Irena Kustec • Three essays on family firms

Series of Dissertations • No. 5–2020

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BI Norwegian Business School

*No. 5 – 2020
SERIES OF DISSERTATIONS*

BI Norwegian Business School

Three essays on family firms

by
Irena Kustec

A dissertation submitted to BI Norwegian Business School
for the degree of PhD

PhD specialisation: Finance

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Three essays on family firms:

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Acknowledgements

No one achieves anything alone.

First, I thank my supervisor Charlotte Ostergaard for all the motivation and guidance throughout my PhD years. I have benefited a great deal from our discussions, and I feel that learning from her makes me a better young scholar. Doing a PhD is challenging, but it is definitely easier with a committed supervisor like Charlotte.

I also thank faculty members at BI who offered their feedback on my research. In particular, I thank Janis Berzins, Øyvind Bøhren, and Bogdan Stacescu for sharing their insights about family firms with me. I thank my co-author, Amir Sasson, for always taking the time to help me with the data. I thank my fellow PhD students, especially Renata Almeida, Vasyl Kotsovskyi, and Jo Albertsen Saakvitne. It was always nice seeing you in the office and sharing PhD students' blessings and annoyances with you.

I also thank my new colleagues at Nord University for their priceless help and support during the last few months of my PhD.

Finally, I thank my parents for showing me the importance of education from an early age. This thesis would not be possible without their continuous support, encouragement and love. I also thank the Gulldahls who have taken on a role as my Norwegian family and are one of the reasons why my last years in Norway have been so wonderful. Lastly, I want to thank my friends for all their love and for always reminding me of what is important in life.

Contents

Introduction

Family businesses are important in many economies worldwide. One reason family firms pique many researchers' interest is the interplay of family and business. Decisions made within family firms often reflect business as well as family objectives, and controlling families have to find the right balance between the two without distorting firm's outcomes or family's well-being. All three papers in this dissertation use detailed micro-level data on Norwegian family firms and empirically examine some of the questions often associated with family businesses.

The first paper takes a closer look at the compensation of family firm employees and examines the pay gap between family and non-family employees. I find that the pay gap is highly contingent on the equity that the controlling family and firms' employees invest in the firm. Family employees only earn more than their non-family counterparts in firms owned solely by one family. Family firms with minority owners, on the other hand, offer similar compensation to all employees without invested equity regardless of their family status. Family owners earn significantly more than non-owner employees do, but always less than other owners employed in the firm. Taken together, my results suggest that families compensate their members without equity with above-market salaries, however, the presence of minority shareholders limits such nepotistic behaviour.

The second paper, co-authored with Charlotte Ostergaard and Amir Sasson, studies the underperformance of firms that undergo a family succession. We capture career

trajectories of all successors and show that family firms prefer to promote insider successors, and that their lack of outside work experience rather than the small pool-effect drives the underperformance of family successions. The performance of outside family successors is, on the other hand, similar to that of unrelated successors. These results suggest that successors with multiple work experiences are more likely to develop strong skill sets that are needed for managing the firm, and that controlling families are willing to put in charge successors with inferior skills if that helps preserve their socioemotional wealth.

The third paper turns the focus to the next-generation family members and asks the question which factors determine their employment in the family firm. A senior's children are often employed in the family firm, however, some decide to work elsewhere. I show that the decision to work in the family firm depends on firm characteristics, though these alone cannot explain why sons (and especially the eldest sons) are more likely to work in the family firm. The observed primogeniture gap can be explained by the number of potential successors and by the presence of non-family members within the firm, nonetheless, the gender gap cannot be attributed to the factors used in the analysis. These results shed new light onto how the next generation self-selects into working for their family's firm.

Chapter 1   Nepotism in family firms?

