Family and non-family firms: an empirical analysis of performance differences

There has been extensive research into the differences between family and non-family firms, of which a relevant part into performance differences. This paper empirically analyses the differences in performance between family and non-family firms in mostly Western European economies between 2012 and 2017. I find that both firms that are under control of families and firms with family CEOs outperform non-family firms. A further study into the performance differences in firms with a first-generation family CEO or a family CEO from a later generation did not yield significant results.

Bachelor thesis

International Bachelor Economics and Business Economics

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Date: July 1st, 2018

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Introduction

A large share of worldwide firms is controlled by families (Cadbury, 2000; Faccio & Lang, 2002). These firms can be found in all shapes and sizes; from the local ice cream store around the corner to enormous multinationals, and from small vineyards to large lawfirms. There are many differences between family firms and non-family firms; they may for example differ in organizational structure, management style, strategic goals and vision (Cadbury, 2000).

They may however also differ in performance, which has been empirically analysed by many authors and for many different economic regions and firm types. This paper will focus on performance differences between family and non-family firms of mostly small to medium-sized firms in mostly Western European economies. The data is available from a very recent time period, namely between 2012 and 2017. In order to investigate the performance differences, the following research question is formulated:

What is the difference in performance between family and non-family firms?

The research question is split up into three sub-questions. I define a family firm as a company of which either the family owns the majority (more than 50%) of the firm's shares (family ownership), or of which the CEO is a member of the founding family (the firm has a family CEO). These two options result in the first two sub-questions:

1. *What is the relationship between family ownership and firm performance?*
2. *What is the relationship between having a family CEO and firm performance?*

Literature suggests that firms of which the founder is still CEO perform different than firms of which a descendant is CEO (Anderson & Reeb, 2003; Bennedsen, Nielsen, Pérez-González, & Wolfenzon, 2007; Pérez-Gonzáles, 2006). I will expand further on this literature in the literature review. To investigate this, the third sub-question is generated as follows:

3. *Is there a difference in firm performance between firms with a first-line family CEO and firms with a second- or higher line family CEO?*

This paper will start off by reviewing similar relevant literature. After that, my hypotheses are formed, the dataset is introduced, and the methodology and results are explained Then, the sub-questions and the main research question are answered in the conclusions section, followed by a brief discussion.

Literature review

There has been extensive research into the strengths and weaknesses of family-owned and family-controlled businesses. In this section, literature on problems and advantages of family firms is discussed first, after which literature on the difference in performance between family and non-family firms is studied to gain insight on similar research on this paper's topic.

Most of the weaknesses found in literature are social problems. Lansberg (1983) found that conflicts may arise in family firms due to differences in interests between the family and the firm. The family, for example, may be more risk averse as they want to ensure continuity of the firm for future generations, whereas outsiders in the family firm may be happy to accept a larger risk in order to generate higher profits.

This view is in line with Barnes & Hershon (1976), who found conflicts often arise between family politics and professional management inside the family firm. They found that this problem especially occurs in cases where the top management is transferred from the founding entrepreneur to future generations or outsiders. When this happens, the founder often tries to keep his influence on "his" firm, which may generate conflict.

Another potential problem concerning management transitions arises when the family wishes to assign top-tier management positions to family members. In this case, the selection pool for management positions is much smaller than when looking outside the family, which may result in the appointment of managers that are less suitable for the job (Burkart, Panunzi, & Shleifer, 2003).

Researchers also found potential advantages that family firms may possess in comparison to non-family firms. Habbershon and Williams (1999) built a theoretical framework to asses the competitive advantage of family firms. They mention that family firms' management practises and business values may result in higher competitiveness, and that they are able to integrate the advantages of family involvement into a business perspective. Examples of such advantages are more efficient usage of personnel, lower cost bases and easier communication between family members.

Cadbury (2000) finds, as Lansberg did, that family firms have a higher focus on business continuity than non-family firms as they also weigh in the family interest (and especially that of future generations) into their decisions. Cadbury states that this might be a positive aspect of family ownership; family firms would focus more on the long-term view in their strategic

decisions, which may result in better business performance in the long run. As a result, family firms build up stronger relationships with external parties, such as employees, suppliers and customers.

Furthermore, family firm management may have additional, nonmonetary motivations that drives the board to perform better and thereby increase firm performance. An example of this is peer pressure, as explained by Kandel and Lazear (1992). They state that potential failure in a family firm causes a fear of shame or guilt to the family which is not present in a non-family owned firm, which causes family CEOs to be extra motivated to realize a good performance.

The advantages and disadvantages of family firms have also been connected to firm performance. Anderson and Reeb (2003) published a much-cited paper where they link family ownership to firm performance. They study the performance of large (S&P 500) family owned and non-family owned firms for a continuous period between 1992 and 1999. The authors use the fractional equity ownership of the founding family as a measure for family ownership. Using this measure they found that, after controlling for various firm characteristics such as size, age, sector and debt/equity ratio, "family firms perform at least as well as nonfamily firms".

