FAMILY FIRMS:
BETTER OR WORSE PERFORMING?

Bachelor Thesis
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As it is believed that the family-owned businesses perform differently than the other corporations, it is important to test whether this is true for the European market and if so, what exactly are the drivers which trigger these differences in performance. Until this moment, the field of performance of family-owned firms has shown mixed results and most of the research has been conducted in an US-setting. In this paper, the focus will be on whether the company is family-owned or not and if the CEO is a descendant of the founding family or not and how these variables influence firm performance and firm value. The data set analysed is extracted from Euronext, focusing on the Amsterdam and Brussels markets. The empirical results led to the conclusion that having a family member as the CEO of the firm, leads to a higher firm performance, while being a family-owned firm does not have any impact on the performance of the company. In addition, it has been found that there is not any difference in firm value whether it is a family-firm or not.

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Introduction

Heineken, Volkswagen, Samsung are just a few names of the many firms around the world which are owned by families, usually families that established these companies many years ago. It is of great interest for the corporate finance world to be able to conclude whether family firms perform better than non-family firms or not and why is this so. However, at this moment, the findings in this field of research are still inconclusive and highly debated. As stated in a survey conducted by PwC, the family firms are aspiring, with a high will to grow and guarantee the long-term success and steadiness of their business (PwC, 2016). A similar report published by KPMG emphasized the relevance of studying family firms by stating that "it is increasingly fashionable to be branded a "family business" and the importance of the family business market to the global economy is even harder to neglect" (KPMG, 2015). Therefore, the research question of this paper is:

"Do family-owned firms perform better than the non-family-owned firms?"

In order to be able to more clearly define the research topic, it is important to firstly define the family firm. This was one of the stepping stones for this field of research, as every academic has a different interpretation for it. The European definition which has been "widely accepted and has the advantage of being comprehensive and operational" was formulated by the Finnish Working Group on Family Entrepreneurship (set up by the Ministry of Trade and Industry of Finland in 2006) and will be used throughout this study (European-Commission, 2009). In this paper, terms like family firm, family company, family business, family-owned firm, the same as family-CEO, family member CEO, will be used interchangeably. The section of the definition which refers to listed companies is as follows:

Listed companies meet the definition of family enterprise if the person who established or acquired the firm (share capital) or their families or descendants possess 25% of the decision-making rights mandated by their share capital (European-Commission, 2009).

Most of the research conducted on the family firm topic is done in a US-setting, by Anderson & Reeb (2003) for companies traded on the S&P 500, by Peréz-González (2006) for

U.S. firms, by Demsetz (1983) for Fortune 500 listed companies and thus, their results cannot be extrapolated to a European setting. Therefore, for this research it was decided to focus on some Western-European countries, namely on The Netherlands and Belgium, therefore it was chosen to conduct the research on the Euronext stock exchange, as it holds information on all the publicly traded companies in the Amsterdam and Brussels markets.

As already-mentioned, the scholars have different opinions on whether family firms perform better than non-family firms (definitions and formulas of firm performance are introduced in the Methodology section of this paper). One of the most-referred to writings in this current study is the paper by Anderson & Reeb (2003) and they are strong believers that family firms perform better than non-family firms, the same as that when family members serve as CEO, the performance of the company is higher than with outside CEOs (Anderson & Reeb, 2003). Generally, this is what this paper will focus on, except this will be tested with the Euronext data, instead of S&P 500 companies.

It is also of interest which variables exactly influence how business performance fluctuates. Taking the example of other scholars but not only, several control variables will be included in the hypotheses testing of this study, namely: firm age, R&D expenditure, investing activities and number of employees. This paper will try to bring answers which will explain the variables which hold a role in how different companies perform.

The paper is organized as follows: The Literature Review chapter will focus on the relevant theoretical and empirical evidence with respect to family firm performance and shared ownership in firms, the previous findings on the advantages and disadvantages of family-owned companies, as well as the hypotheses derived and which will be tested throughout this paper. The Methodology section introduces definitions and formulas of the performance measures investigated, followed by information on the sample size and how it was built. Next, the independent variables, family firm variable and family-CEO variable are defined, followed by the introduction of the control variables used. Subsequently, you will be introduced to some descriptive statistics, to the models defined and how it was dealt with the OLS assumptions. In the Results section, you will be presented with the results of the hypotheses testing and several explanatory Figures. The Discussion & Conclusion section exhibits the findings of this research and how they align with the findings from the existing literature, as well as the limitations of this research and future recommendations for

improvement of this subject's studies. The closing section is the Appendix, in which all the relevant tables and figures will be included.

Literature Review

The focus of this chapter is on the relevant theoretical and empirical evidence with respect to family firm performance and shared ownership in firms. The main goal of this section is to present the previous findings regarding the advantages and disadvantages of family firms and family members which serve board/management positions. The pros and cons are separated into three topics: investment horizons, large shareholders and the agency problem. The hypotheses investigated in this research are also defined in this section. It ends with a short summary about how the current research fits within the existing literature.

Advantages and Disadvantages of Family firms

Previous findings on whether family firms perform better or not than non-family firms are still inconclusive. In different markets and using different data samples, the results differ: some researchers find reasons to believe that family businesses are advantageous (Anderson & Reeb, 2003; James, 1999), while others believe the opposite (Pérez-González, 2006; Morck, Strangeland, & Yeung, 1998; Cirillo, Mussolino, Romano, & Viganò, 2017; Lardon, Deloof, & Jorissen, 2017).

Anderson & Reeb (2003) find stronger firm performance in family firms than in non-family firms, contrary to the belief that family ownership is prejudicial. The results of their research show that the companies which have a continued founding-family presence exhibit meaningfully superior accounting and market performance than the other types of firms. For example, as suggested in one study, an advantage of the firms which maintain a long-term family presence is that they benefit from a lower cost of debt financing (Anderson, Mansi, & Reeb, 2003), or, as the founding family understands the business better, the involved family members see themselves as "stewards" of the firm (Anderson & Reeb, 2003).

Investment horizon

Some papers analyze whether the investment horizon plays a role in firm's performance. James (1999) finds that families have longer investment horizons, this leading

to a higher investment efficiency. In his paper, it is argued that the extended horizons characteristic of family businesses limits agency costs and is incentivizing the decision makers to invest accordingly to the market rule. He also finds that some variables which are considered to have a positive effect in the lengthening of managers' horizons and in providing incentives for family managers to make efficient investments in the family businesses are family ties, loyalty, insurance and stability (James, 1999).

Casson (1999) and Chami (2001) touch upon this subject, mentioning that founding families envision their company as an asset to pass on to their descendants rather than wealth to consume in their lifetimes. Firm survival is therefore a substantial pursuit for families, implying that they are potentially long-term value maximization upholders (Casson, 1999; Chami, 2001).