Evidence from pay differentials between family and

non-family employees

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Abstract

This paper studies the pay gap in family firms between employees that belong to the controlling family and those that do not. Estimating average treatment effects and controlling for both employee and firm characteristics, I find that family employees earn significantly more than their non-family counterparts do. However, because both controlling families and employees differ with respect to the equity invested in the firm, the pay gap is highly contingent on both the family's and individual's ownership stakes. I show that only in those firms where the family owns 100 percent of the equity, family employees earn more. The result is present for both employed family non-owners and owners, and is stronger for the latter. In firms with minority shareholders all employees without equity earn approximately the same regardless of their family status. However, comparing family owners and minority owners employed in the firm, family owners earn less. This result persists when accounting for dividends suggesting that family firms do not use dividend payments as a substitution for salary. Overall, the results suggest that families compensate their members without equity with above-market salaries, and that the presence of minority shareholders limits such behaviour.

1.1   Introduction

Nepotism, i.e. the advancement of relatives based on family ties rather than merit, is one of the characteristic disadvantages of family controlled firms (see, e.g., discussions in Pollak 1985; De Vries 1993; Bertrand and Schoar 2006). Nepotism is often expressed through favouritism of family members over non-family ones in terms of employment and promotions, and has been shown to be detrimental to firm performance (Pérez-González 2006; Bennedsen, Nielsen, Pérez-González, and Wolfenzon 2007).

Common thinking on nepotism, therefore, suggests that family employees are paid more for the same work than their non-family counterparts. Parise, Leone, and Sommavilla (2018) find support of this premise. They identify firms with family connections among high-ranked employees and find that firms with widespread family ties pay these employees higher salaries. However, there is also evidence that could suggest that family employees are being paid less than their non-family counterparts. Bassanini, Breda, Caroli, and Rebérioux (2013) compare the salaries of non-managerial employees in family and non-family firms, and find that the former offer lower salaries in exchange for greater job security. Sraer and Thesmar (2007) come to the same conclusion by showing that family firms pay lower salaries and have lower turnover across the business cycle. Employees are willing to trade off lower salary for a greater job security, and one could imagine this trade-off is even more pronounced for family employees since they are, arguably, less likely to be dismissed during downsizing. Another reason family employees would be willing to accept lower salaries is that they derive utility from both salary and non-pecuniary benefits, such as pleasure, pride, and personal satisfaction from working at their family's firm (Pollak 1985; Kandel and Lazear 1992).

In this paper I set out to find whether the salary of family employees is driven by

nepotism or some other forces unique to family firms. I study the pay gap between family and non-family employees using micro-level data on private Norwegian limited liability family firms from 2006 to 2014. If family employees are paid more than their non-family counterparts for the same job, this suggests favouritism of family members and that nepotism dominates the family's behaviour. On the other hand, if family employees are paid less, this implies that family members derive utility not only from salary, but also from non-pecuniary job characteristics.

Salary levels of family and non-family employees are likely to reflect differences in their personal characteristics and positions taken within the firm. Detailed individual-level employment and firm-level accounting data allow me to control for such differences in a series of average treatment effect (ATE) estimations. There are two advantages of using the ATE methodology over the simple OLS estimates. First, when the two groups of employees differ substantially in their characteristics, OLS estimators will be biased because of their heavy reliance on extrapolation (Imbens 2015). ATE techniques, on the other hand, put no parametric assumptions on the distribution of the control variables and are therefore preferred when these distributions cannot be approximated by the normal distribution. And second, the ATE estimates the counterfactual by assuming conditional independence, i.e. instead of assuming the treatment of belonging to the controlling family is randomly assigned, one can assume that the treatment is as good as random after conditioning on a sufficient set of covariates (Wooldridge 2010).

In my baseline model I control for individual's age, gender, contracted working hours, tenure, education, and occupation. At the firm level, I control for firm's size, performance, age, location, and industry. I find that family employees earn significantly more than their non-family counterparts. This result connects to Becker's (1981) extension of utility theory to the family firm context, which conveys that controlling

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families care more about family than non-family employees. This favouritism results in family employees being paid more than non-family ones due to the family's nepotistic behaviour.

