

Separation of Ownership and Control

The effect of ownership structure on the corporate governance
in the Benelux

Abstract:

The purpose of this research is to analyse the effects of ownership structures on the managerial efficiency in the corporate governance. A sample of 171 publicly listed firms in the Benelux from 2013 until 2015 is used to measure the overall effect. An analysis is conducted in which the ownership concentration and the heterogeneity among the concentration of shareholders are regressed against the firm performance. Besides, the effects of two different types of ownership identity are tested, family ownership and institutional ownership. The only systematic relation found in this research is between ROE and the concentration of shareholders, which is significant at a significance level of 10%. In this research no strong support is found to argue a significant relationship between ownership structures and the performance measurements ROE, ROA and Tobin's q.

Thesis B.Sc. Economics and Business Economics

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Date of completion: 10-07-2017

Table of content

1	Introduction	(3)
2	Theoretical framework	
2.1	Agency theory.....	(5)
2.2	Ownership concentration.....	(6)
2.3	Inside ownership.....	(10)
2.4	Outside ownership.....	(11)
3	Data	
3.1	Dataset.....	(14)
	3.1.2 Sample selection procedure.....	(14)
	3.1.2 Reliability.....	(14)
3.2	Variables.....	(15)
	3.2.1 Dependent variables.....	(15)
	3.2.2 Independent variables.....	(16)
	3.2.3 Control variables.....	(17)
3.3	Descriptive statistics.....	(18)
4	Methodology	
4.1	Correlation analysis.....	(22)
4.2	Regression analysis.....	(22)
5	Empirical results	
5.1	Correlation analysis.....	(23)
5.2	Regression analysis.....	(25)
5.3	Internal validity.....	(30)
6	Discussion and limitation	
6.1	Discussion.....	(32)
6.2	Limitation.....	(34)

1. Introduction

The issue of the separation in ownership and control has been discussed for a numerous years and widely concerned economist since the publication of Berle and Means '*The Modern Corporation and Private Property*' (1932). A corporation is split up into two organs, the board of directors and its shareholders. However, the idea that the managers followed the interest of the shareholders is altered strongly in the 20th century. Berle and Means (1932) were one of the first to address this evolution in ownership structure at modern companies. Berle and Means brought awareness to the divergent interests of the board of directors and that of the owners of the firm. The growth of the publicly listed firms meant that more and more shares came available for the wider public. The shareholder's type became more dispersed and the fraction of shares held by shareholders differed substantially, which affected the voting rights. This resulted in a more difficult position for shareholders since the shareholders dispersion made the control in corporate governance harder to maintain.

The theory of Berle and Means remains a central value to this topic and from then on many contributed on their findings. A major contribution came from Jensen and Meckling (1976), which brought the social and private cost to attention, which arises with this principal-agent problem. In the paper of Jensen and Meckling the relationship between the agency cost and the separation of ownership and control issue is displayed. In their research they described the agency relationship as a contract under which the shareholder engage the manager to work on his behalf. This includes the shareholders delegating control of the corporate governance on to the manager. In case both the shareholder and the manager are utility maximizers, it may lead to the manager extracting personal benefits opposing the firms' best interests. Thereby, the agency relationship may hurt the firm performance in terms of sustainable profits (Jensen & Meckling, 1976).

Incentivising and monitoring the manager may help to limit the agency cost; however such actions (i.e. monitoring costs) could be costly for firms with widely dispersed ownership structures. Therefore, the way in which the ownership is structured may play a crucial role in the issues of the agency relationship and enhancing the firm performance (Shleifer & Vishny, 1986). The ownership structure of listed firms can be defined by the distribution of the equity among shareholders and by the shareholder's type, e.g. institutional or family ownership. The structure plays a major role in corporate governance; significant shareholders can determine the incentives of the board of directors and thereby influence the economic performance of the corporation they manage (Dalton, Daily, Certo, & Roengpitya, 2003).

The aim of this thesis is to investigate how the ownership structure relates to the firm performance of publicly listed firms in the Benelux. According to the research of Davidov and Schmidt (2004), the economic environment and values among the Netherlands, Belgium and Luxembourg provide high comparability. This offers the research to improve the external validity by increasing the sample size and maintaining the internal validity. In addition, only a few studies are found on firms in the Netherlands, Belgium or Luxembourg and none on the Benelux as a whole.

This thesis contributes to the existing literature by filling this empirical gap. The main research question on which empirical analysis will be done is stated as follows: *'What is the effect of the ownership structure on the firm performance of publicly listed firms in the Benelux?'* In this empirical research the performance measurements will consist of return on assets (ROA), return on equity (ROE) and *Tobin's q* and the ownership structure will be defined in *Ownership concentration*, *Ownership control*, *Ownership dispersion* and *Ownership type*. Taking multiple measurements as a proxy for the firm performance will result in a more representative understanding of the relationship. Besides, the variables for ownership will not only display the effect of the ownership dispersion but also reveal the effect of the type of the largest shareholders.

In section 2 the preceding literature will be reviewed and in addition the relevant theory will be discussed. Based on the literature review four hypotheses will be constructed that will support the analysis on the main research question. After evaluating the collected data and the sample selection procedure, the theoretical analysis of the methods will be elaborated followed by an examination of the empirical results. Ultimately, conclusions may be drawn upon the results and the corresponding limitations of the research will be discussed.

2. Literature Review and Hypotheses

In this section a literature review is conducted on the studies that contributed on the theory of ownership and control of Berle and Means (1932). In addition, concepts that are regarded relevant and crucial to this topic are defined and elaborated. Finally, four hypotheses will be constructed according the literature.

2.1 Agency theory

The agency theory is a concept on the relationship between principals and agents. The theory addresses issues that arise between the agent and principal due to divergent interests or different levels of risk aversion. In this thesis, the main concern is the principal-agent relationship in the corporate governance. Krivogorsky (2006) defined the corporate governance as the structure of which a firm is directed and controlled. In the literature of the agency theory in corporate governance, the shareholder is viewed as the principal and the manager as the agent.

In order to elaborate the agency theory the term ownership will be defined. Firms that are owned by a single person are called sole proprietorships (Nickels, McHugh & McHugh, 2008). In enterprises where the ownership and control is in the same hands, the interests and financial goals are perfectly aligned. However, raising capital and directing an enterprise becomes harder when the enterprise grows. Therefore, outside investors are consulted for providing the risk capital. These shareholders have the residual claim on the assets of the company and thus the right to participate in exploitation of these assets. Since the shareholders own capital of the company they are regarded as the lawful owners. In these stock enterprises the shareholders have voting right, which means they have influence in appointing the non-executive board of directors. The role of the board of directors is to monitor and control the executive management and to represent both the interests of the shareholders and the managers.

However, the interest of the directors and managers can diverge from those of the shareholders (Berle & Mean, 1932). Due to the unaligned interests of the managers and the shareholders, voting right gets more important for shareholders since they can increase the representation of their interests by appointing suitable board members. The divergence of interests between the shareholders and the managers worsens the governance to direct and

manage the company, which results in greater agency costs (Core, Holthausen & Larcker, 1999). Jensen and Meckling (1976) defined these agency cost by the sum of three components: the monitoring expenditures by the principal, the bonding expenditures by the agent and the residual loss.

Monitoring expenditures can be explained by the cost made by the principal to prevent the agent from executing activities that are not aligned within the principal's interests. To prevent the agent from such actions the principal may undertake several type of actions, e.g. auditing, compensations contracts or firing the manager. The incentive for the shareholders is high since they have a claim on all the residual profit (Demsetz & Lehn, 1985). Fama and Jensen (1983) stated that these agency cost will eventually be passed on to the manager by adjusting the agent's compensations. Since the agents bear the monitoring cost, they are likely to set up structures to convince the principal that they are acting in the shareholders best interests. The expenditures that result from establishing and adhering such structures are known as the bonding costs. The monitoring and bonding may help aligning the interests of both the managers and the shareholders (Chung & Zhang, 2011). Nonetheless, there will still be agency costs arising from divergent interests. To further align these interests by writing fully enforcing contracts would impractical since the managerial actions are unobservable ex ante. These costs due to the remaining difference in interests are called the residual loss.

