

Ratio Working Paper No. 259

Efficiency of Female Leaders in Family and Non-Family Firms

Per-Olof Bjuggren*

Louise Nordström**

Johanna Palmberg***

* per-olof.bjuggren@ratio.se Jönköping International Business School, P.O. Box 1026, 551 11 Jönköping and The Ratio Institute, P.O. Box 3203, SE-103 64 Stockholm, Sweden

** louise.nordstrom@jibs.hj.se Jönköping International Business School, P.O. Box 1026, 551 11 Jönköping and The Ratio Institute, P.O. Box 3203, SE-103 64 Stockholm, Sweden

*** johanna.palmberg@entreprenorskapsforum.se Entreprenörskapsforum, Grevgatan 34, 114 53 Stockholm and CESIS, KTH, Lindstedtsvägen 30, 100 44 Stockholm.

**** We thank Rubeca Duggal for excellent research assistance.



Efficiency of Female Leaders in Family and Non-Family Firms*

Authors:

Per-Olof Bjuggren, per-olof.bjuggren@jibs.hj.se, per-olof.bjuggren@ratio.se
Jönköping International Business School, P.O. Box 1026, 551 11 Jönköping.
The Ratio Institute, Sveavägen 59 (Box 3203), 103 64 Stockholm.

Louise Nordström, louise.nordstrom@jibs.hj.se
Jönköping International Business School, P.O. Box 1026, 551 11 Jönköping.
The Ratio Institute, Sveavägen 59 (Box 3203), 103 64 Stockholm.

Johanna Palmberg, johanna.palmberg@entreprenorskapsforum.se
Entreprenörskapsforum, Grevgatan 34, 114 53 Stockholm.
CESIS, KTH, Lindstedtsvägen 30, 100 44 Stockholm.

Abstract

Female leadership is an expanding area of research. It is a popular topic discussed frequently in both academia and in the popular press. Despite this, comparative studies of the impact of female leadership on firm level performance between family and non-family firms are rare. The present study has the ambition to fill this gap. This paper investigates female leadership in family firms and how it affects firm profitability. A unique database of ownership and leadership in private Swedish firms makes it possible to analyze difference in firm performance due to female leadership in family and non-family firms. Even though much has been written regarding the role of women in family firms we do not know so much about how female leadership in family firms affect the profitability of the firm. The analysis indicates that female leadership makes much more of a positive difference for performance in family firms. The effect is negative in non-family firms.

.....

JEL-Codes: G34, L25, J31.

Key words: Family firms, Female Representation, Financial Performance.

* We thank Rubecca Duggal for excellent research assistance.

1. Introduction

Traditionally women in family firms have had roles that are closely linked to the family, i.e., spouse, mother, in-law, rather than with a prominent and formal business related position such as CEO or CFO which traditionally has been more associated with male family members (Arjis 2013). However, the literature on family firms indicates that there is a changing role for females in these firms. Women have become more visible and incorporated in the family business. There is also a more positive vibe around women's opportunities and what the family firm can offer them in terms of career opportunities, management positions and leadership (Gupta and Levenburg 2013; Jimaneze 2009).

Empirical studies on female corporate leaders exist, but the results are unclear and needs more investigation. For example, Adams and Ferreira (2009) investigate female directors and find an ambiguous effect on firm performance, and Dezso and Ross (2012) report that female leadership is beneficial in some contexts. Moreover, most of the previous studies are on large listed firms, there are quite few studies on smaller non-listed firms. Systematic empirical research on women in family firms is even scarcer and needs further analysis. One area to look closer at is how effective female leaders are in family firms (Danes and Olsen 2003; Gnan, and Songini 2013; Jimaneze 2009). What is the impact of female on performance in family firms, is it different from non-family firms and how can we explain deviations in performance from male leadership?

To fill this gap and to extend our knowledge on women in family firms, this paper investigates the effects of women in managerial positions, members of the board of directors, and as owners of the firm on firm level profitability, with a special focus on family owned enterprises. The research question addresses the issue of female governance on firm performance, i.e., *is the effect of female governance different in family firms compared to non-family firms?*

The study relates to recent research on female leadership in family firms. A study by Amore et al. (2014) is probably the closest to ours. They have adopted a similar approach to ours but differ in one important aspect; they study only family firms and do not compare with other private firms. Their hypotheses are grounded in a theoretical framework that posts that female directors and leaders function better in cooperation with the same sex. In contrast, we also stress discrimination as an important explanation.

The paper makes empirical and practical contributions to literature on family firms and the corporate governance literature in general. The main empirical contribution is that we

investigate the effect of female corporate leaders on firm performance and compare family with non-family firms. Are female leaders more efficient in family firms compared to non-family firms? The empirical analysis is based on survey data with firms in all sized classes with at least 5 employees, i.e., not only listed firms are included. The owners of the firm were asked about the names of the five largest owners, their respective cash-flow and voting rights, and if they consider themselves to be a family or a non-family firm. In total, 1,041 firms answered the survey, which corresponds to a response rate of 42 percent. The survey data is matched with firm level data from Bureau van Dijk's database "Amadeus" and information on female leaders from official sources.

The regression analysis shows that female corporate executives in family firms generate higher profitability than in non-family firms. That is, family firms could improve their profitability by supporting and mentoring female family members to take leading positions in the firms. Previous literature (Bennedsen et al. 2007) shows that family firms to a larger extent hand over the firm to the son with a negative effect on firm performance. Our results indicate that promoting women to leading positions is actually good for the firm. Thus, regional and national networks could be one way forward to further support female leaders and at the same time enhance firm performance.

The remainder of the paper is organized as follows. The next two sections present the theoretical framework, an overview of the previous literature, and the hypotheses tested. The fourth section discusses the methodology and the data and variables used. Section five presents the relevant descriptive statistics and the regression analysis. The final section summarizes and concludes the paper.

2. Female leadership – Literature Review and research questions

Research on gender issues is relatively new within the corporate governance/finance literature (Huang and Kisgen 2013). There is no coherent theoretical framework that comprises all aspects of gender and how it could affect firm performance. Rather one has to rely on a mixture of theories about behavioral differences in gender, discrimination, principal-agent relationship and the proposed advantages of gender diversity in the board. Reviewing this literature we claim that a difference has to be made between family firms and non-family firms considering the effects of gender on firm performance.

2.1. Gender differences in top management

The principal agent theory does not generate a conclusive view on the role of gender diversity on firm value/performance. Jensen and Meckling (1976) provide a corporate governance framework based on a principal agent view. The central messages in their article are that leaders (those in control of the use of firm assets) are human beings with taste for both pecuniary wealth as well as consumption on the job (consumption at the expense of firm value). Principals are the firm financiers and agents are those in control of the management of firm resources. We will here concentrate on the shareholders in a corporation as principals and owners. In some firms, especially those of larger size, there are different layers of agents.

