BI Norwegian Business School - campus Oslo

GRA 19703

Master Thesis

Thesis Master of Science

Post-acquisition performance of family owned firms and the effect of separating concentrated decision-making and risk-bearing functions: Evidence from Norway.

Navn:	Stian Renslo Falch, Fredrik Wean Edvardsen

Start:	15.01.2021 09.00
Finish:	01.07.2021 12.00

Stian Renslo Falch

Fredrik Wean Edvardsen

Master Thesis Report

at BI Norwegian Business School

Post-acquisition performance of family owned firms and the effect of separating concentrated decision-making and risk-bearing functions: Evidence from Norway.

Hand in Date:

01-07-2021

Supervisor:

Leon Bogdan Stacescu

Examination Code:

GRA19703 – Master Thesis

Study Program:

Master of Science in Business, major in Finance

Acknowledgements

First and foremost, we want to thank our supervisor Leon Bogdan Stacascu for great insights and guidance throughout the process. We are grateful for the feedback, help and discussions which has been most helpful towards the end results. Furthermore, we would like to thank CCGR for providing us with data on unlisted Norwegian firms. Lastly, we would thank all our professors at BI for the knowledge provided during our 5 years of education.

Abstract

This thesis examines the financial performance of family firms transition to nonfamily firms and the effect of having an active family ownership. The analysis is based on Norwegian unlisted firms in the period of 2000-2018, from the database of CCGR. We test for differences in the firms' performance prior to our specified event (e.g., ownership change) to the performance following the event, using univariate testing and regression. Our findings show that family firms vastly outperform nonfamily firms, and the acquirers of family firms are not able to maintain the high performance following the acquisition. This thesis furthermore finds evidence for lower performance after acquisition when the family control is greater. We argue that acquirers should consider the observed decrease in performance when valuating such firms.

1. Introduction

For small and medium sized enterprises (SME) are mergers and acquisitions (M&A) often the most effective and practical form of exit, as an initial public offering (IPO) is in most cases not feasible. The M&A market is increasing and the literature on risk-bearing and decision-making functions are divided, this paper should therefore investigate the matter from a new approach by focusing on the target firm rather than acquirer.

1.1 M&A-market and family firms

From the early 1900s, there has been three major waves of mergers and acquisitions in Europe, with the latter beginning in 1990s (Torre-Enciso & Garcia, 1996). Torre-Enciso and Garcia (1996) states that even though cross-border mergers and acquisitions have been increasing during this time, they only make for a low percentage of the overall activities in Europe. On a global level, these activities has grown from 0.73 trillion dollars in 1992, to 2.65 trillion dollars in 2010 (Yılmaz & Tanyeri, 2016). M&A are a widely used strategy for growth and organizational learning, consequently driving innovation performance (Ahuja & Katila, 2001). Though the increasing popularity of M&A activities, the rate of failure is still high, with studies finding failure rates to be in the range from 70% to 90% (Christensen et al., 2011). However, while the failure rate is seemingly high, M&A activities are often used to ensure the firm's survival, rather than increasing shareholder wealth (Almor et al., 2014). Furthermore, are certain industries dependent on growth beyond what is organic, hence, M&As becomes a preferable option (Almor et al., 2014). Earlier research on acquisition types has revealed that horizontal acquisition are best suited for M&A activities (Capron, 1999), and studies from Cioli et al (2020) suggest that cross border acquisitions have a negative effect on target firms' margins.

Evidence from Anderson and Reeb (2003) implies a positive correlation between profitability and combining risk-bearing and decision-making functions. The paper reasons that family firms' high performance is a result of long-term horizon on investments. Our paper considers the owners of the firm to have the risk-bearing function, while the CEO of the firm has the decision-making function. Moreover, will we refer to the combination of these functions as active ownership. We will further build on Anderson & Reeb's (2003) suggestion and

investigate whether performance of family firms deteriorates after an ownership change on a medium to long term timeline. Our data, which is conducted on unlisted Norwegian firms, do find evidence for family firms to be high performing compared to nonfamily firms, consistent to the results of Anderson & Reeb's (2003) findings on American listed firms. While we find evidence in favour of family ownership creating value, are Villalonga & Amit (2020) review of family firm literature suggesting that family management might overpower the effect of family ownership.

In addition to investigate ownership change in family firms, are the paper also investigating the effect of family managerial shifts on the same premises. Bennedsen et al. (2007) find evidence for CEO successor to have a negative effect on a firm performance, thus we investigate the effect of hiring a professional CEO instead. We do not directly investigate successor, however, we do find indications of professional CEO to be the preferable option for actively owned family firms with intentions to separate their decision-making and risk-bearing functions.

By investigating the Norwegian SME-market we supply the literature with new findings on the aftermath of family firm exits with regards to the effect of disrupting active ownership as the explanatory factor. Moreover, will our analysis contribute to the literature by investigating if the family firms' premium on performance holds after transitioning to nonfamily firms and how this premium may impact valuation.

1.2 Research question and approach

When conducting our research, we will apply a deductive approach with the paper's hypothesis created from earlier theories and results. By using empirical panel data and univariate testing we aim to answer our hypothesis and contribute and/or challenge established literature. Our main hypothesis is as follows:

"Family owned firms will decrease their performance when ownership changes to nonfamily ownership."

Where we define a family firm as a firm where at least 50% of the shares are family owned and refer to the remainder firms as nonfamily firms. We conduct our analysis by measuring performance through accounting figures. Although we acknowledge the complexity of the M&A-process and the limitations to the financial indicators, the objectivity of financial measurement

and the accessibility of data are important aspects of our research. Due to the nature of our dataset, we do not have the ability to identify certain traits of the specific transaction, e.g., motivation for the transaction. Hence, the accounting-based measures is preferred. In our analysis, we therefore use Return On Assets (ROA), EBIT-margin (EBITm) and Return On Invested Capital (ROIC) as indicators for performance.

The trending results of the thesis is that target firms, in general, are high performing firms. This holds true after addressing issues regarding sector influences and different economic environments; hence indicators are adjusted for the sector average each year to create a performance indicator. We also find that it is not sufficient to only compare one year before and after the event-year to capture the full effect of event changes. The analysis is therefore conducted on three years before and after the event-year. The results show high performing firms having a sharp negative shift the first year after event-year, but still performing above the sector average as early as two years after the event.

We constrain how the ownership change is implicated in order to clarify which factors that are relevant when acquiring a family owned firm. Hence, our analysis will be on the effect of certain events and the change in performance from the three-year period prior to this event, to the following three-year period. We separate the event scenarios into a total of six tests and conduct one regression to examine and identify what type of actions and characteristics that acquirers can take into consideration. The first test is the main hypothesis, while the second test is analysing whether an active family ownership differs from the main hypothesis' loose restrictions on the decision-making function. The third test restricts the family CEO from leaving the active family owned firm after the transaction and the fourth test take the scenario where the active family have a complete exit, withdrawing from both the risk-bearing and the decision-making function. In the fifth test, we leave ownership changes out and examine a family CEO to a professional CEO change as an alternative method of disrupting active ownership. The sixth, and last univariant test, checks for industry differences on the same premises as the first test. Lastly, are the regression examining 10 different regressors to identify firm characteristics and their effect on delta performance after an equal scenario as in Test I.

All tests examine whether performance significantly improve or deteriorate after the event year. We do find that retaining the CEO is a common practice in the data, however, the action is not sufficient to limit the sharp decrease in performance. The results also suggest that the firmer grip a family has on the firm, the more difficult the transition to new owners becomes. Our findings differ from earlier studies in its high focus on performance of target firms, in contrast to the acquirer's success. New evidence from Norway is considered relevant for acquisition, valuation and exit strategies performed in the SME-market.

2. Literature Review

In this section, we will go through relevant earlier literature. As the thesis objective is to disclose whether family firms are performing better after an ownership change, literature regarding family firm is important. We have therefore conducted a review of previous family firm findings in section 2.1. Furthermore, are the thesis investigating the effect of active ownership on the post transaction performance, therefore are section 2.1 extended to also to include actively owned family firm's performance. Section 2.2 gives an overview of previously used performance measure in similar studies and section 2.3 summarize factors that might affect post ownership change performance. Lastly, are section 2.4 an overview of relevant governance theory regarding actively owned family firms.

2.1 Family firms; combining ownership and executive power

Anderson and Reeb (2003) suggest that family firms are an efficient organisational structure and that family firms perform at least as efficient as nonfamily firms. The findings contradict earlier theory which implies that family firms are less efficient, because of resource conflict between personal gain and investments and innovation in the firm (Morck et al., 1998). Moreover, Anderson and Reeb's (2003) findings suggest a positive correlation between increased profitability and having a family firm member as CEO. Reasons for the increased profitability is suggested to be a long perspective horizon and understanding of the business.

Miller et al. (2011) provides evidence to higher shareholder return for founder owned firms than other Fortune 1000 companies. The findings suggested that the increasing shareholder return also stays true when the founder is CEO and the largest shareholder. However, compared to Anderson and Reeb's (2003) findings do Miller et al. (2011) not find evidence for higher, nor lower, returns for family firms. The combination of family ownership and CEO is somewhat been suggested to only apply for the founder of the firm. Further evidence from Bennedsen et al. (2007) suggests that firms that promote family have a negative impact from succession of 0.8 – 1.5 % in terms of profitability. While Morck et al. (1998) suggest that parties with majority ownership has the possibility to exploit the firm, are Jensen and Meckling (1976) suggesting close ownership being beneficial in terms of agency explanation. Other disputes comes from Fama and Jensen (1983) who argues that firms which do not separate risk-bearing and decision-making functions could fail to obtain maximum profit. In contrast to Demsetz and Lehn's (1985) suggestion on combining control and ownership could be profitable. In conclusion, we see that there is a divided literature on whether family firms outperform nonfamily firms and the effect of the family having the CEO position concentrating the risk-bearing and decision-making functions.

2.2 Identified measures of performance

Most researchers would agree that M&As have a large degree of complexity that should be considered by the method of which performance are measured. Despite this wide belief that M&As are complex, scholars tend to measure performance within the financial domain and mostly as unidimensional (Meglio & Risberg, 2011). Further, Meglio and Risberg (2011) found that stock market- and accounting-based measures are dominating in the literature, often validated for their objectiveness and availability. This thesis uses accounting-based measures instead of stock price reactions, as it is conducted on Norwegian unlisted firms. Consequently, other factors affecting the M&A process are discarded, such as the length of the process and motive behind.

Amongst the literature, there have been several financial performance measures used for evaluating post-M&A performance. Due to the weaknesses of the accounting-based measures, the literature has yet to reach a consensus on how to accurately measure the success of an M&A transaction. Hence, the use of profit

as a performance measure might lead to another result as opposed to using sales (Gugler et al., 2003). Return on assets (ROA), appears to be the most used accounting ratio in the M&A literature (Thanos & Papadakis, 2012), however, the raw ROA calculated from dividing net income by total assets have been criticised for disregarding industry influences (Harrison et al., 1991). Adjusting the raw ROA by subtracting the industry- or geographical average ROA has become a way of overcoming this criticism (Thanos & Papadakis, 2012).