2.2 Ownership concentration

Ownership structure is an important aspect when it comes to aligning the interests of both the shareholders and the executive directors (Shleifer & Vishny, 1986). The trade-off between monitoring and expropriation underpins the relationship between ownership concentration and firm performance. In the existing literature the positive effect of ownership concentration on firm performance that is expected, is based upon the monitoring effect. Namely, shareholders who owe large amounts of capital are more incentivised to practice influence and monitor the managers. In addition, dominant shareholders often have the power to control the board of directors and thereby monitor the managerial policies, due to their large fraction of voting rights (Salancik & Pfeffer, 1980; Fama & Jensen, 1983). In contrary, when the ownership is widely dispersed (i.e. minority shareholders), neither the incentive nor the ability to monitor the managers is available. This gives the managers a higher degree of discretion in corporate governance, which grants them opportunity to extract their personal benefits and ignore the maximization of the profits and thus the shareholders interests (Gedajlovic & Shapiro, 1998). Thus, ownership can help in reducing agency problems due to separation in

control and ownership by monitoring the executive directors. However, as Shleifer and Vishny (1986) stated, the ownership has to be concentrated for the monitoring to be effective. In addition, La Porta, Lopez-de-Silanes, and Shleifer (1999) argue the aforementioned theorem and add that the effect of ownership concentration on firm performance can be negative as well, dependent on the characteristics of the firm. This negative relationship addresses the expropriation effect. La Porta et al. (1999) stated that the ownership concentration doesn't merely affect the firm performance, but also the origin of the agency problems. Namely, the agency problem may shift as the fraction owned by the largest shareholders increases. Whereas agency problems with low concentration of shareholders originate from the traditional agent to principal issue, with larger shareholder concentrations these issues could occur between the principals, i.e. conflicts may arise between minority and controlling shareholders.

Demsetz and Lehn (1985) analysed the relationship between variations in the structure of corporate ownership and the firm value maximisation according a dataset of 511 observations over the timeframe 1976-1980. The sample is drawn from major sectors of the U.S. economy and includes regulated utilities and financial firms. In their research they regressed percentage of the fraction hold by the top 5 and top 20 shareholders together with the Herfindahl index, against the accounting profit rate ROA. Demsetz and Lehn found no significant relationship between ownership concentration and firm performance. Moreover, they argued that diffuseness of ownership results in lower capital acquisition cost which offsets the higher cost that are associated with more dispersed ownership concentrated. Therewith, they disputed the thesis of Berle and Means (1932), which implied that diffuse ownership structure adversely affects the firm performance. Furthermore, Demsetz and Lehn provided evidence for the endogeneity of a firm's structure, which opposes the exogeneity claimed by Berle and Means (1932). In other words, Demsetz and Lehn point out the reverse direction of causality from the economic performance to the ownership structure. Besides, in their regression models only one dependent variable (ROA) is used. Therefore, one could state that the results of Demsetz and Lehn (1985) display an inadequate perception of the relationship between ownership structure and firm performance. In addition, despite Demsetz and Lehn did examine the fraction hold by institutional investors in one section of their study, overall their study seems to ignore the variety in shareholder types.

Demsetz and Villalonga (2001) continued on the research of Demsetz and Lehn (1985) in which they furnish stronger results due to more reliable data and a more adequate

methodology. Demsetz and Villalonga (2001) used a random subsample of the sample that is used in the research of Demsetz and Lehn (1985). Since the Demsetz and Lehn database no longer existed, they were compelled to completely re-construct the subset, leading to more accurate and reliable data on 223 firms including regulated companies (i.e. utilities and financial institutions). Namely, using more reliable database services with more complete and recent data resulted in more precise measurements of ownership. It also granted them with the opportunity to construct more adequate regression models by adding variables like Tobin's q , leverage, fixed assets relative to sales and managerial ownership. Demsetz and Villalonga (2001) models ownership structure as an endogenous variable and state that the ownership of the 5 largest shareholders is a composition of persons with different interests. Therefore, the ownership structure is examined two-dimensionally, i.e. the fractions of shares owned by outsiders and management are measured separately. Also two subsamples are examined in which the regulated firms are separated from the firms belonging to the non-regulated sector. In the research of Demsetz and Villalonga (2001) no systematic relation has been found between ownership structure and the accounting profit rates ROA and Tobin's q . Demsetz and Villalonga stated that agency problem might be exacerbated by diffuse ownership, however compensation advantages compensate for such effects. Furthermore, the results of Demsetz and Villalonga (2001) lend support to the endogeneity of ownership that is argued by Demsetz and Lehn (1985).

In contrary, Shleifer and Vishny (1986) support the theorem hypothesized by Berle and Means (1932) about the positive effect of increasing ownership concentration on firm performance. Shleifer and Vishny (1986) designed an econometric model, which furnished a foundation for later empirical studies by among others Morck, Shleifer & Vishny (1986). In the econometric model they argue that large shareholders provide a solution to the lack of monitoring on performance of the management in presence of solely minority shareholders.

In addition, the research of Agrawal and Mandelker (1990) supports the hypothesis constructed in the research of Berle and Means (1932) and the econometric model of Shleifer and Vishny (1986). Agrawal and Mandelker (1990) obtained data of 372 NYSE and AMEX firms, including regulated firms, over the timespan 1979-1985. They used the percentages of the five largest institutional owners and of the two largest shareholders that exceed the threshold of 5%. Unique in this research is the distinction between the fraction over which the shareholders has sole voting power and the fraction of total ownership over which the shareholders has either sole or shared investment power or voting power. Also they took

account for distinction in institutional and managerial ownership. Furthermore, Agrawal and Mandelker examined the relation between the ownership structure and the shareholder wealth effects, leaving accounting rate profits like ROA aside. Agrawal and Mandelker accept their hypothesis on active monitoring that states that the existence of large shareholders improves the managerial efficiency by more efficient monitoring. However, in the analysis of Agrawal and Madelker (1990) both the endogeneity of ownership structure and the potential differentials between regulated and non-regulated firms are ignored. These two aspects combined with the absence of accounting profit rates as proxies for firm performance, may form threats to the internal validity. The fact Agrawal and Madelker (1990) left these aspects completely unnamed is questionable.

Aligned with the results aforementioned, Thomsen and Pedersen (2000) found a positive relationship of ownership concentration on firm performance. In their research on the 435 largest business enterprises of Europe, the share of the largest shareholder and the ownership identity are regressed against ROA, market-to-book value (MBV) and the sales growth. With the categorical dummy variable for ownership identity, Thomsen and Pedersen (2000) did not only distinct managerial ownership from outside ownership. Furthermore, they specified the ownership identity by subdividing outside ownership into five different categories: bank, (nonfinancial) company, family, government and institutional investor. In their research ownership identities were found to be as important as ownership concentration itself and significantly affected the firm performance. Furthermore, Thomsen and Pedersen addressed the problem of endogeneity that is pointed out by various recent studies (Demsetz & Lehn, 1985; Hermalin and Weisbach, 1988; Loderer and Martin, 1997; Cho, 1998; Himmelberg, Hubbard & Palia, 1999; Demsetz & Villalonga, 2001). Thomsen and Pedersen argue that the ownership structures are stable and not influenced by economical changes over a 5-year period, a reasoning that is supported by others (McConnel and Servaes, 1990; Holderness, Kroszner & Sheehan, 1999). Therefore, they state that the ownership structure can be treated as an exogenous variable over the time frame 1990-1995 on which the analysis is based upon. In conclusion, Thomsen and Pedersen found a positive relation between ownership concentration and firm performance. In addition, they stated that the positive effect of ownership concentration on firm performance levels off when surpassing a certain threshold of concentration. They stated that the non-linear relation that is found between ownership structure and firm performance follows a bell-shaped form.

Thomsen and Pedersen (2000) conducted the research regarding the effect of the ownership concentration on the firm performance according the most adequate methodology relative to the other studies that are examined in this thesis. In their research the potential threats, methodology and choices of variables were extensively argued. Hence is chosen to follow the non-linear relation found by Thomsen and Pedersen (2000), resulting in the following hypothesis:

(1) Hypothesis 1: The effect of ownership concentration on firm performance follows a nonlinear bell shaped form.

To specify the relationship that is addressed in the first hypothesis, a second hypothesis is drawn, stated as follows:

(2) Hypothesis 2: Heterogeneity among the 5 largest shareholders positively affects firm performance.

No literature has been found in which they addressed the effects of heterogeneity among shareholders on the firm performance. More usual measurements in the related literature that are frequently seen are the fraction of shares hold by a certain number of the largest shareholders. This experimental hypothesis measures the effect of variation in holdings among the five largest shareholders using the standard deviation of *OwnConc* that is used in the first hypothesis. The main function of the second hypothesis is to aid and specify the effects analysed in the first hypothesis.

