 1963). However, it is important to consider the potential

costs of financial distress associated with higher debt levels, such as bankruptcy and credit risks, which may limit firm's ability to pursue profitable investment opportunities (Myers, 1977). According to Jensen (1986), higher debt-to-equity ratio can improve firm's performance by mitigating agency conflicts that arise when managers have excessive free cash flows and engage in opportunistic behaviour. Additionally, debt financing can incentivize extra monitoring by lenders leading to improved performance (Agrawal & Knoeber, 1996).

Consistent with prior research (Demsetz & Villalonga, 2001; Weir et al., 2002; Klapper & Love, 2004; Bhagat & Bolton, 2008; Bhaumik, Driffield, & Pal, 2010; Ray et al., 2018; Mani & Durand, 2019), this study uses capital structure, measured by the ratio of total debt to equity, as a control variable.

4.8.4.4. Leverage

Many researchers have argued that leverage may affect firm performance either positively or negatively. On the positive side, some researchers propose that leverage can have a positive effect on firm performance due to the monitoring provided by lenders. Jensen & Meckling (1976) found that leverage can serve as an internal corporate governance mechanism, particularly in addressing problems like the free cash flow problem. According to Jensen (1986), increasing external debt can be advantageous as it constrains managerial discretion. Managers are motivated to use the company's free cash flow when they have obligations to make periodic repayments of interest and principal. This, in turn, can lead to improved firm performance. Stiglitz (1985) emphasizes that lenders play a crucial role in effectively controlling managerial behaviour than shareholders. Moreover, Ross (1977) argues that higher leverage can reflect company's ability to handle significant amounts of debt, which is a positive indicator of high performance.

On the other hand, Myers (1977) argues that high leverage levels can have a negative impact on firm performance, particularly due to the problem of underinvestment. This occurs because excessive leverage can hinder company's ability to raise new debt, which may result in missed investment opportunities. Myers (1977) and Stulz (1988) suggested that high leverage can affect the market value of stocks, leading to increased financial risk. From a corporate governance perspective, high levels of leverage might impede firm performance due to excessive interest payments and closer monitoring by creditors. Andrade & Kaplan (1998) suggest that lower firm leverage is associated with a reduced probability of financial distress, and firms with higher financial leverage tend to perform worse than those with lower leverage.

In this thesis leverage is measured by the ratio of total liabilities to total assets. Leverage has been utilised as a control variable by many other studies, such as (Choi et al., 2012; Isakov and Weisskopf 2014; Firth et al., 2016; Rashid 2016; Richter & Schrader, 2017; Nekhili, Nagati, Chtioui, & Rebolledo, 2017; Baghdadi et al. 2018; Buchanan et al 2018; Erhemjamts & Huang, 2019; Ren et al., 2019; Ciftci et al. 2019; Murro & Peruzzi 2019; Bennedsen et al., 2019; Nekhili, Boukadhaba, & Nagati, 2021; Pongelli, Calabrò, Quarato, Minichilli, & Corbetta, 2021).

4.8.4.5. Liquidity

Liquidity refers to company's ability to meet its short-term obligations and withstand short-term financial distress (Rashid 2016). This means that companies with more liquid assets have the potential to generate higher income from investments, contributing to improved firm performance (Camelia & Vasile, 2014). Many studies found a significant impact of liquidity on company's survival due to its impact on sales dynamics, growth, financial costs reduction, and company risk level (Chamberlain & Gordon, 1989; Jose, Lancaster, & Stevens, 1996).

Liquidity is also vital for company's development and serves as an indicator of the company's market position and achievements (Arif, Amiruddin, Darmawati, & Ferdiansah, 2023). However, higher levels of liquidity may result in an opportunity cost for the company, as it foregoes potential investment opportunities that could generate returns.

Previous studies have found inconclusive results regarding the effect of liquidity on firm performance. Some researchers argue that liquidity reduces managerial opportunism and encourages informed investors to trade, thereby leading to more informative share prices and improved investment decisions, supporting a positive relationship between liquidity and performance (Cho, 1998; Fang, Noe, & Tice, 2009; Li & Naughton, 2013). On the other hand, Dionne & Garand (2003) found a negative relationship between the liquidity ratio and firm performance.

In line with previous studies (Chamberlain & Gordon, 1989; Fang et al., 2009; Lappalainen & Niskanen, 2012; Rashid 2016; Ray et al., 2018; Murro & Peruzzi, 2019; Pongelli et al., 2021; Leung et al., 2022), this study measures liquidity using current ratio by dividing current assets by current liabilities.

4.8.4.6. Firm growth

Firm growth is very important for business owners, managers, and investors as it provides a reasonably accurate projection of the performance of the business (Hand, 2005). According to Fitzsimmons, Steffens, & Douglas (2005), high growth rate indicates better performance of firms. Several authors examined the role of different business activities to find out factors that will increase profitability of firms. Business efficiency and rational allocation of investments over time horizons have a positive effect on firm performance, which, in turn, exercises growth opportunities and enhances the value of the firm (Saleh, Halili, Zeitun, & Salim, 2017). Evidence suggests that firms with higher performance have greater investments

and higher growth opportunities (McConaughy & Phillips, 1999; Eklund, 2013; Eklund, 2020). Therefore, this study uses return on invested capital as a measure of firm growth (Saleh et al., 2017; Denicolai et al., 2019; Murro & Peruzzi, 2019).

4.8.4.7. Systematic Risk

Risk is a fundamental consideration for investors when making investment decisions. Investments inherently involve uncertainty, and investors are primarily concerned about the associated risks and potential returns. Risk can be defined as the variability or deviation between the actual return on investment and the expected return (Anderson et al., 2003). In other words, it represents the possibility that an investment's actual outcome may differ from what is initially anticipated. One key distinction in risk is between systematic risk and unsystematic risk. Systematic risk, also known as market risk or non-diversifiable risk, is the type of risk that cannot be eliminated through diversification. It is related to external factors and affects the overall market. On the other hand, unsystematic risk, also known as specific risk or diversifiable risk, is the risk that is unique to a particular company or industry. It can be reduced or eliminated through diversification across different investments. Unsystematic risk is company-specific and not correlated with the broader market fluctuations. Previous studies suggested that systematic risk is highly related to firm performance (Aldamen, Duncan, Kelly, McNamara, & Nagel, 2012; Youn, Hua, & Lee, 2015). Therefore, following previous studies (Anderson et al., 2003; Andres, 2008; Youn et al., 2015; Firth et al., 2016; Rashid, 2016; Saleh et al., 2017; Erhemjamts & Huang, 2019), this study considers BETA as a control variable to control for firm systematic risk.

4.8.4.8. Industry and year dummies

The thesis uses both industry and year dummy variables to control for industry and time effects on the relationship between ownership structure and firm performance. This study

uses 9 dummy variables representing 9 different industry sectors, and ten dummy variables reflecting the study's time-period from 2011 to 2020. Industry and year dummy variables are widely used throughout previous literature to control for macroeconomic changes (Ferreira & Matos, 2008; Lin & Fu, 2017; Alabdullah, 2018; Andersson et al. 2018; Sengupta & Yoon 2018; Ren et al., 2019; Ciftci et al. 2019; Kim and Han 2019; Mani and Durand, 2019; Murro and Peruzzi 2019; Yang et al 2020; Al Farooque, Buachoom, & Sun, 2020; Madanoglu et al., 2020; Nekhili et al., 2021; Pongelli et al. 2021; Berrone et al. 2022; Fareed et al., 2022; Leung et al. 2022).

Table 4.3: Summary of the thesis variables' measurements

Variable	**Measurement**	**Data Sources**
Dependent variable (Firm Performance)		
Tobin's Q	It is calculated as (market value of common stock + the book value of preferred stock + book value of debt) / book value of total assets	Financial Statements of the company, obtained from DataStream database available on the university of Essex online library.
ROA	Return on assets calculated as net profit after tax to total assets	Financial Statements of the company, obtained from DataStream database available on the university of Essex online library.
ROE	Return on equity calculated as net profit after tax to total equity	Financial Statements of the company, obtained from DataStream database available on the university of Essex online library.

Independent variables		
Family ownership	Percentage of shares owned by family members to total firm shares outstanding	Ownership structure of the company, obtained from DataStream database available on the university of Essex online library.
Government ownership	Percentage of government shareholdings in the firm to total firm shares outstanding	Ownership structure of the company, obtained from DataStream database available on the university of Essex online library.
Institutional ownership	Percentage of shares owned by institutions to total firm shares outstanding	Ownership structure of the company, obtained from DataStream database available on the university of Essex online library.
Managerial ownership	Percentage of shares owned by executive managers and board of directors to total firm shares outstanding	Ownership structure of the company, obtained from DataStream database available on the university of Essex online library.
Employee ownership	Percentage of shares owned by employees to total firm shares outstanding	Ownership structure of the company, obtained from DataStream database available on the university of Essex online library.
Moderating variables		
Investor protection level	the strength of investor protection index	World Bank official website.

Degree of capitalism	Economic freedom index	World Bank official website.
Industry effect	Industry average ROA	DataStream database available on the university of Essex online library.
Control variables		
Firm size	the natural logarithm of total assets	Financial Statements of the company, obtained from DataStream database available on the university of Essex online library.
Innovative potential	the ratio of capital expenditures to total assets	Financial Statements of the company, obtained from DataStream database available on the university of Essex online library.
capital structure	the ratio of total debt to equity	Financial Statements of the company, obtained from DataStream database available on the university of Essex online library.
Leverage	the ratio of total liabilities to total assets	Financial Statements of the company, obtained from DataStream database available on the university of Essex online library.
Liquidity	current ratio (the ratio of current assets to current liabilities).	Financial Statements of the company, obtained from DataStream database available on the university of

		Essex online library.
Systematic Risk	Standard deviation of daily share returns (BETA)	DataStream database available on the university of Essex online library.
Firm Growth	Return on Invested capital	Financial Statements of the company, DataStream database available on the university of Essex online library.
Industry dummies	The value of one is used if the firm is in the industry or zero otherwise.	
Year dummies	Every dummy variable value is equal to one for every year and zero otherwise.	

4.9. Empirical research models

Models used in this thesis are linear regression models, and STATA software is used to run the regression to examine the relationship between ownership structure and firm performance, through the Dynamic Generalized Method of Moments.

Model 1:

This equation is used to describe the relationship between the five ownership types and firm performance.

$$FP\ (ROE, ROA, Tobin's\ Q) = \alpha + \beta1GovOS + \beta2FamOS + \beta3InsOS + \beta4ManOS + \beta5EmpOS + \beta6CS + \beta7Lev + \beta8FG + \beta9Liq + \beta10Risk + \beta11InnPot + \beta12FS + \varepsilon$$

Where: FP (firm performance); GovOS (government ownership); FamOS (family ownership); InsOS (institutional ownership); ManOS (managerial ownership); EmpOS (employee ownership); CS

(capital structure); Lev (Leverage); FG (firm growth); Liq (liquidity); InnPot (innovative potential); FS (firm size).

Model 1 is used to test the following hypothesis:

H1: There is a significant positive relationship between family ownership and firm performance.

H2: There is a significant negative relationship between government ownership and firm performance.

H3: There is a significant positive relationship between institutional ownership and firm performance.

H4: There is a significant positive relationship between managerial ownership and firm performance.

H5: There is a significant positive relationship between employee ownership and firm performance.

Model 2:

This equation is used to describe the moderating impact of the level of investor protection on the nature of the relationship between the five ownership types and firm performance.

$$FP\ (ROE, ROA, Tobin's\ Q) = \alpha + \beta 1 Inv.Pro. + \beta 2 GovOS + \beta 3 FamOS + \beta 4 InsOS + \beta 5 ManOS + \beta 6 EmpOS + \beta_7 GovOSxInvPro + \beta_8 FamOSxInvPro + \beta_9 InsOSxInvPro + \beta_{10} ManOSxInvPro + \beta_{11} empOSxInvPro + \beta_{12} CS + \beta 13 Lev + \beta 14 FG + \beta 15 Liq + \beta 16 Risk + \beta 17 InnPot + \beta 18 FS + \varepsilon$$

Where: FP (firm performance); Inv.Pro. (the level of investor protection); GovOS (government ownership); FamOS (family ownership); InsOS (institutional ownership); ManOS (managerial ownership); EmpOS (employee ownership); CS (capital structure); Lev (Leverage); FG (firm growth); Liq (liquidity); InnPot (innovative potential); FS (firm size).

Model 2 is used to test the following hypothesis:

H1a: the level of investor protection has a significant positive moderating impact on the relationship between family ownership and firm performance.

H2a: the level of investor protection has a significant negative moderating impact on the relationship between government ownership and firm performance.

H3a: the level of investor protection has a significant positive moderating impact on the relationship between institutional ownership and firm performance.

H4a: the level of investor protection has a significant positive moderating impact on the relationship between managerial ownership and firm performance.

H5a: the level of investor protection has a significant positive moderating impact on the relationship between employee ownership and firm performance.

Model 3:

This equation is used to describe the moderating impact of the degree of capitalism on the nature of the relationship between the five ownership types and firm performance.

$$FP\ (ROE, ROA, Tobin's\ Q) = \alpha + \beta 1Cap + \beta 2GovOS + \beta 3FamOS + \beta 4InsOS + \beta 5ManOS + \beta 6EmpOS + \beta_7 GovOSxCap + \beta_8 FamOSxCap + \beta_9 InsOSxCap + \beta_{10} ManOSxCap + \beta_{11} empOSxCap + \beta_{12} CS + \beta 13Lev + \beta 14FG + \beta 15Liq + \beta 16Risk + \beta 17InnPot + \beta 18FS + \varepsilon$$

Where: FP (firm performance); Cap (the degree of capitalism); GovOS (government ownership); FamOS (family ownership); InsOS (institutional ownership); ManOS (managerial ownership); EmpOS (employee ownership); CS (capital structure); Lev (Leverage); FG (firm growth); Liq (liquidity); InnPot (innovative potential); FS (firm size).

Model 3 is used to test the following hypothesis:

H1b: The degree of capitalism has a significant negative moderating impact on the relationship between family ownership and firm performance.

H2b: The degree of capitalism has a significant negative moderating impact on the relationship between government ownership and firm performance.

H3b: The degree of capitalism has a significant positive moderating impact on the relationship between institutional ownership and firm performance.

H4b: The degree of capitalism has a significant negative moderating impact on the relationship between managerial ownership and firm performance.

H5b: The degree of capitalism has a significant positive moderating impact on the relationship between employee ownership and firm performance.

Model 4:

This equation is used to describe the moderating impact of the industry average performance on the nature of the relationship between the five ownership types and firm performance.

$$FP\ (ROE, ROA, Tobin's\ Q) = \alpha + \beta 1 IndROA + \beta 2 GovOS + \beta 3 FamOS + \beta 4 InsOS + \beta 5 ManOS + \beta 6 EmpOS + + \beta_7 GovOSxIndROA + \beta_8 FamOSxIndROA + \beta_9 InsOSxIndROA + \beta_{10} ManOSxIndROA + \beta_{11} empOSxIndROA + \beta_{12} CS + \beta 13 Lev + \beta 14 FG + \beta 15 Liq + \beta 16 Risk + \beta 17 InnPot + \beta 18 FS + \varepsilon$$

Where: FP (firm performance); IndROA (Industry average return on assets); GovOS (government ownership); FamOS (family ownership); InsOS (institutional ownership); ManOS (managerial ownership); EmpOS (employee ownership); CS (capital structure); Lev (Leverage); FG (firm growth); Liq (liquidity); InnPot (innovative potential); FS (firm size).

Model 4 is used to test the following hypothesis:

H1c: The industry average performance has a significant negative moderating impact on the relationship between family ownership and firm performance.

H2c: The industry average performance has a significant negative moderating impact on the relationship between government ownership and firm performance.

H3c: The level of industry average performance has a significant positive moderating impact on the relationship between institutional ownership and firm performance.

H4c: The industry average performance has a significant positive moderating impact on the relationship between managerial ownership and firm performance.

H5c: The industry average performance has a significant positive moderating impact on the relationship between employee ownership and firm performance.

4.10. Statistical methods and tests

This section of the chapter discusses the statistical techniques employed to carry out the empirical part of the study. This study uses dynamic GMM to test the study hypotheses. The widely used OLS regression is also employed to explore the relationship between the five ownership types and firm performance, and the extent to which such relationship is affected by the three moderating variables including in the study. The results of the OLS analysis and a comparison between OLS and GMM results are included in the thesis appendix.

In corporate governance literature, many empirical studies suggest that there is an endogenous relationship between governance characteristics and firm performance (Demsetz & Lehn, 1985; Thomsen & Pedersen, 2000; Demsetz & Villalonga, 2001; Hermalin & Weisbach, 2001; Valenti, Luce, & Mayfield, 2011). The ownership structure of a firm influences its performance, and, at the same time, firm performance influences the willingness of investors to invest in the firm. It is suggested that such endogeneity problem resulted in inconclusive results on the relationship between ownership structure and firm performance (Demsetz & Villalonga, 2001; Lemmon & Lins, 2003; Farooque, Zijl, Dunstan, & Karim, 2007; Schultz, Tan, & Walsh, 2010; Bhagat & Bolton, 2019). For example, Lemmon & Lins (2003) suggested that all previous evidence on ownership structure and firm value relationship have a problem with the endogeneity issue that arise because of the two-

way relationship between ownership structure and firm performance. Similarly, Bhagat & Bolton (2019) implied that most empirical evidence on governance has serious issues with endogeneity problem. There are several reasons that may result in such endogenous relationship such as omitted variable bias, measurement error and simultaneity causation leading to inconsistent and biased estimates of parameters making it impossible to reach reliable conclusions (Farooque et al., 2019).

In order to solve such problem, many researchers suggested using the dynamic generalized method of moments (GMM), developed by Arellano & Bond (1991), for addressing the dynamic endogeneity, simultaneity and unobservable heterogeneity (Saleh, 2012; Farooque et al., 2019). It is suggested that GMM provides more consistent and efficient parameter estimates in the presence of endogeneity issues (Bond, 2002; Baltagi, Fingleton, & Pirotte, 2014).

Therefore, this study uses the dynamic panel generalized method of moments (GMM) for the empirical analysis.

4.11. Reflexivity and ethics

This study aims at collecting secondary data from financial and ownership structure reports of firms in the study sample. These data are publicly available, so no ethical concerns may arise in the process of data collection.

The study aims to examine the relationship between five main ownership types and firm performance using a sample of both developed and developing countries. The study also aims to examine the moderating impacts the level of investor protection, the degree of capitalism, and the industry average performance on the nature of the relationship between ownership structure and firm performance.

The researcher believes that this research area is worthy of research for several reasons. First, as a researcher from a developing country, studying the extent to which firm performance is affected by different ownership types in both developed and developing countries will give valuable guidelines on how to improve corporate governance in developing countries with respect to developed ones. Second, finding out the most effective ownership structures will help in reducing the agency problem, and ensure that the rights of all stakeholders are protected which improves firm overall performance. Third, studying the relationship between ownership structure and firm performance will provide guidelines for boards of directors and investors on how to improve firm performance through adopting the appropriate ownership structure. For instance, the results of examining the relationship between managerial ownership and firm performance will help in deciding on the effectiveness of offering ownership shares to managers as a compensation strategy. Moreover, examining the impact of block holder ownership, such as institutions and families, on firm performance will help small individual investors in understanding whether investing in family firms or firms dominated by institutions will maximize their own wealth or their rights will be exploited by controlling shareholders.

4.12. Conclusion

This chapter discussed in detail the research philosophy and methodology underpinning the study. It also presented the measures of the study variables, and empirical research models, in addition to the methods of data collection and analysis.

The study aims at examining the endogenous relationship between ownership structure and firm performance from the agency theory perspective for the period from 2011 to 2020 in 20 countries. The study aims to find out the extent to which firm performance is affected by five main ownership types. Moreover, the research examines the moderating impact of the level

of investor protection, degree of capitalism, and industry average performance on the nature of the relationship between ownership structure and firm performance.

Regarding the research philosophy, the study adopts objectivist ontological approach and positivist epistemological approach, as the assumptions of the study regarding reality and what constitutes knowledge matches the assumptions of both objectivism and positivism. Deductive approach is adopted as the study builds hypotheses based on the agency theory and collects data to test these hypotheses. Quantitative approach is used as it is related to the positivism and deductive approaches adopted in the study. Panel research design is used to control for the heterogeneity problem and to gain greater ability for generalization.

Archival research method is used for data collection. Data is gathered through the examination of annual reports and ownership structures of firms in the sample. This study uses the dynamic panel generalized method of moments (GMM) for data analysis.

Chapter Five

Results and Discussion

5.1. Introduction

This chapter empirically examines and discusses the relationship between five main ownership structure types and firm performance using the Generalized Method of Moments. It also examines the extent to which the relationship between the five ownership structure types and firm performance is affected by level of investor protection, degree of capitalism, and industry average performance. Three samples are used in the analysis which are combined sample, developed countries sample, and developing countries sample. Firstly, the relationship between control variables and firm performance is examined. Then, the direct relationship between firm performance and the five ownership types, namely, government, family, institutional, managerial, and employee ownership is investigated. After that, the impacts of each moderating variable on the relationship between the five ownership types and firm performance are examined.

The chapter is divided into seven sections. The first section presents descriptive statistics that describe the basic features of the data used in this study and identify any outliers, abnormalities, or missing data. The second section shows the correlation analysis results where the relationships between constructs are tested using Pearson's correlation analysis to examine how the analysis dimensions are correlated with each other. The third section presents the results of using the generalised method of moments (GMM) to examine the direct relationship between the five ownership types and firm performance and the impacts of the three moderating variables on ownership structure-firm performance relationship. The

Fourth section discusses the results of GMM analysis. The fifth section summarizes the hypotheses testing results. Then, the chapter conclusion is provided in the last section.

5.2. Descriptive Statistics

Descriptive statistics are used to describe the basic features of the data used in this study. It shows summaries about the sample and the variables utilised in the study. Table 5.1 presents the percentage of companies with different ownership types in each country.

Table 5.1: percentage of companies with different ownership types in each country

Country	Sample size	percentage of companies with Government ownership	percentage of companies with Family ownership	percentage of companies with Institutional ownership	percentage of companies with Managerial ownership	percentage of companies with Employee ownership
Austria	36	0%	17%	97%	19%	0%
Belgium	81	17%	40%	98%	62%	7%
Brazil	53	0%	9%	100%	36%	2%
China	162	6%	81%	99%	70%	0%
Denmark	55	2%	7%	100%	55%	0%
Egypt	67	72%	18%	58%	43%	18%
Finland	94	44%	72%	100%	72%	0%
France	84	10%	37%	100%	61%	68%
Germany	45	4%	13%	100%	22%	2%
India	65	68%	46%	100%	68%	22%
Ireland	19	0%	84%	100%	99%	21%
Netherlands	68	6%	24%	90%	99%	10%
Norway	99	13%	47%	99%	96%	2%
Portugal	30	3%	40%	90%	40%	0%
South Africa	81	1%	0%	100%	95%	11%
Spain	62	6%	23%	100%	73%	0%

Sweden	131	2%	27%	100%	44%	2%
Switzerland	136	4%	26%	99%	88%	1%
UK	59	0%	0%	98%	71%	49%
US	84	0%	2%	100%	75%	0%
Developed Countries sample	1083	9%	30%	99%	68%	10%
Developing Countries sample	428	24%	42%	93%	66%	8%
Total	1511	13%	33%	97%	68%	10%

Institutional ownership is the most common ownership type in our sample with 97% of combined sample companies have institutional investors in their ownership structure, and 99% of companies in the developed countries sample. This is in line with previous studies who suggest that there is an increasing trend around the world for institutional ownership in most countries around the world (Kim et al., 2019; Erhemjamts & Huang, 2019; Ma & Ren, 2021). Companies with managerial ownership represents 68% of our combined sample companies. Ireland and Netherlands are the highest countries with managerial ownership (99%), followed by Norway (96%). It is observable that managerial ownership is common in both developed and developing countries. Companies with family ownership represented 33% of the combined sample. Ireland is the highest country in the sample with family ownership percentage (84%), then comes China with 81%. Companies having government ownership are 13% of the study's combined sample, with only 9% of companies in the developed countries sample have government ownership. However, government ownership exists in 24% of the developing countries sample, which indicates that government ownership is more common in developing countries than developed ones. The highest percentage of government ownership in the study sample is in Egypt with 72% of sample companies have

government ownership, followed by India with 68%. Employee ownership is the least common ownership type in our sample with only 10% of companies in the combined sample have employee ownership. The percentage of companies with employee ownership is the highest in France (68%), followed by The UK (49%).

Table 5.2 presents the descriptive statistics for the dependent, independent, moderating, and control variables. The figures presented include variables that have been winsorized to avoid the influence of extreme and theoretically incorrect values on the data results. Extreme values are identified as values greater or smaller than 3 standard deviations from the Mean (i.e. Mean ± 3SD) (Hoaglin, Iglewicz, & Tukey, 1986; Yu & Ashton, 2015). Such outliers can influence the outcomes of the analysis in many ways. For instance, extreme values can inflate the error variance, increase the confidence intervals, and bias the parameter estimates. There are two ways to deal with outliers; deleting the extreme values (trimming) or winsorizing these values. Deleting (Trimming) the extreme values is not used for several reasons. First, new outliers can appear after trimming the initial outliers. Second, outliers could include important observations, which can affect the study results. Therefore, the winsorization method is used by reducing the extreme values (outliers) to the next value after/before the Mean ± 3SD. The sample from each country in the study has its own characteristics, so winsorizing was conducted on each country sample separately to avoid changing the main features of the study sample.