One explanation of why family employees earn higher salaries could be that they work longer hours, for which they are also compensated. As my outcome variable does not distinguish between income earned from regular salary and overtime, I address this issue by using the number of working hours an employee actually spends at work as an additional covariate.[1] I also divide my sample based on whether an employee works overtime or not. The overall result remains the same, and additional analysis shows that family employees do not spend more time at work than their non-family counterparts.

Another possible explanation for the pay gap can be offered by the observation that controlling families, as well as firm employees, differ with regard to the equity they invest in the firm. Family firms with and without minority shareholders (hereafter, multiple-owner and single-owner family firms, respectively) are two heterogeneous groups of firms and one must acknowledge the differences between them that can affect the pay gap. First, the pay gap might be smaller for multiple-owner family firms because minority shareholders bring additional monitoring and control over the family (see, e.g., discussion in Villalonga, Amit, Trujillo, and Guzmán 2015). However, if monitoring is not sufficient, paying out excessive compensation to family employees is one way that families can divert resources out of the firm at the expense of minority shareholders (Johnson, La Porta, Lopez-de-Silanes, and Shleifer 2000; Atanasov, Black, and Ciccotello 2014). The effect of the family's ownership on the pay gap is, therefore, unclear.

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[1] I do not include this variable in my main analysis due to validity concerns. The variable is self-reported from the firms and only captures the number of average weekly working hours for the period over the 4 weeks before the reporting date.

On the other hand, owners face some costs and enjoy some benefits from their investment in the firm, which can also affect their salary. Because these costs and benefits differ for family and non-family employees, employee ownership can affect the pay gap in several ways. First, non-family owners have, arguably, more bargaining power than non-owners, and can, therefore, demand to be compensated for the lack of control and limited opportunities they have within the family firm compared to their family counterparts. Even more, their influence in the firm can also contribute to better job security. Second, owners who work in their firm enjoy some non-pecuniary benefits, which can be greater for family employees. Among non-owners, only family employees receive certain non-pecuniary benefits, however, the benefits they receive are still lower than the benefits of family owners. As a consequence to all these differences between owners and non-owners, the pay gap between family and non-family employees might be smaller among owners.

I document the ratio of single-owner family firms is disproportional to multiple-owner family firms; more than 77% of family firms are owned by a single family. There is also a disproportion of owners among family and non-family employees. More than 40% of family employees have some equity invested in the firm, while this percentage is much lower for non-family employees, at less than 2%. These imbalances in the subgroup sizes and the fact that ownership is not exogenous demand separate subgroup analyses.

I repeat the ATE estimation separately for single- and multiple-owner family firms, and separately for owner and non-owner groups of employees. Results point to an interesting interaction of ownership and employment that has not been explored before. First, owners always earn significantly more than their non-owner counterparts. This result supports the hypothesis that employees who are also owners bear some cost of being

undiversified, as their wealth comes from the firm in which they also invest their human capital, and that they demand to be compensated for that cost. Second, family owners earn significantly less compared to non-family owners. Since family owners have on average more equity invested in the firm, I repeat the analysis accounting for dividend payments. The pay gap remains negative, which reflects that the aligned dividend and labour income tax rates in Norway discourage families to use dividend payments as a substitution for salary (Sørensen 2005).

To investigate the reasons for why non-family owners earn the most in family firms, I complement my sample with non-family private firms and their employees. Additional analysis suggests that family firms attract non-family employees by offering them equity and similar salary than they would have received outside the family firm. Family owners, on the other hand, earn significantly less than they would have elsewhere. These results suggest that family owner employees are willing to accept below-market salaries because of the non-pecuniary benefits they receive from the ownership.

Finally, the only subgroup of family employees that earns more than their non-family counterparts are non-owner employees in single-owner family firms. In multiple-owner family firms non-family and family employees without equity earn approximately the same. Further analysis shows that their salaries are also similar to what they would have earned in a non-family firm. In single-owner family firms, on the other hand, family non-owners earn more than they would if employed elsewhere, while non-family employees earn less. These results suggest that families compensate family non-owners with above-market salaries, while such nepotistic behaviour is somewhat restricted in the presence of minority shareholders.