Large Shareholders

Some academics research whether holding large amounts of shares influences firm's performance. One of the main findings of Demsetz & Lehn (1985) is that the combination of ownership and control in a company can be beneficial, as large shareholders can act to diminish managerial impounding. As an example, the family's historical presence, large undiversified equity position, and control of management and director posts, place them in a prominent role to impact and counsel the company. They find for the U.S. market that usually public corporations depict a segregation of ownership and control when professional managers, rather than fragmented shareholders control important business decisions.

In line with this opinion is the research conducted by Fama & Jensen (1985) which show how large undiversified shareholders could engage different investment decision rules compared to atomistic shareholders. They find that it is expected that diversified shareholders assess investments using market value rules that maximize the value of firm's residual cash flows. On the other hand, it is presumed that large concentrated shareholders may derive higher gains if aiming for growth of the firm, technological innovation or the survival of the firm, other than improving shareholder value (Fama & Jensen, 1985).

Agency problem

Other investigations consider the agency problem in relation to firm performance. Gomez-Mejia, Nuñez-Nickel, & Gutierrez (2001) touch upon the agency problem for family

firm's performance. Typically, it is believed that the division of ownership and control in diversified corporations, might result in agency problems, as executives may take advantage of their privileged prerogative positions compared to atomistic shareholders. It is found by Gomez-Mejia, Nuñez-Nickel, & Gutierrez (2001) that there are multiple types of agency threats under family contracting. First, they discuss the possibility of contradicting goals of the executives and the family, this resulting in a possibility of the executive proceeding with goals which do not follow the best interest of the family business. These comprise consideration for short-term profits rather than long-term, reluctance to innovations, following projects which harm owners' image, and empire building through sales maximization at the expense of profits (Gomez-Mejia, Nuñez-Nickel, & Gutierrez, 2001).

In line with the above mentioned, Morck, Strangeland, & Yeung (1998) find for the Canadian market that the companies which are controlled by descendants of the company founders display lower financial performance, labor capital ratios and R&D expenditures, the authors' conclusion being that concentrated and inherited corporate control is detrimental for growth.

One important idea emphasized by Demsetz (1983) is about the possibility of concentrated shareholders choosing non-monetary consumption and therefore use the scarce resources away from profitable projects. This idea is also supported by Shleifer & Vishny (1997), that controlling shareholders seek to extract personal gains from the company. Additionally, in their paper it is determined that firms with large, undiversified owners (founding families) may abandon maximum profits, as they are incapable of segregating their financial liking with those of outside owners. One action which is considered the highest cost a large shareholder may impose to the firm is remaining active in management even though they are no longer proficient or skilled to run the company (Shleifer & Vishny, 1997). Demsetz & Lehn (1985) believe that concentrated investors have solid economic stimuli to minimize agency conflicts and maximize firm value. Namely, because the family's wealth is so closely linked to firm welfare, families have strong reasons to control managers and mitigate the free-rider problem. If the monitoring necessitates cognition of the firm's technology, families potentially deliver superior surveillance because their extensive firm possession allows them to move further along the firm's learning curve. It is found in their paper that families are more

probable to provide top managers when they have the possibility to better meet their consumption goals through the firm rather than through their wealth.

Berle & Means (1933) also support the idea that the value of a company is reduced when ownership and control are separated rather than combined. Their reasoning is that when managerial and ownership functions are segregated and ownership is spread, there are emerging costs to the company. These costs translate in the difficulty of developing contracts designed to specify completely and accurately the specific actions managers are to take in the interest of firm owners. Additionally, it is costly to monitor the performance of executives relative to actions specified in the contracts, this resulting in the decision-making agents committing to operations that diminish the value of the firm. The additional monitoring costs, combined with the possibility of managers involving in activities that may not enhance firm value for the owners, may result in a lower valuation by the market. Therefore, it is expected that if the ownership and control functions of companies come into the line, the firm value boosts. De facto, only when the ownership and control functions are combined should organizational efficiency be fully realized (Berle & Means, 1933).

Anderson, Mansi & Reeb (2003) find in their research that one main benefit of families keeping a long-term presence is that the company will rejoice a lower cost of debt financing compared to non-family firms. One of the papers which finds a contradictory explanation i.e. dispersed ownership is disadvantageous is written by Fama & Jensen (1985). They state that organizations characterized by the segregation of ownership and control, survive because the efficiency gains outweigh the agency costs. They assert that the internal board of directors, managerial labor markets, the stock market and the market for takeovers, may discipline managers sufficiently so that agency costs are minimized (Fama & Jensen, 1985). Barclay & Holderness (1989) also think that large ownership stakes reduce the value of a firm. They state that the role the family holds in choosing managers and directors may create obstacles for the control seizure of third parties, suggesting higher managerial entrenchment and lower firm values compared to non-family firms. Also, contradictory to the belief that family ownership and control is beneficial for the firm is the paper by Cirillo, Mussolino, Romano, & Viganò (2017), they stating that the probability of firm survival after the IPO issuance decreases, the more family members are involved in the company management.

Hypotheses

The review of the existing literature on the researched topic will serve as the base for defining the hypotheses of this paper. These hypotheses will be further on used in the development of the next chapters: Methodology and Results.

When considering previous literature, it is still inconclusive whether family firms perform better than non-family firms or vice versa. For the S&P 500 sample Anderson & Reeb (2003) find that family firms perform better; this idea is also sustained by James (1999), observed, similarly, in an US setting. Thus, it is of high interest how this hypothesis behaves in a different setting (non-US), hence the first null hypothesis is as follows:

$H_0$1: Family firms have a positive effect on firm performance and value.

Other researches on the topic of family firms, focus more on the impact of family members serving management/board positions for the company. However, their findings are still inconclusive. Gomez-Mejia, Nuñez-Nickel, & Gutierrez (2001) find for a sample of Spanish newspaper that it is beneficial for the firm performance and value to have a family member CEO and their finding is supported by Demsetz & Lehn (1985) for US corporations. The finding is not agreed on by Morck, Strangeland, & Yeung (1998) in a Canadian setting, by Demsetz (1983) for a Fortune 500 sample and Cirillo, Mussolino, Romano, & Viganò (2017) for the Milan Stock Exchange. Thus, for drawing a conclusion for the Euronext sample used in this paper the second hypothesis will be tested:

$H_0$2: Family-CEO has a positive effect on firm performance and value.

