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Master Thesis

The Impact of Ownership Structure on Firm Performance: Evidence from Europe

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Abstract

The ownership structure of a company has been identified as a key mechanism in corporate governance. The present study investigates the impact of ownership concentration and ownership identity on company economic performance. The sample consists of a unique database of 749 listed Continental European companies. The empirical results show that ownership concentration has a U-shaped relationship with firm performance. The effect of ownership concentration on corporate performance is also found to be negatively mediated by R&D investment and to vary across different legal settings. Furthermore, this research proposes and supports the hypothesis that the identity of the controlling shareholder has implications for corporate strategy and performance. In fact, corporate and state ownership have a positive and negative impact, respectively, on firm performance. Thus, the findings of this study suggest that ownership structure matters, particularly in a Continental European institutional setting.

Keywords: Ownership Structure, Ownership Concentration, Owner Identity, Agency Theory, Continental Europe, R&D investment, Firm Performance

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List of Abbreviations

OLS – Ordinary Least Squares
2SLS – Two-Stage Least Squares
UK – United Kingdom
US – United States
EFES - European Federation of Employee Share Ownership
R&D – Research and Investment
et al. - (Latin et alii) and others
ROA – Return on Assets
SIC – Standard Industrial Classification
R^2 - R Squared (Coefficient of Determination)

1 Introduction

The gap between ownership and control is a phenomenon that is at the heart of many large companies and precipitates conflicts of interest between principals (owners) and agents (managers). While principals are focused on enhancing the value of the firm, agents prefer to pursue their own short-term and financial interests (Berle & Means, 1932). Jensen and Meckling (1976) described this divergence of interests as the agency theory. Corporate governance provides a guarantee to those that supply capital to a company that they will get a return on their investment (Shleifer & Vishny, 1997) and it can be described as the process by which investors attempt to minimize agency costs (Coase, 1937).

Ownership structure is an important component of corporate governance (Shleifer & Vishny, 1986). The ownership structure of a firm is explained by ownership concentration, which provides quantitative data about the stake of the shareholder(s), and ownership identity, which provides qualitative data regarding the character of the shareholder(s). Concentrated and dispersed ownership can both lead to agency problems between different shareholders or stakeholders (Isik & Soykan, 2013) and different types of owners will differ in the objectives, risk preferences, and investment horizons they set for the firm, leading to dissimilar types of outcomes in terms of performance (Hautz et al., 2013). The controlling owner, defined as the largest shareholder, has the highest importance in the firm. Previous research argues that the controlling owner receives more attention from firm management and has access to more information than other shareholders (Useem, 1996; Schnatterly et al., 2008). Subsequently, the controlling owner may be in a privileged position to monitor, discipline and influence agents (Muller-Kahle, 2013).

R&D activities are very important to create a sustainable competitive advantage and enhance firm performance (Hall & Oriani, 2006). However, these can also be associated to agency costs. Even though R&D investments might result in higher performance, agents might tend to underinvest into R&D investments compared to principals, due to the high risk of failure and the long-term horizon associated with these investments (Holmström, 1989). Nonetheless, the literature has not gathered consensus whether controlling owners are long-term oriented and promote R&D investments (Chen, 2010).

The relationship between ownership structure and economic performance has been one of the most widely researched areas in management (Demsetz & Villalonga, 2001). Regardless of the massive volume of empirical work available on this topic, scholars have

not reached an agreement, with different authors achieving inconsistent and even contradictory empirical evidence (Džanić, 2012). This research has considered mainly an Anglo-Saxon corporate governance structure (Gugler et al., 2008), which is not necessarily representative for continental Europe where the legal/institutional environment is quite different (Pedersen & Thomsen, 2003), corporate governance mechanisms are nearly non-existent in some countries (Shleifer & Vishny, 1997), share ownership is much more concentrated (Isik & Soykan, 2013), and stock markets are less developed (Pedersen & Thomsen, 2003). Although recent studies have moved towards analyzing the relationship between ownership structure and performance in Europe (Lisboa & Esperança, 2008), they study Europe as a unit and therefore disregard regional specificities such as macroeconomic instability and investors legal protection (Thomsen & Perdersen, 2000). A meta-analysis by Wang and Shailer (2015) supports the need for comparative studies of the relationship between ownership structure and firm performance across countries with similar corporate governance environments.

Thus, there are several research gaps on prior research concerning the ownership of corporations (Boyd & Solarino, 2016). This paper contributes to the literature by extending previous work to the different regions of continental Europe, allowing to compare the effect of ownership structure as a corporate governance mechanism within different institutional and legal settings. The results may boost the consistency and reliability of previous findings and provide information that can be used to achieve a more accurate definition of optimal ownership structure. Moreover, this research seeks to improve our understanding of how R&D investment mediates the relationship between ownership structure and firm performance, which is an aspect that was neglected by previous studies. Investigating the unknown impact of R&D investment may provide new insights to the existing literature. Furthermore, this study builds on the relatively limited literature on the impact of controlling ownership (Filatotchev & Wright, 2001; Muller-Kahle, 2013).

The objective of this study is to provide empirical evidence on whether and how corporate ownership structure influences the performance of European listed companies, focusing on the role and identity of the controlling shareholder. The research question for this study is as follows: *What is the effect of ownership structure on the performance of European listed companies?* Furthermore, it has been divided into four sub-questions: 1. How does ownership concentration influence the performance of European firms? 2. Does owner

identity impact the performance of European firms? 3. Does R&D investment mediate the interaction between ownership structure and firm performance? 4. Can differences across countries explain variation in performance?

The rest of this thesis is organized as follows: chapter two discusses the theoretical foundations underpinning the present research and presents the hypothesis that will be tested in this study; chapter three describes the data sources and statistical methods used; chapter four reveals the research findings per hypothesis; chapter five discusses the results of this study by comparing it to previous literature, provides implications for academics, managers and policy makers, and discusses the limitations of the study; chapter six answers the problem statement, providing an overview of the empirical results obtained.

2　Literature Review and Hypothesis

The following chapter, which is divided into four sub-sections, aims to discuss the theoretical foundations supporting every hypothesis development. As a result, it: (i) provides a general overview of the corporate governance theory and the relevant literature within the field, to draw up the universe within which this research is constructed; (ii) elaborates on the relationship between ownership structure and firm performance, supporting it with findings from empirical research; (iii) explores R&D investment in the context of the ownership literature; and (iv) elaborates on corporate governance differences across Continental European regions, supporting it with findings from previous studies.

2.1　Corporate Governance Theory

Corporate governance can be described as the various mechanisms that investors use to reduce agency costs (Coase, 1937). The existing literature considers that ownership structure is an important mechanism of corporate governance (Shleifer & Vishny, 1997). The lack of corporate governance systems in less developed capital markets increases the risk of managers not following the stakeholder approach, where they make decisions according to the interests of the firm's stakeholders as a whole (Shleifer & Vishny, 1997; Driver & Thompson, 2002). Corporate governance mechanisms are usually linked with the existence of agency costs, being essential to overcome potential principal-agent and principal-principal problems.

2.1.1　Principal-Agent Theory

Agency theory is the approach that is used more often when studying ownership issues (Boyd & Solarino, 2016). Berle and Means (1932) were the first to introduce the concept of agency theory, stating that the interests of firm's managers often differ from the interests of the shareholders of the company. An agency cost occurs when there is a separation of ownership and management. In other words, agency theory states that the principal and the agent both want to maximize their utility and by doing so they will not act in the best interest for each other (Jensen & Meckling, 1976). Jensen and Meckling (1976) define agency costs as the value lost by shareholders due to the divergent interests between principal and agent.

To avoid the negative impact of agency costs on firm value, it is important to align principal and agent interests (Fama & Jensen, 1983). Nevertheless, due to the imperfect nature of contracts, it is impossible to develop a contract that accounts for every possible

action of an agent (Shleifer & Vishny, 1997; Nyberg et al., 2010). The absence of an alignment between both parties can lead to several adverse outcomes. For example, managers may favour strategic actions, such as mitigating risk, in order to increase their own financial rewards, potentially at the cost of shareholder return and the firm's long-term performance (Baumol, 1967; Boyd & Solarino, 2016).

The two main types of principal-agent problems described in the literature are adverse selection and moral hazard. Whilst the first occurs *ex ante* writing the contract and arises due to hidden information, the latter exists *ex post* writing the contract and happens due to hidden action (Arrow, 1984). Adverse selection describes a situation where the principal is unable to observe the qualities of the agent in an accurate way (Furubotn & Richter, 2005). This asymmetry of information often leads to the principal, which has less information, to make bad decisions. On the other hand, the problem of moral hazard occurs because the principal is unable to completely evaluate the causes of the outcome of the agent's actions, since these can be influenced by internal as well as external factors (Arrow, 1984; Jensen & Meckling, 1973). Consequently, this will lead to a situation where agents will act on their own incentives at the cost of the principal (Jensen & Meckling, 1973).

2.1.2 Principal-Principal Theory

The traditional agency model has led to the development of the principal-principal agency theory which explains the conflict between controlling owners and minority investors (Young et al., 2008). This theory states that in less developed capital markets principal-principal conflicts may occur. These conflicts arise when the controlling owner emphasizes his own goals, expropriating value from minority shareholders. This results in the transfer of value from minority shareholders to the controlling shareholder (Morck et al., 2005; Shleifer & Vishny, 1997). Thus, although controlling shareholders reduce the agency cost of managers, whether their presence is beneficial for companies depends on their expropriation behaviours (La Porta et al., 2000). According to Young et al. (2008), principal-principal conflicts are caused by concentrated ownership and control, weak legal protection of minority shareholders and inefficient corporate governance systems.