The board, for example, is an agent of the shareholders whose task is to control the CEO and other executives in charge of the day-to-day management of the firm.¹ In many private firms, the concentration of ownership is high and the board is thus not as important as an agent. It is common that just a few persons own the entire stock of shares. If the owner, the board membership and CEO position is concentrated to one person or a small group of closely connected persons (i.e., a family) we argue that the control capabilities of that person/group is very strong. In case the person in question also is the single owner there is no division of ownership and control (Berle and Means, 1932). In that case there is no possibility to engage in consumption-on-the job at the expense of other owners.

Gender and diversity:

In the corporate governance literature much has recently been written about gender balance in boards (Bohren and Staubo 2014). Within the agency framework, board diversity (here gender diversity) is best understood in terms of independent directors (Carter et al. 2003). Many of the boards' tasks involve monitoring of the management, and since independent directors have an incentive to build a reputation as expert monitors, these tasks, theoretically, are best fulfilled by directors not dependent on the management.

There are, however, at least four objections to this argument. First, the role of gender diversity might differ between large and small firms. In small firms, female directors might not represent outsiders, rather they are part of the controlling family and hence both dependent on

¹ However, the board can have other purposes than just to prevent consumption on the job at the expense of the shareholders. It can also provide useful business knowledge.

the management and on the largest owner. Second, if the outsider (here women) is marginalized she might not have an influence on the board work. Instead, the woman is appointed as a token rather than as a full-member of the board.² Third, too high of a share of outsiders might lower the quality of the board work since outsiders have less firm-specific knowledge. Fourth, the effect of gender diversity might differ between firms due to other differences in corporate governance quality. Adams and Ferreira (2009) find that female directors might be tougher monitors of the management. In firms with already high quality governance this might lead to over-monitoring reducing the quality of the board work and firm performance.

There is a tradeoff between the value of having independent (outside) and dependent (inside) directors and between diversity and homogeneity in boards that should be considered in the gender discussion of board composition. Bohren and Staubo (2014) use the tradeoff relation between outsiders and insiders in their analysis of why the value of some Norwegian firms decreased after the 40-percent gender quota was passed by the Norwegian Parliament in 2003 and became mandatory in 2008. As framework for their tradeoff discussion they refer to Adams and Ferreira (2009), Linck et al. (2008) and Duchin et al. (2010).

The tradeoff between diversity and gender homogeneity is the main theme in Amore et al. (2014) in their empirical study of the impact on firm profitability of female executives and directors in Italian family firms. Their explanation to why female leadership boost profitability is based on argument that female interactions in boards and between board and CEO is beneficial. They refer to earlier studies by among others Greig and Bonhet (2009) and Matsa and Miller (2012) who find that cooperation is more productive between women than between males and females.

Behavioral differences:

There are a large number of studies that have examined how men and women differ in confidence, ethical behavior and attitudes towards competition and risk. Such behavioral differences can have an impact on investment and profitability. Many of these studies are of an experimental character. Nierdele and Vesterlund (2007) is such an experimental study. They examine differences between men and women in preferred type of compensation scheme for their work. The experimental design chosen makes it possible to separate differences in choice of compensation scheme due to risk aversion, discrimination, confidence and just preferences. They find that confidence and preference for competition differ. Men are inherently more

² Adams and Ferreira (2009) refer to appointment of marginalized directors as tokenism.

competitive and more overconfident than women. How confidence influence financial decisions have recently been examined by Huang and Kisgen (2013). They use real market data. Their findings are that men executives undertake more acquisitions and issue more debt than female executives. The announcement returns for these financial decisions are lower for the male executives. As an explanation to their result they refer to the male overconfidence.

Another experimental study is Charness and Gneezy (2012). They study investment behavior and find that men are more prone to take risk than women. However, Schubert et al 2000 find in an experiment that it is ambiguity that matters. If investment decisions are taken in a secure environment with known probabilities for risky payoffs they found no differences in risk aversion. Furthermore, Hibbert et al 2013 find in an empirical study that financial education mitigates gender differences in financial risk aversion.

There are also some studies of ethical differences between sexes. Betz et al. (1989) find using a method of open-ended questions to 213 business school students that men are twice as likely as women to engage in unethical actions. From the questions posed they draw the conclusion that men were even prepared to break the law to law in order to get personal benefits. There were hardly any females in their study that would go that far in unethical behavior. Ford and Richardson (1994) find in review of the empirical literature dealing with ethical decision making a similar gender pattern. Out of fourteen articles dealing with gender differences in ethical behavior seven find that females were more ethical than males. In the remaining seven articles no significant difference between males and females is found.

What implications do lower confidence, risk averseness, less taste for competition and ethical constraints have for firm performance? A lot of work remains to test these proposed behavioral differences between males and females in empirical research. In our study we investigate primarily private firms. Consequently, earlier studies that focus on private firms in their research about gender effects on performance are of great interest. Most of these studies find that female owned firms underperform relative to male-owned firms. An overview of such prior studies is provided in Robb and Watson (2012). They concentrate on results from studies of small firms and startups. In their list of earlier research there is a Swedish study by Du Rietz and Henrekson (2000). They have collected survey data from 4200 small firms with employees in the range 1-20. It is a random sample from a population consisting of all Swedish firms in that size class. The response rate is as high as 79 per cent. Performance variable are sales, profitability, growth and orders. All performance variables are of qualitative nature mirroring the perceptions of the surveyed firms. In the sample there were 450 female owned firms. The only case of female underperformance could be found for sales. All data is from 1995.

An even more ambitious Scandinavian study is Smith et al. (2006). It is a panel study of 2 500 Danish firms for the period 1993-2001. Register data is used covering most of the firms in Denmark. A majority of the firms is fairly small and private. There are only 300 listed firms in their database. As performance measures different profit margins and returns on assets are used. They look at the proportion of women in top executives' jobs and on the boards of directors. The result of their study is that the proportion of women tends to have positive effects on firm performance.

Discrimination:

Consumption on the job is in Jensen and Meckling (1976) defined as use of firm resources that gives utility to leader (manager) at the expense of firm value. Gender and other form of discrimination as defined by Becker (1957) represent such a use of resources at the expense of firm value. Discrimination by gender and race implies that marginal productivity is no longer the norm for use of labor. For example, an employer chooses to hire a person with a lower marginal productivity due to preferences for certain race or sex. The cost of the discrimination is thereby born by the employer in terms of lower profit.

In a private firm with essentially non-tradable shares the preferences for gender might be shared by both shareholders and management. It is less likely that preferences for gender and other types of discrimination are to be shared by shareholders and management in listed (public) firms. With a majority of the shareholders having an outside position (not working in the firm or in any other way spending time in the firm) it is likely that discrimination resulting in lower share value is not appreciated at all. One can therefore hypothesize that outsiders, like the shareholders in a listed firm with dispersed ownership, are negative to discrimination. From that perspective there is no surprise that Wolfers (2006) finds that there is no difference in value between female-headed listed firms and others. Difference in firm value should be more noticeable in private firms.

