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Master Thesis

Private Family Firms and Distribution of Control: Evidence from Norway

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Abstract

Using a sample of 1 701 newly started Norwegian private family firms, where the CEO also is from the founding family, (family firms), in the period from 2000 through 2015, this thesis investigates the survivability, profitability and growth of these firms. Comparing the results of firms with a high concentration of control with firms with low concentration of control. I find that family firms have a higher survival rate the first 6 years of business than that of new firms where no family has more than 50% control (non-family firms). However, the probability of survival converges towards the same value over time. When investigating profitability, I find that family firms takes shorter to become profitable, but non-family firms will catch up and ultimately become more profitable. In terms of growth, I find strong evidence for non-family firms having higher and more rapid growth than family firms. There has been increasing demands for research on private family firms, and with this thesis I wish to supplement existing research and set the ground for further research on private family firms. My thesis provides evidence towards empirical research, proving owners of private family firms being less diversified and more risk averse than owners of non-family firms.

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1. Introduction and Motivation

Recent research is showing that the majority of firms are controlled by their founders or their founders' descendants (La Porta, Lopez-De-Silanes, & Shleifer, 1999; Morck, Stangeland, & Yeung, January 2000; Claessens, Djankov, & Lang, 2000; Faccio & Lang, 2002). Hence, family firms have gained increasing attention in the economics and finance literature. When considering privately held firms, as most of the family firms are privately held, almost all are controlled by the founding family, and in publicly traded firms this is also a dominant ownership structure (Burkart, Panunzi, & Shleifer, 2003).

Today, much of the existing theory-based research on family firms have been focusing on the comparison between family and non-family firms. Increasing demands have been made for research that contributes to our understanding of private family firms (Chrisman, Sharma, & Taggar, 2007). One article or even a compilation of articles is not sufficient to answer all questions which is needed for the development of a theory of the family firm. The majority of prior research on family firms have been focused on public family firms, most likely as the data is more accessible. As we know that most family firms are private, studies of public family corporations is biased since it does not reflect the behavior of private companies (Langli & Che, 2015).

Prior studies that represent advances toward a greater understanding of private family firms does exist. These studies typically attempt to address questions family firms deals with in their day-to-day business and they usually employ small data samples (Langli & Che, 2015). Hence, they could be subject to sample selection bias.

Over time, as the firm grows in size and need more shareholders to become involved, it may be advantageous to align interests between family and outside shareholders. One of the central issues surrounding family firms relates to CEO succession decisions. CEO transitions will most likely have a key role in determining the firm's prospects, and controlling families often struggle between hiring a family member or an non-family CEO (Bennedsen, Nielsen, Perez-Gonzalez, & Wolfenzon, 2007). Entrepreneurship theory has focused on failure of new firms (Artinger & Powell, 2016; Michael & Combs, 2008; Shepherd,

Douglas, & Shanley, 2000), while governance theory argues that family firms are more successful (Berzins & Bøhren, 2013). With this thesis I will provide my contribution to the understanding of private family firms by investigating the survivability, profitability and growth.

I use rich panel data on Norwegian firms to study a sample of 1701 newly started private family firms. My thesis brings evidence for that family firms have a higher probability of survival the first 6 years of business than non-family firms. In terms of success, family firms take shorter to become profitable. However, non-family firms seem to be more profitable in the long run as well as having both a higher ang quicker growth rate.

The remainder of this thesis is organized as follows: Section 2 provides a review of existing literature on the topic, in section 3 I present the data and descriptive statistics, in section 4 I present the research method used in this thesis, in section 5 I present my findings and results and in section 6 I give my concluding remarks.

2. Literature Review

As mentioned, there are increasing demands for research that contributes to our understanding of private family firms. The first ones to advance the idea of ownership and performance relationship were Berle & Means (1932), as in the 1930s they noticed a trend of increased ownership diffuseness. What they found was an inverse relationship between ownership diffuseness and firm performance, this would later become known as the Berle & Means thesis. This thesis has become an outspring for several empirical studies on the relationship between ownership concentration and firm performance. Berle & Means (1932) proved that control has moved from being concentrated to dispersed in large U.S. corporations and that the professional managers exercise nearly full control. They noticed that large U.S. firms were controlled by their managers, not by their many small shareholders, and were the ones to introduce the idea of the separation between ownership and control.

2.1. Agency Theory

In the classical model of the firm, the owner's main function was to provide capital, while the corporate governance model treats ownership as a governance mechanism where owners are able to shape the firm's behavior and how it creates shareholder value. The existence of outside shareholders, as Berle & Means (1932) introduced, leads to an agency relationship between owners and managers (Jensen & Meckling, 1976). Agency theory, as first introduced by Jensen & Meckling (1976), has been the dominant theory in corporate governance. This theory comes in to play when a firm controlled by the founding family and the founding family also has CEO, decides to hire a non-family CEO. In their study, Fama & Jensen (1983), specify that in situations where there are diverging goals between the owners and management of a firm as a result of separation of the firm's ownership and management, agency theory is applied. However, for private family firms, which have more closely held ownership and close relations between family owners and managers, the principal-agent conflict is often not considered as a main concern. Hence, the dynamics of a private family firm cannot be fully explained by agency theory. Based on a review of 217 refereed articles on family business studies, Sharma (2004) shows that stewardship theory proves to be a useful framework for examining governance issues in family firms. As compared to agency theory, stewardship theory predicts smaller boards in family firms with high levels of goal alignment between owners and managers (Gubitta & Gianecchini, 2002). The distribution and use of ownership and control can determine the power of the different stakeholders, and there are several studies that has found a positive relationship between family ownership and firm performance. However, that cannot be said about studies in private family firms.

2.2. Ownership succession

Burkart, Panunzi & Shleifer (2003) presented a model of succession in a firm owned and managed by its founder. The model presents a manager with the decision between hiring a professional manager or leaving his/her heir to the management of the firm, and the decision of what fraction of the firm to float on the stock exchange. They assume that a professional is a better manager than the heir and describes how the founder's decision is shaped by the legal environment. For nearly every entrepreneurial firm that does not fail there comes a point in time

when the founder no longer wishes to manage the firm. This could possibly happen when the firm is young, as is the case for many high technology start-ups in the U.S. (Burkart, Panunzi, & Shleifer, 2003). Alternatively, the founder may retire or cut the workload later in the lifespan of his firm and then, either appoint a professional or an heir as a successor. Ownership and management become separated first when control is turned over to a professional, as pointed out by Jensen & Meckling (1976). In Western Europe, in contradiction to the U.S., significant ownership typically stays with the family after the founder retires (Burkart, Panunzi, & Shleifer, 2003).

Burkart et al. (2003) also presented three broad theories of the benefits to a family of preserving control. Firstly, that there is a significant amenity potential of family control. Hence, the founder may derive pleasure from having his/her child run the firm with the family name. with a large amenity potential, families would try to maintain control as long as they are able to. Secondly, the name itself may be a carrier of a reputation, both in economic and political markets. Hence, the family may stand for quality or for political connections. The final reason is the possibility of expropriation of outside investors that comes with control.

The model presented by Burkart et al. (2003) has a timeline divided in four dates. At the starting point, date zero, the founder decides whether to appoint a professional manager to run the firm or keep management within the family. Simultaneously, the founder decides what fraction of shares, $1 - \alpha$, to sell to dispersed shareholders. At date one, if the founder appoints a professional manager, the professional manager either accepts or rejects the offer to run the firm. At date two, the founder chooses monitoring intensity. Finally, at date three, the firm generates revenues that depend on the identity of the manager. There are two interpretations of this model. Firstly, the choice is between the founder himself and a professional outsider. Secondly, the founder definitely retires from management and chooses either a professional manager or his/her heir as the successor. The presented model and their research on the subject shows that the optimal solution for the founder is to hire the best professional manager and sell off the entire firm in the stock market, that is in the regimes with the strongest legal protection of minority shareholders. This will hold, unless the founder's amenity potential of keeping control is huge.

2.3. Ownership dynamics

Another study on ownership dynamics, by Helwege, Pirinsky & Stulz (2007), examines the evolution of insider ownership in firms from 1970 to 2001 to understand how U.S. firms become widely held. They follow a large sample of firms over time to understand why and how firm ownership becomes more dispersed following an initial public offering (IPO). The database includes all firms that completed an IPO from 1970 to 2001. By defining insider ownership as the ratio of shares held by insiders over the total number of shares outstanding, their analysis involves tracking the evolution of firms' insider ownership as the firms age.