2.3 Factors which effect post ownership change performance

Previous research has investigated specific attributes that increases acquisitions success rate. Resource complementarity and acquirers recent experience from acquisitions and large-scale changes appears to be amongst the important factors in ensuring the success of the M&A-process (Hitt et al., 1998). Hitt et al. (1998) further elaborated on the importance of learning for a successful acquisition.

Laurence Capron (1999) was looking at the long-term perspective of horizontal acquisitions and the logic behind. By investigating post-acquisitions, he focused on the implication of asset divestiture and resource redeployment, and the relationship between relatedness of the parties and the acquisition performance. Capron (1999) further concludes that resource redeployment is the dominate factor of value creation of horizontal acquisitions.

Grullon, Larkin and Michaely (2019) imply that the concentration of the market is a relevant factor in profit gains after acquisitions. The study from the US finds evidence that horizontal mergers in concentrated industries are likely to gain higher profits, both on a financial firm level and as abnormal stock returns. The study identifies market power as one of the biggest value drivers.

2.4 Corporate governance

For family firms, associations with agency costs are less prominent then for nonfamily firms, as the principle and agent often are the same person (Jensen & Meckling, 1976). Fama and Jensen (1983) argues the same, stating that family members often have multiple dimensions of exchange, thus having advantages in monetarizing and disciplining decision agents.

When studying the governance of Norwegian firms, Bøhren et al. (2019) found that family firms are governed by the family, either as CEO, chairman or both in 97% of the firms. Furthermore, due to the longer horizons for family

managers, Sraer & Thesmar (2007) found evidence for family managers to have a higher trustworthiness and therefore has the ability to provide workers with better job safety in exchange for lower wages, as opposed to professional CEOs. However, Sraer &Thasmar (2007) also report professional CEOs to be more efficient in managing capital, thus have the ability to handled higher debt levels. Though family managers may experience lower costs due to their trustworthiness, Bennedsen et al. (2007) found family successions to have a large negative effect on the firm's financial performance.

3. Data and Analyses

In section three we give a step-by-step explanation of the dataset in our analyses, including the source of our data in 3.1, preparation in 3.2 and variables created in 3.3 to 3.5. The dataset includes 42 846 firms and 530 423 firm-year observation after filtering which will be used in the analyses. Section 3.3 elaborates on the different dummy-variables that has been created to identify events. Section 3.4 gives a detailed explanation on how we created margin-indicators, which is the raw calculated ROA, ROIC and EBITm. Lastly, will section 3.5 explain how we transform margin-indicators into performance-indicators, which is the raw calculations adjusted for sector and year.

3.1 Data source, characteristics, and variables

Our analyses will be based on data collected from the CCGR-database. CCGR offer detailed and high-quality data on unlisted Norwegian firms which meets the aim of our research. The data stretches from 2000 to 2018 and contains 568.481 firms and 4.451.774 firm-year observations prior to filtering. The panel data do not contain any personal information or personal identification factors, thus in line with GDPR and ethical guidelines.

We have identified 20 variables to be relevant towards our analyses. Six of the variables are collected to identify types of ownership, five to identify control and eight are accounting variables. The accounting data are not consolidated figures, consequently, target firms' individual financial figures are observable.

The last variable is the firms' industry code, which is used to identify the firms' industry and analyse sector specifics. In cases where a firm is registered with multiple industries, are the first listed industry code assumed to be the

primary industry. We have grouped the industry codes into broader sectors based on the firms' primary industry. An overview of these sectors and example of operations can be found in appendix 1.

3.2 Data filtering

The data contains certain missing values, and in such cases have the firm-year observation been removed. We ignore missing values for currencies as our analysis is based on margins, thus making differences in currencies between firms irrelevant. Furthermore, to achieve reliable and consistent results, we conduct the following four conditions to the dataset:

Firstly, firms with operating revenues below 500.000 NOK in any given year are removed from the data. This condition intends to exclude inactive and smaller firms which is considered irrelevant for the analyses.

Secondly, firms need at least seven continuous observations. Our analysis compares the three-year average of a given performance measure before and after the event, while excluding the event-year. Thus, the analysis requires the firms to have continuous observations over a seven-year period.

Thirdly, are holding- and property firms removed. We consider both types of firms as financial tools and therefore irrelevant for our analyses.

Lastly, we used a 96^{th} percentile winsorization-method to remove extreme values. Firms with margin measures below the 2^{nd} percentile and above the 98^{th} percentile are set to their respective percentile. Each percentile is calculated from the firm's specific sector. Thus, the condition takes into consideration the sector differences, i.e., the IT sector being less capital intensive then construction. Hence, this condition is reducing the effect of outliers, while not reducing number of observations.

3.3 Dummy variables and definitions

This thesis seeks to analyse the effect of active family ownership being disrupted. We have therefore created several additional dummy variables and the explanation and definition of the dummy-variables follows in the section below.

Family firm dummy: There has been many definitions of a family firm throughout the literature, e.g., are an ownership share above 20% commonly used for listed companies (Maury, 2006). However, because it is ultimately the

shareholders that elect the board who decides whether to hire or fire the CEO, will a majority ownership of the firm give controlling rights. Thus, we define a firm as a family firm if the family ownership stands for at least 50% of the shares. Therefore, the variable takes the value 1 in cases where the ultimate family ownership is at least 50%, consistent with Berzins & Bøhrens (2013) research conducted on the CCGR dataset.

Ownership change dummy: From our dataset, we cannot identify acquisitions directly. However, in our analysis we are only interested in cases where the firm transitioning from family to nonfamily ownership. Therefore, we have defined a change in ownership to be when the ultimate family ownership shifts from above or equal to 50% ownership in year t, to below 50% ownership in year t+1. The dummy variable for ownership change then takes the value 1 in year t+1, the first year as a nonfamily firm.

CEO change dummy: For privacy reasons, we are not able to identify the specifics about the firm's CEO, other than their birth year. Thus, we define a change in CEO to be where the birth year of the CEO have changed. Like the ownership change dummy, the dummy for CEO change takes the value 1 in the first year with the new CEO.

Active family ownership dummy: One of the predetermined dummy-variable in the dataset are for largest family having CEO, we combine this with the firm also being family owned. Hence, the active family ownership dummy will indicate that there is a concentration of the risk-bearing and decision-making functions in the firm. The dummy for active family ownership gives value 1 in cases where the owners and CEO are from the same family.

Change in concentrated ownership: Following the rules of our previous dummies for changes, our dummy variable for concentrated ownership change also takes the value 1 in cases where the firm have gone away from having a concentrated ownership from year t to t+1. The dummy takes value 1 in the year t+1.

3.4 Margin-indicators

The margin-indicators used in the analyses are calculated based on reported operating income, current assets, fixed assets, and operating revenues. Furthermore, are fixed assets and current assets summarized to create the total

balance sheet of the firm. Acquisitions are commonly concentrated on the firm's operations, rather than its financials structure, since financial structure can be adapted towards preference and, with the exception of tax shields, are irrelevant in the valuation (Modigliani & Miller, 1958). For this reason, we focus on the operating accounting figures when calculating margin-indicators.

Firstly, is ROA calculated and adjusted to capture the focus on operational margins of the firms, thus ignoring financial operations. To handle assets that do not have a full year of yielding profits and are acquired late in the year, the balance sheet of the firm is adjusted towards an average balance as shown in Equation 1. However, first observations for each firm are calculated based on the ending balance of that year and not divided in half, since time of acquisition and profits generated first year are assumed to be coordinated. ROA for each firm is consequently calculated according to Equation 2.

Equation 1:

$$Average\ Balance_{t,i} = \frac{Ending\ Balance_{t,i} + Ending\ Balance_{t-1,i}}{2}$$

Equation 2:

$$ROA_{t,i} = \frac{Operating\ Income_{t,i}}{Average\ Balnace_{t,i}}$$

Secondly, are ROIC adjusted similarly to ROA and using average invested capital during the year, as shown in Equation 3. ROIC is also calculated to include tax but due to limitation in the data are tax rates assumed to be 22% for all firm-year observations, which is the common tax rate for joint stock companies in Norway (Norwegian Ministry of Finance, 2020). ROIC is therefore calculated according to Equation 4.

Equation 3:

$$Average\ invested\ capital_{t,i} = \frac{(Ending\ balance_{t,i} - Cash_{t,i}) + (Ending\ balance_{t-1,i} - Cash_{t-1,i})}{2}$$

Equation 4:

$$ROIC_{t,i} = \frac{Operating\ income_{t,i} * (1 - 0.22)}{Average\ invested\ capital_{t,i}}$$

Thirdly, are EBITm calculated using the operating income and operating revenue, as shown in Equation 5. The margin-indicator is not adjusted any further due to is already existing properties.

Equation 5:

$$EBITm_{t,i} = \frac{Operating\ income_{t,i}}{Operating\ revenus_{t,i}}$$

In all calculations are firms that include a 0 value in the denominator given a value of 0% on one or all three indicators. The total 530 423 firm-year observations are divided up in 8 different sectors, as shown in Table 1 below. Not surprisingly are the most observations in the sales sector which also have the lowest average EBITm.

Sector	Observations	ROA	EBITm	ROIC
Construction	96 709	0.1322	0.0696	0.1775
Sales	178 481	0.1069	0.0429	0.1461
Industrial	49 928	0.1024	0.0535	0.1296
Service	73 748	0.1006	0.0561	0.1867
Primary	12 983	0.0971	0.0851	0.1120
Office Service	75 954	0.1911	0.1207	0.3631
IT	13 438	0.1886	0.1089	0.3888
Welfare	29 182	0.2001	0.1368	0.4813

Table 1 Sector overview (see Appendix 1 for sector explanation)

By studying Figure 1 below we find that family firms in general are outperforming nonfamily firms on all three margin-indicators in the data. Initial analysis of our data is therefore consistent with the findings of Anderson & Reeb (2003), suggesting that family firms outperform nonfamily firms. In addition are family firms less volatile and seemingly less effected by the financial crises in 2007-08. However, Norway in general was less effected by the crises compared to other countries e.g., USA. Our data is also overrepresented by family firms, which in most years are approximately 95% of the total observations.