For many academics, it was of interest to analyze the effect on firm performance and value if the firm is both a family firm and has a family member as its CEO (interaction effect). Berle & Means (1933) find it detrimental for the control and ownership to be separated in a firm. Thus, the next hypothesis which will be tested is:

$H_0$3: Family firm with a family-CEO has a positive effect on firm performance and value.

The last hypothesis which will be tested in this paper, comes as a follow-up of the previous hypotheses tested with the addition of some control variables. The fourth null hypothesis is as follows:

$H_0$4: Family firm, family-CEO, family firm x family-CEO, firm age, R&D expenditures, investing activities and number of employees have a positive effect on firm performance and value.

Fit within the existing literature

As it was presented in the previous sections of the literature review, there has been done significant research on the topic of family firms and their performance and market valuation. Normally, most of the papers were started as a trial to respond to the now long-debated topic "Do family firms perform better than non-family firms?". Every paper has a somewhat different approach but in the end, they all had the same goal. Many scholars focus on the longer investment horizons of the family businesses for explaining firm performance, others on the undiversified shareholders and how this impacts the market valuation of the firm and the most empirics talk about the agency problem which arises between shareholders and the management team. Considerable research is centered on the impact the family members have on the performance of the company when they hold a management position in it.

In order to conduct this specific research, some combinations of previous analyses are made. Firstly, the focus is only on the performance and value of family firms. Secondly, the focus is only on family members which hold top positions in the company. Thirdly, a combination of the two is analyzed and their interaction effect is captured. Next, a model which comprises several control variables is used, some of them have been previously believed to affect firm performance, but some are new. Consequently, there is no difference made between the industries in which the companies from this sample operate, so it is not as extensive as some other papers. Moreover, the clear majority of the exploration of family firms and performance has been conducted in a US-setting (S&P 500, Fortune 500) and not that many in the European market, so this research serves as an important extension. More than that, there has not been found a research conducted on the Euronext, namely on the

Euronext Amsterdam & Euronext Brussels, so this will serve as a valuable research addition for this topic.

Methodology

The goal of this section is to introduce definitions and formulas of the performance measures examined in this paper. Another part of this chapter will focus on the sample set used, followed by a short description of the family firm and family-CEO variables. Similarly, the control variables are introduced here. Lastly, some descriptive statistics, the derived models and how it was dealt with the OLS assumptions will be advanced.

Performance measures

The measures used in this research to assess the performance of firms are return on assets (ROA) – as a measure of operating performance and Tobin's Q – as a measure of market valuation of the firm.

ROA is an overall measure of profitability and it is computed by dividing the net income of a firm by its total assets: $ROA = \frac{Firm's\ Net\ Income}{Firm's\ Total\ Assets}$ (Weygandt, Kimmel, & Kieso, 2015).

Tobin's Q is defined as the market value of the firm over the value of firm's total assets: $Tobin'sQ = \frac{Total\ Market\ Value\ of\ Firm}{Firm's\ Total\ Assets}$ (Klapper & Love, 2004).

Sample

The sample used for this research consists of all the listed companies on Euronext, on the Amsterdam and Brussels markets (Euronext Amsterdam and Euronext Brussels). Euronext is a leading European capital-raising center with the focus on the Belgian, French, Portuguese, Dutch and British markets (Euronext, 2017). There are 303 companies publicly listed on the Euronext Amsterdam and Euronext Brussels, from which it is found that 45 of the listings are corporate bonds issued by some of the companies in this list, which are automatically disregarded for this analysis. This leaves the sample with 258 companies.

The Euronext stock exchange contains financial and economic information about the 258 companies analyzed in this paper and it is used for information collection about the firms in this sample. Bloomberg is the other database used in this paper for data gathering.

Bloomberg brings together real-time data on every market, unparalleled news and research, powerful analytics and communication tools (Bloomberg, 2017).

The research is conducted in a cross-sectional setting. The list of companies has been downloaded on the 1st of June 2017 and the comparison is done only on a cross-sectional level (between companies) and does not consider a time-series variation.

Family Firm Variable

In this analysis, a dummy variable is used to identify family firms. A firm is marked as a family firm if one or more family members have a considerable impact on the company through their managerial or board contribution, or through their possession (ownership control) – holding the largest stake of shares or holding the majority of the voting rights (Lee, 2006).

If the observed company satisfies the conditions of a family firm, then the dummy variable is set to one, otherwise it is set to zero.

Family-CEO variable

The same as above, a dummy variable is used to identify if the CEO is a descendant of the founder(s) of the firm or not. If the person occupying the CEO position in the company is a family member (founder or founder descendants), is connected to the family by succession or marriage, then the variable is set to one, and otherwise it is set to zero (Perez-Gonzalez, 2006).

Control Variables

The variables: firm age, Research & Development investments, investing activities and number of employees are used to control for firm-specific characteristics.

Firm age is used in order to capture the differences in firm competitiveness associated with history (Lee, 2006). Many academics which test for the effect of this control variable, look at it from the perspective of years since the firm was founded. However, as it was seen, Lee (2006) finds that this variable is not statistically meaningful, thus, for this research, it was decided to analyse "age" in terms of when the company became public instead of when it was

founded, which differs from what has been done is similar researches. This variable is calculated by subtracting the year when the firm first issued its IPO from 2017.

R&D investments are crucial for progress, survival and accomplishment of the firm (Beld, 2014). "Research and development is a key determinant of long-run productivity and welfare" (Jones & Williams, 2000). Thus, the effects of R&D expenditures on firm performance will be investigated.

Investing activities have a direct impact on the firm's assets and liabilities, that is why it is of interest for this research if they affect in any way firm's performance. Investing activities are defined as the cash flow activities that include purchasing and disposing of investments and property, plant, and equipment using cash; and lending money and collecting the loans (Weygandt, Kimmel, & Kieso, 2015).

Number of employees is a variation of firm size and instead of using the latter, for this research, number of employees will be one of the control variables for firm performance.

Descriptive statistics

The summary statistics for the variables that are used in the analysis of this paper are presented in Table 1. Descriptive Statistics. Included in the table are the number of observations, mean, standard deviation, minimum and maximum. Please refer to Section: Models for explanation of why ROA was transformed in a log variable. In Table 2. Correlation Matrix is presented the correlation matrix of the variables used in the regression analysis.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
lnROA	194	-3.310498	1.381782	-10.45	-0.2067504
TobinsQ	258	1.354275	2.007057	0.0001128	17.5
Family_Owned	258	0.2945736	0.4567369	0	1
Family_CEO	258	.1705426	0.3768398	0	1
Firm_age	258	13.06202	10.90907	0	105
RD	258	6.72e+07	2.26e+08	0	2.07e+09
Investing	258	-4.60e+08	2.80e+09	-3.14e+10	2.97e+09
Employees	258	13272.47	40694.91	1	403000

From Table 1. Descriptive Statistics it is observable that almost 30% of the firms in the sample used are family firms and around 17% of the firms have a CEO which is a descendant of the founder family. On average, the firms in this sample have been publicly listed on the Euronext for 13 years. Average R&D expenditures are 67.2 million euros, firms spend on investing activities -460 million euros and the average number of employees for the companies analysed in the sample is 13 thousand. The average firm has a return on assets of -3.3% and the Tobin's Q lies between 0.0001 and 17.5, with an average of 1.35.