Table 5.2: Descriptive statistics

Var.	No. of Observations			Mean			Std. Dev.			Min			Max		
	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3	S1	S2	S3
Tobin Q	15110	10830	4280	1.92	2.046	1.605	11.5	13.54	1.72	0.00	0.00	0.00	600.44	600.44	16.42
ROA	15110	10830	4280	5.06	4.161	7.328	15.27	17.18	8.29	-209.06	-209.06	-123.96	198.19	198.19	70.192
ROE	15110	10830	4280	7.52	5.477	12.70	60.14	67.62	34.09	-764.05	-764.05	-764.05	651.9	651.9	285.41

Government ownership	15110	10830	4280	.02	.012	.054	.12	.07	.18	0.00	0.00	0.00	.967	.67	.967
Family ownership	15110	10830	4280	.04	.049	.025	.13	.14	.097	0.00	0.00	0.00	.89	.89	.756
Managerial ownership	15110	10830	4280	.06	.063	.037	.144	.154	.114	0.00	0.00	0.00	.997	.941	.997
Institutional ownership.	15110	10830	4280	.245	.269	.186	.206	.207	.194	0.00	0.00	0.00	1	1	.993
Employee ownership	15110	10830	4280	.002	.002	.002	.014	.013	.017	0.00	0.00	0.00	.377	.292	.377
Investor Protection	15110	10830	4280	5.878	5.946	5.707	1.206	1.199	1.208	3	3	3.7	8.3	8.3	8
Economic Freedom	15110	10830	4280	68.401	73.271	56.077	9.055	5.05	3.61	51.2	62.3	51.2	82	82	63
Industry Average ROA	15110	10830	4280	-157.998	-217.492	-7.455	1930.429	2268.772	316.579	-50000	-50000	-16577	7583.12	7583.12	2482
Capital structure.	15110	10830	4280	72.683	66.405	88.569	255.746	267.462	222.61	-3038.5	-3038.5	-3038.5	3153.63	3153.63	3153.63
Leverage	15110	10830	4280	.904	1.055	.521	9.175	10.833	.219	-.44	-.44	0.00	241	241	2.4
Liquidity	15110	10830	4280	2.415	1.921	3.667	3.235	2.362	4.543	-15.25	-15.25	-15.25	21.34	21.34	21.34
Firm Growth	15110	10830	4280	6.145	5.441	7.926	34.213	37.95	21.997	-667.25	-667.25	-667.25	516.22	516.22	516.22
risk	15110	10830	4280	.86	.812	.981	.628	.604	.67	-2.043	-2.043	-2.043	4.17	4.17	4.17
Innovative potential	15110	10830	4280	4.653	4.431	5.214	4.617	4.373	5.141	-7.98	0	-7.98	24.72	24.72	24.72
Firm size	15110	10830	4280	6.448	6.314	6.789	1.381	1.117	1.848	2.1	2.1	2.1	10.07	9	10.07

S1: Combined sample S2: Developed countries sample S3: Developing countries sample

Firm performance is measured using three different measures. The first one is Tobin's Q. It has a mean value of 1.921%, 2.046%, 1.605% for S1, S2, and S3, respectively. Tobin's Q value varies between 0.00% and 600.44%. The standard deviation is 11.5%, 13.539%, 1.717% for s1, s2, and s3, respectively. Firm performance is also measured using return on assets (ROA). It has 5.058%, 4.161%, 7.328% as mean values for s1, s2, and s3, respectively, with -209.06% and 198.19% minimum and maximum values, respectively. The ROA standard deviation is 15.269, 17.184, and 8.29, for s1, s2, and s3 respectively. The third measure for firm performance is return on equity (ROE) which has mean value of 7.523,

5.477, and 12.702 for s1, s2 and s3, respectively. The ROE standard deviation is 60.14 for s1, 67.618 for s2, and 34.094 for s3. The high variations in firm performance measures among samples reflect differences among countries' capital market characteristics.

Government ownership has an average ownership percentage of 2.4% for sample one, 1.2% for sample two and 5.4% for sample three. Family ownership has an average ownership percentage of 4.3%, 4.9%, and 2.5% for sample one, sample two and sample three, respectively. The average percentage for institutional ownership is 24.5%, 26.9%, and 18.6% for sample one, sample two and sample three, respectively. Regarding managerial ownership, the average ownership ratio is 5.6% for sample one, 6.3% for sample two, and 3.7% for sample three. The average employee ownership percentage is 0.2% in all three samples. The minimum ownership percentage for each of the five types of ownership is zero, while the maximum percentage is 96.7%, 89%, 100%, 99.7%, and 37.7% for government, family, institutional, managerial, and employee ownership, respectively.

5.3. Correlation analysis

The relationships between constructs are tested using Pearson's correlation analysis to examine how the analysis dimensions are correlated with each other. The strength and direction of the correlation between the variables is given by the correlation coefficient r, which lies between -1 and +1, where a positive (negative) value signals a positive (negative) association. Higher r value means stronger association (Field, 2009). The coefficients and signs of correlation provide a basic understanding of the direction and magnitude of the correlations between dependent and independent variables.

Tables 5.3, 5.4, and 5.5 present the correlation matrix for each of the three study samples describing the relationships between all variables. Correlation of each independent variables pair should not exceed 0.80, since any independent variable with a coefficient exceeding 0.80

exhibits multicollinearity (Bryman & Cramer, 2011). The results do not produce any evidence of multicollinearity problems. The potential for multicollinearity was also tested when linear regressions of all explanatory variables on ROA, ROE, and Tobin's Q were performed. None of the VIF factors obtained a value exceeding 2. This confirms that there is no multicollinearity problem for the regression analyses. Therefore, the multicollinearity problem does not appear to be a concern in this thesis.

Table 5.3 shows the correlation analysis results for the combined sample. Government and institutional ownership are found to be positively corelated with ROA at 0.01 significance level, while a negative correlation is found between managerial ownership and ROA at the same significance level. Employee ownership is found to have a positive correlation with ROA at 0.1 significance level. Government, Institutional, and employee ownership are found to be positively correlated with ROE with a significance level of 0.01, while managerial ownership is found to be negatively correlated with ROE at 0.05 significance level. There are also some correlations between ownership variables with significance levels of 0.01 and 0.05. Negative correlations are found between government, family, institutional and managerial ownership except for family and managerial ownership where positive correlation is found. For employee ownership, positive correlation is found with government ownership, while negative correlation is found with institutional ownership.

Table 5.4 shows the correlation analysis results for the developed countries sample. It is found that there is a significant negative correlation between managerial ownership and both ROA and ROE. Positive correlations are found between institutional ownership and each of ROA and ROE at 0.01 significance level. Positive correlation is found between employee ownership and ROE at 0.01 significance level. It is also found that there are significant correlations between ownership variables. Negative correlations are found between Government, family, institutional and managerial ownership at significance level 0.01.

Employee ownership is found to be positively correlated with government ownership and negatively correlated with institutional ownership.

Table 5.5 shows the correlation analysis results for the developing countries sample. A significant positive correlation is found between Tobin's Q and each of family, managerial, institutional, and employee ownership. It is also found that there are significant positive correlations between each of government, family, institutional, managerial and employee ownership and ROA at significance level 0.01. When it comes to ROE, a significant positive correlation is found between each of government, family, managerial, and employee ownership and ROE. It is also found that there are significant correlations between ownership variables. Negative correlations are found between the government, family, managerial and institutional ownership, except for family and managerial ownership where positive correlation is found. It is also found the employee ownership is positively correlated with government, managerial, and institutional ownership at 0.01 significance level.

Table 5.3: Correlation analysis for the combined sample

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) TQ	1.000																	
(2) ROA	-0.181***	1.000																
	(0.000)																	
(3) ROE	-0.271***	0.533***	1.000															
	(0.000)	(0.000)																
(4) Government ownership	-0.011	0.052***	0.027***	1.000														
	(0.189)	(0.000)	(0.001)															
(5) Family ownership	-0.004	0.012	0.001	-0.061***	1.000													
	(0.587)	(0.138)	(0.879)	(0.000)														
(6) Managerial ownership	-0.002	-0.041***	-0.019**	-0.075***	0.160***	1.000												
	(0.788)	(0.000)	(0.023)	(0.000)	(0.000)													
(7) Institutional ownership	0.003	0.107***	0.082***	-0.140***	-0.155***	-0.198***	1.000											
	(0.721)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)												
(8) Employee ownership	-0.007	0.015*	0.026***	0.055***	-0.011	-0.020**	0.004	1.000										
	(0.388)	(0.074)	(0.001)	(0.000)	(0.172)	(0.012)	(0.591)											
(9) Investor protection	0.004	0.061***	0.016*	-0.069***	-0.033***	-0.040***	0.368***	0.012	1.000									
	(0.645)	(0.000)	(0.057)	(0.000)	(0.000)	(0.000)	(0.000)	(0.144)										
(10) Economic freedom	0.027***	-0.069***	-0.041***	-0.162***	0.019**	0.048***	0.268***	-0.078***	0.033***	1.000								
	(0.001)	(0.000)	(0.000)	(0.000)	(0.017)	(0.000)	(0.000)	(0.000)	(0.000)									
(11) Industry average ROA	-0.015*	-0.039***	-0.016**	0.017**	0.024***	0.015*	-0.127***	0.012	-0.102***	-0.066***	1.000							
	(0.067)	(0.000)	(0.049)	(0.034)	(0.003)	(0.060)	(0.000)	(0.132)	(0.000)	(0.000)								
(12) capital structure	-0.020**	-0.010	0.024***	-0.024***	-0.023***	-0.010	-0.010	-0.028***	-0.034***	0.003	1.000							
	(0.013)	(0.239)	(0.003)	(0.003)	(0.005)	(0.232)	(0.239)	(0.001)	(0.000)	(0.687)								
(13) Leverage	0.185***	-0.004	-0.049***	-0.008	0.023***	-0.014*	-0.006	-0.003	-0.019**	0.018**	0.004	0.005	1.000					
	(0.000)	(0.630)	(0.000)	(0.314)	(0.005)	(0.081)	(0.491)	(0.689)	(0.021)	(0.031)	(0.657)	(0.544)						
(14) Firm growth	-0.423***	0.697***	0.524***	0.015*	0.015*	-0.019**	0.109***	0.018**	0.052***	-0.020**	-0.028***	0.004	-0.076***	1.000				
	(0.000)	(0.000)	(0.000)	(0.059)	(0.064)	(0.022)	(0.000)	(0.024)	(0.000)	(0.014)	(0.001)	(0.615)	(0.000)					
(15) Liquidity	0.002	0.047***	0.030***	-0.022***	-0.052***	-0.027***	-0.090***	-0.051***	-0.125***	-0.203***	-0.016*	-0.055***	-0.018**	-0.002	1.000			
	(0.834)	(0.000)	(0.000)	(0.007)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.053)	(0.000)	(0.026)	(0.795)				
(16) Risk	-0.038***	0.003	0.010	0.039***	-0.093***	-0.093***	0.076***	0.105***	0.182***	-0.186***	-0.003	-0.007	0.029***	0.007	-0.004	1.000		
	(0.000)	(0.744)	(0.202)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.751)	(0.368)	(0.000)	(0.404)	(0.638)			
(17) Innovative potential	0.001	0.098***	0.050***	0.030***	-0.001	-0.016**	0.020**	-0.017**	0.098***	-0.057***	-0.050***	0.023***	0.026***	0.058***	-0.028***	-0.013*	1.000	
	(0.925)	(0.000)	(0.000)	(0.000)	(0.908)	(0.043)	(0.014)	(0.033)	(0.000)	(0.000)	(0.000)	(0.005)	(0.002)	(0.000)	(0.001)	(0.109)		
(18) Firm size	-0.072***	0.147***	0.111***	-0.141***	-0.098***	-0.232***	0.248***	0.008	0.174***	-0.111***	-0.009	0.098***	-0.029***	0.143***	0.024***	0.103***	0.124***	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.342)	(0.000)	(0.000)	(0.257)	(0.000)	(0.000)	(0.000)	(0.003)	(0.000)	(0.000)	

*** p<0.01, ** p<0.05, * p<0.1

Table 5.4: correlation analysis for the developed countries sample

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) TQ	1.000																	
(2) ROA	-0.201***	1.000																
	(0.000)																	
(3) ROE	-0.290***	0.535***	1.000															
	(0.000)	(0.000)																
(4) Government ownership	-0.014	-0.009	-0.002	1.000														
	(0.147)	(0.364)	(0.847)															
(5) Family ownership	-0.015	0.008	0.000	-0.047***	1.000													
	(0.122)	(0.421)	(0.998)	(0.000)														
(6) Managerial ownership	-0.010	-0.050***	-0.022**	-0.072***	0.084***	1.000												
	(0.315)	(0.000)	(0.022)	(0.000)	(0.000)													
(7) Institutional ownership	-0.002	0.142***	0.111***	-0.059***	-0.196***	-0.262***	1.000											
	(0.855)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)												
(8) Employee ownership	-0.011	0.001	0.025***	0.034***	-0.007	-0.056***	-0.012	1.000										
	(0.237)	(0.891)	(0.009)	(0.000)	(0.491)	(0.000)	(0.224)											
(9) Investor protection	-0.008	0.042***	0.010	-0.006	-0.051***	-0.073***	0.251***	-0.014	1.000									
	(0.382)	(0.000)	(0.307)	(0.553)	(0.000)	(0.000)	(0.000)	(0.152)										
(10) Economic freedom	0.026***	0.018*	0.014	-0.021**	-0.105***	-0.051***	0.178***	-0.222***	-0.251***	1.000								
	(0.006)	(0.061)	(0.146)	(0.028)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)									
(11) Industry average ROA	-0.014	-0.046***	-0.022**	0.017*	0.031***	0.021**	-0.140***	0.015*	-0.115***	-0.052***	1.000							
	(0.138)	(0.000)	(0.021)	(0.075)	(0.001)	(0.028)	(0.000)	(0.110)	(0.000)	(0.000)								
(12) Capital structure	-0.018*	0.010	0.028***	0.014	-0.007	0.009	-0.009	-0.032***	-0.007	0.001	0.010	1.000						
	(0.056)	(0.318)	(0.004)	(0.147)	(0.437)	(0.327)	(0.323)	(0.001)	(0.498)	(0.948)	(0.279)							
(13) Leverage	0.186***	-0.001	-0.049***	-0.007	0.023**	-0.018*	-0.012	-0.004	-0.025**	-0.010	0.005	0.005	1.000					
	(0.000)	(0.934)	(0.000)	(0.458)	(0.017)	(0.064)	(0.207)	(0.660)	(0.011)	(0.295)	(0.606)	(0.633)						
(14) Firm growth	-0.457***	0.749***	0.563***	0.000	0.010	-0.029***	0.122***	0.006	0.026***	0.005	-0.032***	0.012	-0.079***	1.000				
	(0.000)	(0.000)	(0.000)	(0.977)	(0.301)	(0.002)	(0.000)	(0.560)	(0.007)	(0.593)	(0.001)	(0.195)	(0.000)					
(15) Liquidity	0.002	0.010	0.015	-0.041***	-0.045***	-0.001	0.005	-0.049***	0.024**	0.116***	-0.045***	-0.057***	-0.016*	0.012	1.000			
	(0.845)	(0.286)	(0.113)	(0.000)	(0.000)	(0.893)	(0.593)	(0.000)	(0.013)	(0.000)	(0.000)	(0.000)	(0.100)	(0.220)				
(16) Risk	-0.039***	0.004	0.014	-0.017*	-0.107***	-0.104***	0.165***	0.110***	0.275***	-0.264***	-0.011	-0.002	0.040***	0.024**	-0.056***	1.000		
	(0.000)	(0.707)	(0.132)	(0.081)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.237)	(0.806)	(0.000)	(0.014)	(0.000)			
(17) Innovative potential	-0.008	0.079***	0.041***	0.080***	-0.010	-0.013	0.005	-0.013	0.055***	-0.009	-0.066***	0.017*	0.035***	0.054***	-0.079***	-0.038***	1.000	
	(0.403)	(0.000)	(0.000)	(0.000)	(0.281)	(0.168)	(0.612)	(0.193)	(0.000)	(0.327)	(0.000)	(0.072)	(0.000)	(0.000)	(0.000)	(0.000)		
(18) Firm size	-0.108***	0.226***	0.170***	0.117***	-0.096***	-0.286***	0.329***	0.070***	0.190***	0.042***	-0.024**	0.049***	-0.038***	0.208***	-0.129***	0.194***	0.050***	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.013)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

*** p<0.01, ** p<0.05, * p<0.1

Table 5.5: correlation analysis for the developing countries sample

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) TQ	1.000																	
(2) ROA	0.507***	1.000																
	(0.000)																	
(3) ROE	0.200***	0.494***	1.000															
	(0.000)	(0.000)																
(4) Government ownership	-0.012	0.166***	0.075***	1.000														
	(0.439)	(0.000)	(0.000)															
(5) Family ownership	0.238***	0.113***	0.048***	-0.075***	1.000													
	(0.000)	(0.000)	(0.002)	(0.000)														
(6) Managerial ownership	0.153***	0.086***	0.039**	-0.079***	0.495***	1.000												
	(0.000)	(0.000)	(0.012)	(0.000)	(0.000)													
(7) Institutional ownership	0.032**	0.062***	0.012	-0.201***	-0.092***	-0.058***	1.000											
	(0.034)	(0.000)	(0.436)	(0.000)	(0.000)	(0.000)												
(8) Employee ownership	0.036**	0.073***	0.040***	0.076***	-0.024	0.072***	0.040***	1.000										
	(0.018)	(0.000)	(0.008)	(0.000)	(0.113)	(0.000)	(0.009)											
(9) Investor protection	0.219***	0.230***	0.078***	-0.114***	-0.010	0.038**	0.651***	0.063***	1.000									
	(0.000)	(0.000)	(0.000)	(0.000)	(0.501)	(0.014)	(0.000)	(0.000)										
(10) Economic freedom	-0.034**	0.045***	-0.014	-0.091***	-0.088***	-0.014	0.410***	0.044***	0.498***	1.000								
	(0.026)	(0.003)	(0.364)	(0.000)	(0.000)	(0.377)	(0.000)	(0.004)	(0.000)									
(11) Industry average ROA	0.009	0.010	0.093***	0.007	0.008	0.009	-0.002	0.004	-0.015	0.018	1.000							
	(0.571)	(0.493)	(0.000)	(0.656)	(0.607)	(0.553)	(0.900)	(0.789)	(0.324)	(0.233)								
(12) capital structure	-0.089***	-0.159***	-0.014	-0.093***	-0.072***	-0.072***	0.020	-0.020	-0.021	-0.013	-0.193***	1.000						
	(0.000)	(0.000)	(0.371)	(0.000)	(0.000)	(0.000)	(0.197)	(0.193)	(0.164)	(0.413)	(0.000)							
(13) Leverage	-0.168***	-0.195***	-0.081***	-0.024	-0.059***	-0.046***	-0.006	0.014	-0.076***	-0.054***	-0.027*	0.323***	1.000					
	(0.000)	(0.000)	(0.000)	(0.111)	(0.000)	(0.003)	(0.673)	(0.368)	(0.000)	(0.000)	(0.074)	(0.000)						
(14) Firm growth	0.188***	0.242***	0.186***	0.035**	0.068***	0.062***	0.101***	0.065***	0.190***	0.080***	0.014	-0.048***	-0.219***	1.000				
	(0.000)	(0.000)	(0.000)	(0.022)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.345)	(0.002)	(0.000)					
(15) Liquidity	0.080***	0.084***	0.035**	-0.078***	-0.021	-0.020	-0.131***	-0.061***	-0.290***	-0.178***	-0.001	-0.096***	-0.207***	-0.066***	1.000			
	(0.000)	(0.000)	(0.021)	(0.000)	(0.164)	(0.181)	(0.000)	(0.000)	(0.000)	(0.000)	(0.941)	(0.000)	(0.000)	(0.000)				
(16) Risk	-0.108***	-0.070***	-0.043***	0.055***	-0.015	-0.025*	-0.056***	0.098***	0.015	0.160***	0.014	-0.039***	0.000	-0.078***	-0.012	1.000		
	(0.000)	(0.000)	(0.005)	(0.000)	(0.339)	(0.096)	(0.000)	(0.000)	(0.333)	(0.000)	(0.373)	(0.010)	(0.983)	(0.000)	(0.439)			
(17) Innovative potential	0.181***	0.179***	0.080***	-0.031**	0.055***	-0.002	0.103***	-0.026*	0.212***	0.096***	-0.011	0.028*	-0.047***	0.074***	-0.017	0.008	1.000	
	(0.000)	(0.000)	(0.000)	(0.044)	(0.000)	(0.885)	(0.000)	(0.086)	(0.000)	(0.000)	(0.479)	(0.072)	(0.002)	(0.000)	(0.270)	(0.612)		
(18) firm size	0.072***	-0.072***	-0.038**	-0.343***	-0.086***	-0.141***	0.241***	-0.067***	0.206***	0.055***	-0.009	0.190***	0.135***	0.018	0.076***	-0.059***	0.201***	1.000
	(0.000)	(0.000)	(0.014)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.563)	(0.000)	(0.000)	(0.238)	(0.000)	(0.000)	(0.000)	

**** p<0.01, ** p<0.05, * p<0.1*

5.4. Generalized Method of Moments (GMM)

Two-step generalised method of moments is used to address the endogeneity problem in the relationship between ownership structure and firm performance. To decide between using two-step difference GMM and two-step system GMM. Firstly, the model should be estimated using pooled OLS and fixed effects approaches (Blundell, Bond, & Windmeijer, 2001). The coefficient of the dependent variable in the OLS is considered as the upper-bound estimate, while the coefficient of the dependent variable in the fixed effects is considered the lower-bound estimate (Blundell et al., 2001). If the coefficient of the dependent variable obtained from the difference GMM is close to or less than the fixed effects estimate, then the system GMM is more appropriate as difference GMM estimate is downward biased due to poor instrumentation (Blundell et al., 2001). In this study two-step system GMM is used in all models as it is found to be more appropriate. Table 5.6 summarizes the results of pooled OLS, fixed effects, and difference GMM estimations, which led to the decision of using system GMM.

Table 5.6: Deciding between two-step difference and two-step system GMM

Baseline Model: The relationship between Control variables and firm performance.									
	Combined Sample			Developed Countries Sample			Developing Countries Sample		
Firm performance	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
L.performance (OLS)	.854	.302	.384	.851	.218	.97	.958	.759	.51
L.performance (Fixed)	.578	.006	.136	.576	-.028	.362	.625	.388	.277
L.performance (DGMM)	.701	.061	.152	.506	.035	.122	-.079	.56	.234
Decision	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM

Model 1: The relationship between ownership structure and firm performance.									
	Combined Sample			Developed Countries Sample			Developing Countries Sample		
Firm performance	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
L.performance (OLS)	.853	.298	.383	.85	.216	.36	.953	.745	.504
L.performance (Fixed)	.578	.006	.134	.576	-.028	.12	.62	.386	.276
L.performance (DGMM)	.701	.061	.114	.508	.022	.114	-.07	.559	.277
Decision	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM
Model 2: The impact of the level of investor protection on ownership structure-firm performance relationship.									
	Combined Sample			Developed Countries Sample			Developing Countries Sample		
Firm performance	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
L.performance (OLS)	.853	.981	.382	.85	.215	.36	.937	.721	.499
L.performance (Fixed)	.578	.295	.287	.576	-.028	.12	.599	.387	.274
L.performance (DGMM)	.502	.005	.227	.508	.138	.114	-.099	.595	.277
Decision	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM
Model 3: The impact of the degree of capitalism on ownership structure-firm performance relationship.									
	Combined Sample			Developed Countries Sample			Developing Countries Sample		
Firm performance	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
L.performance (OLS)	.853	.293	.381	.85	.215	.36	.952	.743	.663
L.performance (Fixed)	.577	.006	.134	.575	-.028	.119	.618	.383	.504
L.performance (DGMM)	.503	.061	.114	.509	.021	.114	-.066	.559	.275
Decision	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM

Model 4: The impact of industry average performance on ownership structure-firm performance relationship.

	Combined Sample			Developed Countries Sample			Developing Countries Sample		
Firm performance	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
L.performance (OLS)	.853	.298	.383	.85	.215	.36	.951	.743	.501
L.performance (Fixed)	.578	.006	.132	.576	-.028	.117	.62	.389	.272
L.performance (DGMM)	.502	.061	.113	.508	.022	.113	-.068	.558	.269
Decision	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM	SGMM

Arellano-Bond Serial Correlation Test and Hansen test statistics are used to verify the validity of GMM estimations. The AR (2) test null hypothesis that no serial correlation exists in the error terms at 5%. The AR (2) statistics obtained for all the study models are more than 0.05 which indicates that the null hypothesis is accepted meaning that there is no second-order autocorrelation, and the moment conditions are correctly specified (Arellano & Bond, 1991; Roodman, 2009). Hansen J- Statistics results shows that all P-values are more than 0.1 and less than 0.9. Therefore, the null hypothesis of the exogeneity of all instruments used in the study models is accepted which supports the choice of the study instruments (Hansen, 1982).

5.4.1. The relationship between the five ownership structure types and firm performance using GMM

Tables 5.7a,b,c present the results generated from the GMM test for the direct relationship between firm performance (measured by Tobin's Q, ROA, and ROE) and the five ownership structure types using the GMM for the combined sample, developed countries sample, and developing countries sample, respectively.