2.2 Ownership Structure and Corporate Performance

The effect of ownership structure, in terms of ownership concentration and ownership identity, on firm performance has been extensively researched in the literature. The

interconnection between ownership and management is an efficient substitute for costly corporate governance mechanisms (Schulze et al., 2002), reducing or even eliminating the existence of agency costs such as adverse selection and moral hazard. Nevertheless, presently most public companies have a concentrated ownership structure and are controlled by a dominant shareholder (La Porta et al., 1999), named as controlling shareholder.

2.2.1 Ownership Concentration and Corporate Performance

Ownership concentration is defined as the number of shares owned by a firm's shareholders and measures if these shares are widely or closely held by the listed companies (OECD, 1993; Demsetz & Villalonga, 2001). Scholars have defined two conflicting paradigms in the literature: the *alignment theory* and the *expropriation theory*. Whilst the first states that ownership concentration has a positive influence on company performance, the latter defends the contrary effect.

The *alignment theory* defends that controlling shareholders have more motivation to monitor the actions of managers, allowing the firm to achieve a better performance due to lower agency costs (Shleifer & Vishny, 1997; Jensen & Meckling, 1976). When shareholders own a larger stake of the company's stocks there are more incentives for them to control managers, since they could be more affected by the actions of these (Denis & McConnell, 2003). In other words, large shareholders achieve more benefits by staying informed than the cost, in terms of time and money, required to be able to obtain the information. Shleifer and Vishny (1997) argue that large shareholders can improve firm performance by changing the strategy of the company or by negotiating with or replacing the management team. These authors state that managers maximize profits imperfectly and therefore large shareholders can find improvements that the incumbent management is not aware of. Moreover, ownership concentration can work as a substitute for weak legal and institutional environments, with a positive effect on firm performance (Wang & Shailer, 2015; Perotti & von Thadden, 2006).

On the other hand, the *expropriation theory* argues that concentrated ownership may increase the probability of conflicts between large shareholders and minority shareholders (Denis & McConnell, 2003). Thus, controlling shareholders can act in their own interest and use their power to benefit themselves at the expense of minority shareholders (Shleifer & Vishny, 1997). Naturally, pursuing the interests of the dominant shareholders may lead to worse firm performance, since interests of controlling shareholders and firm

interests may diverge (Leung & Horwitz, 2009). Additionally, concentrated ownership may imply lower performance due to less access to external finance and a negative impact on other corporate governance mechanisms, such as the board of directors (Wang & Shailer, 2015).

Although many researches have tried to examine the impact of large shareholders, these have often found contradicting or mixed results (Al-Najjar, 2015), failing to shed light on to which extent ownership concentration pays off. In fact, some researchers do not find any impact at all of the ownership structure on firm performance (Demsetz & Villalonga, 2001; Chen et al., 2005). These scholars defend that the optimal ownership structure highly depends on the environment the company is incorporated in (Becker, 1962). According to this viewpoint, companies that have an inefficient ownership structure will be eliminated by the market competition.

Yet, many papers have found a positive relationship between ownership concentration and firm performance (Brailsford et al., 2002; Edwards & Weichenrieder, 2004). These results indicate that companies should increase stocks owned by dominant shareholders indefinitely. A less significant portion of studies, have found ownership concentration to be prejudicial for corporate performance (Dyck et al., 2004; Burkart et al., 1997; Pervan et al., 2012). This means that ownership concentration should be discouraged due to its detrimental impact on firm performance. More recently, there has been a focus on the possibility of a non-linear relationship between ownership concentration and firm performance, suggesting that the two previous viewpoints might in fact complement each other. Studies concluded that at first there is an increasing effect of ownership concentration on firm performance and then a decreasing effect of ownership concentration on firm performance, documenting an inverted U-Shaped relationship (Thomsen & Pedersen, 2000; Liu et al., 2012; Arosa et al., 2010; Kapopoulos & Lazaretou, 2007). Thus, this stream of research argues that ownership concentration has two conflicting effects on company performance (Gugler et al., 2008).

Author	Year	Sample	Performance Measure	Ownership Measure	Key Findings
Demsetz and Villalonga	2001	223 firms from all sectors of the US economy	Tobin's Q	Percentage of shares owned by 5 largest shareholders	**No significant** relation between ownership concentration and performance
Edwards and Weichenrieder	2004	97 listed German corporations from 1992	Value of corporate equity	First and second largest shareholder control rights	**Positive** effect on minority shareholders of ownership concentration
Pervan et al.	2012	Listed Croatian firms during the period from 2003 – 2010	ROA	Concentration of the 4 largest shareholders	Report a **negative** influence of concentration on firm performance
Thomsen and Pedersen	2000	435 of the largest European companies in 1990	Shareholder value and profitability	Ownership share of the largest owner	Large shareholders' ownership has an **inverted U-shaped** relation

Table 1: Literature on Ownership Concentration and Firm Performance

Although empirical results have diverged, as can be understood from the explanation above, there are two main theoretical predictions that give rise to a non-linear relationship between ownership concentration and firm performance. According to the *alignment theory*, concentrated ownership may minimize the agency problems that occur between controlling shareholders and the managers of the firm. Consequently, concentrated ownership may have a positive impact on firm performance due to the monitoring effect. On the other hand, the *expropriation theory* states that when ownership concentration exceeds a certain level, controlling shareholders may extract private benefits at the cost of other stakeholders, leading to a decrease in corporate performance. This said, it is expected that there is an increasing effect of ownership concentration on firm performance until a certain point and then a decreasing effect of ownership concentration on firm performance.

H1: A higher share of ownership of the controlling shareholder decreases firm performance.

H2: The share of ownership of the controlling shareholder has an inverted U-shaped relationship with firm performance.

2.2.2   Owner Identity and Corporate Performance

The identity of a firm's owner is one of the most important factors affecting the strategy and performance of a company (Xia & Walker, 2015). Each type of owner has different incentives and consequently imposes different type of goals in terms of profit, dividends, capital structure, and growth rates (Thomsen & Pedersen, 2000). Consequently, it is important, not only how much equity a shareholder owns, but also who that shareholder is. This thesis will focus on four owner identities: family, state, corporate, and institutional. These are among the main ownership types of publicly-traded companies around the world (Munari & Sobrero, 2010).

2.2.2.1   Family Ownership

Family firms are usually linked to a double role for the family as owners and managers of the firm (Thomsen & Pedersen, 2000). Thus, families act on their own behalf and therefore they can pursue more focused strategies than other type of owners (Gomez-Mejia et al., 2010). The fact that families make large firm-specific investments in human capital (Maug, 1996) and invest a large proportion of their personal wealth in a single company (Gomez-Mejia et al., 2010) leads to them being risk-averse and unwilling to give up control (Hautz et al., 2013).

Claessens et al. (1999) documented high conflicts of interest between minority shareholders and controlling family, resulting in inferior company performance. These results suggest that families may attempt to expropriate minority shareholders. Nevertheless, most studies have found a positive association between family ownership and firm performance (Anderson & Reeb, 2003; Wenyi, 2011; Chu, 2011; Boyd & Solarino, 2016). The in-depth knowledge that families have of the firm enables efficient monitoring, which in turn reduces the principal-agent problem.

H3a: Family ownership has a positive impact on firm performance.

2.2.2.2   State Ownership

In many countries, especially in industries considered of public interest, the state owns some listed firms. The objective of state-owned corporations is less profit-oriented and more focused on maximizing social welfare (Shen & Lin, 2009). Hence, governments

may invest in private firms to achieve political, economic, or social goals (Shleifer & Vishny, 1994; Cuervo & Villalonga, 2000), which are often associated with poor financial performance and low firm value (Hart et al., 1997). State-owned companies may benefit from some competitive advantages by having the government as their controlling shareholder, such as tax exemptions (Capobianco & Christiansen, 2011), easier access to credit (Tian & Estrin, 2008) or the creation of new regulations in favour of the firm (Borisova et al., 2012). Nonetheless, these benefits are overcome by the role these companies assume of correcting market failures (Thomsen & Pedersen, 2000). For example, the government may disregard profit in favour of reducing unemployment, extracting tax revenues, or contributing to the stability of the financial system (Borisova et al., 2012). The visibility of the social benefits pursued, which are highly dependent on regional differences, is critical to politicians (Shleifer & Vishny, 1996; Shleifer & Vishny, 1994).

Most of the empirical studies conclude that government ownership has a negative impact on performance (Thomsen & Pedersen, 2003; Dewenter & Malatesta, 1998; Goldeng et al., 2008). These results seem to indicate that the various competitive advantages these firms have could discourage monitoring, which in turn can trigger agency problems. This may happen because the monitoring costs are higher than the political payoff (Shen & Lin, 2009).

H3b: State ownership has a negative impact on firm performance.

2.2.2.3 Corporate Ownership

Corporations may hold a large stake of shares in other companies as part of cross-ownership or company group structures (Ghemmavat & Khanna, 1998; Kester, 1992). Although corporate ownership can provide access to valuable technology or capital that might improve the value of the allied companies (Kester, 1992), the target firm also loses some level of control and flexibility (Connelly et al., 2010).

Previous research has not gathered consensus on whether the benefits of corporate ownership outweigh the costs associated (Demsetz, 1983). Thomsen and Pedersen (2000) found a negative relationship between corporate ownership and firm value, stating that corporate owners are more concerned with firm survival rather than shareholder value. Nevertheless, there seems to be more evidence that support a positive relationship between corporate ownership and firm value in continental European firms (Pedersen &

Thomsen, 2003; Connelly et al., 2010; Bauguess et al., 2009). In fact, this stream of research states that corporate ownership brings capital that can be used for growth, which in turn could lead to a better firm performance (Connelly et al., 2010).

H3c: Corporate ownership has a positive impact on firm performance.