Helwege et al. (2007) managed to show that half of the sampled firms have less than 20 percent insider ownership ten years after the IPO. This trend gives support to the findings of Berle & Means (1932) study. The authors used two different approaches to understand why firms become widely held. By the first approach, they investigate determinants of large decreases in ownership and it shows that a firm experiences a large decrease mostly because its common stock has a good market. By the second approach, they estimated a hazard model that allowed them to understand the determinants of a firm's conditional probability of becoming widely held. Again, they found that firms of high value and turnover are more likely to become widely held. Conclusively, the results show that the market for a firm's stock and the respective stock's market performance were critical determinants of the evolution of its ownership. The firms that do not experience good performance or stock market liquidity do not experience large decreases in ownership and have lower probability of becoming widely held (Helwege, Pirinsky, & Stulz, 2007).

2.4. Entrepreneurship literature

Berzins & Bøhren (2013) found, by studying a sample of Norwegian family firms, that family firms are run more profitable than other firms. However, there is a long-running debate in the entrepreneurship literature on the phenomenon of failure (Khelil, 2016). A large amount of research has been developed to explain the causes of business failure or survival (Artinger & Powell, 2016; Michael & Combs, 2008; Shepherd, Douglas, & Shanley, 2000). There is however dispute

amongst research scholars about how high the failure rate for new venture is. One estimate of the failure rate for new ventures, according to the U.S. Bureau of Labor Statistics, 20% of new businesses fail during the first two years of being open, 45% during the first five years, and 65% during the first ten years. Only 25% of new businesses make it to 15 years or longer (U.S. Bureau of Labor Statistics, n.d.).

2.5. Contribution

Similar to Berzins & Bøhren (2013) and Artinger & Powell (2016), Michael & Combs (2008) and Shepard et al. (2000), I will look to explain the survivability, profitability and growth of family firms and compare the findings to non-family firms. I will see if ownership concentration in family firms has an effect on the profitability and growth within the family firms.

I use a sample of private family firms that is representative for the entire industrial sector of the Norwegian economy, where the size and quality of my data set is unique. The database consists of rich panel data on all main firm characteristics. To my knowledge, this thesis is the first of its kind in focusing specific on the survivability, profitability and growth of Norwegian family firms. In addition, it serves as a building block for further research on private family firms.

3. Data and descriptive statistics

3.1. Data

My data, made available by the Centre for Corporate Governance Research (CCGR) at BI Norwegian Business School, consists of an unbalanced panel of firms. The data panel consists of Norwegian non-listed companies and includes accounting data and governance data on ownership. The sample period spans from 2000 to 2015.

In this thesis I study ultimate ownership, a concept advocated by La Porta et al. (1999). After accounting for the complexities of ownership structures, this method identifies the true owners of a firm, as opposed to direct ownership. Hence, ultimate ownership provides a more accurate image of who owns the private firms

in my sample. A weakness of using ultimate ownership is that the resulting share of the largest owner have the possibility to exceed 100% due to errors in the summing of control stakes.

Panel data is also preferred in this thesis because of its unique characteristics, which make it suitable for exploring subjects as growth, change, persistence and developmental processes. However, the disadvantages come from subject attrition and relatively short time span (Pedhazur & Schmelkin, 1991).

3.2. Sample selection

The data sample obtained from CCGR originally included 1,334,808 observations on Norwegian non-listed firms from 2000 to 2017. In this thesis I am focusing on firms starting their life in 2000, following their development, excluding 2016 and 2017, as no accurate data were available for 2016. After omitting observations of firms more than one year of age, firms with an average revenue of zero, firms with zero employees, firms with an average total assets of zero and firms who are not independent, my data sample consists of 1,701 family firms where the founding family has 100% control and CEO is of family, and 900 firms where no family has more than 50% control. This leads to a total of 11,235 observations on the family firms and 5,910 observations on the non-family firms.

3.3. Descriptive statistics

Table 1, on the next page, gives an overview of the decline in firms in the sample period and the distribution of the annual ownership concentration across firms.

Table 1.
Ownership concentration (percentage held by the largest family) by year

Year	No. of firms	Ownership concentration	CEO is of family	Bottom percentile	Middle percentile	Top percentile
2000	1701	100	1	100	100	100
2001	1447	99,04	0,98	99,24	99,20	98,68
2002	1206	97,50	0,97	98,17	97,90	96,45
2003	1059	96,82	0,95	98,28	96,51	95,69
2004	951	96,58	0,96	97,82	96,96	94,98
2005	846	95,33	0,95	97,96	95,87	92,17
2006	614	82,67	0,93	84,85	82,79	80,53
2007	563	94,39	0,94	96,20	94,95	92,09
2008	486	94,56	0,94	95,74	94,56	93,00
2009	420	94,79	0,94	96,23	94,96	93,25
2010	388	94,13	0,93	96,00	93,26	93,20
2011	365	93,89	0,93	96,55	92,91	92,33
2012	335	91,62	0,93	94,65	90,65	89,17
2013	312	92,60	0,92	95,69	91,12	91,11
2014	286	92,24	0,92	94,25	91,77	90,83
2015	256	92,24	0,93	93,22	91,51	92,15
Overall	11235	94,28	0,95	95,93	94,06	92,85

Table 1 shows summary statistics for the decline in firm-year observations and ownership concentration data by year. The panel is constructed by applying a set of filters to improve data integrity for the purpose of this thesis. I impose a non-zero condition on revenues, total assets and employees. I exclude firms that are not independent, more than one year of age in 2000 and firms which I have missing values on any of the variables by omitting these observations in the model. Outliers are not controlled for as the sample is of a significant size. After filtering, the sample consists of 1 701 different new firms in year 2000, resulting in 11 235 firm-year observations. The percentage held by the largest owner is recorded at the end of the calendar year. I report the annual mean ownership concentration, mean observations where the largest family also has CEO (1 if largest family has CEO, 0 if not) and percentiles bottom, middle and top based on the firm performance measured by revenue.

During the sample period the average ownership concentration constantly decreased together with the decline in firm-year observations. This trend can also be observed in the bottom, middle and top percentile firms. The average observation on CEO belonging to the controlling family is also constantly decreasing. The abrupt changes in observations from 2005 to 2006 is partially a result of the Norwegian tax reform from 2006, where taxes on dividends payed out to private persons increased, leading business owners to create holding companies to transfer dividends bypassing the taxes (Finansdepartementet, n.d.).

The average firm in the sample has a high ownership concentration, of 94.32%. However, the overall mean value for family CEO is slightly higher at 95%. The reported percentiles I present supports empirical findings that usually show an inverse relationship between performance and ownership concentration (Demsetz

& Villalonga, 2001). When firms exhibit good financial results, owners relinquish more control and have better opportunities to cash out, leading to a decrease in concentration. Hence, the table shows lower ownership concentration in the top percentile compared to the middle and bottom percentiles (92.85%, 94.06% and 95.93% respectively).

During the sample period there is also changes in firm characteristics, focusing on financial characteristics as reported in table 2.

Table 2.
Financial characteristics of family firms by year

Year	No. of owners	Paid-in capital	CEO salary	Dividends	Revenue	ROA	ROE	No. of employees
2000	1,59	190279,25	204071,72	44492,65	4137440,33	-0,1165	0,5091	4,58
2001	1,60	202749,83	259002,76	101192,12	5132379,41	0,0199	0,5091	5,15
2002	1,62	207467,66	277155,89	215838,31	5831833,33	0,0205	0,5091	5,43
2003	1,63	241839,47	294058,55	223547,69	6188882,91	-0,0105	0,4089	5,60
2004	1,63	229189,27	311973,71	334508,94	6810256,57	0,0818	0,7649	5,80
2005	1,60	224537,83	319594,56	31060,28	6695643,03	0,0930	0,5091	5,62
2006	1,38	239819,22	348486,97	110224,76	7553285,02	0,0685	0,3615	6,03
2007	1,67	250603,91	381937,83	86321,49	8667381,88	0,1128	0,5099	6,22
2008	1,66	250810,70	405343,62	94135,80	9382761,32	0,0892	0,4427	6,35
2009	1,70	272171,43	426042,86	111573,81	9526452,38	0,0030	0,3248	6,59
2010	1,70	302755,15	441451,03	104064,43	9310224,23	0,0717	0,2731	6,73
2011	1,66	307263,01	463197,26	139873,97	9993964,38	0,0910	0,5091	6,79
2012	1,64	283635,82	491919,40	175946,27	10808095,52	0,0992	0,2719	6,99
2013	1,63	290801,28	505826,92	195032,05	10708282,05	0,0811	0,5091	7,05
2014	1,59	306206,29	543447,55	194951,05	11472650,35	0,0856	0,4765	7,39
2015	1,59	345183,59	564285,16	205414,06	11904261,72	0,0985	0,6029	10,36
Overall	**1,62**	**259082,11**	**389862,24**	**148011,11**	**8382737,15**	**0,0555**	**0,4682**	**6,42**

Table 2 shows summary statistics for the financial characteristics data by year and is constructed applying the same filters as in Table 1. Table 2 reports average statistics by year; number of owners per firm, paid-in capital, CEO salary, dividends, revenue, return on assets (ROA), return on equity (ROE) and number of employees, respectively. ROA is calculated as net income to total assets. ROE is calculated as net income to total equity. *Overall average of ROE is calculated by omitting extreme values resulting in an overall average of 41.43%.