2.3 Inside ownership

As proposed by Thomsen and Pedersen (2000), the identity of large owners has significant implications on the corporate strategy and performance. To define the ownership identity the shareholder types are divided into two categories: capital owned by insiders and capital owned by outsiders. The third hypothesis is therefore split up into two partial hypotheses, hypothesis 3a and hypothesis 3b. The first partial hypothesis regards the inside ownership. Insider is used as a term for the directors or senior officers of a company that own a significant fraction of the company's voting shares. Dalton et al. (2003) described this insider classification of ownership as the 'alignment approach'. This alignment approach discloses the way inside ownership aligns both the corporate governance and the shareholders value. In

this theorem, it is believed that directors or senior officers encounter a shift in their personal interest towards the broader interests of shareholders as the fraction of capital owned increases.

Morck, Shleifer & Vishny (1986), McConnell and Servaes (1990) and Himmelberg et al. (1999) examined how inside ownership affects the alignment of interests between both the executives and the shareholders. These studies follow the theorem of Jensen and Meckling (1976) in which is hypothesised that as inside ownership increases, extracting personal benefits on short-term becomes less attractive. Executives with a higher fraction of holdings in the firm tend to exploit firm assets on a more long-term strategy. Morck et al. (1988), McConnell and Servaes (1990) and Himmelberg et al. (1999) expressed the alignment of interest in firm performance, using Tobin's q as a proxy. Morck et al. (1988) and Himmelberg et al. (1999) find a positive relation, whereas the insider (i.e. managerial) equity has a positive effect on Tobin's q up to a certain point of inside ownership concentration and turns negative after that.

Moreover, McConnell and Servaes (1990) find an inverted U-shaped relation between Tobin's q and inside ownership concentration. These results all find a certain inflection point where the effect of managerial ownership on Tobin's q levels off or even turns from positive to negative. These findings argue the entrenchment effects due to high level of managerial ownership. Namely, besides their shift in interests, executives gain control as their ownership increases. Executives end up in a position in which they are empowered to reduce the risk profile in order to protect their own interests. However, this change in corporate strategies could lead to decreasing performance. This effect is displayed in the aforementioned studies with a decreasing Tobin's q at high levels of managerial ownership. However, due to the lack of available data the effect of inside ownership on firm performance remains unobserved in this research. The sample obtained at Orbis didn't provide suitable data of managerial ownership and collecting the data by manually is infeasible due to time constraints.

2.4 Outside ownership

Hypotheses 3a and 3b will address the relationship between firm performance and outside ownership, more specifically institutional and family ownership. Contrary to the alignment approach, Dalton et al. (2003) refers to the capital held by outside investors as for the control approach. The control approach highlights the other side of the medal and argues that high levels of outside ownership stimulate the shareholders to monitor the corporate governance.

Significant outside investors, also known as block holders, have two main motives that motivates them: concentrated control and private benefits (Connelly et al., 2010).

Types of ownership identities come in many forms. Different types of identities may affect the firm performance in different ways. Therefore, Thomsen and Pedersen (2000) assigned the types of shareholders in five different categories of outside ownership: family ownership, bank ownership, institutional ownership, company ownership and governmental ownership. In their results they found a positive between institutional ownership and both shareholders value and ROA. In contrary, bank ownership and governmental ownership were associated with low values of both. Lastly, they stated that company ownership and family ownership are likely to have low market-to-book values but higher growth in sales. However, the results of Thomsen and Pedersen (2000) regarding the ownership type lacks in significance. Therefore, one must be cautious with interpreting these results since most of the effects. Furthermore, Agrawal and Mandelker (1990) analysed the proposed 'active monitoring hypothesis' by Demsetz & Lehn (1985) and Shleifer and Vishny (1986). The results of Agrawal and Mandelker corresponded with this hypothesis. Agrawal and Mandelker stressed the important implications of institutional ownership on which they found a positive relation relative to the shareholders value. Based upon the literature the following hypothesis regarding institutional ownership is constructed:

(3) Hypothesis 3a: Institutional ownership is positively correlated with firm performance

Moreover, founding families that posses a large stake in the company are reluctant in giving control away. One or more individuals of the founding family are therefore often represented in the executive board. In addition, family ownership is associated with a long-term commitment due to the firm-specific investments families make in human capital (Thomsen & Pedersen, 2000). However, expropriation effects may arise at higher levels of family ownership concentration. As their control is positively correlated to their fraction of capital owned, founding families may derive personal interest at the expense of minority shareholders (Fama & Jensen, 1983; La Porta et al., 1999). Nevertheless, the expropriation effects seem small and are likely to be offset by the positive effects of the aligned interests (Maury, 2006). Maury (2006) analysis on 1672 non-financial firms from 13 Western European countries focused solely on the effect of family investors on firm performance. Maury found a positive relationship in which family ownership is associated with 7%

increased valuations and 16% increased profitability, measured in Tobin's q and ROA respectively. These results are aligned with the beliefs of previous studies that family ownership reduces the costs related to the principal-agency issues from separation in ownership and control (Fama & Jensen, 1983; Morck et al., 1988).

In contrast with Maury (2006), Holderness and Sheehan (1988) argue that high family ownership concentration may harm minority shareholders. They find a tendency in which high family ownership is associated with a lower Tobin's Q and lower ROA. Holderness and Sheehan analysed a relative small sample of 114 NYSE- or AMEX-listed corporations, which included both financial and nonfinancial firms. Differences in outcomes could stem from a relative small sample used by Holderness and Sheehan in which financial firms are incorporated. In addition, the research conducted by Maury (2006) was solely focused on family ownership and made use of a more complete set of variables. Therefore, the research of Maury (2006) is believed to contain to a stronger internal validity relative to Holderness and Sheehan (1988).

Subsequently, a positive relationship between family ownership and firm performance will be hypothesised according the research of Fama and Jansen (1983), Morck et al. (1988) and Maury (2006), which is stated as follows:

(4) Hypothesis 3b: Family ownership is positively correlated with firm performance.

The preconceived hypotheses will be further elaborated in section 4, where multiple regression analysis will be performed in order to reject or accept each of the four hypotheses.

3. Data

3.1 Dataset

3.1.1 Sample selection procedure

The data that is required for this thesis is obtained at the database of Orbis. Orbis is one of the most substantial data research service subsidiaries from Bureau van Dijk (BvD), which is a major publisher of financial information on firms all over the globe. It contains a comprehensive database offering financial data from over 79 million companies worldwide. In addition, Orbis is among others things specialised in ownership structures of listed companies. The Dutch financial authority (AFM) obliges shareholders of Dutch firms to notify both the firm and the AFM when their ownership exceeds the threshold of 3%. Accordingly, all the required data about the firm's ownership structures can be found at both the publically accessible register of shareholders of AFM as well as the database of Orbis, where Orbis will be used as a primary source. In Belgium and Luxembourg the aforementioned shareholder disclosure threshold is set at a 5% fraction of the holdings. No similar register for AFM is found for the countries Belgium and Luxembourg. In case Orbis provides insufficient data about the ownership structure in Belgium and Luxembourg, the Internet is consulted. In conclusion, Orbis furnishes a suitable fit for composing the data set for this thesis, which is focused on publicly listed firms in the countries of the Benelux.

Subsequently, Orbis provides the user with a practical tool. This offers the user to search efficiently through the database conditional on a wide range of criteria. The following sample selection procedure is conducted for this research. At first, the available data at Orbis has been filtered on publicly listed companies in the Netherlands, Belgium and Luxembourg for the time interval 2013 till 2015. These settings resulted in total observations of 222 firms. Due to insufficient data and feasibility reasons, 51 companies were deleted from this sample. The preceding sample selection procedure resulted in a final sample of 171 firms containing a total of 513 observations from three fiscal years. The data points will be used to calculate the 3-year averages of all the time varying variables to limit potential bias due to unobserved firm heterogeneity.

3.1.2 Reliability

The Erasmus Data Service Centre (EDSC) grants access to several (financial) databases for students and academics at the Erasmus University. The database of Orbis is listed among

these financial databases of the EDSC. Combined with the fact that Orbis is a subsidiary of BvD, one can consider the data research service from Orbis as reliable.