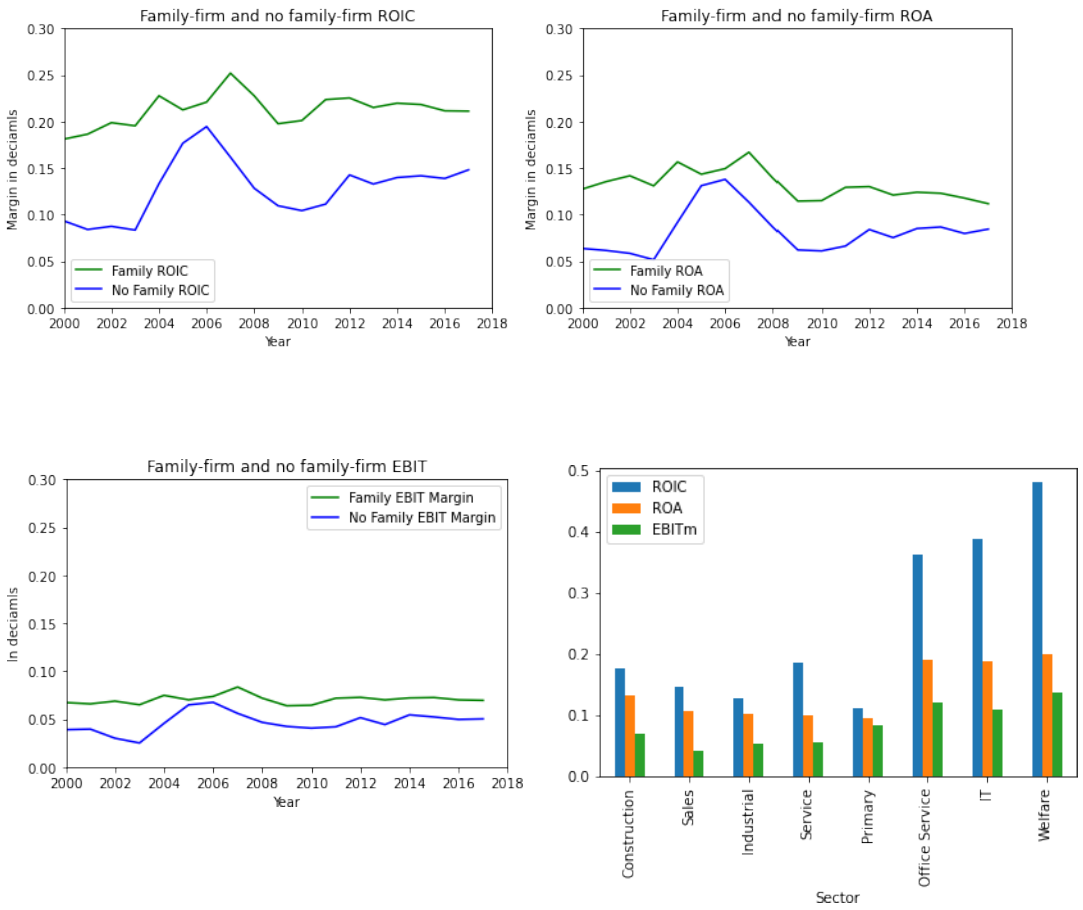

Figure 1: Comparison between family firm and nonfamily firms and sector comparison

3.5 Performance-indicator

We compare the previously calculated margin-indicators for each firm to the average for each sector and year as a benchmark. The benchmark is subtracted from the margin-indicators to create performance-indicators, as shown in Equation 6. Hence, a positive performance-indicator implies that the firm is performing above market expectations and a negative figure signifies a lower performance than market expectations. The sum of all firms' performance-indicators is consequently equal to zero. Reasoning for the adjustment is to compare pre- and post- event performance without the noise of economic trends, environment and other sector differences (Harrison et al., 1991).

Equation 6:

$$ROA\ Performance_{t,i} = ROA\ indicator_{t,i} - ROA\ sector\ average_t$$

$$ROIC\ Performance_{t,i} = ROIC\ indicator_{t,i} - ROIC\ sector\ average_t$$

$$EBITm\ Performance_{t,i} = EBITm\ indicator_{t,i} - EBITm\ sector\ average_t$$

4 Methodology and Design

In this section, we will begin with describing theory of panel data in 4.1 and the advantages and disadvantages. Followed by a description of univariant test and how it will be utilised in six different tests in 4.2. We further give an elaboration of the regression analysis that is employed in the thesis in section 4.3.

4.1 Use of panel data

Our dataset is a combination of cross-sectional and time-series elements, hence a dataset of panel data (Brooks, 2019). The data follows the same entities and measure given objects over times. There is some important advantages of using panel data at disposal; (1) potential to address complex and broader issues, (2) examine dynamical change with increased number of degree of freedom and (3) decreased impact of omitted variable bias (Brooks, 2019). However, we have calculated a delta between the average of three-year post and prior to an event for each entity. Hence, in our regression analyses the data is transformed into a cross-sectional dataset.

4.2 Univariant test

By taking the three-year average of each performance indicator prior to the event-year, and comparing them to the three-year period after, we can conduct a univariate t-test for the difference of our two averages. Due to our data having yearly observations, the exact date-time of the events cannot be recognized. Hence, the event-year will be excluded.

Our two samples are therefore calculated as:

Equation 7:

$$\bar{X}_1 = \frac{Performance_{t-1,i} + Performance_{t-2,i} + Performance_{t-3,i}}{3}$$

$$\bar{X}_2 = \frac{Performance_{t+1,i} + Performance_{t+2,i} + Performance_{t+3,i}}{3}$$

Where performance is one of ROA-, ROIC- or EBITm-performance for firm i with year t defined as event year.

Moreover, in cases where the same firm are subject to multiple events, we limit ourselves to only look at the latest event. To check for differences in the two samples' means, we conduct the following test for dependent paired samples:

Equation 8:

$$t = \frac{\bar{X}_D - \mu_0}{\frac{s_D}{\sqrt{n}}}$$

Where $\bar{X}_D$ and s_D are the average and standard deviation of the paired differences between our two samples and $\mu_0 = 0$. This univariate test will be repeated for ROA, EBITm and ROIC where the null-hypothesis states no change in the samples between the periods before and after event-year. Hence, if we are able to reject the null-hypothesis, we conclude that the two sample periods are significantly different. In addition to answering the hypothesis question of the paper, we aim to investigate the effect of disrupting active ownership as an explanatory factor. The analyses should also seek to uncover whether an exit of the decision-maker or risk-bearer is the most impactful. Consequently, will the following six tests be conducted in the same matter, where Test I answer the main hypothesis:

Test I: Family firms transition to a nonfamily firm. The test is conducted to see if there is a significant difference in performance when changing ownership from a family firm to a nonfamily firm. Earlier research is divided on the performance of family firms as opposed to nonfamily firms, with Anderson & Reeb (2003) arguing that family firms outperform nonfamily firms in financial performance, and Morck et al. (1998) argue otherwise. In our section 3.4, we find that family firms outperform nonfamily firms in general, however, this test gives indications on whether the performance premium hold after an ownership change to a nonfamily firm.

Test II: Actively owned family firms transition to nonfamily firm. In contrast with our original test on family firms, this test also specifies that there has been a change from active ownership in the previous year. Fama & Jensen (1983) have argued for concentrated risk-bearing and decision-making functions to yield lower profits, thus our intention is to answer whether the effect of change in family ownership is stronger when the firm was actively owned prior to the acquisition.

Test III: Actively owned family firms transition to nonfamily firm while retaining the family CEO. Whereas test number two does not specify if the CEO continue in the firm, this test should give evidence to the effect of retaining the CEO after the acquisition. Earnout is a popular way of retaining the commitment of the CEO and lowering the risk of the acquisition, as family firm members in the CEO position have a substantial understanding of the business (Anderson & Reeb, 2003). In this test, the family keeps the decision-making function after the acquisition.

Test IV: Actively owned family firms transition to nonfamily firm specifying a CEO change, hence, a complete family exit in terms of risk-bearing and decision-making functions. As opposed to our previous tests, we here test the effect of a family stepping out of the firm. However, the family might still have shares in the firm, though they no longer have a controlling share.

Test V: Actively owned family firm's transition to nonactive family firm, due to a CEO change and not ownership change. While our previous tests have emphasized on the effect of ownership changes, our fifth test should help uncover the effect of hiring a professional CEO. Here entering agency costs as the family still retain the risk-bearing function in the firm, however, Miller et al. (2014) argue that a nonfamily CEO do outperform the family CEO regardless.

Test VI: Lastly, we repeat Test I on a sector basis. The aim of the test is to investigate whether some industries are more effected by going from a family firm to a nonfamily firm than other industries. Almor et al. (2014) argue that certain industries have other motivations for their M&A activities, such as exceeding organic growth, while Hitt et al. (1998) found recent experience to have a positive effect on the success rate of such activities. This is particularly true for the technology industry, where firms' survival is dependent on obtaining new knowledge through acquisition, and where the low capital demand on entry level makes it easier to establish entrepreneurial firms (Rossi et al., 2013).

4.3 Regression

Conducting a regression analyses on panel data can be accomplished by the use of pooled regression. Pooled regression estimates a single equation on all of the data together and stack the dependent variable y into a vector and explanatory variables x into matrix X containing all cross-sectional and time-series

observation, then regression could be estimated using Ordinary Least Square (OLS) (Brooks, 2019).

However, as mentioned earlier in this section is our data been transformed into a cross-sectional data. We therefore conduct an OLS-regression to investigate the change in performance when transitioning from a family to nonfamily ownership directly. The regression will be conducted three times, each on the different performance-indicator's delta as the dependent variables. Hence, in the regression we set the difference between the average three years pre- and post-event as the dependent variable, as shown in equation 9. The OLS regression is only conducted on firms with an observed ownership change from family to nonfamily.

Equation 9:

$$y_i = \frac{Performance_{t+1,i} + Perfomance_{t+2,i} + Perfomance_{t+3,i}}{3} - \frac{Performance_{t-1,i} + Performance_{t-2,i} + Performance_{t-3,i}}{3}$$

Where, performance is ROA, EBITm or ROIC performance for firm i and event-year t.

We have chosen 10 regressors to identify firm characteristics which potentially impacts performance changes after acquisition. Such characteristic should therefore be in mind for an acquirer when obtaining share in a family firm. First two regressors, *CEO_change* and *FCO_change*, are the same dummy variables used in test II through V to identify CEO change and active family ownership change, respectively. We further implicate the analyses with two growth indicators. First, *gtrend* calculated by the growth from t-3 to t-1, and second *revenue_g* which is the growth between t-2 and t-1. We believe there will be differences between high growing and low growing firms in similarity to growth stock and income stocks in the stock market. We expect low growing firms to be more stable, and therefore less exposed to performance changes. We also add *Large* and *Small* dummy variables to capture stability, where *Small* is the lowest quartile of the dataset and *Large* is the biggest in terms of operating revenues. In addition to that large firms being more stable do we also believe that cultural influences from owner are greater in smaller firms, since the culture is more concentrated around fewer individuals. We also add *Equity_rate* as an

indication on capital structure and a measure on leverage. *Equity_rate* is calculated by dividing equity on total assets.

Furthermore, are three indicators applied to capture the behaviour of the owners. First are the dummy variable *Lfam_full* taking value 1 when the largest family pre-event has a 100% ownership and were not influenced by other shareholders. Secondly are *N_owners* measuring number of owners in t-1 and capturing number of investors influencing the firm. Both variables are a measure of concentration of control and the firm's familiarity to other shareholders. Last variables, *Pays_dividend*, is a dummy variable which capture whether the firm pay dividend in year t-1. We have two reasonings for adding dividend; (1) possibility of family members working in the firm to have a lower salary due to potential dividend pay outs, hence after a sell are performance expected to decrease due to cost increases in the absence of dividend pay outs, and (2) dividend is a method for decreasing the balance sheet and selling out assets in favor for short term shareholders.