Table 2. Correlation Matrix

	lnROA	TobinsQ	Family_Owned	Family_CEO	Firm_age	RD	Investing	Employees
lnROA	1.0000							
TobinsQ	0.4890	1.0000						
Family_Owned	-0.0239	0.0195	1.0000					
Family_CEO	0.0009	0.0273	0.6083	1.0000				
Firm_age	0.2323	0.0618	-0.0341	-0.0368	1.0000			
RD	-0.1540	-0.0376	-0.0817	-0.0979	0.4669	1.0000		
Investing	0.1813	0.0954	0.1030	0.0821	-0.1845	-0.2223	1.0000	
Employees	-0.1088	0.0237	0.0389	0.0086	0.2193	0.3440	-0.2521	1.0000

The correlation matrix is a useful and easy to use tool when it comes to investigating the relation between variables, i.e. how near it is for their relationship to be linear. The correlation is a number between -1 and +1, with zero showing no relationship at all, +1 showing a perfectly positive correlation, meaning that if one variables increases, the other one will increase by as much (synchronization) and -1 shows a perfectly negative relationship, meaning that if one increases, the other one will decrease by the same amount (Stock & Watson, 2015). It can be seen in the table above that there is a weak negative correlation between family-owned firms and the firm performance (coefficient is -0.0239). Family-CEO and lnROA have almost no relationship at all (0.0009). Worth mentioning is the fact that firm performance and firm value are moderately correlated (0.4890), family-CEO and family firm are strongly correlated (0.6083) and R&D expenditures are moderately correlated with firm age (0.4669), however, R&D spending is negatively correlated with the firm performance (-0.1540) and firm value (-0.0376).

Models

In order to test the first hypothesis which is "Family firms perform better than non-family firms" the following model is used:

Model 1.1 $$ln(ROA) = \alpha_0 + \beta_1 * Family_{Owned} + \varepsilon_0$$

Model 1.2 $$TobinsQ = \alpha_0 + \beta_1 * Family_{Owned} + \varepsilon_0$$

Family_Owned is a dummy variable which takes the value 1 if it satisfies the conditions of a family firm and zero otherwise. As "return on assets" has its values expressed in percentages, it is beneficial to transform this variable into a logarithmic variable, thus for the regressions it is necessary to use ln(ROA) as the dependent variable instead of ROA, this leading to a log-linear model. One important advantage of a log-linear model is that it provides more control over the interaction of the variables (Rosenfeld, 2007). This also leads to an easier interpretation of the coefficients as percentages (Brooks, 2014). Also, there are less variables of ln(ROA) than for the other variables, and this happens because a natural logarithm of a negative number is not valid and Stata automatically disregards those numbers (companies which have a negative ROA) and runs the regression for the companies which have a positive ROA (Sydsæter, Hammond, & Strøm, 2012). By running this regression (**Error! Reference source not found.**), it is of interest to observe if indeed a family firm has any impact on the performance or valuation of that firm. This is the reason why the same independent variable (Family_Owned) is regressed over two different dependent variables, once over ln(ROA) and once over TobinsQ. This will be the case for the next models as well. Furthermore, a two-sample t statistic is used in order to assess how the means of the response variable in the two groups (family firms and non-family firms) compare (Moore, McCabe, Alwan, & Craig, 2016).

As a follow-up on the first model, the purpose of **Error! Reference source not found.** is to find whether the firms which a have as CEO a family member, indeed perform better than non-family firms. The same as Family_Owned, Family_CEO is also a dummy variable which takes value 1 if the CEO is a family member and zero otherwise.

Model 2.1 $$\ln(ROA) = \alpha_0 + \beta_1 * Family_{CEO} + \varepsilon_0$$

Model 2.2 $$TobinsQ = \alpha_0 + \beta_1 * Family_{CEO} + \varepsilon_0$$

Also, it is of interest to investigate whether there is an effect on the performance of the firm when the firm is both family-owned and has a family-CEO. This model analyses the interaction effect between ownership and family-CEO. This variable is also a dummy variable which takes the value 1 if the firm is both family-owned and its CEO is a family member and zero otherwise. The following model is used:

Model 3.1 $$\ln(ROA) = \alpha_0 + \beta_1 * Family_{Owned_{CEO}} + \varepsilon_0$$

Model 3.2 $$TobinsQ = \alpha_0 + \beta_1 * Family_{Owned_{CEO}} + \varepsilon_0$$

In order to make the model more complete and eliminate any possible OVB (omitted variable bias – exclusion of an important variable that is a determinant of firm performance (Brooks, 2014)), more control variables are incorporated. The other included control variables are included as continuous variables. It incorporates the effect of Firm age, Number of employees, R&D expenditures and Investing activities on firm's performance and valuation.

Model 4.1 $$\ln(ROA) = \alpha_0 + \beta_1 * Family_{Owned} + \beta_2 * Family_{CEO} + \beta_3 * Family_{Owned_{CEO}} + \beta_4 * Firm_{age} + \beta_5 * Employees + \beta_6 * RD + \beta_7 * Investing + \varepsilon_0$$

Model 4.2 $$TobinsQ = \alpha_0 + \beta_1 * Family_{Owned} + \beta_2 * Family_{CEO} + \beta_3 * Family_{Owned_{CEO}} + \beta_4 * Firm_{age} + \beta_5 * Employees + \beta_6 * RD + \beta_7 * Investing + \varepsilon_0$$

When testing the effect of the independent variables on the dependent ones, the 5% significance level is used and it serves as the needed amount of evidence to reject the null hypothesis.

OLS Assumptions

In order to validly conduct hypothesis testing using the estimation technique Ordinary Least Squares (OLS) there are five assumptions which need to be taken into consideration (Brooks, 2014).