Nonetheless, when conducting a research it is essential to check whether the data from the sample selection is reliable and accurate. Due to the short time frame of this thesis, it is not feasible to audit every variable for each year. Hence is chosen to limit the auditing of the data to a selection of the upper-/middle- and lower bound per country, based on the total assets. For each of these upper-/middle and lower bounds, 2 firms per country are examined. For completeness sake, this means 2 firms per bound per country, which makes a total of 18 firms. In order to check the reliability and accuracy of the data obtained at Orbis, all the financial variables of these 18 firms were compared to data from the annual reports of the firms. However, the variables regarding the ownership structure were verified for all the firms. At first, the data is compared to the significant shareholders reported in the annual reports. In case the annual reports turned out to be insufficient, the AFM register of shareholders or the Internet were consulted.

The data obtained at Orbis proved to be consistent with the data found at annual reports, AFM and the Internet. Only modest inconsistency in the data regarding ownership structure was found. The inconsistencies originated from small shareholders who barely exceeded the minimum threshold of 5% and were therefore not reported in the database of Orbis. The companies where such variation existed were directly corrected by hand.

3.2 Variables

The variables that are incorporated in the regression and thus the data set are divided in three groups; independent variables, dependent variables and control variables. These variables could be exposed to random fluctuation, which would form a threat to the internal validity. Namely, these random causes could interfere with the relationship that is examined in the regression analysis. To get a clearer view of what causes the change in the dependent variable such threats have to be eliminated. Hence is chosen to calculate a 3-year average for the time varying variables that are sensitive to such random fluctuations. The variables that are calculated upon a 3-year average are as follows: *ROA*, *ROE*, *Tobin's q*, *Leverage*, *Size*, *Beta* and *Growth*.

3.2.1 Dependent variables

In the analysis, three performance measurements will be regressed against various measures of ownership to gauge their impact on the performance and value of the firm. The dependent

variables used in the analysis consist of three performance ratios based on the research from proceeding literature (Himmelberg et al., 1999; Thomsen et al., 2000; Demsetz & Villalonga, 2001; Van Ees, Postma & Sterken, 2003; Krivogorsky, 2006; Aggarwal et al., 2011).

The first dependent variable that is used as a firm performance measurement is the ROA. This variable is the most common measurement for performance found in the existing literature (Himmelberg et al. 1999; Thomsen et al., 2000; Demsetz et al., 2001; Krivogorsky, 2006; Maury, 2006; Aggarwal et al., 2011). This proxy for performance indicates how profitable a company operates relative to its assets and gives an idea how efficient the management exploit its assets to generate earnings. The ROA is displayed as a percentage in the database of Orbis and calculated by dividing the net income by the total assets.

As for the second performance metric, the ROE is used. The ROE is often used together with the ROA as an additional dependent variable and calculated by dividing the net income by the shareholder's equity (Van Ees et al., 2003; Maury, 2006). The ROE shows the growth rate of the company's value and indicates how effectively the management allocates the investors money. Using both performance metrics, ROA and ROE, as dependent variables results in a clearer representation of the firm's performance.

Finally, Tobin's q will be added to the analysis as a dependent variable. Following McConnell and Servaes (1990), Himmelberg et al. (1999), Demsetz et al. (2001), Morck et al. (1988) and Maury (2006) Tobin's q is calculated as a ratio of the company's market value divided by the replacement value of the company's assets. To preclude problems with heavy outliers the firms with Q ratios greater than 6.0 are deleted from the sample (McConnell et al., 1990). This sample screening resulted in a loss of three firms.

3.2.2 Independent variables

Three different independent variables are used regarding the measurements of the ownership structure. The ownership concentration is one of these measurements and strongly emphasised in proceeding literature (Demsetz et al., 2001). As mentioned earlier, shareholders of publicly firms from the Netherlands and from Belgium and Luxembourg are obliged by law to notify both the firm and the domestic authority of their holdings when they exceed the minimum threshold of 3% or 5% respectively. In addition, the shareholders have to notify both parties when their fraction changes and exceeds or fall below further thresholds (5%, 10%, 15%, 20%, 25% etc.). The ownership concentration will be measured according to the research of Demsetz and Lehn (1985). Namely, the sum of the fraction owned by the 5 largest shareholders who exceed the minimum threshold of 5%. In addition, the fraction of the largest

shareholder will be added as an independent variable, again only if the share of capital held surpasses the threshold of 5%. As discussed in section 2, a bell shaped form is expected. Thomsen and Pedersen (2000) results state that the ownership has contrary effects on the firm performance after reaching a definite point. In other words, at first the ownership concentration has a positive influence on the firm performance. However, when the concentration fraction becomes too large, this positive influence will turn into a negative effect on the performance. Since the relationship is believed to be nonlinear the squared definition of both *OwnConc* and *OwnControl* will be incorporated in the regression analysis. The squared definitions will take account for the negative effect that arises after the reflection point.

The second hypothesis states that dispersion in fraction owned among the five largest shareholders is negatively correlated with the firm performance. To measure the heterogeneity in ownership concentration, the standard deviation of the variable *OwnConc* will be used. However, the observations of significant shareholders are unevenly distributed among firms, meaning that not all firms have 5 significant shareholders exceeding the 5% threshold. This could be problematic when analysing hypothesis 2 with standard deviation as a proxy for heterogeneity. Therefore, the number of significant shareholders is taken into account as a control variable when testing hypothesis 2.

To answer hypotheses 3a and 3b, an independent variable considering the type of the largest shareholder has to be included. The types of shareholders are divided into five different groups according the classification that is used in the research by Thomsen and Pedersen (2000). These 5 types are as follows: company (*ComOwn*), government (*GovOwn*), bank (*BankOwn*), family or individual (*FamOwn*), institutional investor (*InstOwn*).

3.2.3 Control variables

To limit sample selection bias there will be accounted for multiple factors that are known to have an impact on firm performance. The results of the research of Fama and French (1995) reported that small firms have, on average, lower ROE than large firms. Therefore, the firm size is added to the regression as a continuous control variable. According to the research of Maury (2006) and Aggarwal et al. (2011) firm size will be measured by taking the logarithm of the book value of the total assets. The total book value of the assets is further used to measure the growth. The firm's growth is calculated as the difference in average percentage change in total assets of the year prior (t-1) to the year of interest (t).

Subsequently, Krivogorsky (2006) stated two reasons to control for leverage. First of all, Krivogorsky addresses the viewpoint of the shareholders regarding the optimal choice of debt. Krivogorsky refers to the research of Novaes and Zingales (1999) where the difference between the before-mentioned shareholder's viewpoint and the managers gets assessed. Secondly, Krivogorsky points out that both the firm's credit risk and the financial risk are positively correlated with debt. The variable leverage ratio controls for these two factors and will be computed by dividing the total debt by the total equity (Maury, 2006; Krivogorsky, 2006). The total equity is obtained by subtracting the total liabilities from the total assets. To control for the systematic risk, the beta will be included as a control variable. The systematic risk (beta) of the firms is obtained at Orbis and contains the covariance with the national market portfolio over 3 consecutive years: 2013, 2014 and 2015. Moreover, the control variable for the country in which the firm is registered will be incorporated in the model as a dummy variable. The reference group regarding this dummy variable will be the Netherlands. Furthermore, there will be accounted for industry effects by adding dummy control variables for the industries.

3.3 Descriptive statistics

The aim of this section is to give a clear understanding of the features of the data set used in this research. The raw data set that is obtained at Orbis contained 222 firms with 666 observations over a 3-year time frame from the fiscal years 2013-2015. Due to the time restraint for the research, the firms with insufficient data were excluded from the sample. Furthermore, 6 firms with extreme outliers in performance measurements were deleted from the sample. The aforementioned sample screening resulted in a definitive sample of 171 firms with 513 observations distributed over the Netherlands, Belgium and Luxembourg.

Table 1
Country Distribution

Country	N	
	Definitive	Raw
NE	89	113
BE	59	71
LUX	23	38
Total	171	222

In Table 1 can be seen that the sample is not evenly distributed over the three countries. Therefore, one should be cautious with interpreting inconsistency of effects between the

countries, since the difference in observations across the countries could interfere with these effects. Table 2 gives a concise overview of the variables that are obtained from the sample. For every variable the following values are displayed: Average (Avg), Standard Deviation (StDev), Minimum Value (Min), Maximum Value (Max), Median (Median) and the Skewness (Skew).