2.2.2.4 Institutional Ownership

Institutional ownership is defined as "the fraction of a firm's shares that are held by institutional investors" (Chung & Zhang, 2011, p.250). Scholars have distinguished two categories of institutional investor: pressure resistant and pressure sensitive (Kochhar & David, 1996). The former (e.g. pension, hedge, and mutual funds) does not have any business relationship with the firm, whilst the latter (e.g. banks, and insurance companies) is constrained by regulatory requirements and subsequently has less ability to influence firms (Brickley et al., 1988; Boyd & Solarino, 2016). Institutional investors provide easy access to capital, have low risk aversion, are normally specialists in business, and are highly concerned with shareholder value, since their performance is often measured in terms of financial success (Pound, 1988; Thomsen & Pedersen, 2000). Moreover, scholars have pointed out the informational and analytical advantages of institutional investors compared with other types of owners (Yuan et al., 2009).

In general, researchers have found a positive impact of institutional ownership on firm performance (McConnell & Servaes, 1990; Thomsen & Pedersen, 2003; Tuggle et al, 2010). These findings have been associated to both categories of institutional investors, namely pressure resistant and pressure sensitive (Boyd & Solarino, 2016). These results indicate that institutional ownership may enhance firm performance through superior monitoring, since many fiduciary responsibilities are involved.

Hypothesis 3d: Institutional ownership has a positive impact on firm performance.

2.3 The Mediating Role of R&D

R&D expenditures are investments in activities that contribute to product innovation, process innovation or the managing of innovations (Kastl et al., 2013). R&D investments have unique characteristics that make them different from other kind of investments (Singh & Faircloth, 2005). First, they are long-term investments, requiring a continuous input of human and financial resources (Munari et al., 2010). Second, R&D activities are specialized and can only be fully deployed in its original company (Williamson, 1988). Third, they are associated with high failure rates and can generate negative cash flows for

long periods (Munari et al., 2010). Surprisingly, there is very little empirical research on the interplay between ownership structure, R&D investments, and firm performance. In fact, this study is the first to empirically examine whether R&D plays a significant role in mediating the performance of a firm in relation to its ownership structure.

According to agency theory, the corporate R&D strategy may result in principal-agent conflicts. Managers focus on short-term gains through efficiency-seeking investments and therefore may be reluctant to the long-term nature and high failure rate of R&D projects (Mansfield, 1968). On the other hand, high investment in R&D is generally attractive for shareholders since they forestall a positive effect on firm performance and they can reduce inherent risk by promoting a diversified investment portfolio (Hay & Morris, 1979). Ownership "represents a source of power that can be used either to support or oppose management, depending on how it is concentrated" (Salancik & Pfeffer, 1980, p.655). Consequently, ownership concentration has important strategic implications for R&D investments. In fact, since controlling shareholders have more power over management than minority shareholders (Cubbin & Leech, 1983), these have more incentives to monitor managers in order to guarantee that value-enhancing investments such as R&D are pursued. Accordingly, the general findings in the literature demonstrate that ownership concentration has a positive effect on R&D intensity (Cho, 1998; Hill & Snell, 1988; Barker & Mueller, 2002).

The differences in the owner's preferences, behaviours, and investment horizons lead to divergent effects on innovation development (Hoskisson et al., 2002; Munari & Sobrero, 2010). Although the empirical findings from research confirmed the existence of a significant relationship between ownership identity and R&D investment, whether the impact is positive or negative is highly contingent on the institutional environment that affects the company. Institutional ownership is usually positively associated with R&D expenditure, although the effect is stronger for pressure resistant investors (Boyd & Solarino, 2016). This indicates that institutional investors assume a long-term perspective and are able to induce companies to be more innovative (Zahra, 1996; Aghion et al., 2013). Mixed results have been yield for corporate ownership, with studies suggesting that this type of ownership can both increase or decrease the level of R&D investment (Domadenik et al., 2008; Allen & Phillips, 2000). The investment horizons and the desire to generate the public good of knowledge, favours the tendency of state-controlled firms to invest in R&D (Munari et al., 2010; Munari et al., 2002). Family-controlled firms are

generally associated with more conservative strategies in terms of R&D investment (Boyd & Solarino, 2016). This could be explained by the fact that families classically invest a significant amount of their own capital in the company and therefore leads to them becoming risk-averse (Rossi & Cebula, 2015)

Scholars have thoroughly explored the relationship between R&D investments and firm performance and once again the results have been contradictory. Yet, the consensus seems to be that investment in R&D is vital for the survival and growth of firms, although this highly depends on the industry and market the firm is competing in (Lee & O'Neill, 2003). Companies that invest in R&D activities can differentiate themselves from competitors, in terms of product innovation or even cost efficiency, which could result in more profits (Ting et al., 2016). Thus, several scholars have confirmed this intuition and demonstrated that R&D investments have a positive impact on firm performance (Lau, 1998; Hill & Snell, 1988).

H4a: R&D investment mediates the relationship between ownership concentration and firm performance.

H4b: R&D investment mediates the relationship between ownership identity and firm performance.

2.4 Variations Across Regions

The relationship between ownership structure and firm performance is dependent on the national institutions companies are embedded in (La Porta et al., 2002). This way, the efficiency of the ownership structure as a corporate governance mechanism, varies with the institutional structure at the country level (Young et al., 2008). The geographical position, the legal and regulatory system, industrial development, and cultural characteristics, along with other factors, influence the impact of ownership structure on firm performance (Pedersen & Thomsen, 1997). The legal protection of investors is the most important determinant of regional differences in ownership effects (La Porta et al., 2000; Lisboa & Esperança, 2008). As mentioned previously, when there is a lack of investor protection, a conflict of interest occurs between the controlling shareholder and minority shareholders. This could lead to the controlling shareholder favouring private benefits over corporate performance (Shleifer & Vishny, 1997).

The ownership structure of a company could have a dissimilar impact on firm performance, depending on the legal system in place. The various regions of Continental

Europe have different dominant law systems. The French civil law is common across countries in Southern Europe (Lisboa & Esperança, 2008). In these nations, the quality of the legal rules is low and their enforcement is weak, leading to principal-principal conflicts (La Porta et al., 1998). Consequently, concentrated ownership is desired to avoid expropriations and to increase performance. On the other hand, the Scandinavian civil law is frequent across countries in Northern Europe (Lisboa & Esperança, 2008). These countries have a better quality of law enforcement and investors are better protected (La Porta et al., 1998). Thus, the concentration of ownership is not so important to enhance performance.

H5: Ownership concentration contributes more to firm performance in Southern Europe than in Northern Europe.

3 Methodology

The purpose of this chapter is to describe the methodology used to test the hypotheses previously formulated. Therefore, it specifies: (i) the research design adopted; (ii) the process of data collection and the sample drawn for this study; (iii) the variables used to measure financial performance, ownership structure and R&D investment; and (iv) the analytical strategy followed.

3.1 Research Design

This study makes use of quantitative data and methods to investigate the relationship between ownership structure and firm performance. According to Blumberg et al. (2014), research can be classified as formal or exploratory. This research can be classified as a formal study, because it aims to examine the effect of ownership structure on the performance of companies. As the focus of previous research has been on countries with an Anglo-Saxon corporate governance structure (Gugler et al., 2008), the geographical setting of this study is based on companies of Continental Europe**.** The time dimension analysed is constrained due to data availability, making this a cross-sectional study. Hence, this research builds on the following conceptual model:
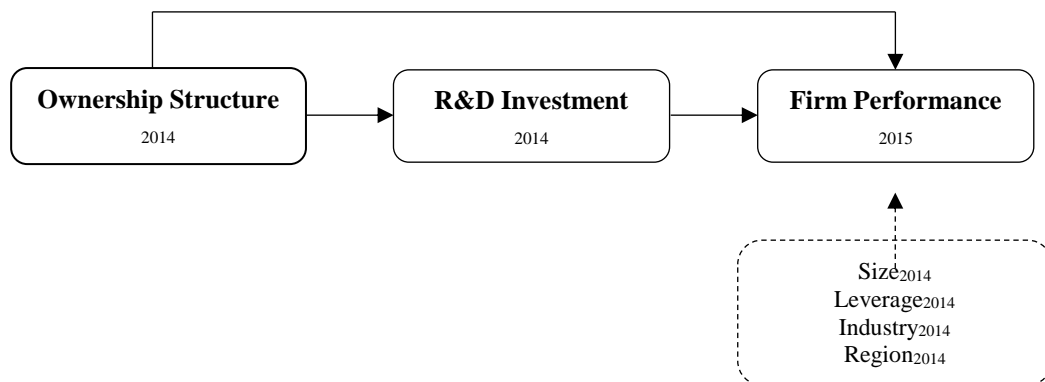
Figure 1: Conceptual Model
Source: Own Elaboration

3.2 Data Source and Sample Selection Procedure

To conduct this research, two secondary data sources were combined. This research uses the EFES database, an extensive database covering ownership data from 31 countries in Europe, and the Compustat Global database, which is an international database containing financial and market data. While the Compustat Global database is recognized among scholars as a credible and reliable source of information, the EFES database can also be considered as highly accurate, because it is based on each firm's annual reports.

Secondary data availability and constraints in each database contributed to define both the period and the sample size. The raw sample data consists of the 2500 largest European listed companies for which the EFES database provides ownership structure data. Given the context of this study, companies operating in the UK and Ireland were excluded. An overview of the counties included in this study can be found in **Appendix I.** In addition, data concerning total assets, total equity, net income (loss), employees, market value, R&D expenditures, and SIC codes were retrieved from Compustat Global. Firm performance data was collected for 2015 and used as the dependent variable. The data required for the independent variables, mediator, and control variables were collected for 2014. Given this research design, it is unlikely that the measures for the non-independent variables, which were collected in the earlier period, are impacted by firm performance in the succeeding period (Muller-Kahle, 2013). Thus, reverse causality issues are less probable. Exceptionally, R&D expenditures are considered to be zero when reported as "missing" by Compustat. This assumption has been tested and used by previous scholars (Hirschey et al., 2012; Chauvin & Hirschey, 1993). Companies belonging to the sample are required to have full information over the sampling period for all the other variables. Therefore, the final sample consists of 749 companies from 29 different countries, complying with the following criteria:

- Firms belonging to Continental Europe;
- Firms with data available simultaneously on EFES and Compustat;
- Firms whose data regarding the dependent variable is available for 2015 and data regarding the independent and control variables is available for 2016;
- R&D expenditures data reported as "missing" was considered to be zero for all companies included in this study.