1. $E(u_t) = 0$. This assumption requires the average value of the errors to be zero. Its violation can lead to severe biases in the slope coefficient estimates and/or negative R^2. However, this assumption is not violated in this paper, since the intercept term is included in the regression (Brooks, 2014).
2. $var(u_t) = \sigma^2 < \infty$. The assumption of homoscedasticity assumes that the variance of the error terms is constant. If it is not constant, the errors are said to be heteroscedastic, and the OLS estimators are still unbiased but they are no longer BLUE (best linear unbiased estimators) (Brooks, 2014). In order to test whether the errors in the used regression equations are homoscedastic/heteroscedastic, the Breusch-Pagan test in Stata is used. The outcomes of the conducted tests are reported in the Appendix, Tables 12-19. If the software reports that there is a heteroscedasticity problem, in order to remove this problem, the "robust" option should be used in Stata, as it accounts for the heteroscedasticity problem i.e. Stata will compute heteroscedasticity-robust standard errors (Stock & Watson, 2015).
3. $cov(u_i, u_j) = 0$. The third assumption requires the covariance of the error terms over time (or cross-sectionally) to be zero i.e. the errors to be uncorrelated with each other. As the sample used in this research is in a cross-sectional setting, an autocorrelation test is not valid, as without a time component the residuals cannot be serially correlated (Brooks, 2014).
4. $cov(u_t, x_t) = 0$. This assumption requires the independent variables to be non-stochastic (non-random). If the regressors are not correlated with the error term, the OLS estimators will be consistent and unbiased, however, if there is correlation between the regressors and the error term of the equation, the OLS estimators will be inconsistent and the problem of OVB (omitted variable bias) arises, meaning that there are regressors with a substantial effect on the dependent variable which are not included in the regression (Brooks, 2014). To account for this problem, multiple control variables are included in the regression but this is still one of the biggest limitations of the OLS regression model.
5. $u_t \sim N(0, \sigma^2)$. This assumption refers to the normal distribution of the disturbance terms (Brooks, 2014). In order to test for the normality of the data, the Shapiro-Wilk test can be used in Stata. Its null hypothesis is that the population is normally

distributed. The outcomes of the conducted tests can be found in Appendix, Table 20. Only the family-owned variable shows signs of non-normality. In order to account for this problem, it is not obvious what should be done. However, as it is believed that non-normality in financial data could also arise from certain types of heteroscedasticity, the same "robust" option will be used in Stata, as it will compute heteroscedasticity-robust standard errors (Stock & Watson, 2015).

Results

This section concentrates on the statistical analysis of the obtained results.

Model 1 is the main model of this paper and it is derived directly from the research question; Model 1.1 is tested in order to analyze the impact a family firm has on firm performance. First, it is of interest to check the results of the two-sample t test presented in Table 3 below. It is essential to conduct this test in order to assess whether there is a difference between two groups within the population, i.e. assess whether family firms and non-family firms perform better (Moore, McCabe, Alwan, & Craig, 2016). From the reported results, it is observed that in the used sample, 60 companies are family-owned, while 134 and non-family firms. Looking at the output of this test, namely at the alternative hypothesis that there is a difference between the two groups of interest (H_a: diff!=0), the probability of this is 0.7413, which is higher than the alfa of 0.05 (based on a 2-tailed significance level) and it can be concluded that the mean is not statistically significant different than zero, thus, the decision is that of failure to reject that there is no difference in performance between the two groups of firms analyzed here. If the interest is to investigate the one sided alternative hypotheses, i.e. the mean performance of non-family firms is lower than that of family-owned companies (H_a: diff<0), the probability is 0.6293 which is again higher than 0.025 (one-sided significance level) and the null hypothesis should be rejected; similarly, the probability of the mean performance of non-family firms being higher than that of family firms (H_a: diff>0) is 0.3707 which is higher than the one-sided significance level of 0.025 and it can be concluded that the null hypothesis of no difference in means should be rejected. When investigating the first regression estimation, it is noticeable in Table 4 that family firms do not perform better than non-family firms. First of all, the Family_Owned coefficient is negative, suggesting that if a company is a family firm, it's performance will be 7% lower than for a non-family firm.

However, this coefficient is not significant (p-value=0.719>0.05), so the first hypothesis is rejected at a 5% significance level. However, for Tobin's Q, it can be observed in Table 5 that if a firm is a family firm, its Tobin's Q will be with 0.0041 units higher than for non-family firms. However, this coefficient is also insignificant (p-value=0.987>0.05) so again, the first hypothesis should be rejected. For both estimated equations, the R-squared is very low; it can be seen that the variable Family_Owned only explains 0.6% of the variation in ROA and 0% for TobinsQ.

Table 3. Two-sample t test with equal variances

diff = mean(0) – mean(1)						
t = 0.3306						
degrees of freedom = 192						
H_0: diff = 0						
H_a: diff < 0 → Pr (T < t) = 0.6293						
H_a: diff != 0 → Pr (|T| > |t|) = 0.7413						
H_a: diff > 0 → Pr (T > t) = 0.3707						
Group	**Obs**	**Mean**	**Std. Err.**	**Std. Dev**	**[95% Conf. Interval]**	
0	134	-3.288501	0.1268723	1.468653	-3.539449	-3.037552
1	60	-3.359624	0.1516538	1.174706	-3.663083	-3.056165
combined	194	-3.310498	0.992061	1.381782	-3.506165	-3.11483
diff		0.0711232	0.2151378		-0.3531139	0.4954603

Table 4. Linear regression. Model 1.1

Number of obs = 194						
F (1,192) = 0.13						
Prob > F = 0.7191						
R-squared = 0.0006						
Root MSE = 1.385						
lnROA	**Coef.**	**Robust Std. Err.**	**t**	**P>|t|**	**[95% Conf. Interval]**	
Family_Owned	-0.0711232	0.197469	-0.36	0.719	-0.4606105	0.3183641
_cons	-3.288501	0.1270546	-25.88	0.000	-3.539103	-3.037899

Table 5. Linear regression. Model 1.2

Linear regression						
Number of obs = 258						
F (1,256) = 0.00						
Prob > F = 0.9871						
R-squared = 0.0000						
Root MSE = 2.011						
TobinsQ	**Coef.**	**Robust Std. Err.**	**t**	**P>|t|**	**[95% Conf. Interval]**	
Family_Owned	0.0040762	0.2519326	0.02	0.987	-0.4920481	0.5002005

_cons	1.353074	0.1573072	8.60	0.000	1.043293	1.662855

When moving to Model 2, where the focus is on the family-CEO, the R^2 for ROA decreases (from 0.0006 to 0.000), meaning that the prediction of company performance is less accurate, while for TobinsQ it increases (from 0.0000 to 0.0036), meaning that the prediction of company value is more accurate. When looking at Model 2.1, it can be seen in Table 6 that having a family member as CEO, increases the company performance by 0.33%, However, this coefficient is insignificant at the 5% significance level (p-value=0.9880>0.05) and the hypothesis should be rejected. Regarding the valuation of a company (Model 2.1), having a CEO which is a descendant of the founding family, on average, increases business valuation by 0.32 units (see Table 7). Again, this coefficient is insignificant at the 5% significance level (p-value=0.337>0.05) and it should be rejected that a family-CEO has a positive impact on firm value.