A more theoretical approach to this situation is the stewardship theory (David, Schoorman, & Donaldson, 1997), stating that in a family-controlled firm, the classic principle-agent problem between firm and CEO does not hold. CEOs from inside the family (the agent) act as "stewards of their firms", with the same goal as the principle (the firm owners or shareholders), namely obtaining maximum profitability, which boosts efficiency.

Empirical evidence supports this view. Maury (2006) studied a sample of 1672 non-financial Western-European firms and found that "active family control is associated with higher profitability compared to nonfamily firms". Similar results were found in Chile (Martínez, Stöhr, & Quiroga, 2007) and Taiwan (Chu, 2011).

King & Santor (2008) executed similar research of Canadian firms between 1998 and 2005, and also found that family ownership has no negative effect on firm performance. Their findings involve some family owned firms that underperform in comparison to the market, but they connect this lower performance to control-enhancing mechanisms (dual-class shares) and not necessarily to family ownership.

Yermack (1995), studying the firm value of U.S. corporations between 1984 and 1991, found that firms controlled by families realize a higher performance measure, but he connects this to a difference in firm asset usage. He also found that when founding families surrender control of their firms, firm value increases which suggests that family control may not be seen as efficient by investors.

Other literature on family ownership or control and firm performance use event-study analyses shaped around the appointment of a new CEO, who can either be a family member of external. Pérez-Gonzáles (2006), for example, studied over 300 management transitions of U.S. corporations, and found that "firms that promote family CEOs significantly underperform". Bennedsen et al (2007) also found, using a large Danish dataset, that firms that appoint family CEOs underperform in comparison to appointed external CEOs. An issue with these studies however, as stated in the paper itself, is that these management turnovers are unlikely to be random.

In their earlier mentioned paper, Anderson and Reeb (2003) also looked the relationship between CEO type on family firm performance. They found firm founders and outside CEOs to have a positive effect on firm performance, in comparison to second or higher generation descendants of firm founders who do not. Possible explanations are that a descendant is selected from a smaller selection pool of managerial talent (Burkart, Panunzi, & Shleifer, 2003), or that as the firm ages, family members have less to contribute to the firm (Anderson & Reeb, 2003).

Hypotheses

I formulated hypotheses for each of the three sub-questions based on findings and theories from the aforementioned literature, in order to generate a hypothesis for the research question as a whole.

The first sub-question investigates the relationship between family ownership and firm performance. Previous literature suggests that family owned firms perform at least as well (Anderson & Reeb, 2003; King & Santor, 2008) or better (Chu, 2011; Martínez, Stöhr, & Quiroga, 2007; Maury, 2006) than non-family owned firms. This is in line with Habbershon and Williams' theory (1999), stating that family firms have a competitive advantage by integrating family involvement into a business perspective. Therefore, I expect family owned firms to outperform non-family owned firms.

Sub-question 2 focusses on the relationship between firms with a family CEO and firms that do not. Theories on this effect are conflicting. Kandel & Lazear (1992) suggest that family CEOs have extra nonmonetary incentives that should drive a firm's long-term profitability. Also, the stewardship theory by David, Schoorman, & Donaldson (1997) suggests that firms with a family CEO suffer less from the principle-agent problem, which could drive efficiency and profitability. Lansberg (1983), on the other hand, finds that conflicts arise in firms with family CEOs due to different interests of the firm and the family. As for the literature empirically investigating this effect, Yermack (1995) found that firms with a family CEO realize higher performance.

Adopting Yermack's and Kandel & Lazear's conclusions and the stewardship theory, my second hypothesis is generated: firms with a family CEO perform better than firms with an external CEO.

The third sub-question investigates the performance difference of firms with first-line family CEOs and second- or higher line family CEOs. Anderson and Reeb (2006) found that firms with a first-line family CEO outperform firms with a family CEO from a later generation.

Anderson and Reeb's findings are supported by the findings of Pérez-Gonzáles (2006) and Bennedsen et al (2007); their research focusses on in-family CEO transitions, meaning that the appointed CEOs in these papers are from a second- or higher generation. They find that such a transition results in underperformance.

Findings by Barnes & Herson (1976) offer a possible explanation. They found that a management transfer from a first line CEO to a later generation often causes conflict inside the firm, as the retired entrepreneur tries to keep his influence.

Embracing the mentioned findings, I expect firms with a first-line family CEO to perform better than firms with a family CEO from a second- or higher line.

Combining the stated hypotheses for the sub-questions, the hypothesis for the main research question is formulated. I hypothesise that family firms, which are either controlled by the founding family or have an active CEO from the founding family, perform better than non-family firms. In the latter case, family firms with the founder as CEO perform better than family firms with a CEO from a later generation.

Data

The data is supplied by a Dutch consulting company. The dataset contains multiple-year financial data of more than 400 mostly Western-European firms, most of which are Dutch. For each firm, data is presented for between three and six successive years in the period 2012-2017. The financial data is almost completely based on the firms' own financial statements, complemented with a small number of estimates.