There is an increasing demand for female leaders. Farrell and Hersch (2005) advances the demand arguments to hire more women as directors and executives to be; i) gender diversity with respect to board of directors has a positive impact on the financial performance of the firm, ii) external pressure on firms to increase the share of female directors and executives, and iii) internal preferences for gender diversification. We will here look at the performance argument.

The performance argument rests on the assumption that low levels of diversity imply forgone talent that generates lower performance i.e., the discrimination argument as developed by Becker (1957). By sidestepping a segment of the society's talent the quality of the internal

corporate governance will systematically become lower if firms appoint directors and executives based on gender and not on their qualifications (Burke 1997; Cassell 2000). The empirical results are however inconclusive. For example, Erhardt et al. (2003) show in a study of listed firms in the United States that higher gender diversity in the board of directors has a positive effect on firm performance using accounting measures. Adams and Ferreira (2009) find, in a study of large listed US firms, on average, no effect of gender diversity on firm performance measured by Tobin's q .

2.2 Family firm management

The general theory about gender differences in management outlined above has to be reformulated when it comes to family firms. To start with one has to define what a family firm is so everyone knows which subset of firms that are being analyzed. In this study we have only included firms as family firms if they consider themselves to be family firms. Our presumption is that firms that declare themselves as family firms also are firms in which there is an intention that the firm is to stay within the ownership and control by the family. Accordingly we argue that our selection of firms meets the definition outlined by Chua et al. (1999, p. 25):

“The family business is a business governed and/or managed with the intention to shape and pursue the vision of the business held by a dominant coalition controlled by members of the same family or a small number of families in a manner that is potentially sustainable across generations of the family or families”.

In this study we are interested in women leaders in family firms, and thus we need to include the specific attributes characterizing family firms into the discussion. Previous literature shows clearly that family firms differ in terms of management and governance structure from non-family firms and that these differences affect for example strategic attitudes and recruitment policies

In an excellent review on the “Research on Women in Family Firms: Current status and Future Directions”, Jimenez (2009) presents the development on scholars' view on the role of women in the literature from 1985 and onwards.³ The literature could be divided into two

³ The review is based on 48 articles, 23 books and 3 doctoral dissertations.

segments; i) obstacles and ii) positive aspects. The first segment highlights the issue of “the invisible woman”, emotional leadership, and succession and primogeniture (p. 54). The second segment of literature is more recent and highlights women’s professional careers within the family firm and running the family firm (p. 54). We can be classified into the primogeniture discussion and the theme in our paper also highlights women’s professional careers in the sense that these are subject that are related to discrimination and resource based theory.

Amongst recent empirical research we want to highlight a study of Amore et al (2014) which is the only study that we have found that specifically look at the impact of gender on performance in family firms. The other studies we have found of gender performance in private firms do not explicitly consider the distinction family vs non-family firms. It is a panel study of 2,400 median and large family-controlled firms, with data for the period 2000-2010, covering both listed and non-listed firms. Each firm in the data set had sales exceeding Euro 50 million in 2009. In all there are 10,154 observations for the whole period. Return on assets is used as performance measure. The explanatory gender variables used are female CEO, proportion of female directors on the board and the interaction between female CEO and female directors. A positive significant impact on profitability is found for the interaction term female CEO and female directors. Otherwise, there is a negative sign for the female gender variables. The result is interpreted as it is positive for profitability to have female cooperation in family firms.

Formulation of theory to fit family firms:

Considering family firms management the resource dependence theory is likely to be of importance. The resource dependence theory rests on the assumption that a firm’s competitive advantage lies in the application and capitalization of internal resources. The firm is seen as “bundles” of resources and by creating unique or hard to copy bundles, the firm gains competitive advantages. Human capital is the key factor. Barney (1997) argues that employees and management structures are the most valuable and hardest to duplicate resource that a firm has. Directors are seen as providers of essential resources or as a way for the firm to secure those resources from the external world. That is, the directors bring important resources to the firm such as expertise, capital and knowledge of customers, suppliers, and other cooperative partners (Hillman et al. 2000).⁴ Being brought up in a family business has implications on knowledge and capabilities of family members who are appointed as directors and CEO.

⁴Hillman et al. (2000), Table 1, distinguishes four categories; insiders, business experts, support specialists, and community influential’s. Interesting to note, is that they do not refer to the classical categories of diversity such as gender, ethnicity, age, but talk rather about diversity in terms of which resources that each director bring to the group.

Bjuggren and Sund (2001 and 2002) emphasize the knowledge idiosyncrasies attained through upbringing in a family firm. This is the topic also in Habbershon et al. (2003) and Zahra et al. (2004). This is an important human capital in line with the resource-based theory available to family firms.

Another distinguishing feature of family firm is the concentration of ownership and control. The aligning of both incentive and capability to run operations profitably show up in efficient investment performance (Bjuggren and Palmberg 2010). In other words there are principal-agent advantages that can be reaped by a family firm. However there is also dark side demonstrated by among others (Schulze et al. 2003). Family firms sometimes “*are plagued by conflicts that can cause them to flounder, if not fail and that they are vulnerable to a form of inertia that can paralyze decision making and threaten firm survival*” (Schulze et al. 2003 p. 180). In an empirical study, Schulze et al. (2001) also find that family firms are more difficult to manage because dilemmas created by altruism and nepotism.

More recently, Bennedsen et al. (2007) presented an extensive study of impact of succession decisions on performance that indicate gender discrimination in family firms.⁵ They study 5,334 successions in mostly private Danish corporations. They find that family successions have a negative impact on firm performance. Of special interest for our study are their gender results. One finding is that if more than 50 per cent of the outgoing CEOs children are male it is much more likely with a family successor than if the portion of male is less. Even more interesting is that “*outgoing executives whose first-born children are male are 9.6 percentage points more likely to be succeeded by a family member than their counterparts whose firstborn is female*” (p. 662). To judge from their findings there seem to be gender discrimination in the appointment of successors in family firms. Danish culture has a lot of similarities with Swedish culture.

Hypotheses:

Considering our discussion of the relevance of principal agent theory, resource based theory and discrimination theory for family firms management we state the following hypotheses.

⁵ In this paper we will use the discrimination theory developed originally by Becker (1957) in our analysis of the role of female leaders in family firms. According to the discrimination theory one can expect that discriminated females have a higher marginal productivity in order to obtain a leading position in family firms.

