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Redefining Family Ownership and How It Affects Firm Performance

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“A business that makes nothing but money is a poor business”

- Henry Ford

ABSTRACT

Through this thesis, we want to challenge the established family firm definition of 50% family ownership. We do this by incorporating additional criteria such as active management from the controlling family and a requirement that the company has two or more owners from the same family. By implementing these criteria, we aim to capture more of the features one expect to see when a company is family owned. We will measure the effects by looking at firm performance and compare the results from our new definition with the established definition.

This thesis uses panel data of Norwegian public and private companies over the years 2000-2015 gathered from The Center for Corporate Governance Research. Our sample consists of approximately 175.000 Norwegian companies.

The models used in this paper will always consist of one base case where family ownership is measured by the variable “family ultimate ownership”, which indicates percentage ownership of the controlling family. The base case is compared against two different models where the first model uses the established 50% definition as a dummy variable and the second model uses our new definition of family ownership. All these three cases include control variables for firm age, firm size, leverage and industry risk. The dependent variables are return on assets (ROA), return on equity (ROE), growth in assets and growth in revenues.

The results from our analysis indicates that even though we use our new, stricter definition of family ownership, family firms still outperform non-family firms with reference to ROA and ROE. However, we see a negative impact on both growth measures, which could be explained by higher risk aversion and long-term thinking in family firms. Our findings, regarding the control variables for the new family definition, also capture the effects and key features one would expect from a family owned company.

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1.0 INTRODUCTION

Family owned companies is a common organizational structure, and in Norway over 2/3 of all firms are characterized as being family owned (Berzins and Bøhren, 2013). The reason we wanted to investigate family firms closer is because family ownership is a well discussed subject and is often mentioned in media, from wealthy families and big companies to intrigues and dramatic court cases.

The definition of family firms used in the paper written by Berzins and Bøhren (2013) requires that the family owns at least 50% of the shares in the company. This definition, as mentioned above, resulted in 2/3 of all Norwegian firms being characterized as family owned. We believe that this might be a misrepresentation of the real world, and therefore we started to research whether previous literature on family firms had discussed this concern. From the research, it was clear that many of the papers had used a similar approach as Berzins and Bøhren and classified family firms as one or more owners from the same family that owned 50% or more of the shares. We believe that this definition is too extensive, and do not capture what we believe truly classifies as family firms.

We believe a consequence of defining family ownership by the 50% benchmark will skew the results and misrepresent the true effects of family ownership. This because the specter of firms defined as family owned will be large, when in reality the number of firms that we characterize as real family owned firms, are quite lower.

We will create a variable for measuring family ownership, which we will hereafter refer to as “true family”, which we hope will illustrate a more precise picture than what we believe has previously been done. The new definition will be isolated to companies where there are two or more owners from the same family that collectively owns at least 50% of the shares. Additionally, the controlling family must be actively involved in the management of the firm, meaning that the family must have both CEO and chair.

To examine whether we have captured the effects of true family ownership with the new definition, we will look at how the firms perform compared to non-family firms. We believe that some of the characteristics that could contribute to greater performance is that family ownership and business management is coinciding. This leads to better alignment of interests, meaning that family firms can avoid agency conflicts (Berzins and Bøhren, 2013). In addition, family firms are more risk averse because their perspective is usually more long-term in order to pass on the firm to the next generation (Pollak 1985; and Miller and Breton-Miller 2006).

If we could accomplish creating the true family variable correctly, we hope this can contribute to already existing literature and show that there are alternative ways of defining family ownership. Through this paper it will be interesting to see what effects the new definition will have on firm performance, and what impact listing status has on our results. Some of the questions we hope to be able to answer at the end of this thesis are:

“Can we say that a correct definition of family firms only requires one owner with 50% or more of the shares in the company?”

“When the additional criteria are set, will the effects of family ownership still be observable in our sample, and do they perform better than non-family firms?”

The answers to our questions will be based greatly on our conclusions from descriptive statistics, regressions and robustness testing. Since we are interested in seeing how the conclusions change, we will always run one base case where family is measured by the variable *family ultimate ownership*, one case with the 50% family limit and lastly one case with the variable we created, *true family*.

2.0 THEORETIC FRAMEWORK

In this section, we will present previous literature and theories that is relevant for our study and that will help us set the research question into context.

It is important to keep in mind that there are distinct differences between countries. For that reason, one cannot automatically assume that the empirical research that has previously been done regarding ownership structure will automatically apply for Norway (Randøy and Koekebakker, 2002).

2.1 Concentrated ownership versus family ownership

The dominant organizational form in most countries is concentrated ownership, with company control either in the hands of a family, large holding company, major institutional investors, or in some cases the state.

Concentrated ownership comes with certain benefits like investors interest in the firm's long-term growth and performance, and better ability to resolve principal-agent problems. At the same time, concentrated structures have problems like dominant shareholders exercising control at the expense of minority shareholders (Schleifer and Wilson, 2013).

The successful involvement of a family in a business gives it an advantage over other businesses. As a professor of global innovation at Cass Business School, Ajay Bhalla said: "They typically outperform non-family owned firms over a long time". "The family wants to create a legacy, by transferring the business to the next generation and extending the family's reputation, which is closely aligned with the firm's. They are more risk-averse and shed fewer people" (Newing, 2011).

Family ownership is regarded as a form of concentrated ownership since there often are few owners of the company. We believe that it is important to separate concentrated ownership and family ownership in this thesis. Based on this reasoning we decided that our definition of family ownership requires at least two owners from the same family.

2.2 Short-termism versus Long-term view

Short-termism is defined as decision-making in favor of short term profits at the expense of long term returns. In common literature, short-termism is a value destroying effect and should be avoided. One effect that mitigates this is the “Stewardship effect”, as described by Miller and Breton-Miller (2006). Here, they claim that managers and owners that are heavily involved in the firm, with regards to name, reputation, and personal wealth, as we so often see in family firms, tend to be more cautious due to a lifelong commitment to the firm.

Successful family firms usually seek steady long-term growth and performance to avoid risking the family’s wealth and control of the business. This approach tends to shield them from the temptation of pursuing maximum short-term profits at the expense of long-term company health. A long-term planning horizon and more moderate risk-taking causes family businesses to have lower levels of financial leverage (Caspar, Dias and Elstrodt, 2010). Family owners have longer investment horizons than other shareholders, and they generally regard their ownership as an asset to pass on to future generations (Cheng, 2014).

From an article written by Bertrand and Schoar (2006) they explore some theories under which family control is a source of comparative advantage for firms. They point out that family-controlled firms embrace a long-term approach to management. The underlying idea is that the links that binds current generations to future ones provide family firms with “patient capital”, a focus on maximizing long-run returns and the desire to pursue investment opportunities that more shortsighted widely held firms would not.

Lins et al (2013) wrote a paper where they studied whether and how family control affects valuation and corporate decisions during the 2008-2009 financial crisis. They found that family controlled firms underperform significantly, they cut investment more relative to other firms, and these investment cuts are associated with greater underperformance. Their evidence is consistent with families taking actions to increase the likelihood that under their control the firm survive the crisis, at the expense of outside shareholders.

2.3 Diversification loss

Diversification is the process of a business group entering multiple lines of businesses. Family firms are characterized by the control of a limited number of owners with family ties, with significant shares. Concentrated ownership reduces the possible diversification of financial risk (Demsetz and Lehn, 1985).

The long-term focus mentioned earlier implies relatively conservative portfolio strategies based on competencies built over time, coupled with moderate diversification around the core businesses. Family owners, who usually have a significant part of their wealth associated with the business, face the challenge of preventing an excessive aversion to risk from influencing company decisions. Excessive risk aversion might unduly limit investments to maintain and build competitive advantage and to diversify the family's wealth. Diversification is important not only for overall long-term performance but also for control, because it helps make it unnecessary for family members to take money out of the business and diversify their assets themselves (Caspar, Dias and Elstrodt, 2010).

Due to the fact that the owners usually have a relatively large portion of their wealth tied up in the firm, as well as their livelihood, they suffer a diversification loss. The lack of diversification implies higher risk for the owner, making the owner require either a higher return on the investment or lower risk for the firm. Since owners of family firms tend to have a longer time horizon in line with the stewardship theory discussed earlier, it is reasonable to believe that family firms are more risk averse, and that they prefer to reduce the risk of the company rather than demanding higher returns. This implies for instance lower performance and growth because they will choose projects and investments with lower risk (Anderson & Reeb, 2003(2)).

2.4 Agency theory

Here we will look closer at the different impact of agency problems in family firms and how they could potentially explain why family firms outperform non-family firms. Since families often manage the firms they own (Porta et al., 1999), we will primarily focus on agency problem one and two for the rest of this thesis.

Agency theories in family firm context have received much attention in family firm business literature. We use Jensen and Meckling's (1976) definition on an agency relationship as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf, which involves delegating some decision-making authority to the agent. If both parties in the relationship are utility maximizers there is good reason to believe that the agent will not always act in the best interest of the principal. According to Jensen and Meckling, there could be less conflicts in general when there is an alignment of interest with respect to growth opportunities and risk preferences.

Agency problem 1 – Shareholders versus Managers

Daily and Dollinger (1992) studies the effect agency theory has on family firms compared to professionally managed firms. They point out that when the owner is in a managing position, he or she would almost never pursue strategies which does not maximize firm value. In companies where this is the case, the first agency problem will be mitigated because the owner and manager is the same person, so the interest would be aligned. From our dataset, we can see that in over half of the observations, the family owners have both chair of the board and the role as CEO, therefore we can say that agency conflict one is most likely reduced in our sample.

Mitigating this agency conflict could lead to more efficient decision-making, which would lead to enhanced performance. Maury (2006) also found that performance in family firms are higher compared to non-family firms when the family has active control, which also is in line with what Anderson and Reeb (2003(2)) found in their paper.

As mentioned earlier, families tend to have longer investment horizons. Their long-term presence in the firm implies that family owners are willing to invest in long-term projects. Because the founding family views the firm as an asset to pass on to future generations rather than as wealth to be consumed during their lifetimes (James, 1999), firm survival is an important concern, which means stronger incentives to monitor (Cheng, 2014).

Agency problem 2 – *Small shareholders versus large shareholders*

Villalonga and Amit (2006) explains the second agency problem as situations where the large shareholder uses his/hers controlling position in the firm to extract private benefits at the expense of the small shareholders. In line with our definition of family firms, families have a controlling share of the company, thus agency problem two is highly relevant to our thesis.

The controlling family has both the opportunity and the power to extract private benefits at the expense of minority shareholders, which can reduce firm value. In firms with high family control, this conflict is expected to be negligible, but more serious in situation where the controlling family owns just above 50% of the firm. While families may take actions that maximizes their personal benefit, many of these actions can lead to suboptimal corporate decisions that reduce the value to minority shareholders. Compared to non-family firms, family firms face more severe agency conflict between small and large shareholders (Cheng, 2014).

With regards to our hypothesis, we can expect to see an impact on the percentage ownership of ultimate owners in our regression. Due to agency problem two, a lower share of ownership, but still with a majority owner, will have a negative effect on firm performance. Likewise, we expect to see higher firm performance when a larger share is held by the controlling family.

2.5 Family as governance structure: advantages and disadvantages

To enlighten how the family plays a role in governance structure, we will look closer into the article written by Pollak in 1985, where he has identified advantages and disadvantages concerning the integration of family and firms.

The first advantage is *incentives*, where this is related to the fact that members have claims on family resources (wealth). Therefore, when family members are in a managing position or enforce strict ownership, their actions will affect family wealth. In the long run, family members are expected to have claims on wealth through their entire lifetime, therefore incentivizing long term pay-offs rather than short term profit.

Secondly, Pollak argues that the cost of *monitoring* is lower in family firms due to similarities in work patterns and lifestyle. Therefore, one can more easily observe if someone is shirking their duties or extracting private benefits from the firm at the cost of the shareholders (other family members).

Furthermore, *altruism* and *loyalty* are two effects found within families that influences the decisions of the firm. It helps to limit opportunistic behavior at the expense of other shareholders or family members.

On the other hand, family governance can also negatively affect how the firm is operated. The mix of family relations and professional behavior can lead to *conflict spillover*. Also, family members tend to have a higher *toleration of inefficient personnel* if the person in question is a family member. Furthermore, the controlling family may choose a less qualified manager because of family ties, rather than a professional outsider, thus potentially losing key competencies required to stay competitive. Lastly, size limitations implied by family governance may prevent the realization of technologically achievable *economies of scale*.

As we can see, there are several advantages of family governance that implies excess returns over non-family firms, but conflicts within the family can arise, and it might result in family relations prohibit competitive performance.

2.6 Summary and general characteristics of family firms

From the above theories, we have identified some main features and effects we will keep in mind when analyzing the data. These effects are something we believe differentiates family firms from non-family firms.

One could expect family ownership to have a positive effect on the performance of the firm, and this will be indicated by a positive and significant beta on the ownership variable in our model described later in the thesis. Long-term view will also be reflected by a lower leverage ratio, and that, combined with risk aversion, will be reflected in family firms having less aggressive and more steady growth compared to non-family firms. Higher performance will also indicate that family firms reduces their agency costs because of alignment of interests.

From the above theories, we find support for our decision regarding why we defined *true family* as we have done. The reasoning for why we use two or more owners is because we want to differentiate between concentrated and family ownership, and we implement the criteria of active management to show that there should be an alignment of interest and motives in a family firm.

3.0 RESEARCH QUESTION & METHODOLOGY

In this section, we present the research questions in further detail, as well as the hypotheses and regressions that will be tested in this study.

This study has four different hypotheses that we will utilize to see whether family firms outperform non-family firms and consequentially, see if our new measure captures the desired effects of family ownership.