Each firm is qualified as being family owned or non-family owned. For a firm to be classified as "family owned", the founding family must hold more than 50% of the shares. Daughter companies of family-owned firms are also qualified as family-owned, as the ultimate owner in those cases is still the family.

Firm and share ownership is determined with the help of financial databases, such as Orbis (Bureau van Dijk), and by consulting local trade registers. Most firms are found to be medium-sized companies, with all shares held by one or a limited number of parties (mostly through a holding company). In the majority of cases, these parties were either family members or private equity companies, making ownership determination relatively easy. In a number of cases, the determination of ownership was not possible; these firms are removed from the dataset, leaving a total number of 285 firms in the dataset.

Besides firm ownership, it is determined whether the CEO is from the founding family or not. CEOs are found by searching company websites, the beforementioned financial databases, trade registers, and LinkedIn pages. When the firm has a family member as CEO, it is also indicated whether the CEO is the founder of the firm (first line), or whether he is second- or higher line. I was unable to determine the latter for 10 firms; these firms are however not removed from the dataset as this would not lead to an enhanced understanding of the investigated relationships. Firm ownership structure was irrelevant in determining first- or second line CEOs.

Dummies are created for firm ownership (1 if the firm is family owned, 0 if it is not), family CEO (1 is the firm has a founding family CEO and 0 if it has not), first line CEO (if the family CEO is the firm founder), second- or higher line CEO (if the family CEO is not the founder) and unknown CEO (if the CEO is a family member, but if it is unknown whether this is the founder or not). An overview of these variables is displayed in table 1.

Table 1

Firm ownership and CEO type

The total number of firms is 285. 54.7% of the firms are family owned, and 48.4% of the firms have a family CEO.

CEO type	Firm ownership	
	Family owned	Non-family owned
Family CEO	**132**	**6**
First line	29	3
Second- or higher line	93	3
Unknown	10	0
Outside CEO	**24**	**123**
Total	**156**	**129**

The firms are also divided into different sectors, as this may influence profitability. Sectors also depend on firm activities; food production and food trading firms for example are categorized into different sectors, as a food trader generally adds less value to the products and therefore generates lower profits. Some sectors may also require more capital to execute their business than others. For each sector, a dummy variable is included in the dataset. An overview of the firm division over sectors is displayed in table 2.

Because of the low number of firms and the similarity in customers, firms in the 'facility management' and 'staffing' sectors are combined in a group called 'B2B services'. The original dataset also included two oil trading firms, but as these firms' activities differ substantially from the other firms in the dataset and there are only 2 firms active in this sector, these firms were removed from the dataset. The number of firms in 'flower trading' is deemed large enough to keep separately in the dataset, as there are no main conclusions drawn on the difference in performance over individual sectors.

Table 2

Division of firms over different sectors

The total number of firms is 285, of which 156 are family owned firms (54.7%), and 129 are non-family owned firms.

The upper frame represents the division of firms into sectors in the final dataset. The sectors in the lower frame are either removed (oil) or combined into one new category (facility management and staffing into B2B services).

Sector	Family owned firms	Non-family owned firms	Total firms	% family owned firms
Agricultural supplier	12	11	**23**	52.2%
Animal feed	6	7	**13**	46.2%
B2B services	3	7	**10**	30.0%
Flower trading	5	2	**7**	71.4%
Food production	75	48	**123**	61.0%
Food trading	23	28	**51**	45.1%
Packaging & pallet pooling	5	8	**13**	38.5%
Retail	3	9	**12**	25.0%
Transport	24	9	**33**	72.2%
Facility management (B2B services)	*2*	*2*	***4***	*50.0%*
Staffing (B2B services)	*1*	*5*	***6***	*16.7%*
Oil (removed)	*1*	*1*	***2***	*50.0%*

The ROA (return on assets) and Tobin's q are used as the accounting measures for determining firm performance. Tobin's q is a common measure for firm performance in similar literature (Anderson & Reeb, 2003; King & Santor, 2008; Martínez, Stöhr, & Quiroga, 2007; Maury, 2006; Yermack, 1996), and measures the ratio between a firm's true market value and its total asset value. The total asset value is self-reported in the firm's financial statements.

The market value of a firm is generally approached by finding the trading value of a firm's shares on the stock market, but as almost none of the firms in the dataset are publicly traded this method is unsuitable for this research. Instead, the market value is approached by calculating the market value of invested capital based on profitability-multiples. The multiples used for each sector are extracted from market reports by Duff & Phelps, a global firm valuation

and finance advisor. An overview of the used multiples and the exact methodology for computing the firms' market value is included in appendix 1. Tobin's q is calculated by dividing the firms proxied market value by its total asset base, a method used in similar literature as well (Anderson & Reeb, 2003; Yermack, 1996).

The ROA is computed by dividing the firm's net profit over the total asset base. An alternative method of calculating the ROA is by using the EBITDA (earnings before interest, taxes, depreciation and amortization) over the firm's total asset base. This method uses operating revenue instead of net profit, and is less common. It will therefore be used as a robustness check. A statistical overview of the financial measures is included in table 3.