Hypothesis 1: A female CEO is likely to have a more positive impact on performance in family firms than in other firms

The discrimination against appointment of women as CEOs found by Bennedsen et al (2007) motivates this hypothesis. Since it is more difficult for women to make a career in family firms, thus the ones that become female leaders are better leaders and generate a higher profitability.

Hypothesis 2: The combination of female ownership with a CEO position is likely to have a more positive impact on performance in family firms than in other firms

The alignment of both ownership and leadership makes it easier for female CEO to make a difference. Idiosyncratic knowledge acquired through being brought up with the family business can also here be important. A higher marginal productivity of women is likely to be reflected in higher profitability.

Hypothesis 3: The combination of female ownership with both a CEO position and board membership is likely to have a more positive impact on performance in family firms than in other firms

This hypothesis is motivated both by discrimination, principal agent and resource-based considerations. Control ability, likely higher marginal productivity and idiosyncratic knowledge will have this effect of female leadership. The motivation behind this hypothesis is essentially the same as for hypothesis two. The combination of all these three position strengthens the female leadership position even more.

Hypothesis 4: The share of female directors is likely to have a positive effect on performance in both family and non- family firms.

Essentially it is the discrimination theory and the positive effects of female cooperation (see Amore et al 2014) that makes this hypothesis plausible.

3. Data and method

The dataset contains information on ownership, board of directors, CEO, and accounting data for Swedish private firms during the year 2008. The ownership database is created by Center

for Family Ownership (CEFEO) at Jönköping International Business School (JIBS) from a survey on Swedish firms. The sample firms were randomly drawn from the total population of Swedish limited liability firms (270,057 firms in total). The sampling was based on firm size measured in terms of employees. No firm with less than 5 employees was included, and a categorization was made based on the number of employees (see Table 1). A survey was thereafter conducted and distributed to delineate ownership structures and family firm appearance. In total, the survey was sent out to 2,522 firms.

Table 1. Sample sizes and respective groups

Groups	Number of firms in the sample
5-9	622
10-19	359
20-49	242
50-99	391
100-199	205
200-499	250
500-999	216
>1000	237
Sum:	2522

Names of the five largest owners were asked, along with their respective ownership share and voting power. A total number of 1041 firms answered the survey, producing an answering frequency of around 42 percent. By receiving the owners' names, we were later able to map the occurrence of female ownership and their ownership share. All the firms' financial data were extracted from Amadeus (Bureau von Dijk). Also, we found the board members of each firm through the site 121.nu (see allabolag.se). Eventually, we had 1001 firms with all the necessary information regarding for example female ownership, board participation and family firm manifestation. This means that we dropped 40 companies for which we did not have the needed facts.

3.1. Variables

Due to the nature of our sample no stock data of companies could be obtained and hence no market based measures of performance were used in the analysis. Instead, we used accounting-based measure of firm performance (the profit margin, Table 1). Female leadership is defined in terms of ownership, directorship and if the CEO is female. In the regression analysis these variables are tested both separately and as an interaction term.

Table 2. Definition of variables

Variable	Definition
<i>Panel A Governance variables</i>	
Female CEO	Dummy variable, equal to one if CEO is female, zero otherwise.
Share of female directors	Share of female directors.
Board size	Number of board members.
Total female ownership	Sum of total female ownership
Female owner-CEO	Dummy variable, equal to one if the CEO is female and the largest owner of the firm is female.
Female board and owner	Number of females that are board members and owners
Female director-owner-CEO	Interaction term between the number of female directors, number of female owners and the female CEO dummy.
<i>Panel B Firm variables</i>	
Incorporation year	Year that the firm was incorporated
Firm age	2008 minus the year that the firm was incorporated
Profit margin	Measure of firm profitability. Defined as: net income divided by sales
Solvency	Shareholders' Funds/Total Assets*100 (%). Note: in a few cases there are negative values due to how it is defined in Amadeus (Bureau van Dijk)
Firm size	Net sales (Euro).
Industry Sectors	Dummies for (1) Manufacturing, (2) Construction, (3) Wholesale and Retail Trade and Transportation and Storage, (4) Accommodation and Food Service Activities, Financial and Insurance Activities, Real Estate, Professional, Scientific Activities and Other Service Activities. (The sector division base NACE, Rev. 2 classification in Amadeus)

4. RESULTS

4.1. Descriptive Statistics

Tables 3 and 4 present descriptive statistics for all firms and for nonfamily and family firms regarding female ownership and female representation on the board of directors. There are 817 observations after elimination of outliers on each end of the distribution of profit margin (5 per cent each tail). Table 3 shows for all firms that figures for female participation in board (16 per cent), as a CEO (9 per cent) and as owners (8 per cent) are rather modest. Combinations of ownership and CEO position was held by a woman in 5 per cent of the firm and the same percentage was for the combination ownership, CEO position and seat on the board,

Table 3. Descriptive statistics for all firms

Variable	Mean	Std. Dev.	Min	Max
Board size	4	2.62	1	16
Female CEO	.09	.29	0	1
Female owner-CEO	.05	.21	0	1
Female owner-board	.14	.44	0	4
Female director-owner-CEO	.05	.21	0	1
Share of female directors	.16	.24	0	1
Total female ownership	.08	.22	0	1
Age	26.57	23.43	1	111
Sales (Thousand EURO)	112 54	440 15	114	8 185 552
Profit margin (%)	4.84	5.98	-8.14	22.15
Solvency (%)	34.97	21.99	-77.62	96.67

Note: Total number of observations is 817.

The comparison between family and non-family firms in Tables 4 show that there are not any large differences between family and non-family firms in terms of female leadership. Female ownership is much larger in family firms (12 per cent compared to 4 per cent) and female owners on the board of directors are more common in family firms. These differences are statistical significant.

The descriptive statistics show further that the average board size is larger for non-family firms than family firms. Non-family firms have on average 5 board members whereas the average board size for family firms is 3 and the size of non-family firms is larger. However, family firms have a higher solvency.

Table 4. Descriptive statistics with t-test of differences family and non-family firms

Variable	Family Firms			Non-family			t-test
	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.	
Board size	3	2.02	372	5	2.78	445	10.45
Female CEO	.09	.28	372	.10	.30	445	0.37
Female owner-CEO	.06	.23	372	.04	.19	445	-1.42
Female owner-board	.19	.47	372	.09	.42	445	-3.35
Female director-owner-CEO	.06	.23	372	.04	.19	445	-1.42
Share of female directors	.15	.25	372	.16	.24	445	0.69
Total female ownership	.12	.25	372	.04	.18	445	-5.28
Age	26	19.82	372	27	26.07	445	0.74
Sales	60 050	350 030	372	156 413	49 9425	445	3.12
Profit margin	4.81	5.91	372	4.86	6.04	445	0.17
Solvency	38.19	21.56	372	32.29	22.00	445	-3.89

Note: Significant differences are marked by bold.