Before introducing the research questions, we wanted to dive deeper into the main perception of family, what is really a family? This question will have various answers depending on who you ask. Some will say that it is the people you choose, like your friends, and some will say that the answer is in biology. The content of family will differ in meaning in terms of economic, cultural, social and other factors. A quick search in the Oxford dictionary (2017) had the two following top results:

“A group consisting of two parents and their children living together as a unit”

“A group of people related by blood or marriage”

We also did a quick search in the thesaurus to see what types of results we would get, and words like; clan, group, people, ancestors, dynasty and generations was words that kept appearing. These two searches only strengthened our initial thought: a true family, in this setting, cannot be contributed to one single individual. The key indicators in all above results in these searches was that family is plural.

What happens when we then turn our focus to business? What is top-of-mind when we think of a family business. Many will think of large dynasties that follows the family through generations. An article from the financial times (2011) states:

“The family wants to create a legacy, by transferring the business to the next generation and extending the family’s reputation, which is closely aligned with the firm’s. They are more risk-averse and shed fewer people”

We believe that to really capture the essence of family firms we should do some adjustments to the generally used definition of family. As stated earlier, many papers we have seen use a similar definition as Berzins and Bøhren's (2013), where at least 50% of the shares are owned by one individual or a family. What we believe this possibly do not capture is the fact that this gives us no indications of whether this truly is a family business or not. If we believe that family firms are these strong, robust, empires that will be passed on through generations, we contradict ourselves by stating that it is enough to have one owner with 50% of the shares.

What we propose is to create a measure called *true family* which we hope will show a more correct picture of the business world. We believe that if family firms indeed are supposed to be passed on from generation to generation there should be more than one person that has the majority. Therefore, the *true family* measure is defined as two or more people that collectively possesses over 50% of the shares, and that the family has CEO and chair in the company. We add the criteria of CEO and chair because we believe this reflects that the family are actively managing the company, which is in line with theory in the sections earlier in the thesis.

The board of directors is responsible for the hiring and firing of the CEO (Boland and Hofstrand, 2009) so therefore one could argue that the CEO criteria is unnecessary to have in the original *true family* measure, but we will instead check this for robustness later by running regressions where the criteria is that the family only has chair. From the start, all criteria mentioned above must be fulfilled to be classified as a *true family* company.

3.1 Hypotheses

The main objective in this thesis is to test if the measure *true family* correctly draws the line between concentrated ownership and family ownership. Once we have implemented this measure it will give us a plausible way to separate the two and allow us to see if the firms we have identified as family firms outperforms non-family firms based on various performance measures.

In the following regressions, the variable “FamilyOwnership” represents all three different ways of measuring family ownership, and we will have one base case where we measure family by the variable *family ultimate ownership*. Furthermore, we will run the same regression twice, where we replace family ultimate ownership with the variable we have created, *true family*, and the last time with the 50% ownership benchmark, called *dummy family*. This will show us how much the conclusions changes when using different definitions, and it will allow us to see which of the three measures are more in line with theory.

The first hypothesis and regression is as follows:

“Will family firms, measured by the variable true family, yield higher performance when compared to non-family firms?”

$$ROA = \alpha + \beta_1 \text{FamilyOwnership} + \beta_2 \text{FirmAge} + \beta_3 \text{Leverage} + \beta_4 \text{Size} + \beta_5 \text{Industry risk} + \varepsilon$$

To substantiate our conclusion, we will also run regressions on three other measure of performance and growth, following the same idea as above. The questions and regressions we will perform:

“There is a higher return on total equity (ROE) in family firms than in similar companies that are not family owned”

$$ROE = \alpha + \beta_1 \text{FamilyOwnership} + \beta_2 \text{FirmAge} + \beta_3 \text{Leverage} + \beta_4 \text{Size} + \beta_5 \text{Industry risk} + \varepsilon$$

“Family firms have less growth measured by both change in assets and revenues than average similar firms”

$$\text{Growth} \frac{\text{Assets}}{\text{Revenues}} = \alpha + \beta_1 \text{FamilyOwnership} + \beta_2 \text{FirmAge} + \beta_3 \text{Leverage} + \beta_4 \text{Size} + \beta_5 \text{Industry risk} + \varepsilon$$

3.2 Predictions

Before performing any of the analysis on the data, we wanted to summarize what effects we believe the variable *true family* will have on the dependent and independent variables:

| Variables | Prediction |
|---------------|------------|
| ROA | + |
| ROE | +/- |
| Growth (A) | + |
| Growth (R) | - |
| Firm size | + |
| Leverage | - |
| Firm age | + |
| Industry risk | +/- |

From the table above one can see that we predict *true family* to have a positive impact on ROA and growth(A), because of the mitigation of agency costs and risk aversion. Risk aversion will also lead to lower leverage, thus having a negative impact on ROE. In addition, risk aversion will lead to less aggressive growth, meaning revenues will see lower growth.

We also believe that as true ownership increases the firm size and firm age will also increase, since stable family firms survives longer and are larger than non-family firms according to how we want to measure family firms. From literature, it is indicated that family firms are less leveraged than non-family firms (Anderson and Reeb 2003(1); Kachanes, Stalk and Bloch 2012) therefore we believe that *true family* will lead to decreasing leverage.

Industry risk is the same for all firms within the same industry, independent on family firm classification. We also believe that the *true family* measure will prove to capture more of the desired family ownership features, compared to the *dummy family* definition.

4.0 DATA

In this section, we will give information about the data used in this study. Firstly, an introduction to the database, and secondly, the data filters we have applied. Lastly, an overview of the different variables and how they are defined throughout this paper.

4.1 Database

Our data set is downloaded from the Center for Corporate Governance Research (CCGR) at BI Norwegian Business School. The data consist of Norwegian listed and non-listed firms in the period from 2000-2015.

4.2 Data filters

Before applying any filters to the data set we had a population consisting of over 478.249 companies, and over 3.461.962 observations throughout our time frame. To ensure that there is consistency in the research we will utilize relevant filters to the population, including filters from Bøhren and Rydland (2008).

1. Firms with no information about industry is excluded
2. No information about listing status are excluded
3. All company forms that are not AS and ASA are excluded
4. Negative entry on debt are excluded
5. Total assets less than or equal to zero are excluded
6. No employee information or with employees equal to zero are excluded
7. No entry on ROA and ROE are excluded
8. No information about company age is excluded (or equal to zero)
9. No information about ownership, CEO or chair is excluded

Filter 1 ensures that all industries are included and grouped into categories, and filter 2 makes sure that we have listing status on all companies that are included. This is needed because we want to look at both public and private companies, and to be able to differentiate between the two groups. Filter 3 removes firms without limited liability, which generates the relevant population for our study with AS and ASA.

Filters 4 and 5 are activity restrictions, ensuring that the firm has information about debt and positive assets. Filter 6, 7, 8 and 9 ensures that we have consistency in our data set. After applying the relevant filters and removing extreme outliers, our data set consists of 175.054 companies and 1.071.896 observations.

4.3 Variables

4.3.1 *Dependent variables*

Performance

To measure performance, we use return on assets (ROA) in our main hypothesis. For a comparison measure we look at return on equity (ROE) in one of our sub-hypothesis. ROA and ROE are commonly used performance indicators as a measure of profitability (Amit and Villalonga, 2010).

For our main regression, we will focus on ROA as it captures returns with disregards to capital structure, thus giving a more general picture.

In our data set, we see that family firms tend to have lower leverage than non-family firms, thus we can expect a lower ROE. These differences are mainly due to capital structure alone, and so we will look closer at ROE in our sub-model.

Growth

This will be measured by both percentage change in assets and percentage change in revenues. By changing the definition of growth and comparing the result it can give us an indication and insight into the company's investments level in comparison to asset growth (Maury, 2006).

$$Growth(A) = \frac{Total\ assets_t - Total\ assets_{t-1}}{Total\ assets_{t-1}}$$

$$Growth(R) = \frac{Revenues_t - Revenues_{t-1}}{Revenues_{t-1}}$$

4.3.2 *Independent variables*

Family ultimate ownership

The percentage of shares ultimately held by the controlling families. We will include this to see if there is a relationship between family ownership and performance. This will also indicate if agency costs are present in our sample.

Dummy true family

As mentioned earlier, this variable is defined by us as companies that has two or more owners from the same family that combined has 50% or more of the shares, where the family also has CEO and chair of the firm. Because of the criteria of CEO and chair, one can say that these family firms are actively controlled by the families which also would mitigate agency problem one, as mentioned earlier in the paper.

Dummy family

Defined according to Berzins and Bøhren's (2013) definition where a firm is family owned if the family has at least 50% of the shares.

Firm size

Firm size is defined as the natural logarithm of the book value of total assets. (Anderson and Reeb, 2003 (2); Bennedsen, et al. 2007). The size influences all regressions because smaller firms often grow faster than larger firms, hence it is important to account for this effect. In addition, we will run several regressions where we divided the data set into three different intervals based on size.

Firm age

The reason we wish to include this in our regression is to capture the effects of new small startups, which is often the case with family firms. It is more likely that new firms are smaller than older firms, and therefore, age will have a negative impact on growth rate (Evans, 1987). This variable is added and will be compared to size.

Leverage

The formula we use for leverage is:

$$\text{Financial leverage ratio} = \ln\left(1 + \frac{\text{Total debt}}{\text{Total assets}}\right)$$

Because of the special case when a firm has no debt, we must use $\ln(1+\text{leverage})$, since $\ln(0)$ is not possible (Maury, 2006).

It is important to account for leverage in our regressions because highly leveraged firms choose short term projects even when the long-term project gives a higher NPV. Also from earlier theory we know that family firms usually are less leveraged than non-family firms, therefore we need to account for leverage in our regressions (Caspar, Dias and Elstrodt, 2010).

Industry

In our paper, we have divided the industries into ten different categories. Because different industry sectors are exposed to different risks, it is important to account for the correct industry risk. We capture the industry risk by taking the natural logarithm of the ratio between standard deviation of revenues over mean revenues, within each industry (Svalland og Vangstein 2011). This will capture some of the volatility of revenues within each industry, and is equal for all companies within the same industry. See appendix 1 for overview of the industry categories.

5.0 RESULTS

5.1 Descriptive statistics

Here we will look at descriptive statistics which is used to describe the basic features of the data in our study.

Table 1 shows us the descriptive statistics for the variables in the main sample, where ROA, ROE, growth in assets and revenues, later referred to as growth(A) and growth(R), are the dependent variables. The independent variables are family ultimate ownership, firm size, leverage, firm age and industry risk. If we first look at the dependent variables, we can see that the average ROA and ROE for the sample firms is 7,5% and 7,9% respectively, which tells us that the sample has on average positive performance by both measures. Growth(A) and (R) also have positive averages of 12,7% and 13,4%.

For the independent variables, we see that the mean for family ultimate ownership is high at 91,6 and the median is 1, which we interpret to mean that most of the 175.054 firms in the sample is defined as family owned by this variable.

For firms size we find an average and median of approximately 14,8, which tells us that the average total assets for the firms in the sample is roughly 2,6MNOK. Leverage has an average and median of 0,54 which indicates that most firms are levered with total debt ratio of approximately 72%. The average firm age is 12 years with a median of 9 years, which indicates that the firms in the sample are relatively young companies. Industry risk has a mean of 1,77 and with a skewness of -2,3 which indicates that most firms have high volatility.

From the minimum and maximum values, together with skewness and kurtosis, we can see an indication that extreme outliers could be present in the sample and that this might skew our results. We have winsorized and trimmed the dataset to reduce these effects.

Table 1 - Descriptive statistics main sample

The table shows descriptive statistics of the dependent and independent variables. Filters described in chapter 4 is applied.

The first two dependent variables is ROA(return on assets) and ROE(return on equity), which is performance indicators as a measure of profitability

The following two dependent variables is growth(A) and (R), measured by percentage change in assets and percentage change in revenues, respectively.

Family ultimate ownership is the sum of shares ultimately held by families. Firm size is calculated as the natural logarithm of total assets.

Leverage is the natural logarithm of (1+(total liabilities divided by total assets)). Firm age indicates how many years the company has actively been operating.

Industry risk is the natural logarithm of the coefficient of variation, defined as the standard deviation of revenues over mean revenues.

ROA, ROE, Growth (A), Growth (R) and family ultimate ownership is all winsorized at the 1st and 99th percentile.

| | Mean | Median | Std.dev. | Variance | Skewness | Kurtosis | Minimum | Maximum |
|------------------------------|--------|--------|----------|----------|----------|----------|---------|---------|
| Dependent variables | | | | | | | | |
| ROA | 0,075 | 0,019 | 0,144 | 0,021 | 1,638 | 7,049 | -0,303 | 0,644 |
| ROE | 0,079 | 0,045 | 0,766 | 0,586 | -1,121 | 15,753 | -4,071 | 3,093 |
| Growth (A) | 0,127 | 0,035 | 0,474 | 0,224 | 2,682 | 13,681 | -0,680 | 2,699 |
| Growth (R) | 0,134 | 0,039 | 0,619 | 0,383 | 3,698 | 22,341 | -0,999 | 4,060 |
| Independent variables | | | | | | | | |
| Family ultimate ownership | 0,916 | 1,000 | 0,194 | 0,038 | -2,595 | 9,150 | 0,100 | 1,000 |
| Firm size | 14,832 | 14,743 | 1,565 | 2,448 | 0,451 | 4,288 | 6,908 | 26,151 |
| Leverage | 0,544 | 0,556 | 0,241 | 0,058 | 5,857 | 91,937 | 0,000 | 8,694 |
| Firm age | 12,015 | 9,000 | 11,791 | 139,021 | 2,848 | 17,538 | 0,000 | 168,000 |
| Industry risk | 1,767 | 1,845 | 0,264 | 0,070 | -2,310 | 8,065 | 0,815 | 2,168 |

In table 2 we ran descriptive statistics for the main sample categorized by the two different family ownership definitions. The first table shows the descriptive statistics when family is measured by the dummy variable *true family*, and the second when we use the standard 50% ownership dummy.