The findings illustrate that government ownership is negatively related with the market performance measure, TQ, in the combined sample. However, it is positively related with the market and financial performance measures, TQ and ROA for the developing countries sample. It is also found that government ownership has insignificant relationship with all three performance measures in developed countries sample. The results found in the developing countries sample go in line with several previous studies conducted in developing countries (Sun and Tong 2003; Tian and Estrin 2008; Phung and Mishra 2016; Eforis 2018; Kubo and Phan 2019). These findings illustrate that government ownership brings performance improvements in developing countries, while it has an insignificant impact on firm performance in developed ones.

Family ownership is found to have an insignificant relationship with firm performance in all three samples. This result indicates that when using an advanced analysis method, GMM, family ownership turned to have an insignificant impact on firm performance, rather than a positive relationship as suggested by OLS results. This result is consistent with some previous studies suggesting that family ownership does not have any impact on firm performance (Filatotchev, Lien et al. 2005; Sciascia and Mazzola 2008; Choi, Park et al. 2012).

A significant positive relationship is found between institutional ownership and firm performance in combined and developed countries samples, while a significant negative relationship is found in developing countries sample. This result is consistent with the OLS results in both combined and developed countries samples, implying that institutional ownership reduces the principle-agent problem resulting in better firm performance in developed countries as institutional investors have the incentives, resources, and abilities to hold an efficient monitoring role which results in better firm performance (Cornett et al.,

2007; Chen et al., 2008; Aghion, Van Reenen et al. 2013; Hawas & Tse, 2015; McCahery, Sautner et al. 2016; Al-Saeed, 2018; Fukuda et al., 2018; Wang & Shailer, 2018; Baghdadi, Bhatti et al. 2018; Panda and Bag 2019; Rahman, 2021). However, in developing countries, institutional investors may peruse their self-interest goals and exploit minority shareholders rights resulting in principle-principle agency problem which negatively impacts firm performance (Mura, 2007; Erkens et al., 2012).

Managerial ownership is found to have an insignificant relationship with all three measures of firm performance in all three samples. This result contradicts previous studies that recommends managerial ownership as an incentive alignment mechanism to solve the agency problem and improve firm performance (such as, Fama, 1980; Feldmann & Schwarzkopf, 2003; Chau & Leung, 2006; Lilienfeld-Toal & Ruenzi, 2014; Nakabayashi, 2019).

A significant positive relationship between employee ownership and firm market performance, TQ, is found in the developing countries sample. However, employee ownership is found to have an insignificant impact on all three measures of firm performance in both combined and developed countries samples. These results imply that employee ownership reduces the agency problem resulting in better firm market performance in developing countries which goes in line with many previous studies (Welbourne and Cyr 1999; Pugh et al., 2000; Jiang, Colakoglu et al. 2015; O'Boyle, Patel et al. 2016; Richter and Schrader 2017; Basterretxea and Storey 2018; Brown, McQuaid et al. 2019; Ren, Xiao et al. 2019). However, it is found that employee ownership does not have any impact on firm performance in developed countries. This result is consistent with Poulain-Rehm and Lepers (2013) who examined the relationship between employee ownership and firm value in France and found that employee ownership has no effect on value creation.

For control variables, the findings illustrate that there is an insignificant relationship between capital structure and the three measures of firm performance in all three samples. This result contradicts the OLS results that indicate a significant negative relationship between capital structure and firm performance in all the three samples. Leverage is found to have an insignificant relationship with firm performance in all three samples which is in line with the OLS results in the combined and developed countries samples, while it contradicts the OLS results in developing countries sample as a significant negative relationship was found between leverage and firm market performance measure, TQ. A significant positive relationship is found between firm growth and firm financial performance in all three samples which goes in line with the results found using OLS.

The relationship between liquidity and firm performance is found to be significantly positive in both combined and developing countries samples. However, an insignificant relationship between liquidity and firm performance is found in developed countries sample. This goes in line with the OLS results in both combined and developing countries samples, while it is different than the results found in developed countries sample when using OLS. Risk is found to be negatively related with firm performance, measured by TQ and ROA, in developing countries sample. For the combined and developed countries samples, it is found that risk has an insignificant relationship with all three measures of firm performance.

A significant positive relationship between innovative potential and firm market performance measure, TQ, is found in all three samples. The same significant positive relationship is also found when using OLS. The relationship between firm size and firm market performance measure, TQ, is found to be significantly negative in the combined and developed countries samples, which confirms the OLS results.

Table 5.7a: Model 1 (The relationship between ownership structure and firm performance) summary results in the Combined sample using GMM

Combined Sample						
Study Variables	TQ		ROA		ROE	
	Baseline analysis	Main relationship	Baseline analysis	Main relationship	Baseline analysis	Main relationship
L.performance	.952***	.956***	.366***	.373***	.687***	.727***
Government Ownership		-.155**		4.617		1.361
Family Ownership		.012		.507		2.516
Institutional Ownership		.18**		.825		.135
Managerial Ownership		-.028		-.69		1.509
Employee Ownership		.205		2.493		206.863
Capital structure	0.000*	0.000	0.000	0.000	-.023	.004
Leverage	-.001	0.000	.129***	.131	.044	.048
Firm growth	.001	.002	.225***	.223	.549***	.531***
Liquidity	-.01	-.003	.196***	.202	.272	.401*
Risk	-.012	-.018	-.233***	-.296	-.216	-.489
Innovative potential	.014***	.014***	.115***	.109	.105	.096
Firm size	-.04**	-.047***	.129*	.140	-.148	-.761
Constant	.52***	.507***	-.487**	-.793	-4.023	-2.964
AR2	0.263	0.261	0.826	0.837	0.278	0.226
J-test Hansen	0.247	0.458	0.368	0.363	0.545	0.507

*** p<.01, ** p<.05, * p<.1

Table 5.7b: Model 1 (The relationship between ownership structure and firm performance) summary results in the Developed countries sample using GMM

Developed countries sample						
Study Variables	TQ		ROA		ROE	
	Baseline analysis	Main relationship	Baseline analysis	Main relationship	Baseline analysis	Main relationship
L.performance	.953***	.952***	.97***	.613**	.845***	.72***
Government Ownership		-.099		-1.785		-.07
Family Ownership		-.084		1.128		2.448
Institutional Ownership		.357**		.742		3.467
Managerial Ownership		-.077		-1.362		-2.914
Employee Ownership		-.696		-2.823		1598.502
Capital structure	0.000	0.000	-.002	0.000	-.067	-.001
Leverage	0.000	0.000	.238	.222	.082	.051
Firm growth	.001	.001	.145	.206	.51***	.589***
Liquidity	-.029	-.031	.126	.152	.381	.392
Risk	.011	0.000	-.48	-.548	-.474	2.317
Innovative potential	.019***	.019***	.067	.088	.176	.123
Firm size	-.081**	-.106**	-.844	-.117	-.949	-.195
Constant	.824***	.916***	3.801	.617	3.577	-4.195
AR2	0.263	0.263	0.103	0.457	0.425	0.436
J-test Hansen	0.504	0.502	0.470	0.353	0.688	0.371

*** p<.01, ** p<.05, * p<.1

Table 5.7c: Model 1 (The relationship between ownership structure and firm performance) summary results in the Developing countries sample using GMM

Developing countries sample						
Study Variables	TQ		ROA		ROE	
	Baseline analysis	Main relationship	Baseline analysis	Main relationship	Baseline analysis	Main relationship
L.performance	.975***	.973***	.58***	.643***	.481**	.885***
Government Ownership		.146**		3.226*		6.034
Family Ownership		.236		2.549		1.145
Institutional Ownership		-.172***		1.008		1.523
Managerial Ownership		.118		.301		2.52
Employee Ownership		1.012**		11.739		392.271
Capital structure	0.000	0.000	-.001	-.001	-.007	.002
Leverage	-.054	-.056	-.987	-.81	-4.005	-5.98
Firm growth	.001	.001	.033	.032	.158	.115*
Liquidity	.006*	.005	.097**	.105*	-.028	-.095
Risk	-.047***	-.049***	-.386**	-.404*	-1.012	.411
Innovative potential	.007**	.006**	.071*	.040	.255	.007
Firm size	-.014*	-.012	-.251***	-.113	-.464	-.307
Constant	.18**	.201**	3.386**	1.428	3.916	-1.401
AR2	0.444	0.442	0.629	0.643	0.663	0.287
J-test Hansen	0.595	0.621	0.297	0.719	0.223	0.442

*** p<.01, ** p<.05, * p<.1

5.4.2. The moderating impact of the level of investor protection on the relationship between ownership structure and firm performance using GMM

Table 5.8 presents the GMM results on the impact of the level of investor protection on the relationship between ownership structure and firm performance.

The results show that the level of investor protection has a significant negative moderating impact on the nature of the relationship between government ownership and firm financial performance (ROA) in both developed and developing countries samples. These findings indicate that the lower the level of investor protection, the more significant the relationship between government ownership and firm performance in both developed and developing countries.

The relationship between family ownership and ROA is found to be positively moderated by the level of investor protection in all three samples. These results imply that the higher the level of investor protection in a country, the more significant the relationship between family ownership and firm financial performance.

The level of investor protection is found to have a significant positive moderating impact on the nature of the relationship between institutional ownership and firm performance in both combined and developed countries samples. However, it is found that the level of investor protection has an insignificant moderating impact on the nature of the relationship between institutional ownership and firm performance in developing countries sample. These results indicate that the higher the level of investor protection in a developed country, the more significant the relationship between institutional ownership and firm performance.

The GMM results indicates a significant negative moderating impact of the level of investor protection on the nature of the relationship between managerial ownership and firm performance, ROA, in all three samples. This finding suggests that the lower the level of investor protection in a country, the more significant the relationship between managerial ownership and firm performance.

The relationship between employee ownership and firm performance, ROA, is found to be negatively moderated by the level of investor protection in both combined and developed countries samples. However, it is found that the level of investor protection has a significant positive moderating impact on the nature of the relationship between employee ownership and firm performance, TQ & ROA, in the developing countries sample. These findings imply that the higher the level of investor protection, the more significant the relationship between employee ownership and firm performance in developing countries, while the less significant the relationship between employee ownership and firm performance in developed countries.

Table 5.8: Model 2 (The impact of the level of investor protection on ownership structure-firm performance relationship) summary results using GMM

	Combined Sample****			Developed Countries Sample****			Developing Countries Sample****		
	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
The level of Investor protection	.037	-2.645***	-.244	.049	-11.157***	.183	.161	-.093	-.674
Government ownership x investor protection	.087	-.153	-2.791	.017	-15.245***	-6.106	-.023	-.697**	-6.888
family ownership x investor protection	.057	3.672***	.194	.054	13.089***	.643	.669	1.787***	10.766
Institutional ownership x investor protection	.075	6.28***	.970	.057	23.332***	1.493	-.283	1.052	-5.534

managerial ownership x investor protection	.058	-3.337***	3.065	.043	-14.839***	3.576	-.047	-.761**	-12.188
Employee ownership x investor protection	.765*	-9.912**	-107.901	-.189	-32.681**	-58.038	1.457**	6.749*	-755.226
AR2	0.257	0.522	0.171	0.258	0.309	0.349	0.405	0.640	0.290
J-test Hansen	0.384	0.545	0.303	0.548	0.549	0.310	0.618	0.336	0.632

*** p<.01, ** p<.05, * p<.1 **** Control variables are included in the analysis.

5.4.3. The moderating impact of the degree of capitalism on the relationship between ownership structure and firm performance using GMM

Table 5.9 presents the GMM results on the impact of the degree of capitalism, measured by economic freedom, on the relationship between ownership structure and firm performance.

The results imply that the degree of capitalism negatively moderates the relationship between government ownership and firm performance in all three samples. These findings suggest that the lower the degree of capitalism in a country, the more significant the relationship between government ownership and firm performance.

The relationship between family ownership and firm performance is found to be negatively moderated by the degree of capitalism in all three samples, suggesting a more significant relationship between family ownership and firm performance in countries with lower degrees of capitalism.

It is found that the degree of capitalism positively moderates the relationship between institutional ownership and firm performance, when measured by TQ & ROE in the combined sample, and when measured by TQ & ROA in developed countries sample. These

findings indicate that the higher the degree of capitalism in a developed country, the more positive the relationship between institutional ownership and firm performance. However, a significant negative moderating impact of the degree of capitalism on the relationship between institutional ownership and firm performance, TQ & ROA, is found in developing countries sample, implying a more significant relationship between institutional ownership and firm performance in developing countries with low degrees of capitalism.

The relationship between managerial ownership and firm financial performance is found to be negatively moderated by the degree of capitalism in all three samples. When it comes to employee ownership-firm performance relationship, a significant negative moderating impact is found in the combined sample, while a significant positive moderating impact is found in developed and developing countries samples.

Table 5.9: Model 3 (The impact of the degree of capitalism on ownership structure-firm performance relationship) summary results using GMM

	Combined Sample****			Developed Countries Sample****			Developing Countries Sample****		
	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
The degree of capitalism	-.001	-.042	-.008	-.001	.099	-.041	.004	.093*	-.149
Government ownership x capitalism	-.006	-.546*	-.748**	-.008	-.166**	-.108	-.095**	-.861**	-.995
family ownership x capitalism	-.011**	-.134**	-.126	-.002	-.126	-.065*	-.007**	-.136*	-1.009
Institutional ownership x capitalism	.018***	.090	.282*	.02**	.383*	-.121	-.02*	-.224*	-.519
managerial ownership x capitalism	-.010	-.038*	.265	0.001	.118	-.974*	-.001	-.363*	-1.107
Employee ownership x capitalism	-.009*	1.54	8.319	-.027	1.694*	10.267**	.168**	.658	-.315

AR2	0.257	0.473	0.169	0.258	0.388	0.123	0.466	0.656	0.295
J-test Hansen	0.291	0.316	0.691	0.317	0.357	0.373	0.532	0.442	0.587

*** p<.01, ** p<.05, * p<.1 **** Control variables are included in the analysis.

5.4.4. The moderating impact of the industry average performance on the relationship between ownership structure and firm performance using GMM

Table 5.10 presents the GMM results on the impact of the industry average performance, measured by the industry average ROA, on the relationship between ownership structure and firm performance.

The results imply that the relationship between government ownership and firm performance is negatively moderated by the industry average ROA in all three samples. This result suggests that the lower the industry average performance, the more significant the relationship between government ownership and firm performance.

The industry average ROA is found to have a significant positive moderating impact on the relationship between family ownership and firm financial performance in all three samples. This indicates that the higher the industry average performance, the more significant the relationship between family ownership and firm financial performance. However, it is found that industry average ROA negatively moderates the relationship between family ownership and firm market performance, TQ, in developing countries sample.

In developing countries sample, it is found that the industry average ROA has a significant negative moderating impact on the relation between institutional ownership and firm performance, TQ and ROA. This finding suggests that the lower the industry average ROA in a developing country, the more significant the relationship between institutional ownership

and firm performance. However, the results indicate that the industry average performance has an insignificant impact on the nature of the relationship between Institutional ownership and firm performance in both combined and developed countries samples.

Managerial ownership-firm performance relationship is found to be negatively moderated by the industry average performance when using ROE as firm performance measure in the developing countries sample. This result suggests that the lower the industry average performance in a developing country, the more significant the relationship between managerial ownership and firm performance.

The industry average ROA is also found to have a significant negative moderating impact on employee ownership-firm market performance relationship in the developing countries sample, indicating a more significant relationship between employee ownership and firm market performance in industries with lower average performance.

Table 5.10: Model 4 (The impact of the industry average performance on ownership structure-firm performance relationship) summary results using GMM

	Combined Sample****			Developed Countries Sample****			Developing Countries Sample****		
	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
Industry average ROA	0.000	0.000	0.000	0.000	0.000	-.001	0.000*	.002***	.008***
Government ownership x industry average ROA	.009	-.171**	-.202**	-.001	-.003**	-.002	-.012*	-.123*	-.177
family ownership x industry average ROA	0.000	-.002	.037***	0.000	-.001	.04***	-.093*	.051***	.469
Institutional ownership x industry average	0.000	0.000	-.001	0.000	0.000	-.001	-.002*	-.009***	.006

ROA									
Managerial ownership x industry average ROA	0.000	0.000	-.002	0.000	0.000	-.003	.020	-.043	-.386***
Employee ownership x industry average ROA	-.017	.349	-1.402	-.006	-.021	-.831	-.033**	.415	2.731
AR2	0.257	0.517	0.209	0.258	0.292	0.424	0.360	0.662	0.293
J-test Hansen	0.240	0.286	0.693	0.253	0.342	0.261	0.599	0.738	0.384

*** p<.01, ** p<.05, * p<.1 **** Control variables are included in the analysis.

5.5. Discussion of GMM results

5.5.1. The relationship between government ownership and Firm performance

The results suggest that government ownership has a significant negative relationship with firm market performance in the combined sample, which is consistent with the results of many previous studies (e.g. Qi, Wu et al. 2000; Megginson & Netter, 2001; La Porta et al. 2002; Zeitun & Tian 2007; Gunasekarage, Hess et al. 2007; Shen and Lin 2009; Lin, Liu et al. 2009; Alipour 2013; Song, Wang et al. 2015). The negative impact of government ownership on firm market performance is justified by that governments as investors have non-financial goals that is inconsistent with economic goals related to improving firm performance (Qi, Wu et al. 2000; Megginson & Netter, 2001; Bruton, Peng et al. 2015; Musacchio, Lazzarini et al. 2015). This is in addition to poor selection of managers, Soft budget constraints, and weak monitoring (Kornai, Maskin et al. 2003; Kornai, Maskin et al. 2003; Estrin, Hanousek et al. 2009; Estrin, Meyer et al. 2016; Huang, Xie et al. 2017).

However, government ownership is found to have significant positive relationship with firm performance in the developing countries sample. This result goes in line with several previous studies conducted in developing countries (Sun and Tong 2003; Tian and Estrin 2008; Phung and Mishra 2016; Eforis 2018; Kubo and Phan 2019). These results suggest that government ownership can improve firm performance in developing countries due to the government's ability to reduce financial constraints and influence policies and regulations to the best interest of firms with government ownership (Okhmatovskiy, 2010; Chen et al., 2011; Haider, Liu, Wang, & Zhang, 2018; Kubo & Phan, 2019). Previous studies have also suggested that, in developing countries, firms with government ownership have more economic privileges such as implicit loan guarantees for favourable lending and tax reduction or exemption compared to other forms of ownership (Musacchio, Lazzarini et al. 2015; Zhou et al., 2017).

Moreover, it is found that the lower the level of investor protection in a developed country, the more negative the relationship between government ownership and firm performance. This result implies that in developed countries with low levels of investor protection, government ownership will have a more significant adverse impact on firm performance as the low levels of investor protection will encourage the government to pursue its political objectives rather than economic objective which result in misallocation of resources (Cheung et al., 2009; Jiang et al., 2015). In developed countries with low levels of investor protection, the power that government officials have as major actors in the political process leads them to emphasize maximizing their goals, such as power, votes, and prestige rather than taking efficient decisions that improve firm performance (Arocena & Oliveros, 2012; Huyghebaert & Wang, 2012; Nash, 2017).

When it comes to developing countries, it is found that the lower the level of investor protection in a developing country, the significant the positive relationship between government ownership and firm performance. This result implies that government ownership results in better firm performance in developing countries with lower levels of investor protection. These results are consistent with previous studies suggesting that in countries having low levels of investor protection, firms with government ownership receive favourable treatment and more advantages than private firms leading to better firm financial performance (Gunasekarage et al., 2007; Lin et al., 2009; Borisova et al., 2012; Inoue et al., 2013).

It is also found that the lower the degree of capitalism in a country, the more significant the relationship between government ownership and firm performance in all three samples. This result implies that government ownership has more significant relationship with firm performance in countries with lower degrees of capitalism. This can be explained by that in countries with low degrees of capitalism where government is the regulator, enforcer of law and owner of assets, government ownership will have higher abilities to influence policies and regulation which gives them a regulatory backing leading to a more significant impact of government ownership on firm performance (Liu, Saidi et al. 2014). For example, in developing countries with low degrees of capitalism, state-owned firms will receive more advantages in the form of lower financial constraints, favourable lending, and more access to information leading to a more significant positive impact of government ownership on firm performance (Okhmatovskiy, 2010; Chen et al., 2011; Haider et al., 2018; Gaio & Pinto, 2018; Kubo & Phan 2019).

The industry average ROA is found to have a significant negative moderating impact on the relationship between government ownership and firm performance in all three samples. This

result implies that the higher the industry average performance, the less significant the relationship between government ownership and firm performance. This result goes in line with the study hypothesis suggesting that in highly performing industries, the social and political goals of the government as an investor will contradict with the economic goals of such highly performing industries (Estrin et al., 2009; Okhmatovskiy 2010; Bruton, Peng et al. 2015; Musacchio, Lazzarini et al. 2015). Therefore, both types of agency problem will increase resulting in lower firm performance.

5.5.2. The relationship between Family ownership and Firm performance

The results suggest that family ownership does not significantly impact firm performance in all three samples. This result is consistent with some previous studies that examined the relationship between family ownership and firm performance and found that no relationship exists between these two variables (Filatotchev et al., 2005; Sciascia & Mazzola, 2008; Choi et al., 2012).

However, when examining the moderating impact of the level of investor protection, it is found that family ownership has a more significant impact on firm performance in countries with higher levels of investor protection. This result is consistent with some previous studies such as Isakov & Weisskopf (2014), Sakawa & Watanabel (2018), and Lepore et al. (2018) who suggested that in economies where the level of shareholders protection is high, family ownership has a more significant impact on firm performance. This can be explained by that, in countries with high levels of investor protection, family investors will hold an effective monitoring role that will reduce the principle-agent problem, and the high level of investor protection will protect minority shareholders rights from exploitation which reduces the principle-principle problem (Barclay & Holderness, 1989; Bebchuk, 1999; Burkart et al., 2003; Anderson et al., 2003; Boubakri, Cosset, & Guedhami, 2005; Sacristán Navarro et al.,

2011; Lepore, Paolone et al. 2018). However, in countries with low levels of investor protection, family ownership may result in principle-principle agency problem as family owners may work for their own interest and extract private benefits at the expense of minority shareholders which negatively impacts firm performance (Barclay & Holderness, 1989; Bebchuk, 1999; Boubakri et al., 2005; Isakov & Weisskopf 2014).

The degree of capitalism is also found to have a significant negative moderating impact on the relationship between family ownership and firm performance in all three samples. It means that the higher the degree of capitalism in a country, the less positive the relationship between family ownership and firm performance. This result can be explained by that in countries with high degrees of capitalism where the main aim of economic activities is generating profits and maximizing self-interest (Witt & Jackson, 2016), family ownership can result in exploitation of minority shareholders rights resulting in principle-principle agency problem and lower firm performance.

The industry average ROA is found to have a significant negative moderating impact on the relationship between family ownership and firm market performance in developing countries sample. However, it has a significant positive moderating impact on the relationship between family ownership and firm financial performance in all three samples. These results imply that the higher the industry average ROA, the more positive the relationship between family ownership and firm financial performance, while the less positive relationship between family ownership and firm market performance in developing countries. These findings indicates that the effective monitoring role of family ownership has a more significant impact on firm financial performance in industries with high average performance (Martínez, Stöhr et al. 2007; Allouche, Amann et al. 2008; Yoshikawa and Rasheed 2010; Ray, Mondal et al. 2018; Ciftci, Tatoglu et al. 2019).

5.5.3. The relationship between Institutional ownership and Firm performance

A significant positive relationship is found between institutional ownership and firm market performance in both the combined and developed countries samples, while a significant negative relationship is found in developing countries sample. This result implies that, in developed countries, institutional ownership helps in solving the principle-agent problem in the sense that institutional investors have the incentives, resources and abilities to effectively monitor, discipline and influence managers (Shleifer & Vishny, 1997; Del Guercio & Hawkins, 1999; Cornett et al., 2007; Chen et al., 2008; Hawas & Tse, 2015; Al-Saeed, 2018; Fukuda et al., 2018). Such effective monitoring role can mitigate agency conflicts and ensure good corporate governance practices and higher firm performance (Aggarwal et al., 2010; Martin et al., 2016; Connelly et al., 2018). This result is consistent with previous studies performed in developed countries such as (McConnell & Servaes, 1990; Cornett et al., 2007; Del Guercio & Hawkins, 1999; Chen, Blenman, & Chen, 2008; Hawas & Tse, 2016; Fukuda et al., 2018). However, in developing countries, the negative relationship found may be a result of an increase in the principle-principle problem that negatively impacts firm performance. Institutional investors may peruse their self-interest goals and exploit minority shareholders rights when there is conflict of interest between institutional investors and minority shareholders (Mura, 2007; Erkens et al., 2012). The conflicting results found between developed and developing countries sample is explained by that the developing countries sample has higher percentage of pressure-sensitive institutional investors, such as banks and insurance companies, compared with the developed countries sample. Previous studies suggested that pressure-sensitive institutional ownership negatively impacts firm performance as those investors usually have business relations with firms where they are investing, which may increase the principle-principle agency problem and reduce firm

performance (Cornett et al., 2007; Chen et al., 2007; Ferreira & Matos, 2008; Elyasiani & Jia, 2010; Guo & Platikanov, 2019).