Acknowledging that family firms are a heterogeneous group of firms, I repeat my analysis on a variety of subsamples to see whether a subgroup of firms is driving a

positive pay gap in single-owner family firms. The most important covariate that affects the pay gap at the firm level is firm size. I divide firms into terciles based on their total assets, and find the pay gap is substantially lower in smaller compared to the larger firms. In addition, I investigate a unique trade-off in family firms, namely the trade-off between the firm's growth and the family's liquidity needs. Because families are reluctant to share control, they might prefer internal financing during times of investment growth (see, e.g., the discussion in Villalonga et al. 2015). To see whether family employees are willing to trade off their salaries for firm's growth, I divide firms in my sample into terciles based on firm's industry growth opportunities. Results show that family employees accept lower salaries compared to their non-family counterparts when the firm's growth opportunities are high. This result is consistent with the idea that family members have a direct, long-term interest in the family's income and welfare beyond their lifetimes.

The paper connects to several strands of literature. First, it empirically examines families' nepotistic behaviour in terms of the pay gap between family and non-family employees. Due to limited access to detailed individual-firm level data, most existing studies focus mainly on family firms' CEOs. CEOs who are members of firm's controlling family may be able to pursue private benefits at the expense of minority shareholders (Shleifer and Vishny 1986), and seem to receive some preferential treatment in terms of a better job security (Gómez-Mejía, Larraza-Kintana, and Makri 2003) or a more flexible working schedule (Bandiera, Lemos, Prat, and Sadun 2017). Gómez-Mejía et al. (2003) also show that family CEOs trade off job security for a lower salary. On the other hand, Combs, Penney, Crook, and Short (2010) find that family CEOs are willing to accept lower salaries only when there are more family members employed in the firm. Although agency theory suggests that family employees act as additional mon-

itors, Combs et al. (2010) recognize the limitations of this premise and acknowledge the need for a better understanding of the governance of the family behind the family firm.

To the best of my knowledge only two other papers examine the compensation of non-CEO employees in family firms. Parise et al. (2018) find that top-management employees from firms with more dispersed family ties have a lower incentive to exert effort because firms are paying them higher fixed salaries while offering them greater job security. Block, Millán, Román, and Zhou (2015), on the other hand, show that family employees receive lower salaries but reach higher levels of job satisfaction, suggesting family employees derive additional utility from being employed by their family's firm. My paper connects to this literature and fills the gap in understanding what drives the differences in the salary levels of family firms' employees.

Finally, my paper relates to the literature that analyses the differences in human resource management practices and styles between family and non-family firms. Existing studies find that family firms pay their employees lower salaries in exchange for a greater job security (Sraer and Thesmar 2007; Bassanini et al. 2013; Ellul, Pagano, and Schivardi 2017). In particular, this paper adds to this literature by identifying family firms' employees that are more willing to make this trade-off.

The rest of the paper is organized as follows. I describe the data set and covariates in Section 1.2. In Section 1.3 I explain the baseline model, and discuss the results in Section 1.4. I conclude in Section 1.5.

1.2 Data and variables

1.2.1 Sample construction

To construct my sample I use several unique registry databases that cover the entire population of Norwegian private limited liability firms, its owners, and employees between 2006 and 2014. I link the databases through unique employee and employer identifiers.

I start from the matched employee-employer database that is compiled by Statistics Norway. It consists of individual-level annual data of the employment history of all employees in Norway. It also includes socio-demographic information, such as age, gender, education, and occupation. To obtain individuals' incomes I use the individual-level tax filing database obtained from the Norwegian Tax Administration. Tax filings contain information on the various sources of individuals' annual income, such as income from employment and self-employment, as well as property, dividend, and interest income.

