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Factors Impact on Profitability for Norwegian Private Firms

Navn:	Geir Einar Borgen, Joachim Granheim

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Joachim Granheim
Geir Einar Borgen

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Abstract

This paper investigates what factors have an impact on the profitability of Norwegian private firms divided by size. Profitability is measured using Return on Assets (ROA) and Return on Equity (ROE). The factors tested are: Female CEO, Female in Board, Family Firms, Tenure, CEO Salary, Capital Structure, and Research & Development (R&D). The Centre for Corporate Governance Research has provided both accounting- and corporate governance data for the period 2000 to 2015. We find that Female CEOs, Female board members, and Tenure have a negative effect on ROA and ROE for Micro firms. Family firms in this category generates a higher ROA than nonfamily firms, and the results for Capital Structure shows that ROE decreases if the firms' long-term debt increases. For Small firms, Tenure has a positive effect on ROA. On the other hand, R&D has a negative effect on ROA. We find no such effect on ROE for Small firms. For the Medium & Large firms, none of the factors tested have any effect on neither ROA nor ROE. The findings are considered robust to alternative definitions, measures, and regression models.

Table of contents

Introduction

Successful companies and what they do different from others, have for decades been of interest in our economy. Raynor, Ahmed & Henderson (2009) explained the performance of "successful companies" as luck. According to their study, only one of four successful companies were truly special and remarkable. On the other hand, Jim Collins has written several research papers and books on why companies succeed. In 2001, he studied how some companies managed to get from good to great and finds several characteristics for these firms related to management, ownership, and business culture. Hence, there exists a lot of research and possible explanations to why companies are more profitable and "better" than others.

In this paper we study what factors have an impact on profitability of Norwegian private firms divided by size.

Our research will focus on six factors. Firstly, in the second proposition of Modigliani & Miller (1958) they state that firms should increase debt to increase the value of the firm to the maximum, because increased debt corresponds to increased interest payments, which are tax deductible. However, Höbarth (2006) finds a negative relationship between debt and profitability. Whereas, both Addae, Baasi & Hughes (2013) and Abeywardhana (2015) find a positive relationship between short-term debt and profitability, and a negative relationship between long-term debt and profitability. Secondly, we focus on female CEOs and the presence of female board members. Nolan, Moran & Kotschwar (2016) find females in executive positions to have a positive effect on profitability, but no effect of female CEOs. McKinsey (2007) find gender diversified firms to be more profitable. Thirdly, the profitability of family firms vs. nonfamily firms are included, since family firms counts for two thirds of all private firms in Norway (Berzins & Bøhren, 2013). Barontini & Caprio (2006) and McVey, Draho & Stanley (2005) find family firms to be more profitable than nonfamily firms, whereas Westhead & Cowling (1997) do not support these findings. Fourthly, we include investments in Research & Development (R&D). Only the most R&D intense sectors have a positive relationship between investments in R&D and profitability, according to Tubbs (2007), whereas Graham (1988) finds no

relationship between R&D intensity and profitability. Fifthly, we include the effect of continuity in the CEO position. Hillier, Marshall, McColgan & Werema (2006) find change in the CEO position to have a negative effect on profitability in the period surrounding the change, and Sridharan & St. John (1998) find continuity to generate higher profits. Sixthly and finally, compensation to the CEO is included to observe whether higher salary corresponds to higher profits. Ozkan (2011) finds increased CEO salary to increase the profits, whereas Michaud & Gai (2009) find no such effect.

Private firms represent, by far, a higher value creation in Norway than publicly listed firms, and yet, there exists way more research and analysis on publicly listed firms (Bøhren & Berzins, 2009). The purpose of our research is to contribute with new and important findings to the existing literature by studying non-listed private companies in Norway. To our knowledge, there has never been conducted a similar study on Norwegian companies.

In early 2003, Johnson & Soenen analyzed almost 500 listed companies from around the world. The purpose of the study was to find which financial indicators explained the difference between financially successful and less successful companies. They measure financial success by Sharpe Ratio, Jensen's Alpha, and Economic Value Added (EVA), and the companies performing better than the average are successful. Ten financial indicators are tested: Book-to-market ratio, Size, Sustainable growth rate, Profitability in terms of Return on Assets (ROA), Capital structure, Liquidity, Cash conversion cycle, R&D expenditures, and Advertisement expenditures. They find the most important indicators in explaining the over-average-performance to be; Size, Sustainable growth rate, Profitability (ROA), and Cash conversion cycle. Further, the firms that outperformed others on the three measures are large and profitable firms, with short cash conversion cycle and with some sort of uniqueness within its business.

Höbarth did a study on 9.854 companies from the Compustat database in 2006, aiming to model the relationship between financial indicators and firm performance. He formulates three different models with the dependent variable as the only difference between them. The three different dependent variables are stock price changes, cash dividends to shareholders and Return on Investment

(ROI), whereas the latter one is the most relevant for our study since we will not have a look at market performance. Further, he includes the same 17 independent variables in all models, emphasizing that all variables should be relative measures to ensure comparability. Höbarth finds ten statistically significant independent variables: Auditor's opinion with one-year lag, Book-to-market Ratio, Current Ratio, Capital Structure, EBIT-margin, and Lagged change in sales had negative effect on the dependent variable. And Cash Conversion Cycle, Common Stock Rating, Return on Assets (ROA), and Sustainable Growth Rate with one-year lag had positive effect on the dependent variable.

Looking at firms' capital structure, Modigliani & Miller (1958) first stated that firms' value is independent of capital structure in a perfect market with no tax. However, the market is not perfect, and their second proposition said that firms should increase debt, and thus its interest payments, since they are tax deductible and will increase the value of the firm to the maximum. Further research within capital structure shows various results. Höbarth (2006) finds a negative relationship between debt and profitability. Addae et al. (2013) find a positive relationship between short-term debt and profitability, measured as Return on Equity (ROE), significant negative relationship between long-term debt and profitability, and finally, significant negative relationship between total debt and profitability. Based on these findings, companies increasing their short-term debt will also increase the profitability. But on the other hand, increased long-term debt and a general increase in debt will decrease firms' profitability. Further, a study on UK private limited firms (Abeywardhana, 2015) show similar results as Addea et al. (2013), supporting a negative relationship on profitability for long-term debt and high debt-ratio, measured as Return on Assets (ROA) and Return on Common Equity (ROCE), and a positive relationship between short-term debt and profitability.

Further, Nolan et al. (2016) did a global study on the effect of gender diversity on profitability. They conclude that firms with females present in executive positions have the highest effect on profitability. In fact, they estimate that profitable firms with no female executives will increase the revenue margin with 15 percent if they have 30 percent female executives. Further, female representation on the board of

directors have some effect, but not statistically robust. Finally, they find no effect of having female CEOs compared to male CEOs.

McKinsey (2007) did a similar study on the 89 most gender diversified listed firms in Europe. For firms to be gender diversified, they need at least two women in executive positions and/or board members. The financial performance of these companies is compared to the performance of other firms within their sector. On average, the gender diversified firms show significant better results on all three financial parameters; ROE, EBIT, and Stock price growth.

Over the years it has been a lot of studies on family-controlled firms and whether they perform better than nonfamily firms, and vice versa. Berzins & Bøhren (2013) find two thirds of all private companies in Norway, both AS and ASA, to be family firms. When measuring companies' performance as ROA, they find family firms to outperform nonfamily firms. Barontini & Caprio (2006) studied 675 large and public firms from eleven countries, including Norway. Their criteria for being a family-controlled firm is to control 51 percent of the voting rights or count for the double of the voting rights of the second largest shareholder. Measuring firms' performance in terms of ROA and Tobin's Q, they find family-controlled firms to perform better. They also find family-controlled firms with external CEO to perform better than family-controlled firms with CEO from the family.

On the other hand, Westhead & Cowling (1997) did a study on 887 firms in the UK, with the same purpose as Barontini & Caprio (2006). Interestingly, the results from these studies do not align. Westhead & Cowling find no evidence of family firms performing better than nonfamily firms. A similar study by McVey et al. (2005) analyzing the performance of family firms and nonfamily firms among the S&P500. Since these firms are publicly listed, financial performance is measured using stock-returns. The results are significant and clear, family firms outperform the other firms on the S&P500.

Michael Tubbs (2007) did a study on R&D investments, by observing 1.250 firms, both listed and private in Europe. Tubbs hypothesized he would discover a relationship between R&D and profitability for firms operating in industries

where it could give a competitive advantage. Examples of such industries are typically the pharmaceutical- and software industry. He measures profitability as operating profit to sales. Tubbs mentions several difficulties when analyzing the relationship between R&D and profitability; differences within the sectors, the effect of firm size, business cycle, acquisitions of other firms, and different time-horizon in developing new products. Among the top 16 sectors investing in R&D, five have a profitability over 15 percent. Out of these five sectors, three operates in sectors with high R&D intensity. For example, the study shows that the pharmaceutical industry has the highest R&D investments and the highest profitability. Also, results from the study shows that growth in R&D generates growth in sales, for the R&D intense sectors.

Further, Graham (1988) finds no statistically significant relationship between investments in R&D and profitability, measured as net income to total sales. He studies 800 companies of different sizes and operating in various industries in the US. Despite finding no relationship to profitability, he finds the profits to decline when the intensity of R&D increase, when measuring all industries and sizes together. He also finds a strong relationship between growth in sales and R&D intensity. Additionally, the long-term growth leaders invest more in R&D than the rest.

According to the study by Fama and Jensen (1983) on the separation of ownership and control, they conclude that the most crucial decision for the board of directors relates to the CEO position. Hillier et al. (2006) studied non-financial firms in the UK from 1993 to 1998. The purpose of the study is to investigate the financial impacts related to CEO turnover. The firms' financial performance is measured using industry-adjusted ROA (IROA), and several ratios connected to debt. The findings show that when a CEO is forced to leave, it gives the firm a large and significant decline in IROA. On the other hand, the first two years after the succession of a CEO, firms' performance increases significantly relative to their industry. For the debt variables, the results show that the amount of debt in the firms increased prior to the change of CEO and decreased in the first year after. For the listed firms, they observe a decline in share price in the time-period surrounding the CEO turnover.

In 1998, Sridharan & St. John studied 66 of the largest firms in the US and their performance over the last 14 years. They study what effect the change of duality status have on firm's performance. If the CEO also is the Chairman, it is referred to as dual CEO, and on-dual CEO when the CEO and Chairman are not the same person. In total, 35 of the 66 firms exhibited had stable leadership. Stable leadership is defined as no change in the duality status over the period. On overall, the results show that profits increase when the firm changes its duality status. However, for firms listed on the stock exchange, stability and continuity in the duality status yields higher return ratios.

Evidence from the study by Kovach (1987) prove that money is one of the most important incentives to motivate workers. Thus, one would believe that higher compensation to CEOs will increase performance and create better results for the firm. Michaud & Gai (2009) did a study on 274 S&P500-firms in the period 1995-2004. Financial performance is measured as ROE, Average ROE, and EVA. CEOs' compensation is divided into several parts, such as fixed salary, bonus, stock grants et cetera. However, Michaud & Gai find none of the parts included in the CEOs' compensation to have any significant effect on firms' performance.

On the other hand, Ozkan (2011) did a comparable study on 390 non-financial and publicly listed UK firms in the period 1999-2005. CEO compensation includes both salaries in cash and stock-related earnings, and firm performance is measured in shareholder-returns. The results show that there is a relationship between CEO compensation and firm performance. He finds a 0,75 percent increase in CEO compensation to generate an increase in return to shareholders of ten percent of the increased CEO compensation.

Hypotheses Development

Publicly listed firms in Norway are forced, by law, to have both sexes represented in the board of directors (allmennaksjeloven §6-11a). However, we exclude publicly listed firms from our dataset, and there are no laws regulating the composition of boards in most of the firms we are examining. Nolan et. al (2016) find no results in favor of female CEOs for the effect on profits. However, the effect of female executives and/or board members is positive on the profitability.

McKinsey (2007) supports these findings regarding female board members. Our first hypothesis aims to provide more knowledge on whether female CEOs generate higher profits than male CEOs in Norwegian private companies. It is further extended to board members and whether firms with female representatives are more profitable than firms with only males.

There exist various definitions regarding control in firms, which also applies for family firms. We apply the same definition as Berzins & Bøhren (2013), defining family firms as when one person together with his/her direct family and/or indirect family controls over 50 percent of the outstanding shares and corresponding voting rights.