From the tables below we can see a significant change in number of observations. We checked the number of unique companies in the sample for each of the categories and found that when we use the *true family* variable the number of firms that is family owned is 38.326, or 22%, while with the 50% measure, the number of family owned firms are 168.496, or 96%. This shows that the *true family* measure excludes 130.170 firms that is no longer defined as family firms. We believe that the reduction in number of firms indicates that we have successfully separated concentrated ownership from family ownership.

When comparing family firms to non-family firms, by the two different definitions, we see that the means for ROA and ROE is higher for family firms, by both definitions, indicating that family firms are more profitable compared to non-family firms. The mean and standard deviations for both growth measures are lower for family firms, by both definitions, which captures the desired effect of higher risk aversion and lower but steadier growth.

Regarding the independent variables, we see that there are important deviations from the *true family* variable and the 50% variable. From previous literature, we expect leverage to be lower, and firm age and size to be higher for family firms. These effects are captured by our definition, but could also indicate that we have survival bias in our sample. Survival bias means that firms that perform poorly either will die or be sold to outsiders and firms that perform better will find it easier to stay in family hands. Since our definition requires that the family has both CEO and chair, and therefor manage to stay in the family hands, one could argue that the firms defined as family firms are companies that are, in general, successful, and thus survival bias could be present. When we look at the 50% measure we see that leverage is higher for family firms, while firm age and firm size is lower. This is not in line with what we expect to see and we believe that this clearly shows some of the weaknesses of using the 50% definition.

Table 2 - Descriptive statistics for dummy measures

The table shows descriptive statistics of the dependent and independent variables, where family ultimate ownership is replaced by either dummy family or dummy true family. Dummy true family is categorized as a firm where two people or more from the same family combined has 50% or more of the shares and the family has both CEO and Chair in the company. Dummy family is fulfilled when one or more person combined or alone has 50% or more of the shares. Please see table 1 for the definitions of the variables. The tables here show two states, one where the dummy variable = 1 and dummy = 0.

| | | Dummy true family | | | | | | | | |
|------------------|----------------------------------|------------------------------|-------------|---------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| | | N | Mean | Median | Std.dev. | Variance | Skewness | Kurtosis | Minimum | Maximum |
| | | <u>Dependent variables</u> | | | | | | | | |
| Dummy = 1 | ROA | 207071 | 0,083 | 0,024 | 0,143 | 0,020 | 1,592 | 6,614 | -0,303 | 0,644 |
| | ROE | 207071 | 0,085 | 0,046 | 0,750 | 0,562 | -1,059 | 15,695 | -4,071 | 3,093 |
| | Growth (A) | 178403 | 0,106 | 0,028 | 0,426 | 0,181 | 2,903 | 16,208 | -0,680 | 2,699 |
| | Growth (R) | 168722 | 0,102 | 0,032 | 0,556 | 0,309 | 4,002 | 27,169 | -0,999 | 4,060 |
| | | <u>Independent variables</u> | | | | | | | | |
| | Family ultimate ownership | 207071 | 0,967 | 1,000 | 0,090 | 0,008 | -3,065 | 12,056 | 0,500 | 1,000 |
| | Firm size | 207071 | 14,809 | 14,760 | 1,429 | 2,043 | 0,274 | 3,917 | 6,908 | 22,909 |
| | Leverage | 207071 | 0,531 | 0,549 | 0,220 | 0,049 | 5,095 | 83,836 | 0,000 | 7,241 |
| | Firm age | 207071 | 14,042 | 11,000 | 12,649 | 159,993 | 2,443 | 13,957 | 0,000 | 168,000 |
| | Industry risk | 207071 | 1,780 | 1,898 | 0,260 | 0,068 | -2,486 | 8,874 | 0,815 | 2,168 |
| | | <u>Dependent variables</u> | | | | | | | | |
| Dummy = 0 | ROA | 864885 | 0,073 | 0,018 | 0,144 | 0,021 | 1,652 | 7,163 | -0,303 | 0,644 |
| | ROE | 864885 | 0,078 | 0,045 | 0,770 | 0,592 | -1,134 | 15,757 | -4,071 | 3,093 |
| | Growth (A) | 718497 | 0,132 | 0,037 | 0,485 | 0,235 | 2,629 | 13,150 | -0,680 | 2,699 |
| | Growth (R) | 682592 | 0,142 | 0,041 | 0,633 | 0,401 | 3,628 | 21,383 | -0,999 | 4,060 |
| | | <u>Independent variables</u> | | | | | | | | |
| | Family ultimate ownership | 864885 | 0,904 | 1,000 | 0,210 | 0,044 | -2,353 | 7,697 | 0,100 | 1,000 |
| | Firm size | 864885 | 14,838 | 14,738 | 1,595 | 2,545 | 0,478 | 4,309 | 6,908 | 26,151 |
| | Leverage | 864885 | 0,547 | 0,558 | 0,246 | 0,061 | 5,970 | 92,512 | 0,000 | 8,694 |
| | Firm age | 864885 | 11,529 | 9,000 | 11,523 | 132,781 | 2,981 | 18,870 | 0,000 | 163,000 |
| | Industry risk | 864885 | 1,765 | 1,845 | 0,265 | 0,070 | -2,271 | 7,893 | 0,815 | 2,168 |

Dummy family

| | | N | Mean | Median | Std.dev. | Variance | Skewness | Kurtosis | Minimum | Maximum |
|------------------------------|----------------------------------|----------|-------------|---------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|
| Dependent variables | | | | | | | | | | |
| Dummy = 1 | ROA | 1011668 | 0,076 | 0,019 | 0,144 | 0,021 | 1,670 | 7,022 | -0,303 | 0,644 |
| | ROE | 1011668 | 0,085 | 0,045 | 0,764 | 0,583 | -1,078 | 15,740 | -4,071 | 3,093 |
| | Growth (A) | 847844 | 0,124 | 0,034 | 0,470 | 0,221 | 2,682 | 13,770 | -0,680 | 2,699 |
| | Growth (R) | 806747 | 0,130 | 0,038 | 0,610 | 0,372 | 3,723 | 22,789 | -0,999 | 4,060 |
| Independent variables | | | | | | | | | | |
| | Family ultimate ownership | 1011668 | 0,954 | 1,000 | 0,114 | 0,129 | -2,649 | 9,069 | 0,500 | 1,000 |
| | Firm size | 1011668 | 14,752 | 14,687 | 1,498 | 2,244 | 0,313 | 4,000 | 6,908 | 24,337 |
| | Leverage | 1011668 | 0,546 | 0,558 | 0,241 | 0,058 | 5,876 | 92,385 | 0,000 | 8,694 |
| | Firm age | 1011668 | 11,888 | 9,000 | 11,443 | 130,932 | 2,700 | 16,371 | 0,000 | 168,000 |
| | Industry risk | 1011668 | 1,766 | 1,845 | 0,265 | 0,070 | -2,307 | 8,009 | 0,815 | 2,168 |
| Dependent variables | | | | | | | | | | |
| Dummy = 0 | ROA | 60288 | 0,054 | 0,018 | 0,140 | 0,020 | 1,101 | 7,317 | -0,303 | 0,644 |
| | ROE | 60288 | -0,007 | 0,039 | 0,793 | 0,629 | -1,761 | 15,806 | -4,071 | 3,093 |
| | Growth (A) | 49056 | 0,164 | 0,046 | 0,528 | 0,279 | 2,621 | 12,045 | -0,680 | 2,699 |
| | Growth (R) | 44567 | 0,204 | 0,057 | 0,761 | 0,579 | 3,220 | 16,019 | -0,999 | 4,060 |
| Independent variables | | | | | | | | | | |
| | Family ultimate ownership | 60288 | 0,276 | 0,282 | 0,136 | 0,018 | 0,073 | 1,627 | 0,100 | 0,500 |
| | Firm size | 60288 | 16,177 | 16,016 | 1,990 | 3,959 | 0,475 | 3,626 | 6,908 | 26,151 |
| | Leverage | 60288 | 0,518 | 0,533 | 0,249 | 0,062 | 5,674 | 87,110 | 0,000 | 7,091 |
| | Firm age | 60288 | 14,151 | 10,000 | 16,429 | 269,926 | 3,211 | 16,778 | 0,000 | 163,000 |
| | Industry risk | 60288 | 1,785 | 1,845 | 0,243 | 0,059 | -2,328 | 8,992 | 0,815 | 2,168 |

Furthermore, we wanted to investigate the relationships between the variables by checking the correlations. Table 3 shows that family ultimate ownership is positively correlated with ROA and ROE, and negatively correlated with both growth measures, which is in line with theory. With regards to leverage and firm age, family ultimate ownership shows the opposite signs than what we would expect for family firms.

Table 3 - Correlations main sample

This table shows the correlation between the dependent and independent variables in our sample. Please see table 1 for the definitions of the variables

| | ROA | ROE | Growth (A) | Growth (R) | Family ult. own. | Firm size | Leverage | Firm age | Industry risk |
|------------------|--------|--------|------------|------------|------------------|-----------|----------|----------|---------------|
| ROA | 1,000 | | | | | | | | |
| ROE | 0,675 | 1,000 | | | | | | | |
| Growth (A) | 0,135 | 0,118 | 1,000 | | | | | | |
| Growth (R) | 0,071 | 0,060 | 0,416 | 1,000 | | | | | |
| Family ult. own. | 0,037 | 0,027 | -0,019 | -0,030 | 1,000 | | | | |
| Firm size | 0,013 | 0,042 | 0,113 | 0,043 | -0,258 | 1,000 | | | |
| Leverage | -0,057 | -0,011 | -0,026 | 0,022 | 0,027 | -0,182 | 1,000 | | |
| Firm age | -0,031 | 0,012 | -0,087 | -0,104 | -0,059 | 0,273 | -0,106 | 1,000 | |
| Industry risk | 0,003 | 0,010 | 0,007 | 0,000 | -0,018 | 0,117 | -0,046 | 0,095 | 1,000 |

In table 4 we see that *true family* is positively correlated with ROA and ROE, and negatively correlated with both growth measures, which is in line with theory. When we investigate the correlation with the independent variables, we see that when *true family* increases, leverage decreases and firm age increases. From earlier mentioned literature, we know that family firms usually are less levered than non-family firms. These relationships may indicate that our new definition of family captures the desired effects that we did not see in table 3.

The 50% ownership, *dummy family*, shows the same effects that the base case variable family ultimate ownership showed in table 3. This again indicates that the new variable we have created may be able to capture more of the characteristics of family firms.

Table 4 - Correlations for dummy measures

This table shows the correlation between the dependent and independent variables in our sample. Please see table 1 for the definitions of the variables

| | ROA | ROE | Growth (A) | Growth (R) | Dummy true family | Firm size | Leverage | Firm age | Industry risk |
|-------------------|--------|--------|------------|------------|-------------------|-----------|----------|----------|---------------|
| ROA | 1,000 | | | | | | | | |
| ROE | 0,683 | 1,000 | | | | | | | |
| Growth (A) | 0,133 | 0,118 | 1,000 | | | | | | |
| Growth (R) | 0,071 | 0,060 | 0,416 | 1,000 | | | | | |
| Dummy true family | 0,025 | 0,000 | -0,021 | -0,025 | 1,000 | | | | |
| Firm size | 0,015 | 0,047 | 0,117 | 0,043 | -0,015 | 1,000 | | | |
| Leverage | -0,052 | -0,006 | -0,029 | 0,022 | -0,025 | -0,180 | 1,000 | | |
| Firm age | -0,040 | 0,002 | -0,090 | -0,104 | 0,076 | 0,240 | -0,092 | 1,000 | |
| Industry risk | 0,006 | 0,009 | 0,007 | 0,000 | 0,022 | 0,117 | -0,042 | 0,096 | 1,000 |

| | ROA | ROE | Growth (A) | Growth (R) | Dummy family | Firm size | Leverage | Firm age | Industry risk |
|---------------|--------|--------|------------|------------|--------------|-----------|----------|----------|---------------|
| ROA | 1,000 | | | | | | | | |
| ROE | 0,683 | 1,000 | | | | | | | |
| Growth (A) | 0,133 | 0,118 | 1,000 | | | | | | |
| Growth (R) | 0,071 | 0,060 | 0,416 | 1,000 | | | | | |
| Dummy family | 0,028 | 0,021 | -0,018 | -0,027 | 1,000 | | | | |
| Firm size | 0,015 | 0,047 | 0,117 | 0,043 | -0,205 | 1,000 | | | |
| Leverage | -0,052 | -0,006 | -0,029 | 0,022 | 0,021 | -0,180 | 1,000 | | |
| Firm age | -0,040 | 0,002 | -0,090 | -0,104 | -0,042 | 0,240 | -0,092 | 1,000 | |
| Industry risk | 0,006 | 0,009 | 0,007 | 0,000 | -0,014 | 0,117 | -0,042 | 0,096 | 1,000 |

From table 5 we can see that the family companies that has both CEO and chair has the highest performance measured by ROA and ROE. Growth is higher in both assets and revenues when the family firm has neither CEO or chair. As mentioned earlier, family firms tend to have slower and steadier growth, therefore this result is as expected.

From the independent variables, we can see that leverage and firm size is highest when family has neither CEO or chair. When the family has both CEO and chair, firm age is highest. These findings highlight the facts we have stated earlier that family firms are more risk averse and long-term oriented than non-family firms.