Multicollinearity is defined as a scenario where two or more explanatory variables in the regression are highly related (Brooks, 2019). An implicit assumption of OLS-models is that the explanatory variables should not be related. Hence, correlated explanatory variables should be avoided. Perfect multicollinearity explains exact correlation, and such variables would only have enough information to estimate one parameter. While near multicollinearity is a near perfect relation and is more likely in practice (Brooks, 2019). According to Brooks (2009), will certain problems arise if near multicollinearity is ignored. Firstly, would R^2 be seemingly high, but individual coefficients will not be significant due to high standard errors. High standard errors are a consequence of the difficulty to observe individual contribution. Secondly, changes to the regression will cause a large change to the significant and/or coefficient values of other values. Thirdly, confidence interval for the parameter will be wide, which gives unsuitable conclusions with regards to significant tests.

A variance inflation factor (VIF) should be calculated to measure the multicollinearity if multicollinearity is suspected. However, as shown in appendixes 2, 3 and 4 are the correlation between the parameters low, and we therefore do not expect multicollinearity. We see from the table that *gtrend* and *revenue_g* is somewhat correlated, which is not unexpected. However, the

correlation of approx. 0.52 (<0.7) is not significantly enough to expect multicollinearity.

To validate the use of OLS regression we investigate whether all five assumptions hold true. If one or more assumption is violated, we further investigate the possibility for using other estimations. First assumption requires that the average residual value to be zero. From Table 2: Results from assumption of OLS test we see that this assumption is maintained.

Second assumption is with regards to heteroscedasticity. OLS assumes that the variance of the errors is constant, also known as homoscedasticity. Consequently, if the error terms are not constant, we have presence of heteroscedasticity. To test for heteroscedasticity, we conduct a Breusch-Pegan test, where the null hypothesis is presence of homoscedasticity. We here find a LaGrange multiplier statistic of 199 and a p-value of 0 as shown in table 4.1 for ROA. Consequently, we reject the null hypothesis and conclude that we have insufficient evidence for homoscedasticity. Hence, we cannot say that the variance of the errors is constant. For EBITm and ROIC are p-values estimated to 0 as well and we draw the same conclusion.

Third assumption is with regards to autocorrelation. The Durbin-Watson statistic, shown in appendix 5, 6 and 7, in our regressions is close to 2 for all three regressions, which indicates low probability of autocorrelation (Brooks, 2019). We therefore conclude that assumption regarding autocorrelation is not violated.

Fourth assumption assumes that x_t are non-stochastic, but in presence of stochastic regressors the OLS estimator is consistent and unbiased if the regressors are not correlated with the error term (Brooks, 2019). As shown earlier are $E(u) = 0$ and as shown in appendix 2, 3 and 4 is the correlation between regressors and the error term equal to 0. We therefore conclude that this assumption holds.

Lastly, assumption five is with regards to the normality of the residuals. In our regressions are prob(omnibus) low in all three regressions, which indicates that the normal distribution assumption is violated. Prob(omnibus) is showed in appendix 5, 6 and 7. However, according to Brooks (2019) is it still desirable to use the OLS regression, as it is well researched.

Type	ROA	EBITm	ROIC
Lagrange multiplier statistic	199.15	152.64	161.43
P-value	0	0	0
F-Value	20.76	15.75	16.69
F P-value	0	0	0
Mean residuals	0	0	0

Table 2: Results from assumption of OLS test

In the robustness check we were unable to find presence of homoscedasticity, which makes OLS regression inconsistent, and normality of the residuals. We therefore conduct a Weighted Least Square (WLS) model to adjust for heteroscedasticity and choose to ignore the absent of normality. Outliers above 3 standard errors from the mean delta performance are removed before the regression is conducted. The WLS regression is as showed in Equation 10 below.

Equation 10:

$$y_i = \beta_{0,i} + \beta_{1,i}x_{1,i} + \beta_{2,i}x_{2,i} + \ldots + \beta_{10,i}x_{10,i} + u_i$$

Where;

y $= \Delta performance_i$, (as shown in equation 2.3)

x_1= CEO_change (a CEO change dummy in time t)

x_2= FCO_change (an active ownership dummy in time t)

x_3= gtrend (growth in revenues from time t-3 to t-1)

x_4= Lfam_full (a dummy for largest family having 100% share in time t-1)

x_5= Small (Dummy variable for firms with revenues lower than the 25-percentile in time t-1)

x_6= Small (Dummy variable for firms with revenues higher than the 75-percentile in time t-1)

x_7= Equity_rate ($\frac{Equity^{t-1}}{Totalassets_{t-1}}$)

x_8= Pays_dividend (dummy for paying dividend in time t-1)

x_9= N_owners (Number of owners in time t-1)

x_{10}= revenue_g (revenue growth from time t-2 to t-1)

In summary, are six tests and one regression executed in this paper. Table 3 sums up the pre-event environment, the event that interrupt the environment and the new post-event environment for all tests and the regression. Every process is completed at previously family owned firms, but we separate between family ownership, where only family ownership is specified, and active ownership, where family ownership and CEO position is specified. Professional CEO is used where the CEO position is not within the controlling family and retained CEO is when the family CEO is retained after the acquisition.

Test	Pre-event	Event	Post-event
Test I	Family ownership	Ownership change	Nonfamily ownership
Test II	Active ownership	Ownership change	Nonfamily ownership
Test III	Active ownership	Ownership change, but no CEO change	Nonfamily ownership, Retained CEO
Test IV	Active ownership	Complete family exit	Nonfamily ownership, Professional CEO
Test V	Active ownership	CEO change	Family owned, Professional CEO
Test VI	Family ownership	Ownership change (individual sector)	Nonfamily ownership
Regression	Family ownership	Ownership change	Nonfamily ownership

Table 3: Test overview

5 Results and Discussion

In this section we will present our results from the analyses and give a discussion on how our results compare to previous findings. Section 5.1 present and discuss the results from Test I regarding family firm exits, section 5.2 with regards to Test III-V on active ownership, 5.3 with regards to Test VI on industry specific and section 5.4 on the regression explained in section 4.3. Lastly, will section 5.5 give a combined discussion of our results and section 5.6 addresses issues and potential critique to our analyses.

5.1 Main hypothesis

Our main hypothesis *"Family owned firms will decrease their performance when ownership changes to nonfamily ownership"* was based on the findings of Anderson & Reeb (2003), that family firms outperform nonfamily firms. In section 3.3 we can see that their finding also holds true to in our data. Test I, as explained in section 4.2, aims to see if possible positive effect of being a family firm holds after an ownership change to a nonfamily firm. We expect to find that after a change to a nonfamily owner, the firm's performance decreases.

5.1.1 Results from Test I: From family to nonfamily ownership

A change from family to nonfamily firm shows significant difference in the three-year period prior to the event, to the three-year period after. Furthermore, are the mean change negative for all three performance indicators, being -0.78% for ROA, - 0.36% for EBITm and -1.17% for ROIC. The results from Test I therefore indicates that a family firm's transition to a nonfamily firm will decrease the firm's performance. The average decrease is statistically significant, however, the decrease in ROA and EBITm are minor and therefore not of economic significance.

Test I: Family change			
Indicator	**Mean**	**T-statistic**	**P-value**
ROA	-0.0078	3.1433	0.0017
EBITm	-0.0036	2.8068	0.0050
ROIC	-0.0117	2.8500	0.0043

Total observations: 4 689

Table 4: Result from Test I

5.1.2 Discussion of results from Test I: From family to nonfamily ownership

In our previous presentation of the dataset, we showed that family firms outperformed nonfamily firms in terms of our margin indicators. Hence, our findings were consistent with earlier research from Anderson and Reeb (2003) on the performance of family firms versus nonfamily firms. From Test I, we find that family firms transitioning to nonfamily firms decreases their performance and are unable to maintain the performance premium. Consequently, supporting family firms as an efficient ownership structure. Moreover, are the results questioning those from Morck et al. (1998) regarding majority ownership potential to exploit the firm, as family firms in our study have majority ownership by definition.

5.1.3 Robustness check of Test I: From family to nonfamily ownership

Our analysis is conducted through the use a t-test for dependent paired samples. The test has the null-hypothesis that the three-year average performance-indicator prior to the event is the same as the three-year average after the event. However, the test also assumes our variables to be normally distributed, which we can test for using a Shapiro-Wilk Test on our samples. The normality test results are illustrated in Table 5.

Vector	T-stat	P-value
ROA_pre	0.9792	$1.1578e^{-25}$
ROA_pos	0.9816	$3.3132e^{-24}$
EBITm_pre	0.9268	$4.8625e^{-43}$
EBITm_pos	0.9273	$6.2918e^{-43}$
ROIC_pre	0.8388	0
ROIC_pos	0.8158	0

Table 5: Shapiro-Wilk test results

From Table 5, we see that all p-value are approximately equal to zero. Hence, we reject the null hypothesis that the samples are normally distributed. We therefore conduct the same analysis, using the Wilcoxon Signed Rank test. This is a nonparametric test, which does not assume normality in the sample distribution and test for differences in the two samples' median as opposed to their mean. Based on Table 4 and Table 6, we find both tests to show a significant decrease for all performance indicators, both on the sample mean from our t-test and on the median from the Wilcoxon test.

Indicator	Median	W-stat	P-value
ROA	-0.0054	5136631	$9.7594e^{-05}$
EBITm	-0.0025	5164894	$3.2862e^{-04}$
ROIC	-0.0122	5037511	$6.8452e^{-07}$

Table 6: Wilcoxon test result

5.2 Active ownership – results and discussion

We will further investigate why we found a significant decrease in performance when a family firm becomes a nonfamily firm. As earlier literature suggests concentration of risk-bearing and decision-making functions to affect firms' performance, we expect variation in performance change with regards to different types of separations. Test II therefore specifies an active family ownership prior to the family firm becoming a nonfamily firm. Test III elaborates on the effect of family CEO by retaining the CEO after the transaction, while test IV takes on the

scenario where the family loses both CEO position and majority share. Lastly, in Test V we test for performance differences after a change in active ownership because of a CEO change, i.e., the firm has hired a professional manager.

5.2.1 Test II: From active to nonfamily ownership

Test II shows a significant reduced performance following the event, with reductions of -1.17%, -0.37% and -1.34% for ROA, EBITm and ROIC, respectively. Building on our original test, these results show an even larger reduction in the firm's performance in cases where the firm previously had active ownership. Test II further strengthens the finding that having family members as the CEO could improve the firm's performance (Demsetz and Lehn's (1985), Anderson and Reeb (2003)). Our findings support the prior arguments that family members in CEO positions have a broad knowledge of the industry and market, thus can efficiently manage their firm.

Test II: Disruption of active family ownership

Indicator	Mean	T-stat	P-value
ROA	-0.0116	3.9556	0.0001
EBITm	-0.0039	2.5862	0.0098
ROIC	-0.0143	2.8330	0.0046

Total observations: 2986

Table 7: Results from Test II

5.2.2 Test III: From active to nonfamily ownership with a retained CEO

In Test III we found that the financial performance decreases when the actively owned family firm transition to nonfamily firm while retaining the family CEO. The reduction is similar to our previous Test II, as the subsample used on Test II contains many of the same observations as in Test III. However, we find a larger decrease now when adding the condition of not changing the CEO, with -1.16%, -0.39% and -1.43% for ROA, EBITm and ROIC, respectively. These results contradict the theory of family CEOs knowledge about the industry is beneficial, as the same CEO experiences decreasing performance after an ownership change. The decrease can somehow be explained by the entering of agency costs in form of monetarizing, as the CEO no longer have the same risk-bearing incentives (Jensen & Meckling,1976).