Table 6. Linear regression. Model 2.1

Number of obs = 194						
F (1,191) = 0.10						
Prob > F = 0.9877						
R-squared = 0.0000						
Root MSE = 1.3854						
lnROA	**Coef.**	**Robust Std. Err.**	**T**	**P>|t|**	**[95% Conf. Interval]**	
Family_CEO	0.0033202	0.2152467	0.02	0.988	-0.4212317	0.4278721
_cons	-3.311011	0.1127779	-29.36	0.000	-3.533454	-3.088568

Table 7. Linear regression. Model 2.2

Number of obs = 258						
F (1,256) = 0.93						
Prob > F = 0.3366						
R-squared = 0.0036						
Root MSE = 2.0073						
TobinsQ	**Coef.**	**Robust Std. Err.**	**t**	**P>|t|**	**[95% Conf. Interval]**	
Family_CEO	0.3196316	0.3320305	0.96	0.337	-0.3342273	0.9734906
_cons	1.299764	0.1372449	9.47	0.000	1.029491	1.570037

The interest now is how is the firm performance and valuation behaving when a company is both a family firm and has a family-CEO. In this case, firm's return on assets, on average, will be by 1.6% lower than for non-family, non-family member CEO, but this

coefficient is insignificant (p-value=0.943>0.05) (see Table 8) and hypothesis 3 is rejected. Worth mentioning is also the fact that R-squared is 0%, meaning that the control variable is weak and it does not have any explanatory value for firm performance. With regards to Tobin's Q, R-squared is a bit higher for Model 3.2 (0.24%) but it is still very low in order to draw substantial conclusions. If a firm is family firm and has a family member as CEO, its valuation on the market will be, on average, 0.26 units higher than for the other firms. This coefficient is again insignificant, its p-value being 0.434, which is higher than 0.05 and the hypothesis can be rejected (see Table 9).

Table 8. Linear regression. Model 3.1

Number of obs = 194						
F (1,192) = 0.01						
Prob > F = 0.9433						
R-squared = 0.0000						
Root MSE = 1.3854						
lnROA	**Coef.**	**Robust Std. Err.**	**t**	**P>|t|**	**[95% Conf. Interval]**	
Family_Owned_CEO	-0.0156525	0.2197091	-0.07	0.943	-0.4490059	0.417701
_cons	-3.308158	0.1121308	-29.50	0.000	-3.529324	-3.086991

Table 9. Linear regression. Model 3.2

Number of obs = 258						
F (1,256) = 0.61						
Prob > F = 0.4339						
R-squared = 0.0024						
Root MSE = 2.0086						
TobinsQ	**Coef.**	**Robust Std. Err.**	**t**	**P>|t|**	**[95% Conf. Interval]**	
Family_Owned_CEO	0.2637579	0.3365232	0.78	0.434	-0.3989485	0.9264642
_cons	1.311337	0.1368806	9.58	0.000	1.041782	1.580893

The most complete model in this paper, which tests for the 4th hypothesis and includes control variables, has an R^2 of 6.55% (Model 4.1). First of all, if a company has a CEO which is a descendant of the founder family, on average, the firm's performance will be 34% higher than for the other companies. Family_CEO variable is significant, as its p-value equals 0.011, which is lower than 0.05 and it cannot be rejected that it has a positive influence on ROA (see Table 10). Three of the four control variables analyzed are significant at the 5% significance level. One of them is firm's age, with a p-value of 0.021<0.05. This means that on average, one

extra year of being a publicly traded company, increases firm's performance by 1.64%. R&D expenditures have a negative impact on company's performance. On average, for every 10 billions euros invested in research and development, firm's performance will decrease by 9.45%. The R&D coefficient is significant at the 5% significance level, as its p-value is 0.015 which is lower than 0.05. The investing activities also have a significant effect (p-value=0.000<0.05) on firm's return on assets. On average, 100 billions euros spent on investing activities, increases the performance of a company by 7.10%. The Family_Owned variable of interest again shows a negative effect on the performance (-14.92%) if the firm is family-owned, however this is insignificant on the 5% significance level. Another interest variable which is insignificant for firm performance is Family_Owned_CEO and one insignificant control variable is number of employees in a firm.

Regarding the value of the firm, Model 4.2 has an R-squared of 0.0131, meaning that this model explains 1.31% of the fluctuations in firm valuation. In this model only the investing activities (as a control variable) are significant and these have a positive effect on the firm valuation (p-value=0.005<0.05) (see Table 11). On average, for every 100 billions euros spent on investing activities, firm's valuation on the market increases with 4.68 units. The other control variables used in the valuation model are insignificant, their p-values are higher than 0.05 and it cannot be concluded what their effect on the dependent variable is. Thus, the fourth hypothesis can be rejected.

Table 10. Linear regression. Model 4.1

Number of obs = 194						
F (5,186) = .						
Prob > F = .						
R-squared = 0.0655						
Root MSE = 1.3607						
lnROA	**Coef.**	**Robust Std. Err.**	**t**	**P>|t|**	**[95% Conf. Interval]**	
Family_Owned	-0.1491976	0.2683517	-0.56	0.579	-0.6786018	0.3802066
Family_CEO	0.3424062	0.1328358	2.58	0.011	0.0803477	0.6044647
Family_Owned_CEO	-0.3295191	0.3381112	-0.97	0.331	-0.9965449	0.3375067
Firm_age	0.0164187	0.0070527	2.33	0.021	0.0025051	0.0303323
Employees	01.13e-06	2.40e-06	-0.47	0.638	-5.86e-06	3.60e-06
RD	-9.45e-10	3.83e-10	-2.46	0.015	-1.70e-09	-1.88e-10
Investing	7.10e-11	1.97e-11	3.60	0.000	3.21e-11	1.10e-10
_cons	-3.357278	0.1664722	-20.17	0.000	-3.685694	-3.028861

Table 11. Linear regression. Model 4.2

Number of obs = 258						
F (5,250) = .						
Prob > F = .						
R-squared = 0.0131						
Root MSE = 2.0216						
TobinsQ	**Coef.**	**Robust Std. Err.**	**t**	**P>|t|**	**[95% Conf. Interval]**	
Family_Owned	-0.2651597	0.2495837	-1.06	0.289	-07567143	0.226395
Family_CEO	1.173757	1.474511	0.80	0.427	-1.73029	4.077804
Family_Owned_CEO	-0.7181241	1.52472	-0.47	0.638	-3.721057	2.284809
Firm_age	-0.000471	0.0081213	-0.06	0.954	-0.0164659	0.0155238
Employees	3.45e-07	3.16e-06	0.11	0.913	-5.87e-06	6.56e-06
RD	-2.84e-10	3.62e-10	-0.78	0.435	-9.97e-10	4.30e-10
Investing	4.68e-11	1.66e-11	2.82	0.005	1.41e-11	7.95e-11
_cons	1.391299	0.1841982	7.55	0.000	1.028521	1.754077

Discussion and Conclusion

The goal of this chapter is to summarize the presented information and findings and present a conclusion of this research. Below, there are short paragraphs for every tested hypothesis and how the results in this paper compare and align with the results of existing studies on the same topic. This section ends with the limitations of this study and how they affected the findings and suggestions for future research.