Previous research on whether family firms perform better than nonfamily firms show different results. As mentioned, both Berzins & Bøhren (2013) and Barontini & Capri (2006) find evidence supporting their hypothesis that family firms perform better than nonfamily firms in Europe. Whereas Westhead & Cowling (1997) did a similar study and find no evidence of family firms being more profitable than nonfamily firms in the UK. Hypothesis two is directed towards the profits generated by Norwegian family firms and nonfamily firms. With the inconsistent results in previous studies, we investigate whether family firms in Norway are more profitable than nonfamily firms.

With continuity in CEO position we refer to the continuous time a firm has the same person as their CEO. Hillier et al. (2006) find that forced CEO turnovers generates a significant decline in IROA, indicating that firms will be better off by keeping the same CEO for a longer period, in a short time perspective. Further, Sridharan & St. John (1998) find firms changing their duality status to generate higher profits. However, publicly listed firms show higher returns when operating with stability and continuity in the CEO position. Due to the mixed results and findings we want to address whether firms operating with the same CEO over a longer period of time will generate higher profits compared to firms with higher turnover-rate. Based on previous findings our third hypothesis will test whether higher CEO tenure is associated with higher profits.

In our fourth hypothesis we put further research into the field of CEO compensation. According to Michaud & Gai (2009), none of the six components of CEO compensation have any effect on profitability among the S&P500-firms. Whereas Ozkan (2011) finds a 0,75 percent increase in CEO compensation to increase the shareholders' profit by ten percent of the increased CEO compensation. By this, the fourth hypothesis aims to answer whether higher compensation to CEOs of Norwegian private companies is associated with higher profits to its shareholders.

From a basic perspective, firms finance their operation by equity, debt, and often a combination of both. The amount of debt in a firm varies and can be explained by numerous reasons, such as: whether the sector in which the firm operate is capital intensive, and what degree of risk the owners allow. Addae et al. (2013) find a significantly negative relationship between long-term debt and profitability. These findings are supported by Abeywardhana (2015). We build further on these findings and test whether Norwegian private firms with high long-term debt are less profitable than firms with low long-term debt.

Existing research presents mixed results on the relationship between R&D investments and firms profits. Tubbs (2007) categorizes firms into different sectors depending on how R&D intense they are. He finds the most intense sectors to have a relationship between R&D and profitability. In contrast, Graham (1988) finds no relationship between the intensity of R&D and profitability. Due to the lack of consistent evidence on the relationship between R&D investments and firms' profitability, our sixth and final hypothesis will test whether investments in R&D generates higher profits to the firms' shareholders.

Data and Descriptive Statistics

We collect data from the Centre for Corporate Governance Research (CCGR) database. CCGR is a high-quality database containing both accounting- and consolidated accounting data, together with corporate governance data for Norwegian firms and organisations. The data is available for the fiscal period 1994 to 2015. However, information on ownership structure was first made available from year 2000. Since this information is of vital importance for our research, we collected data for the period 2000 to 2015.

This study focuses on non-listed private firms in Norway (AS and ASA) and therefore, we first remove all observations not satisfying this criterion. Further, for our findings to be credible, we apply several adjustments and filters to the dataset.

First, we exclude financial firms as Frank & Goyal (2009), due to their special accounting rules and capital requirements, together with utilities and public firms (Berzins, Bøhren & Stacescu, 2012). Second, we remove observations with missing values on corporate governance data, such as CEO salary, CEO tenure, CEO gender, family ownership and the firms relationship as parent/subsidiary/joint control/associated. Third, we remove subsidiaries and joint ventures, since their capital structure is affected directly by their owners'. Fourth, observations with inconsistent accounting data is removed from the dataset. Inconsistent accounting data involves negative total fixed assets, negative total current assets, negative total current liabilities, negative liabilities to financial institutions and positive depreciation (López, 2014 p.59). Fifth, we apply the same filter as Bøhren & Berzins (2009) when removing passive companies from the dataset. Sixth, we exclude firms with gaps in accounting data. Meaning, if one firm for example has reported data for the period 2000 to 2014, but miss data for one or more years within this period, all observations for these companies are removed. Finally, we do not omit firms that suddenly stop reporting accounting data. For example, a firm is established in 2003 and stop reporting data in 2010. This firm is assumed to be either bankrupt, merged, acquired, or dissolved. According to Tamari (1966), the profitability ratios decline in at least five periods prior to the bankruptcy. Checks of the dataset for these firms show that in most situations the firms are most likely bankrupt. However, despite whatever reason

for the sudden stop in reporting of data, they are all included in the dataset. This is in line with existing literature on comparable studies, e.g. Höbarth (2006) and Johnson & Soenen (2003).

Researchers have previously used many different measures of profitability in their studies, based on both accounting information and market values. We will in this section make an analysis on various possible profit measures to use in our research. Since the dataset contains non-public private firms, we find it most applicable and relevant to use measures based on accounting information.

One measure often used is Return on Investment (ROI). Among others, Höbarth (2006) and Busija, O'Neill & Zeithaml (1994) use ROI to measure profitability. Höbarth states that ROI can be used to evaluate how efficient companies obtain its income and that it is easy to compare between the divisions in a company. Also, one of the reasons for ROI being a popular measure of profitability is that it includes a broad set of factors of a company.

Return on Assets (ROA) is another common measure of profitability and is used by e.g. Barontini & Caprio (2006) who defines ROA as the ratio between operating profit and total assets. They modify the formula to make the ratio more consistent by deducting Cash and Short-Term Investments, and Investments in Associates. ROA accounts for the assets used to generate income and is usually calculated without the modifications as Barontini and Caprio (2006) use.

In 1989, Selling & Stickney applied ROA to measure how successful firms are in using assets to generate earnings without considering how the assets are financed. They find that ROA is connected to where each industry is located on the product life-cycle scale and the industries in their study with the highest ROA were all relative mature industries (Publishing, Chemicals, Food processors). Even though these findings are nearly 30 years old, and perhaps different now, they show that there are differences in ROA from one industry to another. Hence, it will be important to account for industry effects in our model.

Another measure often used in finance literature and research is Return on Equity (ROE). Companies often use ROE as an internal benchmark for performance (Michaud & Gai, 2009). The purpose of ROE is to measure how successful firms are in generating income to their shareholders. However, when interpreting ROE from a shareholder perspective, it is important to keep in mind that it is an accounting ratio based on book values. Since book values may not represent the fair value of the assets, ROE could be either higher or lower when assets are realized. Therefore, ROE cannot be compared to e.g. the interest returns on a bank deposit (Ross, Westerfield & Jeffrey, 2010 p.55).

A forth common profitability measure is Earnings before Interests, Taxes, Depreciation and Amortization-margin (EBITDA-margin). This measure focuses directly on the operating cash flow and do not consider the effects of taxes and interest expenses. One should not do the mistake of consequently considering a high EBITDA-margin as better than a lower EBITDA-margin, since a company can for example decrease their selling price to increase the volume of units sold. This can increase the total profits but decrease their EBITDA-margin. In that case it can be favorable to take actions that will lower the EBITDA-margin (Ross et al., 2010 p.54). However, in this paper we use ROA and ROE as profitability measures, because those are two of the best-known measures based on accounting information and fits the purpose of this research and our data. The calculations of ROA and ROE are presented in appendix 6.

When generating ROA and ROE, we exclude 0,15 percent of the most extreme observations for each profit measure, on both sides of the dataset. However, we observe a problem with ROE. Observations with negative net income and negative total equity results in a positive ROE, which is highly misleading for the results. We find a low correlation between ROA and ROE of approximately eight percent for micro firms, confirming that something is wrong. We handle this problem by creating a new dataset where observations with negative net income and positive ROE are deleted. The new dataset without these observations has 131.391 fewer observations compared to the previous. The previous dataset is referred to as the original dataset and the new dataset with fewer observations is referred to as the adjusted dataset. In the result section, we interpret the results for ROA and ROE, using the adjusted dataset. If we were to use different datasets, the

results would not be directly comparable. However, we comment on whether the results for ROA change if we use the original dataset that includes the misleading observations for ROE. Even though this research focuses primarily on the adjusted dataset, tables and graphical illustrations for both dataset is included.

We also include five control variables to control for different firm characteristics and one variable to control for industry effects. The control variables are the following: Size, Growth, Risk, Firm Age, and Liquidity. Size is included as a control variable, since Anderson & Reeb (2003) find a relationship between Size and profitability. To measure Size, they use the natural logarithm of total assets. We use the natural logarithm due to the possibility of outliers in total assets (Sridharan, 1996). Further, Loderer & Waelchli (2010) argue that Firm Age should be included as a control variable. In our research, Firm Age is measured by subtracting the year of the observation from the founding year. Together with these two, we apply measures of Growth, Risk, and Liquidity as control variables, according to López (2014). Growth is the change in Size in percentage and Risk is the standard deviation of growth in sales (López, 2014). The last control variable, Liquidity, is the sum of cash plus total investments as a ratio to total assets (Johnson & Soenen, 2013). To control for industry effects, we create dummies for all industries at the most general term defined by Statistisk Sentralbyrå, SSB, (2009).

Table 1 illustrates an overview of all variables:

In model:	Dependent/ Independent:	Explanatory-/ Control variables
FemaleCEO	Independent	Explanatory
FemaleInBoard	Independent	Explanatory
CEO Salary	Independent	Explanatory
Tenure	Independent	Explanatory
Family Firm	Independent	Explanatory
Capital Structure	Independent	Explanatory
R&D	Independent	Explanatory
Size	Independent	Control
Growth	Independent	Control
Risk	Independent	Control
Firm Age	Independent	Control
Liquidity	Independent	Control
ROA	Dependent	
ROE	Dependent	

Table 1:Overview of variables, included with calculations in appendix 6.

After the modifications we have an unbalanced dataset containing 116.960 firms and 498.467 firm-year observations in the adjusted dataset. Due to missing values on CEO Tenure for 2015, we use data for the period 2000 to 2014. Also, the original dataset in which we use to compare the results for ROA, has 139.963 firms and 629.858 firm-year observations.

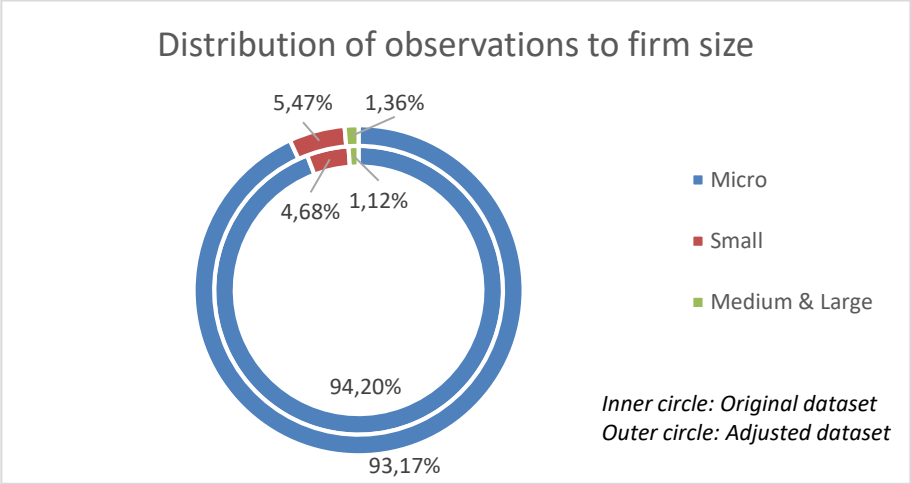

Figure 1: Distribution of observations to firm size.

Figure 1 graphically presents the distribution of observations in the original- and adjusted dataset to firm-size categories. Note that 94,2 percent and 93,17 percent of the observations in the original- and adjusted dataset, respectively, are firms categorized as Micro firms according to the definition provided by the EU Commission (2003). The EU Commission uses four categories of size; Micro, Small, Medium, and Large. However, in our research we merge Medium and Large to include more observations in this category and thus more credible results. Micro firms have less than 16,7 million NOK in total assets, Small firms have total assets between 16,7 million NOK and 83,5 million NOK, and Medium & Large firms have over 83,5 million NOK in total assets. More information follows in Methodology.

The distribution of observations into sectors, as defined by SSB (2009), is shown in appendix 1. We observe that for both datasets, about one quarter of the observations are from firms operating in Professional, Scientific and Technical activities and about 16-17 percent each from the Wholesale and Retail trade, and from the Transportation and Storage sectors. For more detailed information about the sectors we refer to SSBs' webpage.