Table 5 - Descriptive statistics per family management category

This table shows mean for the dependent and independent variables per management category, where the reported standard deviations is in parenthesis. Please see table 1 for the definitions of the variables

| | Family has CEO | Family has Chair | Family has CEO + Chair | Family has neither CEO or Chair |
|------------------------------|--------------------|---------------------|------------------------------|------------------------------------|
| <u>Dependent variables</u> | | | | |
| ROA | 0,077 (0,143) | 0,078 (0,145) | 0,079 (0,145) | 0,064 (0,142) |
| ROE | 0,087 (0,744) | 0,088 (0,757) | 0,089 (0,743) | 0,038 (0,821) |
| Growth (A) | 0,123 (0,466) | 0,120 (0,468) | 0,119 (0,464) | 0,146 (0,501) |
| Growth (R) | 0,124 (0,601) | 0,120 (0,603) | 0,114 (0,593) | 0,175 (0,679) |
| <u>Independent variables</u> | | | | |
| Family ult. own. | 0,950 (0,143) | 0,954 (0,134) | 0,965 (0,117) | 0,751 (0,308) |
| Firm size | 14,633 (1,435) | 14,645 (1,458) | 14,530 (1,379) | 15,551 (1,810) |
| Leverage | 0,541 (0,242) | 0,542 (0,247) | 0,539 (0,249) | 0,549 (0,238) |
| Firm age | 12,031 (11,452) | 12,141 (11,516) | 12,235 (11,448) | 12,151 (13,338) |
| Industry risk | 1,772 (0,258) | 1,768 (0,263) | 1,771 (0,259) | 1,760 (0,276) |

5.2 Regressions

In this section, we want to investigate whether we can substantiate even further the results and indications we got from the descriptive statistics.

Regression 1 shows the results of our main regression, where we clearly see that family ownership has a positive effect on ROA, ROE and growth(A), but a negative impact on growth(R). The positive impact on ROA and ROE strengthens our belief that family ownership reduces agency costs. Another interesting aspect is that while a higher ownership concentration has a positive effect on growth(A), it has a negative impact on growth(R). The difference in impact could be due to short-termism and the fact that families tend to be more risk averse and long-term oriented.

When we look at the stricter *true family* ownership criteria, we see that both growth(A) and (R) are affected negatively. Since this measure captures what we define as real family firms, this further strengthens our theory of risk aversion, implying families choose less risky projects with lower returns than non-family firms.

When comparing to the 50% ownership definition, we see no notable differences except for growth(A), where the sign is opposite. This helps us conclude that the simple 50% ownership definition of a family firm is inaccurate and does not capture the true effects of family firms.

For the independent variables, we see no major differences between the three definitions, and they all show the expected signs.

Regression 1 - Results main regression

The table shows the beta coefficients, their standard errors and the adjusted r-squared for our main regressions with different measures for family ownership. The variables are defined in table 1. Significance levels of 5%, 1% and 0,1% are indicated by *, ** and *** respectively. Standard errors are stated in parentheses.

| | ROA | ROE | Growth (A) | Growth (R) |
|----------------------------------|----------------------|----------------------|----------------------|----------------------|
| Family ultimate ownership | 0.032*** (0.001) | 0.158*** (0.004) | 0.029*** (0.003) | -0.061*** (0.004) |
| Firm size | 0.002*** (0.000) | 0.025*** (0.001) | 0.044*** (0.000) | 0.029*** (0.000) |
| Leverage | -0.034*** (0.001) | -0.009** (0.003) | -0.023*** (0.002) | 0.064*** (0.003) |
| Firm age | -0.001*** (0.000) | -0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| Industry risk | 0.001* (0.001) | 0.012*** (0.003) | 0.002 (0.002) | 0.009*** (0.003) |
| cons | 0.035*** (0.002) | -0.451*** (0.010) | -0.486*** (0.007) | -0.214*** (0.010) |
| N | 1071956 | 1071956 | 896900 | 851314 |
| adj.R-sq | 0.006 | 0.003 | 0.027 | 0.017 |

| | ROA | ROE | Growth (A) | Growth (R) |
|--------------------------|----------------------|----------------------|----------------------|----------------------|
| Dummy true family | 0.011*** (0.000) | 0.007*** (0.002) | -0.012*** (0.001) | -0.023*** (0.002) |
| Firm size | 0.001*** (0.000) | 0.020*** (0.000) | 0.043*** (0.000) | 0.031*** (0.000) |
| Leverage | -0.035*** (0.001) | -0.012*** (0.003) | -0.024*** (0.002) | 0.064*** (0.003) |
| Firm age | -0.001*** (0.000) | -0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| Industry risk | 0.001* (0.001) | 0.014*** (0.003) | 0.003 (0.002) | 0.009*** (0.003) |
| cons | 0.076*** (0.002) | -0.233*** (0.009) | -0.442*** (0.006) | -0.292*** (0.008) |
| N | 1071956 | 1071956 | 896900 | 851314 |
| adj.R-sq | 0.006 | 0.002 | 0.027 | 0.017 |

| | ROA | ROE | Growth (A) | Growth (R) |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| Dummy family | 0.025*** (0.001) | 0.126*** (0.003) | 0.012*** (0.002) | -0.049*** (0.003) |
| Firm size | 0.002*** (0.000) | 0.024*** (0.001) | 0.044*** (0.000) | 0.030*** (0.000) |
| Leverage | -0.035*** (0.001) | -0.010*** (0.003) | -0.024*** (0.002) | 0.065*** (0.003) |
| Firm age | -0.001*** (0.000) | -0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| Industry risk | 0.001** (0.001) | 0.013*** (0.003) | 0.002 (0.002) | 0.009*** (0.003) |
| cons | 0.044*** (0.002) | -0.409*** (0.010) | -0.463*** (0.007) | -0.231*** (0.009) |
| N | 1071956 | 1071956 | 896900 | 851314 |
| adj.R-sq | 0.006 | 0.003 | 0.027 | 0.017 |

For our next regression, we have divided the companies into the categories listed and non-listed.

The base case model predicts a higher growth(A) when there is a larger owner for non-listed firms, this effect is reversed when it comes to listed firms. In addition, the negative impact on growth(R) is much larger for listed firms than non-listed. This may imply that higher concentration of ownership is damaging the value creation for listed firms. The most notable effect is perhaps the effects family ownership has on growth(A).

When looking at the different measures for family control, we see that the results differ slightly from the base case. With our new measure, we see that very few of the coefficients are statistically significant on the listed firms. This is mainly because we only have eight observations from two companies of listed firms defined as family owned. For the non-listed firms, our results are in line with previous conclusions.

It is important to note that the odd results for listed companies for both dummy variables are most likely due to the fact that we still use 50% ownership as a measure for family firms. This is a too strict measure for listed companies and we will check different thresholds in our robustness testing later in the thesis.

Regression 2 - Regression non-listed vs listed

The table shows the beta coefficients, their standard errors and the adjusted r-squared for our main regressions with different measures for family ownership. The variables are defined in table 1. Significance levels of 5%, 1% and 0,1% are indicated by *, ** and *** respectively.

Standard errors are stated in parentheses.

| | Listed | | | | Non-listed | | | |
|----------------------------------|---------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) |
| Family ultimate ownership | 0.049** (0.018) | 0.255** (0.080) | -0.081 (0.102) | -0.455* (0.213) | 0.031*** (0.001) | 0.155*** (0.004) | 0.028*** (0.003) | -0.061*** (0.004) |
| Firm size | 0.008*** (0.002) | 0.057*** (0.010) | 0.063*** (0.013) | 0.054* (0.025) | 0.002*** (0.000) | 0.025*** (0.001) | 0.044*** (0.000) | 0.029*** (0.000) |
| Leverage | 0.023 (0.018) | -0.192* (0.078) | -0.488*** (0.101) | 0.132 (0.223) | -0.035*** (0.001) | -0.009** (0.003) | -0.023*** (0.002) | 0.064*** (0.003) |
| Firm age | 0.000** (0.000) | 0.000 (0.000) | -0.002*** (0.001) | -0.004** (0.001) | -0.001*** (0.000) | -0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| Industry risk | -0.044 (0.027) | -0.079 (0.120) | 0.077 (0.165) | -0.322 (0.335) | 0.001* (0.001) | 0.012*** (0.003) | 0.002 (0.002) | 0.009*** (0.003) |
| cons | -0.076 (0.065) | -1.054*** (0.288) | -0.952* (0.385) | -0.163 (0.759) | 0.035*** (0.002) | -0.453*** (0.010) | -0.487*** (0.007) | -0.214*** (0.010) |
| N | 1131 | 1131 | 968 | 641 | 1070825 | 1070825 | 895932 | 850673 |
| adj.R-sq | 0.033 | 0.035 | 0.046 | 0.020 | 0.006 | 0.003 | 0.027 | 0.017 |

| | Listed | | | | Non-listed | | | |
|--------------------------|---------------------|---------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) |
| Dummy true family | 0.024 (0.040) | 0.110 (0.178) | 0.420* (0.210) | 0.128 (0.476) | 0.011*** (0.000) | 0.006*** (0.002) | -0.012*** (0.001) | -0.023*** (0.002) |
| Firm size | 0.007** (0.002) | 0.054*** (0.010) | 0.062*** (0.013) | 0.057* (0.025) | 0.001*** (0.000) | 0.020*** (0.001) | 0.043*** (0.000) | 0.031*** (0.000) |
| Leverage | 0.025 (0.018) | -0.181* (0.079) | -0.500*** (0.100) | 0.080 (0.222) | -0.035*** (0.001) | -0.012*** (0.003) | -0.024*** (0.002) | 0.064*** (0.003) |
| Firm age | 0.000*** (0.000) | 0.000 (0.000) | -0.002*** (0.001) | -0.004** (0.001) | -0.001*** (0.000) | 0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| Industry risk | -0.045 (0.027) | -0.084 (0.121) | 0.056 (0.165) | -0.292 (0.336) | 0.001* (0.001) | 0.013*** (0.003) | 0.003 (0.002) | 0.009*** (0.003) |
| cons | -0.052 (0.065) | -0.932** (0.288) | -0.913* (0.384) | -0.369 (0.757) | 0.075*** (0.002) | -0.240*** (0.009) | -0.445*** (0.006) | -0.293*** (0.008) |
| N | 1131 | 1131 | 968 | 641 | 1070825 | 1070825 | 895932 | 850673 |
| adj.R-sq | 0.027 | 0.027 | 0.049 | 0.013 | 0.006 | 0.002 | 0.027 | 0.017 |

| | Listed | | | | Non-listed | | | |
|----------------------|--------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
| | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) |
| Dummy family | 0.019 (0.010) | 0.105* (0.043) | -0.036 (0.053) | -0.197 (0.112) | 0.025*** (0.001) | 0.124*** (0.003) | 0.011*** (0.002) | -0.049*** (0.003) |
| Firm size | 0.007** (0.002) | 0.054*** (0.010) | 0.063*** (0.013) | 0.057* (0.025) | 0.002*** (0.000) | 0.024*** (0.001) | 0.044*** (0.000) | 0.030*** (0.000) |
| Leverage | 0.025 (0.018) | -0.185* (0.078) | -0.489*** (0.101) | 0.104 (0.222) | -0.035*** (0.001) | -0.010*** (0.003) | -0.023*** (0.002) | 0.064*** (0.003) |
| Firm age | 0.000** (0.000) | 0.000 (0.000) | -0.003*** (0.001) | -0.004** (0.001) | -0.001*** (0.000) | -0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| Industry risk | -0.042 (0.027) | -0.065 (0.120) | 0.073 (0.165) | -0.330 (0.336) | 0.001** (0.001) | 0.013*** (0.003) | 0.002 (0.002) | 0.009*** (0.003) |
| cons | -0.062 (0.064) | -0.985*** (0.287) | -0.973* (0.383) | -0.286 (0.755) | 0.043*** (0.002) | -0.411*** (0.010) | -0.464*** (0.007) | -0.231*** (0.009) |
| N | 1131 | 1131 | 968 | 641 | 1070825 | 1070825 | 895932 | 850673 |
| adj.R-sq | 0.030 | 0.032 | 0.046 | 0.017 | 0.006 | 0.003 | 0.027 | 0.017 |

Furthermore, we wanted to see the differences when we divide the companies according to size. We chose to divide into three intervals, where the “small” interval is companies with assets between 0 and 1MNOK and captures 25% of the observations. The “medium” interval consists of companies with assets between 1MNOK and 100MNOK and captures 50% of the observations. Lastly, the “large” interval is companies with assets above 100MNOK and captures 25% of the observations. This is in line with the fact that most Norwegian companies are small to medium sized (Regjeringen, 2012).

When running the base case regression on each size interval, we see the same results as expected earlier, except for large firms with assets above 100MNOK. In this interval, ownership has a lower coefficient on all performance measures, and it even has a negative impact on growth in assets.

If we investigate further with the measure for *true family*, we see a negative impact on both growth measures in all intervals, but a positive effect on ROA and ROE. This is as predicted, with family owners preferring lower but steadier growth.

For the *dummy family* measure, we see the same effects as for *true family*, apart from a positive impact on growth(A) for all intervals except for firms with assets above 100MNOK.

For leverage, we see opposite signs than what we would expect regarding its impact on ROE, for all three definitions. The variable is only statistically significant for firms with assets between 0 and 1MNOK. This could be explained by the natural life cycle of a business, where they are often dependent on start-up loans early on.

Regression 3 - Regression separated by size

The table shows the beta coefficients, their standard errors and the adjusted r-squared for our main regressions with different measures for family ownership and size intervals.