I then connect the employees' data with their employers' accounting information. Firm accounting database consists of accounts for all private limited liability firms and is provided by the Norwegian register of companies, the *Brønnøysund Register*.[2] The quality of this data is high since all limited liability firms in Norway have to annually report full accounting statements regardless of firms' listing status, size, and industry.[3] The failure of submitting firm accounts eventually results in deletion from the register of companies and forced liquidation. All accounting variables are winsorized at the 5

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[2] This data is made available to me through the Center for Corporate Governance Research (CCGR) at the BI Norwegian Business School.

[3] The data quality is especially high up to 2011 since all limited liability firms had to report audited accounting statements. From 2011 on, small firms are not required to do so, i.e. firms with less than 10 full-time employees, and firms with operating revenues and total assets lower than 6 and 23 million Norwegian Kroner (NOK), respectively.

percent level and adjusted for the consumer price index (CPI) using 2015 as a base year.

For identifying family firms I use an ownership database that measures the ultimate (direct plus indirect) ownership of all owners, and a family relationship database that groups owners into families based on blood or marriage up to the second degree of kinship. The ownership database is obtained by the Norwegian Tax Administration, while the family relationship database is from Statistics Norway. I also use the family relationship database to identify firm employees who are members of the largest owner-family but not necessarily owners themselves.

Finally, I add the following filters to obtain my final sample:

1. To avoid the impact of atypical industry regulations I exclude financials and utilities. I also exclude real estate firms due to a strong increase in Norwegian housing prices over the sample period, which is likely to affect financial results and compensation policies in that sector.

2. To avoid non-operating firms, I exclude firms with zero sales, assets, or employment.

3. I restrict my sample to only family firms, i.e. to firms that are majority-owned (ultimate stake of 50% or more) by individuals related by blood or marriage to up to the second degree of kinship.[4]

4. I include only family firms that employ both family and non-family members in non-CEO positions. Including firms with only family or only non-family employees does not capture nepotism expressed toward family members through employee compensation.[5]

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[4] To calculate the family's ownership I use ultimate stakes. Since multiple-class shares are rare in Norway (Ødegaard 2007), I do not distinguish between share classes.

[5] Adding these firms to my analysis does not change the results.

The resulting pooled sample consists of about 176,000 firm years, and about 19,000 firms per year. More than 41,000 unique firms employ about 687,000 individuals in non-CEO positions at one point in time, resulting in 2,065,145 individual-year observations.

Table 1.1 shows the prevalence and relevance of family firms in the economy. Panel A shows family firms' representation across eight major industries. The average percentage of family firms in the economy is 73%, varying between a maximum of 80% in retail and wholesale, and a minimum of 53% in publishing, media, and IT. Panel B shows the descriptive statistics of basic accounting variables for family and non-family firms. On average, family firms are smaller in terms of total assets and their number of employees. Family firms have a higher mean and median return on assets, measured by either with or without industry adjustment, which resembles the difference reported by others studying Norwegian family firms (see, e.g., Berzins, Bøhren, and Stacescu 2018). This overview shows that family firms present important and successful economic entities, providing employment for more than 70% of the labour force across the whole country.

Looking at the summary statistics of family and non-family firms I find that family firms pay lower salaries to their employees. I confirm this observation by performing individual-level ATE estimations in Appendix Table A2. I find that even after accounting for the observed differences between the two types of firms and their employees, the pay gap persists. This result is in line with findings in the literature (see Breda 2018 for a review).