3.3   Variables and Measures

3.3.1   Dependent Variable

Firm Performance

Corporate financial performance can be measured using accounting-based measures and market-based measures (Al-Matari et al., 2014). These types of measures "focus on different aspects of performance" (McGuire et al., 1988, p.859). Accounting-based measures reflect the historical performance of the firm, being subject to bias from differences in accounting rules and therefore sensitive to manipulation (Krivogorsky, 2006). On the other hand, market-based measures represent the investors' expectations

concerning future performance rather than past performance (Al-Matari et al., 2014). The choice of a certain type of measure may affect empirical results (McGuire et al., 1988).

Tobin's Q, which is a market-based measure, is present in the essential academic literature concerning the relationship between ownership structure and firm performance (Morck et al., 1988; McConnell & Servaes, 1995; Hermalin & Weisbach, 1991). This measure is a better performance indicator than return on assets (ROA) or return on equity (ROE), which are accounting-based measures (Morck et al., 1988; Cui & Mak, 2002). A Tobin's Q above one indicates positive market expectations of the company's current and future projects and their quality. On the other hand, results bellow one indicate moderate or negative expectations about the company's plans (Cui & Mak, 2002; Lang et al., 1989). Thus, this study will rely on Tobin's Q as a measure of firm performance.

$$\boxed{\text{Firm Performance Measure}} \longrightarrow \boxed{\text{Tobin's Q} = \frac{Total\ Market\ Value}{Total\ Assets}}$$
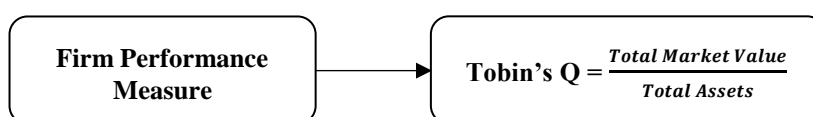
Figure 2: Firm Performance Measure
Source: Own Elaboration

3.3.2 Independent Variables

Ownership Structure

Several measures of ownership structure can be found in the literature. The two major dimensions of ownership structure are ownership concentration and ownership identity (Leech & Leahy, 1991). Thomsen and Pedersen (2000) state that the share and identity of the controlling owner is a good measure of ownership structure in European companies. This study uses the EFES database to assess these dimensions.

Ownership concentration is measured by the stake of the controlling shareholder. This research defines a controlling shareholder as the single person holding, directly or indirectly, at least 25 percent of the capital or votes. This is consistent with previous literature, which refers this value as being the minimum stake necessary for a shareholder to have a significant influence on a company's performance (Wiwattanakantang, 2001). Moreover, this study applies dummy variables to distinguish the four ownership categories described in the literature review: family, state, institutional, and corporate ownership.
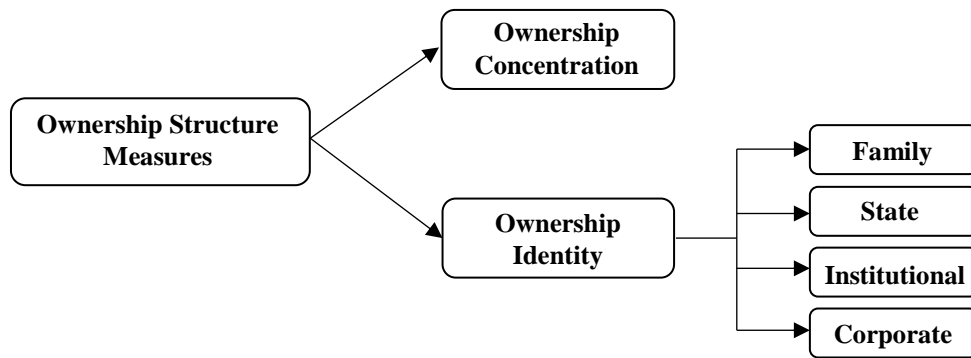
Figure 3: Ownership Structure Measures
Source: Own Elaboration

3.3.3 Mediator Variable

R&D Investment

This research uses R&D expenditures, which represents all costs that relate to a firm's total annual expenditure in the development of new products or services, to measure R&D intensity. This choice is motivated by the ease and availability of data, as well as the acceptance among scholars (Munari et al., 2010; Filatotchev & Piesse, 2009). Companies with high R&D expenditures can have positive returns in the future and therefore increase their performance (Lau, 1998; Hill & Snell, 1988).

3.3.4 Control Variables

Firm Size

The size of a company is a crucial factor to explain firm-specific heterogeneity. Studies suggest that larger firms have a lower risk of financial distress and achieve economies of scale and synergies. Thus, there is a positive relationship between firm size and firm performance (Claessens et al., 2002; Anderson & Reeb, 2003; Pedersen & Thomsen, 1999). This study will use the natural logarithm of the number of employees as a proxy variable for firm size (Beyer et al., 2011).

Leverage

The financial leverage of a company is calculated through dividing the current and non-current liabilities by equity. Literature has found a positive connection between financial leverage and performance, because debtholders will assume a monitoring role, increasing the effectiveness of a firm's management (Easterbrook, 1984; Jensen, 1986). Nevertheless, highly leveraged companies tend to cut R&D expenditure to cover their debt, which may also have a negative impact on firm performance (Hansen, 1991).

Industry and Region

Similar studies have demonstrated the importance of distinguishing different industries and nations (Thomsen & Pedersen, 2000; Claessens et al., 2002). Firm performance tends to vary by industry, due to differences concerning the intensity of competition and importance of intangible assets (Pedersen & Thomsen, 2003). The SIC codes will be used to differentiate the different type of industries. In order to simplify the analysis, similar industries were merged together. Hence, five different industries were considered, namely: wholesale and retail, services, construction, primary sector and manufacturing. Besides, corporate performance may differ due to nation effects related to macroeconomic variables (Pedersen & Thomsen, 2003). Consequently, companies were allocated to four different Continental Europe regions: Northern Europe, Western Europe, Eastern Europe, and Southern Europe.

Table 2 summarizes the variables and their codes, as described in the previous section.

Variable Function	Variable Name	Variable Label	Code Description
Dependent Variable	Tobin's Q	lnTobin	Natural logarithm of (Total Market Value/Total Assets)
Independent Variables	Controlling Shareholders Stake	Stake	Proportion of stocks held by largest shareholder
	Controlling Shareholders Stake Squared	Stakesq	Square of Stake
	Controlling Shareholders Identity	Family, State, Institutional, Corporate	0-1 dummies, where the reference category is Institutional
Control Variables	Firm Size	lnSize	Natural logarithm of the number of employees
	Financial Leverage	Leverage	100 * (Debt/Equity)
	Industry	Construction, Manufacturing, Primary Sector, Wholesale and Retail, Services	0-1 dummies, where the reference category is Manufacturing
	Region	Eastern, Northern, Southern and Western Europe	0-1 dummies, where the reference category is Northern Europe
Mediator Variable	R&D Investment	R&D	All costs spent on R&D activities (mil. US $)

Table 2: List of Variables and Codes

3.4 Analytical Strategy

This study makes use of several different statistical procedures. Initially, univariate descriptive analysis and bivariate Pearson correlations were used to further explore the data. Furthermore, multivariate linear regressions (using the OLS method) were performed to understand the relationship between ownership structure and firm performance and Baron and Kenny's (1986) mediation model was used to analyse if R&D investment mediates the relationship between ownership structure and firm performance. Lastly, additional multivariate linear regressions were considered to understand if ownership concentration contributes more to firm performance across different regions.

Having introduced the various methodologies and techniques this study makes use of, the economic specifications of each multivariate linear regression model needed to evaluate the proposed hypothesis will be further explained.

Initially, one regression equation is used to analyse how the control variables are related with firm performance, as follows:

Equation 1: $lnTobin_i = \beta_1 + \beta_2\ lnSize_i + \beta_3\ Leverage_i + \beta_4\ Eastern_i + \beta_5\ Southern_i + \beta_6\ Western_i + \beta_7\ Construction_i + \beta_8\ PrimarySector_i + \beta_9\ RetailandWholesale_i + \beta_{10}\ Services_i + \varepsilon_i$, $i=1,\ldots,749$

where *lnTobin$_i$* stands for the logarithm of the Tobin's Q Ratio; *Leverage$_i$* refers to the Debt to Equity ratio of a given company; *lnSize$_i$* is the logarithm of the number of employees of the company; *Eastern$_i$, Southern$_i$* and *Western$_i$* are the dummy variables defining the region of Continental Europe of a certain company, with Northern European companies considered as the reference region category; *Constuction, Primary Sector, Retail and Wholesale and Services* are the dummy variables defining industry, being Manufacturing the reference category; ε_i are the error terms associated with these regressions.