During the sample period number of owners has been relatively stable, Table 2 is only reporting a minor overall average increase at 1.62 compared to the average of 1.59 in 2000. However, in number of employees there is a constant increase in observations which is understandable as the surviving firms are growing in size, reporting a change from 4.58 employees per firm in 2000 to 10.36 employees per firm in 2015. I will go more in depth on the observations of the financial characteristics as I provide my results on the research. However, Table 2 provides

a positive trend in the yearly observations of the financial characteristics. Table 2 gives further evidence to the Norwegian tax reform of 2006 influencing firm/owner behavior, looking at the changes in observations of dividends in 2005 and 2006.

Table 3.
Unsuccessful family firms by year

Year	Time of failure	Frequency
2000	0	0
2001	1	254
2002	2	241
2003	3	147
2004	4	108
2005	5	105
2006	6	232
2007	7	51
2008	8	77
2009	9	66
2010	10	32
2011	11	23
2012	12	30
2013	13	23
2014	14	26
2015	15	30
Overall		**1445**

Table 3 shows the frequency of the unsuccessful firms started by one family with 100% control where CEO is of the founding family. Table 3 is constructed applying the same filters as Table 1, assuming firms disappearing from the sample are unsuccessful/due to failure.

During the sample period the frequency of unsuccessful firms are declining. The overall frequency of 1 445 unsuccessful firms are indicating that out of the total 1 701 firms started by a family with 100% control and the CEO is of the founding family, only 15.05% made it to year 2015. Table 3 also reports an abrupt change in observations in year 2006. Interestingly there is a higher frequency in 2008, indicating the effect the global financial crisis had on the success rate on firms in my sample, as investigated by Klapper & Love (2011).

4. Methodology

In order to investigate survivability, profitability and growth in my sample, I apply a number of performance measures and a survival model that are well-established in the literature. This section presents a review of this methodology, beginning with the survival model, before I move on to the profitability and growth measures.

4.1. Survival analysis

A survival analysis is a time-to-event analysis. In survival analysis, interest centers on a group or groups of individuals for each there is defined a point event, often called failure, occurring after a length of time called failure time (Cox & Oakes, 1984). To determine failure time precicely, according to Cox & Oakes (1984) says there are three requirements: firstly, a time origin must be unambiguously defined. Secondly, a scale for measuring the passage of time must be agreed. Finally, the meaning of failure must be entirely clear. Table 3 provides my data for these requirements. Survival analysis is properly thought of as a univariate technique because there is only a single response variable, even though there may be many explanatory variables (Cox & Oakes, 1984). Survival data usually consists of the time until an event occurs and the censoring information for each individual or component. However, survival data might also include the number of failures at a certain time, reported in Table 3.

The survival function is the probability of survival as a function of time. It provides the probability that the survival time of an individual exceeds a certain value. As the cumulative distribution function, $F(t)$, is the probability that the survival time is less than or equal to a given point in time, the survival function for a continuous distribution, $S(t)$, is the complement of the cumulative distribution function:

$$S(t) = 1 - F(t)$$

The survivor function is related to the hazard function, which I am also implementing in my research. The hazard function, $h(t)$, gives the instantaneous failure rate of an individual conditioned on the fact that the individual survived until a given time:

$$h(t) = \lim_{\Delta t \to 0} \frac{P(t \leq T < t + \Delta t | T \geq t)}{\Delta t}$$

where Δt is a very small time interval. The hazard rate is sometimes called the conditional failure rate, and the hazard function always takes a positive value. However, these values do not correspond to probabilities and therefore might be greater than 1.

Both the survivor function and hazard function are used in this thesis to analyze the survivability of the family firms in my sample. I use the built-in distribution fitter in Matlab to generate the models by applying the data seen in Table 3 and Appendix 3 to perform a survivability analysis on the family firms and non-family firms.

4.2. Profitability and growth analysis

The financial characteristics in Table 2 and Appendix 2 gives a first indication on the profitability and growth on the firms in my sample. For assessing the profitability, I am reporting two of the most common profitability measures, ROA and ROE. ROA is an indicator of how profitable the firms are relative to their total assets and gives the idea as to how efficient the firms are at using their assets to generate earnings. A higher ROA indicates more asset efficiency. Whereas ROA measure profitability relative to funds raised by both debt and equity financing, ROE focuses only on the profitability of equity investments and is one of two basic factors in determining a firm's growth rate of earnings (Bodie, Kane, & Marcus, 2018). ROA and ROE are linked, but their relationship is affected by the firm's financial policies. To evaluate ROA and ROE in the family firms I am using the yearly average values for comparison as seen in Table 2., looking at previous years as a benchmark, whilst also comparing it to the values reported by the non-family firms as seen in Appendix 2.

For assessing the growth, I am reporting growth of sales, total assets and employees as seen in Table 2 and Appendix 2, using previous years as benchmarks.

4.3. Fixed effects linear regression model

The descriptive evidence in Table 2 and Appendix 2 gives a good indication for the profitability and growth analysis. In this section I present an econometric

model for explaining the associations between the variables in my data sample and the profitability and growth on the sampled family firms. I approximate the observable characteristics with the variables measured as described in the previous section. The unobservable factors are referred to as unobservable firm heterogeneity, and a series of examples that illustrates this concept is provided by Himmelberg et al. (1999). However, a longitudinal design enables me to control for the unobserved firm heterogeneity.

There are both advantages and drawbacks of working with panel data. Baltagi (2005) points out that firstly, such data allow me to eliminate potential bias by controlling for individual heterogeneity. Secondly, panel data contain more information and variability and lead to less collinearity among the variables, more degrees of freedom and more efficiency. Lastly, a panel is more suited for investigating the dynamics of adjustments, by allowing for the identification and measurement of effects that are unobservable in cross-section or time-series alone. The disadvantages, however, lies in a usually short time-series dimension, as is the case in this thesis. Also, there is a risk of cross-section dependence, which could affect inferences.

In general terms, a linear model of both the profitability- and growth measures can be written as:

$$y_{it} = \alpha + \beta \cdot X_{it} + u_{it},$$

where y_{it} is the variable for profitability/growth for each firm i in year t, X_{it} is the set of explanatory variables and u_{it} stands for the error component. In the form written above, the explanatory variables are observed firm characteristics. A bias in the OLS estimator would be the result of not accounting for firm heterogeneity, because the unobserved effects will be captured in the residuals:

$$u_{it} = \mu_i + v_{it},$$

where v_{it} stands for stochastic disturbances and μ_i is a time invariant parameter specific to each firm. One can include a matrix of individual dummies, Z_{it}, in the regression and estimate each μ_i, by assuming that μ_i elements are fixed parameters:

$$y_{it} = \alpha + \beta' \cdot X_{it} + \mu' \cdot Z_{it} + v_{it}$$

The above is called a fixed effects estimator and Baltagi (2005) explains that such a model is appropriate when I am interested in the behavior of a specific number of firms.

Two main econometric models are available for the purpose of this thesis as I am working with panel data, fixed effects and random effects. The fixed effects model assumes that the firms in my sample are fixed and they form the population I am interested to draw inferences upon. By keeping the firms fixed, translates to that I am not interested in the variation between them, rather the variation within them. Hence, the inferences I make apply to the specific sample I am looking at. In the random effects model, however, the firms would be randomly drawn from the population, and I rely on the variance between them in order to reach conclusions on the entire population. My data includes more or less all Norwegian private firms and my specific sample include almost all family firms started in the year 2000, thus the fixed effects model will provide an accurate description of the present relationships between variables. However, the inferences drawn from estimating the model may no longer be valid if the number and average characteristics of firms fluctuate significantly in the future.