The level of investor protection is found to have a significant positive moderating impact on the relationship between institutional ownership and firm performance (ROA) in both combined and developed countries samples. This result means that the higher the level of investor protection in a developed country, the more positive the relationship between institutional ownership and firm financial performance. These results are consistent with some previous studies conducted in developed counties such as Aggarwal et al. (2011) and Zhong et al. (2017) who found that institutional ownership has a more significant positive impact in countries with higher levels of investor protection. However, it is found that the level of investor protection has insignificant impact on the nature of the relationship between institutional ownership and firm performance in developing countries.

A significant positive moderating impact of the degree of capitalism on the relationship between institutional ownership and firm performance is found in both combined and developed countries samples. It means that the higher the degree of capitalism in a country, the more positive the relationship between institutional ownership and firm performance. When it comes to developing countries sample, it is found that the degree of capitalism has a significant negative moderating impact on the relationship between institutional ownership and firm performance. It means that the higher the degree of capitalism in a developing country, the less negative the relationship between institutional ownership and firm performance. This is consistent with our hypothesis that in countries with high degrees of capitalism where the goal of all economic activities is maximizing self-interest (Hall, 2018), institutional investors can hold an effective monitoring role as they have the abilities and incentives to effectively monitor managerial actions which mitigates the principle-agent

problem leading to improved firm performance (Florou & Conyon, 2002; Gillan & Starks, 2003; Michie & Lobao, 2012).

The industry average performance is found to have insignificant moderating impact on the relationship between institutional ownership and all three measures of firm performance in both combined and developed countries samples. This result implies that the nature of the relationship between institutional ownership and firm performance is not affected by the industry average performance in developed countries. However, the industry average ROA is found to have a significant negative moderating impact of on the relationship between institutional ownership and each of TQ and ROA. This result suggests that the higher the industry average performance, the less negative the relationship between institutional ownership and firm market performance, while the less positive the relationship between institutional ownership and firm financial performance.

5.5.4. The relationship between Managerial ownership and Firm performance

Managerial ownership is found to have insignificant relationship with all three measures of firm performance in all three samples. This result goes in line with Demsetz & Villalonga, (2001) who found that managerial ownership does not have any impact on firm performance.

The level of investor protection is found to have a significant negative moderating impact on the relationship between managerial ownership and firm financial performance, ROA, in all three samples. This result implies that the lower the level of investor protection, the more negative the relationship between managerial ownership and firm financial performance in both combined and developed countries samples, while the more positive the relationship between managerial ownership and firm financial performance in developing countries sample. This result can be explained by that in developing countries with low levels of

investor protection, managerial ownership can substitute poor investor protection which reduces the agency problem and improves firm performance (Nakabayashi, 2019). When it comes to developed countries with low levels of investor protection, the results found suggest that managerial ownership increases the principle-principle agency problem which negatively impacts firm performance. Managerial ownership reduces the impact of external market mechanisms such as the managerial labour market and the market for corporate control which makes managers more powerful to secure their position and protect themselves against takeovers (Morck et al., 1988; Denis, Denis, & Sarin, 1997; Lins, 2003; Hu et al., 2010; Kim & Lu, 2011). Moreover, the low levels of investor protection can encourage managers to pursue their own interests and therefore reduce firm performance.

The degree of capitalism is found to have a significant negative moderating impact on the relationship between managerial ownership and firm financial performance in all three samples. This suggests that the lower the degree of capitalism, the more negative the relationship between managerial ownership and firm financial performance in a developed country, while the more positive the relationship between managerial ownership and firm financial performance in a developing country. The results found in developed countries can be explained by managerial entrenchment hypothesis as in countries with low degrees of capitalism, managerial ownership will increase managers power to secure their position and avoid outside checks (Demsetz, 1983; Fama & Jensen, 1983). Therefore, they will work for their self-interest resulting in lower firm performance (Morck et al., 1988; Lins, 2003; Hu et al., 2010; Kim & Lu, 2011). However, the results found in developing countries sample can be explained by the convergence-of-interest hypothesis as there is high level of government intervention in countries with low degrees of capitalism (Hall, 2018). Managerial ownership will help in solving the principle-agent problem and high government intervention will help in solving the principle-principle problem which results in better firm performance.

The industry average ROA is found to have insignificant or no moderating impact on the nature of the relationship between managerial ownership and firm performance in both combined and developed countries samples. In the developing countries sample, it is found that the industry average ROA has a significant negative moderating impact on the relationship between managerial ownership and firm financial performance (ROE). It means that the lower the industry average performance in a developing country, the more positive the relationship between managerial ownership and firm financial performance. This result can be explained by that industries with low average performance encourages managers to extract private benefits and to exploit shareholders rights which increases agency problem leading to lower firm performance. Therefore, managerial ownership can help in solving such principle-agent problem as when managers become co-owners in the firm, they become more motivated to improve firm performance (Jensen & Meckling, 1976; Desender et al., 2013).

5.5.5. The relationship between Employee ownership and Firm performance

The relationship between employee ownership and firm market performance, TQ, is found to be significantly positive in the developing countries sample, and insignificant in the developed countries sample. These results suggest that employee ownership brings performance improvements in developing countries, while it has an insignificant impact in developed countries. The insignificant relationship found between employee ownership and firm performance in the developed countries sample is consistent with some previous studies that examined the relationship between employee ownership and firm performance in developed countries and found that no or insignificant relationship exists (Guedri & Hollandts, 2008; Poulain-Rehm & Lepers, 2013; Whitfield et al., 2017). The results found in developing countries sample is consistent with many previous studies suggesting that

employee ownership improves firm performance (Welbourne & Cyr, 1999; Jiang et al., 2015; O'Boyle et al., 2016; Richter & Schrader, 2017; Basterretxea & Storey, 2018; Brown et al., 2019; Ren et al., 2019). An explanation for such positive relationship is that employee ownership can be considered as an important incentive alignment mechanism that solves the agency problem between employees and shareholders (Oyer, 2004).

The level of investor protection is found to have a significant positive moderating impact on the nature of the relationship between employee ownership and firm performance (TQ and ROA) in the developing countries samples. However, the relationship between employee ownership and firm financial performance (ROA) is found to be negatively moderated by the level of investor protection in both combined and developed countries samples. These results suggest that the higher the level of investor protection, the less negative the relationship between employee ownership and firm performance in a developed country, and the more positive the relationship between employee ownership and firm performance in a developing country. The results found can be explained by the reduction in both agency problem types. On one hand, employee ownership will motivate employees to align their behaviour, motives, and actions with those of shareholders which reduces the principle-agent problem (Blasi et al., 2016; Kurtulus & Kruse, 2018; Brown et al., 2019; Kim & Patel, 2021). Simultaneously, the high levels of investor protection will reduce the principle-principle problem resulting in higher firm performance.

The degree of capitalism is found to have a significant negative moderating impact on the relationship between employee ownership and firm market performance in the combined sample. This result suggests that the higher the degree of capitalism in a country, the less positive the relationship between employee ownership and firm market performance. However, it is found that the degree of capitalism has a significant positive moderating

impact on the relationship between employee ownership and firm financial performance in the developed countries sample, meaning that the higher the degree of capitalism in a developed country, the more negative the relationship between employee ownership and firm financial performance. This result suggests that in countries with high degrees of capitalism where maximizing self-interest is the main purpose of all economic activities (Michie & Lobao, 2012), employee ownership will increase the principle-principle agency problem leading to lower firm performance (Moyer et al., 1989; Ledford Jr, 2014; Whitfield et al., 2017). In developing countries, the nature of the relationship between employee ownership and firm market performance is found to be positively moderated by the degree of capitalism in the country. This result suggests that the higher the degree of capitalism in a developing country, the more positive the relationship between employee ownership and firm market performance. This result goes in line with our hypothesis as in countries with high degrees of capitalism where maximizing self-interest is the main purpose of all economic activities (Michie & Lobao, 2012), the agency problem is expected to arise between employees and shareholders because of conflict of interests. Therefore, employee ownership can help in reducing the agency problem and improving firm performance (Moyer et al., 1989; Ledford Jr, 2014; Whitfield et al., 2017).

The industry average ROA is found to have a significant negative moderating impact on the relationship between employee ownership and firm market performance in developing countries sample. However, the industry average ROA is found to have an insignificant moderating impact on the nature of the relationship between employee ownership and firm performance in developed countries sample. This result implies that, in developing countries, the lower the industry average ROA, the more positive the relationship between employee ownership and firm market performance. However, in developed countries, the nature of the relationship between employee ownership and firm performance is not affected by the

industry average performance. This result is consistent with Makino et al. (2004) who suggested that industry effects are more significant in developing countries than developed ones.

5.6. Hypothesis testing results

This section summarizes the results of testing the study hypotheses. The hypothesis is considered as partially supported if it is confirmed by any of the three firm performance measures. The hypothesis is considered as not supported when it is not confirmed by any of the three firm performance measures.

Table 5.11: Summary of hypotheses testing

No	Hypothesis	Combined sample	Developed Countries Sample	Developing Countries Sample
H1	There is a significant positive relationship between family ownership and firm performance.	Not Supported	Not Supported	Not Supported
H1a	The level of investor protection has a significant positive moderating impact on the relationship between family ownership and firm performance.	Partially Supported	Partially Supported	Partially Supported
H1b	The degree of capitalism has a significant negative moderating impact on the relationship between family ownership and firm performance.	Partially Supported	Partially supported	Partially supported
H1c	The industry average performance has a significant negative moderating impact on the relationship between family ownership and firm performance.	Partially supported	Partially supported	Partially supported
H2	There is a significant negative relationship between government ownership and firm performance.	Partially supported	Not Supported	Not Supported

H2a	The level of investor protection has a significant negative moderating impact on the relationship between government ownership and firm performance.	Not Supported	Partially supported	Partially Supported
H2b	The degree of capitalism has a significant negative moderating impact on the relationship between government ownership and firm performance.	Partially Supported	Partially Supported	Partially Supported
H2c	The industry average performance has a significant negative moderating impact on the relationship between government ownership and firm performance.	Partially Supported	Partially supported	Partially Supported
H3	There is a significant positive relationship between institutional ownership and firm performance.	Partially Supported	Partially Supported	Not Supported
H3a	The level of investor protection has a significant positive moderating impact on the relationship between institutional ownership and firm performance.	Partially Supported	Partially Supported	Not Supported
H3b	The degree of capitalism has a significant positive moderating impact on the relationship between institutional ownership and firm performance.	Partially Supported	Partially Supported	Not Supported
H3c	The level of industry average performance has a significant positive moderating impact on the relationship between institutional ownership and firm performance.	Not Supported	Not Supported	Not Supported
H4	There is a significant positive relationship between managerial ownership and firm performance.	Not Supported	Not Supported	Not Supported
H4a	The level of investor protection has a significant positive moderating impact on the relationship between managerial ownership and firm performance.	Not Supported	Not Supported	Not Supported

H4b	The degree of capitalism has a significant negative moderating impact on the relationship between managerial ownership and firm performance.	Partially Supported	Partially Supported	Partially Supported
H4c	The industry average performance has a significant Positive moderating impact on the relationship between managerial ownership and firm performance.	Not Supported	Not Supported	Not Supported
H5	There is a significant positive relationship between employee ownership and firm performance.	Not Supported	Not Supported	Partially Supported
H5a	The level of investor protection has significant positive moderating impact on the relationship between employee ownership and firm performance.	Partially Supported	Not Supported	Partially Supported
H5b	The degree of capitalism has a significant positive moderating impact on the relationship between employee ownership and firm performance.	Not Supported	Partially Supported	Partially Supported
H5c	The industry average performance has a significant positive moderating impact on the relationship between employee ownership and firm performance.	Not Supported	Not Supported	Not Supported

5.7. Conclusion

This chapter presented the results and discussion of examining the relationship between five main ownership structure types and firm performance, in addition to the moderating impacts of the level of investor protection, degree of capitalism and industry average performance on the nature of the relationship between the five ownership structure types and firm performance.

The GMM findings of the study analysis suggest that in developed countries, institutional ownership is the only ownership type that has a significant direct relationship with firm performance. When examining the moderating impact of the level of investor protection, it is found that in developed countries with high levels of investor protection, both family and institutional ownership have more significant positive impacts on firm performance, and government, managerial, and employee ownership have less significant negative impacts on firm performance. These results are due to the reduction in principle-principle agency problem in countries with high investor protection levels. It is also found that in developed countries with high degrees of capitalism, institutional ownership has a more significant positive impact on firm performance, while employee ownership has a more significant negative impact on firm performance. In developed countries with low degrees of capitalism, family ownership is found to have more significant positive impact on firm performance, while both government and managerial ownership are found to have more significant negative impacts on firm performance. In highly performing industries, family ownership is found to have a more significant positive impact on firm performance, while government ownership is found to have a less significant negative impact on firm performance.

In the developing countries sample, both government and employee ownership are found to have significant positive impacts on firm performance, while institutional ownership is found to have a significant negative impact on firm performance. The lower the investor protection level in a developing country, the more positive the relationship between each of government and managerial ownership and firm performance. This result indicates that both government and managerial ownership can substitute low investor protection levels in developing countries resulting in a reduction of the agency problem and improved firm performance. It is also found that the higher the level of investor protection in a developing country, the more positive the relationship between each of family and employee ownership, and firm

performance. The study results suggest that the lower the degree of capitalism in a developing country, the more significant the positive relationship between each of government, family, and managerial ownership and firm performance, while the more significant the negative relationship between institutional ownership and firm performance. It is also found that the lower the industry average performance, the more significant the relationship between each of government, institutional, managerial and employee ownership and firm performance.

Chapter Six

Concluding Remarks

6.1. Introduction

This chapter presents the study conclusions and recommendations. It starts with summarizing research objectives, research philosophy and methodology. Then, a summary of the study empirical results is presented. The next section includes the study implications, followed by the study contributions. The last section provides the study limitations and avenues for future research.

6.2. Summary of research objectives

This study aims to examine the extent to which the nature of the relationship between different ownership structures and firm performance is affected by the level of investor protection, degree of capitalism and industry average performance building on agency theory, using a multi-country sample. The thesis primarily examines the relationship between five different ownership types and firm performance. The five ownership types examined are government, family, institutional, managerial, and employee ownership. Firm performance is measured using two firm financial performance measures, ROA and ROE, and one firm market performance measure, TQ. Then, the thesis examines the extent to which the relationship between the five ownership types and firm performance is affected by the level of investor protection, the degree of capitalism, and the industry average performance.

6.3. Summary of research philosophy and methodology

This study adopts objectivist ontological approach, positivist epistemological approach, deductive approach and functionalism paradigm as the study focuses on the structural and formal aspects of the firm. Moreover, the relationship between ownership structure and firm performance is observed independently from the researcher. The researcher deduces hypotheses based on agency theory and then these hypotheses are empirically investigated for validation or rejection (Bryman & Bell, 2015). The study uses quantitative data collected from firms' ownership history reports and financial statements.

The research design adopted in this study is panel design in which data from 20 countries are collected over the period from 2011-2020. Three samples are used for the empirical analysis. The combined sample consists of 1511 companies from 20 countries. The developed countries sample consists of 1083 companies from 15 developed countries. The developing countries sample consists of 428 companies from 5 developing countries. The archival research method is used in data collection in which secondary data are gathered. Ownership data are collected from ownership history reports of companies in the sample. Data for level of investor protection and degree of capitalism are collected from the World Bank official website. Ownership data and financial data are collected using DataStream database.

The models used in this study are linear regression models, and STATA is used to run the regression. Dynamic GMM is used to test the study hypotheses.

6.4. Summary of empirical results

The study results can be divided into the direct relationship between the five ownership types and firm performance, the impact of the level of investor protection on the relationship between ownership structure and firm performance, the impact of the degree of capitalism on

the relationship between ownership structure and firm performance, and the impact of the industry average performance on the relationship between ownership structure and firm performance.

For the developed countries sample, the GMM results reveal that institutional ownership is the only ownership type that has a significant positive relationship with firm performance, while the other four ownership types are found to have insignificant relationships with firm performance. For developing countries, it is found that only government and employee ownership have significant positive relationships with firm performance, while insignificant relationship is found between each of family and managerial ownership and firm performance. Institutional ownership is found to have a significant negative relationship with firm performance.

The higher the level of investor protection in a developed country, the more significant the relationship between each of family and institutional ownership, and firm performance. The lower the level of investor protection in a developed country, the more significant the relationship between each of government, managerial and employee ownership, and firm performance. Regarding developing countries, the results show that the higher the level of investor protection in a developing country, the more significant the relationship between each of family and employee ownership, and firm performance, while the less significant the relationship between each of government and managerial ownership, and firm performance.

The study results reveal that the higher the degree of capitalism in a developed country, the more significant the relationship between each of institutional and employee ownership, and firm performance. The lower the degree of capitalism in a developed country, the more significant the relationship between each of government, family, and managerial ownership, and firm performance. For developing countries, it is found that the higher the degree of

capitalism in a developing country, the less significant the relationship between each of government, family and institutional ownership, and firm performance, while the more significant the relationship between employee ownership and firm performance.

In the developed countries sample, the industry average performance is found to have a significant negative moderating impact on the relationship between government ownership and firm performance, while it has a significant positive moderating impact on the relationship between family ownership and firm performance. Regarding developing countries, the lower the industry average ROA, the more significant the relationship between each of government, institutional, managerial and employee ownership, and firm performance. It is also found that the higher the industry average ROA, the more significant the relationship between family ownership and firm financial performance, while the less significant the relationship between family ownership and firm market performance.

6.5. Thesis Implications

There are several implications that can be highlighted based on the study results. This thesis suggests that the relationship between ownership structure and firm performance differs according to ownership structure type, firm performance measure, country development stage (developed vs. developing), the level of investor protection in a country, the degree of capitalism in a country, and the industry average performance.

The study results show that, in developed countries, government ownership has insignificant negative relationship with firm performance. This result justifies that government ownership is the least common ownership type in the developed countries sample with only 9% of companies in the developed countries sample are having government ownership. Regarding

developing countries, the results show that government ownership has a significant positive relationship with firm performance. This can explain the higher percentage of companies (24%) in the developing countries sample with government ownership. In developing countries, the positive relationship between government ownership and firm performance is more significant in countries with low levels of investor protection or low degrees of capitalism, and in industries with low average performance. Therefore, the study suggests that government ownership can be considered as an efficient internal corporate governance mechanism that reduces the agency problem and improves firm performance in developing countries, especially in countries with low levels of investor protection or low degrees of capitalism, and in industries with low average performance. This result goes in line with many previous studies suggesting that government ownership brings performance improvements in developing countries (Sun and Tong 2003; Tian and Estrin 2008; Phung and Mishra 2016; Eforis 2018; Kubo and Phan 2019).

The study results show that family ownership has insignificant positive relationship with firm performance in both developed and developing countries. However, when examining the moderating impacts of investor protection level, capitalism degree, and industry average performance, it is found that family ownership has more significant positive relationship with firm performance in countries with higher levels of investor protection or lower degrees of capitalism, and in industries with higher average performance. Therefore, the study suggests that family ownership should be considered as an internal corporate governance mechanism in countries with higher levels of investor protection or low degrees of capitalism, and in industries with high average performance. This is consistent with some previous studies that suggest that family ownership has a more significant positive impact in countries with high levels of investor protection (Isakov & Weisskopf 2014; Sakawa & Watanabel 2018; and Lepore et al. 2018).

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The results show that institutional ownership has a significant positive relationship with firm performance in developed countries. The significance of this positive relationship increases in developed countries with higher levels of investor protection or higher degrees of capitalism. In developing countries, institutional ownership has a significant negative relationship with firm performance. The significance of such negative relationship increases in developing countries with lower degrees capitalism and in industries with lower average performance. Therefore, the study suggests that institutional ownership can be considered as an efficient monitoring mechanism that can reduce the principle-agent agency problem in developed countries, especially in developed countries with high levels of investor protection or high degrees of capitalism, which is consistent with previous studies performed in developed countries such as (McConnell & Servaes, 1990; Cornett et al., 2007; Del Guercio & Hawkins, 1999; Chen, Blenman, & Chen, 2008; Hawas & Tse, 2016; Fukuda et al., 2018). However, institutional ownership should not be considered as a monitoring mechanism in developing countries as it increases the principle-principle agency problem, especially in developing countries with low degrees capitalism and in industries with low average performance.

Managerial ownership has insignificant negative relationship with firm performance in developed countries. This negative relationship is more significant in developed countries with lower levels of investor protection or lower degrees of capitalism. The relationship between managerial ownership and firm performance is insignificantly positive in developing countries, the significance of such relationship increases in developing countries with lower levels of investor protection or lower degrees of capitalism. Therefore, the study implies that managerial ownership can be considered as an incentive alignment mechanism in developing countries with lower levels of investor protection or lower degrees of capitalism. This goes in line with Nakabayashi (2019) suggesting that managerial ownership can substitute poor

investor protection leading to higher firm performance in developing countries with low levels of investor protection.

The relationship between employee ownership and firm performance is found to be insignificant in developed countries. The significance of such relationship increases in developed countries with lower levels of investor protection or higher degrees of capitalism. In developing countries, the relationship between employee ownership and firm performance is significantly positive. The significance of this relationship increases in developing countries with higher levels of investor protection or higher degrees of capitalism, and in industries with lower average performance. Therefore, the study suggests that employee ownership can be considered as an incentive alignment mechanism that solves the principle-agent agency problem in developing countries, especially those countries with higher levels of investor protection or higher degrees of capitalism, and in industries with lower average performance. This result goes in line with several previous studies that found a positive impact of employee ownership on firm performance, such as (Welbourne & Cyr, 1999; Jiang et al., 2015; O'Boyle et al., 2016; Richter & Schrader, 2017; Basterretxea & Storey, 2018; Brown et al., 2019; Ren et al., 2019).

To sum up, the findings of this study implies that institutional ownership should be considered as an effective internal corporate governance mechanism in developed countries, especially in developed countries with higher levels of investor protection or higher degrees of capitalism. Family ownership can reduce the agency problem in both developed and developing countries with higher levels of investor protection or lower degrees of capitalism, and in industries with higher average performance. Government and employee ownership are effective internal corporate governance mechanisms in developing countries, especially in industries with lower average performance. Government ownership is more significant in

developing countries with lower levels of investor protection or lower degrees of capitalism, while employee ownership is more significant in developing countries with higher levels of investor protection or higher degrees of capitalism. Managerial ownership is effective incentive alignment mechanism in developing countries with lower levels of investor protection or lower degrees of capitalism, or in industries with lower average performance.

6.6. Research contribution

6.6.1. Contributions to theory

This study extends the boundaries of the agency theory by examining the role of different ownership structure types, as internal corporate governance mechanisms, in solving the agency problem and improving firm performance. This study suggests that the impacts of different ownership structure types vary according to the different settings in which the firm operates. For example, previous studies in agency theory literature suggest that managerial ownership is generally considered as an incentive alignment mechanism that reduces the conflict of interest between shareholders and managers, which solves the agency problem and improves firm performance (Jensen & Meckling, 1976; Fama, 1980; Fan & Wong, 2002; Feldmann & Schwarzkopf, 2003; Chau & Leung, 2006; Donnelly & Mulcahy, 2008; Desender et al., 2013; Lilienfeld-Toal & Ruenzi, 2014; Cheng et al. 2019). However, the thesis results imply that managerial ownership can be used as incentive alignment mechanism only in specific settings. The study found that managerial ownership can solve the agency problem and improve firm performance in developing countries with lower levels of investor protection or lower degrees of capitalism or in industries with lower average performance, otherwise managerial ownership increases the principle-principle agency problem leading to lower firm performance.

Similarly, many studies built on agency theory suggests institutional ownership as an effective monitoring mechanism that solves the agency problem (Pukthuanthong et al., 2017; Baghdadi et al., 2018; Buchanan et al., 2018; Rahman, 2021). However, the study results suggest that institutional ownership reduces the agency conflict and improves firm performance in developed countries only, especially those countries with higher levels of investor protection or higher degrees of capitalism, while, in developing countries, institutional ownership is found to increase the principle-principle agency problem which negatively impacts firm performance.

Therefore, this study adds to the agency theory and existing literature by explaining the inconclusive results in the literature on the relationship between different ownership types and firm performance as suggested by Boyd & Solarino (2016), Federo et al. (2020), and Solarino & Boyd (2020), through considering the impact of three moderating variables, the level of investor protection, degree of capitalism and industry average performance, and by using three samples, a combined sample of 20 countries from both developed and developing countries, a developed countries sample, and a developing countries sample.

6.6.2. Contributions to practice

This study contributes to practice in many ways. Firstly, it helps firms' boards of directors and top management in understanding the impact of different types of shareholders on firm performance, and in finding the right owners for the firm. The study results suggest that modifying the ownership structure of a firm can reduce the agency problem and bring performance improvements. For example, the study recommends that firms operating in developing countries with low levels of investor protection or low degrees of capitalism should work to attract government ownership as it positively impacts firm performance, which goes in line with previous studies such as (Sun and Tong 2003; Tian and Estrin 2008;

Phung and Mishra 2016; Eforis 2018; Kubo and Phan 2019). However, firms operating in developed countries with high levels of investor protection or high degrees of capitalism should work to attract institutional investors, which is consistent with many researchers (e.g., McConnell & Servaes, 1990; Cornett et al., 2007; Del Guercio & Hawkins, 1999; Chen, Blenman, & Chen, 2008; Hawas & Tse, 2016; Fukuda et al., 2018). The study also recommends for firms operating in developing countries to include employee ownership in the ownership structure of the firm, the same result is suggested by Jiang et al. (2015) and Ren et al. (2019), especially in developing countries with high levels of investor protection or high degrees of capitalism, and in industries with low average performance.