Panel A of Appendix Table A3 reports some basic descriptive statistics of family firms divided based on the employment of family members. Almost half of family firms do not employ family members in non-CEO positions.[6] 13% of family firms, on the

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[6] However, these firms can still have a family CEO. Firms' board members are not counted as firm

other hand, employ only family members. In order to examine the compensation of family firm employees in regard to their relation to the controlling family, I focus primarily on the group of firms that employ both family and non-family employees (see filter 4). About 27% of such employees are related to the controlling family. These firms are neither the biggest nor the smallest among all family firms in the economy, but they represent a group of best-performing firms. To make the distinction that a firm's employees have different levels of responsibilities, I further divide them into managers and workers based on their occupation. Managers comprise a group of non-CEO employees at the top-management level, and this group consists of a firm's senior officials and its department and other non-CEO managers who have the responsibility of oversight over employees at lower-hierarchy levels. As seen in panel B of Appendix Table A2, there are more than 100,000 manager-year observations in my final sample. 38% of them are members of a firm's controlling family. Workers comprise a group of all other employees not employed at a management-level position. The group of workers consists of technicians, associate professionals, and white- and blue-collar workers. My sample captures more than 1.9 million worker observations, about 13% of whom are members of the controlling family.

1.2.2 The outcome variable and covariates

The main variable of interest is the individuals' *annual salary* received from their main employer. This includes all taxable payments from employer to an employee, such as cash wages and bonuses, as well as sickness and parental benefits received during the calendar year. It excludes other sources of income, such as dividend and interest income, capital gains, or income from self-employment.

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employees.

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To consistently estimate the ATE estimator, one must include as many relevant co-variates as possible (see the discussion in Section 1.3). Salary levels of employees likely reflect differences in their individual characteristics and characteristics of their employers, which must be accounted for in the estimation of the ATE. At the individual level, I control for individuals' *age*, *gender*, *contracted working hours*, *tenure*, *education level*, and *occupation*. Individuals' *age* and *gender* are widely used as standard covariates in pay differential studies. Older individuals are on the job market longer and have more experience, which results in a higher salary, while controlling for gender is necessary due to the observed gender pay gap in the population. *Contracted working hours* capture whether an individual is employed full- or part-time. *Tenure* is measured by a dummy variable that equals 1 if an individual is employed by the firm for more than 5 years within the period 2000-2014. I divide individual's *education level* into five categories: secondary school or below, high school, bachelors, masters, and PhD. Individual's *occupation* is reported by Norwegian occupational code STYRK-08 that is based on the ILO international standard classification of occupations.

At the firm level, I control for *firm size*, *performance*, *age*, *location*, and *industry* in which the firm operates. Larger firms have more profits and liquid assets, thus they can pay higher salaries to their employees (Currie and McConnell 1992). For similar reasons, I also control for *firm performance*. *Firm size* is measured by firm's total book value of assets, while *firm performance* is measured as return on assets (ROA). It is also important to control for the firm's *age* since older firms have over time developed a reputation and a certain stability on the market, and may consequently pay lower salaries, while younger firms have to attract employees by paying them more. *A firm's location* is measured as a dummy variable that equals 1 if firm is located in one of

Norway's five largest cities.[7] A firm's location is an important covariate, since it controls for the differences in supply and demand of the labour force and potential employers in larger and smaller cities. Finally, I control for *industry* differences by using two-digit NACE industry codes.

1.3 The baseline model

For estimation of the average treatment effect many researchers use the ordinary least square (OLS) regression methods. However, since OLS is not taking into account the differences in the covariate distributions between the treatment and the control group, OLS estimates can be biased (Imbens 2015). In such settings, an attractive alternative to OLS are average treatment effect estimators (ATE estimators), which use differences in covariates to calculate the counterfactual outcomes. There exist several methods of estimating the ATE estimators based either on a model for the outcome variable, a model for the treatment assignment, or a model based on matching. There is no definite way to select one of the ATE methods since all of them require the same assumptions, and should therefore produce similar results (Imbens 2015). My baseline model for estimating the ATE estimators is a regression adjustment (RA) method, which models the relationship between the outcome and covariates. I first describe RA estimator and its assumptions, and discuss reasons for using this ATE method at the end of this section.