For the variables in my thesis, the model for profitability and growth translates into the following simplified form:

Profitability:

$$ROA_{it} = \alpha + \beta_1 LargestFamilySumUltOwnership_{it} + \beta_2 LargestFamilyHasCEO_{it} + \beta_3 CompanyAge_{it} + \beta_4 LargestFamilyNumberOfOwners_{it} + v_{it}$$

$$ROE_{it} = \alpha + \beta_1 LargestFamilySumUltOwnership_{it} + \beta_2 LargestFamilyHasCEO_{it} + \beta_3 CompanyAge_{it} + \beta_4 LargestFamilyNumberOfOwners_{it} + v_{it}$$

Growth:

$$Revenue_{it} = \alpha + \beta_1 LargestFamilySumUltOwnership_{it} + \beta_2 LargestFamilyHasCEO_{it} + \beta_3 CompanyAge_{it} + \beta_4 LargestFamilyNumberOfOwners_{it} + v_{it}$$

$$TotalAssets_{it} = \alpha + \beta_1 LargestFamilySumUltOwnership_{it} +$$
$$\beta_2 LargestFamilyHasCEO_{it} + \beta_3 CompanyAge_{it} +$$
$$\beta_4 LargestFamilyNumberOfOwners_{it} + v_{it}$$

$$NumberOfEmployees_{it} = \alpha + \beta_1 LargestFamilySumUltOwnership_{it} +$$
$$\beta_2 LargestFamilyHasCEO_{it} + \beta_3 CompanyAge_{it} +$$
$$\beta_4 LargestFamilyNumberOfOwners_{it} + v_{it}$$

In the profitability and growth regressions I look for any explanatory variable out of the ownership variables that is statistically significant in explaining variations of both ROA and ROE. According to Montgomery & Runger (1999), the test for significance of regression determines whether a linear relationship exists between the response variable, y_{it}, and a subset of the regressor variables, X_{it}. The explanatory variables are chosen to see whether the specifics of family owned firms have any explanatory power over the response variables. I run the regressions for profitability in year 2010 and for growth in 2005.

5. Results

In this section I am reporting the results given by the research described in the previous sections. I firstly report the results from the survival analysis, then I move over to the results from the profit and growth analysis and discuss the findings from the linear regression analysis. Finally, I report the validity of these results.

5.1. Survival analysis

The results from the survival analysis are clear. During the first 1 to 5 years the probability of survival drops at a higher rate, compared to the last 7 to 15 years, as seen in Figure 1 below. Year 6 is an exception with a much higher drop rate of probability of survival, and the reason for this observation was discussed in section 3.3 being the new Norwegian tax reform of 2006.

Figure 1.
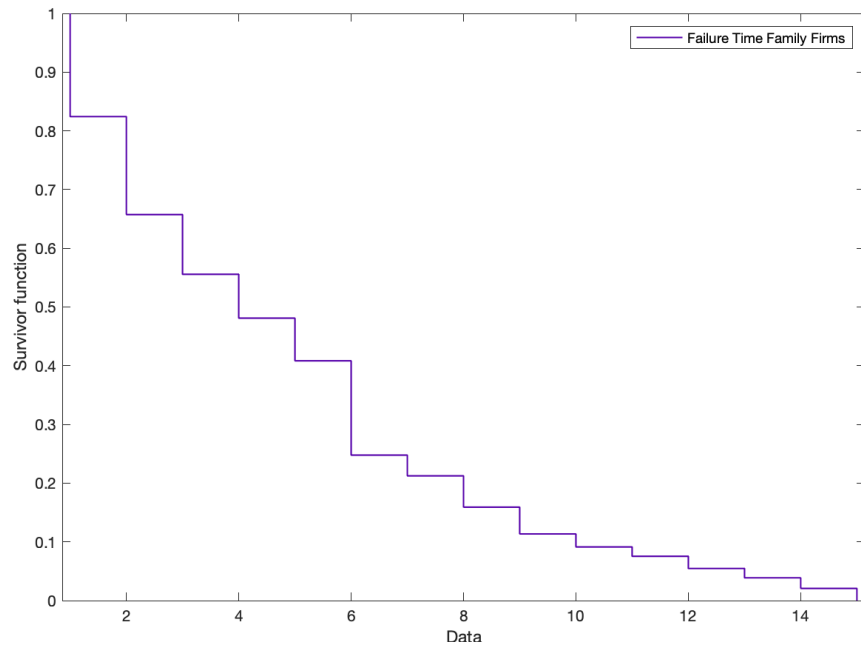**Survival analysis of family firms**

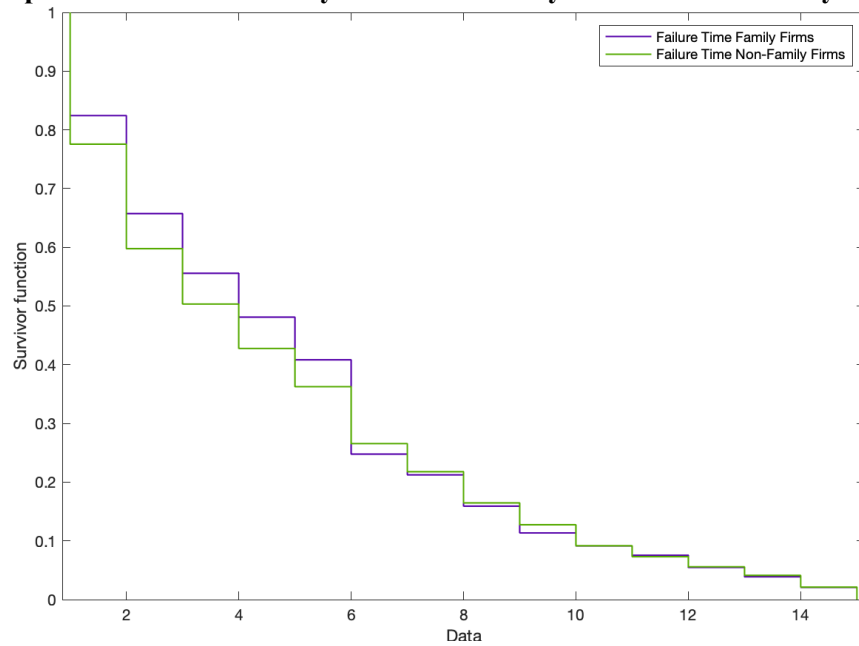
Figure 1 shows the probability of survival for family firms as a function of time. The figure is constructed with the in-built distribution fitter within Matlab by applying the data shown in Table 3. It reports the probability of survival as a number between 0 to 1 over the sample timespan of 15 years. The probability of surviving the following year 1 to 14 is: 1=82.24%, 2=65.74%, 3=55.57%, 4=48.10%, 5=40.83%, 6=24.78%, 7=21.25%, 8=15.92%, 9=11.35%, 10=9.16%, 11=7.54%, 12=5.58%, 13=3.88% and 14=2.12%.

From year 1 to 5 there is a decrease in the probability of survival for the family firms from 100% to 40.83%. That is a difference of 59.17 percentage points. Compared to year 6 to 14 showing a decrease of 22.66 percentage points. That is excluding the abrupt drop from year 2005 to 2006. These findings give more depth to the understanding of family firms by comparing the results of the family firms to the results of the non-family firms as shown in Figure 2 on the next page.

Figure 2.
Comparison of survival analysis between family firms and non-family firms

Figure 2 shows the probability of survival for both family firms and non-family firms as a function of time. The figure is constructed with the built-in distribution fitter within Matlab applying the data shown in Table 3 and Appendix 2. It reports the probability of survival as a number between 0 to 1 over the sample timespan of 15 years. The probability for non-family firms of surviving the following year 1 to 14 is: 1=77.56%, 2=59.76%, 3=50.33%, 4=42.76%, 5=36.26%, 6=26.56%, 7=21.78, 8=16.47%, 9=12.75%, 10=9.16%, 11=7.30%, 12=5.58%, 13=4.12% and 14=2.12%. The percentages for family firms are given in Figure 1.

The probability of the non-family firms surviving the first 5 years are much lower than compared to the family firms. The decrease in year 1 to 5 for the non-family firms are 63.75 percentage points which is significantly higher than that of family firms. These results support the findings of Berzins & Bøhren (2013) that family owners are undiversified. Hence, they carry a larger economic risk by having more of their capital invested in one firm. This will again result in family firms being more risk averse than non-family firms, taking on less riskier projects. Indicated in Figure 2, as family firms have a higher probability of survival the first years of the sample period. Also, the family owners will be more willing to hold on to their family firm in bad times as most of their capital is invested in the family firm.