Table 3

Summary statistics of financial measures

The first two panels show summary statistics of family owned and non-family owned firms, respectively. The third panel shows summary statistics of the full dataset. The total number of observations is 1,232, of which 669 are from family owned firms and 563 are from non-family owned firms.

	Family owned firms		**Non-family owned firms**		**All firms**	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**
Total assets (millions of €)	252.1	46.0	2877.6	57.0	1,451.9	50.9
EBITDA (millions of €)	40.3	6.6	214.0	7.3	119.7	7.1
Net profit (millions of €)	17.7	2.4	74.0	2.0	43.4	2.1
Tobin's q	1.40	1.25	1.23	1.25	1.32	1.17
ROA (EBITDA based) (%)	14.6	13.5	12.6	10.5	13.7	12.4
ROA (net profit based) (%)	6.2	5.3	5.1	3.7	5.7	4.4
Firm age (years)	69.9	63.0	63.0	48.0	67.1	56.0

The summarizing statistics suggest that family owned firms perform better than non-family owned firms, as the mean and median of all three performance measures are higher in the first than in the second panel. Family owned firms are on average older than non-family owned firms.

When looking at the median total asset value, non-family owned firms seem to be much larger than family owned firms. This is however the result of a small number of high outliers; the difference in medians is much smaller, but still present. The same is true for the profit measures, for one exception; the median family owned firm has a higher net profit than the median non-family owned firm.

Accurately recording the year of financial reporting is essential in panel data. Some firms have a split book year in their financial reporting; the calendar year in which most days occur is in this case taken as the year of measurement (e.g. when the financials are reported from April 2008 until March 2009, the year of measurement in the dataset is 2008).

Further variables in the dataset include the natural logarithm of the firm's total assets as a proxy for relative firm size, the natural logarithm of the firm's age, and the country the firm is located. The latter one is included in the dataset through a number of dummy variables. An overview is supplied in appendix 2.

Methodology and results

First, the relationship between firm ownership, firm management and firm performance is estimated through a random effects model. As the variables of interest (*firm ownership*, *family CEO*) and most of the explanatory variables do not vary over time, a fixed effects model seems unsuitable. To establish applicability of the random effects model, a Hausman test is performed for each regression. In every case, the random effects model came out as being preferred. More details on the Hausman tests are provided in appendix 3.

The relationship between firm ownership on performance is estimated by the following random effects model:

(1) $$Firm\ performance_{it} = \alpha + \beta\,(firm\ ownership_i) + \delta_1\,(size\ indicator_{it}) + \delta_2\,(age\ indicator_i) + \delta_{3\text{-}7}\,(geography\ indicator_i) + \delta_{8\text{-}16}\,(sector\ indicator_i) + \varepsilon_{it}$$

In the regression model, α indicates the constant, β indicates a variable of interest, δ indicates an explanatory variable and ε indicates the random error term. As for the index i indicates different firms and index t indicates different years.

The firm performance measure is either Tobin's q or the ROA, and differs over years. Firm ownership is a dummy variable, taking the value 1 when the firm is family owned and 0 when it is not.

Explanatory variables include size indicator δ_1, represented by the natural logarithm of the firms' total assets. This is the only explanatory variable that differs throughout time periods. The age indicator δ_2 is represented by the natural logarithm of the firm's age in 2018. Geography indicators $\delta_{3\text{-}7}$ are dummy variables for the different regions defined (the Netherlands, Belgium, DACH-region, France and others), and sector indicators $\delta_{8\text{-}16}$ are dummy variables for the nine different sectors.

A similar random effects model is used to determine the relationship between family- or non-family CEOs controlling the firm on performance:

(2) $$Firm\ performance_{it} = \alpha + \beta\,(family\ CEO_i) + \delta_1\,(size\ indicator_{it}) + \delta_2\,(age\ indicator_i) + \delta_{3\text{-}7}\,(geography\ indicator_i) + \delta_{8\text{-}16}\,(sector\ indicator_i) + \varepsilon_{it}$$

In this model the firm ownership dummy is replaced by the *family CEO* dummy, taking the value 1 when the CEO is a member of the family and 0 when this is not the case.

In a third model, both the *firm ownership* and *family CEO* dummies are included:

(3) $Firm\ performance_{it} = \alpha + \beta_1\,(firm\ ownership_i) + \beta_2(family\ CEO_i) + \delta_1\,(size\ indicator_{it}) + \delta_2\,(age\ indicator_i) + \delta_{3\text{-}7}\,(geography\ indicator_i) + \delta_{8\text{-}16}\,(sector\ indicator_i) + \varepsilon_{it}$

Table 4 presents the results of the first three regression models.