To sum up the important findings for summary statistics is that there does not seem to be any big differences when it comes to leadership between family firms and non-family firms judging from the frequency of having a female CEO, a female CEO being one of the five largest owners and female CEO who sits on the board and at the same time is large owner. This is in spite of the fact that total female ownership is considerably higher in family firms.

4.2. Correlations

In this section we concentrate on correlations between the female leadership and ownership variables. The correlation between these variables will, as can be seen later in the paper, determine the choice of models used in the regressions. (Table A1 and A2 in Appendix present correlations between all variables.) Table 5 present correlations for non-family firms and table 6 presents correlations for family firms. Table 5 shows that female ownership is statistically significantly correlated with all other governance variables. That is, there is a positive correlation between female ownership and female leadership in non-family firms. A possible interpretation of this result is that if that female ownership increases this brings along a positive increase in female representation both in the management of the firm as well as in the board of directors. Such a high correlation between ownership and female leadership is not found for family firms (see Table 6).

A comparison between Tables 5 and 6 further shows for non-family firms that there is a significant negative relation between board size and strong female leadership and positive significant relationship between board size and female share of board. In family firms there is no significant relation for these variables.

Table 5. Correlation Matrix - Non- Family Firms

	Board Size	Owner CEO	CEO female	Female Board-Owner-CEO	Total ownership women	Share of female directors
Board Size	1					
Female owner-CEO	-0.145**	1				
Female CEO	0.005	0.591**	1			
Female director -owner-CEO	-0.145**	1.00**	0.591**	1		
Total female ownership	-0.178**	0.854**	0.490**	0.854**	1	
Share of female directors	0.158**	0.511**	0.510**	0.511**	0.591**	1

Note: The table displays Pearson correlation coefficients. * indicates significance at 0.05 level, ** indicate significance at 0.01 level.

Table 6. Correlation Matrix - Family Firms

	Board Size	Owner CEO	CEO female	Female Board-Owner-CEO	Total ownership women	Share of female directors
Board Size	1					
Female owner-CEO	0.033	1				
Female CEO	0.076	0.743**	1			
Female director -owner-CEO	0.027	0.950**	0.743**	1		
Total female ownership	-0.048	0.423**	0.337**	0.490**	1	
Share of female directors	0.07	0.416**	0.414**	0.438**	0.415**	1

Note: The table displays Pearson correlation coefficients. * indicates significance at 0.05 level, ** indicate significance at 0.01 level (2-tailed).

4.3 Model

The ordinary least squares (OLS) method is used to obtain the coefficient estimate of the model. The general model is as follows:

Eq. 1:

$$\text{Profit margin} = f(\text{Female ownership, Female CEO, Female CEO-owner, Female board-owner- CEO, Share of female directors, Control variables})$$

Hypotheses (1-4) predicts that female leadership (Female CEO, Female CEO-owner, Female board-owner- CEO, Share of female directors) have a positive effect on profit margin in *family firms* due to a combination of corporate governance, discrimination and resource-based reasons (see section 4). Female ownership as such is a variable not automatically connected to an influential inside position as CEO and member of the board. Seen from this perspective it is hard to predict what the influence on profits might look like. Due to the high correlations between female CEO, female CEO-owner, female board-owner-CEO and share of female directors (see Tables 5 and 6) we will estimate the coefficients separately in four different models for family firms and non-family firms. Consequently, eight different models will be estimated.

The control variables used in each of the eight models are board size, solvency, firm age, firm sales and industry sector. These are variables commonly used in earlier studies that take into consideration the financial situation of the firm, how mature the firm is, size effects and the industrial environment. Board size is commonly regarded to have a negative effect if the board is very large. The general model looks like

Eq.2:

$$\text{Profit margin} = a + \beta_1 \text{Female ownership} + \beta_2 \text{Board size} + \beta_3 \text{Solvency} + \beta_4 \ln \text{age} + \beta_5 \ln \text{Sales} + \beta_6 \text{Industry sector 1} + \beta_7 \text{Industry sector 3} + \beta_8 \text{Industry sector 4} + \beta_9 (\text{one of the variables Female CEO, Female CEO-owner, Female board-owner- CEO and Share of female directors}) + \varepsilon_i$$

5.4 Regression Analysis

Due to the high correlation between the different female leadership variable separate regressions will be used for each of the different female leadership variables (Tables 7 and 8). A striking result is that the strong leaderships represented by the combinations female CEO-

owner and female board director-owner-CEO have opposite signs in family and non-family firms. It can also be noted that all the female leadership variables (female CEO, female CEO-owner, female board-owner-CEO and share of female directors) have a positive sign in family firms. Strong female leadership indicated by the combination of female board-owner-CEO has significantly positive impact on performance at the 5 per cent level. (In appendix Table A3 the variable female CEO-owner is also significant at the 10 per cent level. But it is only the case when industry dummies are excluded.) According to hypothesis 3 high marginal productive emanating from discrimination, idiosyncratic knowledge and principal-agent advantages can explain this result for family firms. The other hypotheses, 1, 2 and 4, could not be confirmed. Interesting is that this relationship is negative for non-family firms.

Table 7. Regression analysis Family Firms (Dependent variable: Net Profit Margin)

Variables	Model 1	Model 2	Model 3	Model 4
Constant	3.723** (1.879)	3.703** (1.871)	3.767** (1.865)	3.612* (1.876)
Female ownership	-1.253 (1.269)	-1.738 (1.318)	-2.301 (1.352)	-1.079 (1.314)
Board size	0.113 (0.175)	0.105 (0.174)	0.103 (0.174)	0.116 (0.175)
Solvency	0.102*** (0.014)	0.101*** (0.014)	0.102*** (0.014)	0.104*** (0.014)
ln age	-0.502 (0.363)	-0.508 (0.362)	-0.515 (0.361)	-0.515 (0.365)
ln sales	-0.219 (0.191)	-0.204 (0.191)	-0.208 (0.190)	-0.211 (0.192)
Industry 1	0.188 (1.129)	0.194 (1.127)	0.191 (1.123)	0.172 (1.130)
Industry 3	-0.098 (1.016)	-0.092 (1.013)	-0.095 (1.01)	-0.109 (1.021)
Industry 4	0.902 (1.048)	0.884 (1.043)	0.856 (1.039)	0.958 (1.048)
Female CEO	0.907 (1.095)			
Female CEO-owner		2.106 (1.403)		
Female board-owner-CEO			3.123** (1.427)	
Share of female directors				0.388 (1.259)
R ²	0.146	0.150	0.156	0.145
N	372	372	372	372

Note: Standard deviation within parentheses * p-value ≤ 0.1 ; ** p-value ≤ 0.05 ; *** p-value ≤ 0.01

The opposite (negative) signs for female CEO-owner, female board-owner-CEO in non-family firms imply that female leadership does not lead to increased performance. This is just the opposite from what was found for family firms. The result is in line with most earlier empirical studies of the impact of female leadership (see Robb and Watson, 2012). A possible explanation

is that the behavioral differences between sexes with respect to confidence, ethical behavior and attitudes to towards competition and risk have a negative impact on performance. An increase in the riskiness of the larger non-family firms could play a role. This is an area for future research. Another possible explanation could be that the idiosyncratic knowledge obtained by female leaders in family firms is lacking. The main conclusion that can be drawn is that female ownership is significantly positive in family firms. If family and non-family firms are mixed (see Table A5 in Appendix) the gender of the top management does not matter. This in line with earlier empirical studies of female leadership, with a negative or no relationship with performance (see e.g. Robb and Watson, 2012). The positive impact of female ownership in family firms is also found in Amore et. Al. (2014).