Descriptive statistics for the original- and adjusted dataset is included in appendix 2.1 and 2.2, respectively. We note that in the original dataset (appendix 2.1), for Micro firms, the mean ROA is negative, whilst the median is positive. This indicates that ROA is negatively skewed for Micro firms, which is further supported by the minimum and maximum values, respectively at -20 and 2. However, in the adjusted dataset (appendix 2.2) we observe ROA and ROE to be slightly positive skewed. Hence, the median represents a better descriptive indicator of profitability in the dataset. We observe in the adjusted dataset, that for both ROA and ROE, the median is decreasing with firm size, indicating that smaller firms are more profitable than larger firms. Another interesting output is that the average firm age is higher for larger firms than for smaller firms, this is however logical, since firms needs time to grow. The tables also show the standard deviation for all variables and we note that CEO Salary has high standard deviation, especially for Micro firms. The same applies for Risk for all firm sizes, indicating that the spread for those variables are large. For both cases, one will have a confidence interval ranging from a negative value since the standard deviation exceeds the mean, even though the variables, by rule, can only have positive values.

Appendix 2.2 also shows the number of observations for each variable in each firm size category in the adjusted dataset. Most of the variables have approximately the same number of observations as the total number of observations for its subgroup of firm sizes. However, there are a lower number of observations for three variables; R&D, Growth and Risk. The reason for this is that some firms reports zero in revenues for some years, making the R&D measure impossible to calculate since one cannot divide by zero. Further, the calculation of Growth and Risk are depending on values for one year prior to the observation, and thus, we miss observations for the first time-period for each firm.

Methodology

The methods we use are based on quantitative statistical methods. Also, to be in line with existing literature and similar research we use panel data.

Main model

We generate two models in which we believe contain variables that have an impact on firms' profitability. The full models contain the dependent-, independent- and control variables defined as:

Formula 1:

$$ROA = \beta_0 + \beta_1 FemaleCEO_{t-1} + \beta_2 FemaleInBoard_{t-1} + \beta_3 CEO\ Salary_{t-1} + \beta_4 Tenure_{t-1} + \beta_5 Family\ Firm_t + \beta_6 Capital\ Structure_{t-1} + \beta_7 R\&D_{t-1} + \beta_8 Size_{t-1} + \beta_9 Growth_{t-1} + \beta_{10} Risk_t + \beta_{11} Firm\ Age_t + \beta_{12} Liquidity_{t-1} + \varepsilon$$

Formula 2:

$$ROE = \beta_0 + \beta_1 FemaleCEO_{t-1} + \beta_2 FemaleInBoard_{t-1} + \beta_3 CEO\ salary_{t-1} + \beta_4 Tenure_{t-1} + \beta_5 Family\ Firm_t + \beta_6 Capital\ Structure_{t-1} + \beta_7 R\&D_{t-1} + \beta_8 Size_{t-1} + \beta_9 Growth_{t-1} + \beta_{10} Risk_t + \beta_{11} Firm\ Age_t + \beta_{12} Liquidity_{t-1} + \varepsilon$$

As dependent variable we use two different measures of profitability, ROA and ROE. The following seven variables are the ones our research aim to test (formulas in appendix 6): *FemaleCEO* is a dummy indicating whether the CEO is a female or not, value 1 if female and 0 if male, with one-year lag (Palvia, Vähämaa & Vähämaa, 2015). *Female in Board* is a dummy indicating whether the board of directors includes at least one women, value 1 if female is present and 0 if not, with one-year lag (Palvia et al., 2015). *CEO Salary* is the reported salary provided by the CCGR-database, with one-year lag. *Tenure* is the number of consecutive years the CEO has held that exact position, with one-year lag (Henderson, Miller & Hambrick, 2006). *Family Firm* is a dummy indicating whether one family owns more than 50 percent the firm, with value 1 if family firm and 0 if not. *Capital Structure* shows the debt-level and is calculated as total

long-term liabilities as a portion of total assets, with one-year lag (Johnson & Soenen, 2013). *R&D* is the ratio of last years' R&D investments to total revenues, with one-year lag (Johnson & Soenen, 2003). The last five variables are included as control variables; *Size* is the measure of the firm size calculated as the natural logarithm of total assets, with one-year lag (Hill & Phan, 1991). *Growth* is calculated as the change in Size measured in percentage, with one-year lag (López, 2014). *Risk* is calculated as the standard deviation of the growth in sales (López, 2014). *Firm Age* is calculated as the fiscal observation year minus the year of foundation. *Liquidity* is calculated as the ratio of cash plus total investments to total assets, with one-year lag (Johnson & Soenen, 2013). In addition, we include industry-dummies in the regressions. Some of the explanatory- and control variables might affect or correlate with each other, causing possible issues with endogeneity (Roberts & Whited, 2013). Endogeneity is difficult to solve completely but is normally handled by lagging the relevant variables. Therefore, endogenous variables are lagged, and exogenous variables are not lagged.

To get the most correct and comparable results, we divide the firms by size. The categories of firm size are developed in accordance with the standard given by the EU Commission (2003). The original standard is four categories of size; Micro, Small, Medium, and Large. However, we merge Medium and Large to include more observations in this category. Micro firms have less than 16,7 million NOK in total assets, Small firms have total assets between 16,7 million NOK and 83,5 million NOK, and Medium & Large have over 83,5 million NOK in total assets. The standard is presented with values in EUR. Our dataset contains values in NOK for the period 2000 to 2014, therefore, we use the exchange rate EUR/NOK at 8,35 by the end of 2014 (Norges Bank) to convert the standard to NOK. Practically, we handle the different categories of firm size in the estimation models by including if-restrictions in the expressions. The regressions are adjusted and repeated at all sizes for ROA and ROE.

Estimation methods

This study uses two different models; Generalized Least Squares (GLS) with random effects and Pooled Ordinary Least Squares (Pooled OLS).

The dataset we use contains two dimensions of data, time series and cross-sectional. This means that our research is based on panel data and we can observe relationships between different firms and how they change over time (Hsiao, 2007). Some of the advantages in using panel data is that it controls the impact of omitted variables and generates more efficient econometric estimates (Hsiao, 2007). Further, the dataset is either balanced or unbalanced. With a balanced dataset we will have the same number of observations for each firm. With an unbalanced dataset, the number of observation for each company varies (Wooldridge, 2010). Some of the firms in the dataset have for example three years of data, whereas others have the full 15 years (2000-2014). Hence, this study is based on an unbalanced dataset.

The most common way to figure out whether the estimation model should include fixed effects or random effects is by performing a Hausman-test (Hausman, 1978). The results from the Hausman-test rejects the null hypothesis, indicating the use of fixed effects (appendix 3). However, the dataset we use consists of both quasi time invariant (e.g. Female CEO) and time invariant variables (e.g. Risk), meaning that variables have the same value for several observations, invariant of time data (Torres-Reyna, 2007). Using variables with such conditions, our model is better suited for the use of random effects compared to fixed effects.

When dealing with random effects, the most common and efficient model is the GLS (Höbarth, 2006 & Hausman, 1978). One of the advantages with GLS is that it handles possible issues with both heteroscedasticity and autocorrelation, given that the form of both are known (Brooks, 2008). For the GLS to work properly we assume strict exogeneity, according to Stock & Watson (2014, p. 636).

Without the assumption of strict exogeneity, one or several variables in the model affect each other. If this is the case, a possible issue with endogeneity might arise. According to López (2014) endogeneity can emerge in two ways: 1) if the independent variables are not exogenous, and 2) if omitted variables are biasing the results. As mentioned, endogeneity is difficult to solve completely but is normally handled by lagging the variable, as we have done.

According to Höbarth (2006, p. 68) heteroskedasticity is present "*if the error term has changing variance*". A common way of testing for heteroscedasticity is the Breusch and Pagan test for heteroskedasticity (Breusch & Pagan, 1979). Based on this test we reject the null hypothesis of homoscedasticity, meaning heteroscedasticity is present in our dataset (appendix 4). To account for heteroskedasticity we have included the Huber-White Sandwich estimator in the regressions (White, 1980). This term makes the standard errors robust against heteroskedasticity. In addition, the term does correct the standard errors for autocorrelation. Also, by removing some extreme observations we reduce the problem with heteroscedasticity. Removal of extreme observations was described in Data and Descriptive Statistics.

Problems with multicollinearity might arise if one or more of the independent variables have a strong correlation, either positive or negative, with one or more of the other independent variables (Disatnik & Sivan, 2016). We perform two tests to control whether we have problems with multicollinearity. First, we create correlation matrices, illustrated in appendix 5. The results from these matrices do not indicate any multicollinearity among the variables. Second, according to Costea (2005), standard errors above two may indicate potential issues with multicollinearity. All standard errors in our research is considerably below two (table 2-4). On the basis of these tests, we conclude that multicollinearity is not a problem.

Robustness

The robustness tests are performed to verify and show the credibility of our findings. Do the findings change considerably if we use other models, methods or other definitions? In the following we describe the tests we perform to show the robustness of our findings.

First, Myers (2003, p. 217) argue that firms have different characteristics, especially related to capital structure, and one should be careful when comparing firms where this might be the case. We solve the potential issue of comparing non-comparable firms by dividing firms into three groups depending on size, measured in total assets, given by the EU Commission (2003).

The first robustness test relates to whether the results change if we divide the firms into alternative size categories. Since the Micro category accounts for over 90 percent of all observations we split this category into two new subcategories, SubMicro1 and SubMicro2. By doing so, we observe whether the results change considerably from the original Micro category. SubMicro1 has total assets below 2 MNOK, and SubMicro2 has total assets between 2 and 16,7 MNOK. With these conditions, each of the two new subcategories have approximately the same number of observations.

Next, to prove the credibility of the results of our main model, GLS with random effects, we perform a Pooled OLS. The Pooled OLS is a normal linear regression executed in a similar way as our main model, with ROA and ROE as the dependent variable in two respective regressions, together with all the independent variables. First, we perform the Pooled OLS without any further instructions to the regression. After this, we repeat the same regression with robust standard errors. Since the standard errors change from the first model to the second, this could be a sign of potential issues with heteroscedasticity (Hoechle, 2007). Hence, we use the Pooled OLS with robust standard errors as robustness test. From the output of the model, there are missing values for F and Wald chi2 in some cases. This does however not imply that anything is wrong with the model, according to Stata (2017).

The intention of Pooled OLS as a robustness test to the main model, is to observe whether the results corresponds to each other. Meaning, significant variables in the main model should also be significant (or close to) in the Pooled OLS. We also observe the coefficients in the Pooled OLS, which should be similar to the main model for the results to be credible.

Results

First, we present the results from the GLS with random effects for both ROA and ROE, by firm size category. As mentioned, we have removed observations with negative net income and negative total equity from the dataset, since they will show a positive ROE, which is highly misleading. In the interpretation of the results, we focus on both profitability measures. However, we also compare the results from the adjusted dataset for ROA to the original dataset. By this, we observe what difference the omitted observations have on the results for ROA. Next, we present the results of the different robustness tests. In the end, we provide some possible explanations to the results.

Table 2 presents the results from the two GLS models with random effects for Micro firms.

Table 2 shows the results of regressing profitability measures to the different hypotheses variables (above the dotted line) and a set of control variables (below the dotted line) using GLS estimation with random effects and Huber/White/Sandwich estimator (robust std.err.), with ROA and ROE as profitability measures respectively, for firms categorizing as micro firms. The adjusted dataset is used as basis for the results. *ROA* is net income to total assets. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female, lagged by one year. *FemaleInBoard* is a dummy with value 1 if females are present in the board, lagged by one year. *CEO Salary* is the reported salary of the CEO in MNOK, lagged by one year. *Tenure* is the number of consecutive years the CEO has held its position, lagged by one year. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets, lagged by one year. *R&D* is the ratio of R&D expenses to total revenue, lagged by one year. *Size* is the natural logarithm of total assets, lagged by one year. *Growth* is the change in size from previous year, lagged by one year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets, lagged by one year. For *Industry effects*, "yes" means that industry dummies are included in the regressions. The calculations of each variable are also included in appendix 6. The robust standard errors are reported in parantheses and significance levels represented by stars.