The purpose of this study was to present a substantial answer to the research question "*Do family-owned firms perform better than the non-family-owned firms?"*. Unfortunately, given the derived hypotheses and the empirical evidence, the achieved results are quite deceiving.

To summarize the results, for the hypothesis that family firms have a positive impact on firm performance and firm valuation, the variable of interest (see Table 4 & Table 5) is statistically insignificant, meaning that family firms do not perform better than non-family firms. This finding is contradictory to most of the academics' views (Anderson & Reeb, 2003; Casson, 1999; Chami, 2001; Demsetz & Lehn, 1985). Anderson & Reeb (2003) find in their research that family businesses perform at least as well as the non-family ones. They find an economically and statistically significant positive impact on ROA of a family firm (on average,

13.7% higher performance for family firms). Similarly, for Tobin's Q, it is found that the companies which are family-owned rejoice approximately a 10% higher value compared to non-family-owned businesses. An important conclusion drawn by James (1999), which is again not aligned with the obtained results is that the efficiency of family firms is due not only to the fact that they are an "efficient governing system", but also because substantial decision regarding firm's path, development and future are made as a unity (family). Casson's (1999) and Chami's (2001) views on why family firms perform better is that for them, survival and the long-term value maximization is at stake. Since for the family firm founders their company represents an asset to pass on to their descendants rather than wealth to consume during their lifetimes, they have a broader vision when it comes to investment horizons, which lead these firms to have a higher performance and firm value creation. The reason for this difference in outcomes it is mainly outlined in the limitations section of this research but it is believed that the data set, the control variables and the market chosen for this research are the main reasons why the results differ so much from the previous studies conducted on this topic.

When talking about the second hypothesis, which assesses whether a family-CEO has a positive impact on ROA and Tobin's Q, it is again found that the variable of interest is statistically insignificant (see Table 6 & Table 7), meaning that companies which have a family member serving as the firm CEO do not perform better than the other firms. This result is not in line with what has been found by Anderson & Reeb (2003); CEOs which are descendants of the founding-family lead to the highest profitability in family businesses (on average, 13.7% higher performance and 10% higher value). The same idea is sustained by Demsetz & Lehn (1985), as the largest shareholders (family-owners) also hold the top management board in their power, it is way easier for them to influence and advise the company, which leads to the alignment of future vision of the firm for all the members implied, consequently this resulting in higher firm performance.

Regarding the third hypothesis, which investigates the effect on firm performance and value of the firm being family-owned and having a family-CEO, it is also found that this variable is statistically insignificant (see Table 8 & Table 9). This is probably the most contradictory finding of this research. The common belief is that the segregation of ownership in control is detrimental for companies as this usually results in agency problems. Gomez-Mejia, Nuñez-

Nickel, & Gutierrez (2001) are strong believers that if the executives of a company do not descend the owning family, they will start acting in their own interest, even though this is highly possible to be hurtful to the possessing family. It has been deduced by them that agency threats in family-owned companies are less harsh when adequate monitoring techniques are implemented. This idea is supported by the research conducted by Berle & Means (1933), which find that there are high arising costs to the firm when the firm does not have a family member in the executive board of that firm. These costs refer to the difficulty of monitoring the firm staff and making sure they act in the best interest of the firm shareholders. The opposite findings come from academics like Demsetz (1983) or Shleifer & Vishny (1997). One of the explanations is that one of the highest costs a company may incur is for a member of the management board to remain active even after they are no longer skilled or competent to lead the business (Shleifer & Vishny, 1997). Another monetary related finding is that large shareholders might use scarce resources away from profitable projects, which will consequently negatively impact firm performance (Demsetz, 1983). A subjective opinion is that a family member being appointed as a CEO of the firm might be prejudicial to the company as he/she might not be seen as a good model by the other employees or someone who should be taken seriously as he/she is fulfilling this position only for subjective reasons and not for merits or expertise in the domain.

The results of testing the fourth hypothesis are probably the highlight of this study, as the R-squared is the highest out of all the other models and it has some statistical significance. According to the model, firms which have a family member as CEO will have, on average, a 34% higher performance (ROA) compared to the other firms (see Table 10). Again, this finding is supported by Anderson & Reeb's (2003) paper, where they state that family members as CEOs are associated with the greatest value gains and according to their results, an outside CEO reduces business performance, on average, by 11%. This is in contradiction to what Pérez-González (2006) finds, namely that "promoting family-CEOs in publicly traded corporations significantly hurts performance", on average, by 2.9%. Regarding firm's value (Tobin's Q), none of the variables of interest of this study have come true to the initial expectations (see Table 11) and it should be concluded that family firms do not have a higher value compared to non-family firms. This idea was supported by many academics, especially by Morck, Strangeland, & Yeung (1998) who argue that family members as CEOs are disadvantageous to

the firm as it slows down firm's growth. Similarly, Cirillo, Mussolino, Romano, & Viganò (2017) find that when a company employs family members in its management, it has poor probability of post-IPO survival.

One subjective conclusion of this research is that overall, the publicly listed family-owned companies are very much aligned with the non-family ones and that is why it has not been found a substantial conclusion that performance and firm value are different whether the focus is on a family firm or not. The findings of the paper might have been substantially different if privately-owned companies would have been included in the dataset.

There are, however, limitations to this study. The most common limitation to academic research is the omitted variable bias. There are probably multiple variables which affect firm performance and value but have not been included in this paper like: firm size, risk taking, total debt, total assets, asset tangibility, cash holdings etc. Moreover, the study has been done in a cross-sectional setting, without taking into consideration time variables. A panel-data research might have given substantially more significant findings. Another limitation can be that it has not been controlled for industry affiliation of the companies in the sample used.