Table 8. Regression analysis: Non-Family Firms (Dependent variable: Net Profit Margin)

Variables	Model 5	Model 6	Model 7	Model 8
Constant	-2.409 (1.882)	-2.335 (1.852)	-2.335 (1.852)	-2.522 (1.888)
Female ownership	-2.879 (1.853)			-3.503* (2.098)
Board size	0,037 (0.119)	0.043 (0.118)	0-043 (0.118)	0.019 (0.123)
Solvency	0.089*** (0.013)	0.089*** (0.013)	0.089*** (0.013)	0.089*** (0.013)
ln age	0.033 (0.280)	0.047 (0.279)	0.047 (0.279)	0.013 (0.281)
ln sales	0.017 (0.166)	0.013 (0.164)	0.013 (0.164)	0.013 (0.166)
Industry 1	-0.930 (1.321)	-0.862 (1.317)	-0.862 (1.317)	-0.940 (1.319)
Industry 3	-1.166 (1.321)	-1.109 (1.319)	-1.109 (1.319)	-1.212 (1.322)
Industry 4	-0.623 (1.241)	-0.545 (1.235)	-0.545 (1.235)	-0.702 (1.246)
Female CEO	0.244 (1.074)			
Female CEO-owner		-2.781* (1.559)		
Female board-owner-CEO			-2.781* (1.559)	
Share of female directors				1.023 (0.676)
R ²	0,122	0,123	0,123	0.122
N	445	445	445	445

Note: Standard deviation within parentheses * p-value ≤ 0.1; ** p-value ≤ 0.05; *** p-value ≤ 0.01

Finally we find no significant effect of female CEO and female share of board as indicated by hypotheses 1 and 4.

5. CONCLUDING DISCUSSION

The issue of women's participation on the board of directors and in the executive managements of firms is a frequently discussed topic, both in the popular press and in scientific research. Much of this debate and analysis, is, however, focused on the effect of gender diversity on firm performance in larger often listed companies (Hart 1995; Carter et al. 2003; Gabrielsson and Huse 2004). The quota laws in Norway and in other countries have also been enacted to include only listed firms.⁶ As a consequence, the largest share of companies within the economy has been excluded both in the public debate and in the academic research.

A randomly drawn sample representing the total population of Swedish corporations is used as database. Hence, an overwhelming majority of the firms are private (not listed). The study is unique in making a distinction between family and non-family firms in the analysis of the efficiency of female leadership. The distinction is motivated by a presumption that conditions for existence of female leadership differs between these two types of firms. We claim, based on results from earlier research, that existence of idiosyncratic knowledge and gender discrimination is likely to play a larger role for female leadership in family firms. Our hypotheses are that these two factors will make female leadership to stand out as more efficient in family than in non-family firms.

Due to the nature of our sample, inclusion of private non-listed firms, no stock data of companies could be obtained and hence no market based measures of performance were used in our analysis. Instead accounting-based measure of firm performance (the net profit-margin) is used in the econometric analysis. Our study shows that female leadership is more common in family than non-family corporations. This female leadership has also a strong positive impact on performance in family firms while the performance impact is surprisingly strongly negative in non-family firms. Further research is needed to explain this difference. Possible explanations can be differences in idiosyncratic knowledge, discrimination, selection biases and principal-agent conditions that contribute to a superior female performance in family firms.

REFERENCES

⁶ A similar gender quota has been implemented in countries such as Belgium, Iceland, Italy, the Netherlands, Spain, and France (Ahren and Dittmar, 2012; Economist 2014). The sanctions in these countries are of "comply or explain" type, i.e., not as severe as in the Norway where companies that don't adhere to the quota are dissolved. So far this has not happened however.

- Adams, R., Hermalin, B. E., & Weisbach, M. S. (2010). The Role of Boards of Directors in Corporate Governance: A Conceptual Framework and Survey. *Journal of Economic Literature*, 48(1), 58–107.
- Adams, R., Licht, A., & Sagviv, L. (2011). Shareholders and Stakeholders: How Do Directors Decide? *Strategic Management Journal*, 32(12), 1331-1355.
- Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of financial economics*, 94(2), 291-309.
- Ahern, K. R., & Dittmar, A. K. (2012). The changing of the boards: The impact on firm valuation of mandated female board representation. *Quarterly Journal of Economics*, 127(1), 137-197.
- Amore, M. D., Garofalo, O., and Minichilli, A. (2014). Gender Interactions within Family Firms. *Management Science*, 60(5), 1083-1097.
- Arjis, D. (2013). Measuring and Comparing Leadership Styles of Male and Female Chief Executive Officers in Businesses with a Varying Family Intensity. In Smyrnios, K. X., Poutziouris, P. Z., Goel, S. (Eds.) *Handbook Of Research On Family Business*, Second Edition, Edgar Elward Publishing Limited, Celthenham, US.
- Barney, J. (1997). *Gaining and Sustaining Competitive Advantage*. Massachusetts, Addison Wesley: Reading
- Berle, A. Jr., Means; C. G. (1932). *The modern corporation and private property*. Macmillan, New York, NY.
- Becker, G. (1957). *The Economics of Discrimination*, Chicago. IL: Chicago University Press.
- Betz, M, O'Connell, L. & Shepard, J.M. (1989), Gender Differences in Proclivity for Unethical Behavior, *Journal of Business Ethics*, 8(5), 321-324.
- Bennedsen, M., Nielsen, K.M., Perez-Gonzales F. and Wolfenzon, D., (2007). Inside the Family Firm: The Role of Families in Succession Decisions and Performance, *Quarterly Journal of Economics*, 122(2): 647-691.
- Bjuggren, P-O. & L-G Sund (2001). Strategic Decision Making in Intergenerational Successions of Small and Medium-Sized Family Owned Businesses, *Family Business Review*, 14(1), 11-23.
- Bjuggren, P-O. & Sund, L-G. (2002). A Transaction Cost Rationale for Transition of the Firm within the Family. *Small Business Economics*, 19(2), 123-133
- Bjuggren, P-O. & Palmberg, J. (2010). The Impact of Vote Differentiation on Investment Performance in Listed Family Firms. *Family Business Review*, 23(4):327-340
- Bøhren, Ø., & Staubo, S. (2014). Does mandatory gender balance work? Changing organizational form to avoid board upheaval. *Journal of Corporate Finance*, 28, 152-168.
- Burke, R. J. (1997). Women on Corporate Boards of Directors: A needed resource. *Journal of Business Ethics*, 16(9), 909-915.
- Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial Review*, 38(1), 33-53.
- Cassell, C. (2000). Managing Diversity in the New Millenium. *Personel Review*, 29(3): 267-274.
- Charness, G. & Gneezy, U. (2012). Strong Evidence for Gender Differences in Risk Taking, *Journal of Economic Behavior & Organization*, 83, 50-58.
- Chua, J.H., Chrisman, J.J. & Sharma, P. (1999). Defining the Family Business by Behavior, *Entrepreneurship: Theory and Practice*, 23(1), 19-39.
- Danes, S. M., & Olson, P. D. (2003). Women's role involvement in family businesses, business tensions, and business success. *Family Business Review*, 16(1), 53-68.