The variables are defined in table 1. Significance levels of 5%, 1% and 0,1% are indicated by *, ** and *** respectively. Standard errors are stated in parentheses.

| | 0 < Assets ≤ 1.000.000 | | | | 1.000.001 < Assets ≤ 100.000.000 | | | | 100.000.001 < Assets ≤ ∞ | | | |
|----------------------------------|------------------------|----------------------|----------------------|----------------------|----------------------------------|---------------------|----------------------|----------------------|--------------------------|----------------------|----------------------|----------------------|
| | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) |
| Family ultimate ownership | 0.032*** (0.002) | 0.154*** (0.011) | 0.056*** (0.008) | -0.002 (0.012) | 0.027*** (0.001) | 0.138*** (0.006) | 0.015*** (0.004) | -0.082*** (0.005) | 0.014*** (0.001) | 0.101*** (0.005) | -0.022*** (0.004) | -0.076*** (0.006) |
| Firm size | 0.031*** (0.000) | 0.110*** (0.002) | 0.105*** (0.002) | 0.076*** (0.002) | -0.007*** (0.000) | 0.002 (0.002) | 0.038*** (0.001) | 0.020*** (0.001) | -0.004*** (0.000) | -0.005*** (0.001) | 0.022*** (0.001) | 0.024*** (0.002) |
| Leverage | -0.023*** (0.001) | 0.048*** (0.004) | -0.045*** (0.003) | 0.029*** (0.004) | -0.021*** (0.001) | -0.006 (0.006) | 0.062*** (0.004) | 0.175*** (0.005) | -0.009*** (0.002) | 0.005 (0.009) | 0.221*** (0.007) | 0.230*** (0.011) |
| Firm age | -0.000*** (0.000) | 0.002*** (0.000) | -0.004*** (0.000) | -0.009*** (0.000) | -0.001*** (0.000) | -0.000 (0.000) | -0.006*** (0.000) | -0.007*** (0.000) | -0.000*** (0.000) | 0.000 (0.000) | -0.003*** (0.000) | -0.004*** (0.000) |
| Industry risk | 0.002 (0.001) | -0.003 (0.005) | -0.002 (0.004) | 0.002 (0.006) | -0.000 (0.001) | 0.002 (0.004) | 0.007** (0.002) | 0.022*** (0.003) | 0.009*** (0.001) | 0.089*** (0.006) | -0.001 (0.005) | -0.006 (0.008) |
| cons | -0.365*** (0.007) | -1.611*** (0.033) | -1.315*** (0.025) | -0.812*** (0.035) | 0.184*** (0.005) | -0.037 (0.026) | -0.411*** (0.016) | -0.124*** (0.021) | 0.109*** (0.005) | -0.076** (0.027) | -0.229*** (0.023) | -0.217*** (0.035) |
| N | 271532 | 271532 | 203597 | 195490 | 604533 | 604533 | 518311 | 498881 | 195891 | 195891 | 174992 | 156943 |
| adj.R-sq | 0.029 | 0.010 | 0.032 | 0.017 | 0.005 | 0.001 | 0.019 | 0.020 | 0.004 | 0.003 | 0.020 | 0.014 |

| | 0 < Assets ≤ 1.000.000 | | | | 1.000.001 < Assets ≤ 100.000.000 | | | | 100.000.001 < Assets ≤ ∞ | | | |
|--------------------------|------------------------|----------------------|----------------------|----------------------|----------------------------------|---------------------|----------------------|----------------------|--------------------------|----------------------|----------------------|----------------------|
| | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) |
| Dummy true family | 0.010*** (0.001) | -0.008 (0.004) | -0.011*** (0.003) | -0.014*** (0.004) | 0.010*** (0.000) | -0.000 (0.003) | -0.015*** (0.002) | -0.022*** (0.002) | 0.006*** (0.001) | 0.018*** (0.004) | -0.013*** (0.003) | -0.034*** (0.004) |
| Firm size | 0.031*** (0.000) | 0.109*** (0.002) | 0.105*** (0.002) | 0.076*** (0.002) | -0.008*** (0.000) | -0.002 (0.002) | 0.038*** (0.001) | 0.021*** (0.001) | -0.005*** (0.000) | -0.012*** (0.001) | 0.023*** (0.001) | 0.029*** (0.002) |
| Leverage | -0.023*** (0.001) | 0.046*** (0.004) | -0.046*** (0.003) | 0.029*** (0.004) | -0.021*** (0.001) | -0.005 (0.006) | 0.062*** (0.004) | 0.174*** (0.005) | -0.008*** (0.002) | 0.013 (0.009) | 0.218*** (0.007) | 0.220*** (0.011) |
| Firm age | -0.000*** (0.000) | 0.002*** (0.000) | -0.004*** (0.000) | -0.009*** (0.000) | -0.001*** (0.000) | -0.000 (0.000) | -0.006*** (0.000) | -0.007*** (0.000) | -0.000*** (0.000) | 0.000 (0.000) | -0.003*** (0.000) | -0.004*** (0.000) |
| Industry risk | 0.002 (0.001) | -0.002 (0.005) | -0.002 (0.004) | 0.002 (0.006) | -0.000 (0.001) | 0.004 (0.004) | 0.007** (0.002) | 0.021*** (0.003) | 0.009*** (0.001) | 0.089*** (0.006) | -0.001 (0.005) | -0.006 (0.008) |
| cons | -0.333*** (0.006) | -1.456*** (0.031) | -1.258*** (0.023) | -0.814*** (0.033) | 0.217*** (0.005) | 0.138*** (0.025) | -0.389*** (0.015) | -0.223*** (0.020) | 0.132*** (0.005) | 0.115*** (0.025) | -0.263*** (0.021) | -0.347*** (0.033) |
| N | 271532 | 271532 | 203597 | 195490 | 604533 | 604533 | 518311 | 498881 | 195891 | 195891 | 174992 | 156943 |
| adj.R-sq | 0.029 | 0.009 | 0.032 | 0.018 | 0.005 | -0.000 | 0.019 | 0.020 | 0.003 | 0.002 | 0.020 | 0.014 |

| | 0 < Assets ≤ 1.000.000 | | | | 1.000.001 < Assets ≤ 100.000.000 | | | | 100.000.001 < Assets ≤ ∞ | | | |
|----------------------|------------------------|----------------------|----------------------|----------------------|----------------------------------|---------------------|----------------------|----------------------|--------------------------|----------------------|----------------------|----------------------|
| | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) |
| Dummy family | 0.037*** (0.002) | 0.146*** (0.011) | 0.043*** (0.008) | -0.009 (0.011) | 0.025*** (0.001) | 0.127*** (0.005) | 0.004 (0.003) | -0.064*** (0.004) | 0.009*** (0.001) | 0.069*** (0.004) | -0.022*** (0.003) | -0.055*** (0.005) |
| Firm size | 0.031*** (0.000) | 0.110*** (0.002) | 0.105*** (0.002) | 0.076*** (0.002) | -0.007*** (0.000) | 0.001 (0.002) | 0.038*** (0.001) | 0.020*** (0.001) | -0.004*** (0.000) | -0.007*** (0.001) | 0.022*** (0.001) | 0.025*** (0.002) |
| Leverage | -0.023*** (0.001) | 0.047*** (0.004) | -0.045*** (0.003) | 0.029*** (0.004) | -0.022*** (0.001) | -0.007 (0.006) | 0.063*** (0.004) | 0.175*** (0.005) | -0.009*** (0.002) | 0.005 (0.009) | 0.222*** (0.007) | 0.230*** (0.011) |
| Firm age | -0.000*** (0.000) | 0.002*** (0.000) | -0.004*** (0.000) | -0.009*** (0.000) | -0.001*** (0.000) | -0.000 (0.000) | -0.006*** (0.000) | -0.007*** (0.000) | -0.000*** (0.000) | 0.000 (0.000) | -0.003*** (0.000) | -0.004*** (0.000) |
| Industry risk | 0.002 (0.001) | -0.002 (0.005) | -0.002 (0.004) | 0.002 (0.006) | -0.000 (0.001) | 0.003 (0.004) | 0.007** (0.002) | 0.021*** (0.003) | 0.009*** (0.001) | 0.089*** (0.006) | -0.001 (0.005) | -0.006 (0.008) |
| cons | -0.371*** (0.006) | -1.605*** (0.033) | -1.302*** (0.025) | -0.805*** (0.035) | 0.189*** (0.005) | -0.017 (0.026) | -0.396*** (0.016) | -0.149*** (0.020) | 0.117*** (0.005) | -0.026 (0.027) | -0.224*** (0.022) | -0.251*** (0.034) |
| N | 271532 | 271532 | 203597 | 195490 | 604533 | 604533 | 518311 | 498881 | 195891 | 195891 | 174992 | 156943 |
| adj.R-sq | 0.030 | 0.010 | 0.032 | 0.017 | 0.006 | 0.001 | 0.019 | 0.020 | 0.003 | 0.003 | 0.020 | 0.014 |

Looking closer on how ownership is executed in a firm, we can define four dummy variables depending on if the controlling family has CEO, chair, both or neither.

The table below shows us that when the family has some level of control, whether it is only CEO, chair or both, the impact of family control is always positive on ROA, ROE and growth(A), while having a negative impact on growth(R). From this we can conclude that family control increases performance compared to the case where the family has neither CEO or chair. One plausible cause for this is, as mentioned earlier, the reduction of agency costs. It is reasonable to believe that if the family have both CEO and chair, their interests are aligned even if it is not the same person. This due to the close relations found within the family, which other firms lack.

Moreover, we see that when the family only has chair, the firms' performance is at its highest. This emphasizes the point we made earlier, where we mentioned that we believe the most important control the family can have is chair. We will further investigate this in the robustness testing.

In the paper written by Amit & Villalonga (2006), they define family firms as: "those in which the founder or a member of his or her family by either blood or marriage is an officer, director, or blockholder, either individually or as a group". They also found that family ownership creates value only when the founder is still active in the firm as either CEO or chairman, which is in line with our findings.

Regression 4 - Types of family control

The table shows the beta coefficients, their standard errors and the adjusted r-squared for our main regressions with different measures for family ownership. The variables are defined in table 1. Significance levels of 5%, 1% and 0,1% are indicated by *, ** and *** respectively. Standard errors are stated in parentheses.

| | ROA | ROE | Growth (A) | Growth (R) | |
|-------------------------|---------------|----------------------|----------------------|----------------------|----------------------|
| Family has Chair | Dummy Chair | 0.013*** (0.000) | 0.045*** (0.002) | 0.010*** (0.001) | -0.029*** (0.002) |
| | Firm size | 0.002*** (0.000) | 0.023*** (0.001) | 0.044*** (0.000) | 0.029*** (0.000) |
| | Leverage | -0.034*** (0.001) | -0.008* (0.003) | -0.023*** (0.002) | 0.063*** (0.003) |
| | Firm age | -0.001*** (0.000) | -0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| | Industry risk | 0.001* (0.001) | 0.012*** (0.003) | 0.002 (0.002) | 0.009*** (0.003) |
| | Cons | 0.058*** (0.002) | -0.306*** (0.009) | -0.463*** (0.006) | -0.249*** (0.009) |
| | N | 1071956 | 1071956 | 896900 | 851314 |
| | adj. R-sq | 0.006 | 0.002 | 0.027 | 0.017 |
| Family has CEO | Dummy CEO | 0.009*** (0.000) | 0.039*** (0.002) | 0.017*** (0.001) | -0.013*** (0.001) |
| | Firm size | 0.002*** (0.000) | 0.022*** (0.001) | 0.044*** (0.000) | 0.031*** (0.000) |
| | Leverage | -0.034*** (0.001) | -0.008* (0.003) | -0.022*** (0.002) | 0.064*** (0.003) |
| | Firm age | -0.001*** (0.000) | -0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| | Industry risk | 0.001 (0.001) | 0.011*** (0.003) | 0.001 (0.002) | 0.009*** (0.003) |
| | Cons | 0.066*** (0.002) | -0.291*** (0.009) | -0.472*** (0.006) | -0.278*** (0.009) |
| | N | 1071956 | 1071956 | 896900 | 851314 |
| | adj. R-sq | 0.006 | 0.002 | 0.027 | 0.016 |

| | | | | | |
|---------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Family has both | Dummy both | 0.011*** (0.000) | 0.037*** (0.002) | 0.016*** (0.001) | -0.023*** (0.001) |
| | Firm size | 0.002*** (0.000) | 0.023*** (0.001) | 0.045*** (0.000) | 0.029*** (0.000) |
| | Leverage | -0.034*** (0.001) | -0.007* (0.003) | -0.022*** (0.002) | 0.062*** (0.003) |
| | Firm age | -0.001*** (0.000) | -0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| | Industry risk | 0.001 (0.001) | 0.011*** (0.003) | 0.001 (0.002) | 0.010*** (0.003) |
| | Cons | 0.061*** (0.002) | -0.293*** (0.009) | -0.473*** (0.006) | -0.257*** (0.009) |
| | N | 1071956 | 1071956 | 896900 | 851314 |
| adj. R-sq | 0.006 | 0.002 | 0.027 | 0.017 | |
| Family has neither | Dummy neither | -0.014*** (0.000) | -0.067*** (0.002) | -0.015*** (0.001) | 0.023*** (0.002) |
| | Firm size | 0.002*** (0.000) | 0.023*** (0.001) | 0.044*** (0.000) | 0.030*** (0.000) |
| | Leverage | -0.034*** (0.001) | -0.008* (0.003) | -0.023*** (0.002) | 0.064*** (0.003) |
| | Firm age | -0.001*** (0.000) | -0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| | Industry risk | 0.001 (0.001) | 0.011*** (0.003) | 0.002 (0.002) | 0.009*** (0.003) |
| | Cons | 0.072*** (0.002) | -0.265*** (0.009) | -0.453*** (0.006) | -0.286*** (0.008) |
| | N | 1071956 | 1071956 | 896900 | 851314 |
| adj. R-sq | 0.006 | 0.003 | 0.027 | 0.016 | |

6.0 ROBUSTNESS TESTS

In this section, we want to examine the robustness of our findings to see whether our results are sensitive to alternative definitions of key variables.