I start with notation. Let w be a binary variable that equals 1 for family employees (i.e., treated employees), and 0 for non-family employees (i.e., control employees). Let $Y_i(w)$ denote the annual income from employment (salary) as a function of w for employee i. Given this notation, $Y_j(1)$ indicates a salary of a family employee and $Y_k(0)$ indicates a salary of a non-family employee. The challenge of estimating the pay gap

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[7]Norway's five largest cities by population are Oslo, Bergen, Trondheim, Stavanger, and Bærum.

between family and non-family employees is that for individual i only one of $Y_i(1)$ and $Y_i(0)$ is observed. To overcome this challenge in estimating the ATE, the RA model creates the counterfactual outcomes by using a linear regression model.

To compute potential salary for treated employees, the RA method first regresses the salary on covariates over the sample of family employees:

$$Y_i(1) = \alpha_1 + \beta_1 X_i(1) + e_{1i} \ , \tag{1.1}$$

where the outcome $Y_i(1)$ is the family employee i's salary, and $X_i(1)$ is a vector of individual's observable covariates that are potentially related to the outcome. Second, RA uses *beta*-coefficients from regression (1.1) to obtain linear predictions for the individual's salary over the whole sample denoted by $\hat{Y}_i(1, X_i)$. $\hat{Y}_i(1, X_i)$, therefore, indicates a potential salary for treated employees. In other words, $\hat{Y}_i(1, X_i)$ denotes a counterfactual salary of the individual with characteristics X_i if an individual is or would be a family-instead of a non-family employee.

Similar steps are taken to compute counterfactual salary for control employees. $\hat{Y}_i(0, X_i)$ indicates a potential salary an individual with characteristics X_i receives as a non-family employee.

The ATE is then defined as a difference in mean counterfactual salaries for family and non-family employees:

$$ATE = N^{-1} \sum_{i=1}^{N} [\hat{Y}_i(1, X_i) - \hat{Y}_i(0, X_i)] \ , \tag{1.2}$$

where N is the number of individual-year observations. The ATE, therefore, captures the effect of the treatment adjusted for a set of covariates. If family and non-family

employees, comparable in their characteristics, earn a similar salary, the ATE should be close to zero and statistically insignificant. If, on the other hand, family employees earn more (less) than their non-family counterparts, the ATE should be significantly positive (negative).

The treatment of belonging to the controlling family is clearly not exogenous. Nevertheless, the ATE estimator can be consistently estimated if the two assumptions, ignorability and overlap, are satisfied. Ignorability, or conditional independence, says that after conditioning on observables X_i, the treatment and the outcome are independent:

$$(Y_i(0), Y_i(1)) \quad \perp \quad w_i \quad | \quad X_i \ . \tag{1.3}$$

Although ignorability is fundamentally untestable, it has intuitively a better chance of holding when X_i is richer. Covariates in the vector X_i are described in Section 1.2.2.

Overlap, the second assumption for identifying the ATE, refers to the joint distribution of treatment and covariates. Overlap holds when, based on the covariates X_i, every individual in the sample has some chance of belonging or not belonging to the controlling family:

$$0 < P(w_i = 1 | X_i) < 1 \ . \tag{1.4}$$

The overlap assumption, therefore, holds when, for any set of the covariates X_i, there is a chance of seeing family and non-family employees. Then the propensity score, i.e. the probability of an employee belonging to the controlling family, is strictly between zero and one. In other words, for every family-employee i with characteristics X_i it is possible to observe a non-family counterpart with similar characteristics X_i, and vice versa.

Under the two assumptions above, the ATE can be consistently estimated at the stan-

dard parametric $\sqrt{N}$ rate without conditioning on the distribution of outcome (Y_0, Y_1). In this setting, the ATE estimation is, therefore, preferred to alternative models which can only be justified by relying on much stronger functional form assumptions (Wooldridge 2010; Imbens 2015).