Table 4

Estimated effects of firm ownership and family CEOs on firm performance

The number of observations in each regression is 1,221. The left panel uses Tobin's q as performance measure; the right uses the ROA (based on net profit). Columns 1 and 4 use firm ownership as the variable of interest (regression 1), columns 2 and 5 use family CEO as the variable of interest (regression 2), and columns 3 and 6 use both (regression 3). The estimated effects on the ROA based on the EBITDA is used as a robustness check; these results are included in appendix 4.

The table shows the coefficient estimates with the st. deviation between brackets below. Significant estimates at the 0.05 level are indicated with a star (*), and at the 0.10 level with a double star (**).

	Tobin's q			**ROA (net profit)**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Intercept	2.347* (0.547)	2.267* (0.551)	2.281* (0.552)	0.123* (0.044)	0.115* (0.044)	0.116* (0.044)
Firm ownership	0.229* (0.088)		0.126 (0.141)	0.019* (0.007)		0.010 (0.011)
Family CEO		0.227* (0.087)	0.130 (0.140)		0.020* (0.007)	0.012 (0.011)
Ln (total assets)	- 0.070* (0.026)	- 0.066* (0.026)	-0.067* (0.026)	- 0.005* (0.002)	- 0.005* (0.002)	-0.005* (0.002)
Ln (firm age)	- 0.075 (0.057)	- 0.069 (0.057)	-0.075 (0.057)	- 0.005 (0.005)	- 0.005 (0.005)	-0.005 (0.005)
R-squared overall	0.100	0.100	0.102	0.127	0.128	0.129
Chi-squared	37.07	37.12	37.89	57.49	58.11	58.82

Columns 1 and 4 show that family owned firms perform significantly better than non-family owned firms. Tobin's q is on average 0.23 higher, and the realised ROA is on average 1.9%

higher. Also, columns 2 and 5 show that firms with a family CEO perform significantly better, with the same average difference in Tobin's q and a 2.0% higher ROA.

Besides that, firms with a larger asset base perform worse; in column 4 for example, a 1% higher asset base results in an on average 0.5% lower ROA. The same is true for firm age, but these coefficients are insignificant.

When comparing the results of regressions 1 and 2 (columns 1 & 2, 4 & 5), the coefficients are very similar. This is a logical consequence of the large similarities between the *firm ownership* and *family CEO* variables; the dataset only contains six non-family owned firms with a family CEO and 24 family owned firms with an outside CEO. This results in a correlation of 0.807 between the two variables.

Columns 3 & 6 show the results of regression 3, in which both the *firm ownership* and *firm CEO* variables are included. The coefficients for the explanatory variables, again, are similar to those of regressions 1 & 2. The regression does however not supply clarification on whether firm ownership or having a family CEO drives the better performance of family firms. The coefficient of the *family CEO* variable is slightly higher than that of *firm ownership*, but both estimates are insignificant. This is probably the result of the high correlation between the *firm ownership* and *firm CEO*; potential multicollinearity causes the significance of both variables to decrease. I expect that a dataset with a higher number of family owned firms without a family CEO and non-family owned firms with a family CEO would result in more significant estimates.

The estimates of the robustness test are very similar for regressions 1, 2 and 3, as can be seen in appendix 4. Only the intercept shows an exceptional difference, but this is caused by the difference in profit measurement; the EBITDA does not include interest, taxing, depreciation and amortization costs and is therefore naturally higher than the net profit.

The coefficients of the variables of interest, family ownership and family CEO, are positive and significant in using both ROA calculations. The results therefore suggest the same conclusions as the results when using the ROA based on net profits; both family owned firms and firms with a family CEO perform significantly better than firms that do not, but no conclusions can be drawn on whether this is the result of the ownership or of the appointed CEO.

Firms with a larger asset base generally tend to have higher amortization and depreciation costs, which only presses down on net profits and not on the EBITDA. Therefore, I expected the

negative coefficient of ln (total assets) to be smaller when using the EBITDA as a profitability measure. The opposite is true, however. A possible explanation is that larger firms are able to invest more in their assets, resulting in a higher quality and a longer depreciation and amortization period. This would result in relatively lower depreciation and amortization costs for firms with a large asset base, and explain the higher coefficient using the EBITDA-measure.

Second, the relationship between a family CEO's generation on firm performance is estimated. To analyse the generation types separately, two interaction terms are added to the model; one between *family CEO* and *first line CEO*, and one between *family CEO* and *higher line CEO*. This is possible as there are several firms that have a family CEO of whom the generation is unknown. Keeping the same explanatory variables, the new model is as follows:

(4) $$\textit{Firm performance}_{it} = \alpha + \beta_1 (\textit{family CEO}_i) + \beta_2 (\textit{family CEO} \times \textit{first line CEO}_i) + \beta_3 (\textit{family CEO} \times \textit{higher line CEO}_i) + \delta_1 (\textit{size indicator}_{it}) + \delta_2 (\textit{age indicator}_i) + \delta_{3\text{-}7} (\textit{geography indicator}_i) + \delta_{8\text{-}16} (\textit{sector indicator}_i) + \varepsilon_{it}$$

The results of regression 4 are displayed in table 5.