Table 2
Variable names, Means and Standard Deviation

Variable Name:	Avg (StDev)	Min Max	Median Skewness
Dependent variables:			
Return on equity (<i>ROE</i>)	4.10 (22.99)	-61.43 72.68	7.52 -1.76
Return on assets (<i>ROA</i>)	1.92 (9.38)	-34.20 30.37	2.99 -1.42
Tobin's Q	1.01 (.94)	.01 5.62	.74 2.24
Independent variables:			
Ownership concentration	52.45 (23.76)	5.01 99.76	52.63 .01
Ownership control	33.57 (22.11)	5.01 96.00	28 .67
Standard Deviation OwnConc	9.89	.00	5.75
Number of significant shareholders	11.57 3.04 (1.45)	47.8 1.00 5.00	1.30 3.00 .01
Control variables:			
Size (<i>in logarithm of total assets</i>)	5.85 (.93)	3.90 7.99	5.83 .04
Leverage (<i>Debt/Equity</i>)	.64 (.75)	.03 2.95	1.34 -.64
Beta	.56 (.37)	-.32 1.78	.58 .34
Growth (<i>in assets</i>)	0.24 (1.20)	-.33 13.37	.05 9.21
Observations	171	171	171

Note: Avg, StDev, Min, Max, Median and Skewness represent 3-year averages of a sample of 171 firms from the Netherlands, Belgium and Luxembourg.

The value of skewness is a proxy for the degree of which the sample is normally distributed and can take both negative, zero, and positive values. A skewness of zero reveals a perfect

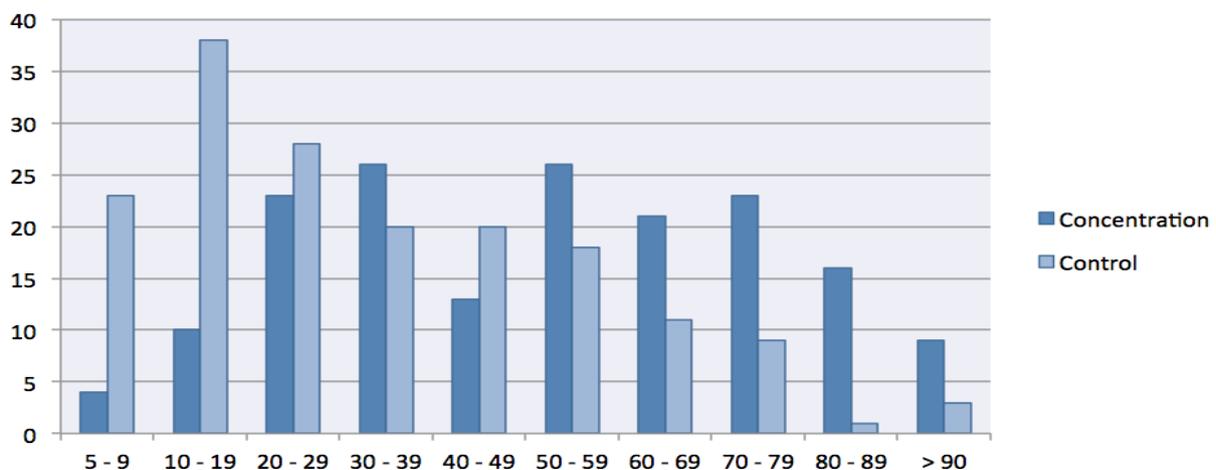
symmetric distribution, meaning the observations follow a normal distribution. Positive values indicate that more values lie below the mean, resulting in a right-skewed distribution. A right-skewed distribution has a tail that extends toward the higher values. Negative values of skewness result in a left-skewed distribution where the opposite holds.

Table 3
Fluctuation in time-varying variables

Variable Name	Avg.		
	2013	2014	2015
ROE	6.26	5.90	4.39
ROA	1.73	1.49	2.43
Tobin's q	.86	.95	1.02
Leverage	2.15	1.14	2.10
Growth	.44	.12	.14

As can be seen in Table 3, the variables substantially fluctuate over the years, which could bias the results in the analysis. To limit such bias, the financial data used in the analysis contains 171 3-year average data points calculated upon 513 observations of the fiscal years 2013-2015. However, it proved to be difficult to obtain data of the ownership structures over the same 3-year time frame. Hence is chosen to limit the time frame of the ownership to the last fiscal year used in the financial data, namely 2015. For simplicity sake the assumption is made that significant ownership structure is less volatile than the financial data and stayed constant over the years 2013-2015.

Figure 1
Distribution Ownership Control & Concentration



Note: the y-axis represents the number of observations and the x-axis the categories in %. The thresholds of the categories end on .99.

The observations regarding the ownership structure contain the significant shareholders that exceed the minimum threshold of 5%. This sample constraint resulted in a total of 526 observations of shareholders spread over 171 firms. To summarize the distribution of the concentration of ownership structure, the sum of the 5 largest shareholders were assigned to baskets of 10% (5.00-9.99%, 10.00-19.99% etc.). Likewise, the largest shareholders of each firm were assigned to the same baskets. The distribution of both the concentration and control among firms can be seen in Figure 1. The number of observations and the categories are displayed on the y-axes and the x-axes respectively.

Table 4
Distribution Ownership Type

Ownership type	N	%
Company Ownership	171	32.51
Bank Ownership	61	11.60
Institutional Ownership	197	37.45
Government Ownership	13	2.47
Family Ownership	84	15.97
Total	526	100

Note: N is not equal to 5 times the sample

Furthermore, the raw sample consisted of a wide range of shareholder types. In this analysis the classification from the research of Thomsen and Pedersen (2000) is used. This classification contains the following 5 categories: company ownership, bank ownership, institutional ownership, governmental ownership and family ownership. Since the dataset of Orbis used more specific and diverse categories, the data had to be transformed according the classification of Thomsen and Pedersen (2000). Table 4 shows the distribution that resulted from the data transformation. Both the number of observations (N) and the percentage of the total (%) are displayed.

4. Methodology

In this thesis, the relationship between the ownership structure and the firm performance of Dutch listed companies will be analysed. In order to test the hypothesis, a variety of regressions will be constructed which includes multiple dependent, independent and control variables. In the section methodology, the research approach of the study together with the regression models will be elaborated in more detail.

4.1 Correlation analysis

To investigate whether any correlation exists between the variables a correlation analysis will be conducted. The correlation will be defined with correlation coefficients that range from values of -1.00 to +1.00. The value of +1.00 indicates a perfect positive relationship, which means that if one variable increases by one so does the other. In contrary, the value of -1.00 indicates a perfect negative relationship. In this case the variables move in opposite direction, which means if one variable increases by one the other variable decreases by one. When high correlation is found, multicollinearity could exist between the variables. To test for multicollinearity, the variation inflator factor (VIF) can be used.

As for the type of the correlation coefficient, the Pearson r will be used. The Pearson r analysis operates by measuring the two variables on a range of increasing values. The coefficients will be calculated by taking the covariance of the two variables and dividing it by the product of their standard deviation.

4.2 Regression analysis

To test the preconceived hypotheses, cross sectional research will be used in which a multivariate regression analysis will be conducted. For the multivariate regression analysis, five different models are constructed which assess the relationship between ownership structure and firm performance. Each of these models will attempt to identify more specific effects between firm performance and ownership. These results will be combined to substantiate arguments to accept or reject the preconceived hypotheses and answer the research question. Each of the models will be regressed against all three dependent variables: *ROA*, *ROE* and *Tobin's q*.

As stated in hypothesis 1, the effect of ownership concentration is believed to take a bell-shaped form (Thomsen & Pedersen, 2000). For this reason the squared definition of both the

variables *OwnConc* and *OwnControl* are added as independent variables to take account for the counter wise (negative) effect that is expected to arise after a certain threshold. Model (1) till (4) are constructed to test hypotheses 1, 3a and 3b. In these models the measurements of ownership are both separately and simultaneously regressed against firm performance. Multiple regressions with slight variations in the models ensure a more complete understanding of the relationship between both.