*: Significant at 10 percent level
**: Significant at 5 percent level
***: Significant at 1 percent level

	GLS with Random Effects	
	ROA	**ROE**
Firm category:	*Micro*	*Micro*
FemaleCEO	-0,012 (0,003) ***	-0,080 (0,016) ***
FemaleInBoard	-0,008 (0,002) ***	-0,060 (0,012) ***
CEO Salary	0,000 (0,000)	0,001 (0,001)
Tenure	-0,002 (0,000) ***	-0,014 (0,001) ***
Family Firm	0,007 (0,002) ***	0,002 (0,011)
Capital Structure	0,004 (0,007) *	-0,031 (0,022) ***
R&D	-0,001 (0,001)	-0,005 (0,004)
Size	-0,006 (0,001) ***	0,035 (0,006) ***
Growth	0,176 (0,025) ***	0,187 (0,134)
Risk	0,000 (0,000) **	0,000 (0,000) ***
Firm Age	0,000 (0,000) ***	-0,004 (0,001) ***
Liquidity	0,020 (0,003) ***	0,236 (0,020) ***
Constant	0,237 (0,018) ***	0,190 (0,089) **
Industry effects	Yes	Yes
R2-overall	0,007	0,012
Number of obs.	267102	267015
Number of firms	55390	55373

Table 2: GLS model with Random Effects for micro firms.

The results for ROA on Micro firms supports our second hypothesis, that family firms are more profitable than nonfamily firms. Family firms represent 73,5 percent of Micro firms (appendix 2.2). The results show that being a family firm will increase ROA by 0,7 percentage points compared to nonfamily firms. Female CEO and Female in Board have statistically significant and negative effect on ROA, showing the opposite of our first hypothesis. Micro firms with Female CEO, representing 16,9 percent (appendix 2.2) of the firms, reduces ROA by 1,2 percentage points, compared to male CEOs. Also, boards with female representatives generates a ROA that is 0,8 percentage points lower than boards with only male representatives. Our third hypothesis, Tenure, is also statistically significant and negative.

Further, the results for ROA presented above are based on the adjusted dataset. When comparing these results to the results from the original dataset (appendix 7) the only difference for Micro firms is the results related to Capital Structure. In the adjusted dataset, Capital Structure has a positive effect on ROA, but not statistically significant. Whereas, the original dataset presents positive and statistically significant results.

Back to the adjusted dataset; when profitability is measured by ROE, our fifth hypothesis, Capital Structure, is supported. Meaning, long-term debt has a negative effect on ROE. The results for ROA are approximately the same as for ROE with regards to Female CEO, Female in Board, and Tenure. These variables are statistically significant and have a negative effect on the profitability measures.

Next, table 3 presents the same results as table 2, for Small firms.

Table 3 shows the results of regressing profitability measures to the different hypotheses variables (above the dotted line) and a set of control variables (below the dotted line) using GLS estimation with random effects and Huber/White/Sandwich estimator (robust std.err.), with ROA and ROE as profitability measures respectively, for firms categorizing as small firms. The adjusted dataset is used as basis for the results. *ROA* is net income to total assets. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female, lagged by one year. *FemaleInBoard* is a dummy with value 1 if females are present in the board, lagged by one year. *CEO Salary* is the reported salary of the CEO in MNOK, lagged by one year. *Tenure* is the number of consecutive years the CEO has held its position, lagged by one year. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets, lagged by one year. *R&D* is the ratio of R&D expenses to total revenue, lagged by one year. *Size* is the natural logarithm of total assets, lagged by one year. *Growth* is the change in size from previous year, lagged by one year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets, lagged by one year. For *Industry effects*, "yes" means that industry dummies are included in the regressions. The calculations of each variable are also included in appendix 6. The standard errors are reported in parantheses and significance levels represented by stars.

*: Significant at 10 percent level
**: Significant at 5 percent level
***: Significant at 1 percent level

	GLS with Random Effects	
	ROA	**ROE**
Firm category:	*Small*	*Small*
FemaleCEO	0,000 (0,006)	-0,015 (0,040)
FemaleInBoard	-0,005 (0,004)	-0,051 (0,029) *
CEO Salary	0,005 (0,005)	0,031 (0,032)
Tenure	0,001 (0,000) **	0,004 (0,003)
Family Firm	0,002 (0,003)	-0,015 (0,025)
Capital Structure	-0,013 (0,008) *	-0,036 (0,056)
R&D	-0,005 (0,002) **	0,055 (0,032) *
Size	-0,069 (0,005) ***	-0,277 (0,029) ***
Growth	0,207 (0,062) ***	1,836 (0,427) ***
Risk	0,000 (0,000) ***	0,000 (0,000) **
Firm Age	0,000 (0,000)	-0,002 (0,001) ***
Liquidity	0,013 (0,010)	0,213 (0,058) ***
Constant	1,259 (0,080) ***	4,884 (0,474) ***
Industry effects	Yes	Yes
R2-overall	0,073	0,030
Number of obs.	17697	17696
Number of firms	4917	4917

Table 3: GLS model with Random Effects for small firms.

For Small firms, hypothesis three, Tenure, is supported when profitability is measured by ROA. The average Tenure for Small firms is 7,9 years (appendix 2.2). From this result, Small firms have incentives to use the same CEO for a longer period of time. R&D has a statistically significant and negative effect on ROA. The average amount invested in R&D for Small firms is 9,7 percent of the total revenue (appendix 2.2). None of the other explanatory variables are statistically significant.

Comparing the results on ROA from the adjusted dataset above to the original dataset (appendix 7), we observe that the same results appear. In addition to the two statistically significant variables, Tenure and R&D, Capital Structure is also statistically significant and negative in the original dataset.

When we measure profitability by ROE in the adjusted dataset, none of the explanatory variables are statistically significant. Though not statistically significant, we observe that Female in Board has a negative effect on ROE at the ten percent level for Small firms. The same applies for R&D, showing positive effect on ROE at the ten percent level. These findings are not significant enough to draw any conclusions but represents some tendencies.

At last, table 4 presents the results for Medium & Large firms.

Table 4 shows the results of regressing profitability measures to the different hypotheses variables (above the dotted line) and a set of control variables (below the dotted line) using GLS estimation with random effects and Huber/White/Sandwich estimator (robust std.err.), with ROA and ROE as profitability measures respectively, for firms categorizing as medium and large firms. The adjusted dataset is used as basis for the results. *ROA* is net income to total assets. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female, lagged by one year. *FemaleInBoard* is a dummy with value 1 if females are present in the board, lagged by one year. *CEO Salary* is the reported salary of the CEO in MNOK, lagged by one year. *Tenure* is the number of consecutive years the CEO has held its position, lagged by one year. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets, lagged by one year. *R&D* is the ratio of R&D expenses to total revenue, lagged by one year. *Size* is the natural logarithm of total assets, lagged by one year. *Growth* is the change in size from previous year, lagged by one year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets, lagged by one year. For *Industry effects*, "yes" means that industry dummies are included in the regressions. The calculation of each variable is also included in appendix 6. The standard errors are reported in parantheses and significance levels represented by stars.

*: Significant at 10 percent level
**: Significant at 5 percent level
***: Significant at 1 percent level

	GLS with Random Effects	
	ROA	**ROE**
Firm category:	*Medium & Large*	*Medium & Large*
FemaleCEO	0,007 (0,010)	0,088 (0,092)
FemaleInBoard	-0,004 (0,007)	-0,029 (0,035)
CEO Salary	0,005 (0,003)	0,016 (0,013)
Tenure	0,001 (0,001)	-0,002 (0,003)
Family Firm	-0,001 (0,007)	-0,028 (0,044)
Capital Structure	0,015 (0,015)	0,177 (0,105) *
R&D	0,000 (0,000)	0,000 (0,001)
Size	-0,033 (0,005) ***	-0,126 (0,026) ***
Growth	0,011 (0,116)	0,178 (0,355)
Risk	0,000 (0,000)	0,000 (0,000)
Firm Age	0,000 (0,000)	-0,002 (0,001)
Liquidity	0,026 (0,021)	0,011 (0,099)
Constant	0,636 (0,103) ***	2,532 (0,511) ***
Industry effects	Yes	Yes
R2-overall	0,032	0,008
Number of obs.	4071	4070
Number of firms	1098	1098

Table 4: GLS model with Random Effects for medium & large firms.

For both profitability measures, ROA and ROE, none of our hypotheses are supported. Further, none of the variables connected to the hypotheses are neither positively nor negatively statistically significant. However, we are not surprised by this, since there are not enough observations in this category to get reliable and credible results.

The same results appear in the original dataset when we compare it to the adjusted dataset; no statistically significant variables for ROA.

Finally, table 5 presents a summary of the results.

Table 5 shows a summary of the results from regressing profitability measures to the different hypotheses variables (above the dotted line) and a set of control variables (below the dotted line) using GLS estimation with random effects and Huber/White/Sandwich estimator (robust std.err.), with ROA and ROE as profitability measures respectively. The adjusted dataset is used as basis for the results. *ROA* is net income to total assets. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female, lagged by one year. *FemaleInBoard* is a dummy with value 1 if females are present in the board, lagged by one year. *CEO Salary* is the reported salary of the CEO, lagged by one year. *Tenure* is the number of consecutive years the CEO has held its position, lagged by one year. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets, lagged by one year. *R&D* is the ratio of R&D expenses to total revenue, lagged by one year. *Size* is the natural logarithm of total assets, lagged by one year. *Growth* is the change in size from previous year, lagged by one year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets, lagged by one year. For *Industry effects*, "yes" means that industry dummies are included in the regressions. The calculations of each variable are also included in appendix 6. The signs represents positive (+) and negative (-) coefficients and significance levels are represented by stars. Colored cells marks the results supporting the hypotheses previously outlined.

*: Significant at 10 percent level
**: Significant at 5 percent level
***: Significant at 1 percent level

GLS with Random Effects

	Micro		**Small**		**Medium & Large**	
Variable name:	ROA	ROE	ROA	ROE	ROA	*ROE*
Female CEO	- ***	- ***	+	-	+	+
Female In Board	- ***	- ***	-	- *	-	-
CEO Salary	+	+	+	+	+	+
Tenure	- ***	- ***	+ **	+	+	-
Family Firm	+ ***	+	+	-	-	-
Capital Structure	+ *	- ***	- *	-	+	+ *
R&D	-	-	- **	+ *	+	+
Size	- ***	+ ***	- ***	- ***	- ***	- ***
Growth	+ ***	+	+ ***	+ ***	+	+
Risk	- **	- ***	+ ***	+ **	+	-
Firm Age	- ***	- ***	+	- ***	+	-
Liquidity	+ ***	+ ***	+	+ ***	+	+
Constant	+ ***	+ **	+ ***	+ ***	+ ***	+ ***

Table 5: Summary of GLS results.

Table 5 summarizes the results by illustrating the coefficients as positive (+) or negative (-) and the significance level. The colored cells mark the results supporting the previously outlined hypotheses. Female CEO and Female in Board have a statistically significant and negative effect on both ROA and ROE for Micro firms. For Small and Medium & Large firms we do not observe any effect of Female CEO or Female in Board. CEO Salary has positive coefficients on ROA and ROE for all sizes. However, the effect is not statistically significant in any of the cases. Tenure has a statistically significant and negative effect on ROA and ROE for Micro firms. This effect changes to statistically significant and positive on ROA for Small firms, but no effect on ROE for Small firms. This

variable has no effect for Medium & Large firms. Family firms show statistically significant and positive results on ROA for Micro firms, but no observed effect on profitability for any of the other firm sizes. Capital Structure is statistically significant and negative on ROE for Micro firms. However, the effect is not supported in any of the other firm sizes. R&D has a statistically significant and negative effect on ROA for Small firms, but no effect on ROE. Further, no effect of R&D is observed on Micro and Medium & Large firms.

Finally, we draw a general note regarding the results for the control variables below the dotted line. For all models, Size is statistically significant. However, the effect of Size is negative for both ROA and ROE on all firm sizes, except ROE for Small firms, where the effect is positive. Hence, for Micro firms, the results for Size are inconsistent. For Small and Medium & Large firms, the smallest firms in the respective categories are most profitable. Growth has a statistically significant and positive effect on ROA for Micro firms and on both profitability measures for Small firms. In the other cases, we find no effect. Risk has a statistically significant and negative effect on ROA and ROE for Micro firms and statistically significant and positive effect on ROA and ROE for Small firms. We find no such effect on Medium & Large firms. Firm Age has a statistically significant and negative effect on ROA and ROE for Micro firms and the same effect on ROE for Small firms. The last control variable, Liquidity, has a statistically significant and positive effect on ROA and ROE for Micro firms and the same effect on ROE for Small firms.

Robustness

In this section we return to the robustness test as described in Methodology. These tests are performed to observe whether our findings are credible, and whether they are sensitive to changes in alternative methods.