The estimated coefficients suggest that firms with a first line family CEO perform better than average, and firms with a family CEO from a higher line perform worse. The coefficients are however all insignificant; this makes it impossible to draw this conclusion with certainty.

The estimated coefficients from the robustness test again show much similarities with the results explained above. Just as in regressions 1 until 3, a similar difference in the intercept is registered. In this case of regression 4, however, the results using the ROA based on the EBITDA do not fully support the results using the net profit-based ROA; a small but positive estimate of the *higher line CEO* coefficient is estimated, instead of a negative effect in the regressions using the other two performance measures. This makes drawing conclusions even more doubtful.

Interesting to see is that the coefficients for the firm size indicators are very similar to those in regressions 1 to 3, but that the coefficient of the firm age indicator is much lower in this model. As 'young' firms are more likely to have first line family CEOs and older firms usually have family CEOs from a higher line, the relationship with firm age will partly be included in the *first line CEO* and *higher line CEO* dummies.

Table 5

Estimated effects of family CEOs and on firm performance

The number of observations in each regression is 1,221. The left column uses Tobin's q as performance measure; the right column uses the ROA (based on net profit). The estimated effects on the ROA based on the EBITDA is used as a robustness check; these results are included in appendix 4.

The table shows the coefficient estimates with the st. deviation between brackets below. Significant estimates at the 0.05 level are indicated with a star (*), and at the 0.10 level with a double star (**).

	Tobin's q	**ROA (net profit)**
Intercept	2.162* (0.561)	0.101* (0.045)
Family CEO	0.198 (0.209)	0.022 (0.016)
First line CEO	0.155 (0.245)	0.014 (0.019)
Higher line CEO	- 0.017 (0.211)	- 0.009 (0.017)
Ln (total assets)	- 0.067* (0.026)	-0.005* (0.002)
Ln (firm age)	- 0.046 (0.061)	-0.001 (0.005)
R-squared overall	0.104	0.135
Chi-squared	38.10	61.75

Conclusion

This paper is set up to investigate the differences in performance between family and non-family firms. The problem is approached by creating three sub-questions, which are answered seperately. Together, these form the main conclusion of this paper.

The estimates of the first regression model confirm my hypothesis for the first sub-question; the results show that the *family ownership* variable has a positive and significant relationship with the performance measures. Tobin's q is 0.23 higher for family firms, and the ROA is 1.9% higher. The results are confirmed by the robustness test. Therefore, I conclude that family owned firms outperform non-family owned firms.

In the same way, the second regression model confirms my hypothesis for the second sub-question, as the variable *family CEO* has a similar positive and significant relationship with the performance measures. Tobin's q is again 0.23 higher, and the ROA is 2.0% higher for firms with a family CEO. These results are also confirmed by the robustness test, so I conclude that firms with a family CEO perform better than firms with an external CEO.

Because of the high correlation between the *family ownership* and *family CEO* variables, it is impossible to distinguish which of the two variables is the main driver of the higher performance. When including both in the regression (model 3), both estimates are insignificant.

My third hypothesis stated that firms with a first-line family CEO outperform firms with a family CEO from a second- or higher line. The estimates suggest that this is the case, but unfortunately the estimated coefficients from regression model 4 are all insignificant. For this reason, hypothesis 3 is rejected.

As a general conclusion and to answer the research question, I conclude that family firms, either controlled by the founding family or having an active CEO from the founding family, perform better than non-family firms. This means that I can only partly accept my main hypothesis, as it has not been shown that family firms with the founder as CEO perform better than family firms with a CEO from a later generation.

Discussion

This paper has studied the difference in performance between family and non-family firms, but there are some limitations to this study.

One of these limitations concerns the used data. Unfortunately, I was unable to draw reliable conclusions on the effect of the family CEO's generation as the dataset contained a large correlation between the *family ownership* and *family CEO* variables; there were few family owned firms with an external CEO or non-family firms with a family CEO. Obtaining a larger dataset could potentially provide enough of these firms to be able to draw conclusions on this matter.

Besides that, the used proxy for the true value of firms in the calculation of Tobin's q (MVIC to EBITDA multiples) is not fully reliable. The used multiples are industry averages, whereas a firm's true market value and Tobin's q may be affected by several other factors, such as the degree of diversification (Lang & Stulz, 1994) or the amount of intangible capital (Megna & Klock, 1993).

One of the main limitations in academic literature is omitted variable bias. This is also an issue in this paper. Similar literature uses other firm-specific variables, such as growth opportunities (Anderson & Reeb, 2003), the capex-to-sales ratio (King & Santor, 2008) or board size (Yermack, 1996). Including more firm characteristics may provide a better goodness-of-fit of the model and more accurate estimates of the variables of interest.

Besides that, there may also be external factors affecting firm performance. The financial crisis occurred during the time frame analysed in this paper (2012-2017), which may have affected firm performance. Also other factors, such as exchange and inflation rates and average sector performance may affect profitability and firm value. Also these factors could be included in the model to realise more accurate estimates.