The study also helps investors in taking efficient investment decisions that maximize their own wealth. For example, the study results show that institutional ownership is positively related with firm performance in developed countries, so institutional investors are more recommended to invest in firms operating in developed countries than developing ones (consistent with, McConnell & Servaes, 1990; Cornett et al., 2007; Del Guercio & Hawkins, 1999; Chen, Blenman, & Chen, 2008; Hawas & Tse, 2016; Fukuda et al., 2018). The study also suggests that government, as an investor, should invest in firms when the developing country is having low levels of investor protection or low degrees of capitalism, as it is found that government ownership can substitute poor investor protection which positively impact firm performance in countries with such settings (goes in line with, Gunasekarage et al., 2007; Lin et al., 2009; Borisova et al., 2012; Inoue et al., 2013).

The study results benefit policy makers as it reveals which types of ownership structure are more significant in solving the agency problem and improving firm performance depending on the different settings in which the firm operates, which can help policy makers in producing laws and regulations that help improving the quality of corporate governance mechanisms in both developed and developing countries.

6.6.3 Contributions to methodology

This study contributes to methodology through considering the endogenous relationship between ownership structure and firm performance (Lemmon & Lins, 2003). It is suggested by previous studies that the inconclusive results found in corporate governance literature are a result of the endogeneity problem in the relationship between ownership structure and firm performance (Demsetz & Villalonga, 2001; Lemmon & Lins, 2003; Farooque et al., 2007; Schultz et al., 2010; Bhagat & Bolton, 2019). Therefore, this thesis addressed the endogeneity issue by using the dynamic generalized method of moments (GMM) as suggested by previous studies in the literature (Saleh, 2012; Farooque et al., 2019).

The results of the GMM revealed that some ownership types, that are widely considered in the corporate governance literature as effective internal mechanisms, have insignificant impact on firm performance. For example, managerial ownership is considered in the corporate governance literature as an effective incentive alignment mechanism that reduces the principle-agent problem and improves firm performance (Jensen & Meckling, 1976; Desender et al., 2013; Lilienfeld-Toal & Ruenzi, 2014; Cheng et al. 2019). However, when using the more advanced statistical technique, the GMM, it is found that managerial ownership has insignificant direct impact on firm performance in both developed and developing countries as opposed to many studies in the literature. Our study results go in line with Demsetz and Villalonga (2001) that considered the endogenous nature of the relationship between ownership structure and firm performance and confirmed that an insignificant relationship exists between managerial ownership and firm performance. The GMM results suggest that managerial ownership can positively impact firm performance only in developing countries with lower levels of investor protection or lower degrees of capitalism or in industries with lower average performance.

The existing literature on family ownership suggests that family ownership has a positive impact on firm performance as families have greater incentives to hold an effective monitoring role that solves the free-rider problem leading to better firm performance (Demsetz & Lehn, 1985; Shleifer & Vishny, 1986; Anderson & Reeb, 2003; Isakov & Weisskopf, 2014; Ray et al., 2018; Ciftci et al., 2019). However, when using the GMM, it is found that family ownership has insignificant impact on firm performance. This result goes in line with some other studies which found that family ownership has insignificant or no impact on firm performance (Filatotchev et al., 2005; Sciascia & Mazzola, 2008; Choi et al., 2012). The GMM results implied that Family ownership can have a significant impact on firm performance in countries with high levels of investor protection or low degrees of capitalism, otherwise family ownership has an insignificant impact.

Therefore, this study contributes to methodology by confirming that the endogeneity issue in the relationship between ownership structure and firm performance should be addressed by future studies. Omitting such problem will result in inconsistent and biased estimates of parameters that adversely impacts reliability of results (Farooque et al., 2019).

6.7. Research limitations and avenues for future research

This thesis has some limitations that should be highlighted, which can also suggest opportunities for future research.

First, this study excluded financial firms from the sample as the nature of financial firms' financial statements differ from non-financial ones. Financial firms use different reporting standards in preparing their financial statements. Therefore, the study results cannot be generalized to financial firms.

Second, the study data is collected for the period of 10 years, from 2011 to 2020. The coronavirus that was declared as a pandemic in March 2020 may have an influence on the study results. However, the impact of the pandemic is limited as the outliers found in the study data have been winsorized. Moreover, the researcher did not notice significant changes in data between 2019 and 2020. Future studies might consider in-depth examination of the impact of the covid pandemic on the nature of the relationship between ownership structure and firm performance using more extended sample that includes several years after the pandemic. This can provide better understanding on the impact of coronavirus pandemic on ownership structure-firm performance relationship.

Third, this study examines the impact of five ownership types, namely government ownership, family ownership, institutional ownership, managerial ownership, and employee ownership. There are other ownership types which are not considered in this study and can be considered by future studies, such as foreign ownership. Foreign ownership is not included in this study as there will be some overlaps between foreign ownership and some of the ownership types included in the study such as family ownership and institutional ownership.

Fourth, this study deals with each type of the five ownership types as a homogeneous group. However, there are some differences that exist within each ownership type. Each ownership type can be divided to subtypes that might have different impacts on firm performance. For example, it will be interesting for future studies to categorize institutional investors, and to examine the impact of these subcategories on firm performance.

Fifth, this study uses a sample of 1511 firms from 20 countries, 5 of them are developing countries. Although the study sample is relatively large compared with other empirical studies in the literature. It will be interesting for future studies to use a sample of more

countries, especially more developing ones, and to increase the number of firms in each country. This study was unable to further increase the sample due to time constraints.

Sixth, the impacts of three moderating variables, namely, the level of investor protection, degree of capitalism, and industry average performance, on the relationship between ownership structure and firm performance are examined in this study. The thesis recommends examining the impact of other moderating variables such as the legal environment, economic factors, corruption level, and the degree of competition in the industry.

Seventh, the study sample includes listed firms with the highest market capitalization in each country. A comparative study can be performed between firms with high market capitalization and firms low market capitalization, to provide better understanding of the extent to which the relationship between ownership structure and firm performance differs according to firm market capitalization. Moreover, a comparative study between listed and unlisted firms can also be valuable in examining the extent to which the over-regulation of listed firms vs. the under-regulation of unlisted firms affects the nature of the relationship between ownership structure and firm performance.

Eighth, the study uses a sample of 1511 firms from 20 different countries. It is important to acknowledge that there are some differences in the standards used to report some ownership and financial data across countries. Therefore, future studies using a multi-country sample should consider differences in the way data is reported across countries.

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Appendix 1: Ordinary least square (OLS) regression

This section presents and discusses the results of the OLS test to examine to extent to which the relationship between ownership structure and firm performance is affected by ownership type, level of investor protection, degree of capitalism, and industry average performance.

Appendix 1.1 The relationship between the five ownership structure types and firm performance using OLS

Tables 1a,b,&c present the results generated from the combined sample, developed countries sample, and developing countries sample, respectively, to test the relationship between the five ownership structure types and firm performance (measured by Tobin's Q, ROA, and ROE) using the OLS. The tables also present the results generated from the OLS test for the relationship between the control variables and firm performance.

When measuring firm performance with Tobin's Q, the adjusted R^2 is 20.8% for the combined sample, 23.6% for the developed countries sample, and 15.8% for developing countries sample. When using ROA as the firm performance measure, the adjusted R^2 is 49.9%, 57.3%, and 17.3% for combined sample, developed countries sample, and developing countries sample, respectively. When ROE is used as a measure of firm performance, adjusted R^2 is 27.9%, 32.1%, and 5.4% for combined sample, developed countries sample, and developing countries sample, respectively.

The results report a significant positive relation between government ownership and the financial measures of firm performance (ROA and ROE) at significance level of 0.01 in the combined sample. Government ownership is also found to be positively related with all three measures of firm performance in the developing countries sample. This result goes in line with several previous studies conducted in developing countries (Sun and Tong 2003; Tian

and Estrin 2008; Phung and Mishra 2016; Eforis 2018; Kubo and Phan 2019). The positive impact of government ownership on firm performance found in developing countries can be explained by the superior ability of governments in developing countries to obtain insider information and to influence policies and regulations (Kubo and Phan 2019). Moreover, previous studies suggested that government owned firms receive more advantages than private firms. Firms with government ownership face less financial constraints (Okhmatovskiy, 2010; Chen et al., 2011; Haider, Liu, Wang, & Zhang, 2018), in addition to their ability to access to more information (Okhmatovskiy, 2010; Gaio & Pinto, 2018; Kubo & Phan, 2019).

A negative relationship is found between government ownership and firm market performance measure (Tobin's Q) at significance level of 0.01 in the developed countries sample. This result goes in line with the study hypothesis and many previous studies (e.g. Qi, Wu et al. 2000; Megginson & Netter, 2001; La Porta et al. 2002; Zeitun & Tian 2007; Gunasekarage, Hess et al. 2007; Shen and Lin 2009; Lin, Liu et al. 2009; Alipour 2013; Song, Wang et al. 2015). Such negative results can be justified by that governments as investors have social and political goals that may not be consistent with profit maximization goals (Bruton, Peng et al. 2015; Musacchio, Lazzarini et al. 2015). In addition to that, managers of government owned firms are chosen according to their political connections rather than their competences (Kornai, Maskin et al. 2003; Estrin, Meyer et al. 2016; Huang, Xie et al. 2017). Moreover, there is great difficulty of monitoring managerial actions by other shareholders in government owned firms (Estrin, Hanousek et al. 2009).

The conflicting results among developed countries sample and developing countries sample reflects the differences in the institutional settings among these countries. The study results imply that government ownership can bring performance improvements in developing

countries where governments in such countries allow for favorable treatment to government owned firms compared to other firms, which offset the negative consequences of government ownership such as the poorly selected managers and weak monitoring.

Family ownership is found to have a significant positive relationship with firm financial performance in all three samples. This result goes in line with the study hypothesis and supports the findings of previous empirical studies (Hamadi 2010; Chu 2011; Shyu 2011; Isakov and Weisskopf 2014; Buren et al. 2016; Siddik and Kabiraj 2016; Saleh, Halili et al. 2017; Lepore, Paolone et al. 2018; Sakawa and Watanabel 2018; Ciftci, Tatoglu et al. 2019). This result is justified by that firms with family ownership usually have longer investment perspectives as they intend to pass the firm assets onto succeeding generations which results in better financial positions (Berrone et al., 2012; D'Aurizio et al., 2015; Tsao et al., 2019). It's also suggested that the reputation and long-term presence of the family in firm ownership enable firms with family ownership to obtain a lower cost of debt compared to firms with other ownership types (Anderson et al., 2003). The relationship between family ownership and firm market performance measure (TQ) is found to be significantly positive in developing countries sample, while it is significantly negative in developed countries sample. This result is in line with previous studies suggesting that family ownership positively impacts firm performance in firms operating in less regulated markets (Bennedsen et al., 2019). Family investors will have greater incentives to hold an effective monitoring role that solves the free-rider problem leading to better firm market performance (Allouche et al., 2008; Yoshikawa & Rasheed, 2010; Ray et al., 2018; Ciftci et al., 2019).

A significant positive relationship is found between institutional ownership and all three measures of firm performance at 0.01 significance level in the combined and developed countries sample. The consistent results between combined and developed countries sample

is because 73% of firms with institutional ownership in the combined sample are from developed countries. For developing countries sample, a significant positive relationship is found between institutional ownership and firm financial performance measures (ROA and ROE). These results are consistent with previous studies suggesting that institutional ownership reduces the principle-agent problem resulting in better firm performance as institutions have the incentives, resources, and abilities to hold an efficient monitoring role which results in better firm performance (Cornett et al., 2007; Chen et al., 2008; Aghion, Van Reenen et al. 2013; Hawas & Tse, 2015; McCahery, Sautner et al. 2016; Al-Saeed, 2018; Fukuda et al., 2018; Wang & Shailer, 2018; Baghdadi, Bhatti et al. 2018; Panda and Bag 2019; Rahman, 2021).

A significant positive relationship is found between managerial ownership and all three performance measures in developing countries sample. This result is consistent with the study hypothesis and many previous studies suggesting that managerial ownership positively impacts firm performance in developing countries (Kumar and Singh 2013; Arora and Sharma 2016; Buachoom 2017; Boateng, Bi et al. 2017; Al-Saeed 2018; Cheng, Su et al. 2019; Farooque, Buachoom et al. 2019). This result can be explained by the convergence-of-interest hypothesis (Jensen & Meckling, 1976). Higher levels of managerial ownership reduce the principle-agent problem by aligning the interests of managerial owners with other owners towards wealth maximization (maximizing share price), which results in higher level of firm performance. However, a significant negative relationship is found between managerial ownership and firm performance measures, TQ and ROE, at a significance level of 0.05 in developed countries sample. The negative relationship found in developed countries supports the managerial entrenchment hypothesis arguing that managerial ownership leads to entrenchment which increases the principle-principle problem, thus decreasing firm performance (Berger et al., 1997; De Miguel, Pindado, & De La Torre,

2004). Managerial ownership may allow managers to abuse their significant influence in the company to exploit firm resources which negatively impact firm performance (Lins 2003; Shan & McIver 2011; Hu, Tam et al 2010; and Shan 2019).

A significant positive relationship is found between employee ownership and all three measures of firm performance in developing countries sample. A significant positive relationship is also found between employee ownership and both TQ and ROE in the combined sample, and between employee ownership and ROE in developed countries sample. These results go in line with the study hypothesis and are consistent with previous studies suggesting that employee ownership improves firm performance (Welbourne & Cyr, 1999; Jiang et al., 2015; O'Boyle et al., 2016; Richter & Schrader, 2017; Basterretxea & Storey, 2018; Brown et al., 2019; Ren et al., 2019). An explanation for such positive relationship is that employee ownership can be considered as an important incentive alignment mechanism that solves the agency problem between employees and shareholders (Oyer, 2004). When employees become owners in the firm, they have higher incentives for improving firm performance (Chen et al., 2003; Pendleton & Robinson, 2010; Ledford Jr, 2014).

When it comes to controlling variables, capital structure is found to have a significant negative relationship with both TQ and ROA in the combined sample. It is also found to have a significant negative relationship with TQ in developed countries sample and ROA in developing countries sample. A significant negative relationship is found between leverage and both TQ and ROA in the developing countries sample, while an insignificant relationship between leverage and all three measures of firm performance is found in both combined and developed countries samples. The relationship between firm growth and firm market performance measure (TQ) is found to be significantly negative in both combined and

developed countries samples. A significant positive relationship is found between firm growth and both ROA and ROE in combined and developed countries sample. A significant positive relationship is also found between firm growth and ROE in developing countries sample. Liquidity and firm financial performance measures (ROA and ROE) are found to be positively related in both combined and developed countries samples. In developing countries sample, liquidity is found to have a significant positive relationship with all three measures of firm performance.

Risk is found to be negatively related with TQ in all three samples at 0.01 significance level. A significant negative relationship is also found between risk and firm financial performance measures in both developed countries sample (ROA) and developing countries sample (ROA and ROE). The relationship between innovative potential and the three measures of firm performance is found to be significantly positive in all three samples, except for innovative potential and ROE in developed countries sample where an insignificant positive relationship is found. Firm size is found to be positively related with firm financial performance measures in both combined and developed countries samples, while a negative relationship is found between firm size and firm financial performance measures in developing countries sample.

Table 1a: Model 1 (The relationship between the five ownership types and firm performance) summary results in the Combined sample using OLS

The Combined Sample						
Study variables	TQ		ROA		ROE	
	Baseline analysis	Main relationship	Baseline analysis	Main relationship	Baseline analysis	Main relationship
Government ownership		-.365		7.081***		14.477***
Family ownership		.151		1.867***		2.247
Institutional ownership		3.324***		2.708***		7.914***
Managerial ownership		-.307		-.768		2.879
Employee ownership		4.505*		3.443		75.464***
Capital structure	-.001***	-.001***	-.001**	-.001**	.005	.005
Leverage	.194	.194	.083	.083	-.057	-.054
Firm growth	-.138***	-.14***	.309***	.306***	.91***	.903***
Liquidity	.012	.033**	.231***	.255***	.595***	.677***
Risk	-.733***	-.81***	-.187	-.299	.576	.183
Innovative potential	.052***	.052***	.173***	.164***	.215**	.199**
Firm size	-.043	-.157***	.488***	.486***	1.341***	1.35***
Constant	3.389***	3.59***	-1.007*	-1.52**	-10.702***	-12.487***
R^2	0.206	0.209	0.497	0.500	0.278	0.280
Adj-R^2	0.205	0.208	0.496	0.499	0.277	0.279
No. of observations	15110	15110	15110	15110	15110	15110

*** p<.01, ** p<.05, * p<.1

Table 1b: Model 1 (The relationship between the five ownership types and firm performance) summary results in the Developed Countries sample using OLS

The developed countries sample						
Study variables	TQ		ROA		ROE	
	Baseline analysis	Main relationship	Baseline analysis	Main relationship	Baseline analysis	Main relationship
Government ownership		-1.549***		-3.974***		-6.542
Family ownership		-.757*		1.147**		2.573
Institutional ownership		4.235***		3.007***		11.171***
Managerial ownership		-1.27**		-.311		-7.506**
Employee ownership		-1.724		-2.625		118.159***
Capital structure	-.001***	-.001***	0.000	0.000	.005	.005
Leverage	.189	.189	.096	.096	-.023	-.02
Firm growth	-.159***	-.16***	.333***	.332***	.979***	.974***
Liquidity	.042	.019	.102*	.09*	.49***	.499***
Risk	-.739***	-.936***	-.857***	-.957***	-.743	-1.285
Innovative potential	.031**	.031**	.129***	.134***	.146	.16
Firm size	-.026	-.302***	1.25***	1.119***	3.433***	3.138***
Constant	3.156***	4.456***	-5.622***	-5.326***	-24.667***	-25.396***
R^2	0.233	0.238	0.573	0.574	0.321	0.322
Adj-R^2	0.232	0.236	0.572	0.573	0.320	0.321
No. of observations	10830	10830	10830	10830	10830	10830

*** p<.01, ** p<.05, * p<.1

Table 1c: Model 1 (The relationship between the five ownership types and firm performance) summary results in the Developing Countries sample using OLS

The developing countries sample						
Study variables	TQ		ROA		ROE	
	Baseline analysis	Main relationship	Baseline analysis	Main relationship	Baseline analysis	Main relationship
Government ownership		.42**		8.105***		14.045***
Family ownership		3.466***		7.382***		11.695***
Institutional ownership		-.157		4.128***		4.803**
Managerial ownership		.843***		2.477***		4.319*
Employee ownership		4.7***		27.642***		58.14***
Capital structure	0.000***	0***	-.004***	-.003***	.003	.004
Leverage	-.778***	-.767***	-2.941*	-3.005**	-3.952	-4.212
Firm growth	.012*	.01	.077	.067	.267**	.251**
Liquidity	.023***	.027***	.143***	.191***	.349*	.419**
Risk	-.268***	-.269***	-.787***	-.868***	-1.602*	-1.792*
Innovative potential	.054***	.048***	.287***	.254***	.462***	.413***
Firm size	.049	.085***	-.399***	-.15*	-1.047***	-.56**
Constant	1.944***	1.506***	9.11***	5.943***	10.643**	5.364
R^2	0.110	0.162	0.137	0.177	0.052	0.059
Adj-R^2	0.107	0.158	0.133	0.173	0.049	0.054
No. of observations	4280	4280	4280	4280	4280	4280

*** p<.01, ** p<.05, * p<.1

Appendix 1.2. The moderating impact of the level of investor protection on the relationship between ownership structure and firm performance using OLS.

Table 2 presents the results of the impact of the level of investor protection on the relationship between ownership structure and firm performance. When measuring firm performance with Tobin's Q, the adjusted R^2 is 21% for the combined sample, 24% for the developed countries sample, and 26.6% for developing countries sample. When using ROA as the firm performance measure, the adjusted R^2 is 50.2%, 57.4%, and 24.1% for combined sample, developed countries sample, and developing countries sample, respectively. When ROE is used as a measure of firm performance, the adjusted R^2 is 28%, 32.1%, and 5.9% for combined sample, developed countries sample, and developing countries sample, respectively.

The results show that the level of investor protection has a significant positive moderating impact on the relationship between government ownership and firm market performance measure, TQ, in both combined and developed countries sample. This result means that the higher the level of investor protection in a country, the more negative the relationship between government ownership and firm market performance. A significant negative moderating impact is found on the relationship between government ownership and firm financial performance, measured by ROE, in the combined sample, and measured by ROA and ROE, in developing countries sample. This result means that the lower the level of investor protection, the more positive the relationship between government ownership and firm financial performance. These results are consistent with previous studies suggesting that government ownership positively impact firm performance in countries with lower levels of investor protection (Borisova et al., 2012; Inoue et al., 2013), while government ownership

has more adverse impacts on firm performance in countries having high levels of investor protection (Gunasekarage et al., 2007; Lin et al., 2009; Dixon et al., 2015). In countries having low levels of investor protection, state-owned firms receive more advantages in the sense that the government is the regulator, enforcer of law and owner of assets which creates the possibility of a favourable treatment to state-owned firms leading to better firm performance (Gaio & Pinto, 2018; Haider, Liu et al. 2018; Kubo & Phan 2019). However, in countries with high level of investor protection, government owned firms do not receive more advantages than private firms. The role of law in such countries does not allow government-owned firms to benefit from more favourable policies and regulations (Gunasekarage et al., 2007; Lin et al., 2009; Dixon et al., 2015; Gaio & Pinto 2018).

The level of investor protection positively impacts the relationship between family ownership and firm performance, measured by Tobin's Q, in both combined and developed countries samples at a significance level of 0.01. A positive moderating impact of the level of investor protection on the relationship between family ownership and all three measures of firm performance is also found in developing countries sample at a significance level of 0.01. This implies that the higher the level of investor protection in a country, the more positive the relationship between family ownership and firm performance. This result goes in line with some previous studies that suggest a more significant positive relationship between family ownership and firm performance in countries with high levels of investor protection (Isakov & Weisskopf 2014; Sakawa & Watanabel 2018; Lepore, Paolone et al. 2018). This can be explained by that in countries with high levels of investor protection, family ownership can help solving the principle-agent problem through effective monitoring of managerial actions, while the high levels of investor protection will reduce the principle-principle problem as the minority shareholders rights will be highly protected (Barclay & Holderness, 1989; Bebchuk, 1999; Burkart et al., 2003; Boubakri, Cosset, & Guedhami, 2005; Lepore, Paolone et al.

2018. However, while in countries with low levels of investor protection, the possibility of family opportunism becomes higher which leads to agency problems and lower firm performance (Isakov and Weisskopf 2014).

The relationship between institutional ownership and firm performance (TQ and ROA) is found to be positively impacted by the level of investor protection in combined and developed countries samples. This result implies that the higher the level of investor protection in a country, the more positive the relationship between institutional ownership and firm performance. This is consistent with Zhong et al., (2017) who found that the relationship between institutional ownership and firm performance is more likely to be positive in countries with high levels of investor protection using a sample of 41 countries, most of them are developed countries. This is also in line with Aggarwal et al., (2011) who found that institutional ownership results in better firm outcomes in countries with strong levels of investor protection using a sample from 23 developed countries. A possible explanation for such result is that institutional investors have the opportunity, resources and ability to monitor, discipline, and influence managers which solves the principle-agent problem (McCahery et al., 2016; Baghdadi et al., 2018; Panda and Bag 2019), and the high levels of investor protection helps in reducing the principle-principle problem leading to higher firm performance.

However, the relationship between institutional ownership and firm performance (Tobin's Q and ROA) is found to be negatively impacted by the level of investor protection in developing countries sample. It suggests that the lower the level of investor protection in a country, the more positive the relationship between institutional ownership and firm financial performance, while the more negative the relationship between institutional ownership and firm market performance. This is consistent with Lins, (2003), Firth, Gao et al. (2016), and

Wang & Shailer, (2018) who suggest that institutional investors have more significant monitoring role in emerging countries with low levels of investor protection leading to higher firm financial performance. On the other hand, large institutional investors might exploit minority shareholders rights in countries with low levels of investor protection resulting in principle-principle agency problem and lower firm market performance (Zhong et al., 2017).

A positive moderating impact of the level of investor protection on the relationship between managerial ownership and firm market performance (Tobin's Q) is found in both combined and developed countries samples. It means that the higher the level of investor protection, the more negative the relationship between managerial ownership and firm performance. In the developing countries sample, a negative moderating impact of level of investor protection on the relationship between managerial ownership and firm financial performance (ROA and ROE) is found at significance level 0.01. It means that in developing countries, the lower the level of investor protection, the more positive the relationship between managerial ownership and firm performance. These results are consistent with previous studies suggesting that in countries having weak investor protection levels, managerial ownership is expected to have more significant impact on firm performance (La Porta, et al, 2002; Bożek, 2015). The alignment of interests of shareholders and managers resulting from managerial ownership is expected to substitute weak investor protection laws which solves the principle-agent agency problem and improves firm performance (La Porta, et al. 2002; Bożek, 2015).

The relationship between employee ownership and firm performance is found to be positively impacted by the level of investor protection in developing countries samples. It suggests that the higher the level of investor protection in a country, the more positive the relationship between employee ownership and firm performance. This result implies that the high levels of investor protection reduces employees tendency for withholding information or exploiting

shareholders rights which reduces agency costs and improves firm performance (Park & Song, 1995; Lang, Lins, & Miller, 2004; McCarthy et al., 2010; Pendleton & Robinson, 2010). In combined and developed countries samples, the level of investor protection is found to have a negative moderating impact on the relationship between employee ownership and firm performance, which means that the lower the level of investor protection in a country, the more positive the relationship between employee ownership and firm performance. This result suggests that in developed countries, employee ownership can substitute low levels of investor protection which solves the agency problem and improves firm performance (La Porta et al., 2000; Chen, 2003).