- Dezsö, C. L., & Ross, D. G. (2012). Does female representation in top management improve firm performance? A panel data investigation. *Strategic Management Journal*, 33(9), 1072-1089.
- Duchin, R., Matsusaka, J. G., & Ozbas, O. (2010). When are outside directors effective?. *Journal of Financial Economics*, 96(2), 195-214.
- Du Rietz, A., & Henrekson, M. (2000). Testing the female underperformance hypothesis, *Small Business Economics*, 14(1), 1-10.
- Economist, (2014), The spread of gender quotas for company boards, March 25th, retrieved 2015-02-16.
- Erhardt, N. L., Werbel, J.D., & Shrader, C. B. (2003). Board of Director Diversity and Firm Financial Performance. *Corporate Governance: An International Review*, 11(2): 102-111.
- Farrell, K. A., & Hersch, P. L. (2005). Additions to corporate boards: the effect of gender. *Journal of Corporate finance*, 11(1), 85-106.
- Fields, A. M. & Keys, P.F. (2003). The Emergence of Corporate Governance from Wall St. to Main St.: Outside directors, board diversity, earnings management, and managerial incentives to bear risk. *The Financial Review*, 38(1), 1-24.
- Ford, R.C. & Richardson, W.D. (1994). Ethical Decision Making: A Review of the Empirical Literature, *Journal of Business Ethics*, 13(3), 205-221.
- Gabrielsson, J. & Huse, M. (2004). Context, Behavior, and Evolution: Challenges in research on boards and governance. *International Studies of Management and Organizations*, 34(2), 11-36.
- Gnan, L. and Songini, L. (2013). Women and the glass ceiling: the role of professionalization in family SMEs. In Smyrniotis, K. X., Poutziouris, P. Z., & Goel, S. (Eds.) *Handbook of Research On Family Business*, Second Edition, Edgar Elward Publishing Limited, Celthenham, US.
- Greig, F., & Bohnet, I. (2009). Exploring gendered behavior in the field with experiments: Why public goods are provided by women in a Nairobi slum. *Journal of Economic Behavior & Organization*, 70(1), 1-9.
- Gupta, V. and Levenburg, N. M. (2013). Women in family business: three generations of research, in Smyrniotis, K.X., Poutziouris, P. Z., Goel, S. (Eds.) *Handbook Of Research On Family Business*, Second Edition, Edgar Elward Publishing Limited, Celthenham, US.
- Habbershon, T.G., Williams, M. and MacMillan, I.C. (2003). A Unified Perspective of Family Firm Performance, *Journal of Business Venturing*, 18(4), 451-65.
- Hansmann, H. (1988). Ownership of the Firm. *Journal of Law, Economics, & Organization*, 267-304.
- Hart, O. (1995). Corporate Governance: Some theory and implications. *Economic Journal* 105(430), 678-689.
- Hibbert, A.M., Lawrence, E.R. & Prakash, A.J. (2013) Does knowledge of finance mitigate the gender difference in financial risk-aversion?. *Global Finance Journal*, 24, 140-152.
- Hillman, A. J., Cannella, A. A., & Paetzold, R. L. (2000). The resource dependence role of corporate directors: Strategic adaptation of board composition in response to environmental change. *Journal of Management studies*, 37(2), 235-256.
- Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives?. *Journal of Financial Economics*, 108(3), 822-839.
- Jensen, M.C. & Meckling, W.H. (1976). Theory of the firm: Managerial behavior, agency costs and capital structure. *Journal of Financial Economics*, 3(4), 305-360.

- Jimenez, R. M. (2009). Research on women in family firms current status and future directions. *Family Business Review*, 22(1), 53-64.
- Linck, J. S., Netter, J. M., & Yang, T. (2008). The determinants of board structure. *Journal of Financial Economics*, 87(2), 308-328.
- Matsa, D. A., & Miller, A. R. (2012). A female style in corporate leadership? Evidence from quotas. *Evidence from Quotas*. *American Economic Journal: Applied Economics*, Forthcoming.
- Niederle, M. & Vesterlund, L. (2007). Do women shy away from competition? Do men compete too much? *The Quarterly Journal of Economics*, 122(3), 1067-1101.
- Robb, A. M., & Watson, J. (2012). Gender differences in firm performance: Evidence from new ventures in the United States. *Journal of Business Venturing*, 27(5), 544-558.
- Schulze, W.S., Lubatkin, M.H., Dino, R.N., & Buchholtz, A.K. (2001). Agency Relationships in Family Firms: Theory and Evidence. *Organization Science*, 12(2), 99-116.
- Schulze W.S., Lubatkin M.H., & Dino, R.N (2003). Exploring the Agency Consequences of Ownership Dispersion Among the Directors of Private Family Firms. *Academy of Management Journal*, 46, 179–194.
- Smith, N., Smith, V., & Verner, M. (2006). Do women in top management affect firm performance? A panel study of 2,500 Danish firms. *International Journal of Productivity and Performance Management*, 55(7), 569-593.
- Zahra, S.A., & Sharma, P. (2004). Family business research: A strategic Reflection, *Family Business Review*, 17(4), 331-346.