In Figure 3, on the next page, I report the results of the hazard analysis and comment briefly on the findings.

Figure 3.
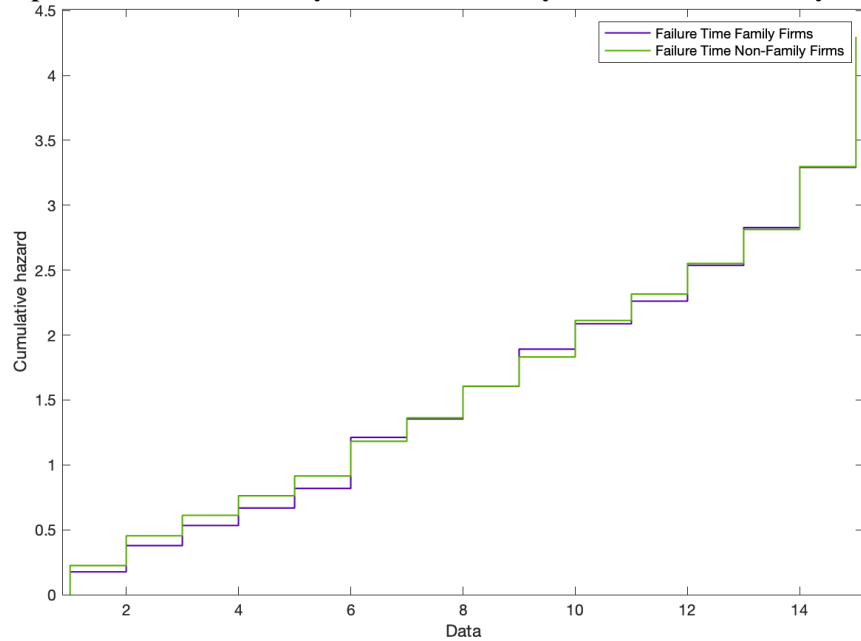**Comparison of hazard analysis between family firms and non-family firms**

Figure 3 shows the hazard rate for both family firms and non-family firms as a function of time. The figure is constructed with the built-in distribution fitter within Matlab applying the data shown in Table 3 and Appendix 2. It reports the instantaneous failure rate of a firm conditioned on the fact that the firm survived until a given time as a number greater than 0. The reported hazard rate for family firms for the following years 1 to 14 is: 1=0.18, 2=0.38, 3=0.53, 4=0.67, 5=0.82, 6=1.21, 7=1.35, 8=1.61, 9=1.89, 10=2.09, 11=2.26, 12=2.54, 13=2.83 and 14=3.30. The reported hazard rate for non-family firms for the following years 1 to 14 is: 1=0.22, 2=0.545, 3=0.61, 4=0.76, 5=0.91, 6=1.18, 7=1.36, 8=1.61, 9=1.83, 10=2.11, 11=2.32, 12=2.55, 13=2.81 and 14=3.30.

The hazard analysis shows that the hazard rate for non-family firms are higher than for the family firms the first years of business, up until year 6, where the hazard rate for family firms becomes greater than for non-family firms. Both hazard rates finally converge to the same value at 3.30 in the final year. In 2002 29.10% of the family firms have failed compared to 33.67% of the non-family firms. In 2005 50.26% of the family firms have failed compared to 53.33% of the non-family firms. In 2010 77.19% of the family firms have failed compared to 76.00% of the non-family firms. In 2015 84.95% of the family firms have failed compared to 83.67% of the non-family firms. Compared to the statistics provided by U.S. Bureau of Labor Statistics, as mentioned in section 2.4., the failure rate is notable higher for year 10 and 15. By comparing the family- and non-family firms in my sample, I find again a higher failure rate with the non-family firms in the first years. However, the rate of failure converges towards almost the same value at year 2015.

5.2. Profitability and growth analysis

5.2.1. Profitability analysis

The numbers in the profitability analysis is collected from Table 2 and Appendix 2. I will start by reporting the ROA findings of the family- and non-family firms followed by ROE.

In year 2000 the family firms report an average ROA of -11.65%. However, already the next year, 2001, average ROA is positive, reporting 1.99%. The family firms that survived to 2015, reports an average ROA of 9.58%. Hence, the surviving family firms in my sample is showing a positive trend in ROA, reporting a total sample average of 5.55%. On the other side, the non-family firms started, in year 2000, with an average ROA of -21.53% and is not showing a positive value for ROA before 2003, with an average of 3.59%. The non-family firms that survived to 2015, reports an average ROA of 11.34%, which is significantly higher than that of the family firms. However, the total sample average for non-family firms reports only 0.62%, which then again is considerably lower than the sample average of family firms.

Moving over to ROE, in year 2000 the family firms report an average ROE of 50.91%. The family firms that survived to 2015 is reporting an average of 60.29%, and a total sample average of 46.82%. On the other side, the non-family firms report an average ROE of 35.28% in 2000, which is considerably lower than that of the family firms. The non-family firms that survived to 2015 reports an average ROE of 63.97%, and a total sample average of 51.69%, which again is higher values than that of the family firms. However, both the surviving family- and non-family firms are showing a positive trend in their ROA and ROE.

5.2.2. Growth analysis

The numbers in the growth analysis is collected from Table 2, Appendix 2 and Appendix 4. I will start by reporting the finding from growth in revenue, next I am reporting the findings from growth in total assets (Appendix 4), and finally I am reporting the findings from growth in employment.

In year 2000 the family firms report of an average revenue of 4 137 440 NOK. In 2015 the surviving family firms has an average revenue of 11 904 262NOK, which implies a growth of 187.72% in the average revenue. The total sample average for family firms is 8 382 737 NOK. The non-family firms have an average revenue of 5 700 180 NOK in 2000 and in 2015 they have an average revenue of 28 181 361 NOK, which implies a growth of 394.39%. Total sample average is 20 613 276 NOK.

Average total assets of family firms in 2000 is 1 760 678 NOK, and in 2015 the average of the surviving family firms have grown to 5 349 469 NOK. This implies a growth of 203.83%, while the total sample average is 3 538 019 NOK. The non-family firms have, in 2000, an average of 3 436 387 NOK total assets, which, in 215, have grown to an average of 13 667 496 NOK. This implies a growth of 297.73%, while the total sample average is 8 598 083 NOK.

Finally, in 2000 family firms have an average of 4.58 employees. This number have grown to an average of 10.36 employees in 2015, which implies a growth of 126.20%. The total sample average for family firms are 6.42 employees. The non-family firms have an average of 5.88 employees in 2000. This number have grown to an average of 19.78 employees in 2015, which implies a growth of 236.40%, and the total sample average of non-family firms are 11.21 employees.

Overall, non-family firms show a higher growth rate than the family firms in my sample, with respect to all three variables accounted for. The findings are summarized in Table 4 below:

Table 4.
Growth results

	Family firms	Non-family firms
Revenue	187.72%	394.39%
Total assets	203.83%	297.73%
Employment	126.20%	236.40%

Table 4 shows total average growth of revenue, total assets and employment from 2000 to 2015 for both family- and non-family firms.

5.3. Fixed effects linear regression model

The model results, presented in Appendix 5, model 1 to 5, does indicate that ownership concentration of the largest family has some power in explaining variations in the response variables. In model 1, ROA, one-standard deviation change in the ownership concentration of the largest family increase ROA with 0.0027. Company age has a little more impact, increasing ROA with 0.0733. Largest family has CEO and number of owners from the largest family is not statistically significant and therefore are not directly important for ROA.

In model 2, ROE, one-standard deviation change in the ownership concentration of the largest family increases ROE with 0.0282. However, in this model the number of owners from the largest family has a bigger impact on ROE, decreasing it with -0.3691. Largest family has CEO and company age are not statistically significant and therefore are not directly important for ROE.

In model 3, Revenue, both ownership concentration of the largest family and company age are statistically significant. However, a one-standard deviation change in both, impacts revenue marginally - close to zero impact. Both largest family has CEO and number of owners from the largest family are not statistically significant and therefore are not directly important for revenue.

In model 5, Total Assets, one-standard deviation change in the ownership concentration of the largest family has a massive negative impact on total assets at -74 206. Company age is also statistically significant, but has close to zero impact on total assets. Largest family has CEO and number of owners from the largest family are not statistically significant and therefore are not directly important for total assets.