The first part of the robustness test relates to the potential issue of comparing firms with different characteristics, Myers (2003 p. 217). We handle this potential issue by dividing firms into size categories; Micro, Small and Medium & Large, by the EU Commission standard. Originally, Medium and Large are two separate categories, however, due to few observations in each of those categories, we

merge Medium and Large to include more observations. After applying this standard to the dataset, the sample of Micro firms consists of 464.416 firm-year observations, 27.269 firm-year observations for Small firms, and 6.782 firm-year observations for Medium & Large firms. Before merging Medium & Large firms into one category the sample of Large firms contained only 1.291 firm-year observations, hence, not enough to find credible results given the restrictions in our research.

The results for the new categories; SubMicro1 and SubMicro2, are shown in appendix 8. Overall, the results from these new categories are to a large degree aligned with the results from the original Micro category. Hence, we do not find it advantageous to split Micro firms into the new subcategories.

The final part of the robustness test consists of performing a Pooled OLS regression. As mentioned in Methodology, we perform a Pooled OLS regression with robust standard errors. Since the standard errors change considerably when we use robust compared to not using it, this is typically a sign of either heteroscedasticity and/or autocorrelation. However, with the robust term included in the model, we can to a greater degree trust the output of the model and compare it to our findings from the GLS model.

Table 6 presents the main findings of the robustness test for Micro firms.

Table 6 shows the results of regressing profitability measures to the different hypotheses variables (above the dotted line) and a set of control variables (below the dotted line) using both GLS estimation with random effects and Huber/White/Sandwich estimator (robust std.err.), and Pooled OLS estimation with Huber/White/Sandwich estimator (robust std.err.), with ROA and ROE as profitability measures respectively, for firms categorizing as micro firms. The adjusted dataset is used as basis for the results. *ROA* is net income to total assets. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female, lagged by one year. *FemaleInBoard* is a dummy with value 1 if females are present in the board, lagged by one year. *CEO Salary* is the reported salary of the CEO in MNOK, lagged by one year. *Tenure* is the number of consecutive years the CEO has held its position, lagged by one year. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets, lagged by one year. *R&D* is the ratio of R&D expenses to total revenue, lagged by one year. *Size* is the natural logarithm of total assets, lagged by one year. *Growth* is the change in size from previous year, lagged by one year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets, lagged by one year. For *Industry effects*, "yes" means that industry dummies are included in the regressions. The calculations of each variable are also included in appendix 6. The robust standard errors are reported in parantheses and significance levels represented by stars.

*: Significant at 10 percent level
**: Significant at 5 percent level
***: Significant at 1 percent level

	GLS with Random Effects	**Pooled OLS**	**GLS with Random Effects**	**Pooled OLS**
	ROA	ROA	ROE	ROE
Firm category:	*Micro*	*Micro*	*Micro*	*Micro*
FemaleCEO	-0,012 (0,003) ***	-0,005 (0,001) ***	-0,080 (0,016) ***	-0,030 (0,009) ***
FemaleInBoard	-0,008 (0,002) ***	-0,010 (0,001) ***	-0,060 (0,012) ***	-0,066 (0,007) ***
CEO Salary	0,000 (0,000)	0,001 (0,001)	0,001 (0,001)	0,004 (0,004)
Tenure	-0,002 (0,000) ***	0,000 (0,000)	-0,014 (0,001) ***	-0,002 (0,001) ***
Family Firm	0,007 (0,002) ***	0,009 (0,001) ***	0,002 (0,011)	-0,024 (0,007) ***
Capital Structure	0,004 (0,007) *	-0,007 (0,005)	-0,031 (0,022) ***	-0,088 (0,059)
R&D	-0,001 (0,001)	-0,002 (0,001) *	-0,005 (0,004)	-0,007 (0,004)
Size	-0,006 (0,001) ***	0,018 (0,001) ***	0,035 (0,006) ***	0,140 (0,004) ***
Growth	0,176 (0,025) ***	0,389 (0,028) ***	0,187 (0,134)	0,627 (0,138) ***
Risk	0,000 (0,000) **	0,000 (0,000) *	0,000 (0,000) ***	0,000 (0,000) ***
Firm Age	0,000 (0,000) ***	0,000 (0,000) ***	-0,004 (0,001) ***	-0,002 (0,000) ***
Liquidity	0,020 (0,003) ***	0,095 (0,002) ***	0,236 (0,020) ***	0,577 (0,022) ***
Constant	0,237 (0,018) ***	-0,167 (0,010) ***	0,190 (0,089) **	-1,586 (0,055) ***
Industry effects	Yes	Yes	Yes	Yes
R2		0,030		0,025
R2-overall	0,007		0,012	
Number of obs.	267102	267102	267015	267015
Number of firms	55390		55373	

Table 6: Robustness test, Pooled OLS for micro firms.

We start by comparing the results on ROA for Micro firms. The results presented by the GLS are supported by the results from the Pooled OLS in three out of four variables; Female CEO, Female in Board, and Family firm. The GLS finds Tenure to have a statistically significant and negative effect on ROA, but the Pooled OLS does not support this finding.

Next, results on ROE are compared. The GLS finds four statistically significant variables; Female CEO, Female in Board, Tenure, and Capital Structure. The Pooled OLS supports the findings for; Female CEO, Female in Board, and Tenure. In addition, the Pooled OLS finds Family Firm to have a statistically significant and negative effect on ROE.

Table 7 presents the main findings from the Pooled OLS for small firms.

Table 7 shows the results of regressing profitability measures to the different hypotheses variables (above the dotted line) and a set of control variables (below the dotted line) using both GLS estimation with random effects and Huber/White/Sandwich estimator (robust std.err.), and Pooled OLS estimation with Huber/White/Sandwich estimator (robust std.err.), with ROA and ROE as profitability measures respectively, for firms categorizing as small firms. The adjusted dataset is used as basis for the results. *ROA* is net income to total assets. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female, lagged by one year. *FemaleInBoard* is a dummy with value 1 if females are present in the board, lagged by one year. *CEO Salary* is the reported salary of the CEO in MNOK, lagged by one year. *Tenure* is the number of consecutive years the CEO has held its position, lagged by one year. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets, lagged by one year. *R&D* is the ratio of R&D expenses to total revenue, lagged by one year. *Size* is the natural logarithm of total assets, lagged by one year. *Growth* is the change in size from previous year, lagged by one year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets, lagged by one year. For *Industry effects*, "yes" means that industry dummies are included in the regressions. The calculations of each variable are also included in appendix 6. The robust standard errors are reported in parantheses and significance levels represented by stars.

*: Significant at 10 percent level
**: Significant at 5 percent level
***: Significant at 1 percent level

	GLS with Random Effects	**Pooled OLS**	**GLS with Random Effects**	**Pooled OLS**
	ROA	ROA	ROE	ROE
Firm category:	*Small*	*Small*	*Small*	*Small*
FemaleCEO	0,000 (0,006)	-0,003 (0,004)	-0,015 (0,040)	-0,022 (0,023)
FemaleInBoard	-0,005 (0,004)	-0,006 (0,002) ***	-0,051 (0,029) *	-0,047 (0,016) ***
CEO Salary	0,005 (0,005)	0,009 (0,004) ***	0,031 (0,032)	0,068 (0,029) **
Tenure	0,001 (0,000) **	0,001 (0,000) ***	0,004 (0,003)	0,001 (0,002)
Family Firm	0,002 (0,003)	-0,003 (0,002)	-0,015 (0,025)	-0,056 (0,017) ***
Capital Structure	-0,013 (0,008) *	-0,063 (0,004) ***	-0,036 (0,056)	-0,160 (0,043) ***
R&D	-0,005 (0,002) **	-0,016 (0,007) **	0,055 (0,032) *	-0,058 (0,034) *
Size	-0,069 (0,005) ***	-0,055 (0,003) ***	-0,277 (0,029) ***	-0,229 (0,020) ***
Growth	0,207 (0,062) ***	0,259 (0,068) ***	1,836 (0,427) ***	2,036 (0,439) ***
Risk	0,000 (0,000) ***	0,000 (0,000) ***	0,000 (0,000) **	0,000 (0,000) *
Firm Age	0,000 (0,000)	0,000 (0,000)	-0,002 (0,001) ***	-0,001 (0,000) ***
Liquidity	0,013 (0,010)	0,066 (0,006) ***	0,213 (0,058) ***	0,330 (0,039) ***
Constant	1,259 (0,080) ***	1,014 (0,052) ***	4,884 (0,474) ***	4,062 (0,327) ***
Industry effects	Yes	Yes	Yes	Yes
R2		0,104		0,037
R2-overall	0,073		0,030	
Number of obs.	17697	17697	17696	17696
Number of firms	4917		4917	

Table 7: Robustness test, Pooled OLS for small firms.

The GLS estimation model for ROA supported our third hypothesis, Tenure. Further, for Small firms, R&D has statistically significant and negative effect on ROA. Comparing to the results from the Pooled OLS, both findings are supported. The Pooled OLS also supports our fourth and fifth hypotheses, CEO Salary and Capital Structure, respectively. Female in Board also has a statistically significant and negative effect on ROA.

For ROE, we find no statistically significant variables from the GLS model. However, Female in Board and R&D were significant at the ten percent level. Comparing to the Pooled OLS, the same results appear for R&D, but the effect of Female in Board is statistically significant and negative. In addition, hypothesis four, CEO Salary, is supported in the Pooled OLS. The same applies for hypothesis five, Capital Structure. Family firms and R&D have a statistically significant and negative effect on ROE.

Table 8 presents the main findings from the Pooled OLS for Medium & Large firms.

Table 8 shows the results of regressing profitability measures to the different hypotheses variables (above the dotted line) and a set of control variables (below the dotted line) using both GLS estimation with random effects and Huber/White/Sandwich estimator (robust std.err.), and Pooled OLS estimation with Huber/White/Sandwich estimator (robust std.err.), with ROA and ROE as profitability measures respectively, for firms categorizing as medium and large firms. The adjusted dataset is used as basis for the results. *ROA* is net income to total assets. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female, lagged by one year. *FemaleInBoard* is a dummy with value 1 if females are present in the board, lagged by one year. *CEO Salary* is the reported salary of the CEO in MNOK, lagged by one year. *Tenure* is the number of consecutive years the CEO has held its position, lagged by one year. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets, lagged by one year. *R&D* is the ratio of R&D expenses to total revenue, lagged by one year. *Size* is the natural logarithm of total assets, lagged by one year. *Growth* is the change in size from previous year, lagged by one year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets, lagged by one year. For *Industry effects*, "yes" means that industry dummies are included in the regressions. The calculations of each variable are also included in appendix 6. The robust standard errors are reported in parantheses and significance levels represented by stars.

*: Significant at 10 percent level
**: Significant at 5 percent level
***: Significant at 1 percent level

	GLS with Random Effects	**Pooled OLS**	**GLS with Random Effects**	**Pooled OLS**
	ROA	ROA	ROE	ROE
Firm category:	*Medium & Large*	*Medium & Large*	*Medium & Large*	*Medium & Large*
FemaleCEO	0,007 (0,010)	0,005 (0,007)	0,088 (0,092)	0,018 (0,040)
FemaleInBoard	-0,004 (0,007)	-0,008 (0,004) *	-0,029 (0,035)	-0,049 (0,033)
CEO Salary	0,005 (0,003)	0,008 (0,002) ***	0,016 (0,013)	0,060 (0,018) ***
Tenure	0,001 (0,001)	0,001 (0,000) ***	-0,002 (0,003)	0,000 (0,003)
Family Firm	-0,001 (0,007)	-0,002 (0,004)	-0,028 (0,044)	-0,042 (0,030)
Capital Structure	0,015 (0,015)	-0,026 (0,008) ***	0,177 (0,105) *	0,003 (0,060)
R&D	0,000 (0,000)	0,000 (0,000) **	0,000 (0,001)	-0,001 (0,001) **
Size	-0,033 (0,005) ***	-0,017 (0,003) ***	-0,126 (0,026) ***	-0,074 (0,014) ***
Growth	0,011 (0,116)	0,120 (0,109)	0,178 (0,355)	0,786 (0,548)
Risk	0,000 (0,000)	0,000 (0,000)	0,000 (0,000)	0,000 (0,000)
Firm Age	0,000 (0,000)	0,000 (0,000)	-0,002 (0,001)	-0,001 (0,000) **
Liquidity	0,026 (0,021)	0,052 (0,013) ***	0,011 (0,099)	0,180 (0,063) ***
Constant	0,636 (0,103) ***	0,335 (0,060) ***	2,532 (0,511) ***	1,541 (0,278) ***
Industry effects	Yes	Yes	Yes	Yes
R2		0,054		0,024
R2-overall	0,032		0,008	
Number of obs.	4071	4071	4070	4070
Number of firms	1098		1098	

Table 8: Robustness test, Pooled OLS for medium & large firms.