Table 2: Model 2 (The impact of the level of investor protection on ownership structure-firm performance relationship) summary results using OLS

	Combined Sample****			Developed Countries Sample****			Developing Countries Sample****		
	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
The level of Investor protection	-.413**	-.102***	-1.794**	-1.099***	-.26	-1.689	.644***	2.888***	3.592***
Government ownership x investor protection	.706*	-5.409	-10.566***	1.527***	-.028	-7.214	-.186	-6.736***	-7.547***
family ownership x investor protection	1.315***	.859	1.833	1.361***	.648	2.401	3.354***	6.257***	9.868***
Institutional ownership x investor protection	2.195***	1.564***	2.452	3.791***	1.517*	1.18	-1.272***	-2.926***	-3.157
managerial ownership x investor protection	.491*	-.508	.321	.92**	-.372	1.53	-.288	-3.06***	-10.453***
Employee ownership x investor	2.423	-9.384***	-35.487**	-6.5**	-4.716	-34.147	4.057***	10.682**	-12.686

protection									
R^2	0.211	0.503	0.281	0.242	0.575	0.323	0.270	0.246	0.065
Adj-R^2	0.210	0.502	0.280	0.240	0.574	0.321	0.266	0.241	0.059
No. of observations	15110	15110	15110	10830	10830	10830	4280	4280	4280

*** p<.01, ** p<.05, * p<.1 **** Control variables are included in the analysis.

Appendix 1.3. The moderating impact of the degree of capitalism on the relationship between ownership structure and firm performance using OLS

Table 3 presents the results of the moderating impact of degree of capitalism on the relationship between ownership structure and firm performance. When measuring firm performance with Tobin's Q, the adjusted R^2 is 20.9% for the combined sample, 23.6% for the developed countries sample, and 16.2% for developing countries sample. When using ROA as the firm performance measure, the adjusted R^2 is 50.5%, 57.3%, and 18% for combined sample, developed countries sample, and developing countries sample, respectively. When ROE is used as a measure of firm performance, the adjusted R^2 is 28.1%, 32.2%, and 5.4% for combined sample, developed countries sample, and developing countries sample, respectively.

The results imply that the degree of capitalism, measured by economic freedom, has a significant negative moderating impact on the relationship between government ownership and all three measures of firm performance in the combined and developing countries samples. Degree of capitalism is also found to have a significant negative moderating impact on the relationship between government ownership and TQ in developed countries sample. These results mean that the higher the degree of capitalism in a country, the less significant the relationship between government ownership and firm performance. This is consistent

with our hypothesis suggesting that in countries with high degree of capitalism, government ownership is expected to have a less significant impact on firm performance as the main aim of such economies is profit maximization which contradicts with the social and political goals of the government as an investor (Estrin et al., 2009). On the other hand, in developing countries with low degrees of capitalism and high government intervention, government ownership will have a more significant positive relationship with firm performance as firms in which the government invests will have an advantage over other firms resulting in lower agency problem and better firm performance (Gaio & Pinto, 2018).

The degree of Capitalism is found to have a significant negative impact on the relationship between family ownership and all three measures of firm performance in developed countries sample. It is also found that the degree of capitalism has a significant negative moderating impact on the relationship between family ownership and firm performance, measured by TQ and ROA in the combined sample and by ROE in developing countries sample. These results mean that the higher the degree of capitalism in a country, the less positive the relationship between family ownership and firm performance. This result goes in line with the study hypothesis. It can be explained by that in economies having high degrees of capitalism, the main aim of economic activities is generating profits and maximizing self-interest (Witt & Jackson, 2016). Therefore, family owners are more likely to pursue their own interests at the expense of minority shareholders resulting in principle-principle agency problem and lower firm performance.

The results also indicate that the degree of capitalism positively impact the relationship between institutional ownership and firm performance in both combined and developed countries samples, meaning that the higher the degree of capitalism, the more positive the relationship between institutional ownership and firm performance. In the developing

countries sample, it is found that the degree of capitalism has a negative moderating impact on the relationship between institutional ownership and firm market performance, TQ. This result implies that institutional ownership is more negatively related with firm market performance in developing countries with low degrees of capitalism. These results are consistent with our hypothesis that in countries with high degrees of capitalism where the goal of all economic activities is maximizing self-interest (Hall, 2018), institutional ownership can hold an effective monitoring role as they have the abilities and incentives to effectively monitor managerial actions which mitigates the principle-agent problem leading to better firm performance (Florou & Conyon, 2002; Gillan & Starks, 2003; Michie & Lobao, 2012).

The relationship between managerial ownership and firm performance, TQ and ROA, is found to be negatively impacted by the degree of capitalism in the combined sample. This result implies that the higher the degree of capitalism in a country, the more negative the relationship between managerial ownership and firm performance. This result can be explained by that in countries with high degrees of capitalism, the principle-agent problem is more likely to exist as managers have more authority to take major decisions and government intervention is minimal (Hall, 2018).

It's also found that the degree of capitalism positively impacts the relationship between employee ownership and firm performance, measured by ROE in combined sample, ROA and ROE developed countries sample, and TQ in developing countries sample. This result implies that the higher the degree of capitalism, the more positive the relationship between employee ownership and firm performance, meaning that in countries with high degrees of capitalism employee ownership can help in more effective utilization of shareholders equity invested in the firm. This result can be explained by that in economies with high degrees of capitalism, maximizing self-interest is the main purpose of all economic activities which can

lead to agency problems (Michie & Lobao, 2012), thus employee ownership can help in solving the principle-agent problem as employees will be motivated to work for the best interest of shareholders and to improve firm performance (Moyer et al., 1989; Ledford Jr, 2014; Whitfield et al., 2017). However, the relationship between employee ownership and the market performance measure, Tobin's Q, is found to be negatively impacted by the degree of capitalism in the combined sample indicating that the relationship between employee ownership and firm market performance is more likely to be positive in countries with low degrees of capitalism.

Table 3: Model 3 (The impact of the degree of capitalism on ownership structure-firm performance relationship) summary results using OLS

	Combined Sample****			Developed Countries Sample****			Developing Countries Sample****		
	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
The degree of capitalism	-.003	-.112***	-.389***	-.022	-.062	.125	.011	.168**	-.027
Government ownership x capitalism	-.17***	-.639***	-1.063***	-.21**	-.222	-.759	-.12*	-1.764***	-2.142**
family ownership x capitalism	-.273***	-.194***	-.253	-.134**	-.161*	-.815***	-.047	-1.045	-2.218*
Institutional ownership x capitalism	.081***	.268***	1.173***	.279***	.254*	-.012	-.106***	-.081	-.006
Managerial ownership x capitalism	-.100**	-.089*	.058	.05	.088	-.463	-.021	-.379	-1.26
Employee ownership x capitalism	-1.298***	1.153	21.359***	-.105	2.95**	37.297**	1.547***	1.534	-5.26
R^2	0.210	0.505	0.282	0.238	0.574	0.323	0.167	0.185	0.060
Adj-R^2	0.209	0.505	0.281	0.236	0.573	0.322	0.162	0.180	0.054
No. of Observations	15110	15110	15110	10830	10830	10830	4280	4280	4280

*** p<.01, ** p<.05, * p<.1 **** Control variables are included in the analysis.

Appendix 1.4. The moderating impact of the industry average performance on the relationship between ownership structure and firm performance using OLS

Table 4 presents the results of the moderating impact of the industry average performance, measured by the industry average ROA, on the relationship between ownership structure and firm performance. When measuring firm performance with Tobin's Q, the adjusted R^2 is 20.8% for the combined sample, 23.6% for the developed countries sample, and 16.2% for developing countries sample. When using ROA as the firm performance measure, the adjusted R^2 is 50%, 57.3%, and 17.9% for combined sample, developed countries sample, and developing countries sample, respectively. When ROE is used as a measure of firm performance, the adjusted R^2 is 27.9%, 32.1%, and 6.4% for combined sample, developed countries sample, and developing countries sample, respectively.

The results imply that the industry average ROA has a significant negative moderating impact on the relationship between government ownership and all three measures of firm performance in the developing countries samples. It is also found that the relationship between government ownership and firm performance, measured by ROA, is negatively moderated by the industry average ROA in the combined sample. The results indicate that the lower the industry average performance, the more positive the relationship between government ownership and firm performance. This result is consistent with the study hypothesis as it is suggested that the social and political goals of the government as an investor do not go in line with the characteristics of highly performing industries that aims at maximizing profitability and firm growth (Okhmatovskiy 2010; Bruton, Peng et al. 2015; Musacchio, Lazzarini et al. 2015). Governments usually have non-financial objectives such as decreasing unemployment and inflation, rather than maximizing firm performance (Ding,

Zhang et al. 2007; Shen and Lin 2009). For the developed countries sample, the findings indicate that the industry average performance has an insignificant impact on the relationship between government ownership and firm performance.

The industry average ROA is found to have a significant positive moderating impact on the relationship between family ownership and firm performance, measured by ROE at a significance level of 0.05 in the developing countries sample. This result indicates that the higher the industry average performance in a developing country, the more positive the relationship between family ownership and firm performance. These findings can be explained by that in industries with high average performance where most firms are highly performing ones, the effective monitoring role held by family investors becomes more significant in improving firm performance (Martínez, Stöhr et al. 2007; Allouche, Amann et al. 2008; Yoshikawa and Rasheed 2010; Ray, Mondal et al. 2018; Ciftci, Tatoglu et al. 2019). Moreover, families usually have longer investment perspectives and tends to invest in long-term projects which enable firms to take more efficient investment decisions that positively impact its performance and long-term survival (Stein 1989; Berrone, Cruz et al. 2012; Chrisman, Chua et al. 2012; Verbeke and Kano 2012; D'Aurizio, Oliviero et al. 2015; De Massis, Frattini et al. 2016; Tsao, Chang et al. 2019; Baù, Chirico et al. 2019). However, the results indicate that the industry average performance has an insignificant moderating impact on the relationship between family ownership and firm performance in both combined and developed countries samples.

The relationship between institutional ownership and firm market performance, TQ, is found to be negatively moderated by the industry average ROA at significance level 0.01 in both combined and developed countries samples. This result indicates that the lower the industry average performance, the more significant the relationship between institutional ownership

and firm market performance. The positive impact of institutional ownership is more significant in low-performing industries than highly-performing ones because institutional investors are obliged to maximize the long-term value of their investments, so they effectively monitor managerial actions to ensure that managers are adopting strategies that enhance long-term firm value especially in low performing industries (Pukthuanthong, Turtle et al. 2017; Baghdadi, Bhatti et al. 2018). Moreover, institutional investors have the ability and motivation to discipline managers directly through putting pressure on management or indirectly through stock market trading which encourage managers to do their best to improve firm performance even in industries with low average performance (Edmans and Manso 2011; McCahery, Sautner et al. 2016; Ma and Ren 2021). For developing countries sample, the results show that the industry average performance has an insignificant impact on the relationship between institutional ownership and firm performance in developing countries.

The industry average ROA is found to have a significant positive moderating impact on the relationship between managerial ownership and firm financial performance, ROA, at significance level 0.05 in both combined and developed countries samples. This result confirms the study hypothesis suggesting that the industry's high average performance encourage managers to work harder to be able to compete with highly performing firms in the industry (Fan and Wong 2002; Mueller and Spitz, 2002). However, in developing countries sample, it is found that the industry average ROA has a significant negative moderating impact on the relationship between managerial ownership and firm financial performance measure, ROE, at significance level 0.01. These results indicate that the lower the industry average performance, the more significant the relationship between managerial ownership and firm financial performance in developing countries, while the less significant the

relationship between managerial ownership and firm financial performance in developed countries.

The findings show that the industry average ROA has an insignificant impact on the relationship between employee ownership and the three measures of firm performance in all three samples.

Table 4: Model 4 (The impact of the industry average performance on ownership structure-firm performance relationship) summary results using OLS

	Combined Sample****			Developed Countries Sample****			Developing Countries Sample****		
	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
Industry average ROA	0.000***	0.000	.003	0.000***	0.000	.003	0.000	.001	.005
Government ownership x industry average ROA	.006	-.194*	-.373	-.015	-.0300	-.027	-.068**	-.365***	-.675**
family ownership x industry average ROA	.001	-.002	.006	0.000	-.004	.002	-.064	.175	.802**
Institutional ownership x industry average ROA	-.001***	0.000	-.006	-.001***	0.000	-.005	0.000	-.004	.035
Managerial ownership x industry average ROA	0.000	.001**	-.003	0.000	.001**	-.002	.024	-.055	-.742***
Employee ownership x industry average ROA	-.034	.185	-.767	-.022	-.109	-1.242	-.0200	.502	1.337
R^2	0.209	0.501	0.281	0.238	0.574	0.323	0.168	0.184	0.070
Adj-R^2	0.208	0.500	0.279	0.236	0.573	0.321	0.162	0.179	0.064
No. of Observations	15110	15110	15110	10830	10830	10830	4280	4280	4280

*** p<.01, ** p<.05, * p<.1 **** Control variables are included in the analysis.

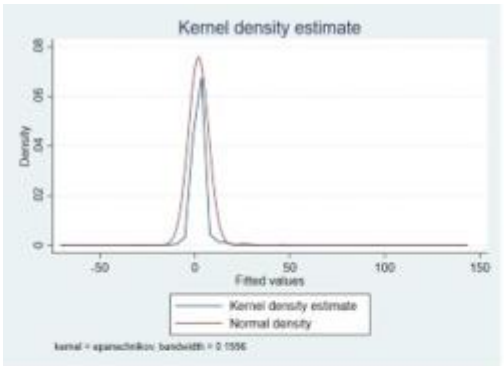
Appendix 2. Regression Assumptions

Ordinary least square regression is the most used method in the literature to test the statistical relationship between ownership structure and firm performance (among others, Wang & Shailer, 2015; Le & Phan, 2017; Lepore, Paolone, Pisano, & Alvino, 2017; Alabdullah, 2018; Kao, Hodgkinson, & Jaafar, 2019; Nguyen & Nguyen, 2020). Assuring the use of OLS regression and preventing the distortion of the results requires checking that the data have met the OLS regression assumptions: normality of residuals, heteroscedasticity, and multicollinearity of independent variables (Field, 2013).

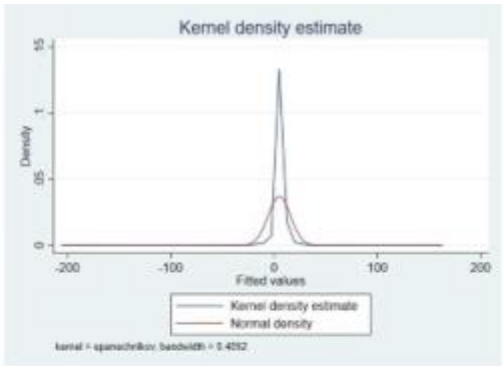
Appendix 2.1. The Normality of Residuals

the Kernel-density plot is used to examine normality of residuals. The plots generated shows that most of the residuals are normally distributed, the normality problems found in some of the plots can be ignored as the sample size is sufficiently large (Gujarati, 2002; Brooks, 2008).

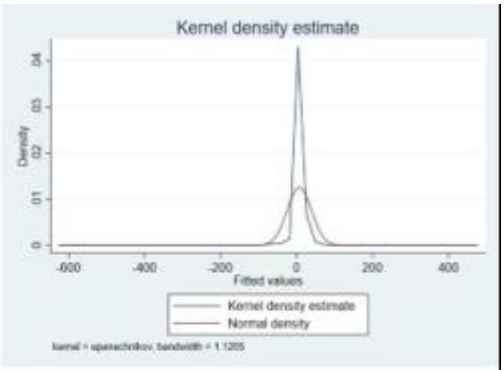
2.1.1. The Kernel-density plots for the combined sample:



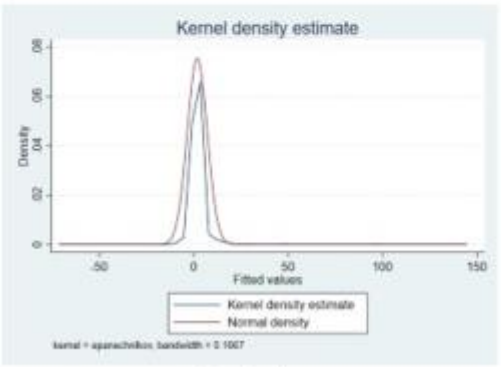
Model 1 (TQ)



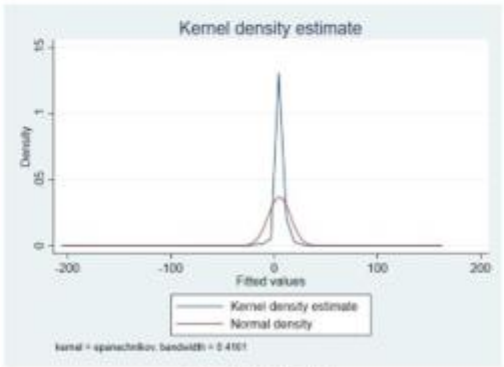
Model 1 (ROA)



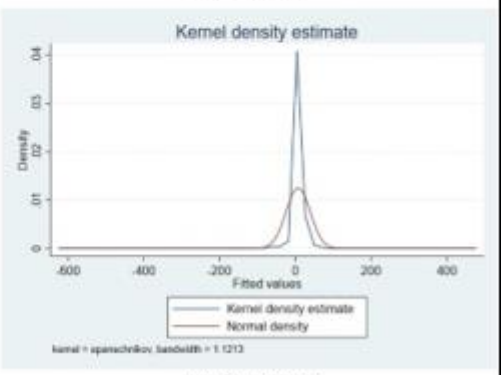
Model 1 (ROE)



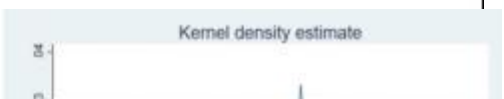
Model 2 (TQ)



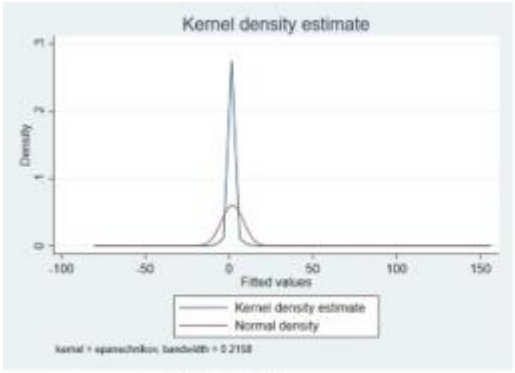
Model 2 (ROA)



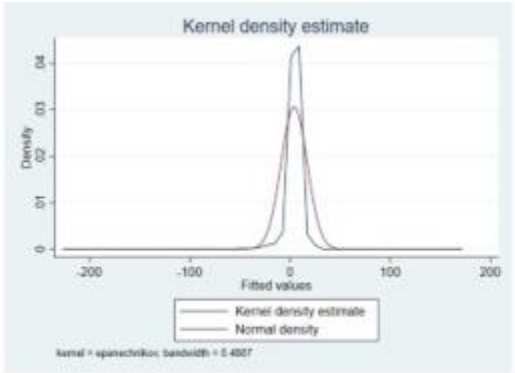
Model 2 (ROE)



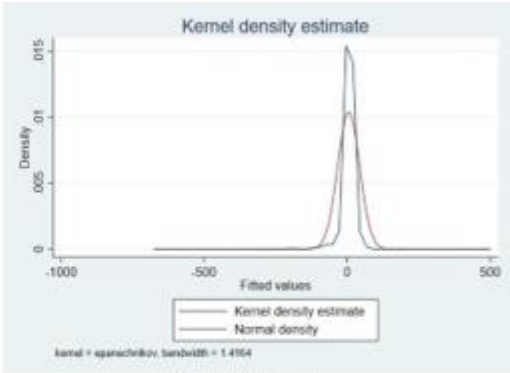
2.1.2. the Kernel-density plots for the developed countries sample:



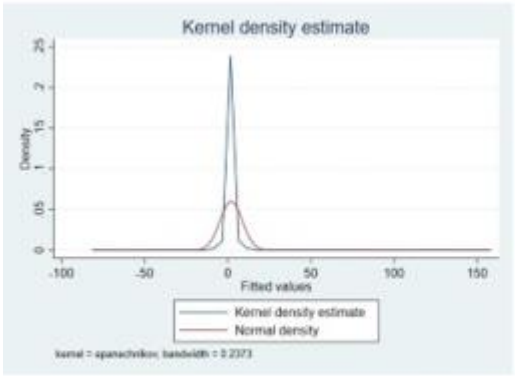
Model 1 (TQ)



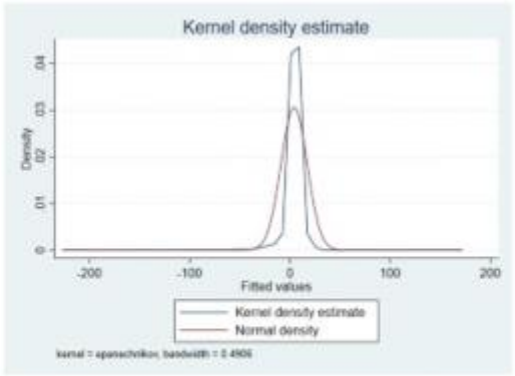
Model 1 (ROA)



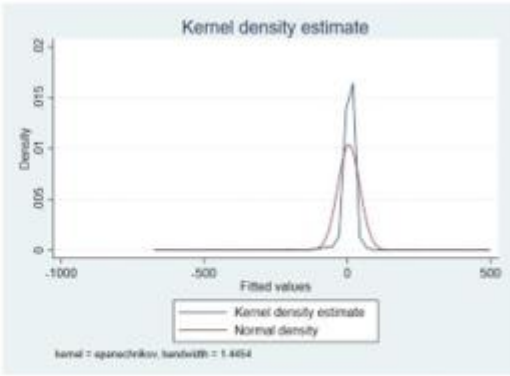
Model 1 (ROE)



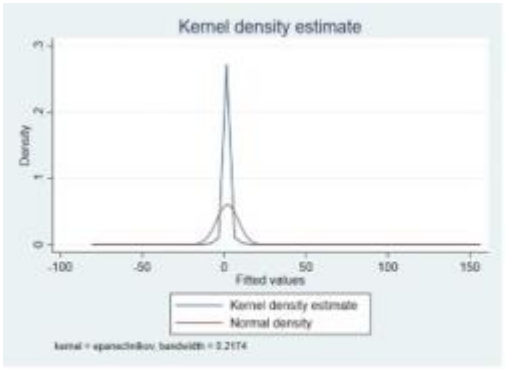
Model 2 (TQ)



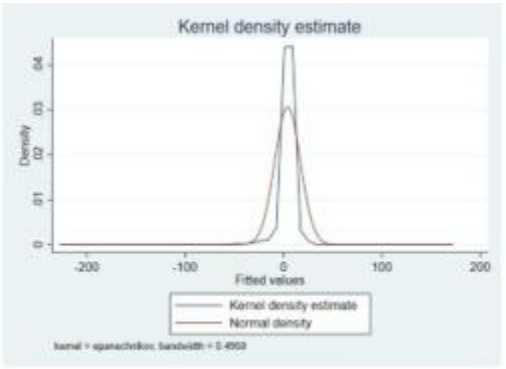
Model 2 (ROA)



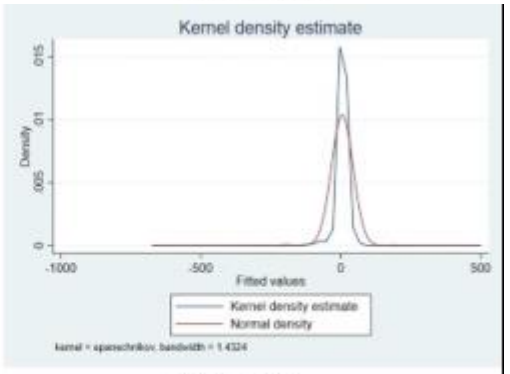
Model 2 (ROE)



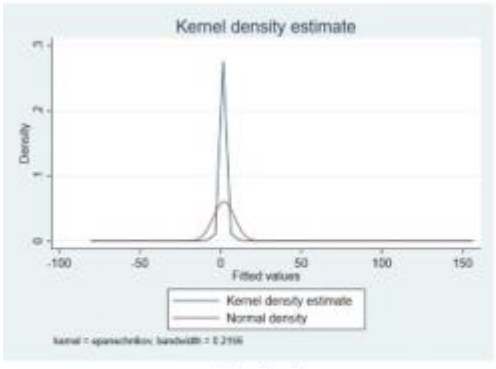
Model 3 (TQ)



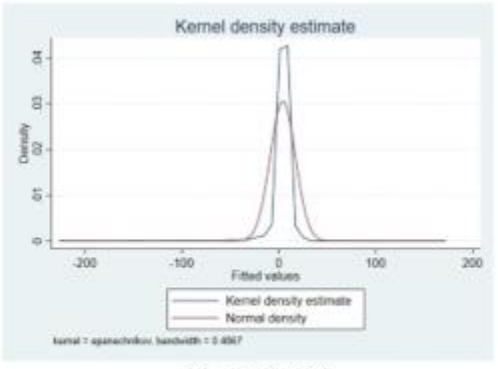
Model 3 (ROA)