Test III: Disruption of active family ownership and retainment of family CEO

Indicator	Mean	T-stat	P-value
ROA	-0.0117	3.9612	0.0001
EBITm	-0.0037	2.4584	0.0140
ROIC	-0.0134	2.6420	0.0083

Total observations: 2893

Table 8: Results from test III

5.2.3 Test IV: From active ownership to a complete family exit

Test IV elaborates on the scenario when the family loses both CEO position and majority share. Our findings do not show significance in either of our performance indicators. However, the results indicate an even larger negative impact compared to previous tests. We find the reductions in our performance indicators to be -1.54%, -1.11% and -4.75% for ROA, EBITm and ROIC, respectively. Even though we are unable to say that the performance will decrease in such scenario, we recognise the risk of decreasing due to the high means.

Test IV: Disruption of active family ownership by complete exit

Indicator	Mean	T-stat	P-value
ROA	-0.0154	0.8952	0.3723
EBITm	-0.0111	1.0701	0.2866
ROIC	-0.0475	1.5697	0.1189

Total observations: 130

Table 9: Results from test IV

5.2.4 Test V: From active ownership to a professional CEO

Interestingly, our fourth test indicates positive changes for family firms' performance when hiring a professional CEO. However, the results are not significant, and we cannot reject the possibility of no change. One plausible explanation for our results is that professional CEOs are likely to have financial education or experience and are therefore able to manage capital more efficiently, thus making up for the family CEO's industrial knowledge (Sraer and Thesmar, 2007). Furthermore, Sraer and Thesmar (2007) found that professional CEOs in listed family firms have outperformed the market over the 1990s. The test shows a change of 0.87% and 1.14% on ROA and ROIC respectively, while showing no changes in the firms' EBITm. Furthermore, combining our findings with Bennedsen et al. (2007) regarding family CEO successor suggest that their theory

holds true. Bennedsen et al. (2007) findings suggest that family CEO successor negatively effects the firm's performance. At the same time, are our findings unable to conclude that a CEO change from family to professional have an impact on the firm's performance. As an implicit conclusion, are change to a professional CEO better for the firm's performance on average than a change to a family successor.

Test V: Disruption of active family ownership by hiring professional CEO

Indicator	Mean	T-stat	P-value
ROA	0.0087	-0.9942	0.3206
EBITm	-0.0001	0.0257	0.9795
ROIC	0.0114	-0.7632	0.4457

Total observations: 472

Table 10: Results from test V

5.2.5 Robustness check of test II – V

Like the samples ran in test I, we find no evidence of normality in the subsamples used in test II through V, the result of our Shapiro-Wilk Test can be found in appendix 8, and we continue testing using the Wilcoxon Signed Rank test. The test further strengthens our findings from Test II and III, showing even more significance in the difference between the three-year averages prior to the event, to the three-year period following the event. However, for Test IV and V, our results are still not significant enough for us to draw any conclusions. The exact results from our Wilcoxon test can be found in appendix 9.

5.3 Industry differences – results and discussion

Test VI repeats Test I, family firm to a nonfamily firm, but on an sector level. The test is therefore conducted once for each performance indicator and divided into sectors.

5.3.1 Test VI: From family to nonfamily ownership

For our test on ROA, we find a decrease in average performance for most sectors, except for welfare and primary. The largest decrease can be found in the IT sector, with an average decrease of 1.65%. However, the test only provides significance for the sales, office services and construction sectors, where they all have a negative effect on ROA.

Test VI: Family firm change by sector (ROA)

Sector	Mean	T-stat	P-value	Obs
Sales	-0.0068	1.8260	0.0681	1527
Industrial	-0.0073	1.1778	0.2393	566
Office service	-0.0149	1.8056	0.0714	673
Construction	-0.0108	1.9585	0.0506	711
Service	-0.0058	0.8015	0.4231	713
IT	-0.0165	0.9827	0.3271	180
Primary	-0.0155	-1.6501	0.1009	158
Welfare	-0.0028	-0.1981	0.8432	161

Table 11: Results from test VI (ROA)

For EBITm we find similar results as for ROA, however, the sales sector does not generate significant results. Interestingly, the office service sector now stands for the largest decrease while also showing significance in the results. Office services have an average decrease in EBITm of -1.08%, with a p-value of 0.016.

Test VI: Family firm change by sector (EBITm)

Sector	Mean	T-stat	P-value	Obs
Sales	-0.0020	1.3090	0.1907	1527
Industrial	-0.0052	1.4336	0.1522	566
Office service	-0.0108	2.4043	0.0164	673
Construction	-0.0070	2.6786	0.0076	711
Service	0.0004	-0.1151	0.9083	713
IT	-0.0107	1.1149	0.2663	180
Primary	0.0162	-1.4918	0.1378	158
Welfare	0.0019	-0.2656	0.7909	161

Table 12: Results from Test VI (EBITm)

Lastly, our test for ROIC produces significance reduction in average for both the sales and office service sector. Their average decrease following the ownership change are 1.02% and 3.79% respectively, with the latter being the largest observed decrease in ROIC following a family exit.

Test VI: Family firm change by sector (ROIC)

Sector	Mean	T-stat	P-value	Obs
Sales	-0.0102	2.0067	0.0450	1527
Industrial	-0.0107	1.4164	0.1572	566
Office service	-0.0379	2.4508	0.0145	673
Construction	-0.0096	1.3549	0.1759	711
Service	-0.0073	0.6063	0.5445	713
IT	-0.0064	0.1728	0.8590	180
Primary	0.0128	-1.1728	0.2427	158
Welfare	0.0227	-0.6040	0.5467	161

Table 13: Results from test VI (ROIC)

The office service sector stands out as we find a significant reduction throughout all the performance indicators. One plausible explanation to our findings is the importance of human capital in this sector. The firms rely on the employees, and especially the owner's know-how of the industry. Hence, with the owner stepping out, much of the firm's expertise is therefore gone.

5.3.2 Robustness check of test VI

We find no evidence for normality from our sector-specific subsamples, as shown in appendix 10. Hence, we conduct the same Wilcoxon test as previously. In general, the test yields the same results as our original t-test, however, we find additional significant results for ROIC in the industrial sector. A complete overview of the results can be found in appendix 11.

5.4 Regression analyses: From family to nonfamily ownership

In the last part of our analysis, we conduct an WLS-regressions on 10 selected explanatory variables to investigate what effects the negative performance of a family firm becoming a nonfamily firm. The regressions were conducted as shown in section 4.3, with the dependent values as the difference between pre- and post- transaction performance with respect to ROA, EBITm and ROIC.

5.4.1 Result from regression

Our regression analysis has a quite low explanatory factor for all three performance indicators, as shown in appendix 5, 6 and 7. R^2 is estimated to 0.01, 0.007 and 0.005 for ROA, EBITm and ROIC, respectively. However, *prob(f-statistic)* for all three regressions are close to zero, we therefore reject the null hypothesis stating that all of the coefficients are equal to zero.

From appendix 5 for ROA, we find significant coefficient for *Lfam_full*, *Equity_rate* and *Pays_dividend* with a P-value of 0.05. *Lfam_full*, *Equity_rate* and *Pays_dividend* has coefficients corresponding to -0.017, -0.005 and -0.022 respectively. Small firms in time t-1 are significant with a P-value of 0.1, with coefficients of 0.012 and a P-value of 0.07.

In appendix 6 regarding EBITm, we see the same three variables having a P-value lower than 0.05. Coefficients are estimated to -0.006, -0.002, -0.01 for *Lfam_full*, *Equity_rate* and *Pays_dividend* respectively. If we increase p-value to 0.1, we do not find any additional significant parameters.

In appendix 7 regarding ROIC, we see that *Lfam_full* and *Pays_dividend* are the only coefficients showing significance with a P-value of 0.05. Both coefficients are negative with -0.018 and -0.025 respectively. *Equity_rate* do, however, have a P-value of 0.057 and a coefficient of -0.004.

CEO_change and *FCO_change*, dummy variables for a change in CEO and active ownership respectively, do have coefficient that are barely economically significant for all three regressions. Furthermore, are t-statistics quite small so we cannot conclude that they are significantly different from zero.

5.4.2 Discussion of results from regression

The regression shows little evidence for our expectations regarding active ownership. We would expect FCO and CEO change to have higher significance. Even if significant, the parameters are quite low and show little effect on the delta performance before and after family ownership change. It would therefore appear that increased agency cost effects have little impact on the firms' margins the following years.

Interestingly, are the ownership share of the largest family significant for the delta performance. All three performance indicators are affected by the previous family's ownership share with a factor of above 1% negatively, which we conclude are of economical significant for a firm's margins. This gives evidence for loss of know-how knowledge, as mentioned by Fama and Jensen (1983), in firms owned by one family are probable. On the other hand, can firms where the largest family do not have 100% ownership be assumed to be affected by other investors. There is reason to believe that these firms might be more used to nonfamily investors or a disperse ownership. The change from one family to a nonfamily investor are therefore simpler, hence we see a negative impact from exclusively being one family on the owner side the year before the event.

The analysis also sees balance sheet figures as explanatory factors. Equity rate, used as a measure for capital structure, indicates that the more self-funded the firm is the more it will affect the delta performance negatively. Hence, increased share of assets financed by equity in time t-1 decreases the delta performance. However, the decrease is quite small in all three regressions and in our opinion not of economic significance. Second balance sheet figure *Pays_dividend*, indicates that firms which pays dividend in time t-1 are negatively

affecting delta performance. The effect is, in our opinion, economically significant as it is above 1% in all three cases and above 2% for ROA and ROIC. Reasonable explanation could be that dividends are paid instead of salaries for families working in the firm. When the dividend then disappear after an ownership change are higher salaries expected, hence, reducing the future profits. On the other hand, if dividend is not used as an allocation of profits, it could be used as a method to thin the balance sheet, and we should therefore expect increased delta performance in respect to ROA and ROIC given equal operating profits. Moreover, since ROA and ROIC are approximately equally negatively affected could the dividend be assumed to not only contain emptying the cash holdings. Given our results, if the balance sheet is decreasing in size other assets than cash must be moved out of the firm. Removal of this assets may affect the profitability, by inducing higher cost levels, greater than it effects from profits on a smaller balance sheet. To be conclusive should further investigations on the matter be conducted.

5.4.3 Robustness check of regression

A robustness check of the regression has already been conducted in section 4.3, where we verify the assumptions of a OLS model. We found evidence of heteroscedasticity being present and therefore choose to conduct a WLS model instead.