Moreover, for assessing firm performance, only two measures have been used: return on assets and Tobin's Q, as these were found to be the most commons ones. However, if more measures have been included, like return on equity, profit margin, asset turnover or earnings per share, the findings could have been more economically and statistically significant and the findings could have been more conclusive.

Last but not least, the dataset is also considered a limitation. It can be said that it is still a fairly small dataset which includes only 259 publicly traded companies, out of which only 76 are considered family firms. As already mentioned, focusing on only public companies, considerably limits the research. Moreover, Euronext is considered a small stock exchange, compared to S&P 500 or London Stock Exchange and the conclusions made on it cannot be extrapolated to other datasets.

In order to account for these limitations, further research is highly advised. More control variables should be included (to account for OVB), extensions to a panel-data setting may be considered, and addition of new/more dependent variables might come in handy for the improvement of the results presented in the current paper.

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Appendix

Table 12. Model 1.1. Breusch-Pagan test for heteroskedasticity

H_0: Constant variance
Variables: fitted values of lnROA
chi2(1) = 3.53
Prob > chi2 = 0.0601

Table 13. Model 1.2. Breusch-Pagan test for heteroskedasticity

H_0: Constant variance
Variables: fitted values of lnROA
chi2(1) = 3.99
Prob > chi2 = 0.0457

Table 14. Model 2.1. Breusch-Pagan test for heteroskedasticity

H_0: Constant variance
Variables: fitted values of lnROA
chi2(1) = 4.00
Prob > chi2 = 0.0456

Table 15. Model 2.2. Breusch-Pagan test for heteroskedasticity

H_0: Constant variance
Variables: fitted values of lnROA
chi2(1) = 0.00
Prob > chi2 = 0.9924

Table 16. Model 3.1. Breusch-Pagan test for heteroskedasticity

H_0: Constant variance
Variables: fitted values of lnROA
chi2(1) = 3.62
Prob > chi2 = 0.0572

Table 17. Model 3.2. Breusch-Pagan test for heteroskedasticity

H_0: Constant variance
Variables: fitted values of lnROA
chi2(1) = 0.01
Prob > chi2 = 0.9358

Table 18. Model 4.1. Breusch-Pagan for heteroskedasticity

H_0: Constant variance
Variables: fitted values of lnROA
chi2(1) = 0.08
Prob > chi2 = 0.7757

Table 19. Model 4.2. Breusch-Pagan test for heteroskedasticity

H_0: Constant variance
Variables: fitted values of lnROA
chi2(1) = 6.80
Prob > chi2 = 0.0091

Table 20. Model 1. Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
lnROA	194	0.88625	16.526	6.444	0.00000
TobinsQ	258	0.54840	84.207	10.330	0.00000
Family_Owned	258	0.98991	1.882	1.473	0.07036
Family_CEO	258	0.96880	5.817	4.103	0.00002
Family_Owned_CEO	258	0.96651	6.245	4.268	0.00001
Firm_age	258	0.69539	56.798	9.413	0.00000
Employees	258	0.35235	120.762	11.171	0.00000
RD	258	0.47119	98.603	10.698	0.00000
Investing	258	0.21208	146.918	11.627	0.00000

Figure 1. Histogram lnROA

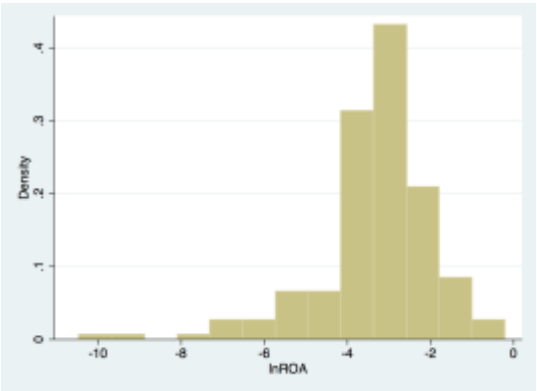

Figure 2. Histogram TobinsQ

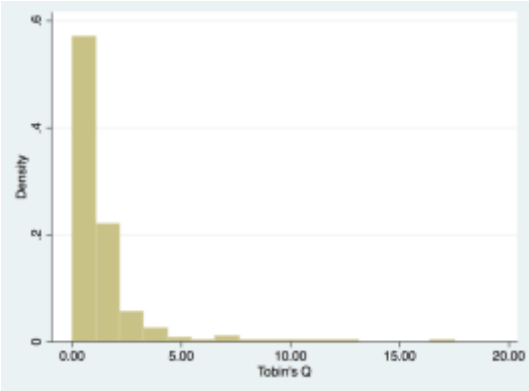

Figure 3. Histogram Firm_age

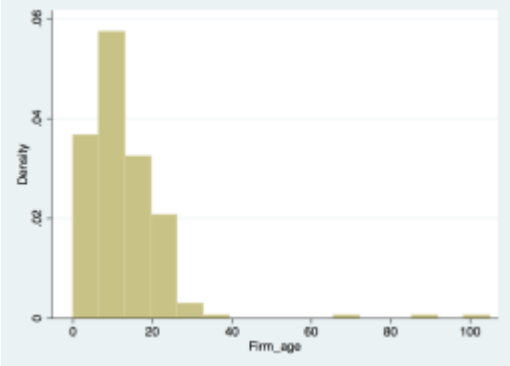

Figure 4. Histogram Employees

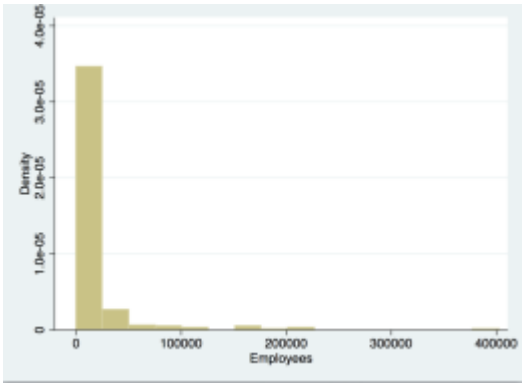

Figure 5. Histogram R&D

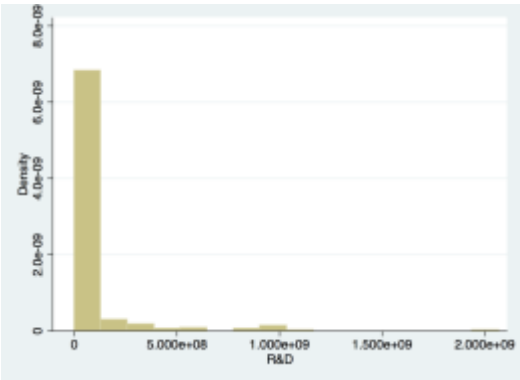

Figure 6. Histogram Investing_activities