Appendix

Table A1. Correlation family firms - all variables

	Prf marg	Total own	owners	board	shareF	boards	ceowomen	ln_age	ln_sales	solv	Ind 1	Ind 2	Ind 3	Ind 4
prfmarg	1.00													
Totalowner	0.02	1.00												
ownersceo	0.12	0.44	1.00											
boardowner	0.13	0.49	0.95	1.00										
shareFdirectors	0.02	0.41	0.41	0.44	1.00									
boardsize	0.01	-0.05	0.03	0.03	0.07	1.00								
ceowomen	0.09	0.34	0.74	0.74	0.41	0.08	1.00							
ln_age	-0.02	-0.16	-0.05	-0.06	0.03	0.18	-0.04	1.00						
ln_sales	-0.08	-0.21	-0.09	-0.08	-0.08	0.55	0.01	0.20	1.00					
solv	0.36	0.07	0.14	0.09	0.04	0.04	0.11	0.19	-0.09	1.00				
Ind 1	0.04	-0.02	-0.03	-0.03	-0.04	0.16	-0.06	0.12	0.03	0.15	1.00			
Ind 2	-0.02	-0.03	-0.05	-0.05	-0.10	-0.19	-0.08	0.02	-0.19	-0.00	-0.17	1.00		
Ind 3	-0.05	-0.04	-0.05	-0.05	0.04	-0.07	-0.07	0.10	-0.07	0.03	-0.35	-0.25	1.00	
Ind 4	0.03	0.08	0.11	0.11	0.05	0.06	0.16	-0.21	0.17	-0.15	-0.36	-0.26	-0.54	1.00

Table A2. Correlation non-family firms - all variables

	Profit marg	Tot. fem. own.	Fem own. CEO	Fem board. owner CEO	Share fem. dir.	Board size	CEO wom	ln_age	ln_sales	Solv	Ind 1	Ind 2	Ind 3	Ind 4
prfmarg	1.00													
Total fem. owners	-0.13	1.00												
ownersceo	-0.14	0.85	1.00											
F board ownerceo	-0.14	0.85	1.00	1.00										
Share fem directors	-0.05	0.59	0.51	0.51	1.00									
boardsize	0.04	-0.18	-0.15	-0.15	0.16	1.00								
ceowomen	-0.05	0.49	0.59	0.59	0.50	0.01	1.00							
ln_age	0.07	-0.19	-0.15	-0.15	-0.02	0.19	-0.11	1.00						
ln_sales	0.02	-0.34	-0.30	-0.30	-0.04	0.55	-0.16	0.30	1.00					
solv	0.34	-0.14	-0.14	-0.14	-0.09	0.02	-0.07	0.18	-0.07	1.00				
Ind 1	0.05	-0.13	-0.11	-0.11	-0.14	0.10	-0.09	0.26	0.09	0.14	1.00			
Ind 2	0.02	-0.02	-0.05	-0.05	-0.11	-0.05	-0.08	-0.07	-0.07	-0.02	-0.13	1.00		
Ind 3	-0.05	-0.01	-0.01	-0.01	-0.07	-0.13	-0.09	0.07	-0.05	-0.03	-0.28	-0.12	1.00	
Ind 4	-0.01	0.13	0.12	0.12	0.23	0.04	0.19	-0.24	-0.01	-0.08	-0.56	-0.24	-0.52	1.00

Table A3. Regressions Family firms without Industry dummies (Dependent variable: Profit margin)

VARIABLES	Prfmarg	Prfmarg	Prfmarg	Prfmarg
Constant	3.950** (1.760)	3.916** (1.754)	3.972** (1.748)	3.827** (1.762)
Female ownership	-1.164 (1.265)	-1.649 (1.314)	-2.216 (1.348)	-0.922 (1.309)
boardsize	0.114 (0.172)	0.107 (0.171)	0.105 (0.171)	0.117 (0.173)
solv	0.101*** (0.0139)	0.0994*** (0.0138)	0.100*** (0.0137)	0.102*** (0.0138)
ln_age	-0.610* (0.354)	-0.614* (0.354)	-0.619* (0.352)	-0.634* (0.356)
ln_sales	-0.168 (0.187)	-0.152 (0.186)	-0.158 (0.185)	-0.154 (0.187)
ceowomen	1.118 (1.081)			
ownersceo		2.300* (1.393)		
boardownersceo			3.292** (1.419)	
ShareFdirectors				0.447 (1.250)
R²	0.141	0.145	0.151	0.139
Observations	372	372	372	372

Table A4. Regression non-family firms without industry dummies (Dependent variable: Profit margin)

VARIABLES	Prfmarg	Prfmarg	Prfmarg	Prfmarg
Female ownership	-2.882			-3.518*
	(1.846)			(2.091)
boardsize	0.0447	0.0522	0.0522	0.0271
	(0.118)	(0.117)	(0.117)	(0.122)
ceowomen	0.289			
	(1.060)			
ln_age	-0.0218	-0.00968	-0.00968	-0.0363
	(0.269)	(0.268)	(0.268)	(0.269)
ln_sales	0.0148	0.0101	0.0101	0.0101
	(0.165)	(0.164)	(0.164)	(0.165)
solv	0.0893***	0.0887***	0.0887***	0.0893***
	(0.0128)	(0.0128)	(0.0128)	(0.0128)
Female CEO	0.289			
	(1.060)			
Female CEO-owner		-2.763*		
		(1.545)		
Female board-owner-CEO			-2.763*	
			(1.545)	
Share of female directors				1.013
				(1.518)
Constant	1.770	1.771	1.771	1.828
	(1.589)	(1.553)	(1.553)	(1.585)
Observations	445	445	445	445
R-squared	0.120	0.121	0.121	0.120

Table A5. Regressions all firms (Dependent variable: Profit margin)

VARIABLES	prfmarg	prfmarg	prfmarg	prfmarg
Totalownershipwomen	-1.663	-1.905	-2.339*	-1.686
	(1.034)	(1.176)	(1.208)	(1.096)
boardsize	0.0812	0.0830	0.0812	0.0777
	(0.0950)	(0.0947)	(0.0946)	(0.0967)
ceowomen	0.370			
	(0.751)			
ln_age	-0.174	-0.176	-0.178	-0.183
	(0.218)	(0.218)	(0.217)	(0.219)
ln_sales	-0.0399	-0.0380	-0.0362	-0.0393
	(0.123)	(0.123)	(0.123)	(0.123)
solv	0.0954***	0.0955***	0.0958***	0.0957***
	(0.00933)	(0.00932)	(0.00932)	(0.00933)
g1	-0.142	-0.141	-0.152	-0.137
	(0.841)	(0.841)	(0.840)	(0.841)
g3	-0.507	-0.509	-0.519	-0.520
	(0.804)	(0.804)	(0.803)	(0.806)
g4	0.226	0.235	0.209	0.231
	(0.786)	(0.783)	(0.782)	(0.787)
ownersceo		0.762		
		(1.198)		
boardownersceo			1.449	
			(1.229)	
shareFdirectors				0.385
				(0.956)
Constant	2.221*	2.215*	2.220*	2.222*
	(1.276)	(1.276)	(1.275)	(1.276)
Observations	817	817	817	817
R-squared	0.125	0.125	0.126	0.125