The GLS model finds no statistically significant variables for ROA. On the other hand, the Pooled OLS supported four of our hypotheses; hypothesis three (Tenure), four (CEO Salary), five (Capital Structure), and six (R&D).

For ROE, the GLS did not find any statistically significant variables. Comparing to the Pooled OLS, it finds two statistically significant variables for ROE; CEO Salary has a statistically significant and positive effect on ROE, and R&D has a statistically significant and negative effect.

To conclude the robustness tests, we first handled the possible problem with comparing non-comparable companies by dividing into three firm size categories according to their amount of total assets. Alternative categories were tested and presents fairly coinciding results, indicating that the categories we use fit the

research. At last, we perform an alternative regression model, Pooled OLS. In total, the original model, GLS, finds ten statistically significant variables, where eight out of those also shows the same results in the Pooled OLS. In addition, the Pooled OLS finds some of the other variables to be statistically significant. However, the important part of this robustness test is that our findings in the GLS is supported with similar findings in an alternative model, in which we conclude it has. Hence, the results and findings have passed the robustness test.

Discussion

In the following we provide some explanation to the results. First, we find a statistically significant and negative relationship between Female CEO and Female board members on ROA and ROE for Micro firms. Neither Nolan et al. (2016) nor McKinsey (2007) find any relationship between Female CEOs and profitability. A possible explanation of this finding can be that females are more risk averse than males, according to Croson & Gneezy (2009, p. 454). Meaning, if a female CEO can choose over different investment options, she might prefer the less risky option even if that option might have a lower expected return. The reasons for this finding to disappear for larger firms is most likely; 1) due to fewer observations; and 2) decisions in larger firms does not rely solely on the personality of the CEO (personal traits), since other managers and/or employees affect them. The same reasoning applies for Female in Board.

Second, we find no relationship between CEO Salary and profitability, supporting the results by Michaud & Gai (2009). We find no effect for Medium & Large firms most likely due to few observations. For Micro and Small firms, approximately one of four CEOs do not receive salary from the firm, which might be one of the reasons for the results. Also, according to Berzins & Bøhren (2013), family firms represent two thirds of all private firms in Norway. Since owners have the right to receive dividends, the results may change if we include dividends as part of the CEO compensation.

Third, we find a negative relationship between Tenure and profitability for Micro firms. Meaning, firms with higher Tenure have lower profitability, indicating that Micro firms should change their CEO more often. However, we believe this can be a wrong interpretation of the variable. A possible better explanation to the results can be that a new CEO of a Micro firm generates high profits in his first years and that these profits will stabilize at a lower level in the following years. In this research, such a pattern will be registered and interpreted by the model as firms with low Tenure have higher ROA and ROE, and the results appear as they do.

Fourth, we find that Family firms are more profitable than nonfamily firms in the Micro category, supporting the findings by Berzins & Bøhren (2013). For Small and Medium & Large firms, the results are not statistically significant.

Fifth, for Capital Structure, we find a negative relationship between long-term debt and ROE for Micro firms, supporting the findings by Höbart (2006), Addae et al. (2013), and Abeywardhana (2015). However, we find conflicting results for Micro firms, since long-term debt has positive effect on ROA at a ten percent significance-level. The existing literature is to a large degree consistent on the relationship between long-term debt and profitability. Therefore, we find no logical reason to why the effect is positive on ROA. For Small and Medium & Large firms, the results are consistent.

Sixth, we find no relationship between investments in R&D and profitability, except for the conflicting results on Small firms. Here, R&D has a statistically significant and negative effect on ROA, supporting the findings by Graham (1988). Contrary, the effect is positive at a ten percent level for ROE. A possible explanation to this is that total assets normally increases when investing in R&D, as part of the balance sheet, thus decreasing ROA. However, the equity does not necessarily change when total assets increases, which leads to a stable or higher ROE if the returns are slightly increasing.

Conclusion

In this research we investigate the impact of several factors on profitability for Norwegian private firms, not listed on either Oslo Stock Exchange or Oslo Axess. The factors we test are: Female CEO, Female in Board, CEO Salary, Tenure, Family firm, Capital Structure, and R&D. Profitability is measured by ROA and ROE. The research is based on data from the high-quality CCGR-database for the time-period 2000 to 2015. The firms are further divided into three size categories, measured by total assets in accordance to the EU Commission (2003).

When using panel data with an unbalanced dataset, the most suitable model to use is the GLS estimation with random effects. We find that Female CEOs, Female board members, and Tenure have a negative effect on ROA and ROE for Micro firms. Family firms in this category generates a higher ROA than nonfamily firms, and the results for Capital Structure shows that ROE decreases if the firms' long-term debt increases. For Small firms, Tenure has a positive effect on ROA. On the other hand, R&D has a negative effect on ROA. We find no such effect on ROE for Small firms. For the Medium & Large firms, none of the factors tested have any effect on neither ROA nor ROE.

Robustness tests are performed, and our findings are robust to alternative definitions, measures, and regressions models. In our estimation model, GLS with random effects, we find ten statistically significant variables. The alternative regression model, Pooled OLS, supports these findings for eight out of the ten variables.

The findings contribute to the existing literature on what factors impact profitability in Norwegian private firms. The findings are at a general level, meaning, we have not gone into depth on the various interesting findings such as the effect on Female CEOs and Board members on Micro firms comparing to larger firms. Hence, we suggest further research on possible explanations of these findings. In addition, it can be interesting to observe whether the same results also apply for listed firms in Norway.

Limitations

We are satisfied with the way our research has contributed to the existing literature in explaining what factors impact firms' profitability. However, with the constraints a master thesis brings in terms of theoretical dept and limited time, there are some points readers of this research should bear in mind.

First, we believe the CEO salary in family firms where the CEO also is a major shareholder is lower than other firms in the dataset. This is because our research does not consider dividends to owners, which in many cases will account for a major part of the total compensation to the CEO. Since a substantial portion of the firms in our research are family firms, the reported CEO salary might be somewhat lower than the actual total compensation to the CEOs. Therefore, we cannot deny that the results related to CEO salary might change if we include dividends as part of the CEO compensation.

Second, it is difficult to assert the time frame of when R&D investments pays off, and one could argue that the effect from R&D do not occur until later than at least one year after the investment. Going more deeply into R&D investments and when the effect occurs could therefore give more precise estimates on the effects.

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Appendices

Appendix 1: Observations by sectors for both datasets.

Appendix 1 presents the distribution of observations to different industries/sectors for both the Original- and the Adjusted datasets in absolute numbers and in percentage of the total.

		Original dataset		**Adjusted dataset**	
Industry:	Observations by sector:	*(Absolute)*	*(Percentage)*	*(Absolute)*	*(Percentage)*
IndA	**Agriculture,forestry and fishing**	9 023	1,43 %	6 773	1,36 %
IndC	**Manufacturing**	46 151	7,33 %	35 910	7,20 %
IndF	**Construction**	52 614	8,35 %	42 317	8,49 %
IndG	**Wholesale and retail trade; repair of motor vehicles**	104 367	16,57 %	80 523	16,15 %
IndH	**Transportation and storage**	104 575	16,60 %	79 832	16,02 %
IndI	**Accommodation and food service activities**	24 319	3,86 %	15 260	3,06 %
IndJ	**Information and communication**	30 037	4,77 %	23 586	4,73 %
IndL	**Real estate activities**	52 567	8,35 %	44 703	8,97 %
IndM	**Professional, scientific and technical activities**	151 701	24,08 %	126 699	25,42 %
IndN	**Administrative and support service activities**	14 414	2,29 %	11 341	2,28 %
IndQ	**Human health and social work activities**	16 766	2,66 %	14 651	2,94 %
IndR	**Arts, entertainment and recreation**	16 078	2,55 %	11 478	2,30 %
IndS	**Other service activities**	7 246	1,15 %	5 394	1,08 %
	Total:	629 858	100,00 %	498 467	100,00 %

Appendix 2: Descriptive Statistics:

Appendix 2.1: For the original dataset

Appendix 2.1 presents descriptive statistics for the original dataset divided into firm size categories. *ROA* is net income to total assets. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female. *FemaleInBoard* is a dummy with value 1 if females are present in the board. *CEO Salary* is the reported salary of the CEO. *Tenure* is the number of consecutive years the CEO has held its position. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets. *R&D* is the ratio of R&D expenses to total revenue. *Size* is the natural logarithm of total assets. *Growth* is the change in size from previous year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets. The calculations of each variable are also included in appendix 6. The table shows: *N* is the number of observations, *Mean*, *Median* and *Standard deviation.*

Data description for the original dataset												
	Micro				**Small**				**Medium & Large**			
	N	*Mean*	*Median*	*Std.Dev.*	*N*	*Mean*	*Median*	*Std.Dev.*	*N*	*Mean*	*Median*	*Std.Dev.*
ROA	591695	-0,022	(0,047)	0,725	29470	0,067	(0,045)	0,172	7042	0,047	(0,031)	0,151
ROE	592689	0,390	(0,236)	2,380	29468	0,297	(0,154)	1,498	7041	0,178	(0,095)	1,392
FemaleCEO	585696	0,177	(0,000)	0,382	29181	0,094	(0,000)	0,292	6980	0,084	(0,000)	0,277
FemaleInBoard	593346	0,317	(0,000)	0,465	29470	0,328	(0,000)	0,469	7042	0,413	(0,000)	0,492
CEO Salary	593346	284255	(262000,0)	1429027	29470	480768	(446000,0)	509973	7042	930182	(702000,0)	1226418
Tenure	593346	6,352	(5,000)	4,721	29470	7,816	(7,000)	5,108	7042	7,311	(7,000)	5,079
Family Firm	593346	0,734	(1,000)	0,442	29470	0,583	(1,000)	0,493	7042	0,521	(1,000)	0,500
Capital Structure	591695	0,288	(0,000)	5,208	29470	0,267	(0,152)	0,306	7042	0,298	(0,221)	0,288
R&D	593346	0,022	(0,000)	2,568	29470	0,103	(0,000)	4,80	7042	0,387	(0,000)	11,420
Size	591695	14,090	(14,208)	1,369	29470	17,206	(17,104)	0,438	7042	19,274	(19,004)	0,961
Growth	460608	0,004	(0,001)	0,040	24715	0,009	(0,003)	0,030	5727	0,008	(0,002)	0,029
Risk	486903	1,802	(0,270)	61,147	24748	7,605	(0,271)	309,18	5705	18,344	(0,316)	480,48
Firm Age	593346	8,905	(6,000)	9,920	29470	15,529	(11,000)	15,874	7042	18,156	(12,000)	20,094
Liquidity	591695	0,327	(0,249)	0,294	29470	0,234	(0,124)	0,264	7042	0,184	(0,090)	0,227
Observations	*593346*				*29470*				*7042*			

Appendix 2.2 presents descriptive statistics for the adjusted dataset divided into firm size categories. *ROA* is net income to total assets. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female. *FemaleInBoard* is a dummy with value 1 if females are present in the board. *CEO Salary* is the reported salary of the CEO. *Tenure* is the number of consecutive years the CEO has held its position. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets. *R&D* is the ratio of R&D expenses to total revenue. *Size* is the natural logarithm of total assets. *Growth* is the change in size from previous year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets. The calculations of each variable are also included in appendix 6. The table shows: *N* is the number of observations, *Mean*, *Median* and *Standard deviation.*

Appendix 2.2: For the adjusted dataset

	Data description for the adjusted dataset											
	Micro				**Small**				**Medium & Large**			
	N	*Mean*	*Median*	*Std.Dev.*	*N*	*Mean*	*Median*	*Std.Dev.*	*N*	*Mean*	*Median*	*Std.Dev.*
ROA	464213	0,076	(0,070)	0,315	27269	0,075	(0,051)	0,160	6782	0,051	(0,034)	0,144
ROE	463934	0,218	(0,198)	1,844	27267	0,255	(0,146)	1,222	6781	0,140	(0,092)	1,043
FemaleCEO	458869	0,169	(0,000)	0,375	27019	0,095	(0,000)	0,293	6723	0,086	(0,000)	0,280
FemaleInBoard	464416	0,314	(0,000)	0,464	27269	0,336	(0,000)	0,472	6782	0,417	(0,000)	0,493
CEO Salary	464416	299627	(284000,0)	1609979	27269	485637	(452000,0)	513927	6782	938157	(704000,0)	1240195
Tenure	464416	6,425	(5,000)	4,746	27269	7,900	(7,000)	5,098	6782	7,364	(7,000)	5,084
Family Firm	464416	0,735	(1,000)	0,442	27269	0,588	(1,000)	0,492	6782	0,527	(1,000)	0,499
Capital Structure	464213	0,163	(0,000)	2,064	27269	0,242	(0,133)	0,281	6782	0,285	(0,212)	0,275
R&D	464416	0,020	(0,000)	2,613	27269	0,097	(0,000)	4,90	6782	0,378	(0,000)	11,516
Size	464213	14,235	(14,348)	1,298	27269	17,211	(17,111)	0,440	6782	19,285	(19,011)	0,968
Growth	362053	0,006	(0,002)	0,035	22940	0,009	(0,003)	0,028	5523	0,008	(0,002)	0,027
Risk	381359	1,453	(0,252)	63,739	22900	7,447	(0,261)	320,67	5501	18,660	(0,312)	489,26
Firm Age	464416	9,128	(6,000)	10,230	27269	15,820	(11,000)	16,082	6782	18,441	(12,000)	20,318
Liquidity	464213	0,354	(0,291)	0,295	27269	0,244	(0,138)	0,266	6782	0,186	(0,093)	0,228
Observations	*464416*				*27269*				*6782*			

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Appendix 3: Hausman test

Appendix 3.1: With ROE as profitability measure.