The first model aims to gauge the effect of the fraction of capital owned by the 5 largest shareholders on the firm performance. In this model, the type of the shareholder will be incorporated as a control variable together with the other control variables.

$$(1) \text{ Firm performance} = \alpha + \beta_1 \text{ OwnConc} + \beta_2 \text{ OwnConc}^2 + \delta_1 \text{ FamOwn} + \delta_2 \text{ InstOwn} + \delta_3 \text{ GovOwn} + \delta_4 \text{ BankOwn} + \delta_5 \text{ ComOwn} + \eta_1 \text{ BE} + \eta_2 \text{ LUX} + \gamma_2 \text{ Leverage} + \gamma_3 \text{ Size} + \gamma_4 \text{ Beta} + \gamma_5 \text{ Industry} + \gamma_6 \text{ Growth} + \varepsilon$$

In the second model *OwnConc* gets replaced by the variable *OwnControl*, which specifies the effect of the largest shareholder on the firm performance.

$$(2) \text{ Firm performance} = \alpha + \beta_1 \text{ OwnControl} + \beta_2 \text{ OwnControl}^2 + \delta_1 \text{ FamOwn} + \delta_2 \text{ InstOwn} + \delta_3 \text{ GovOwn} + \delta_4 \text{ BankOwn} + \delta_5 \text{ ComOwn} + \eta_1 \text{ BE} + \eta_2 \text{ LUX} + \gamma_2 \text{ Leverage} + \gamma_3 \text{ Size} + \gamma_4 \text{ Beta} + \gamma_5 \text{ Industry} + \gamma_6 \text{ Growth} + \varepsilon$$

In the third regression model, the dependent variables *OwnConc* and *OwnControl* are both incorporated to identify the combined effects of ownership concentration and control while the type of ownership is omitted.

$$(3) \text{ Firm performance} = \alpha + \beta_1 \text{ OwnConc} + \beta_2 \text{ OwnControl} + \beta_3 \text{ OwnConc}^2 + \beta_4 \text{ OwnControl}^2 + \eta_1 \text{ BE} + \eta_2 \text{ LUX} + \gamma_2 \text{ Leverage} + \gamma_3 \text{ Size} + \gamma_4 \text{ Beta} + \gamma_5 \text{ Industry} + \gamma_6 \text{ Growth} + \varepsilon$$

Subsequently, the first three models are combined to examine if any changes occur if the variables *OwnConc*, *OwnControl* and *OwnType* are simultaneously regressed against the firm performance.

$$(4) \text{ Firm performance} = \alpha + \beta_1 \text{ OwnConc} + \beta_2 \text{ OwnControl} + \beta_3 \text{ OwnConc}^2 + \beta_4 \text{ OwnControl}^2 + \delta_1 \text{ FamOwn} + \delta_2 \text{ InstOwn} + \delta_3 \text{ GovOwn} + \delta_4 \text{ BankOwn} + \delta_5 \text{ ComOwn} + \eta_1 \text{ BE} + \eta_2 \text{ LUX} + \gamma_2 \text{ Leverage} + \gamma_3 \text{ Size} + \gamma_4 \text{ Beta} + \gamma_5 \text{ Industry} + \gamma_6 \text{ Growth} + \varepsilon$$

Hypothesis 2 states that heterogeneity among the 5 largest shareholders positively affects the firm performance. To measure heterogeneity the standard deviation of the variable *OwnConc* will be used as an independent variable. Furthermore, the control variable *NumberOwn* will be incorporated to take account for the number of shareholders that may influence the standard deviation.

$$(5) \text{ Firm performance} = \alpha + \beta_1 \text{ StDevOwnConc} + \beta_4 \text{ NumberOwn} + \eta_1 \text{ BE} + \eta_2 \text{ LUX} + \gamma_2 \text{ Leverage} + \gamma_3 \text{ Size} + \gamma_4 \text{ Beta} + \gamma_5 \text{ Industry} + \gamma_6 \text{ Growth} + \varepsilon$$

In order to perform the regression analysis, the method of ordinary least squared (OLS) will be applied by using the statistical software program Stata. Thereafter, the results of the regression analysis will be examined in section 5 ‘Empirical results’, on which conclusions may be drawn.

5. Empirical Results

5.1 Correlation analysis

This section will present and discuss Pearson's correlation between the variables. In order to perform the Pearson r test, the variables that are subjected to the test need to be measured on a continuous scale. This assumption holds true for the collected data on both the financial performance and the ownership structure. The dependent variable is measured using continues performance measures: ROE, ROA and Tobin's q. Likewise the independent variable is measured using continues ownership measures: ownership concentration and ownership control.

The results of the Pearson r test are shown in Appendix A, where the Pearson's correlation for the independent variables and dependent variables are displayed in a Pearson matrix. Looking at the Pearson matrix, one can observe a negative relationship between the ownership structure variables and the performance measurements ROA and Tobin's q. When observing this matrix, however, one should note that the significance of Pearson's correlation between ownership structure and firm performance is limited. Only ownership control and ownership concentration appear to correlate significantly to ROE and Tobin's q respectively. Remarkable is the contradicting positive relation between ownership structure and ROA. However, regardless of the insignificance, Pearson's correlation between the ownership concentration measurements and the ROA are too small ($r < |0.1|$) to even argue the slightest correlation. The same holds for the ownership measurements correlation to ROE, with exception to the significant correlation between ownership control and ROE. This significant correlation with a Pearson r of 0.05068 is close to zero. Therefore, one could state that no correlation exists between ownership control and ROE. Only significant correlation is found between ownership concentration and Tobin's q. Both ownership concentration and its squared definition are negatively correlated to Tobin's q with a Pearson r of -0.1507 and -0.1589 respectively, on a significance level of 5%. Albeit the Pearson r for both correlations is rather small, it is vast enough to state a small negative correlation between ownership concentration and Tobin's q.

5.2 Regression analysis

In table 5 and table 6 the results of the four models with regards to hypothesis 1 and 3 are shown. The four models are divided into two tables in order to present a clear overview of the

results. The models that are shown in table 5 measure the same relationship, using different measurements of ownership concentration as independent variables. In model 1 the sum of the five largest shareholders together with the squared definition is regressed against the three dependent variables.

Table 5
Model 1 and 2

Variables	(1)			(2)		
	ROE	ROA	Tobin's q	ROE	ROA	Tobin's q
Concentration	.96** (.47)	.12 (.16)	.01 (.02)	No	No	No
Concentrationsq	-.01** (.01)	-.001 (.002)	-.0001 (.0001)	No	No	No
Control	No	No	No	.30 (.41)	.18 (.13)	-.02 (.01)
Controlsq	No	No	No	-.004 (.01)	-.002 (.002)	-.0002 (.0002)
Institutional ownership	-4.08 (10.57)	-2.02 (3.48)	-.49 (.33)	-1.09 (10.42)	-2.20 (3.38)	-.40 (-.40)
Family ownership	6.92 (11.84)	-.41 (3.90)	-.53 (.37)	11.60 (11.91)	-1.01 (3.86)	-.24 (.37)
Ownership type	Yes	Yes	Yes	Yes	Yes	Yes
BE	-6.44 (5.38)	-.51 (-.95)	.11 (.17)	-7.53 (5.49)	-.24 (1.78)	.19 (.17)
LU	-9.83 (8.52)	-.95 (2.81)	.06 (.27)	-9.41 (8.66)	-1.52 (2.81)	.12 (.27)
Growth	4.58** (1.99)	.25 (.66)	.02 (.06)	4.45** (2.01)	.20 (.65)	.02 (.06)
Leverage	-6.92* (.98)	-.51 (.32)	-.06*** (.03)	-6.98* (.99)	-.53*** (.32)	-.06** (.03)
Size	14.75* (3.43)	3.89* (1.13)	-.31* (.11)	15.10* (3.47)	3.81* (1.13)	-.31* (.11)
Beta	-14.82 (9.43)	-3.17 (3.11)	.62** (.30)	-14.65 (9.43)	-2.93 (3.06)	.78* (.29)
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes
N	171	171	17	171	171	171
R-squared	.36	.16	.18	.35	.18	.17

Notes: N=171. Coefficients are rounded off to two decimal places; calculations on reflection points are made with the full numbers. *Significant at 1% significance level ($p \leq 0.01$). **Significant at 5% significance level ($0.05 > p \geq 0.01$). ***Significant at 10% significance level ($0.10 > p \geq 0.05$).