6.1 Endogeneity

There is reason to believe that our study has a potential endogeneity problem. This is because performance can be affected by some other variables than the ones we have added to our regression. This would constitute an omitted variable bias. On the other hand, there is also the problem of multicollinearity. This can occur between the ownership variables and the dummy variable for family firms. To investigate multicollinearity closer, we ran the main regression once per family ownership definition (alone) to see what the coefficients said (and which signs they originally had), then we ran the ownership variables together with the dummy variable to see if some of them changed signs or generally changed significantly. If one of these actions occurred, we have multicollinearity and we must account for that in our regressions.

As mentioned earlier, we also have the possibility that we have survival bias in our sample. We will not try to solve this issue, but we are aware that this effect could be present in our data.

6.2 Multicollinearity

High correlation might indicate the presence of multicollinearity – that the variables are perfect combinations of each other. If you have multicollinearity it can inflate the size of the error term (Tabachnick and Fidell, 2013).

We checked the correlation between family ultimate ownership and the dummy variable and found that they were correlated by 0,81. Therefore, we chose to use all measures for family ownership in separate regressions.

From tables 3 and 4 we have run the correlations between all variables used in our regressions. The tables indicate that some of the variables like dummy family and family ultimate ownership has high correlation. This is however, unproblematic, as these pairs are not used simultaneously in any model. The remaining correlation coefficients are low, indicating an absence of multicollinearity.

6.3 Additional robustness tests

In this section, we wanted to check how sensitive the definition *true family* is to changes in the criteria. In the first robustness test we will look at what impact changing the limits of required ownership percentage, all else equal, has on our results. Secondly, we check the robustness when the management specification only requires that the family have chair and not CEO. We also here change the limits of required ownership percentage. All results from the robustness tests are compared to the findings from regression 2 in chapter 5.2.

The tables in appendix 2 shows the results when we checked different percentage thresholds for family ownership. For listed companies, we use the thresholds: 10%, 15%, and 20% and for non-listed companies we use the thresholds: 30%, 40%, and 50%.

For the listed companies, we see very few significant results for each of the thresholds, and very much in line with our previous findings, indicating that ownership percentage is not as important if the family is in control, by having CEO and chair. For non-listed companies, we draw the same conclusion, with results almost identical to our previous findings. This helps us conclude that percentage ownership is not a key deciding feature as long as the family is actively managing the firm. Hence, our definition of *true family* is robust for changes in ownership percentage.

From appendix 3, we can see the results from the second robustness test, where we check both the thresholds, as done above, and what impact it will have if the family only has chair and not the CEO in the company. We believe that when the family has chair they will be able to influence the CEO's decision. From the results, we see no major changes when removing the CEO criteria from the regression, which indicates that chair is the most important measure for active family management. As long as the family has chair they can influence the company.

6.4 Heteroscedasticity

Heteroscedasticity in the sample can cause problems for the OLS estimator. If the data have heteroscedasticity, we may face problems that leads to loss in efficiency and misleading statistical inference (Wentao, Xiong and Tian, 2016). We performed the Breusch-Pagan test, White test and plotted the residuals. The results indicate the presence of heteroscedasticity in our data. To investigate further, we checked each of the variables for heteroscedasticity. This showed that dummy *true family* and *family ultimate ownership* had Breusch-Pagan chi-squared under 10, but all other variables were extremely high. This indicated heteroscedasticity in the other variables. We have not taken any measures to offset the effects of heteroscedasticity, but we are aware that the presence might have influenced our results. See appendix 4 for results of the tests.

6.5 Normality

To test for normality in our sample we apply the sktest – skewness and kurtosis test for normality. The test showed that we obtained values lower than the alpha level which indicates that we must reject the hypothesis of normality.

The assumption of independent normal distributed residuals have been checked through graphing and scatter plots, and thus we find non-normality for both the variables and the residuals in all our models with all three family measures. The fact that our sample seems to suffer from non-normality is not of major concern due to the large size of our sample (Stock and Watson, 2014), but it indicates that we need to draw inference with caution. Results can be found in appendix 5.

7.0 CONCLUSION

The topic of family ownership is a complex and complicated subject, and the purpose of this paper was to examine the definition of family ownership. From the outset of this paper we identified some key questions we wanted to answer in addition to our research questions. To be able to answer these questions we needed to create a new definition of what constitutes family ownership and test that definition with support from earlier theory. The first initial question was:

“Can we say that a correct definition of family firms only requires one owner with 50% or more of the shares in the company?”

We believe we have proved throughout the duration of this thesis that the answer to that question is *no*. We believe that by limiting the definition to one owner with at least 50% of the shares, and only that criteria, one does not separate correctly between what constitutes concentrated ownership and family ownership. To make sure one isolates between the two, we introduced a requirement where there must be at least two owners from the same family, that collectively owns at least 50% of the shares, and executes active management through being the CEO and have chair. A consequence of only setting the threshold to 50% ownership, is that the specter of companies captured is too wide, which could lead to misinterpretation of the results.

Furthermore, we asked ourselves:

“When the additional criteria are set, will the effects of family ownership still be observable in our sample, and do they perform better than non-family firms?”

The purpose of the above question was to allow us to test our definition to indicate whether we are on the right path or not. If our variable did not capture the desired effects of lower leverage, risk aversion and slower and steadier growth, we believe that would have indicated that the new definition do not capture the essence of family companies. Throughout this thesis, we have seen that the new variable we created do in fact capture these effects, and could be more in line with reality.

We introduced three hypotheses in chapter 3 in this paper regarding whether performance measured by ROA and ROE would be higher when using the new variable. Also, we wanted to see whether family firms had less growth measured by both changes in assets and revenues.

Our findings indicate that family firms, perform at least as well as non-family firms. Using profitability based measures of firm performance (ROA and ROE), we found that family firms are significantly better performers than non-family firms. Further testing suggests that the greater profitability in family firms, relative to non-family firms, stems from those firms in which a family member serves as the chair. One interpretation of this results is that the family understand the business and that involved family members view themselves as the stewards of the firm. Regarding both growth measures, we found that family firms grow at a lower rate than non-family firms, this could be explained by higher risk aversion and long-term thinking.

The requirements set in our definition, *true family*, makes our thesis to some extent different from previous literature, and may cause our findings to contradict previous research. To check our criteria decisions for appropriateness we always ran all three measures which allowed us to compare and search for changes. This choice showed us that we have captured the desired effects of family ownership introduced by previous literature, and that we have been able to create a variable that is robust to changes. Furthermore, we identified that the requirement of chair (active management), is the most important criteria for defining family ownership. Regarding future research, we believe the family ownership definition needs to be more thoroughly scrutinized and researched.

8.0 GENERAL CRITIQUE AND LIMITATIONS

In this section, we want to explain which limitations we believe could be present in our paper.

One obvious limitation is the fact that there might be relevant variables that are not included in the analysis. We have mentioned this earlier in the setting of omitted variable bias. Because this study is comprehensive, the possibility of omitting something relevant is present. On that note, we have included several independent variables and done our analysis on three different measures for family, and therefore we believe that the most important determinants of family firms are included in the analysis.

Furthermore, we discussed the possibility of survival bias affecting the performance measures. What we mean by this is the fact that firms that go bankrupt will “disappear” from the sample and the performance measures will increase as the firms are excluded. This could potentially bias the results.

Moreover, we could have explored alternative empirical and theoretical variables. We could have used different measures for performance, but we believe that alternative empirical proxies would not have altered the results of the base case considerably. With regards to alternative theoretical variables we could have investigated family ownership by looking more closely at investment strategies, risk aversion and long-term thinking, to name a few. We could have looked at whether a firm behaves like a well-known family firm based on above mentioned criteria, and from there draw conclusions on the likelihood on whether the firms are family owned.

Lastly, there are the possibility of endogeneity issues, heteroscedasticity and non-normality. We cannot say with absolute certainty that these problems are mitigated in this paper, so one should be careful with drawing inference from all the results. Despite these possible limitations, what we can say with certainty is that performance is affected on where one chooses to separate between concentrated ownership and family ownership.

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10.0 APPENDICIES

Appendix 1 – Industry overview

| Industry number | Name | Contains |
|-----------------|-----------------------|---|
| 1 | Agriculture | Agriculture, forestry and fishing |
| 2 | Industry | Mining and extraction, Industry, Building and civil engineering |
| 3 | Utility | Electricity, gas, damp and heating supply, Water supply, waste and renewal activities |
| 4 | Transportation | Trade and repair of motor vehicles, transport and storage |
| 5 | Accommodation | Accomodation and service |
| 6 | Information | Information and communication |
| 7 | Financial | Financial and insurance activities, turnover and operatin of fast property, investing activities |
| 8 | Professional services | Professional, scientific and technical service, business service |
| 9 | Public services | Public administration, responsibilities and safety degrements, instructions, health and social services, cultural activities, entertainment and recreational activities, international organizations and bodies |
| 10 | Other services | Other services, paid employment in private households |

Appendix 2 – Robustness test for family ownership thresholds

Robustness testing: Thresholds for family ownership

The table shows the beta coefficients, their standard errors and the adjusted r-squared for our main regression when we change the thresholds for public and private companies. The variables are defined in table 1, and the dummy variable is defined in regression 1. Significance levels of 5%, 1% and 0,1% are indicated by *, ** and *** respectively. Standard errors are stated in parentheses.

| | Listed(10%) | | | | Listed(15%) | | | | Listed(20%) | | | |
|--------------------------|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|----------------------|---------------------|
| | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) |
| Dummy true family | 0.018 (0.033) | 0.074 (0.145) | 0.324 (0.171) | -0.194 (0.337) | 0.018 (0.034) | 0.074 (0.151) | 0.349 (0.179) | -0.212 (0.360) | 0.019 (0.036) | 0.099 (0.159) | 0.397* (0.187) | -0.282 (0.388) |
| Firm size | 0.007** (0.002) | 0.054*** (0.010) | 0.062*** (0.013) | 0.059* (0.025) | 0.007** (0.002) | 0.054*** (0.010) | 0.062*** (0.013) | 0.059* (0.025) | 0.007** (0.002) | 0.054*** (0.010) | 0.062*** (0.013) | 0.059* (0.025) |
| Leverage | 0.026 (0.018) | -0.179* (0.079) | -0.492*** (0.100) | 0.076 (0.223) | 0.026 (0.018) | -0.179* (0.079) | -0.493*** (0.100) | 0.077 (0.222) | 0.026 (0.018) | -0.180* (0.079) | -0.497*** (0.100) | 0.082 (0.222) |
| Firm age | 0.000*** (0.000) | 0.000 (0.000) | -0.003*** (0.001) | -0.004** (0.001) | 0.000*** (0.000) | 0.000 (0.000) | -0.003*** (0.001) | -0.004** (0.001) | 0.000*** (0.000) | 0.000 (0.000) | -0.002*** (0.001) | -0.004** (0.001) |
| Industry risk | -0.045 (0.027) | -0.082 (0.121) | 0.062 (0.165) | -0.285 (0.336) | -0.045 (0.027) | -0.083 (0.121) | 0.058 (0.165) | -0.282 (0.336) | -0.045 (0.027) | -0.083 (0.121) | 0.060 (0.165) | -0.287 (0.336) |
| cons | -0.053 (0.065) | -0.938** (0.288) | -0.935* (0.383) | -0.410 (0.755) | -0.053 (0.065) | -0.937** (0.288) | -0.926* (0.383) | -0.416 (0.756) | -0.053 (0.065) | -0.935** (0.288) | -0.926* (0.383) | -0.416 (0.755) |
| N | 1131 | 1131 | 968 | 641 | 1131 | 1131 | 968 | 641 | 1131 | 1131 | 968 | 641 |
| adj.R-sq | 0.027 | 0.027 | 0.049 | 0.013 | 0.027 | 0.027 | 0.049 | 0.013 | 0.027 | 0.027 | 0.050 | 0.013 |

| | Non-listed(30%) | | | | Non-listed(40%) | | | | Non-listed(50%) | | | |
|--------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) |
| Dummy true family | 0.011*** (0.000) | 0.006** (0.002) | -0.012*** (0.001) | -0.022*** (0.002) | 0.011*** (0.000) | 0.006** (0.002) | -0.012*** (0.001) | -0.022*** (0.002) | 0.011*** (0.000) | 0.006*** (0.002) | -0.012*** (0.001) | -0.023*** (0.002) |
| Firm size | 0.001*** (0.000) | 0.020*** (0.001) | 0.043*** (0.000) | 0.031*** (0.000) | 0.001*** (0.000) | 0.020*** (0.001) | 0.043*** (0.000) | 0.031*** (0.000) | 0.001*** (0.000) | 0.020*** (0.001) | 0.043*** (0.000) | 0.031*** (0.000) |
| Leverage | -0.035*** (0.001) | -0.012*** (0.003) | -0.024*** (0.002) | 0.064*** (0.003) | -0.035*** (0.001) | -0.012*** (0.003) | -0.024*** (0.002) | 0.064*** (0.003) | -0.035*** (0.001) | -0.012*** (0.003) | -0.024*** (0.002) | 0.064*** (0.003) |
| Firm age | -0.001*** (0.000) | 0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) | -0.001*** (0.000) | 0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) | -0.001*** (0.000) | 0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| Industry risk | 0.001* (0.001) | 0.013*** (0.003) | 0.003 (0.002) | 0.009*** (0.003) | 0.001* (0.001) | 0.013*** (0.003) | 0.003 (0.002) | 0.009*** (0.003) | 0.001* (0.001) | 0.013*** (0.003) | 0.003 (0.002) | 0.009*** (0.003) |
| cons | 0.075*** (0.002) | -0.240*** (0.009) | -0.445*** (0.006) | -0.293*** (0.008) | 0.075*** (0.002) | -0.240*** (0.009) | -0.445*** (0.006) | -0.293*** (0.008) | 0.075*** (0.002) | -0.240*** (0.009) | -0.445*** (0.006) | -0.293*** (0.008) |
| N | 1070825 | 1070825 | 895932 | 850673 | 1070825 | 1070825 | 895932 | 850673 | 1070825 | 1070825 | 895932 | 850673 |
| adj.R-sq | 0.006 | 0.002 | 0.027 | 0.017 | 0.006 | 0.002 | 0.027 | 0.017 | 0.006 | 0.002 | 0.027 | 0.017 |