Secondly, an extended version of the previous equation was tested, to search for evidence on H1, H2, H3a, H3b, H3c, and H3d. With the purpose of understanding the impact the stake held by the controlling owners has on firm performance and the link between the identity of the controlling owner and firm performance, this study estimates the following equation:

Equation 2: $lnTobin = \beta_1 + \beta_2\ Stake_i + \beta_3\ Stake_i^2 + \beta_4\ Corporate_i + \beta_5\ Family_i + \beta_6\ State_i + \beta_7\ lnSize_i + \beta_8\ Leverage_i + \beta_9\ Eastern_i + \beta_{10}\ Southern_i + \beta_{11}\ Western_i + \beta_{12}\ Construction_i + \beta_{13}\ PrimarySector_i + \beta_{14}\ RetailandWholesale_i + \beta_{15}\ Services_i + \varepsilon_i$, $i=1,\ldots,749$

where $Stake_i$, stands for the stake held by controlling owners and $Stake_i^2$ is the square of the stake held by controlling owners; $Corporate_i$, $Family_i$ and $State_i$ are dummy variables that stand for corporate, family and state ownership, respectively, leaving *Institutional* as the reference category.

The mediation effects of R&D investment, which refers to H4a and H4b, is tested using Baron and Kenny's (1986) mediation model. These authors refer three conditions for a variable to be considered a mediator. First, there needs to be a significant effect between the independent variable and the dependent variable. Second, the mediating variable needs to relate significantly to the dependent variable. Third, the mediating variable needs to relate significantly to the independent variable. The control variables were disregarded for both mediation models since this was the interpretation made of Baron and Kenny's (1986) procedures. The conditions proposed by Baron and Kenny (1986) were assessed using six additional regression analyses:

Equation 3: $R\&D_i = i_1 + a\ Stake_i + \varepsilon_i$, $i=1,\ldots,749$
Equation 4: $\ln Tobin = i_2 + c'\ Stake_i + b\ R\&D_i + \varepsilon_i$, $i=1,\ldots,749$
Equation 5: $\ln Tobin = i_3 + c\ Stake_i + \varepsilon_i$, $i=1,\ldots,749$

Equation 6: $R\&D_i = i_1 + a_1\ Corporate_i + a_2\ Family_i + a_3\ State_i + \varepsilon_i$, $i=1,\ldots,749$
Equation 7: $\ln Tobin = i_2 + c_1'\ Corporate_i + c_2'\ Family_i + + c_3'\ State_i + b\ R\&D_i + \varepsilon_i$, $i=1,\ldots,749$
Equation 8: $\ln Tobin = i_3 + c_1 Corporate_i + + c_2 Family_i + c_3 State_i + \varepsilon_i$, $i=1,\ldots,749$

where $R\&D_i$ represents all the costs that relate to the development of new products and services.

To evaluate H5 and statistically compare the impact of ownership concentration on firm performance among different regions, the subsequent equation was formulated:

Equation 9: $\ln Tobin_i = \beta_1 + \beta_2\ STAKENorth_i + \beta_3\ STAKESouth_i + \beta_4\ Corporate_i + \beta_5\ Family_i + \beta_6\ State_i + \beta_7\ \ln Size_i + \beta_8\ Leverage_i + \beta_9\ Eastern_i + \beta_{10}\ Southern_i + \beta_{11}\ Western_i + \beta_{12}\ Construction_i + \beta_{13}\ PrimarySector_i + \beta_{14}\ RetailandWholesale_i + \beta_{15}\ Services_i + \varepsilon_i$ $i=1,\ldots,303$

where *STAKENorth_i* and *STAKESouth_i* are the ownership concentration in Northern European firms and Southern European firms, respectively.

4 Results

This chapter explores the empirical results obtained. Therefore, it presents (i) descriptive statistics regarding the sampled companies; (ii) a validation of the statistical assumptions; and (iii) the correlations and regression analysis from the OLS regressions outlined above.

4.1 Descriptive Statistics

4.1.1 Sample Characteristics

The sample consists of 749 Continental European companies. The companies included in this study diverge in terms of region, identity, and industry **(Appendix II).** Western European firms represent the largest segment among the sample firms (43,3%), followed by Northern European (17,4%), Southern European (23,1%) and Eastern European (16,3%) companies. Furthermore, family ownership (36,4%) and corporate ownership (27,8%) are the predominant owner identities and manufacturing (40,7%) and services (43,8%) the most frequent industry among the firms studied.

Descriptive statistics for all scale variables used in this analysis are presented in **Table 3**. As elaborated in the methodology section, firm performance is measured by Tobin's Q. Tobin's Q for firms included in the sample ranges from 0,22 to 11,28 with an average of 1,31. Comparing the average of the firm performance indicators to findings in related studies shows that the sample is in line with prior research (Demsetz & Villalonga, 2001; Morck et al., 1988). Nevertheless, the slightly higher mean firm performance indicator that this study reveals can be explained due to the sample being characterized exclusively by companies with a stock capitalization of $200M or more, since this value influences the total market value of a company. On the other hand, the ownership concentration level of the firms studied is high. The mean of this variable is 52,93% with a standard deviation of 19,76%. Furthermore, the sample summary statistics reveal more interesting findings regarding the control variables considered. On average, the firms studied have 35.362 employees and spent $64,56M on R&D expenditures during the year considered. The descriptives also reveal that the mean financial leverage is 245,67%, indicating that the companies considered have been heavily taking on debt and thus have high risk.

Table 2 also shows that some of the variables are characterized by high skewness (measure of the asymmetry of the probability function) and kurtosis (measure of the "tailedness" of the probability function) values, indicating a non-normal distribution of these variables. This will be discussed further in chapter 4.1.2.

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Stake	749	,00	100,00	52,9331	19,76397	,240	,089	-,468	,178
R&D	749	,00	5874,00	64,5615	354,82673	10,836	,089	141,378	,178
Tobin's Q	749	,22	11,28	1,3073	,97935	4,758	,089	32,993	,178
Size	749	18	440809	13223,26	35361,988	6,743	,089	57,814	,178
Leverage	749	-123,0000	73,0000	2,456668	7,6765745	-6,058	,089	119,650	,178
lnSize	749	2,89	13,00	8,0949	1,72340	-,118	,089	,089	,178
lnTobin's Q	749	-1,51	2,42	,1199	,49928	,820	,089	2,221	,178
Valid N	749								

Table 3: Descriptive Statistics of the Scale Variables

Table 4 shows the Pearson correlations, indicating the direction and strength of linear relationships between all variables included in this sample. The correlation matrix reveals that some of the variables are correlated with each other. Particularly, *Leverage* is correlated with *lnTobin* at 0,219 (p<0,01). There is a strong and significant negative correlation between *Stake* and *R&D* (p<0,05), suggesting that companies spend less in R&D expenditures when ownership is concentrated. The natural logarithm of firm size is negatively correlated with *Leverage* (p<0,01) and positively related with *R&D* (p<0,01). This indicates that larger firms rely less on debt and allocate more capital to R&D activities. Despite these correlations, multicollinearity should not be of concern, as discussed further in chapter 4.1.2.

Table 4: Correlation Matrix of the Scale Variables

	lnTobin	Stake	Stakesq	lnSize	Leverage	R&D
lnTobin	1					
Stake	-,037	1				
Stakesq	-,037	,978**	1			
lnSize	-,005	-,112**	-,105**	1		
Leverage	,219**	,025	,023	-,232**	1	
R&D	,017	-,115**	-,098**	,272**	-,025	1

**. Correlation is significant at the 0.01 level (2-tailed)
*. Correlation is significant at the 0.05 level (2-tailed)

4.1.2 Checking Statistical Assumptions

To apply the analytical strategy mentioned previously, assumptions of the original sample data must be validated. These assumptions are those that are usually associated with

regression models: normal distributed errors, collinearity, linearity of parameters, homoscedasticity and independence of errors (West, 2009).

First, ensuring that the sample follows a normal distribution is important to achieve unbiased regression estimates. As illustrated in **Table 3** the skewness and kurtosis of some variables indicate that these do not follow a normal distribution. To transform these variables to normality, *Tobin's Q* has been subject to a logarithmic transformation, due to this variable being positively skewered, as suggested by Tabachinick and Fidell (2001). Additionally, since *R&D* and *Leverage* assume values that are negative or equal to zero, they have been deflated using a technique proposed by Field (2009). This author suggested to substitute the outlier by the value of the next highest/lowest observation, while adding/subtracting one unit. The descriptive statistics of the final deflated variables are shown on **Table 5.**

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
R&D	749	,00	1130,00	45,576	165,571	5,194	,089	28,051	,178
Leverage	749	-21,00	26,00	2,6342	4,64329	1,245	,089	12,019	,178

Table 5: Descriptive Statistics of the Deflated Variables

Further, multicollinearity occurs when two or more variables in a multiple regression model are highly correlated and therefore do not add explanatory power to the model (Brooks, 2008). Although some of the variables of this study are highly correlated, in an additional analysis by means of the variance inflation factor (VIF), none of these variables exceeds the limit VIF value of 10 which would indicate multicollinearity (Field, 2009), as illustrated by **Appendix III.** Consequently, any existing multicollinearity poses minimal risk in the accuracy of the model estimates.

Additional required assumptions to conduct multiple linear regressions are the independence of residuals and homoscedasticity. To back this up, the Modified White test as well as the Durbin Watson test were applied **(Appendix IV).** As the test-statistic of the Durbin Watson test was under the suggested d=2 for all models, there seems to be no autocorrelation. The assumption of homoscedasticity is further proven by a non-significant result in the Modified White test, indicating that the standard errors are robust. This means that the standard deviations of the error terms are constant and independent.

4.2 Empirical Results

The empirical regression results are presented in **Table 6** and are discussed in the following.