Appendix 3.1 presents the results from the Hausman test between GLS regression with fixed effects and one with random effects for the adjusted-dataset. The regressions that the Hausman test is based on does not consider the firm size constraints used in the other regressions. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female, lagged by one year. *FemaleInBoard* is a dummy with value 1 if females are present in the board, lagged by one year. *CEO Salary* is the reported salary of the CEO in MNOK, lagged by one year. *Tenure* is the number of consecutive years the CEO has held its position, lagged by one year. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets, lagged by one year. *R&D* is the ratio of R&D expenses to total revenue, lagged by one year. *Size* is the natural logarithm of total assets, lagged by one year. *Growth* is the change in size from previous year, lagged by one year. *Risk* is the standard deviation of growth in sales but is omitted in the GLS regression with fixed effects and therefore not represented in this table. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets, lagged by one year. The calculations of each variable are also included in appendix 6.

Fixed = fixed effects, and Random = random effects.

Hausman test

	Coefficients			
	Fixed	*Random*	*Difference*	*Std.Err.*
FemaleCEO	0,006	-0,081	0,088	0,021
FemaleInBoard	-0,024	-0,058	0,034	0,012
CEO Salary	0,000	0,001	0,000	0,000
Tenure	0,000	-0,012	0,012	0,001
Family Firm	-0,012	0,002	-0,013	0,009
Capital Structure	0,077	-0,029	0,106	0,017
R&D	-0,004	-0,004	0,001	0,001
Size	-0,135	0,023	-0,158	0,006
Growth	0,780	0,303	0,477	0,044
Firm Age	-0,029	-0,004	-0,025	0,001
Liquidity	0,016	0,223	-0,207	0,011
chi2	2809,99			
Prob>chi2	0,000			

Appendix 3.2: With ROA as profitability measure.

Appendix 3.2 presents the results from the Hausman test between GLS regression with fixed effects and one with random effects for the adjusted-dataset. The regression that the Hausman test is based on does not consider the firm size constraints used in the other regressions. *ROA* is net income to total assets. *FemaleCEO* is a dummy with value 1 if the CEO is female, lagged by one year. *FemaleInBoard* is a dummy with value 1 if females are present in the board, lagged by one year. *CEO Salary* is the reported salary of the CEO in MNOK, lagged by one year. *Tenure* is the number of consecutive years the CEO has held its position, lagged by one year. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets, lagged by one year. *R&D* is the ratio of R&D expenses to total revenue, lagged by one year. *Size* is the natural logarithm of total assets, lagged by one year. *Growth* is the change in size from previous year, lagged by one year. *Risk* is the standard deviation of growth in sales but is omitted in the GLS regression with fixed effects and therefore not represented in this table. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets, lagged by one year. The calculations of each variable are also included in appendix 6. Fixed = fixed effects, and Random = random effects.

Hausman test

	Coefficients			
	Fixed	*Random*	*Difference*	*Std.Err.*
FemaleCEO	0,001	-0,012	0,013	0,003
FemaleInBoard	0,000	-0,008	0,007	0,002
CEO Salary	0,000	0,000	0,000	0,000
Tenure	-0,001	-0,001	0,001	0,000
Family Firm	-0,004	0,006	-0,010	0,001
Capital Structure	0,034	0,003	0,031	0,002
R&D	-0,001	-0,001	0,000	0,000
Size	-0,045	-0,005	-0,040	0,001
Growth	0,272	0,179	0,093	0,007
Firm Age	-0,001	0,000	-0,001	0,000
Liquidity	-0,021	0,021	-0,042	0,002

Chi2	5038,93
Prob>chi2	0,000

Appendix 4: Breusch and Pagan heteroscedasticity test

Appendix 4 presents the results from the Breusch and Pagan test heteroskedasticity based on OLS regression for both profitability measures, using the adjusted dataset, without any firm size category constraints. *ROA* is net income to total assets, *ROE* is net income to total equity. In this test the null hypothesis is constant variance, and thus, homoskedasticity. When Prob>Chi2 is significant one rejects the null hypothesis. In this case that means that there is heteroskedasticity in the dataset.

Breusch-Pagan test for heteroskedasticity

Variables: fitted values of	**ROA**	**ROE**
Chi2	974,37	243,23
Prob>Chi2	0,00	0,00

Appendix 5: Correlation matrices

Appendix 5 shows the correlation coefficients for pairs of variables used in the research. The different matrices show the correlations within the different firm size categories in the adjusted- and the original dataset. *ROA* is net income to total assets. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female. *FemaleInBoard* is a dummy with value 1 if females are present in the board. *CEO Salary* is the reported salary of the CEO. *Tenure* is the number of consecutive years the CEO has held its position. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets. *R&D* is the ratio of R&D expenses to total revenue. *Size* is the natural logarithm of total assets. *Growth* is the change in size from previous year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets. The calculations of each variable are also included in appendix 6.

Appendix 5.1: For Micro firms (adjusted dataset):

Correlation matrix: Micro firms in the adjusted dataset

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	**ROA**	1,000													
2	**ROE**	0,487	1,000												
3	**FemaleCEO**	-0,015	-0,015	1,000											
4	**FemaleInBoard**	-0,024	-0,018	0,526	1,000										
5	**CEO Salary**	0,016	0,014	-0,008	-0,007	1,000									
6	**Tenure**	-0,006	0,003	-0,070	-0,008	0,009	1,000								
7	**Family Firm**	0,020	-0,007	-0,003	0,004	-0,012	0,111	1,000							
8	**Capital Structure**	-0,050	-0,056	-0,012	-0,003	-0,018	-0,022	-0,011	1,000						
9	**R&D**	-0,009	-0,004	0,000	0,000	0,000	-0,005	-0,007	0,000	1,000					
10	**Size**	0,147	0,118	-0,134	-0,051	0,048	0,134	-0,093	0,106	0,005	1,000				
11	**Growth**	0,339	0,162	-0,014	-0,020	0,007	-0,097	-0,013	0,010	0,006	0,137	1,000			
12	**Risk**	-0,010	-0,004	0,001	-0,005	-0,002	-0,015	-0,005	0,003	0,016	0,000	0,006	1,000		
13	**Firm Age**	-0,021	-0,003	-0,021	0,052	0,000	0,548	0,047	-0,017	-0,003	0,147	-0,088	-0,009	1,000	
14	**Liquidity**	0,167	0,121	0,073	0,038	0,013	0,040	0,052	-0,229	-0,003	-0,224	0,003	0,001	-0,001	1,000

Appendix 5.2: For Small firms (adjusted dataset):

Correlation matrix: Small firms in the adjusted dataset

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	ROA	1.0000													
2	ROE	0.4908	1.0000												
3	FemaleCEO	-0.0031	-0.0037	1.0000											
4	FemaleInBoard	-0.0311	-0.0301	0.3111	1.0000										
5	CEO Salary	0.0546	0.0479	-0.0829	-0.0391	1.0000									
6	Tenure	0.0428	-0.0050	-0.0270	0.0180	-0.0190	1.0000								
7	Family Firm	-0.0011	-0.0317	0.0967	0.1029	-0.2046	0.1888	1.0000							
8	Capital Structure	-0.2575	-0.1238	-0.0120	-0.0141	-0.2442	-0.0668	0.0577	1.0000						
9	R&D	-0.0480	-0.0099	-0.0033	-0.0061	0.0016	-0.0112	-0.0100	-0.0069	1.0000					
10	Size	-0.0533	-0.0400	-0.0231	0.0382	0.1126	-0.0307	-0.0325	-0.0044	-0.0054	1.0000				
11	Growth	0.2621	0.1236	-0.0179	-0.0578	0.0008	-0.0882	-0.0271	-0.0387	0.0189	0.0096	1.0000			
12	Risk	0.0001	-0.0007	0.0023	-0.0045	-0.0145	-0.0114	0.0063	0.0168	0.0080	0.0056	0.0159	1.0000		
13	Firm Age	-0.0162	-0.0337	0.0793	0.1614	-0.0327	0.2932	0.1038	-0.0795	-0.0091	0.0540	-0.1216	-0.0096	1.0000	
14	Liquidity	0.2772	0.1276	0.0833	0.0760	0.0354	0.1083	0.0652	-0.4292	0.0126	-0.0421	0.0223	-0.0098	0.0661	1.0000

Appendix 5.3: For Medium & Large firms (adjusted dataset):

Correlation matrix: Medium & Large firms in the adjusted dataset

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	ROA	1.0000													
2	ROE	0.4161	1.0000												
3	FemaleCEO	0.0154	-0.0106	1.0000											
4	FemaleInBoard	-0.0174	-0.0247	0.2227	1.0000										
5	CEO Salary	0.0505	0.0708	-0.0929	0.0440	1.0000									
6	Tenure	0.0727	0.0056	0.0196	0.0500	-0.0318	1.0000								
7	Family Firm	0.0153	-0.0291	0.1302	0.1340	-0.1570	0.1807	1.0000							
8	Capital Structure	-0.2278	-0.0921	-0.0086	-0.0577	-0.1367	-0.1188	-0.0121	1.0000						
9	R&D	-0.0135	-0.0032	-0.0031	-0.0005	-0.0069	0.0003	-0.0265	-0.0105	1.0000					
10	Size	-0.0680	-0.0456	-0.0394	0.0685	0.2832	-0.1035	-0.0031	0.1127	-0.0154	1.0000				
11	Growth	0.1806	0.0812	-0.0206	-0.0339	-0.0396	-0.0382	-0.0113	0.0106	0.0908	-0.0287	1.0000			
12	Risk	-0.0008	0.0010	-0.0033	-0.0200	0.0023	-0.0119	0.0220	-0.0015	-0.0002	-0.0061	0.0119	1.0000		
13	Firm Age	0.0199	-0.0175	0.0236	0.1357	0.0535	0.2310	0.0697	-0.0869	-0.0154	0.0928	-0.0742	-0.0239	1.0000	
14	Liquidity	0.2505	0.1116	0.1546	0.0765	0.0197	0.1137	0.1079	-0.4462	0.0012	-0.0611	0.0417	-0.0181	0.0689	1.0000

Appendix 5.4: For Micro firms (original dataset):