In model 6, number of employees, one-standard deviation change in the ownership concentration of the largest family has a small negative impact on the number of employees, decreasing it with -0.0688. Largest family has CEO, company age and number of owners from the largest family are not statistically significant and therefore are not directly important for the number of employees.

The findings from the regression models indicates that the family characteristics within the family firms in my sample does not explain much of the variation in the profitability and growth measures. However, the ownership concentration of the largest family has huge explanatory power in regard to changes in total assets, as on-standard deviation changes, changes total assets with -74 206.

5.4. Validity

To test the validity of my research, I have done the same simulation for family firms starting in year 2001, as I have done for family firms started in year 2000. Results are provided in Appendix 6 and 7. To check for validity I will now compare the statistics of the two simulations.

Firstly, the total percentage of failed family firms, starting in 2000, in 2015 is 84.95%. For firms starting in 2001 this percentage is 84.19%. The similarities are striking, giving validity to the survival analysis.

One weakness with the survival analysis is that with the information provided with my data sample, I cannot be certain that missing firms the following year is due to the firms being unsuccessful or because the firms have taken part of a restructuring.

Considering the total average ownership concentration of the largest family, the sample starting in 2000 has an average of 94.28%, compared to the sample starting in 2001 with an average of 94.44%. The profitability measures, ROA and ROE, are also quite similar, showing an average ROA and ROE in the sample starting in 2000 at 5.55% and 46.82% respectively compared to 3.57% and 40.85% respectively in the sample starting in 2001.

Total average revenue of sample starting in 2000 is 8 382 737 NOK, compared to 8 847 728 NOK for sample starting in 2001. The total average of number of employees is also very similar, with sample starting in 2000 showing 6.42 employees on average while sample starting in 2001 showing 6.04.

This gives evidence for that the data sample I used and the simulations I have done to provide my analysis and models are valid. Small differences in the numbers between sample 2000 and 2001 are accepted as the sample period is 15- and 14 years respectively, indicating that small differences are natural.

6. Concluding remarks

My thesis provides an improved understanding of the early lifecycle of private family firms. Based on a sample of new Norwegian private family firms, I analyze their survivability, profitability and growth and compare the findings with an analysis of non-family firms. I find that the probability rate of survival drops slower for family firms the first 6 years of business compared to non-family firms. From 6 years out, the probability rate of survival between family- and non-family firms converges towards the same value. The reason for this is explained by owners of family firms being less diversified, meaning they have more of their personal wealth invested in their family firm. In the early stages of the family firm's lifetime, one sole founding owner will be more likely to not close down the firm during ruff times compared to the more diversely controlled non-family firm where every owner has a smaller amount of their personal wealth invested.

I then turn to investigate the profitability of family firms. I find that on average it takes the family firms one year to turn a negative ROA to be positive, in comparison, the same achievement takes the non-family firms three years. This is also explained by the family firm owner being less diversified than the non-family firm owners. Meaning, the family firm owner gets his sole income from the new firm he/she founded and will most likely not manage several years with a negative profitability, which on the other hand, the more diversified owners of non-family firms could manage. However, non-family firms will eventually become more profitable than the family firms and this will be elaborated more as I now turn to investigate growth.

I measured growth in the family firms in both revenue, total assets and number of employees. The family firms showed a constant growth in all variables. However, the non-family firms show a much higher and more rapid growth than that of family firms in all three variables. This, again, can be explained by the less diversified family firm owner. The findings provide more evidence toward a less

diversified family firm owner also being more risk averse. The family firm owner is less likely to take on riskier project for potential higher profit and growth, because he/she has a higher stake in the firm compared to the owners of non-family firms.

The findings from the linear regression analysis confirms that the ownership characteristics within family firms does not have much explanatory power on profitability and growth. However, one-standard deviation change in ownership concentration in family firms has a negative effect of -74 206 on total assets.

Overall, my thesis provides evidence towards empirical research, proving owners of private family firms being less diversified and more risk averse than owners of non-family firms. Moreover, it will serve as a building block for further research on private family firms.

References

Artinger, S., & Powell, T. C. (2016, June). Entrepreneurial Failure: Statistical and Psychological Explanations. *Strategic Management Journal, Vol. 37, Issue 6*, pp. 1047-1064.

Baltagi, B. H. (2005). *Economeric Analysis of Panel Data.* NJ, Chichester ; Hoboken: J. Wiley & Sons.

Bennedsen, M., Nielsen, K. M., Perez-Gonzalez, F., & Wolfenzon, D. (2007, May). Inside the Family Firm: The Role of Families In Succession Decisions and Performance. *Quarterly Journal of Economics*, pp. 647-691.

Berle, A. A., & Means, G. C. (1933). *The Modern Corporation and Private Property.* New York: The Macmillan Company.

Berzins, J., & Bøhren, Ø. (2013). *Norske Familiebedrifter: Omfang, Eierstyring og Lønnsomhet*. Retrieved August 2013, from BI.edu: https://www.bi.edu/globalassets/forskning/centre-for-corporate-governance-research/publications/berzins_bohren_familiebedrifter_mai_29_2013.pdf

Bodie, Z., Kane, A., & Marcus, A. J. (2018). *Investments.* New York: McGraw-Hill Education.

Burkart, M., Panunzi, F., & Shleifer, A. (2003, October). Family Firms. *Journal of Finance, VOL. LVIII, NO. 5*, pp. 2167-2202.

Chrisman, J. J., Sharma, P., & Taggar, S. (2007, October). Family Influences on Firms: An Introduction. *Journal of Business Research, Volume 60, Issue 10*, pp. 1005-1011.

Claessens, S., Djankov, S., & Lang, L. H. (2000). The Separation of Ownership and Control in East Asian Corporations. *Journal of Financial Economics, Volume 58, Issues 1-2*, pp. 81-112.

Cox, D. R., & Oakes, D. (1984). *Analysis of Survival Data.* London: Chapman & Hall.

Demsetz, H., & Villalonga, B. (2001). Ownership Structure and Corporate Performance. *Journal of Corporate Finance, 7*(3), pp. 209-233.

Faccio, M., & Lang, L. H. (2002, September). The Ultimate Ownership of Western European Corporations. *Journal of Financial Economics, Volume 65, Issue 3*, pp. 365-395.

Fama, E. F., & Jensen, M. C. (1983). Separation of Ownership and Control. *Journal of Law and Economics, Vol. 26, No. 2*, pp. 301-325.

Finansdepartementet. (n.d.). *Hovedtrekkene i skatte- og avgitopplegget for 2006*. Retrieved August 2020, from regjeringen.no: https://www.regjeringen.no/no/dokumenter/stmeld-nr-1-2005-2006-/id136265/?ch=4

Gubitta, P., & Gianecchini, M. (2002). Governance and Flexibility in Family-Owned SMEs'. *Family Business Review, Vol. 15, No. 4*, pp. 277-297.

Helwege, J., Pirinsky, C., & Stulz, R. (2007, May). Why Do Firms Become Widely Held? An Analysis of the Dynamics of Corporate Ownership. *Journal of Finance, Vol. 62, No. 3*, pp. 995-1028.

Himmelberg, C. P., Hubbard, R. G., & Palia, D. (1999). Understanding the Determinants of Managerial Ownership and the Link Between Ownership and Performance. *Journal of Financial Economics, 53*(3), pp. 353-384.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firms: Managerial Behaviour, Agency Costs and Ownership Structure. *Journal of Financial Economics, Vol 3, No. 4*, pp. 305-360.

Khelil, N. (2016, January). The Many Faces of Entrepreneurial Failure: Insights From an Empirical Taxonomy. *Journal of Business Venturing, Volume 31, Issue 1*, pp. 72-94.

Klapper, L., & Love, I. (2011). The Impact of the Financial Crisis On New Firm Registration. *Economics Letters, 113*(1), pp. 1-4.

La Porta, R., Lopez-De-Silanes, F., & Shleifer, A. (1999, April). Corporate Ownership Around the World. *Journal of Finance, LIV*(2), pp. 471-517.

Langli, J. C., & Che, L. (2015, October). Governance Structure and Firm Performance in Private Family Firms. *Forthcoming in Journal of Business Finance & Accounting*, pp. 1-57.

Michael, S. C., & Combs, J. G. (2008). Entrepreneurial Failure: The Case of Franchisees. *Journal of Small Business Management, Volume 46, Issue 1*, pp. 73-90.

Morck, R., Stangeland, D., & Yeung, B. (January 2000). Inherited Wealth, Corporate Control and Economic Growth: The Canadian Disease? In R. K. Morck, *Concentrated Corporate Ownership* (pp. 319-369). Chicago, IL: University of Chicago Press.

Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, Design and Analysis: An Integrated Approach.* Hillsdale, N.J.: Lawrence Erlbaum Associates.

Sharma, P. (2004, March). An Overview of the Field of Family Business Studies: Current Status and Directions for the Future. *Family Business Review, Vol. 17, No. 1*, pp. 1-36.

Shepherd, D. A., Douglas, E. J., & Shanley, M. (2000, September-November). New Venture Survival: Ignorance, External Shocks, and Risk Reduction Strategies. *Journal of Business Venturing, Vol. 15, Issue 5-6*, pp. 393-410.

U.S. Bureau of Labor Statistics. (n.d.). *Table 7. Survival of private sector establishments by opening year*. Retrieved August 2020, from U.S. Bureau of Labor Statistics: https://www.bls.gov/bdm/us_age_naics_00_table7.txt

Appendix

Appendix 1
Ownership concentration non-family firms (percentage held by the largest family) by year

Year	No. of firms	Ownership concentration	CEO is of largest family	Bottom percentile	Middle percentile	Top percentile
2000	900	29,38	0,38	30,11	30,51	27,59
2001	731	34,83	0,41	38,93	33,52	32,08
2002	597	37,51	0,44	42,05	36,40	34,41
2003	526	40,06	0,44	44,21	40,74	35,22
2004	469	42,31	0,49	49,53	39,60	37,57
2005	420	43,11	0,50	53,77	39,12	36,19
2006	347	38,60	0,46	44,19	37,00	34,41
2007	311	45,27	0,52	53,72	43,92	38,11
2008	271	46,17	0,52	53,28	45,24	39,49
2009	243	46,12	0,51	46,80	48,59	43,51
2010	216	47,25	0,51	55,41	47,24	39,08
2011	202	47,28	0,56	57,48	45,99	37,58
2012	189	48,12	0,53	55,81	45,89	42,18
2013	178	50,38	0,52	57,37	48,44	44,26
2014	163	50,44	0,53	57,15	50,61	42,00
2015	147	51,96	0,52	63,98	46,89	44,43
Overall	**5910**	**43,67**	**0,49**	**50,24**	**42,48**	**38,01**

Appendix 1 shows summary statistics for the decline in firm-year observations and the evolution in ownership concentration data by year. The panel is constructed by applying a set of filters to improve data integrity for the purpose of this thesis. I impose a non-zero condition on revenues, total assets and employees. I exclude firms that are not independent, more than one year of age in 2000 and firms which I have missing values on any of the variables by omitting these observations in the model. Outliers are not controlled for as the sample is of a significant size. After filtering, the sample consists of 900 different new firms in year 2000, resulting in 5 910 firm-year observations. The percentage held by the largest owner is recorded at the end of the calendar year. I report the annual mean ownership concentration, mean observations where the largest family also has CEO (1 if largest family has CEO, 0 if not) and percentiles bottom, middle and top based on the firm performance measured by revenue.

Appendix 2
Financial characteristics of non-family firms by year

Year	No. of owners	Paid-in capital	CEO salary	Dividends	Revenue	ROA	ROE	No. of employees
2000	1,18	844966,67	249763,33	68032,22	5700180,00	-0,2153	0,3528	5,88
2001	1,22	981651,16	339292,75	213041,04	9319227,09	-0,1588	0,4088	6,87
2002	1,26	961048,58	367393,63	230723,62	10411515,91	-0,0427	0,5862	7,38
2003	1,26	1077503,80	386173,00	332737,64	11241861,22	0,0359	0,8290	7,61
2004	1,30	918660,98	398279,32	470569,30	14113321,96	0,1078	0,8698	8,45
2005	1,28	1186426,19	437252,38	202730,95	16641216,67	0,0927	0,3330	9,18
2006	1,19	1199380,40	478524,50	475394,81	18667481,27	0,1255	0,4361	9,41
2007	1,31	1037276,53	512199,36	116581,99	22823868,17	0,1266	0,2830	10,39
2008	1,31	1123369,00	566505,54	259763,84	26245749,08	0,1029	0,5862	12,04
2009	1,32	1177423,87	594045,27	277835,39	24382802,47	-0,6733	0,3318	12,37
2010	1,33	1192337,96	616185,19	220189,81	27266995,37	0,0871	0,2936	12,96
2011	1,30	1358564,36	665227,72	437326,73	31439955,45	0,1050	0,6219	13,60
2012	1,32	1335169,31	700164,02	757343,92	32877301,59	0,0931	0,3668	13,78
2013	1,30	1100280,90	712651,69	602904,49	24311382,02	0,0962	0,6880	14,44
2014	1,29	1210950,92	764509,20	660969,33	26188190,18	0,1035	0,6432	15,28
2015	1,28	1219775,51	800414,97	589170,07	28181360,54	0,1134	0,6397	19,78
Overall	1,28	1120299,13	536786,37	369707,20	20613275,56	0,0062	0,5169	11,21

Appendix 2 shows summary statistics for the financial characteristics data by year and is constructed applying the same filters as in Appendix 1. Appendix 2 reports average statistics by year; number of owners per firm, paid-in capital, CEO salary, dividends, revenue, return on assets (ROA), return on equity (ROE) and number of employees, respectively. ROA is calculated as EBIT to total assets. ROE is calculated as net income to total equity. *Overall average of ROE is calculated by omitting extreme values resulting in an overall average of 51.69%.

Appendix 3
Unsuccessful family firms by year

Year	Time of failure	Frequency
2000	0	0
2001	1	169
2002	2	134
2003	3	71
2004	4	57
2005	5	49
2006	6	73
2007	7	36
2008	8	40
2009	9	28
2010	10	27
2011	11	14
2012	12	13
2013	13	11
2014	14	15
2015	15	16
Overall		**753**

Appendix 3 shows the frequency of the unsuccessful firms where no family has more than 50% control. Appendix 1 is constructed applying the same filters as Appendix 1.

Appendix 4
Total assets by year

Year	Family firms - total assets	Non-family firms - total assets
2000	1760677,837	3436386,667
2001	2050066,344	4311593,707
2002	2255133,499	4491539,363
2003	2409317,28	5044490,494
2004	2563595,163	5403614,072
2005	2549430,26	6442080,952
2006	3033752,443	7894308,357
2007	3665426,288	8378440,514
2008	3962602,881	9642778,598
2009	4221642,857	9223259,259
2010	3975167,526	10498620,37
2011	4302580,822	12261029,7
2012	4720919,403	12391095,24
2013	4755826,923	11801123,6
2014	5032692,308	12681484,66
2015	5349468,75	13667496,6
Overall	**3538018,786**	**8598083,885**

Appendix 4 shows summary statistics for total assets reported by the family- and non-family firms. Appendix 4 is constructed applying the same filters as Appendix 1.

Appendix 5
Fixed linear regression results, model 1 to 5
Model 1

```
Linear regression model:
    ROA ~ [Linear formula with 5 terms in 4 predictors]

Estimated Coefficients:
```

	Estimate	SE	tStat	pValue
(Intercept)	−0.90557	0.29447	−3.0753	0.0022538
LargestFamilySumUltOwnership	0.0026598	0.00094844	2.8043	0.0052988
LargestFamilyHasCEO	−0.034926	0.055147	−0.63332	0.5269
CompanyAge	0.073353	0.026388	2.7798	0.0057073
LargestFamilyNumberOfOwners	−0.012707	0.014368	−0.88442	0.37703

```
Number of observations: 388, Error degrees of freedom: 383
Root Mean Squared Error: 0.247
R-squared: 0.0387,  Adjusted R-Squared: 0.0286
F-statistic vs. constant model: 3.85, p-value = 0.00441
```

Model 1 shows the results from the linear regression on ROA in 2010. The intercept, the explanatory variables LargestFamilySumUltOwnership and CompanyAge are statistically significant and has some explanatory power on changes in ROA. The overall R-squared shows the proportion of variance explained by the regressors. The adjusted R- squared takes into account the number of explanatory variables.