Table 6: Regression Results (DV = lnTobin)

Variables	Model 1 Regression Coefficient	Model 2 Regression Coefficient
Stake		-0.008*
		(0.004)
Stakesq		0.00006396**
		(0.000034)
Corporate		-0.100*
		(0.049)
Family		-0.025
		(0.047)
State		-0.210***
		(0.058)
lnSize	-0.012	-0.003
	(0.010)	(0.011)
Leverage	-0.008**	-0.008**
	(0.004)	(0.004)
Eastern	-0.146**	-0.099*
	(0.056)	(0.060)
Southern	0.307***	0.327***
	(0.052)	(0.054)
Western	0.469***	0.483***
	(0.047)	(0.048)
Construction	-0.133	-0.171**
	(0.082)	(0.083)
Primary Sector	-0.014	0.002
	(0.084)	(0.085)
Retail and Wholesale	-0.057	-0.079
	(0.068)	(0.069)
Services	-0.027	0.012
	(0.036)	(0.039)
R&D		-0.00004896
		(0.000107)
Constant	0.013	0.185
	(0.087)	(0.137)
N Firms	749	749
R^2	0.239	0.258
Adjusted R^2	0.230	0.243

Standard errors in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

4.2.1 Control Variables and Firm Performance

Model 1 includes the market-based firm performance indicator, *lnTobin,* as well as all control variables. The R^2 of this model is 0.239, indicating that the variables in this model explain 23,9% of the variance in *lnTobin*. While the association between the indicator of firm performance and *lnSize* is non-significant (b=-0.012, p>0.10), firm performance is significantly negatively related to the firms' leverage (b=-0.008, p<0.05). Compared to Northern European companies, the reference category for region, Eastern European companies showed a lower firm performance (b=-0.146, p<0.05). Differing, Southern and Western European companies showed a significantly higher firm performance indicated by *lnTobin* (Southern European companies: b=0.307, p<0.01; Western European companies: b=0.469, p<0.01). Results for the dummy coded industry variable showed that the investigated industries (construction, primary sector, retail and wholesale, and services) did not differ significantly from the reference category which is manufacturing.

4.2.2 Ownership Structure and Firm Performance

Model 2 explains the impact of ownership concentration on firm performance. The regression coefficient *Stake* is significant and negative for *lnTobin* (b=-0.008, p<0,1). Since this is a quadratic model, the regression coefficient of the variable *Stake* has no economic interpretation when isolated. The regression coefficient for the quadratic term *Stakesq* is positive and significant (c=0.00006, p<0,05). This result demonstrates that the share of the controlling shareholder has a U-shaped relationship with firm performance, unlike predicted by H2 **(Appendix V).** This indicates that when ownership concentration increases, on average, 1%, for an ownership concentration up to 62.54% *Tobin´s Q* decreases but for values above 62.54% it increases. Thus, this model does not provide support for H1 and H2, which are both rejected.

This model also enters dummy coded variables related to ownership identity into the regression model. Family ownership has a positive but insignificant impact on *Tobin's Q* (b_1+b_{Family}=0,16). Thus, H3a is not supported. The association between state ownership and firm performance is negative and significant (b_1+b_{State} =-0,25; p<0,01). This finding provides evidence for H3b. Corporate ownership is positive and significantly associated to *Tobin's Q* ($b1+b_{Corporate}$=0,085; p<0,1), as assumed by H3c. Institutional ownership, which is the reference category for the identity variable, has no significant impact on firm performance, although this influence is positive, as predicted (b_1=0,185; p<0,1).

Therefore, H3d is rejected. Based on these findings, this study concludes that a firm's owner identity explains a significant variation in firm performance.

4.2.3 Mediating role of R&D

The mediating effect of R&D in the relationship between ownership structure and firm performance is investigated by computing a set of regression analyses, as suggested by Baron and Kenny (1986). In addition, this study uses an indirect mediation test (Preacher & Hayes, 2004).

4.2.3.1 Ownership Concentration

The mediation model presented in **Figure 4** will be used to assess if R&D investment mediates the relationship between stake ownership and firm performance.
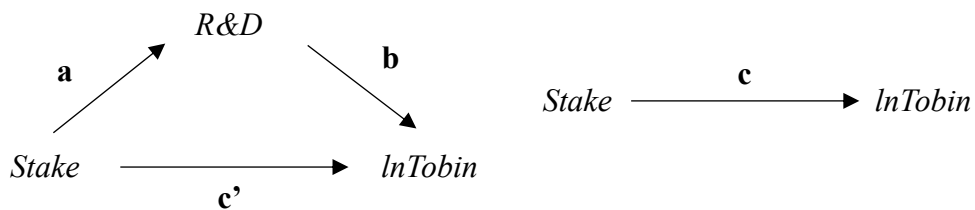
Figure 4: Mediation Model for H4a
Source: Own Elaboration

Results of the three regression models suggested by Baron and Kenny are presented in **Table 7.** There is a significant negative association between the independent variable *Stake* and the mediating variable *R&D* (a=-0.843, p<0.10). The relationship between the mediator and the dependent variable is also negative and significant (b=-0.0004, p<0.01). The total effect, which measures the impact of the independent variable *Stake* on *lnTobin*, revealed a significant positive relationship (c=0.001, p<0.05) and the overall indirect effect, which refers to the effect of *R&D* on *lnTobin*, demonstrated a significant association (b=-0.0004, p<0.01). Thus, this model meets the criteria for mediation (Baron and Kenny, 1986).

Table 7: Results of the Mediation Analysis (H4a)

	DV	IV	Regression Coefficient
Model 3	R&D	Stake	a=-0.843* (0.468)
Model 4	lnTobin	Stake	c'=0.001055** (0.001)
		R&D	b=-0.000409*** (0.00001)
Model 5	lnTobin	Stake	c=0.001400** (0.001)

Standard errors in parentheses
* p < .10, ** p < .05, *** p < .01

In addition, to test the true indirect effect, the output with the indirect mediation test, which provides the 95% bootstrapped confidence interval levels, will be assessed. The bootstrapping technique is a way to overcome some limitations that have been appointed to Baron and Kenny's (1986) model. In this case, the bootstrapped confidence interval is from 0,000318 to 0,002465 (**Appendix VI).** Since this interval does not include the zero value, one can conclude that R&D mediates the relationship between ownership concentration and firm performance. The regression coefficients reveal that the stake of the controlling shareholder has a negative influence on R&D investment, which in turn has a negative effect on firm performance. Accordingly, H4a is supported.

4.2.3.1 Ownership Identity

To evaluate the mediating role of R&D investment in the relationship between ownership identity and firm performance another set of regression analyses were conducted. The mediation model is presented in **Figure 5.**
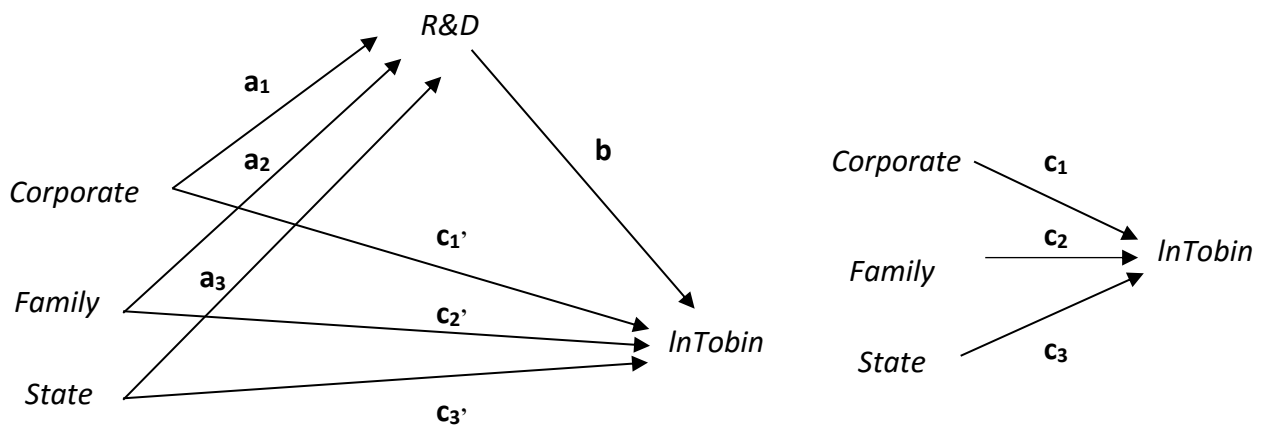
Figure 5: Mediation Model for H4b
Source: Own Elaboration

The results of the regression analyses can be seen on **Table 8.** Initially, the association between the dummy-coded independent variable ownership identity and the mediating variable R&D was determined. State and institutional were the only ownership identities to have a significant impact on R&D. The regression model predicting firm performance by ownership identity reveals a significant and positive coefficient for family owned companies ($c2 = 0.126$, $p < 0.05$) and a significant and negative coefficient for state owned companies ($c3 = -0.167$, $p < 0.01$). Nevertheless, the indirect effect, which refers to the impact of R&D on lnTobin, was not significant. Consequently, this model does not meet the criteria for mediation (Baron and Kenny, 1986). Therefore, H4b is rejected.

Table 8: Results of the Mediation Analysis (H4b)

	DV	IV	Regression Coefficient
Model 6	R&D	Corporate	a_1=-12,80
			(17,531)
		Family	a_2=14,864
			(16,627)
		State	a_3=58,071***
			(20,255)
		Institutional	34,719***
		(intercept)	(13,326)
Model 7	lnTobin	Corporate	c_1=-0,029
			(0,052)
		Family	c_2=0,126**
			(0,050)
		State	c_3=-0,167***
			(0,060)
		Institutional	0,108
		(intercept)	(0,040)
Model 8	lnTobin	Corporate	c_1'=-0,029
			(0,052)
		Family	c_2'=0,125**
			(0,050)
		State	c_3'=-0,170***
			(0,061)
		Institutional	0,107***
		(intercept)	(0,040)
		R&D	b=0,00004259
			(0,000109)

Standard errors in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

4.2.4 Variations across Regions

As illustrated by **Table 9,** the mean stake of controlling shareholders for Southern European companies is 56.22%, whilst this value is 43.29% for Northern European companies. Thus, the stake of controlling owners is higher in Southern European firms than in Northern European companies, as predicted previously.