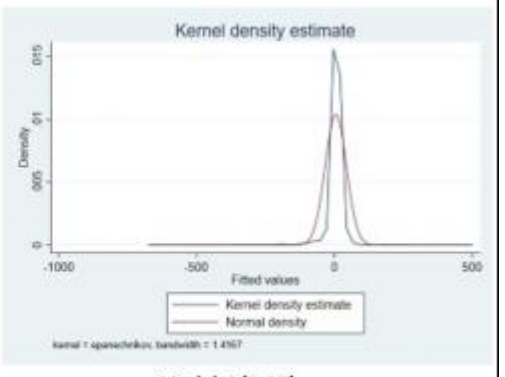
Model 3 (ROE)



Model 4 (TQ)

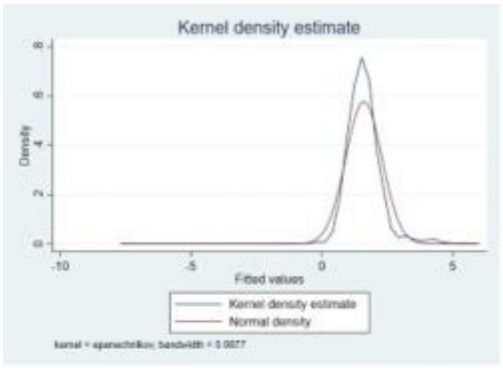


Model 4 (ROA)

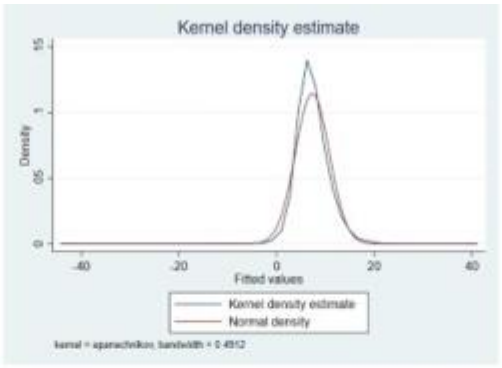


Model 4 (ROE)

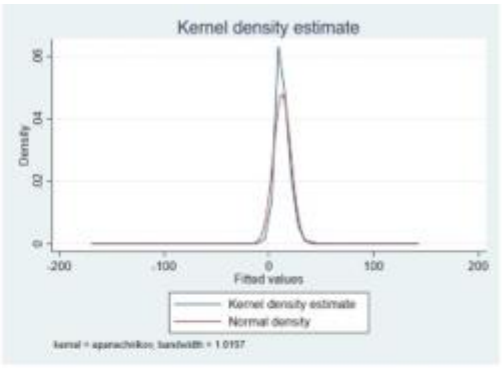
2.1.3. the Kernel-density plots for the developing countries sample:



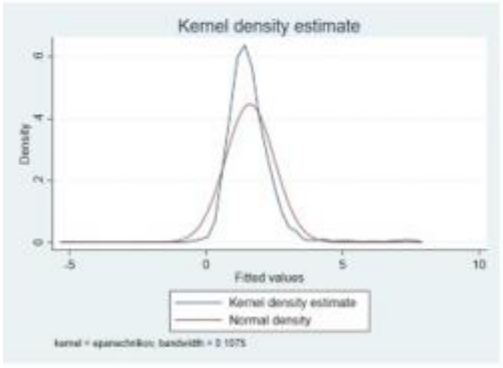
Model 1 (TQ)



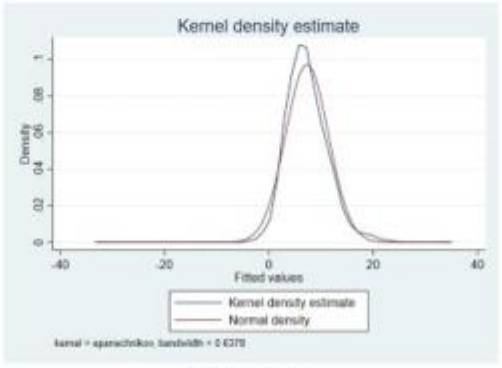
Model 1 (ROA)



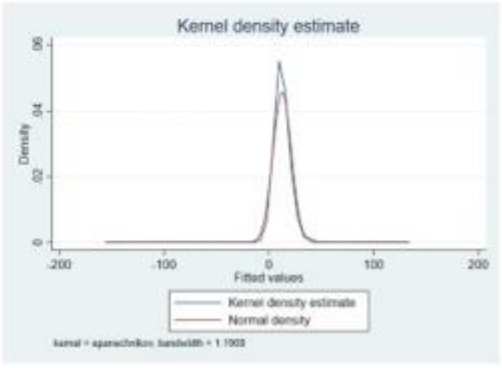
Model 1 (ROE)



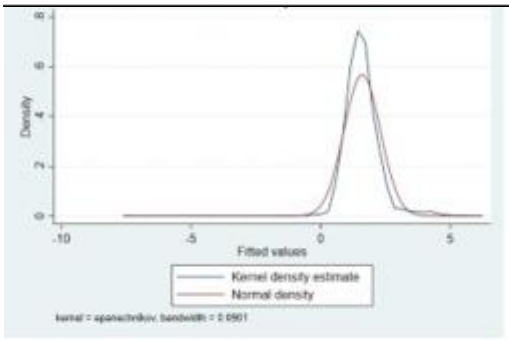
Model 2 (TQ)



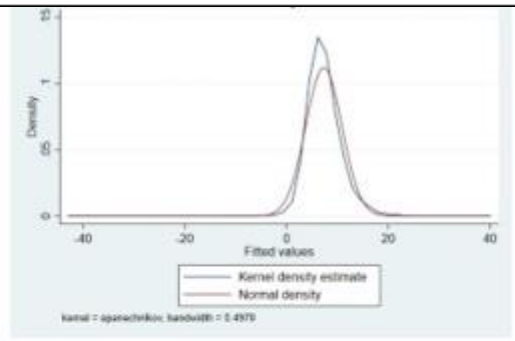
Model 2 (ROA)



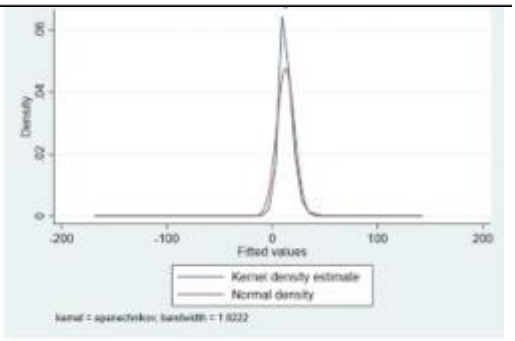
Model 2 (ROE)



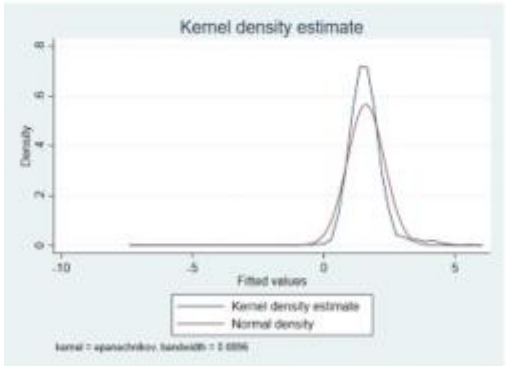
Model 3 (TQ)



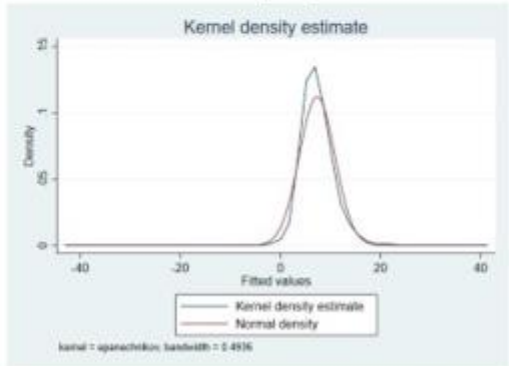
Model 3 (ROA)



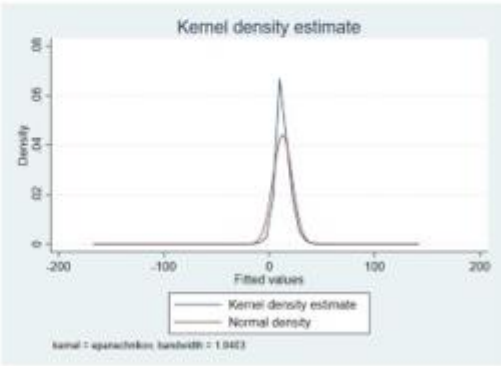
Model 3 (ROE)



Model 4 (TQ)



Model 4 (ROA)



Model 4 (ROE)

Appendix 2.2. Heteroskedasticity

Any error term variance is supposed to be constant and random for all independent variables' values and if it is non-constant, then the residual variance is called 'heteroscedastic'. The White test is used to check the heteroscedasticity. Table 5 shows the Chi^2 and p-values generated from the study models. It is found that the p-values are less than 0.5, which reject the null hypothesis that the residuals variance is homogenous. This problem is solved by using the GMM to control for heteroscedasticity (Saleh, 2012; Farooque et al., 2019).

Table 5: Heteroskedasticity Tests

Combined sample															
	Baseline Model			Model 1			Model 2			Model 3			Model 4		
	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
Chi2	11625.4	9062.8	2488.9	12168.4	10006.8	2899.5	12466.7	10232.6	3181	12345.9	11038.9	3171.3	12214.5	10193	3440.2
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Developed countries sample															
	Baseline Model			Model 1			Model 2			Model 3			Model 4		
	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
Chi2	8621.3	6468.99	1734.5	9011.3	7083.4	2097.9	9181.9	7346.4	2449.9	9072.2	8149.5	2405.7	9060.3	7235.4	2586.6
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Developing countries sample															
	Baseline Model			Model 1			Model 2			Model 3			Model 4		
	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE	TQ	ROA	ROE
Chi2	1174.5	2177.6	1107.8	1541.8	2079.8	1191.4	1807.1	2060.1	1439.9	1741.6	2156.2	1410.4	1791.3	2098.4	1490.7
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Appendix 2.3. Multicollinearity of Independent Variables

It is assumed that there will be a linear association between the dependent variable and the independent variables and that there will be no perfect linear association between any of the independent variables. Multicollinearity occurs when there is strong correlation between two independent variables, which means that two predictors are measuring the same thing (Field, 2013). The researcher examined the non-multicollinearity assumption of independent variables using the STATA program. The Variance Inflation Factors (VIFs) are considered to measure the multicollinearity severity in each regression analysis. VIFs exceeding 10 are thought to show severe multicollinearity problems (Field, 2013). It is found that the VIFs for the direct relationship models are not exceeding 2, but the VIF values for the interaction terms are high. The high VIF values for the interaction terms indicate structural multicollinearity resulting from creating interaction terms from other variables in the model. Therefore, the structural multicollinearity is by-product of the model specified rather than a problem existent in the data itself, suggesting that the multicollinearity problem found can be ignored.

Appendix 2.3.1. The Variance Inflation factor values for the combined sample:

Variance inflation factor for Model 1 (TQ)

	VIF	1/VIF
yr10	1.835	.545
yr9	1.823	.548
yr8	1.817	.55
yr7	1.814	.551
yr6	1.809	.553
yr5	1.806	.554
yr4	1.804	.554
yr3	1.802	.555
yr2	1.801	.555
Institutional ownership	1.193	.838
Managerial Ownership	1.123	.89
Government Ownership	1.074	.931
Family Ownership	1.065	.939
Risk	1.047	.955
Firm Growth	1.042	.96
Innovative Potential	1.036	.965

c i sector	1.028	.973
Liquidity	1.026	.975
Capital Structure	1.018	.982
Employee ownership	1.018	.982
Leverage	1.01	.99
Firm Size	1.193	.838
Mean VIF	1.372	.

Variance inflation factor for Model 1 (ROA)

	VIF	1/VIF
yr10	1.835	.545
yr9	1.823	.548
yr8	1.817	.55
yr7	1.814	.551
yr6	1.809	.553
yr5	1.806	.554
yr4	1.804	.554
yr3	1.802	.555
yr2	1.801	.555
Firm Size	1.193	.838
Institutional ownership	1.193	.838
Managerial Ownership	1.123	.89
Government Ownership	1.074	.931
Family Ownership	1.065	.939
Risk	1.047	.955
Firm Growth	1.042	.96
Innovative Potential	1.036	.965
c i sector	1.028	.973
Liquidity	1.026	.975
Capital Structure	1.018	.982
Employee ownership	1.018	.982
Leverage	1.01	.99
Mean VIF	1.372	.

Variance inflation factor for Model 1 (ROE)

	VIF	1/VIF
yr10	1.835	.545
yr9	1.823	.548
yr8	1.817	.55
yr7	1.814	.551
yr6	1.809	.553
yr5	1.806	.554
yr4	1.804	.554
yr3	1.802	.555
yr2	1.801	.555
Firm Size	1.193	.838
Institutional ownership	1.193	.838
Managerial Ownership	1.123	.89
Government Ownership	1.074	.931
Family Ownership	1.065	.939
Risk	1.047	.955

Firm Growth	1.042	.96
Innovative Potential	1.036	.965
c i sector	1.028	.973
Liquidity	1.026	.975
Capital Structure	1.018	.982
Employee ownership	1.018	.982
Leverage	1.01	.99
Mean VIF	1.372	.

Variance inflation factor for Model 2 (TQ)

	VIF	1/VIF
Institutional Ownership x Investor Protection	44.135	.023
Institutional Ownership	36.605	.027
Employee Ownership	32.007	.031
Employee Ownership x Investor Protection	31.969	.031
Government Ownership	30.948	.032
Government Ownership x Investor Protection	30.3	.033
Managerial Ownership x Investor Protection	27.556	.036
Managerial Ownership	27.484	.036
Family Ownership x Investor Protection	27.403	.036
Family Ownership	27.259	.037
Level of Investor Protection	3.859	.259
yr1	1.844	.542
yr2	1.836	.545
yr3	1.831	.546
yr4	1.825	.548
yr5	1.822	.549
yr6	1.811	.552
yr7	1.807	.553
yr8	1.806	.554
yr9	1.803	.555
Firm Size	1.254	.797
Risk	1.084	.922
Liquidity	1.057	.946
Innovative Potential	1.048	.954
Firm Growth	1.044	.958
c i sector	1.032	.969
Capital Structure	1.02	.981
Leverage	1.011	.989
Mean VIF	12.302	.

Variance inflation factor for Model 2 (ROA)

	VIF	1/VIF
Institutional Ownership x Investor Protection	44.135	.023
Institutional Ownership	36.605	.027
Employee Ownership	32.007	.031
Employee Ownership x Investor Protection	31.969	.031
Government Ownership	30.948	.032
Government Ownership x Investor Protection	30.3	.033
Managerial Ownership x Investor Protection	27.556	.036
Managerial Ownership	27.484	.036
Family Ownership x Investor Protection	27.403	.036
Family Ownership	27.259	.037

Level of Investor Protection	3.859	.259
yr1	1.844	.542
yr2	1.836	.545
yr3	1.831	.546
yr4	1.825	.548
yr5	1.822	.549
yr6	1.811	.552
yr7	1.807	.553
yr8	1.806	.554
yr9	1.803	.555
Firm Size	1.254	.797
Risk	1.084	.922
Liquidity	1.057	.946
Innovative Potential	1.048	.954
Firm Growth	1.044	.958
c i sector	1.032	.969
Capital Structure	1.02	.981
Leverage	1.011	.989
Mean VIF	12.302	.

Variance inflation factor for Model 2 (ROE)

	VIF	1/VIF
Institutional Ownership x Investor Protection	44.135	.023
Institutional Ownership	36.605	.027
Employee Ownership	32.007	.031
Employee Ownership x Investor Protection	31.969	.031
Government Ownership	30.948	.032
Government Ownership x Investor Protection	30.3	.033
Managerial Ownership x Investor Protection	27.556	.036
Managerial Ownership	27.484	.036
Family Ownership x Investor Protection	27.403	.036
Family Ownership	27.259	.037
Level of Investor Protection	3.859	.259
yr1	1.844	.542
yr2	1.836	.545
yr3	1.831	.546
yr4	1.825	.548
yr5	1.822	.549
yr6	1.811	.552
yr7	1.807	.553
yr8	1.806	.554
yr9	1.803	.555
Firm Size	1.254	.797
Risk	1.084	.922
Liquidity	1.057	.946
Innovative Potential	1.048	.954
Firm Growth	1.044	.958
c i sector	1.032	.969
Capital Structure	1.02	.981
Leverage	1.011	.989
Mean VIF	12.302	.

Variance inflation factor for Model 3 (TQ)

	VIF	1/VIF
Employee Ownership	191.442	.005
Employee Ownership x Capitalism	191.114	.005
Institutional Ownership x Capitalism	90.748	.011
Institutional Ownership	83.846	.012
Managerial Ownership	80.021	.012
Managerial Ownership x Capitalism	79.862	.013
Family Ownership	77.769	.013
Family Ownership x Capitalism	77.298	.013
Government Ownership	53.913	.019
Government Ownership x Capitalism	52.719	.019
Degree of Capitalism	3.186	.314
yr10	1.835	.545
yr9	1.825	.548
yr8	1.818	.55
yr7	1.815	.551
yr6	1.811	.552
yr5	1.808	.553
yr4	1.806	.554
yr3	1.803	.555
yr2	1.802	.555
Firm Size	1.277	.783
Risk	1.105	.905
Liquidity	1.075	.93
Firm Growth	1.045	.957
Innovative Potential	1.042	.96
c i sector	1.034	.967
Capital Structure	1.021	.979
Leverage	1.011	.989
Mean VIF	35.959	.

Variance inflation factor for Model 3 (ROA)

	VIF	1/VIF
Employee Ownership	191.442	.005
Employee Ownership x Capitalism	191.114	.005
Institutional Ownership x Capitalism	90.748	.011
Institutional Ownership	83.846	.012
Managerial Ownership	80.021	.012
Managerial Ownership x Capitalism	79.862	.013
Family Ownership	77.769	.013
Family Ownership x Capitalism	77.298	.013
Government Ownership	53.913	.019
Government Ownership x Capitalism	52.719	.019
Degree of Capitalism	3.186	.314
yr10	1.835	.545
yr9	1.825	.548
yr8	1.818	.55
yr7	1.815	.551
yr6	1.811	.552
yr5	1.808	.553
yr4	1.806	.554
yr3	1.803	.555

yr2	1.802	.555
Firm Size	1.277	.783
Risk	1.105	.905
Liquidity	1.075	.93
Firm Growth	1.045	.957
Innovative Potential	1.042	.96
c i sector	1.034	.967
Capital Structure	1.021	.979
Leverage	1.011	.989
Mean VIF	35.959	.

Variance inflation factor Model 3 (ROE)

	VIF	1/VIF
Employee Ownership	191.442	.005
Employee Ownership x Capitalism	191.114	.005
Institutional Ownership x Capitalism	90.748	.011
Institutional Ownership	83.846	.012
Managerial Ownership	80.021	.012
Managerial Ownership x Capitalism	79.862	.013
Family Ownership	77.769	.013
Family Ownership x Capitalism	77.298	.013
Government Ownership	53.913	.019
Government Ownership x Capitalism	52.719	.019
Degree of Capitalism	3.186	.314
yr10	1.835	.545
yr9	1.825	.548
yr8	1.818	.55
yr7	1.815	.551
yr6	1.811	.552
yr5	1.808	.553
yr4	1.806	.554
yr3	1.803	.555
yr2	1.802	.555
Firm Size	1.277	.783
Risk	1.105	.905
Liquidity	1.075	.93
Firm Growth	1.045	.957
Innovative Potential	1.042	.96
c i sector	1.034	.967
Capital Structure	1.021	.979
Leverage	1.011	.989
Mean VIF	35.959	.

Variance inflation factor for Model 4 (TQ)

	VIF	1/VIF
Industry Average ROA	14.655	.068
Institutional Ownership x Industry Average ROA	14.074	.071
yr10	1.836	.545
yr9	1.825	.548
yr8	1.819	.55
yr7	1.815	.551
yr6	1.81	.552

yr5	1.806	.554
yr4	1.806	.554
yr3	1.803	.555
yr2	1.802	.555
Managerial Ownership x Industry Average ROA	1.333	.75
Government Ownership x Industry Average ROA	1.245	.803
Employee Ownership x Industry Average ROA	1.228	.814
Institutional Ownership	1.22	.82
Firm Size	1.199	.834
Managerial Ownership	1.125	.889
Government Ownership	1.095	.913
Family Ownership	1.073	.932
Family Ownership x Industry Average ROA	1.062	.941
Risk	1.048	.954
Firm Growth	1.043	.959
Innovative Potential	1.039	.963
c i sector	1.032	.969
Liquidity	1.029	.972
Employee ownership	1.022	.978
Capital Structure	1.019	.981
Leverage	1.01	.99
Mean VIF	2.281	.

Variance inflation factor for Model 4 (ROA)

	VIF	1/VIF
Industry Average ROA	14.655	.068
Institutional Ownership x Industry Average ROA	14.074	.071
yr10	1.836	.545
yr9	1.825	.548
yr8	1.819	.55
yr7	1.815	.551
yr6	1.81	.552
yr5	1.806	.554
yr4	1.806	.554
yr3	1.803	.555
yr2	1.802	.555
Managerial Ownership x Industry Average ROA	1.333	.75
Government Ownership x Industry Average ROA	1.245	.803
Employee Ownership x Industry Average ROA	1.228	.814
Institutional Ownership	1.22	.82
Firm Size	1.199	.834
Managerial Ownership	1.125	.889
Government Ownership	1.095	.913
Family Ownership	1.073	.932
Family Ownership x Industry Average ROA	1.062	.941
Risk	1.048	.954
Firm Growth	1.043	.959
Innovative Potential	1.039	.963
c i sector	1.032	.969
Liquidity	1.029	.972
Employee ownership	1.022	.978
Capital Structure	1.019	.981
Leverage	1.01	.99

Mean VIF	2.281	.

Variance inflation factor Model 4 (ROE)

	VIF	1/VIF
Industry Average ROA	14.655	.068
Institutional Ownership x Industry Average ROA	14.074	.071
yr10	1.836	.545
yr9	1.825	.548
yr8	1.819	.55
yr7	1.815	.551
yr6	1.81	.552
yr5	1.806	.554
yr4	1.806	.554
yr3	1.803	.555
yr2	1.802	.555
Managerial Ownership x Industry Average ROA	1.333	.75
Government Ownership x Industry Average ROA	1.245	.803
Employee Ownership x Industry Average ROA	1.228	.814
Institutional Ownership	1.22	.82
Firm Size	1.199	.834
Managerial Ownership	1.125	.889
Government Ownership	1.095	.913
Family Ownership	1.073	.932
Family Ownership x Industry Average ROA	1.062	.941
Risk	1.048	.954
Firm Growth	1.043	.959
Innovative Potential	1.039	.963
c i sector	1.032	.969
Liquidity	1.029	.972
Employee ownership	1.022	.978
Capital Structure	1.019	.981
Leverage	1.01	.99
Mean VIF	2.281	.

Appendix 2.3.2. The Variance Inflation factor values for the developed countries sample:

Variance inflation factor for Model 1 (TQ)

	VIF	1/VIF
yr10	1.829	.547
yr9	1.82	.55
yr8	1.816	.551
yr7	1.812	.552
yr6	1.808	.553
yr5	1.806	.554
yr4	1.804	.554
yr3	1.802	.555
yr2	1.801	.555
Firm Size	1.3	.769
Institutional Ownership	1.27	.787
Managerial Ownership	1.144	.874

Risk	1.086	.921
Firm Growth	1.065	.939
Family Ownership	1.06	.944
Government Ownership	1.051	.952
Liquidity	1.038	.963
c i sector	1.03	.971
Innovative Potential	1.026	.974
Employee Ownership	1.023	.978
Leverage	1.013	.987
Capital Structure	1.009	.991
Mean VIF	1.382	.

Variance inflation factor for Model 1 (ROA)

	VIF	1/VIF
yr10	1.829	.547
yr9	1.82	.55
yr8	1.816	.551
yr7	1.812	.552
yr6	1.808	.553
yr5	1.806	.554
yr4	1.804	.554
yr3	1.802	.555
yr2	1.801	.555
Firm Size	1.3	.769
Institutional Ownership	1.27	.787
Managerial Ownership	1.144	.874
Risk	1.086	.921
Firm Growth	1.065	.939
Family Ownership	1.06	.944
Government Ownership	1.051	.952
Liquidity	1.038	.963
c i sector	1.03	.971
Innovative Potential	1.026	.974
Employee Ownership	1.023	.978
Leverage	1.013	.987
Capital Structure	1.009	.991
Mean VIF	1.382	.

Variance inflation factor Model 1 (ROE)

	VIF	1/VIF
yr10	1.829	.547
yr9	1.82	.55
yr8	1.816	.551
yr7	1.812	.552
yr6	1.808	.553
yr5	1.806	.554
yr4	1.804	.554
yr3	1.802	.555
yr2	1.801	.555
Firm Size	1.3	.769
Institutional Ownership	1.27	.787
Managerial Ownership	1.144	.874

Risk	1.086	.921
Firm Growth	1.065	.939
Family Ownership	1.06	.944
Government Ownership	1.051	.952
Liquidity	1.038	.963
c i sector	1.03	.971
Innovative Potential	1.026	.974
Employee Ownership	1.023	.978
Leverage	1.013	.987
Capital Structure	1.009	.991
Mean VIF	1.382	.