Another common limitation in empirical research is selection bias. This is also a limitation in my paper. The included firms are only active in a small number of sectors. Besides that, there is an overrepresentation of firms active in the food sector (food processing and food trading); these firms make up for 174 of the total 285 firms (61.1%). This may be an issue for the external validity of my research; the drawn conclusions may not be applicable on other sectors which are not examined in this paper.

A final limitation of this study is that the relationships found are correlational, not causal. There can be various reasons for the better performance of family firms in comparison with non-family firms. One example is that family owned firms that don't perform well might be sold by the founding families, whereas well-performing family firms remain owned by the founding family. Unfortunately, it is impossible to test for this using the current dataset. A suggestion for further research would therefore be to investigate this, and potential other causes of why family firms outperform non-family firms.

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Appendix 1 – Calculation of Tobin's q

Tobin's is calculated by dividing the true market value of a firm over its total asset value, where the market value is generally app roached by finding the trading value of a firm's shares on the stock market. This method in unsuitable, as almost none of the firms in the dataset are publicly traded. The total asset value is self-reported in the firm's financial statements.

Instead, the market value is approached by calculating the market value of invested capital (MVIC) based on EBITDA-multiples. The multiples used for each sector are extracted from market reports by Duff & Phelps, a global firm valuation and finance advisor. These reports contain MVIC to EBITDA market multiples for various European industries.

The Duff & Phelps market reports are published on a quarterly basis. For each year, the market multiples of the 31st of December are used as most firms report their total asset value on that date in their financial statements.

An overview of the selected industries matched to the sectors in the dataset and their respective MVIC to EBITDA ratios from the reports is provided in table I.

Table I

MVIC to EBITDA ratios

The first column shows the industries as defined by Duff & Phelps in their market reports, the second column shows the sectors as defined in the dataset, displayed next to the respective industries they are matched to.

Industries as defined by Duff & Phelps	Sectors as defined in dataset	MVIC to EBITDA multiples, year					
		2012	2013	2014	2015	2016	2017
Commercial services and supplies	B2B services	8.3	9.9	9.2	9.8	10.2	11.9
	Packaging	8.3	9.9	9.2	9.8	10.2	11.9
Consumer discretionary	Flower trading	8.5	11.0	10.1	10.9	10.5	11.6
Consumer staples	Retail	9.7	10.9	9.9	11.8	11.4	12.9
Food products	Food production	9.2	10.3	9.3	10.8	10.4	11.8
	Food trading	9.2	10.3	9.3	10.8	10.4	11.8
Materials	Agr. supplier	7.4	9.8	9.1	9.2	9.3	10.5
	Animal feed	7.4	9.8	9.1	9.2	9.3	10.5
Road & rail	Transport	6.6	8.2	7.3	8.3	7.6	10.0

Appendix 2 – Country overview

The dataset contains firms from mostly Western European economies; Australia, Austria, Belgium, France, Germany, Hungary, Italy, the Netherlands, Scandinavia, Spain, United Kingdom, and the USA. Although Australia and the United States are no Western European countries, they economies are considered to be similar to those in Western European countries. Besides that, all non-European firms included execute a significant proportion of their business in Western Europe.

The number of firms in the Netherlands, Belgium and France are deemed large enough to be included in the dataset separately. This is also the case for Germany, but as there is a limited number of Austrian firms included and the DACH-region (Germany, Austria & Switzerland) is usually seen as one market in the business environment, I have created a variable for the DACH-region instead of Germany on its own. Firms from all other countries are combined into one large group, receiving the 'others' label.

By using this division, there is no geographical dummy variable with an over- or underrepresentation of family owned firms. Besides that, the division of firms over countries will not have significant impact on the results as there are no main conclusions drawn on the difference in performance over individual sectors.

Table II

Division of firms over countries

The total number of firms is 285, of which 156 are family owned firms (54.7%), and 129 are non-family owned firms.

The first column represents the dummy variables as they are included in the dataset; the second column represents the country the firms are settled in.

Country dummy in dataset	Country of settlement	Family owned firms	Non-family owned firms	Total firms	% family owned firms
The Netherlands	***The Netherlands***	***102***	***82***	***184***	***55.4%***
DACH-region	Germany	16	15	31	51.6%
	Austria	3	2	5	60.0%
	Total	***19***	***17***	***36***	***52.8%***
Belgium	***Belgium***	***18***	***12***	***30***	***60.0%***
France	***France***	***6***	***3***	***9***	***66.7%***
Others	Spain	3	4	7	42.9%
	United Kingdom	2	4	6	33.3%
	Scandinavia	0	4	4	0.0%
	Italy	2	1	3	66.7%
	United States	2	1	3	66.7%
	Hungary	1	1	2	50.0%
	Australia	1	1	1	100.0%
	Total	***11***	***15***	***26***	***42.3%***

Appendix 3 – Hausman tests

As the variables of interest (*firm ownership*, *family CEO*) and most of the explanatory variables do not vary over time, a fixed effects model seems unsuitable. To confirm, a Hausman test is performed for each regression.