Table 9: Descriptive Statistics of Ownership Concentration by Region

Region	N	Proportion (SD)
Northern Europe	130	43.29 (18.86)
Southern Europe	173	56.22 (17.10)

N – Sample Size, SD – Standard Deviation

There is a moderate correlation between *lnTobin* and the controlling shareholders stake in Northern and Southern European firms, as presented in **Table 10**. However, whilst this

correlation is positive in Southern European firms, it is negative for Northern European companies.

Table 10: Correlation Matrix

	lnTobin	STAKENorth	STAKESouth
lnTobin	1		
STAKENorth	-0.279**	1	
STAKESouth	0.260**	-0.787**	1

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

Results presented in **Table 11** assesses H5, which predicted that ownership concentration contributes more to firm performance in Northern Europe than in Southern Europe. This hypothesis is supported as the results show that the relationship between ownership concentration and firm performance is significant and negative in Northern European firms ($b=-0.004$, $p<0.05$) and significant but positive in Southern European companies. ($b=0.002$, $p<0.01$). In other words, the results demonstrate that an increasing *Stake* leads to a positive impact on *lnTobin* for firms in the south of Europe, whilst the contrary occurs for companies in the north of Europe.

Table 11: Regression Results (DV =lnTobin)

Variables	Unstandardized Regression Coefficient	Standardized Regression Coefficient
STAKENorth	-0.004** (0.002)	-0,190**
STAKESouth	0.002*** (0.001)	0,107***
Corporate	-0,002 (0,079)	-0,002
Family	0,044 (0,068)	0,046
State	-0,163* (0,094)	-0,117*
lnSize	0,028* (0,017)	0,093*
Leverage	-0,002 (0,006)	-0,023
Construction	-0,221* (0,115)	-0,112*
Primary Sector	0,011* (0,114)	0,006*
Wholesale and Retail	-0,080 (0,111)	-0,042
Services	0,021 (0,061)	0,023

Standard errors in parentheses
* $p < .10$, ** $p < .05$, *** $p < .01$

5 Discussion

This chapter attempts to understand whether and how corporate ownership structure influences the financial performance of European listed companies. Therefore, it (i) explores the empirical results obtained in the previous section further and compares them with the published data; (ii) describes the main implications of this study; and (iii) acknowledges limitations and provides direction for future research.

5.1 Discussion of Empirical Findings

The results of this study differ from those obtained by Thomsen and Pedersen (2000), who found an inverted U-shaped relationship between ownership concentration and performance in European companies. According to these authors, ownership concentration is expected to have a positive impact on firm performance up to a certain level, after which the positive impact turns into a negative one. Their results were coherent with the *alignment theory*, which states that ownership concentration increases the incentives for shareholders to monitor managers, and with the *expropriation theory*, according to which when large shareholders become too powerful, it could lead to them extracting private benefits by expropriating the minority shareholders.

The estimation results are not in line with the prediction of the agency theory. In fact, contrary to expected, this paper reports a significant U-shaped association between ownership concentration and firm performance. Consequently, this association indicates that for a share of capital held by the controlling shareholder, up to 62,54% firm performance decreases, but for values above 62,54%, it increases, which indicates that low as well as high levels of ownership are the most beneficial for the corporate performance of a company. An explanation for this quadratic relationship could be that intermediate levels of control reduce the possibility of a takeover and entrench bad managers (Barclay & Holderness, 1989). This finding is very interesting, and previous literature could explain why this relationship was found. Liu et al. (2012) reported a U-shaped relation between ownership concentration and crisis-period performance. Considering that the ownership structure data used in this study refers to 2014 and since the ownership structure of a company remains stable over years (Zhou, 2001), results obtained by this study could be highly influenced by the impact of the recent economic crisis. Thus, it can be argued that changes in ownership structure do not only influence firm performance during the crisis itself, but also have major implications several years thereafter.

The ownership identity of the controlling shareholder proves to be an aspect to take into account when considering a firm's ownership structure. State ownership is found to have a significant negative influence on Tobin's Q. As expected by previous findings, state-owned companies place excessive importance on non-profit goals, which results in low firm value (Goldeng et al., 2008; Dewenter & Malatesta, 1998). Likewise, this study documents a significant positive relation between corporate ownership and financial performance, which is in consonance with the findings of Pedersen and Thomsen (2003). This effect is verified since corporate ownership provides its allied companies with capital that can be used to foster growth (Connelly et al., 2010).

As for the other types of owner identities, although pointing towards the same direction as hypothesized, they were not found to have a significant impact on the aforementioned relationship. This study found no effect of family ownership on firm performance, as has been reported by Jayaraman et al. (2000). The findings in terms of institutional investors are in line with that of Sundaramurthy et al. (2005) and Duggal and Millar (1999), who also found no significant relationship between institutional ownership and financial performance. Nevertheless, literature regarding institutional ownership suggests that there are two types of institutional investors, who have different interests and relations with the firm they invest in: pressure resistant and pressure sensitive (Kochhar & David, 1996). Consequently, depending on the type of investor, managers could be influenced to focus on financial performance or to pursue goals that are not related to maximizing shareholder value. These opposing types of institutional investors could be an explanation for the insignificant relationship between institutional ownership and firm performance.

This empirical research proposes R&D investment as a mediator of the relation between ownership structure and firm performance, acknowledging the importance of R&D activities for the performance of a company (Lee & O'Neill, 2003). The statistical evidence reveals that R&D investment negatively mediates the relationship between ownership concentration and firm performance, which means that firms with concentrated share ownership have lower R&D spending. Based on previous research, ownership concentration was expected to have a positive impact on R&D (Li Eng et al., 2001; Barker & Mueller, 2002). Notwithstanding, the results of these studies focused on Anglo-Saxon economies, in which the main agency problem that arises from concentrated ownership is different than the one that occurs in Continental Europe. The present study provides support for the results obtained by Yafeh and Yosha (2003) and Munari et al.

(2006), who found that ownership concentration has a significantly negative impact on R&D investment in European countries. Subsequently, large shareholders may refute the positive effects of a higher equity stake in the firm by choosing to allocate the firm's resources in a way that increases their personal wealth and avoids the *creative self-destruction* of the company, thereby protecting the firm's current capital (Villalonga & Amit, 2006; Morck et al., 2000). Interestingly, this mediation model also reveals a significant negative impact of R&D on firm performance. Several reasons might shed light on this finding. First, there are several ways to measure R&D investments, and the measurement used by this study might not be the most appropriate one. Second, it might be the case that the investments in R&D were not substantial enough to affect their firm performance. Third, previous scholars who explored this relationship have described inconsistent results.

On the contrary, the results reveal that R&D investment does not mediate the relationship between owner identity and firm performance. However, the regression results of this mediation model revealed significant and positive coefficients for state and institutional ownership. Thus, this study argues that these two owner identities tend to encourage companies to be more innovative, which is in line with the findings of Aghion et al. (2013) and Munari et al. (2010).

According to the literature, system effects influence the relationship between ownership structure and firm performance (Pedersen & Thomsen, 2003; Young et al., 2008). To further explore this stream of research, this study analyzes the efficiency of ownership concentration as a corporate governance mechanism across different Continental European regions. To increase the robustness of the findings, only Southern European and Northern European countries were compared, since these two regions have the most drastic differences in terms of the dominant law system. The results of this study demonstrate that ownership concentration contributes more towards firm performance in Southern European companies, where investors are barely protected by the law, than to Northern European companies, which are surrounded by a more effective legal framework. In fact, ownership concentration is found to diminish the performance of firms located in the north of Europe. Nevertheless, the interpretation of these regional differences might not be so straightforward. These results may also reflect variances in terms of country-specific culture, financial pressure, and institutional characteristics, as has been suggested by Pedersen and Thomsen (2003).

5.2   Implications

As mentioned previously, although the link between ownership structure and economic performance has been widely researched, scholars have achieved inconsistent and even contradictory evidence (Džanić, 2012; Demsetz & Villalonga, 2001). Therefore, the present empirical research provides an important contribution to academia by further exploring this link using a unique dataset, with recent ownership data of European companies across several countries. By doing so, the research studies countries that had previously been disregarded by researchers and compares different institutional settings, as had been suggested by Wang and Shailer (2015). Furthermore, this study regards ownership structure as a multidimensional concept which involves ownership concentration and ownership identity, contrasting with previous papers that treat owners as a homogenous group. Moreover, this paper also provides an important methodological contribution. The present thesis is the first to consider R&D investment as a potential mediator of the relationship between ownership structure and firm performance.

The findings of this research have several implications for managers, providing evidence on what drives firm performance in Continental European companies. The results gathered suggest that firms benefit from avoiding intermediate degrees of ownership concentration and that the identity of the controlling owner is a crucial factor in predicting shareholder value. In fact, some types of shareholders have a more positive influence on firm performance than others. This investigation provides valuable insights that companies can keep in mind when analysing their ownership structures, allowing them to assess if the controlling shareholder of their firm fits their strategic goals. In other words, when deciding between different corporate strategies, management should consider the risk preferences, wealth constraints, and network relationships of their controlling owners to leverage their resources in support of the firm's strategic development. This alignment of interests is particularly important considering the findings that suggest that R&D investment can assume the role of a mediator.

Nevertheless, since institutional environments vary, there is no universal relationship between ownership structure and performance. This study finds that ownership concentration contributes more to firm performance in Southern Europe than in Northern Europe. Therefore, policy makers should assure that the legal and regulatory framework of each country guarantees the efficiency of ownership structure as a corporate governance mechanism.

5.3 Limitations and Further Research

Although the findings of the present research contribute to the understanding of how ownership structure influences firm performance, the results must be treated carefully, since they are subject to some limitations. These drawbacks should be reconsidered in future research.