Model 2

```
Linear regression model:
    ROE ~ [Linear formula with 5 terms in 4 predictors]

Estimated Coefficients:
```

	Estimate	SE	tStat	pValue
(Intercept)	1.8602	3.0716	0.60561	0.54513
LargestFamilySumUltOwnership	0.028284	0.0098933	2.8589	0.0044835
LargestFamilyHasCEO	−0.38129	0.57524	−0.66283	0.50784
CompanyAge	−0.30728	0.27525	−1.1164	0.26497
LargestFamilyNumberOfOwners	−0.36906	0.14987	−2.4625	0.014237

```
Number of observations: 388, Error degrees of freedom: 383
Root Mean Squared Error: 2.58
R-squared: 0.0394,  Adjusted R-Squared: 0.0294
F-statistic vs. constant model: 3.93, p-value = 0.00385
```

Model 2 shows the results from the linear regression on ROE in 2010. The explanatory variables LargestFamilySumUltOwnership and LargestFamilyNumberOfOwners are statistically significant and has some explanatory power on changes in ROE. The overall R-squared shows the proportion of variance explained by the regressors. The adjusted R- squared takes into account the number of explanatory variables.

Model 3

```
Linear regression model:
    Revenue ~ [Linear formula with 5 terms in 4 predictors]

Estimated Coefficients:
```

	Estimate	SE	tStat	pValue
(Intercept)	1.1246e+07	4.5125e+06	2.4922	0.012886
LargestFamilySumUltOwnership	−1.4844e+05	26362	−5.6309	2.4433e−08
LargestFamilyHasCEO	−2.1428e+05	1.7756e+06	−0.12068	0.90397
CompanyAge	1.7173e+06	6.8914e+05	2.4919	0.012896
LargestFamilyNumberOfOwners	1.1262e+05	4.2096e+05	0.26753	0.78912

```
Number of observations: 846, Error degrees of freedom: 841
Root Mean Squared Error: 9.77e+06
R-squared: 0.0543,  Adjusted R-Squared: 0.0498
F-statistic vs. constant model: 12.1, p-value = 1.55e−09
```
Model 3 shows the results from the linear regression on Revenue in 2005. The intercept, the explanatory variables LargestFamilySumUltOwnership and CompanyAge are statistically significant and has some explanatory power on changes in Revenue. The overall R-squared shows the proportion of variance explained by the regressors. The adjusted R- squared takes into account the number of explanatory variables.

Model 4

```
Linear regression model:
    TotalAssets ~ [Linear formula with 5 terms in 4 predictors]

Estimated Coefficients:
```

	Estimate	SE	tStat	pValue
(Intercept)	4.5362e+06	1.8449e+06	2.4588	0.014142
LargestFamilySumUltOwnership	−74206	10778	−6.8849	1.131e−11
LargestFamilyHasCEO	1.0632e+06	7.2595e+05	1.4645	0.14343
CompanyAge	6.5278e+05	2.8175e+05	2.3169	0.020751
LargestFamilyNumberOfOwners	2.6102e+05	1.7211e+05	1.5166	0.12974

```
Number of observations: 846, Error degrees of freedom: 841
Root Mean Squared Error: 4e+06
R-squared: 0.0644,  Adjusted R-Squared: 0.0599
F-statistic vs. constant model: 14.5, p-value = 1.99e−11
```
Model 4 shows the results from the linear regression on Total Assets in 2005. The intercept, the explanatory variables LargestFamilySumUltOwnership and CompanyAge are statistically significant and has some explanatory power on changes in Total Assets. The overall R-squared shows the proportion of variance explained by the regressors. The adjusted R- squared takes into account the number of explanatory variables.

Model 5

```
Linear regression model:
    NumberOfEmployees ~ [Linear formula with 5 terms in 4 predictors]

Estimated Coefficients:
                                    Estimate      SE       tStat      pValue
                                    _____   _____   _____   _____

    (Intercept)                       6.9802     2.7902     2.5017     0.012548
    LargestFamilySumUltOwnership    -0.068803     0.0163     -4.221   2.6969e-05
    LargestFamilyHasCEO              0.57092     1.0979     0.52002     0.60319
    CompanyAge                       0.72389    0.42611     1.6988    0.089722
    LargestFamilyNumberOfOwners      0.37491    0.26028     1.4404     0.15013


Number of observations: 846, Error degrees of freedom: 841
Root Mean Squared Error: 6.04
R-squared: 0.0287,  Adjusted R-Squared: 0.024
F-statistic vs. constant model: 6.2, p-value = 6.41e-05
```
Model 5 shows the results from the linear regression on Number Of Employees in 2005. The intercept and the explanatory variable LargestFamilySumUltOwnership are statistically significant and has some explanatory power on changes in Number Of Employees. The overall R-squared shows the proportion of variance explained by the regressors. The adjusted R- squared takes into account the number of explanatory variables.

Appendix 6
Ownership concentration (percentage held by the largest family) by year starting 2001

Year	No. of firms	Ownership concentration	CEO is of family	Bottom percentile	Middle percentile	Top percentile
2001	930	100	1	100	100	100
2002	748	98,39	0,98	98,93	97,55	98,70
2003	662	97,64	0,97	98,65	96,49	97,81
2004	591	96,48	0,96	97,84	96,21	95,41
2005	527	95,31	0,96	97,85	95,49	92,21
2006	369	81,92	0,94	83,42	83,52	78,59
2007	337	94,60	0,95	96,65	93,70	93,52
2008	294	94,85	0,95	95,10	95,32	94,24
2009	250	95,84	0,95	94,57	98,85	94,19
2010	232	95,33	0,92	96,71	93,88	95,52
2011	212	95,80	0,94	96,99	95,09	95,46
2012	189	93,45	0,93	93,73	92,77	94,07
2013	178	92,09	0,92	90,86	92,47	92,08
2014	160	92,08	0,92	91,90	92,28	92,38
2015	147	92,79	0,93	91,69	92,66	94,35
Overall	5826	94,44	0,95	94,99	94,42	93,90

Appendix 6 shows summary statistics for the decline in firm-year observations and the evolution in ownership concentration data by year. The panel is constructed by applying a set of filters to improve data integrity for the purpose of this thesis. I impose a non-zero condition on revenues, total assets and employees. I exclude firms that are not independent, more than one year of age in 2001 and firms which I have missing values on any of the variables by omitting these observations in the model. Outliers are not controlled for as the sample is of a significant size. After filtering, the sample consists of 930 different new firms in year 2001, resulting in 5 826 firm-year observations. The percentage held by the largest owner is recorded at the end of the calendar year. I report the annual mean ownership concentration, mean observations where the largest family also has CEO (1 if largest family has CEO, 0 if not) and percentiles bottom, middle and top based on the firm performance measured by revenue.

Appendix 7
Financial characteristics of family firms by year

Year	No. of owners	Paid-in capital	CEO salary	Dividends	Revenue	ROA	ROE	No. of employees
2001	1,53	180424,73	234921,51	76229,03	4417230,11	-0,0774	0,5060	4,53
2002	1,56	184498,66	256175,13	145422,46	5181360,96	-0,1102	0,7472	4,90
2003	1,56	208848,94	277291,54	188638,97	5705483,38	-0,0367	0,0688	5,14
2004	1,54	254648,05	293335,03	257908,63	6417071,07	0,0862	0,6752	5,43
2005	1,53	243863,38	310136,62	30888,05	6320643,26	0,1054	0,7603	5,21
2006	1,34	259455,28	343485,09	108531,17	6894186,99	0,0712	-0,1000	5,24
2007	1,61	271047,48	377486,65	72652,82	7839008,90	0,0595	0,4194	5,49
2008	1,61	275275,51	397193,88	87697,28	8870176,87	0,0316	0,6872	5,65
2009	1,60	279320,00	413340,00	79840,00	9083796,00	-0,0451	0,1279	5,85
2010	1,57	284870,69	437939,66	67452,59	9828073,28	0,0418	0,3801	6,09
2011	1,54	296580,19	455103,77	106415,09	10872316,04	0,0841	0,2682	6,25
2012	1,48	321386,24	488582,01	96835,98	12230074,07	0,0639	0,2693	6,40
2013	1,46	342837,08	497393,26	130859,55	12674567,42	0,0822	0,1653	6,80
2014	1,41	362593,75	524056,25	149631,25	12504262,50	0,0970	0,6290	7,33
2015	1,39	443510,20	545986,39	232782,31	13877673,47	0,0823	0,5240	10,25
Overall	1,52	280610,68	390161,79	122119,01	8847728,29	0,0357	0,4085	6,04

Appendix 7 shows summary statistics for the financial characteristics data by year and is constructed applying the same filters as in Appendix 6. Appendix 7 reports average statistics by year; number of owners per firm, paid-in capital, CEO salary, dividends, revenue, return on assets (ROA), return on equity (ROE) and number of employees, respectively. ROA is calculated as net income to total assets. ROE is calculated as net income to total equity. *Overall average of ROE is calculated by omitting extreme values resulting in an overall average of 40.85%.