Appendix 3 – Robustness test for family ownership thresholds and chair

Robustness testing: Thresholds for family ownership and only Chair as criteria

The table shows the beta coefficients, their standard errors and the adjusted r-squared for our main regression when we change the thresholds for public and private companies and remove CEO as a criteria. The variables are defined in table 1, and the dummy variable is defined in regression 1. Significance levels of 5%, 1% and 0,1% are indicated by *, ** and *** respectively. Standard errors are stated in parentheses.

| | Listed(10%) | | | | Listed(15%) | | | | Listed(20%) | | | |
|--------------------------|---------------------|---------------------|----------------------|---------------------|---------------------|---------------------|----------------------|---------------------|--------------------|---------------------|----------------------|---------------------|
| | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) |
| Dummy true family | 0.003 (0.010) | 0.047 (0.045) | -0.089 (0.055) | 0.049 (0.113) | 0.006 (0.011) | 0.089 (0.049) | -0.021 (0.060) | 0.089 (0.126) | 0.008 (0.011) | 0.097 (0.050) | -0.027 (0.061) | 0.022 (0.129) |
| Firm size | 0.007** (0.002) | 0.053*** (0.010) | 0.066*** (0.013) | 0.056* (0.025) | 0.007** (0.002) | 0.054*** (0.010) | 0.064*** (0.013) | 0.057* (0.025) | 0.007** (0.002) | 0.054*** (0.010) | 0.064*** (0.013) | 0.058* (0.025) |
| Leverage | 0.026 (0.018) | -0.178* (0.078) | -0.494*** (0.100) | 0.075 (0.223) | 0.026 (0.018) | -0.184* (0.078) | -0.491*** (0.101) | 0.061 (0.224) | 0.025 (0.018) | -0.186* (0.078) | -0.491*** (0.101) | 0.076 (0.225) |
| Firm age | 0.000*** (0.000) | 0.000 (0.000) | -0.003*** (0.001) | -0.004** (0.001) | 0.000*** (0.000) | 0.000 (0.000) | -0.003*** (0.001) | -0.004** (0.001) | 0.000** (0.000) | 0.000 (0.000) | -0.003*** (0.001) | -0.004** (0.001) |
| Industry risk | -0.045 (0.027) | -0.092 (0.121) | 0.108 (0.165) | -0.300 (0.337) | -0.046 (0.027) | -0.108 (0.121) | 0.087 (0.166) | -0.315 (0.338) | -0.047 (0.027) | -0.110 (0.122) | 0.089 (0.166) | -0.295 (0.338) |
| cons | -0.053 (0.065) | -0.903** (0.290) | -1.091** (0.388) | -0.337 (0.763) | -0.051 (0.065) | -0.888** (0.289) | -1.005** (0.386) | -0.332 (0.758) | -0.051 (0.065) | -0.888** (0.289) | -1.008** (0.386) | -0.375 (0.757) |
| N | 1131 | 1131 | 968 | 641 | 1131 | 1131 | 968 | 641 | 1131 | 1131 | 968 | 641 |
| adj.R-sq | 0.027 | 0.028 | 0.048 | 0.013 | 0.027 | 0.029 | 0.046 | 0.013 | 0.027 | 0.030 | 0.046 | 0.013 |

| | Non-listed(30%) | | | | Non-listed(40%) | | | | Non-listed(50%) | | | |
|--------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) | ROA | ROE | Growth (A) | Growth (R) |
| Dummy true family | 0.008*** (0.000) | -0.002 (0.002) | -0.020*** (0.001) | -0.024*** (0.002) | 0.008*** (0.000) | -0.002 (0.002) | -0.020*** (0.001) | -0.024*** (0.002) | 0.008*** (0.000) | -0.001 (0.002) | -0.020*** (0.001) | -0.024*** (0.002) |
| Firm size | 0.001*** (0.000) | 0.020*** (0.001) | 0.044*** (0.000) | 0.032*** (0.000) | 0.001*** (0.000) | 0.020*** (0.001) | 0.044*** (0.000) | 0.032*** (0.000) | 0.001*** (0.000) | 0.020*** (0.001) | 0.044*** (0.000) | 0.032*** (0.000) |
| Leverage | -0.035*** (0.001) | -0.012*** (0.003) | -0.024*** (0.002) | 0.065*** (0.003) | -0.035*** (0.001) | -0.012*** (0.003) | -0.024*** (0.002) | 0.065*** (0.003) | -0.035*** (0.001) | -0.012*** (0.003) | -0.024*** (0.002) | 0.065*** (0.003) |
| Firm age | -0.001*** (0.000) | 0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) | -0.001*** (0.000) | 0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) | -0.001*** (0.000) | 0.000 (0.000) | -0.005*** (0.000) | -0.007*** (0.000) |
| Industry risk | 0.001** (0.001) | 0.014*** (0.003) | 0.003 (0.002) | 0.009*** (0.003) | 0.001** (0.001) | 0.014*** (0.003) | 0.003 (0.002) | 0.009*** (0.003) | 0.001** (0.001) | 0.014*** (0.003) | 0.003 (0.002) | 0.009*** (0.003) |
| cons | 0.077*** (0.002) | -0.238*** (0.009) | -0.446*** (0.006) | -0.296*** (0.008) | 0.077*** (0.002) | -0.238*** (0.009) | -0.446*** (0.006) | -0.296*** (0.008) | 0.076*** (0.002) | -0.238*** (0.009) | -0.446*** (0.006) | -0.296*** (0.008) |
| N | 1070825 | 1070825 | 895932 | 850673 | 1070825 | 1070825 | 895932 | 850673 | 1070825 | 1070825 | 895932 | 850673 |
| adj.R-sq | 0.005 | 0.002 | 0.027 | 0.017 | 0.005 | 0.002 | 0.027 | 0.017 | 0.005 | 0.002 | 0.027 | 0.017 |

Appendix 4 – Skewness/kurtosis tests for normality

| | Obs | Pr(Skewness) | Pr(Kurtosis) | Adj chi2 (2) | Prob>chi2 |
|----------------------------------|-----------|--------------|--------------|--------------|-----------|
| Family ultimate ownership | 1.071.956 | 0.0000 | 0.0000 | . | . |
| Dummy family | 1.071.956 | 0.0000 | 0.0000 | . | . |
| Dummy true family | 1.071.956 | 0.0000 | 0.0000 | . | . |
| ROA | 1.071.956 | 0.0000 | 0.0000 | . | . |
| ROE | 1.071.956 | 0.0000 | 0.0000 | . | . |
| Growth (A) | 896.900 | 0.0000 | 0.0000 | . | . |
| Growth (R) | 851.314 | 0.0000 | 0.0000 | . | . |
| Leverage | 1.071.956 | 0.0000 | 0.0000 | . | . |
| Firm age | 1.071.956 | 0.0000 | 0.0000 | . | . |
| Firm size | 1.071.956 | 0.0000 | 0.0000 | . | . |
| Industry risk | 1.071.956 | 0.0000 | 0.0000 | . | . |

Family ultimate ownership**Breusch-Pagan / Cook-Weisberg test for heteroskedasticity**

Ho: Constant variance

Variables: fitted values of ROA

| | |
|-----------------------|---------|
| chi2(1) | 4752.06 |
| Prob > chi2 | 0.0000 |

Ramsey RESET test using powers of the fitted values of ROA

Ho: model has no omitted variables

| | |
|----------------------|--------|
| F(3, 1071947) | 405.86 |
| Prob > F | 0.0000 |

White's test for Ho: homoskedasticity

against Ha: unrestricted heteroskedasticity

| | |
|-----------------------|----------|
| chi2(20) | 24479.54 |
| Prob > chi2 | 0.0000 |

Cameron & Trivedi's decomposition of IM-test

| Source | chi2 | df | p |
|--------------------|-----------|----|--------|
| Heteroskedasticity | 24479.54 | 20 | 0.0000 |
| Skewness | 66978.15 | 5 | 0.0000 |
| Kurtosis | 49992.09 | 1 | 0.0000 |
| Total | 141449.79 | 26 | 0.000 |

Dummy true family

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of ROA

| | |
|-----------------------|----------|
| chi2(1) | 10269.47 |
| Prob > chi2 | 0.0000 |

Ramsey RESET test using powers of the fitted values of ROA

Ho: model has no omitted variables

| | |
|----------------------|--------|
| F(3, 1071947) | 495.13 |
| Prob > F | 0.0000 |

White's test for Ho: homoskedasticity

against Ha: unrestricted heteroskedasticity

| | |
|-----------------------|----------|
| chi2(20) | 23645.28 |
| Prob > chi2 | 0.0000 |

Cameron & Trivedi's decomposition of IM-test

| Source | chi2 | df | p |
|--------------------|-----------|----|--------|
| Heteroskedasticity | 23645.28 | 19 | 0.0000 |
| Skewness | 65956.77 | 5 | 0.0000 |
| Kurtosis | 50592.79 | 1 | 0.0000 |
| Total | 140194.84 | 25 | 0.000 |

Dummy family

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of ROA

| | |
|-----------------------|---------|
| chi2(1) | 6412.40 |
| Prob > chi2 | 0.0000 |

Ramsey RESET test using powers of the fitted values of ROA

Ho: model has no omitted variables

| | |
|----------------------|--------|
| F(3, 1071947) | 457.88 |
| Prob > F | 0.0000 |

White's test for Ho: homoskedasticity

against Ha: unrestricted heteroskedasticity

| | |
|-----------------------|----------|
| chi2(19) | 23641.83 |
| Prob > chi2 | 0.0000 |

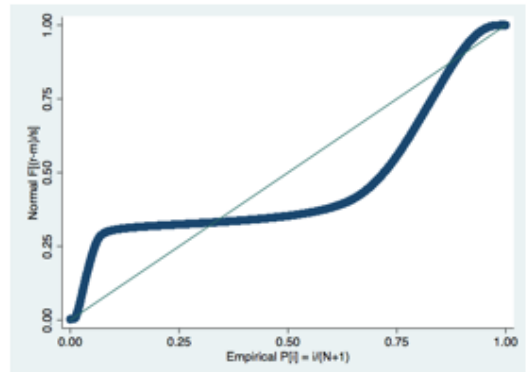
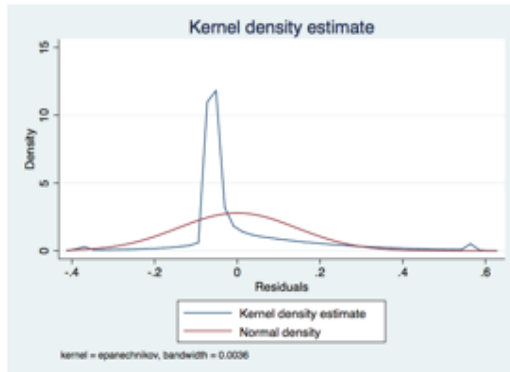
Cameron & Trivedi's decomposition of IM-test

| Source | chi2 | df | p |
|--------------------|-----------|----|--------|
| Heteroskedasticity | 23641.83 | 19 | 0.0000 |
| Skewness | 66972.72 | 5 | 0.0000 |
| Kurtosis | 50173.03 | 1 | 0.0000 |
| Total | 140787.58 | 25 | 0.000 |

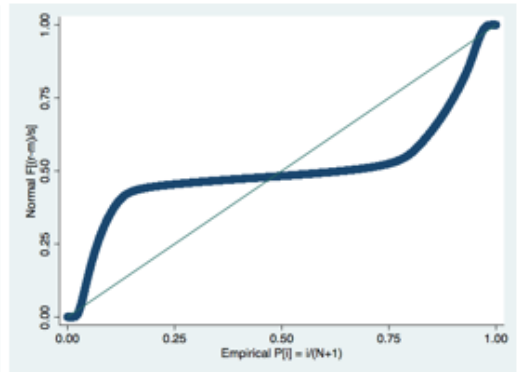
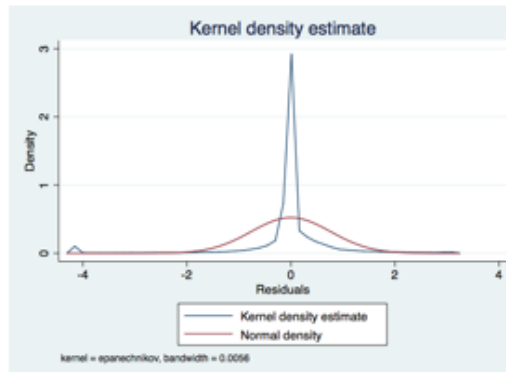
Appendix 5 – Normality of residuals