5.5 Overall discussion of findings

From Table 14 and Figure 2 we see the trend of family firms before and after becoming a nonfamily firm. The figures are estimated in performance margins, hence above/below the market average. As the table shows are the target firms high performing before the acquisition, and on average having a ROA performance of 15.2% higher than the market. However, shortly after the event year, the firms' performance decreases below the market on all three indicators. Such sharp decrease indicates that the changes do in fact have a huge impact. For year t+2 and t+3 we see an upwards trending line, but the increase in performance is not able to contradict the sharp decline in year one. The trend is expected when compared to earlier testing, since we previously find that the three-year average post-event is lower than pre-event. Interestingly are the major impact occurring in year t+1, which reveal the importance of a good transition to new owners.

For acquirer should decreasing trend in performance be considered relevant to pricing. In most cases are valuation conducted on future cash flows which is based on historical figures. For instance, by discounting future cash flows (DCF-model). The DCF-model do take risk into account, generally through the weighted average cost of capital (WACC), but our findings suggest an increase in the WACC estimations to adjust for the risk of lower future cash flows being present. Hence, the discount rate should be adjusted for the additional risk involved when valuating such firms. The build-up of WACC do not consider such risk as betas and peer groups is commonly grouped by sector and listed or unlisted firms, and therefore do not differ between family and nonfamily firms. Alternatively, should forecasting be adjusted for the expected drop in performance. Consequently, risk of overvaluation is present if the observed decrease in cash flows is not adjusted for properly. However, test results from Test I is of a low economic significance, so there is reason to believe that the over estimation of future cash flows are low and consequently an overvaluation being relatively minor.

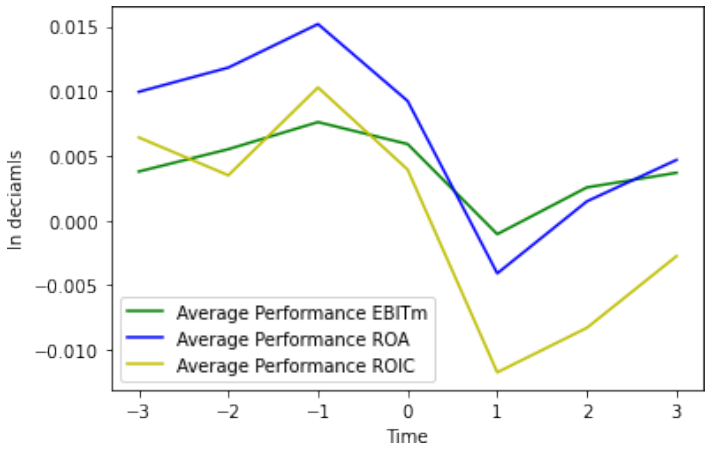

Figure 2: Trends of target firms, where x=0 is event year.

Time	-3	-2	-1	0	1	2	3
ROA	0.0099	0.0118	0.0152	0.0092	-0.0041	0.0015	0.0047
EBITm	0.0038	0.0055	0.0076	0.0059	-0.0011	0.0026	0.0047
ROIC	0.0064	0.0035	0.0103	0.0039	-0.117	-0.0083	-0.0028

Table 14: Trends of target firms where time 0 is event year.

The further investigation found that the problem is stronger related to active family ownership. Test II concluded with a decrease in ROA on an average of -1.16%, which is 0.4% greater decrease than in Test I. Consequently, acquirer

obtaining majority ownership in an active family owned firm have superior exposure to a decrease in performance. Measures of retaining the CEO with an earnout structure has been a common answer to the problem. Most of the observations included in Test II are the same observations as in Test III. As a result, are retaining the active family firms' CEO a common practice in the data as well. However, Test III indicates that such measure to be insufficient, as the decrease is at a similar level as unspecified retainment in Test II having a ROA average of -1.17%. We do not have knowledge of the incentives that the CEOs in question have been given, but our results give reason to believe that any potential incentives to be too weak.

We previously discussed the loss of know-how knowledge as an explanatory factor for the negative results in Test II. However, when comparing unspecified (Test II) and specified (Test III) retainment of a family CEO we see small differences. The results find that retaining CEO negatively impacts ROA but a positively impact on ROIC and EBITm and in all cases are marginal compared to unspecified retainment. The similar results in Test II and III therefore questions the theory of losing know-how knowledge as an explanation of poor performance after ending an active family ownership. However, even though Test IV is unable to conclude a decrease in performance, are the lower means indicating a presence of know-how knowledge being lost after a complete family exit. We also argued that cost of monitoring as a reason for the negative results in Test III with the argumentation that once the CEO loses shares, he also loses the incentives and therefore needs to be monetarized. We do not have knowledge of the CEO share position after event-year when CEO is not retained. However, it is likely that a principal-agent problem arises when the active family ownership ends and therefore see the cost of monitoring as a possible explanation for the poor performance post-event-year.

While we were unable to conclude that the delta performance is different from 0 in Test IV, the mean change is lower in complete family exits than in any other scenarios tested. We would argue that a complete step-out is the last option an acquirer should choose due to the high risk of lower performance in the post-transition period. Consequently, retaining the CEO is the lesser of two evils. However, due to lack of significance, we can only conclude that retaining CEO

after acquiring an active owned firm do not seem to compensate for the loss of performance after a transition.

On the other side, the regression does not show any evidence for active family ownership or retaining CEO to be significant for the delta performance. Rather, indicated capital structure and dividend to be the important factors. The dividend factor was discussed to reason in the potential increased wages after transition. The logic is in line with Test III where the CEO is retained, but loses ownership and therefore also dividend, and are potentially compensated with increased salaries.

The regression did, however, find that the amount of ownership shares the largest family had before transaction to matter in the delta performance. More specifically, did firms where the largest family had 100% of shares before the transaction have a poorer after-transaction performance. These results, combined with testing of active family ownership, indicates that when a family have high control of a firm the impact of ownership change is increased in a negative direction.

5.6 Addressing issues

We find it reasonably to believe that factors not included in the thesis analyses are partly impacting the post-results. Earlier mentioned argumentation for including motivational factors such as market power and firm survival are believed to be important for a successful M&A transaction. Motivational reasons have been given support in earlier literature, e.g. Almor et al., (2014). In our argument we find that the risk of overpricing to be present, but we are unable to identify other values than future cash flows of the target firm. The thesis' pure quantitative approach and indifference to motivation and reasoning of the transaction potentially results in fewer significant factors. Moreover, are other practicalities not included in the analyses, such as the practical implementation of the transition. We are unable to drove conclusive results in our argumentation on the reason behind negative post performance, and indifference of qualitive data are a rational argument for the reason.

Comparing family-to-family transaction with family-to-nonfamily transactions would have been a reasonable comparing component to our analyses. However, a weakness in the data is the absent of the ability to identify family-to-

family transactions making the comparison impossible. The difference in results is valuable information to the argumentation stated earlier, as similar results may indicate that a change, in itself, is the crucially impacting factor. In addition, were we unable to identify the marginal tax rate of the single firm, therefore making a broad assumption of tax rates in calculation of ROIC. Research have suggested that professional CEOs are better suited to manage capital efficiently (Sraer & Thesmar, 2007). Hence, there is reason to believe that marginal tax rate for firms with professional CEO is lower due to the ability to undertake and manage higher debt levels. Lastly, are firms often reporting multiple industry codes, we therefore risk to place firms in wrong sector and adjusting for inaccurate environments and averages. However, wrongly placing firms are a small issue for firms reporting steadily on their industry, but when firms change their industry, and potentially sector, the subtraction of the sector averages changes as well. The change in subtraction combined with wrongly placed sector are an issue in the analyses, as the performance figure becomes inaccurate and at a worst case the two timelines become incomparable.

6. Conclusion

From our initial analysis, we found evidence of family firms outperforming nonfamily firms in general. Thus, our initial findings are consistent with those of Anderson and Reeb (2003), while contradicting Morck et al. (1998) theory regarding possibility of exploiting the firm. We conclude that our hypothesis was correct as family firm performance decrease after transitioning to a nonfamily firm. The decrease in performance is mainly caused by the large drop in year t+1, as the performance indicators looks to normalize in the following years, though without reaching their previous peaks. Conclusively, we see that while the family firms' performance decreases after the family steps out, they still perform above the market average after the exit.

From further analyses we find that the decrease in performance is higher when the family owners are in larger control. Common practice of retaining the family CEO to compensate the loss of performance were found. However, incentives for the CEO are believed to be too weak to compensate for the loss of risk-bearing functions. In other words, the potential earn-out contracts do not contain sufficient incentives for the retained CEO to perform at an equal level.

Moreover, we were unable to conclude on the performance after a transition of both risk-bearing and decision-making functions. However, results gave strong indication on negative means in such scenarios. Conclusively, we find evidence for lower performance after family firms transition to nonfamily firms which should be considered in the firm valuation.

Our recommendation to further research is to include qualitative data when researching the explanation for the decrease in performance after family firms becomes nonfamily firms. Our notion is that the lack of conclusive results on explanatory factors are a consequence of ignoring such data. Comparison between family-to-family transactions and family-to-nonfamily will also be relevant towards a decisive conclusion. The insight in differences and inclusion of qualitive information is in our believes significant factors to more conclusive explanations of the rationale behind the observed decrease in performance in the aftermath of a family firm exit.

References

Ahuja, G., & Katila, R. (2001). Technological acquisitions and the innovation performance of acquiring firms: A longitudinal study. *Strategic Management Journal*, *22*(3), 197–220. https://doi.org/10.1002/smj.157

Almor, T., Tarba, S. Y., & Margalit, A. (2014). Maturing, technology-based, born-global companies: Surviving through mergers and acquisitions. *Management International Review*, *54*(4), 421–444.

Anderson, R. C., & Reeb, D. M. (2003). Founding-Family Ownership and Firm Performance: Evidence from the S&P 500. *The Journal of Finance*, *58*(3), 1301–1328. https://doi.org/10.1111/1540-6261.00567

Bennedsen, M., Nielsen, K. M., Perez-Gonzalez, F., & Wolfenzon, D. (2007). Inside the Family Firm: The Role of Families in Succession Decisions and Performance*. *The Quarterly Journal of Economics*, *122*(2), 647–691. https://doi.org/10.1162/qjec.122.2.647

Bøhren, Ø., Stacescu, B., Almli, L. F., & Søndergaard, K. L. (2019). When Does the Family Govern the Family Firm? *Journal of Financial and Quantitative Analysis*, *54*(5), 2085–2117. https://doi.org/10.1017/S0022109018001102

Brooks, C. (2019). *Introductory econometrics for finance* (4th ed.). Cambrifge university press.

Capron, L. (1999). The long-term performance of horizontal acquisitions. *Strategic Management Journal*, *20*(11), 987–1018. https://doi.org/10.1002/(SICI)1097-0266(199911)20:11<987::AID-SMJ61>3.0.CO;2-B

Christensen, C. M., Alton, R., Rising, C., & Waldeck, A. (2011). *The new M&A playbook*.