The results display a positive relationship between the ownership concentration and the performance measurements. However, only the coefficients relating to ROE appear to be significant. The coefficient 0.9588 of *OwnConc* is significant at a significance level of 5% and as the sum of the 5 largest shareholders increases by one percentage, ROE moves 0.9588 in the same direction. The bell shaped form as hypothesised in the first hypothesis is, however, not supported by the squared definition of *OwnConc*. The squared definition of *OwnConc* takes a negative value of -0.0086 and is significant at a significance level of 5%. Despite the negative sign, it does not induce a negative relation between *OwnConc* and ROE. This negative relation was expected to arise after a certain reflection point according to the hypothesized bell shaped form. The reflection point after which the relationship turns negative lies far beyond the range of possible values [0,100] of ownership concentration. The same can be said about the relationship between ownership concentration and ROA, leaving the significance aside. Meanwhile, the coefficients with regards to Tobin's q oppose the positive relationship as stated before. The squared definition of *OwnConc* causes the relationship to turn negative after the sum of the 5 largest shareholders reaches the sum of 6%. So after interpreting the squared definition of *OwnConc*, one could state that in practice the positive relationship between ownership concentration and Tobin's q takes a negative value. However, these coefficients are not significant.

The coefficients of *OwnControl* and *OwnControl2* indicate a reflection point in the relationship with ROE. When the largest shareholder reaches a level of 73,7% shares the squared variable *OwnControl2* overtakes the positive effect of *OwnControl*, causing a negative relation between control and ROE from 73,3% shares hold onward. This bell shaped form holds with respect to neither ROA nor Tobin's q for the coefficients of control. The variable of ownership control relates positively and negatively to both ROA and Tobin's respectively. However, the coefficients of ownership concentration measured by *OwnControl* and *OwnControl2* do not display any significant coefficients. Therefore, the coefficients do not furnish credible evidence to state that there is a relationship between the fraction hold by the largest shareholder and firm performance. Thus, the aforementioned interpretations on the effect of the fraction hold by the largest shareholder on firm performance are therefore negligible.

Table 6**Model 3 and 4**

Variables	(3)			(4)		
	ROE	ROA	Tobin's q	ROE	ROA	Tobin's q
Concentration	1.08*** (.53)	.02 (.18)	.01 (.02)	1.17** (.57)	.004 (.19)	.02 (.02)
Concentrationsq	-.01** (.01)	-.0001 (.002)	-.0002 (.0002)	-.01*** (.01)	-.0002 (.002)	.0003 (.0002)
Control	-.34 (.53)	-.19 (.17)	-.02 (.02)	-.40 (.54)	-.21 (.18)	-.02 (.02)
Controlsq	.002 (.01)	-.002 (.002)	.0003*** (.0002)	.002 (.01)	-.002 (.002)	-.0003*** (.0002)
Institutional ownership	No	No	No	-3.5638 (10.6097)	-2.23 (3.49)	-.52 (.34)
Family ownership	No	No	No	8.0849 (11.9372)	-.91 (3.93)	-.52 (.37)
Ownership type	No	No	No	Yes	Yes	Yes
R-squared	.36	.16	.18	.37	.17	.20

Notes: $N=171$. Coefficients are rounded off to two decimal places; calculations on reflection points are made with the full numbers. *Significant at 1% significance level ($p \leq 0.01$). **Significant at 5% significance level ($0.05 > p \geq 0.01$). ***Significant at 10% significance level ($0.10 > p \geq 0.05$). Control variables are omitted in the table to maintain a clear overview.

The results of model 3 and model 4 are embodied in table 6 and address both hypotheses 1 and 3. The sole difference between the models is the incorporation of the ownership type in model 4, which is omitted in model 3. In these models the two measurements for ownership concentration (i.e. *OwnControl* and *OwnConc*) are combined to create a more complete effect of ownership concentration on firm performance.

The effect of the sum of the 5 largest shareholders on ROE is significant with a coefficient of 1.0751. The squared definition of *OwnConc* is significant in model 4, which suppresses the effect of ownership concentration as the concentration increases. However, the coefficient of -

0.0092 is too small to offset the positive effect of *OwnConc*. In line with model 1, the results of model 4 provide no support to hypothesis 1 in which a bell shaped form is expected. In model 3 and 4 the variable *OwnControl* functions as an oppressive factor on the positive effect of *OwnConc*. As for Tobin's q, the coefficients of the squared definitions of both *OwnConc* and *OwnControl*, display a non-linear relationship. Both coefficients counterbalance the effects of *OwnConc* and *OwnControl*. Both variables *OwnConc* and *OwnControl* reach a reflection point in which the effects change to negative and positive respectively. However, the results lack of significance. Despite the variable *Controlsq* that lacks economical significance, the only significant coefficient is from the effect of the sum of the 5 largest shareholders on ROE similar as in table 5.

Hypothesis 3 regards the ownership type of the largest shareholder and is split up into two partial hypotheses. Hypothesis 3a and 3b states that institutional and family ownership are positively correlated with firm performance. In three of the four models that are displayed in table 5 and 6, the ownership type is incorporated. The signs of the coefficients of institutional on firm performance are consistent over the models, with one exception regarding the relationship with ROE in model 2. Despite the one deviation, the results contradict hypothesis 3a in which a positive relationship is expected. Hypothesis 3b holds true only for the impact of family ownership with respect to ROE. The coefficients of family ownership regarding ROA and Tobin's q are negative and are not aligned with hypothesis 3b. However, none of these models show a significant relationship between ownership type and firm performance. Therefore, it is hard to argue a relation between the ownership identity and the firm performance. Furthermore, interesting to note is that omitting the dummy variable for the type of ownership from the regression model does not lead to a meaningful change in the coefficients of the independent variables.

In table 7 the results of model 5 are displayed. Hypothesis 5 is complementary to hypothesis 1 and attempts to specify the effects of ownership concentration on firm performance. In model 5 the standard deviation of the variable *OwnConc* is incorporated as an independent variable. By using the standard deviation is endeavoured to observe if heterogeneity among shareholders plays a role in the effect of ownership concentration on firm performance. The coefficients of the heterogeneity measurement positively affect ROA. In contrary, the opposite holds for the relationship with ROE and Tobin's q, where ownership dispersion seems to enhance the ROE and Tobin's q. However, coinciding with the other models, the

coefficients seem to be insignificant. The lack of significance indicates that there is no correlation adhering to the relationship of ownership concentration. Therefore, hypothesis 2 can be rejected based on the results shown in table 7.

Table 7
Model 3

Variables:	ROE	ROA	Tobin's q
Concentrationstdev	-.03 (.21)	.08 (.07)	-.01 (.01)
Numberowners	2.03*** (1.01)	-.22 (.59)	-.06 (.06)
Type ownership	N	N	N
Control variables	Y	Y	Y
N	171	171	171
R-squared	.35	.15	.15

*Notes: N=171. Coefficients are rounded off to two decimal places; calculations on reflection points are made with the full numbers. *Significant at 1% significance level ($p \leq 0.01$). **Significant at 5% significance level ($0.05 > p \geq 0.01$). ***Significant at 10% significance level ($0.10 > p \geq 0.05$).*

5.3 Internal validity

OLS makes the assumption that the variance of the error term is constant, that is $V(\varepsilon) = \sigma^2$. To test for heteroscedasticity, the statistical test of Breusch-Pagan is applied for all the regression models. The Breusch-Pagan test constructs a null-hypothesis in which a constant variance is hypothesized and tests whether this hypothesis is satisfied. However, the test results for all the regression models display a P-value of 0.0000. According to these test statistics the null-hypotheses of the Breusch-Pagan tests are rejected for all the regression models. One can conclude that the variances of the errors from the regression models are dependent on the values of the independent variables. The presence of heteroscedasticity can have some serious consequences for the OLS estimator. Namely, even though OLS estimator remains unbiased, the estimates of the SE are inaccurate.

To check till what extent the internal validity of the analysis of this thesis holds, several robustness checks are done. In this section is examined how the core regression coefficient estimates behave when certain variables are removed or modified. Alternative versions of the regression models, where insignificant control variables like industry effects and countries were omitted, did not affect the coefficients of the independent variables. The control variable for the firm's size, which is measured as the logarithm of the total assets, is removed and the real values of total assets are added. Again, no noteworthy changes in the coefficient of the regressors occurred. Furthermore, robust errors are used in order to address the issue of heteroscedasticity in which the standard errors are dependent on the independent variables. The use of robust errors did not affect or increase the significance. In conclusion, the coefficients did not change due to the robustness check in ways that demand for any explanation. The results of the robustness checks do not furnish any evidence to alter or question the conclusion that will be drawn upon the results that are presented above. The coefficients seem plausible and robust, which support the structural validity of the analysis.