Firstly, the ordinary least squares (OLS) method was chosen to estimate the statistical models. Nevertheless, this method does not account for the possibility that ownership structure might be an endogenous variable. Following the research by Thomsen and Pedersen (2000) and McConnell and Servaes (1990), this study considers that ownership structure is an exogenous variable. Nevertheless, not only can ownership structure influence performance, but the contrary can also be true (Demsetz & Villalonga, 2001). Therefore, future research on the effect of ownership concentration on firm performance should test for the two-way relation, by implementing two-stage least squares (2SLS) regressions in addition to OLS estimation.

Secondly, due to data limitations, this research studies the effect of the independent variable upon a dependent variable at a given point in time. Consequently, the estimation results are based on cross-sections and do not provide robust conclusions regarding the direction of causality (Blumberg, 2014), being only able to establish a correlation between ownership structure and firm performance. Consequently, future studies should measure this relationship over time, using panel data, allowing the use of a fixed-effects model to control for unobserved firm heterogeneity.

Thirdly, the results of this study demonstrate that there are significant differences in the effect of ownership structure between continental European regions. According to the literature, law and regulations is the main determinant of regional differences in ownership effects (La Porta et al., 2000). Nevertheless, factors such as the geographical position, industrial development, cultural characteristics, financial pressure, market competition can also impact the efficiency of ownership structure as a corporate governance mechanism. Hence, further research is required to investigate which factors lead to these differences and to the measure the impact of each of these items on firm performance. In addition, since this study only compares Southern European and Northern European companies, because these had the most contrasting legal systems, it would be intriguing to expand this comparison to the other Continental European regions.

Fourthly, this study used data from large companies, particularly listed companies with a market capitalization of $200M and more, due to the enormous difficulties in collecting data for small and medium-sized companies. Thus, large companies are overrepresented in empirical analysis (Hu & Izumida, 2008). Future research could examine if divergences in the effect of ownership on firm performance are attributable to difference in the size of firms.

Finally, the measure of ownership concentration used in this sample may also limit the results of this study. Following the suggestion by Filatotchev and Wright (2011), this study relied on shares owned by the controlling owner as a proxy for ownership concentration. Nevertheless, some scholars suggest that it is important to investigate the relationships between the second, third and fourth owners (Ruiz-Mallorquí & Santana-Martín, 2011), since it allows to account for the power of the largest owner relative to the next largest owners and understand eventual coalitions that may be formed by these. Thus, future studies should examine the five largest shareholders of the company instead of just focusing on the controlling shareholder.

6 Conclusion

The goal of this thesis was to analyse whether and how corporate ownership structure influences the financial performance of Continental European listed companies. Since most previous studies on this topic focus on Anglo-Saxon countries, this research provides some valuable new insights for the corporate governance literature.

Using a unique sample of 749 listed Continental European companies, with ownership data available for the year of 2014, this study reveals several important findings. First, there is a nonlinear U-shaped relationship between ownership concentration and firm performance. That is, low as well as high levels of ownership are those that lead to the highest Tobin's Q. This finding does not support the principles of agency theory. Instead, these results are in line with previous studies which were performed in the context of the recent economic crisis. Second, corporate and state ownership have a positive and negative impact, respectively, on firm performance. This evidence suggests that the identity of the controlling shareholder influences the strategic goals of a company. Third, R&D investment negatively mediates the relationship between ownership concentration and performance. Therefore, a higher stake of the controlling shareholder will lead to a decrease in the financial resources allocated to R&D. Fourth, ownership concentration was found to be more important for countries characterized by less efficient legal systems.

Overall, this empirical investigation demonstrates that ownership structure does effectively have an impact on the performance of a company. Consequently, it is important for managers and shareholders to assess the ownership structure of their company and assure that it is aligned with the strategic objectives that have been established.

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Appendices

Appendix I

Region	Code	Country
Southern Europe	IT	Italy
	ES	Spain
	PT	Portugal
	GR	Greece
	MT	Malta
Eastern Europe	PL	Poland
	EE	Estonia
	BG	Bulgaria
	CZ	Czech Republic
	RO	Romania
	SK	Slovak Republic
	HR	Croatia
	SL	Slovenia
	LT	Lithuania
	LV	Latvia
Northern Europe	NO	Norway
	SV	Sweden
	DA	Denmark
	FI	Finland
	IS	Iceland
Western Europe	AT	Austria
	BE	Belgium
	CH	Switzerland
	DE	Germany
	FR	France
	LU	Luxembourg
	NL	Netherlands

Table 12: List of Countries Included in the Sample

Appendix II

	Frequency	Percent	Valid Percent	Cumulative Percent
Eastern Europe	122	16,3	16,3	16,3
Northern Europe	130	17,4	17,4	33,6
Southern Europe	173	23,1	23,1	56,7
Western Europe	324	43,3	43,3	100,0
Total	749	100,0	100,0	

Table 13: Frequency Table of Region

	Frequency	Percent	Valid Percent	Cumulative Percent
Corporate	208	27,8	27,8	27,8
Family	273	36,4	36,4	64,2
Institutional	152	20,3	20,3	84,5
State	116	15,5	15,5	100,0
Total	749	100,0	100,0	

Table 14: Frequency Table of Ownership Identity

	Frequency	Percent	Valid Percent	Cumulative Percent
Construction	32	4,3	4,3	4,3
Manufacturing	305	40,7	40,7	45,0
Nonclassifiable	5	,7	,7	45,7
Primary Sector	31	4,1	4,1	49,8
Services	328	43,8	43,8	93,6
Wholesale and Retail	48	6,4	6,4	100,0
Total	749	100,0	100,0	

Table 15: Frequency Table of Industry

Appendix III

Variables	Model 1 VIF	Model 2 VIF	Model 3 VIF	Model 4 VIF	Model 5 VIF	Model 6 VIF	Model 7 VIF	Model 8 VIF	Model 9 VIF
Stake		8,421	1,000	1,011	1,000				
Stakesq		8,972							
Corporate		1,935				1,711	1,711	1,712	1,597
Family		2,051				1,777	1,777	1,779	1,673
State		1,730				1,490	1,490	1,507	1,492
lnSize	1,088	1,321							1,255
Leverage	1,078	1,102							1,041
Eastern	1,685	1,941							
Southern	1,863	2,054							
Western	2,122	2,266							
Construction	1,081	1,109							1,122
Primary Sector	1,105	1,134							1,204
Retail and Wholesale	1,088	1,132							1,099
Services	1,261	1,493							1,368
R&D				1,011				1,020	
STAKENorth									2,932
STAKESouth									2,949

Table 16: Variance Inflation Factors

Appendix IV

	Durbin-Watson	Modified White Test
Model 1	1,868	0,146
Model 2	1,901	0,115
Model 3	1,779	0,052
Model 4	1,819	0,243
Model 5	1,741	0,267
Model 6	1,888	0,055
Model 7	1,794	0,275
Model 8	1,793	0,314
Model 9	1,749	0,693

Table 17: Durbin-Watson and Modified White Test Results

Appendix V
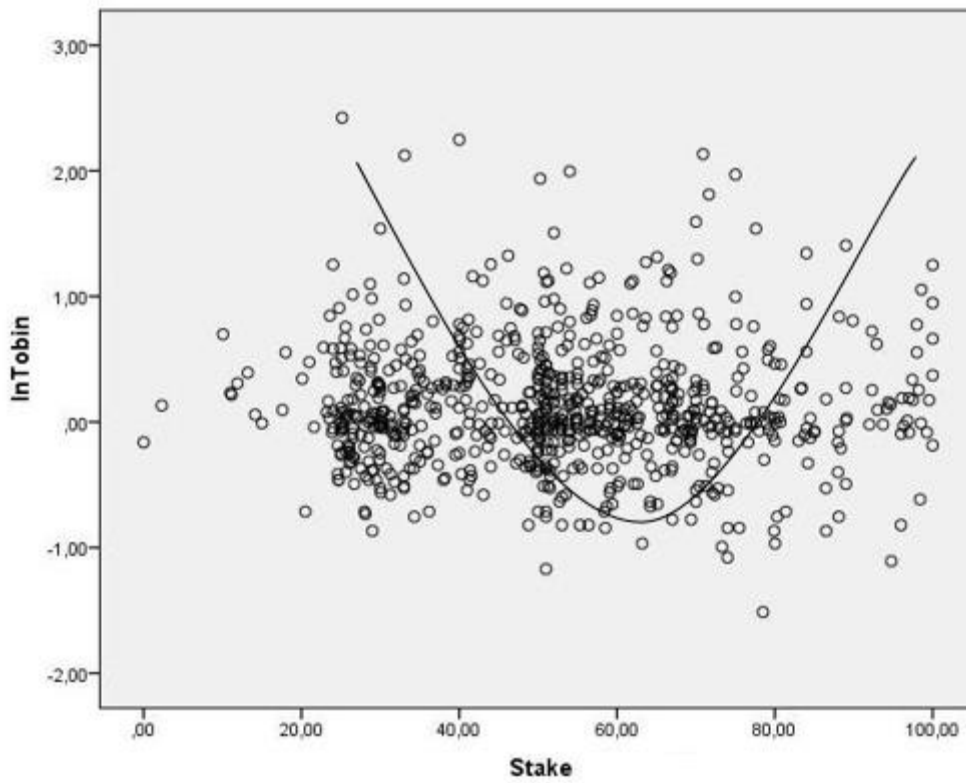
Figure 6: Scatterplot of Stake vs, lnTobin

Appendix VI

Model	B	Bias	Std, Error	Sig, (2-tailed)	95% Confidence Interval	
					Lower	Upper
(Constant)	-0,022	0	0,026	0,412	-0,07	0,028
Stake	0,0014	-1,76E-05	0,001	0,016	0,000318	0,002465

Table 18: Bootstrap for Coefficients (DV=lnTobin)