Cioli, V., Giannozzi, A., Ippoliti, V., & Roggi, O. (2020). Cross-Border M&A and Financial Performance: Empirical Evidence on Bidder/Target Companies. *International Journal of Business and Management*, *15*(4), 67. https://doi.org/10.5539/ijbm.v15n4p67

Demsetz, H., & Lehn, K. (1985). The Structure of Corporate Ownership: Causes and Consequences. *Journal of Political Economy*, *93*(6), 1155–1177. https://doi.org/10.1086/261354

Fama, E. F., & Jensen, M. C. (1983). Separation of Ownership and Control. *THE JOURNAL OF LAW AND ECONOMICS*, 25.

Grullon, G., Larkin, Y., & Michaely, R. (2019). Are US Industries Becoming More Concentrated?*. *Review of Finance*, *23*(4), 697–743. https://doi.org/10.1093/rof/rfz007

Gugler, K., Mueller, D. C., Yurtoglu, B. B., & Zulehner, C. (2003). The effects of mergers: An international comparison. *International Journal of Industrial Organization*, *21*(5), 625–653. https://doi.org/10.1016/S0167-7187(02)00107-8

Harrison, J. S., Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. (1991). Synergies and post-acquisition performance: Differences versus similarities in resource allocations. *Journal of Management*, *17*(1), 173–190.

Hitt, M., Harrison, J., Ireland, R. D., & Best, A. (1998). Attributes of Successful and Unsuccessful Acquisitions of US Firms. *British Journal of Management*, *9*(2), 91–114. https://doi.org/10.1111/1467-8551.00077

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Maury, B. (2006). Family ownership and firm performance: Empirical evidence from Western European corporations. *Journal of Corporate Finance*, *12*(2), 321–341.

Meglio, O., & Risberg, A. (2011). The (mis)measurement of M&A performance—A systematic narrative literature review. *Scandinavian Journal of Management*, *27*(4), 418–433. https://doi.org/10.1016/j.scaman.2011.09.002

Miller, D., Breton-Miller, I. L., & Lester, R. H. (2011). Family and Lone Founder Ownership and Strategic Behaviour: Social Context, Identity, and Institutional Logics. *Journal of Management Studies*, *48*(1), 1–25. https://doi.org/10.1111/j.1467-6486.2009.00896.x

Miller, D., Le Breton-Miller, I., Minichilli, A., Corbetta, G., & Pittino, D. (2014). When do Non-Family CEOs Outperform in Family Firms? Agency and Behavioural Agency Perspectives. *Journal of Management Studies*, *51*(4), 547–572. https://doi.org/10.1111/joms.12076

Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *The American Economic Review*, *48*(3), 261–297.

Morck, R., Stangeland, D., & Yeung, B. (1998). Inherited Wealth, Corporate Control and Economic Growth: The Canadian Disease. *University of Chicago Press*.

Norwegian Ministry of Finance. (2020). *Taxes 2020 (Prop. 1 LS (2019–2020) Proposition to the Storting (bill and draft resolution). For the fiscal year 2020)*. 26.

Rossi, M., Yedidia Tarba, S., & Raviv, A. (2013). Mergers and acquisitions in the hightech industry: A literature review. *International Journal of*

Organizational Analysis, *21*(1), 66–82. https://doi.org/10.1108/19348831311322542

Sraer, D., & Thesmar, D. (2007). Performance and Behavior of Family Firms: Evidence from the French Stock Market. *Journal of the European Economic Association*, *5*(4), 709–751. https://doi.org/10.1162/JEEA.2007.5.4.709

Thanos, I. C., & Papadakis, V. M. (2012). The use of accounting-based measures in measuring M&A performance: A review of five decades of research. In *Advances in mergers and acquisitions*. Emerald Group Publishing Limited.

Torre-Enciso, I. M., & Garcia, J. B. (1996). Mergers and acquisition trends in Europe. *International Advances in Economic Research*, *2*(3), 279–286.

Villalonga, B., & Amit, R. (2020). Family ownership. *Oxford Review of Economic Policy*, *36*(2), 241–257. https://doi.org/10.1093/oxrep/graa007

Yılmaz, I. S., & Tanyeri, B. (2016). Global Merger and Acquisition (M&A) activity: 1992–2011. *Finance Research Letters*, *17*, 110–117. https://doi.org/10.1016/j.frl.2016.02.005

Appendix

Appendix 1: Sector Overview and example of operations

Given Sector	**Example of operation**
Primary	Mining, fishing, agriculture
Industrial	Manufacturing of machines, paper, food, textile etc.
Construction	Building development, Electricity and Gas production, Waste, Water, and sewage
Sales	Sales and repair of motor vehicles, Whole sales, Retail
Service	Transport (bus, cargo, ship etc.) Restaurant, Hotels, Catering, Tourism, Entertainment, Private Household services
IT services	Telecommunication, IT service, Software
Office Services	Financial, Legal, Advertising, design, Business services, Security, Architecture, Auditing etc.
Welfare	Hospitals, Education, Public services, membership organisation (Political, religious), Caretaker
Excluded Sectors	Activities of financial and non-financial holding companies, Real estate agency

Appendix 2: Correlation matrix for WLS regression (ROA)

	CEO_ CHANGE	FCO_ CHANGE	GTREND	LFAM_FULL	SMALL	LARGE	EQUITY_ RATE	PAYS_ DIVIDEND	N_OWNERS	REVENUE_G	RESID
CEO_ CHANGE	1.0000	-0.1275	-0.0827	0.0758	-0.0529	-0.0297	0.0281	0.0070	0.0036	-0.0741	0.0
FCO_ CHANGE	-0.1275	1.0000	-0.0700	0.2340	0.1256	-0.0380	-0.0339	-0.0114	-0.2370	-0.0304	-0.0
GTREND	-0.0827	-0.0700	1.0000	-0.0727	-0.0631	-0.0043	0.0004	0.0011	-0.0562	0.5182	-0.0
LFAM_FULL	0.0758	0.2340	-0.0727	1.0000	0.0202	-0.1220	-0.0025	-0.0580	-0.2742	-0.0379	-0.0
SMALL	-0.0529	0.1256	-0.0631	0.0202	1.0000	-0.2619	-0.0890	-0.0621	-0.1122	-0.0674	-0.0
LARGE	-0.0297	-0.0380	-0.0043	-0.1220	-0.2619	1.0000	0.0876	0.1856	0.1539	0.1061	-0.0
EQUITY_ RATE	0.0281	-0.0339	0.0004	-0.0025	-0.0890	0.0876	1.0000	0.0730	0.0650	0.0113	0.0
PAYS_ DIVIDEND	0.0070	-0.0114	0.0011	-0.0580	-0.0621	0.1856	0.0730	1.0000	-0.0085	0.1237	0.0
N_OWNERS	0.0036	-0.2370	-0.0562	-0.2742	-0.1122	0.1539	0.0650	-0.0085	1.0000	-0.0719	-0.0
REVENUE_G	-0.0741	-0.0304	0.5182	-0.0379	-0.0674	0.1061	0.0113	0.1237	-0.0719	1.0000	-0.0
RESID	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0000	1.0

Appendix 3: Correlation matrix for WLS regression (EBITm)

	CEO_ CHANGE	FCO_ CHANGE	GTREND	LFAM_FULL	SMALL	LARGE	EQUITY_ RATE	PAYS_ DIVIDEND	N_OWNERS	REVENUE_G	RESID
CEO_ CHANGE	1.0000	-0.1299	-0.0775	0.0925	-0.0462	-0.0413	0.0386	0.0156	0.0033	-0.0668	-0.0
FCO_ CHANGE	-0.1299	1.0000	-0.0691	0.2345	0.1257	-0.0245	-0.0210	-0.0148	-0.2333	-0.0375	0.0
GTREND	-0.0775	-0.0691	1.0000	-0.0752	-0.0648	0.0017	-0.0008	0.0070	-0.0584	0.5271	0.0
LFAM_FULL	0.0925	0.2345	-0.0752	1.0000	0.0190	-0.1248	0.0003	-0.0672	-0.2721	-0.0353	0.0
SMALL	-0.0462	0.1257	-0.0648	0.0190	1.0000	-0.2643	-0.0881	-0.0686	-0.1094	-0.0664	0.0
LARGE	-0.0413	-0.0245	0.0017	-0.1248	-0.2643	1.0000	0.0821	0.1864	0.1649	0.1233	-0.0
EQUITY_ RATE	0.0386	-0.0210	-0.0008	0.0003	-0.0881	0.0821	1.0000	0.0734	0.0692	-0.0003	0.0
PAYS_ DIVIDEND	0.0156	-0.0148	0.0070	-0.0672	-0.0686	0.1864	0.0734	1.0000	-0.0143	0.1365	0.0
N_OWNERS	0.0033	-0.2333	-0.0584	-0.2721	-0.1094	0.1649	0.0692	-0.0143	1.0000	-0.0707	-0.0
REVENUE_G	-0.0668	-0.0375	0.5271	-0.0353	-0.0664	0.1233	-0.0003	0.1365	-0.0707	1.0000	-0.0
RESID	-0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0000	1.0

Appendix 4: Correlation matrix for WLS regression (ROIC)

	CEO_ CHANGE	FCO_ CHANGE	GTREND	LFAM_FULL	SMALL	LARGE	EQUITY_ RATE	PAYS_ DIVIDEND	N_OWNERS	REVENUE_G	RESID
CEO_ CHANGE	1.0000	-0.1289	-0.0834	0.0754	-0.0533	-0.0285	0.0293	0.0066	0.0038	-0.0742	-0.0
FCO_ CHANGE	-0.1289	1.0000	-0.0729	0.2327	0.1245	-0.0327	-0.0292	-0.0134	-0.2365	-0.0312	0.0
GTREND	-0.0834	-0.0729	1.0000	-0.0739	-0.0639	-0.0013	0.0031	-0.0000	-0.0556	0.5182	0.0
LFAM_FULL	0.0754	0.2327	-0.0739	1.0000	0.0196	-0.1202	-0.0005	-0.0588	-0.2739	-0.0382	0.0
SMALL	-0.0533	0.1245	-0.0639	0.0196	1.0000	-0.2611	-0.0878	-0.0627	-0.1119	-0.0677	0.0
LARGE	-0.0285	-0.0327	-0.0013	-0.1202	-0.2611	1.0000	0.0825	0.1885	0.1531	0.1073	0.0
EQUITY_ RATE	0.0293	-0.0292	0.0031	-0.0005	-0.0878	0.0825	1.0000	0.0752	0.0640	0.0121	0.0
PAYS_ DIVIDEND	0.0066	-0.0134	-0.0000	-0.0588	-0.0627	0.1885	0.0752	1.0000	-0.0080	0.1235	-0.0
N_OWNERS	0.0038	-0.2365	-0.0556	-0.2739	-0.1119	0.1531	0.0640	-0.0080	1.0000	-0.0718	-0.0
REVENUE_G	-0.0742	-0.0312	0.5182	-0.0382	-0.0677	0.1073	0.0121	0.1235	-0.0718	1.0000	-0.0
RESID	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000	1.0

Appendix 5: Regression analyses delta ROA performance:

WLS Regression Results

Dep. Variable:	ROA_change	R-squared:	0.010
Model:	WLS	Adj. R-squared:	0.008
Method:	Least Squares	F-statistic:	4.602
Date:	Sat, 19 Jun 2021	Prob (F-statistic):	1.54e-06
Time:	14:08:44	Log-Likelihood:	2166.7
No. Observations:	4628	AIC:	-4311.
Df Residuals:	4617	BIC:	-4241.
Df Model:	10		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	-1.982e-05	0.005	-0.004	0.997	-0.010	0.009
CEO_change	0.0082	0.009	0.940	0.347	-0.009	0.025
FCO_change	-0.0062	0.005	-1.236	0.217	-0.016	0.004
gtrend	-0.0002	0.002	-0.089	0.929	-0.005	0.005
Lfam_full	-0.0167	0.006	-2.872	0.004	-0.028	-0.005
Small	0.0120	0.007	1.793	0.073	-0.001	0.025
Large	0.0020	0.005	0.397	0.691	-0.008	0.012
Equity_rate	-0.0047	0.002	-3.004	0.003	-0.008	-0.002
pays_dividend	-0.0217	0.006	-3.921	0.000	-0.033	-0.011
N_Owners	0.0002	0.000	0.929	0.353	-0.000	0.001
revenue_g	0.0034	0.005	0.728	0.467	-0.006	0.013

Omnibus:	78.991	Durbin-Watson:	1.969
Prob(Omnibus):	0.000	Jarque-Bera (JB):	153.662
Skew:	-0.053	Prob(JB):	4.29e-34
Kurtosis:	3.886	Cond. No.	53.9

Appendix 6: Regression analyses delta EBITm performance:

WLS Regression Results

Dep. Variable:	EBITm_change	R-squared:	0.007
Model:	WLS	Adj. R-squared:	0.005
Method:	Least Squares	F-statistic:	3.183
Date:	Sat, 19 Jun 2021	Prob (F-statistic):	0.000441
Time:	14:08:44	Log-Likelihood:	5448.2
No. Observations:	4604	AIC:	-1.087e+04
Df Residuals:	4593	BIC:	-1.080e+04
Df Model:	10		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	-0.0005	0.002	-0.207	0.836	-0.005	0.004
CEO_change	0.0062	0.004	1.452	0.146	-0.002	0.015
FCO_change	-0.0003	0.002	-0.114	0.909	-0.005	0.005
gtrend	-0.0012	0.001	-0.922	0.357	-0.004	0.001
Lfam_full	-0.0056	0.003	-1.971	0.049	-0.011	-3.02e-05
Small	0.0025	0.003	0.775	0.439	-0.004	0.009
Large	-0.0006	0.002	-0.226	0.821	-0.005	0.004
Equity_rate	-0.0018	0.001	-2.421	0.015	-0.003	-0.000
pays_dividend	-0.0104	0.003	-3.835	0.000	-0.016	-0.005
N_Owners	5.709e-05	8.98e-05	0.636	0.525	-0.000	0.000
revenue_g	0.0036	0.003	1.423	0.155	-0.001	0.009

Omnibus:	158.586	Durbin-Watson:	1.961
Prob(Omnibus):	0.000	Jarque-Bera (JB):	451.943
Skew:	0.004	Prob(JB):	7.27e-99
Kurtosis:	4.535	Cond. No.	54.9

Appendix 7: Regression analyses delta ROIC performance:

WLS Regression Results

Dep. Variable:	ROIC_change	R-squared:	0.005
Model:	WLS	Adj. R-squared:	0.003
Method:	Least Squares	F-statistic:	2.201
Date:	Sat, 19 Jun 2021	Prob (F-statistic):	0.0152
Time:	14:08:44	Log-Likelihood:	407.87
No. Observations:	4603	AIC:	-793.7
Df Residuals:	4592	BIC:	-723.0
Df Model:	10		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
const	-0.0107	0.007	-1.503	0.133	-0.025	0.003
CEO_change	0.0106	0.013	0.829	0.407	-0.014	0.036
FCO_change	0.0059	0.007	0.808	0.419	-0.008	0.020
gtrend	-0.0009	0.004	-0.247	0.805	-0.008	0.006
Lfam_full	-0.0184	0.009	-2.157	0.031	-0.035	-0.002
Small	0.0130	0.010	1.317	0.188	-0.006	0.032
Large	0.0038	0.007	0.519	0.604	-0.011	0.018
Equity_rate	-0.0044	0.002	-1.907	0.057	-0.009	0.000
pays_dividend	-0.0250	0.008	-3.086	0.002	-0.041	-0.009
N_Owners	-8.601e-07	0.000	-0.003	0.997	-0.001	0.001
revenue_g	0.0061	0.007	0.889	0.374	-0.007	0.020

Omnibus:	245.755	Durbin-Watson:	1.985
Prob(Omnibus):	0.000	Jarque-Bera (JB):	963.792
Skew:	-0.036	Prob(JB):	5.19e-210
Kurtosis:	5.241	Cond. No.	54.6

Appendix 8: Shapiro-Wilk Test, II-V

Test II: Disruption of active family ownership

Indicator	T-stat	P-value
ROA_pre	0.9782	5.12E-21
ROA_pos	0.9767	1.05E-21
EBITm_pre	0.9161	7.55E-38
EBITm_pos	0.9247	2.60E-36
ROIC_pre	0.8121	0
ROIC_pos	0.7901	0

Test III: Disruption of active family ownership and retainment of family CEO

Indicator	T-stat	P-value
ROA_pre	0.9781	1.02E-20
ROA_pos	0.9764	1.69E-21
EBITm_pre	0.9157	1.95E-37
EBITm_pos	0.9256	1.14E-35
ROIC_pre	0.8140	0
ROIC_pos	0.7848	0

Test IV: Disruption of active family ownership by complete exit

Indicator	T-stat	P-value
ROA_pre	0.9738	0.0126
ROA_pos	0.9782	0.0346
EBITm_pre	0.9443	4.22E-05
EBITm_pos	0.9032	1.15E-07
ROIC_pre	0.8140	1.53E-11
ROIC_pos	0.9385	1.63E-05

Test V: Disruption of active family ownership by hiring professional CEO

Indicator	T-stat	P-value
ROA_pre	0.9864	0.0002
ROA_pos	0.9813	9.25E-06
EBITm_pre	0.9771	8.98E-07
EBITm_pos	0.9492	1.18E-11
ROIC_pre	0.8948	1.77E-17
ROIC_pos	0.7966	7.10E-24

Appendix 9: Wilcoxon Signed Rank Test, II-V

Test II: Disruption of active family ownership

Indicator	Median	W-stat	P-value
ROA	-0.0079	2.02E+06	9.00E-06
EBITm	-0.0028	2.07E+06	0.0005
ROIC	-0.0135	2.02E+06	6.00E-06

Test III: Disruption of active family ownership

Indicator	Median	W-stat	P-value
ROA	-0.0076	1.89E+06	1.00E-05
EBITm	-0.0028	1.94E+06	0.0007
ROIC	-0.0133	1.89E+06	8.00E-06

Test IV: Disruption of active family ownership by complete exit

Indicator	Median	W-stat	P-value
ROA	0.0219	3848	0.3413
EBITm	-0.0069	3799	0.2867
ROIC	-0.0367	3677	0.1774

Test V: Disruption of active family ownership by hiring professional CEO

Indicator	Median	W-stat	P-value
ROA	0.0025	54142	0.5728
EBITm	-0.0008	54760	0.7222
ROIC	-0.0023	55658	0.9580

Appendix 10: Shapiro-Wilk Test, VI

Test VI: Family firm change by sector (ROA prior to change)

Sector	T-stat	P-value
Sales	0.9697	2.20E-17
Industrial	0.9752	3.37E-08
Office Service	0.9875	1.60E-05
Construction	0.9886	2.48E-05
Service	0.9735	4.54E-10
IT	0.9846	0.0453
Primary	0.9711	0.0021
Welfare	0.9864	0.1170

Test VI: Family firm change by sector (ROA after change)

Sector	T-stat	P-value
Sales	0.9802	1.19E-13
Industrial	0.9909	0.0015
Office Service	0.9797	4.83E-08
Construction	0.9887	2.72E-05
Service	0.9644	3.72E-12
IT	0.9766	0.0040
Primary	0.9686	0.0012
Welfare	0.9595	0.0001

Test VI: Family firm change by sector (EBITm prior to change)

Sector	T-stat	P-value
Sales	0.9164	3.04E-28
Industrial	0.9370	1.01E-14
Office Service	0.9192	1.72E-18
Construction	0.8955	1.41E-21
Service	0.9538	3.71E-14
IT	0.9408	8.87E-07
Primary	0.9719	0.0026
Welfare	0.8921	1.87E-09

Test VI: Family firm change by sector (EBITm after change)

Sector	T-stat	P-value
Sales	0.9325	1.02E-25
Industrial	0.9682	9.78E-10
Office Service	0.9134	3.74E-19
Construction	0.9118	6.95E-20
Service	0.9375	1.03E-16
IT	0.9130	7.65E-09
Primary	0.9370	1.84E-06
Welfare	0.8626	5.80E-11

Test VI: Family firm change by sector (ROIC prior to change)

Sector	T-stat	P-value
Sales	0.8437	2.48E-36
Industrial	0.8962	4.06E-19
Office Service	0.8388	1.54E-25
Construction	0.9103	4.74E-20
Service	0.8487	1.56E-25
IT	0.8496	2.43E-12
Primary	0.9095	2.48E-08
Welfare	0.7668	1.01E-14

Test VI: Family firm change by sector (ROIC after change)

Sector	T-stat	P-value
Sales	0.8626	1.42E-34
Industrial	0.9212	1.28E-16
Office Service	0.8108	2.37E-27
Construction	0.9063	1.77E-20
Service	0.8319	1.02E-26
IT	0.7689	1.48E-15
Primary	0.8961	4.05E-09
Welfare	0.6665	1.30E-17

Appendix 11: Wilcoxon Signed Rank Test, VI

Test VI: Family firm change by sector (ROA)

Sector	Median	W-stat	P-value
Sales	-0.0056	540176	0.0123
Industrial	-0.0062	74531	0.1431
Office Service	-0.0067	103813	0.0574
Construction	-0.0079	113980	0.0217
Service	0.0011	120989	0.2536
IT	-0.0314	7304	0.2296
Primary	0.0143	5413	0.1321
Welfare	0.0131	6332	0.7504

Test VI: Family firm change by sector (EBITm)

Sector	Median	W-stat	P-value
Sales	-0.0015	560818	0.1918
Industrial	-0.0034	74708	0.1560
Office Service	-0.0054	100002	0.0079
Construction	-0.0065	107961	0.0007
Service	-0.0006	124153	0.5710
IT	-0.0125	7412	0.2951
Primary	0.0090	5600	0.2375
Welfare	0.0093	6100	0.4779

Test VI: Family firm change by sector (ROIC)

Sector	Median	W-stat	P-value
Sales	-0.0099	531153	0.0025
Industrial	-0.0119	72933	0.0608
Office Service	-0.0294	96625	0.0009
Construction	-0.0153	113734	0.0192
Service	-0.0080	120172	0.1970
IT	-0.0403	7442	0.3153
Primary	0.0103	5710	0.3220
Welfare	0.0238	5948	0.3339