Correlation matrix: Micro firms in the original dataset

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	ROA	1.0000													
2	ROE	0.0672	1.0000												
3	FemaleCEO	-0.0146	-0.0066	1.0000											
4	FemaleInBoard	-0.0104	-0.0102	0.5368	1.0000										
5	CEO Salary	0.0169	0.0087	-0.0096	-0.0074	1.0000									
6	Tenure	0.0390	-0.0185	-0.0710	-0.0147	0.0101	1.0000								
7	Family Firm	0.0097	-0.0064	0.0020	0.0075	-0.0118	0.1184	1.0000							
8	Capital Structure	-0.1273	-0.0053	0.0067	0.0040	-0.0061	0.0023	0.0021	1.0000						
9	R&D	-0.0035	-0.0021	-0.0014	-0.0017	-0.0003	-0.0060	-0.0060	-0.0002	1.0000					
10	Size	0.2681	0.0421	-0.1312	-0.0507	0.0553	0.1133	-0.0899	-0.0524	0.0038	1.0000				
11	Growth	0.3591	0.0664	-0.0150	-0.0176	0.0086	-0.0676	-0.0130	-0.0483	0.0081	0.1964	1.0000			
12	Risk	-0.0106	0.0002	-0.0018	-0.0089	-0.0026	-0.0170	-0.0081	0.0014	0.0546	0.0004	0.0127	1.0000		
13	Firm Age	0.0264	-0.0170	-0.0251	0.0433	0.0017	0.5525	0.0545	0.0011	-0.0025	0.1357	-0.0601	-0.0073	1.0000	
14	Liquidity	0.0769	0.0560	0.0625	0.0336	0.0160	0.0493	0.0409	-0.0204	-0.0039	-0.1806	0.0089	-0.0020	0.0147	1.0000

Appendix 5.5: For Small firms (original dataset):

Correlation matrix: Small firms in the original dataset

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 ROA	1.0000													
2 ROE	0.3270	1.0000												
3 FemaleCEO	-0.0013	-0.0116	1.0000											
4 FemaleInBoard	-0.0162	-0.0259	0.3115	1.0000										
5 CEO Salary	0.0481	0.0359	-0.0818	-0.0366	1.0000									
6 Tenure	0.0644	-0.0095	-0.0308	0.0203	-0.0135	1.0000								
7 Family Firm	0.0129	-0.0272	0.0945	0.1038	-0.2018	0.1941	1.0000							
8 Capital Structure	-0.2829	-0.0742	-0.0051	-0.0255	-0.2557	-0.0773	0.0581	1.0000						
9 R&D	-0.0477	-0.0121	-0.0035	-0.0065	0.0025	-0.0118	-0.0110	-0.0065	1.0000					
10 Size	-0.0382	-0.0334	-0.0241	0.0348	0.1130	-0.0314	-0.0382	-0.0172	-0.0062	1.0000				
11 Growth	0.2366	0.0786	-0.0163	-0.0560	-0.0074	-0.0825	-0.0217	-0.0367	0.0175	0.0148	1.0000			
12 Risk	0.0003	-0.0009	0.0024	-0.0040	-0.0151	-0.0119	0.0055	0.0130	0.0079	0.0060	0.0190	1.0000		
13 Firm Age	0.0017	-0.0353	0.0715	0.1532	-0.0264	0.3043	0.1083	-0.0921	-0.0095	0.0578	-0.1167	-0.0103	1.0000	
14 Liquidity	0.2802	0.0862	0.0764	0.0805	0.0443	0.1111	0.0640	-0.4299	0.0127	-0.0325	0.0171	-0.0097	0.0728	1.0000

Appendix 5.6: For Medium & Large firms (original dataset):

Correlation matrix: Medium & Large firms in the original dataset

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 ROA	1.0000													
2 ROE	0.2428	1.0000												
3 FemaleCEO	0.0212	-0.0098	1.0000											
4 FemaleInBoard	-0.0210	-0.0240	0.2226	1.0000										
5 CEO Salary	0.0424	0.0515	-0.0918	0.0470	1.0000									
6 Tenure	0.0837	0.0049	0.0230	0.0449	-0.0322	1.0000								
7 Family Firm	0.0245	-0.0138	0.1293	0.1274	-0.1563	0.1855	1.0000							
8 Capital Structure	-0.2302	-0.0258	-0.0186	-0.0634	-0.1427	-0.1099	-0.0132	1.0000						
9 R&D	-0.0121	-0.0026	-0.0029	-0.0005	-0.0066	0.0003	-0.0259	-0.0111	1.0000					
10 Size	-0.0599	-0.0319	-0.0339	0.0722	0.2852	-0.1026	-0.0016	0.0941	-0.0150	1.0000				
11 Growth	0.1650	0.0425	-0.0006	-0.0235	-0.0439	-0.0328	-0.0099	-0.0005	0.0842	-0.0319	1.0000			
12 Risk	-0.0005	0.0002	-0.0026	-0.0192	0.0024	-0.0115	0.0216	-0.0027	-0.0001	-0.0052	0.0127	1.0000		
13 Firm Age	0.0309	-0.0278	0.0288	0.1306	0.0538	0.2371	0.0758	-0.0945	-0.0151	0.0941	-0.0649	-0.0232	1.0000	
14 Liquidity	0.2422	0.0580	0.1554	0.0733	0.0259	0.1078	0.1024	-0.4404	0.0014	-0.0531	0.0508	-0.0174	0.0692	1.0000

Appendix 6: Overview of variables

Appendix 6 presents a table with an overview over all variables used in the research. The first column is the names of each variable used in the research. The second column represents the abbreviations each variable has in the Stata-outputs. The third column contains explanation/calculation of each variable. The forth column states whether the variable is dependent or independent. Finally, the fifth column states whether the variable is an explanatory or a control variable.

In model:	Explanation/ Calculation:	Dependent/ Independent:	Control/ Explanatory
Capital Structure	Lagged one year: Total Long-term Liabilities/Total Assets	Independent	Explanatory
CEO salary	Lagged one year: CEO Salary	Independent	Explanatory
Family Firm	Dummy = 1 if Family Firm, 0 if not	Independent	Explanatory
FemaleCEO	Lagged one year: Dummy = 1 if CEO is a female, 0 if not	Independent	Explanatory
FemaleInBoard	Lagged one year: Dummy = 1 if the board has at least one female, 0 if not.	Independent	Explanatory
R&D	Lagged one year: R&D expenses/Total Revenue	Independent	Explanatory
Tenure	Lagged one year: Consecutive years the same CEO has held the position	Independent	Explanatory
Firm Age	Firm Age	Independent	Control
Growth	Lagged one year: Size(t)/Size(t-1)-1	Independent	Control
Liquidity	Lagged one year: (Cash + Total Investments)/Total Assets	Independent	Control
Risk	Std.Dev. Of growth in sales	Independent	Control
Size	Lagged one year: ln(Total Assets)	Independent	Control
ROA	Return on Assets: Net Income/Total Assets	Dependent	
ROE	Return on Equity: Net Income/Total Equity	Dependent	

Appendix 7: GLS with Random Effects for ROA using the original dataset

Appendix 7 shows the results of regressing ROA to the different hypotheses variables (above the dotted line) and a set of control variables (below the dotted line) using GLS estimation with random effects and Huber/White/Sandwich estimator (robust std.err.), for all firm size categories. The original dataset is used as basis for the results. *ROA* is net income to total assets. *FemaleCEO* is a dummy with value 1 if the CEO is female, lagged by one year. *FemaleInBoard* is a dummy with value 1 if females are present in the board, lagged by one year. *CEO Salary* is the reported salary of the CEO in MNOK, lagged by one year. *Tenure* is the number of consecutive years the CEO has held its position, lagged by one year. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets, lagged by one year. *R&D* is the ratio of R&D expenses to total revenue, lagged by one year. *Size* is the natural logarithm of total assets, lagged by one year. *Growth* is the change in size from previous year, lagged by one year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets, lagged by one year. For *Industry effects*, "yes" means that industry dummies are included in the regressions. The calculations of each variable are also included in appendix 6. The robust standard errors are reported in parantheses and significance levels represented by stars.

*: Significant at 10 percent level
**: Significant at 5 percent level
***: Significant at 1 percent level

GLS with Random Effects for ROA using the original dataset

Firm category:	*Micro*	*Small*	*Medium & Large*
FemaleCEO	-0,011 (0,006) **	0,001 (0,006)	0,007 (0,010)
FemaleInBoard	-0,009 (0,004) **	-0,003 (0,004)	-0,005 (0,006)
CEO Salary	0,000 (0,000)	0,004 (0,005)	0,004 (0,003)
Tenure	-0,002 (0,000) ***	0,001 (0,000) ***	0,001 (0,001) *
Family Firm	0,009 (0,003) ***	0,004 (0,003)	0,001 (0,007)
Capital Structure	0,004 (0,001) ***	-0,019 (0,008) ***	0,010 (0,014)
R&D	-0,001 (0,001)	-0,003 (0,001) ***	0,000 (0,000)
Size	0,025 (0,000) ***	-0,065 (0,004) ***	-0,032 (0,000) ***
Growth	0,153 (0,053) ***	0,168 (0,054) ***	-0,025 (0,112)
Risk	0,000 (0,000)	0,000 (0,000) ***	0,000 (0,000)
Firm Age	0,000 (0,000)	0,000 (0,000)	0,000 (0,000)
IndS	-0,101 (0,013) ***	-0,030 (0,031)	0,011 (0,027)
Constant	-0,269 (0,041) ***	1,178 (0,075) ***	0,619 (0,099) ***
Industry effects	Yes	Yes	Yes
R2-overall	0,017	0,073	0,031
Number of obs.	343970	19137	4230
Number of firms	70179	5369	1152

Appendix 8: GLS with Random Effects for new size categories

Appendix 8.1-8.2 presents the Stata-outputs from the GLS with random effects regressions and Huber/White/Sandwich estimator (robust std.err.) for both ROA and ROE as the dependent variable for the new firm size categories, splitting the Micro category into two categories, using the adjusted dataset. *ROA* is net income to total assets. *ROE* is net income to total equity. *FemaleCEO* is a dummy with value 1 if the CEO is female, lagged by one year. *FemaleInBoard* is a dummy with value 1 if females are present in the board, lagged by one year. *CEO Salary* is the reported salary of the CEO in MNOK, lagged by one year. *Tenure* is the number of consecutive years the CEO has held its position, lagged by one year. *Family Firm* is a dummy with value 1 if a family controls more than 50 percent of a firm. *Capital Structure* is total long-term liabilities to total assets, lagged by one year. *R&D* is the ratio of R&D expenses to total revenue, lagged by one year. *Size* is the natural logarithm of total assets, lagged by one year. *Growth* is the change in size from previous year, lagged by one year. *Risk* is the standard deviation of growth in sales. *Firm Age* is the number of years the firm has existed. *Liquidity* is cash and total investments to total assets, lagged by one year. The calculations of each variable are also included in appendix 6.

*: Significant at 10 percent level
**: Significant at 5 percent level
***: Significant at 1 percent level

Appendix 8.1: ROA:

	ROA	
Firm category:	*SubMicro1*	*SubMicro2*
FemaleCEO	-0,005 (0,004)	-0,006 (0,002) ***
FemaleInBoard	0,008 (0,004) **	-0,007 (0,002) ***
CEO Salary	0,008 (0,005)	0,000 (0,000)
Tenure	-0,003 (0,000) ***	0,000 (0,000) ***
Family Firm	0,020 (0,003) ***	0,002 (0,001)
Capital Structure	0,009 (0,008)	-0,013 (0,003) ***
R&D	-0,002 (0,002)	-0,001 (0,002)
Size	-0,016 (0,003) ***	-0,057 (0,002) ***
Growth	0,194 (0,037) ***	0,255 (0,020) ***
Risk	0,000 (0,000) ***	0,000 (0,000)
Firm Age	0,000 (0,000)	0,000 (0,000) ***
Liquidity	0,013 (0,005) ***	0,029 (0,003) ***
Constant	0,330 (0,035) ***	1,017 (0,026) ***
Industry effects	Yes	Yes
R2-overall	0,004	0,064
Number of obs.	126919	140183
Number of firms	33536	31451

Appendix 8.2: ROE:

	ROE	
Firm category:	*SubMicro1*	*SubMicro2*
FemaleCEO	-0,037 (0,023) *	-0,068 (0,022) ***
FemaleInBoard	-0,048 (0,019) ***	-0,061 (0,014) ***
CEO Salary	0,037 (0,018) **	0,000 (0,001)
Tenure	-0,015 (0,002) ***	-0,005 (0,001) ***
Family Firm	0,049 (0,018) ***	-0,018 (0,013)
Capital Structure	-0,004 (0,007)	-0,181 (0,024) ***
R&D	-0,007 (0,008)	-0,005 (0,004)
Size	0,027 (0,011) ***	-0,205 (0,010) ***
Growth	0,053 (0,185)	0,719 (0,177) ***
Risk	0,000 (0,000) ***	0,000 (0,000)
Firm Age	-0,001 (0,001)	0,000 (0,000) ***
Liquidity	0,239 (0,026) ***	-0,004 (0,001) ***
Constant	0,063 (0,153)	3,923 (0,154) ***
Industry effects	Yes	Yes
R2-overall	0,011	0,029
Number of obs.	126843	140172
Number of firms	33517	31449