The null hypothesis of the Hausman test states that error terms ε are uncorrelated with the regressors. When this is the case, a random effects model is more efficient. The results of the Hausman test for every regression are displayed in table III.

Table III

Hausman test outcomes

The table shows the outcomes of the Hausman tests, and the corresponding p-values. Significance at the 0.05 level is indicated with a star (*), and at the 0.10 level with a double star (**).

Regression characteristics		**Hausman test outcomes**	
Performance measure	**Variables of interest**	**Chi-squared**	**Prob.**
Tobin's q	Family ownership	3.54	0.060**
	Family CEO	3.36	0.067**
	Family ownership & family CEO	3.39	0.066**
	Family CEO & first line CEO	3.42	0.064**
ROA (EBITDA-based)	Family ownership	0.52	0.472
	Family CEO	0.59	0.442
	Family ownership & family CEO	0.58	0.447
	Family CEO & first line CEO	0.56	0.455
ROA (net profit-based)	Family ownership	1.27	0.260
	Family CEO	1.17	0.279
	Family ownership & family CEO	1.18	0.277
	Family CEO & first line CEO	1.20	0.272

As the outcomes are insignificant (at the 0.05 significance level), the null hypothesis cannot be rejected and the random effects model is more efficient. This supports my earlier choice of not using a fixed effects model for the analysis.

It cannot be ignored that in the regressions in the top frame, using Tobin's q as the performance measure, the p-values approach the 0.05 significance level. When executing these regressions with a fixed effect model, however, all coefficients besides *ln (total assets)* are omitted because of collinearity, making it impossible to draw any conclusions on the variables of interest.

Appendix 4 – Robustness checks

The prevailing method to calculate the ROA is dividing a firm's net profit by the total assets. An alternative calculation is to use the EBITDA (earnings before interest, taxes, depreciation and amortization) over the firm's total asset base. This method uses operating revenue instead of net profit, and is less common. It is therefore being used as a robustness check. Table IV displays the coefficient of regression 2 using both ROA calculation methods.

Table IV

Comparison of the effects of firm ownership and family CEOs on different ROA-bases

The number of observations in each regression is 1,221. The left panel uses the ROA based on net profit as performance measure, the right panel uses the ROA based on EBITDA as a robustness check. In columns 4 and 7 family ownership is the variable of interest (regression 1), and in columns 5 and 8 family CEO is the variable of interest (regression 2). Columns 6 and 9 include both (regression 3).

The table shows the coefficient estimates with the st. deviation between brackets below. Significant estimates at the 0.05 level are indicated with a star (*), and at the 0.10 level with a double star (**).

	ROA (net profit)			**ROA (EBITDA)**		
	(4)	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Intercept	0.123* (0.044)	0.115* (0.044)	0.116* (0.044)	0.311* (0.054)	0.304* (0.055)	0.305* (0.055)
Family ownership	0.019* (0.007)		0.010 (0.011)	0.021* (0.008)		0.012 (0.014)
Family CEO		0.020* (0.007)	0.012 (0.011)		0.022* (0.009)	0.012 (0.014)
Ln (total assets)	- 0.005* (0.002)	- 0.005* (0.002)	-0.005* (0.002)	- 0.010* (0.003)	- 0.010* (0.003)	- 0.010* (0.003)
Ln (firm age)	- 0.005 (0.005)	- 0.005 (0.005)	-0.005 (0.005)	- 0.006 (0.006)	- 0.005 (0.006)	-0.006 (0.006)
R-squared overall	0.127	0.128	0.129	0.095	0.095	0.097
Chi-squared	57.49	58.11	58.82	38.77	38.79	39.48

A robustness test using the ROA based on the EBITDA is also executed on regression 4. These results can be seen in table V.

Table V

Comparison of the effects of firm ownership and family CEOs on different ROA-bases

The number of observations in each regression is 1,221. The top row indicates which performance measure is used in the regression.

The table shows the coefficient estimates with the st. deviation between brackets below. Significant estimates at the 0.05 level are indicated with a star (*), and at the 0.10 level with a double star (**).

	Tobin's q	**ROA (net profit)**	**ROA (EBITDA)**
Intercept	2.162* (0.561)	0.101* (0.045)	2.293* (0.056)
Family CEO	0.198 (0.209)	0.022 (0.016)	0.015 (0.021)
First line CEO	0.155 (0.245)	0.014 (0.019)	0.020 (0.024)
Higher line CEO	- 0.017 (0.211)	- 0.009 (0.017)	0.002 (0.021)
Ln (total assets)	- 0.067* (0.026)	-0.005* (0.002)	- 0.009* (0.003)
Ln (firm age)	- 0.046 (0.061)	-0.001 (0.005)	- 0.003 (0.006)
R-squared overall	0.104	0.135	0.099
Chi-squared	38.10	61.75	39.91