Variance inflation factor for Model 2 (TQ)

	VIF	1/VIF
Employee Ownership	67.289	.015
Employee Ownership x Investor Protection	67.242	.015
Institutional Ownership x Investor Protection	44.049	.023
Institutional Ownership	37.759	.026
Managerial Ownership	28.01	.036
Managerial Ownership x Investor Protection	27.825	.036
Family Ownership x Investor Protection	26.914	.037
Family Ownership	26.9	.037
Government Ownership	25.68	.039
Government Ownership x Investor Protection	25.656	.039
Level of Investor Protection	4.525	.221
yr1	1.873	.534
yr2	1.863	.537
yr3	1.856	.539
yr4	1.84	.543
yr5	1.83	.546
yr6	1.811	.552
yr7	1.808	.553
yr8	1.808	.553
yr9	1.804	.554
Firm Size	1.314	.761
Risk	1.164	.859
Firm Growth	1.066	.938
Liquidity	1.044	.958
c i sector	1.043	.959
Innovative Potential	1.033	.968
Leverage	1.014	.986
Capital Structure	1.009	.991
Mean VIF	14.537	.

Variance inflation factor for Model 2 (ROA)

	VIF	1/VIF
Employee Ownership	67.289	.015
Employee Ownership x Investor Protection	67.242	.015
Institutional Ownership x Investor Protection	44.049	.023
Institutional Ownership	37.759	.026
Managerial Ownership	28.01	.036
Managerial Ownership x Investor Protection	27.825	.036

Family Ownership x Investor Protection	26.914	.037
Family Ownership	26.9	.037
Government Ownership	25.68	.039
Government Ownership x Investor Protection	25.656	.039
Level of Investor Protection	4.525	.221
yr1	1.873	.534
yr2	1.863	.537
yr3	1.856	.539
yr4	1.84	.543
yr5	1.83	.546
yr6	1.811	.552
yr7	1.808	.553
yr8	1.808	.553
yr9	1.804	.554
Firm Size	1.314	.761
Risk	1.164	.859
Firm Growth	1.066	.938
Liquidity	1.044	.958
c i sector	1.043	.959
Innovative Potential	1.033	.968
Leverage	1.014	.986
Capital Structure	1.009	.991
Mean VIF	14.537	.

Variance inflation factor Model 2 (ROE)

	VIF	1/VIF
Employee Ownership	67.289	.015
Employee Ownership x Investor Protection	67.242	.015
Institutional Ownership x Investor Protection	44.049	.023
Institutional Ownership	37.759	.026
Managerial Ownership	28.01	.036
Managerial Ownership x Investor Protection	27.825	.036
Family Ownership x Investor Protection	26.914	.037
Family Ownership	26.9	.037
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Government Ownership x Investor Protection	25.656	.039
Level of Investor Protection	4.525	.221
yr1	1.873	.534
yr2	1.863	.537
yr3	1.856	.539
yr4	1.84	.543
yr5	1.83	.546
yr6	1.811	.552
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yr8	1.808	.553
yr9	1.804	.554
Firm Size	1.314	.761
Risk	1.164	.859
Firm Growth	1.066	.938
Liquidity	1.044	.958
c i sector	1.043	.959
Innovative Potential	1.033	.968

Leverage	1.014	.986
Capital Structure	1.009	.991
Mean VIF	14.537	.

Variance inflation factor Model 3 (TQ)

	VIF	1/VIF
Institutional Ownership x Capitalism	409.017	.002
Institutional Ownership	396.859	.003
Employee Ownership	320.343	.003
Employee Ownership x Capitalism	319.281	.003
Government Ownership x Capitalism	202.95	.005
Government Ownership	202.817	.005
Managerial Ownership	186.897	.005
Managerial Ownership x Capitalism	186.384	.005
Family Ownership	149.329	.007
Family Ownership x Capitalism	148.682	.007
Degree of Capitalism	4.33	.231
yr2	1.846	.542
yr1	1.834	.545
yr3	1.831	.546
yr4	1.829	.547
yr5	1.828	.547
yr6	1.828	.547
yr7	1.819	.55
yr8	1.811	.552
yr9	1.807	.554
firm Size	1.308	.764
Risk	1.193	.838
Firm Growth	1.066	.938
Liquidity	1.053	.95
c i sector	1.034	.967
Innovative Potential	1.028	.973
Leverage	1.013	.987
Capital Structure	1.009	.991
Mean VIF	91.144	.

Variance inflation factor Model 3 (ROA)

	VIF	1/VIF
Institutional Ownership x Capitalism	409.017	.002
Institutional Ownership	396.859	.003
Employee Ownership	320.343	.003
Employee Ownership x Capitalism	319.281	.003
Government Ownership x Capitalism	202.95	.005
Government Ownership	202.817	.005
Managerial Ownership	186.897	.005
Managerial Ownership x Capitalism	186.384	.005
Family Ownership	149.329	.007
Family Ownership x Capitalism	148.682	.007
Degree of Capitalism	4.33	.231
yr2	1.846	.542
yr1	1.834	.545
yr3	1.831	.546

yr4	1.829	.547
yr5	1.828	.547
yr6	1.828	.547
yr7	1.819	.55
yr8	1.811	.552
yr9	1.807	.554
firm Size	1.308	.764
Risk	1.193	.838
Firm Growth	1.066	.938
Liquidity	1.053	.95
c i sector	1.034	.967
Innovative Potential	1.028	.973
Leverage	1.013	.987
Capital Structure	1.009	.991
Mean VIF	91.144	.

Variance inflation factor Model 3 (ROE)

	VIF	1/VIF
Institutional Ownership x Capitalism	409.017	.002
Institutional Ownership	396.859	.003
Employee Ownership	320.343	.003
Employee Ownership x Capitalism	319.281	.003
Government Ownership x Capitalism	202.95	.005
Government Ownership	202.817	.005
Managerial Ownership	186.897	.005
Managerial Ownership x Capitalism	186.384	.005
Family Ownership	149.329	.007
Family Ownership x Capitalism	148.682	.007
Degree of Capitalism	4.33	.231
yr2	1.846	.542
yr1	1.834	.545
yr3	1.831	.546
yr4	1.829	.547
yr5	1.828	.547
yr6	1.828	.547
yr7	1.819	.55
yr8	1.811	.552
yr9	1.807	.554
firm Size	1.308	.764
Risk	1.193	.838
Firm Growth	1.066	.938
Liquidity	1.053	.95
c i sector	1.034	.967
Innovative Potential	1.028	.973
Leverage	1.013	.987
Capital Structure	1.009	.991
Mean VIF	91.144	.

Variance inflation factor Model 4 (TQ)

	VIF	1/VIF
Industry Average ROA	15.423	.065
Institutional Ownership x Industry Average ROA	14.804	.068

yr10	1.831	.546
yr9	1.822	.549
yr8	1.818	.55
yr7	1.814	.551
yr6	1.809	.553
yr5	1.806	.554
yr4	1.806	.554
yr3	1.803	.555
yr2	1.803	.555
Government Ownership x Industry Average ROA	1.564	.64
Employee Ownership x Industry Average ROA	1.519	.658
Managerial Ownership x Industry Average ROA	1.341	.746
Firm Size	1.307	.765
Institutional Ownership	1.306	.766
Managerial Ownership	1.147	.872
Government ownership	1.1	.909
Risk	1.088	.919
Family Ownership	1.07	.935
Family Ownership x Industry Average ROA	1.067	.937
Firm Growth	1.066	.938
Liquidity	1.044	.958
c i sector	1.036	.965
Innovative Potential	1.032	.969
Employee Ownership	1.027	.974
Leverage	1.013	.987
Capital Structure	1.01	.99
Mean VIF	2.367	.

Variance inflation factor Model 4 (ROA)

	VIF	1/VIF
Industry Average ROA	15.423	.065
Institutional Ownership x Industry Average ROA	14.804	.068
yr10	1.831	.546
yr9	1.822	.549
yr8	1.818	.55
yr7	1.814	.551
yr6	1.809	.553
yr5	1.806	.554
yr4	1.806	.554
yr3	1.803	.555
yr2	1.803	.555
Government Ownership x Industry Average ROA	1.564	.64
Employee Ownership x Industry Average ROA	1.519	.658
Managerial Ownership x Industry Average ROA	1.341	.746
Firm Size	1.307	.765
Institutional Ownership	1.306	.766
Managerial Ownership	1.147	.872
Government ownership	1.1	.909
Risk	1.088	.919
Family Ownership	1.07	.935
Family Ownership x Industry Average ROA	1.067	.937
Firm Growth	1.066	.938

Liquidity	1.044	.958
c i sector	1.036	.965
Innovative Potential	1.032	.969
Employee Ownership	1.027	.974
Leverage	1.013	.987
Capital Structure	1.01	.99
Mean VIF	2.367	.

Variance inflation factor for Model 4 (ROE)

	VIF	1/VIF
Industry Average ROA	15.423	.065
Institutional Ownership x Industry Average ROA	14.804	.068
yr10	1.831	.546
yr9	1.822	.549
yr8	1.818	.55
yr7	1.814	.551
yr6	1.809	.553
yr5	1.806	.554
yr4	1.806	.554
yr3	1.803	.555
yr2	1.803	.555
Government Ownership x Industry Average ROA	1.564	.64
Employee Ownership x Industry Average ROA	1.519	.658
Managerial Ownership x Industry Average ROA	1.341	.746
Firm Size	1.307	.765
Institutional Ownership	1.306	.766
Managerial Ownership	1.147	.872
Government ownership	1.1	.909
Risk	1.088	.919
Family Ownership	1.07	.935
Family Ownership x Industry Average ROA	1.067	.937
Firm Growth	1.066	.938
Liquidity	1.044	.958
c i sector	1.036	.965
Innovative Potential	1.032	.969
Employee Ownership	1.027	.974
Leverage	1.013	.987
Capital Structure	1.01	.99
Mean VIF	2.367	.

Appendix 2.3.3. **The Variance Inflation factor values for the developing countries sample:**

Variance inflation factor Model 1 (TQ)

	VIF	1/VIF
yr1	1.869	.535
yr2	1.851	.54
yr3	1.84	.544
yr4	1.833	.546
yr5	1.824	.548

yr6	1.815	.551
yr7	1.809	.553
yr8	1.807	.553
yr9	1.804	.554
Managerial Ownership	1.378	.726
Family Ownership	1.36	.735
Firm Size	1.342	.745
Leverage	1.255	.797
Government Ownership	1.215	.823
Institutional Ownership	1.197	.836
Capital Structure	1.159	.863
Liquidity	1.12	.893
Innovative Potential	1.116	.896
Firm Growth	1.107	.903
c i sector	1.051	.951
Employee Ownership	1.043	.959
Risk	1.034	.967
Mean VIF	1.447	.

Variance inflation factor Model 1 (ROA)

	VIF	1/VIF
yr1	1.869	.535
yr2	1.851	.54
yr3	1.84	.544
yr4	1.833	.546
yr5	1.824	.548
yr6	1.815	.551
yr7	1.809	.553
yr8	1.807	.553
yr9	1.804	.554
Managerial Ownership	1.378	.726
Family Ownership	1.36	.735
Firm Size	1.342	.745
Leverage	1.255	.797
Government Ownership	1.215	.823
Institutional Ownership	1.197	.836
Capital Structure	1.159	.863
Liquidity	1.12	.893
Innovative Potential	1.116	.896
Firm Growth	1.107	.903
c i sector	1.051	.951
Employee Ownership	1.043	.959
Risk	1.034	.967
Mean VIF	1.447	.

Variance inflation factor Model 1 (ROE)

	VIF	1/VIF
yr1	1.869	.535
yr2	1.851	.54
yr3	1.84	.544
yr4	1.833	.546

yr5	1.824	.548
yr6	1.815	.551
yr7	1.809	.553
yr8	1.807	.553
yr9	1.804	.554
Managerial Ownership	1.378	.726
Family Ownership	1.36	.735
Firm Size	1.342	.745
Leverage	1.255	.797
Government Ownership	1.215	.823
Institutional Ownership	1.197	.836
Capital Structure	1.159	.863
Liquidity	1.12	.893
Innovative Potential	1.116	.896
Firm Growth	1.107	.903
c i sector	1.051	.951
Employee Ownership	1.043	.959
Risk	1.034	.967
Mean VIF	1.447	.

Variance inflation factor Model 2 (TQ)

	VIF	1/VIF
Institutional Ownership x Investor Protection	83.184	.012
Institutional Ownership	68.787	.015
Family Ownership x Investor Protection	44.348	.023
Managerial Ownership x Investor Protection	43.503	.023
Family Ownership	40.624	.025
Government Ownership	39.928	.025
Managerial Ownership	39.182	.026
Employee Ownership x Investor Protection	38.92	.026
Employee Ownership	38.596	.026
Government Ownership x Investor Protection	38.102	.026
Level of Investor Protection	4.582	.218
yr1	1.897	.527
yr2	1.875	.533
yr3	1.859	.538
yr4	1.847	.542
yr5	1.841	.543
yr6	1.819	.55
yr7	1.81	.553
yr8	1.808	.553
yr9	1.805	.554
Firm Size	1.59	.629
Leverage	1.292	.774
Liquidity	1.242	.805
Capital Structure	1.166	.858
Risk	1.147	.872
Innovative Potential	1.143	.875
Firm Growth	1.129	.886
c i sector	1.06	.944
Mean VIF	18.074	.

Variance inflation factor Model 2 (ROA)

	VIF	1/VIF
Institutional Ownership x Investor Protection	83.184	.012
Institutional Ownership	68.787	.015
Family Ownership x Investor Protection	44.348	.023
Managerial Ownership x Investor Protection	43.503	.023
Family Ownership	40.624	.025
Government Ownership	39.928	.025
Managerial Ownership	39.182	.026
Employee Ownership x Investor Protection	38.92	.026
Employee Ownership	38.596	.026
Government Ownership x Investor Protection	38.102	.026
Level of Investor Protection	4.582	.218
yr1	1.897	.527
yr2	1.875	.533
yr3	1.859	.538
yr4	1.847	.542
yr5	1.841	.543
yr6	1.819	.55
yr7	1.81	.553
yr8	1.808	.553
yr9	1.805	.554
Firm Size	1.59	.629
Leverage	1.292	.774
Liquidity	1.242	.805
Capital Structure	1.166	.858
Risk	1.147	.872
Innovative Potential	1.143	.875
Firm Growth	1.129	.886
c i sector	1.06	.944
Mean VIF	18.074	.

Variance inflation factor Model 2 (ROE)

	VIF	1/VIF
Institutional Ownership x Investor Protection	83.184	.012
Institutional Ownership	68.787	.015
Family Ownership x Investor Protection	44.348	.023
Managerial Ownership x Investor Protection	43.503	.023
Family Ownership	40.624	.025
Government Ownership	39.928	.025
Managerial Ownership	39.182	.026
Employee Ownership x Investor Protection	38.92	.026
Employee Ownership	38.596	.026
Government Ownership x Investor Protection	38.102	.026
Level of Investor Protection	4.582	.218
yr1	1.897	.527
yr2	1.875	.533
yr3	1.859	.538
yr4	1.847	.542
yr5	1.841	.543
yr6	1.819	.55
yr7	1.81	.553
yr8	1.808	.553
yr9	1.805	.554

Firm Size	1.59	.629
Leverage	1.292	.774
Liquidity	1.242	.805
Capital Structure	1.166	.858
Risk	1.147	.872
Innovative Potential	1.143	.875
Firm Growth	1.129	.886
c i sector	1.06	.944
Mean VIF	18.074	.

Variance inflation factor Model 3 (TQ)

	VIF	1/VIF
Family Ownership	982.833	.001
Family Ownership x Capitalism	978.854	.001
Government Ownership	727.224	.001
Government Ownership x Capitalism	725.438	.001
Managerial Ownership	546.678	.002
Managerial Ownership x Capitalism	544.736	.002
Institutional Ownership x Capitalism	347.048	.003
Institutional Ownership	329.682	.003
Employee Ownership x Capitalism	283.971	.004
Employee Ownership	282.399	.004
Degree of Capitalism	3.501	.286
yr9	1.968	.508
yr10	1.966	.509
yr7	1.916	.522
yr8	1.906	.525
yr4	1.869	.535
yr5	1.851	.54
yr6	1.841	.543
yr3	1.833	.546
yr2	1.807	.553
Firm Size	1.385	.722
Leverage	1.27	.788
Risk	1.166	.858
Capital Structure	1.161	.861
Liquidity	1.153	.868
Innovative Potential	1.128	.886
Firm Growth	1.114	.898
c i sector	1.06	.943
Mean VIF	206.384	.

Variance inflation factor Model 3 (ROA)

	VIF	1/VIF
Family Ownership	982.833	.001
Family Ownership x Capitalism	978.854	.001
Government Ownership	727.224	.001
Government Ownership x Capitalism	725.438	.001
Managerial Ownership	546.678	.002
Managerial Ownership x Capitalism	544.736	.002
Institutional Ownership x Capitalism	347.048	.003
Institutional Ownership	329.682	.003

Employee Ownership x Capitalism	283.971	.004
Employee Ownership	282.399	.004
Degree of Capitalism	3.501	.286
yr9	1.968	.508
yr10	1.966	.509
yr7	1.916	.522
yr8	1.906	.525
yr4	1.869	.535
yr5	1.851	.54
yr6	1.841	.543
yr3	1.833	.546
yr2	1.807	.553
Firm Size	1.385	.722
Leverage	1.27	.788
Risk	1.166	.858
Capital Structure	1.161	.861
Liquidity	1.153	.868
Innovative Potential	1.128	.886
Firm Growth	1.114	.898
c i sector	1.06	.943
Mean VIF	206.384	.

Variance inflation factor Model 3 (ROE)

	VIF	1/VIF
Family Ownership	982.833	.001
Family Ownership x Capitalism	978.854	.001
Government Ownership	727.224	.001
Government Ownership x Capitalism	725.438	.001
Managerial Ownership	546.678	.002
Managerial Ownership x Capitalism	544.736	.002
Institutional Ownership x Capitalism	347.048	.003
Institutional Ownership	329.682	.003
Employee Ownership x Capitalism	283.971	.004
Employee Ownership	282.399	.004
Degree of Capitalism	3.501	.286
yr9	1.968	.508
yr10	1.966	.509
yr7	1.916	.522
yr8	1.906	.525
yr4	1.869	.535
yr5	1.851	.54
yr6	1.841	.543
yr3	1.833	.546
yr2	1.807	.553
Firm Size	1.385	.722
Leverage	1.27	.788
Risk	1.166	.858
Capital Structure	1.161	.861
Liquidity	1.153	.868
Innovative Potential	1.128	.886
Firm Growth	1.114	.898
c i sector	1.06	.943
Mean VIF	206.384	.

Variance inflation factor Model 4 (TQ)

	VIF	1/VIF
Institutional Ownership x Industry Average ROA	17.061	.059
Industry Average ROA	16.613	.06
yr1	1.874	.534
yr2	1.854	.539
yr3	1.843	.543
yr4	1.837	.544
yr5	1.832	.546
Family Ownership x Industry Average ROA	1.829	.547
yr6	1.824	.548
yr7	1.817	.55
yr8	1.812	.552
yr9	1.811	.552
Managerial Ownership x Industry Average ROA	1.759	.568
Family Ownership	1.525	.656
Employee Ownership	1.446	.691
Employee Ownership x Industry Average ROA	1.418	.705
Managerial Ownership	1.399	.715
Firm Size	1.349	.741
Leverage	1.265	.79
Government Ownership	1.228	.814
Capital Structure	1.213	.825
Institutional Ownership	1.198	.835
Liquidity	1.123	.891
Innovative Potential	1.117	.895
Firm Growth	1.108	.902
c i sector	1.054	.949
Risk	1.035	.966
Government Ownership x Industry Average ROA	1.028	.973
Mean VIF	2.581	.

Variance inflation factor Model 4 (ROA)

	VIF	1/VIF
Institutional Ownership x Industry Average ROA	17.061	.059
Industry Average ROA	16.613	.06
yr1	1.874	.534
yr2	1.854	.539
yr3	1.843	.543
yr4	1.837	.544
yr5	1.832	.546
Family Ownership x Industry Average ROA	1.829	.547
yr6	1.824	.548
yr7	1.817	.55
yr8	1.812	.552
yr9	1.811	.552
Managerial Ownership x Industry Average ROA	1.759	.568
Family Ownership	1.525	.656
Employee Ownership	1.446	.691
Employee Ownership x Industry Average ROA	1.418	.705
Managerial Ownership	1.399	.715
Firm Size	1.349	.741
Leverage	1.265	.79

Government Ownership	1.228	.814
Capital Structure	1.213	.825
Institutional Ownership	1.198	.835
Liquidity	1.123	.891
Innovative Potential	1.117	.895
Firm Growth	1.108	.902
c i sector	1.054	.949
Risk	1.035	.966
Government Ownership x Industry Average ROA	1.028	.973
Mean VIF	2.581	.

Variance inflation factor Model 4 (ROE)

	VIF	1/VIF
Institutional Ownership x Industry Average ROA	17.061	.059
Industry Average ROA	16.613	.06
yr1	1.874	.534
yr2	1.854	.539
yr3	1.843	.543
yr4	1.837	.544
yr5	1.832	.546
Family Ownership x Industry Average ROA	1.829	.547
yr6	1.824	.548
yr7	1.817	.55
yr8	1.812	.552
yr9	1.811	.552
Managerial Ownership x Industry Average ROA	1.759	.568
Family Ownership	1.525	.656
Employee Ownership	1.446	.691
Employee Ownership x Industry Average ROA	1.418	.705
Managerial Ownership	1.399	.715
Firm Size	1.349	.741
Leverage	1.265	.79
Government Ownership	1.228	.814
Capital Structure	1.213	.825
Institutional Ownership	1.198	.835
Liquidity	1.123	.891
Innovative Potential	1.117	.895
Firm Growth	1.108	.902
c i sector	1.054	.949
Risk	1.035	.966
Government Ownership x Industry Average ROA	1.028	.973
Mean VIF	2.581	.

Appendix 3. Comparison between OLS and GMM results

A comparison between the results of OLS and GMM is presented in Table 6 6. The GMM resulted generally in less significant relationships than OLS.

Table 6 6: Comparison between OLS and GMM results

Model 1: The relationship between ownership structure and firm performance																		
	Combined sample						Developed countries sample						Developing countries sample					
FP	TQ		ROA		ROE		TQ		ROA		ROE		TQ		ROA		ROE	
	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM
Gov	-	-**	+***	+	+***	+	-***	-	-***	-	-	-	+**	+**	+***	+*	+***	+
Fam	+	+	+***	+	+	+	-*	-	+**	+	+	+	+***	+	+***	+	+***	+
Inst	+***	+**	+***	+	+***	+	+***	+**	+***	+	+***	+	-	-***	+***	+	+**	+
Man	-	-	-	-	+	+	-**	-	-	-	-**	-	+***	+	+***	+	+*	+
Emp	+*	+	+	+	+***	+	-	-	-	-	+***	+	+***	+**	+***	+	+***	+
Model 2: The impact of the level of investor protection on ownership structure-firm performance relationship																		
	Combined sample						Developed countries sample						Developing countries sample					
FP	TQ		ROA		ROE		TQ		ROA		ROE		TQ		ROA		ROE	
	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM
Gov	+*	+	-	-	-***	-	+***	+	-	-**	-	-	-	-	-***	-**	-***	-
Fam	+***	+	+	+***	+	+	+***	+	+	+***	+	+	+***	+	+***	+***	+***	+
Inst	+***	+	+***	+***	+	+	+***	+	+*	+***	+	+	-***	-	-***	-	-	-
Man	+*	+	-	-***	+	+	+**	+	-	-***	+	+	-	-	-***	-**	-***	-
Emp	+	+*	-***	-**	-**	-	-**	-	-	-**	-	-	+***	+**	+**	+*	-	-
Model 3: The impact of the degree of capitalism on ownership structure-firm performance relationship																		
	Combined sample						Developed countries sample						Developing countries sample					
FP	TQ		ROA		ROE		TQ		ROA		ROE		TQ		ROA		ROE	
	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM
Gov	-***	-	-***	-*	-***	-**	-**	-	-	-**	-	-	-*	-**	-***	-**	-**	-
Fam	-***	-**	-***	-**	-	-	-**	-	-*	-	-***	-*	-	-**	-	-*	-*	-
Inst	+***	+***	+***	+	+***	+*	+***	+**	+*	+*	-	-	-***	-*	-	-*	-	-
Man	-**	-	-*	-*	+	+	+	+	+	+	-	-*	-	-	-	-*	-	-
Emp	-***	-*	+	+	+***	+	-	-	+**	+*	+**	+**	+***	+**	+	+	-	-
Model 4: The impact of the industry average performance on ownership structure-firm performance relationship																		
	Combined sample						Developed countries sample						Developing countries sample					
FP	TQ		ROA		ROE		TQ		ROA		ROE		TQ		ROA		ROE	
	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM	OLS	GMM
Gov	+	+	-*	-**	-	-**	-	-	-	-**	-	-	-**	-*	-***	-*	-**	-
Fam	+	0	-	-	+	+	0	0	-	-	+	+***	-	-*	+	+***	+**	+
Inst	-***	0	0	0	-	-	-***	0	0	0	-	-	0	-*	-	-	+	+
Man	0	0	+**	0	-	-	0	0	+**	0	-	-	+	+	-	-	-***	-***
Emp	-	-	+	+	-	-	-	-	-	-	-	-	-	-**	+	+	+	+

*** p<.01, ** p<.05, * p<.1