6. Conclusion and Limitations

6.1 Discussion

The principal-agent problem, that stems from the separation between ownership and control has been widely discussed among economists. The relationship between ownership structure and firm performance has been examined across the globe, mostly in developed countries in the United States, Europe and Asia. In this thesis the relationship between ownership structure and firm performance of publicly listed firms in the Benelux is aimed to define.

Numerous recent papers analysed the relationship between ownership concentration and firm performance in which the results are quite divergent. The different models, the difference in treating ownership structure as endogenous or exogenous and the set of variables that are used in the analyses can explain the divergence in results among the existing literature. While some studies argue that no significant relation exists between ownership structure and firm performance, others claim larger fraction of ownership concentration result in increased managerial efficiency, leading to higher accounting profit rates and shareholders value. Among the studies that are examined in this thesis, the mix of variables and model that is used in the research of Thomsen and Pedersen (2000) is regarded to be the most optimal and provides a strong fundament for the first two hypotheses. To measure the ownership concentration in the first hypothesis, both the sum of capital hold by the largest five shareholders and the fraction of solely the largest shareholders are used. Furthermore, the standard deviation of ownership concentration is used in the second hypothesis to analyse the effects of heterogeneity among the 5 largest shareholders. These proxies are regressed against ROE, ROA and Tobin's q .

In addition to assessing the effect of the ownership structure on the firm performance, this paper also analysed the effect of the ownership type on firm performance. According the study of Thomsen and Pedersen (2000) the identity of the shareholders are subdivided into five types. Two of these types, institutional and family ownership, are tested in the third hypothesis. A positive relationship of both identities on ROA, ROE and Tobin's q is expected.

In hypothesis 1 a bell-shaped form is expected. The ownership concentration was expected to have a positive effect at first after which turns negative when the concentration becomes too large. These beliefs are based on the findings of previous studies, in which is stated that large

shareholders have the incentive to monitor the board of executives and thereby increase the managerial efficiency due to their large stake in the company (Berle & Means, 1932; Shleifer & Vishny, 1986; Agrawal & Mandelker, 1990; Thomsen & Pedersen, 2000). When the concentration becomes too large the expropriation effect overtakes the monitoring effect since the large shareholders start to extract personal benefits, which damages the firm performance (Thomsen & Pedersen, 2000). The results of the OLS regression give some insight about the relationship between ownership concentration and the managerial efficiency of the firm. The only significant relationship appears to exist between ownership concentration and ROE. The squared definition of *OwnConc* that was expected to offset the positive effect of ownership concentration, however, seems to only suppress the positive effect. The results do not lend strong support to the first hypothesis. One could say the results cautiously hint a non-linear association, since ownership concentration positively affects the firm performance and the squared definition seems to consistently oppress this effect over the different regression models. However, due to the lack of significance and the small scale of this thesis it is hard to draw strong conclusion upon these results.

In addition, hypothesis 2 attempts to further specify the relationship that is addressed in the first hypothesis. No literature has been found that aimed to identify if heterogeneity in the ownership concentration takes part in the effect on firm performance. According the results of the regression model that is constructed for this alternative hypothesis, heterogeneity does not appear to be related to firm performance. Furthermore, the number of significant shareholders positively affects the ROE. This coefficient hints that more significant shareholders positively contribute to the expected monitoring effects on the executive board, leading to a higher ROE. However, since the coefficient was barely significant, with a significance level of 10% ($P=0.098$), it is judicious to be careful with drawing a conclusion based on this coefficient. In conclusion, the second hypothesis can be rejected based on the results of the fifth regression model.

The third hypothesis is split into two partial hypotheses 3a and 3b and tests whether the type of shareholders is of importance with regards to the ownership structure. The identity of the company's largest shareholder is categorised into 5 groups, including family and institutional ownership. Based on the findings of previous studies both family and institutional ownership was expected to positively influence the firm performance. The negative direction of the effects of institutional ownership on firm performance is consistent in all the regression models. These results contradict the hypothesis in which a positive effect of institutional

investors was expected. The direction in which family ownership is associated with the company's profitability is less clear according the results. Namely, the results display a positive with regards to ROE and a negative effect with regards to both ROA and Tobin's Q. However, none of the results regarding the ownership types is significant. Therefore, it is hard to state that institutional investors and family ownership are in any way related to the profitability of the firm.

Furthermore, in the results can be seen that leverage is significantly related to firm performance. The direction of the coefficients is constant over the different models and negatively related to the three performance measurements ROE, ROA and Tobin's q. This indicates that the investment strategy, where financial instruments or borrowed money is used to increase the potential return of an investment leads to adverse effects. Moreover, firm size, as measured in the logarithm of total assets, is positively correlated with the firm's accounting profit rates ROA and ROE. However, it seems that larger firms lead to a lower Tobin's q. This indicates that smaller firms are tend to be more overvalued. That is, that the market stock value of the company, is worth more than the costs of the assets. According the results the ratio in which the market valuation is overvalued, depreciates as the firm size increases.

In conclusion, no strong evidence was found to support the beliefs of a bell-shaped relationship between ownership concentration and the profitability of the firm. In addition, neither evidence for significant effects of family ownership nor institutional ownership on firm performance were found in this thesis. Therefore, one could argue that the divergence in ownership structures is due to different causes, e.g. different circumstances in the markets in which the firms operate. That is, differences in scale economies, regulations and stability of the market environments (Demsetz & Villalonga, 2001). In perfect markets for control any systematic relation between the ownership structure and the firm performance would be removed. However, the firms in this thesis do not necessarily operate in such perfect markets. Yet, the results of this thesis may point out that the market is not imperfect enough to create strong systematic relation for investors, for which they could utilise to maximize their own returns.

6.2 Limitation

In this section, the limitation associated with this study will be examined. First of all, the selection of the literature that is reviewed and used as a fundament for this research is done at

best on basis of what was regarded as important and relevant. Therefore, it is plausible that not all of the important literature is summarized in this research and therefore possible relevant aspects are overlooked.

Furthermore, in the existing literature numerous different sets of variables and methods are used. Hence, the insignificance and heteroscedasticity may be due to the fact that the set of variables used in this research may not be the optimal variable set. The issue of heteroscedasticity may cause bias in the standard errors, test statistics and confidence interval. That is, the OLS method does not furnish the estimates with the smallest variance, leading to inaccurate significance test that can be too high or too low. This may indicate that some important variables are omitted in the regression models. Therefore, further research may attempt to respecify the model and/or transform variables in order to obtain homoscedasticity. Moreover, the data regarding the ownership structure is based upon one fiscal year, 2015. Repeating the analysis on a wider time frame could enhance the structural validity of this research. Besides, one side of the literature emphasize the endogeneity of ownership structure, where in this research it is assumed to be exogenous. The potential of the endogeneity calls for more research, which was not possible in this thesis due to time constraints.

In addition, the data that is obtained in this research was insufficient for including variables regarding the managerial ownership. Some studies state that there is a high correlation between the significant shareholding families and the managerial ownership. Demsetz & Villalonga (2001) found a correlation of 0.67 between the two types of ownership identities. This correlation could bias the results of hypothesis 3b with regards to family ownership, since the coefficients of family ownership may include the effect of managerial ownership. Hence, a study that incorporates measurements for managerial ownership should give a more accurate representation of the characteristics, interests and the influence of the large owners.

These limitations may hinder the generalization of the results and conclusion drawn in this thesis. These limitations point to directions for future research and address aspects that require more attention.

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Appendix

Appendix A: Pearson r correlation matrix

Pearson r matrix							
Variables:	Concentration	Concentrationsq	Control	Controlsq	ROE	ROA	Tobin's q
Concentration	1.000	.9761*	.7800*	.7048*	-.0011	.0514	-.1507**
Concentrationsq	.9761*	1.000	.7746*	.7303*	-.0369	.0389	-.1589**
Control	.7800*	.7746*	1.000	.9620*	-.0568*	.0906	-.0787
Controlsq	.7048*	.7303*	.9620*	1.000	-.0732	.0693	-.0483
ROE	-.0011	-.0369	-.0568*	-.0732	1.000	.5562*	.0947
ROA	.0514	.0389	.0906	.0693	.5562*	1.000	.0263
Tobin's q	-.1507**	-.1589**	-.0787	-.0483	.0947	.0263	1.000

Notes: N= 171. *Significant at 1% significance level ($p \leq 0.01$). **Significant at 5% significance level ($0.05 > p \geq 0.01$). ***Significant at 10% significance level ($0.10 > p \geq 0.05$).