5.1 Family ultimate ownership as family measure

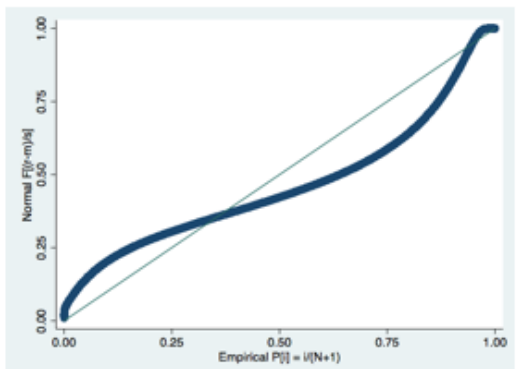
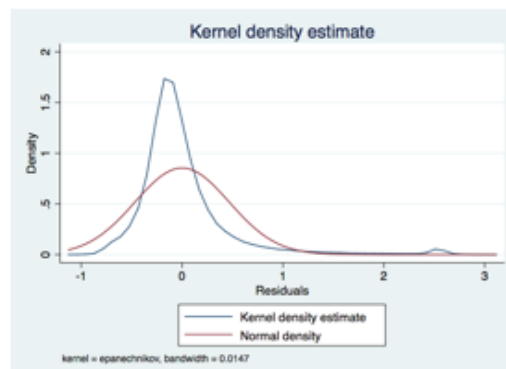
$$ROA = \alpha + \beta_1 \text{FamilyOwnership} + \beta_2 \text{FirmAge} + \beta_3 \text{Leverage} + \beta_4 \text{Size} + \beta_5 \text{Industry risk} + \varepsilon$$



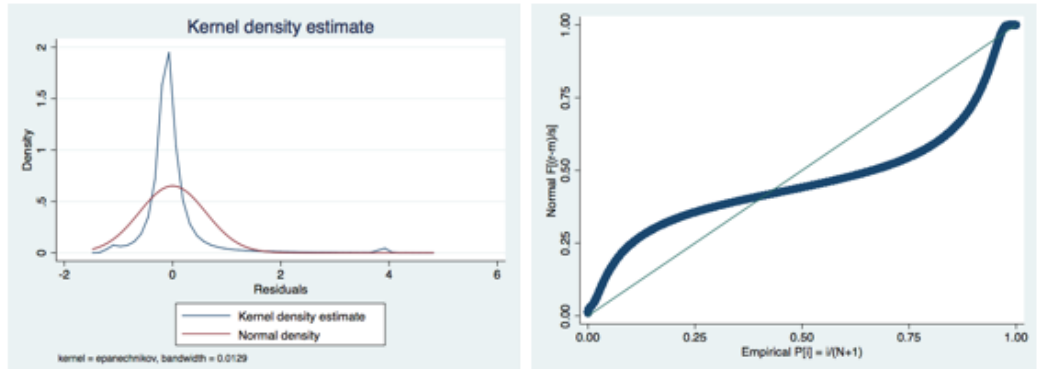
$$ROE = \alpha + \beta_1 \text{FamilyOwnership} + \beta_2 \text{FirmAge} + \beta_3 \text{Leverage} + \beta_4 \text{Size} + \beta_5 \text{Industry risk} + \varepsilon$$



$$\text{Growth}(A) = \alpha + \beta_1 \text{FamilyOwnership} + \beta_2 \text{FirmAge} + \beta_3 \text{Leverage} + \beta_4 \text{Size} + \beta_5 \text{Industry risk} + \varepsilon$$

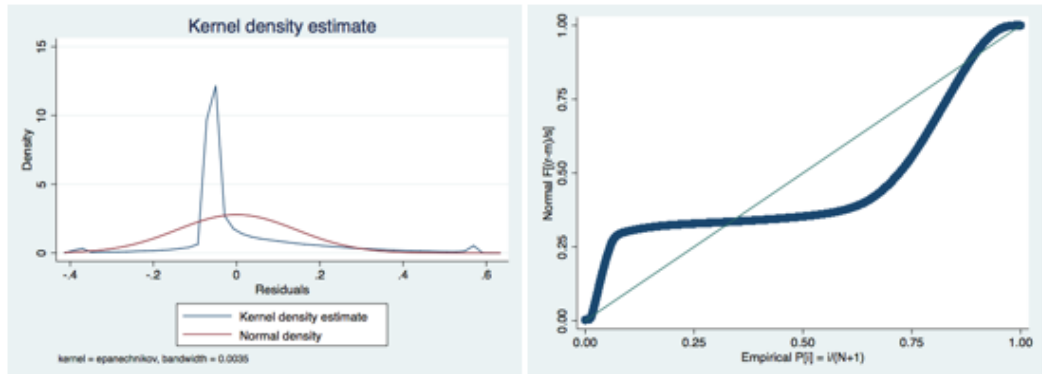


$$Growth(R) = \alpha + \beta_1 FamilyOwnership + \beta_2 FirmAge + \beta_3 Leverage + \beta_4 Size + \beta_5 Industry\ risk + \varepsilon$$

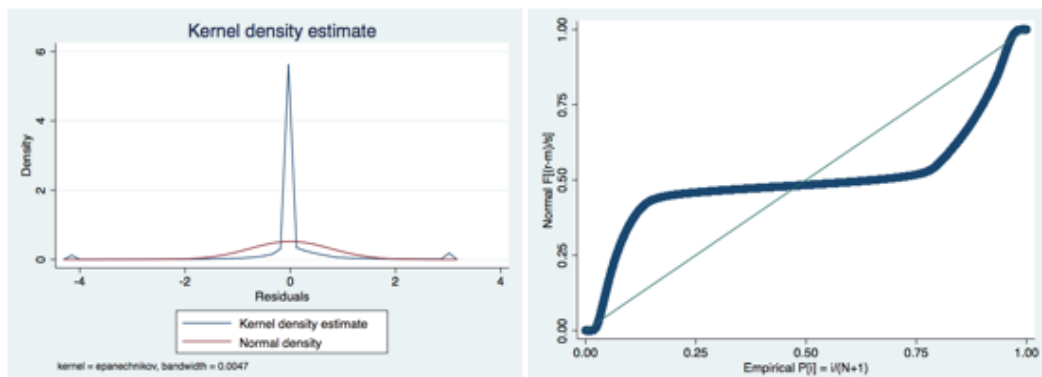


5.2 Dummy true family as family measure

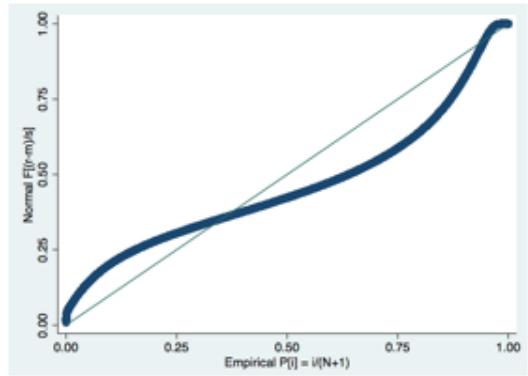
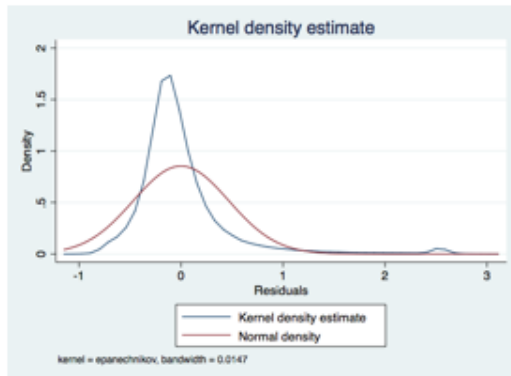
$$ROA = \alpha + \beta_1 FamilyOwnership + \beta_2 FirmAge + \beta_3 Leverage + \beta_4 Size + \beta_5 Industry\ risk + \varepsilon$$



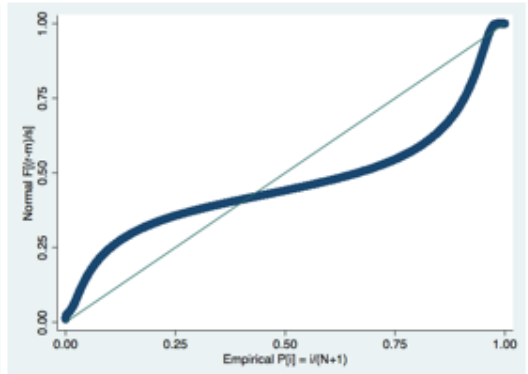
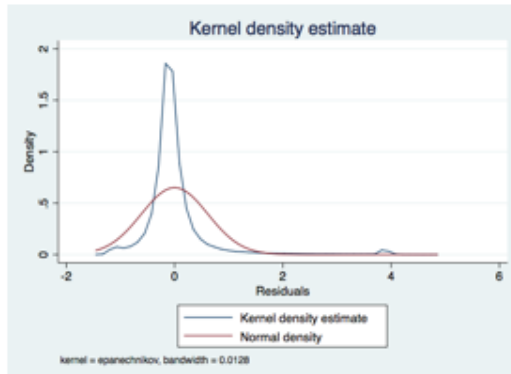
$$ROE = \alpha + \beta_1 FamilyOwnership + \beta_2 FirmAge + \beta_3 Leverage + \beta_4 Size + \beta_5 Industry\ risk + \varepsilon$$



$$Growth(A) = \alpha + \beta_1 FamilyOwnership + \beta_2 FirmAge + \beta_3 Leverage + \beta_4 Size + \beta_5 Industry\ risk + \varepsilon$$

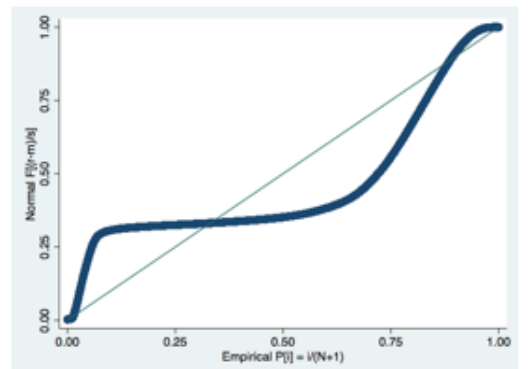
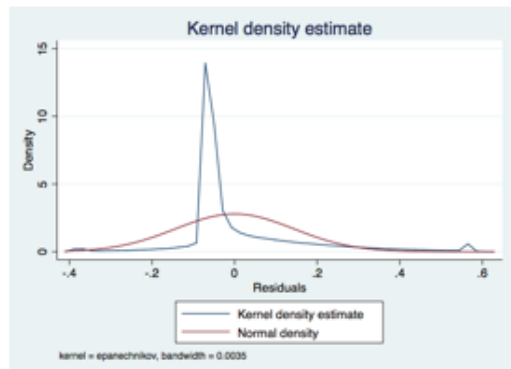


$$Growth(R) = \alpha + \beta_1 FamilyOwnership + \beta_2 FirmAge + \beta_3 Leverage + \beta_4 Size + \beta_5 Industry\ risk + \varepsilon$$

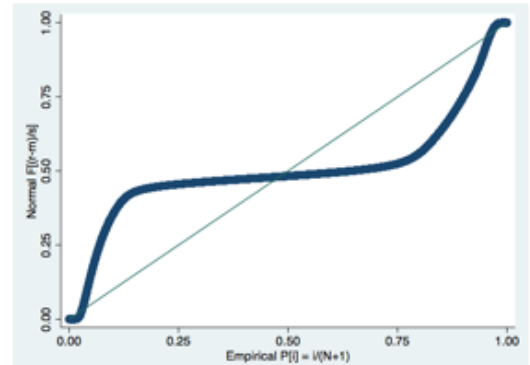
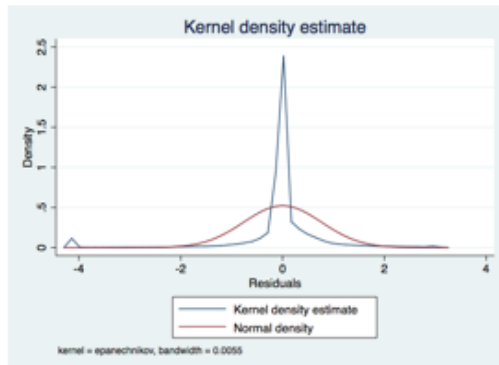


5.3 Dummy family as family measure

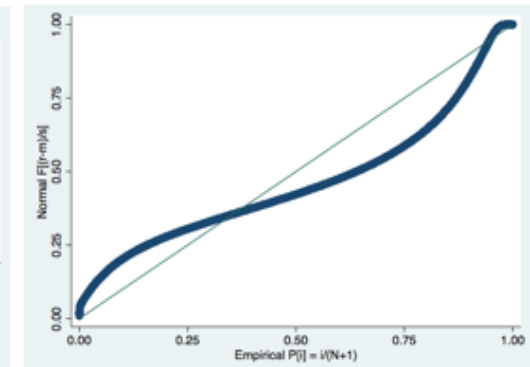
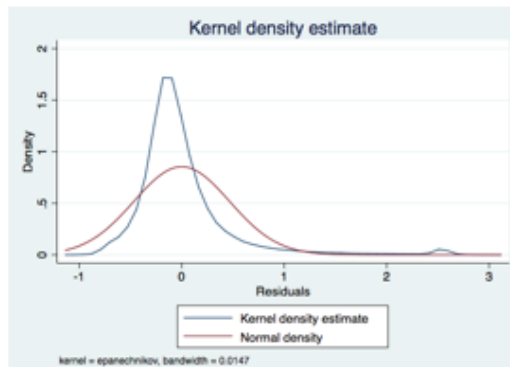
$$ROA = \alpha + \beta_1 FamilyOwnership + \beta_2 FirmAge + \beta_3 Leverage + \beta_4 Size + \beta_5 Industry\ risk + \varepsilon$$



$$ROE = \alpha + \beta_1 FamilyOwnership + \beta_2 FirmAge + \beta_3 Leverage + \beta_4 Size + \beta_5 Industry\ risk + \varepsilon$$



$$Growth(A) = \alpha + \beta_1 FamilyOwnership + \beta_2 FirmAge + \beta_3 Leverage + \beta_4 Size + \beta_5 Industry\ risk + \varepsilon$$



$$Growth(R) = \alpha + \beta_1 FamilyOwnership + \beta_2 FirmAge + \beta_3 Leverage + \beta_4 Size + \beta_5 Industry\ risk + \varepsilon$$