As mentioned above, ATE estimators should all produce similar results. In my main analysis I use the RA estimators for several reasons. First, the method is straightforward, easy to implement, and time- and memory-efficient. Some methods can take up to several hours to render results, which is impractical for analyzing extensive data. Second, the RA method demands a weaker form of the overlap assumption, since it is able to predict a counterfactual even in regions in which there is little data. RA estimators stay stable close to the overlap assumption being violated, which eliminates the need for trimming the sample. To show that my results are not sensitive to the choice of the ATE estimator, I repeat my main analysis using inverse-probability weighting (IPW), matching on covariates and matching on the propensity score in Section 1.4.3.

1.4 Empirical analysis

1.4.1 Descriptive statistics

I show detailed summary statistics of firms and employees in my final sample in Table 1.2 and 1.3. All variables are defined in Appendix Table A1.

Table 1.2 reports descriptive statistics of firms' accounting variables over the period 2006-2014. Mean values year by year are quite stable over time and are presented in Appendix Table A4.

An average firm in my sample has almost 10 million NOK in total assets and em-

ploys more than 11 employees.[8] Both measures proxy for firm size and vary significantly across firms. For instance, the minimum number of employees is 2, while the maximum is 1,745. This points to the fact that, even though some family firms are small, some are also quite large. On average, a quarter of employees are family employees.[9] A family's average equity stake in the firm is 93.7%, while the median is 100%. About 77% of family firms in my sample are 100% owned by a single family. Since the average number of owners in the controlling family is 1.85 and the majority of owners are first-degree relatives (not reported), I believe it is reasonable to consider family ownership as a unified block.[10] In most cases, minority shareholders are other private investors that own the shares directly or through a holding company. It is impossible to identify a minority owner for less than 1% of family firms in my sample.[11]

The average firm was founded 14 years before the observation year, and about 22% of firms are located in one of the Norway's five largest cities. Firm performance, measured by return on assets, is on average 7.3%, and varies much more across the years than other variables as a consequence of an economic boom before the crisis in 2008.[12]

Table 1.3 presents summary statistics for managers and workers employed in family firms in my sample. Family managers on average earn less than their non-family

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[8] The average exchange rate in 2015 was equivalent to 8.06 NOK per USD, and 8.94 NOK per EUR (*source: Norges Bank*). Total assets of 9.86 million NOK are, therefore, equivalent to 1.22 million USD or 1.10 million EUR.

[9] Note here that the minimum of 0.00 is the result of a rounding error. By design, the fraction of family employees must strictly be higher than 0 (and lower than 1), since the final sample contains only family firms that employ both family and non-family employees (see filter 4 in Section 1.2.1).

[10] The observation of high ownership concentration is consistent with Berzins et al. (2018).

[11] Foreign owners (i.e., owner who are not liable to pay tax in Norway) and government owners cannot be identified in the dataset. It is also impossible to identify owners who own their firm through 10 or more holding companies.

[12] Even though Norway felt the impact of the 2008 financial crisis, the recession following the crisis was fairly mild. GDP returned to the 2008 level in 2010 and credit grew continuously throughout the crisis, while the unemployment level stayed below 4 percent. The consequences of the crisis on the Norwegian economy were, therefore, limited, and I do not expect that including crisis years in my analysis will affect my results.

counterparts. A simple two-sample t-test shows that the difference is significant. On the other hand, an average family worker earns slightly more than his non-family peer. The difference is statistically significant, but arguably not economically significant. Both family managers and workers are on average older, and are more likely to be employed in the firm for more than five consecutive years. They are also more likely to work part-time. For example, less than 90% of family managers work full-time, while this percentage is almost 96% for non-family managers. This difference is even larger for the workers; family workers are 10% less likely to be employed full-time compared to non-family workers.[13]

Another difference that needs to be addressed is the difference in gender representation among family and non-family workers. Further investigation reveals that the difference mainly stems from firms in male-dominated industries, such as construction, mining, oil, and heavy industry. This observation suggests that women who are members of the controlling family face fewer barriers in entering male-dominated industries.

Interestingly, family managers are less educated compared to their non-family peers, while this is not the case for family workers. They are, on average, more likely to complete an undergraduate as well as a postgraduate degree.[14] They also work at higher positions within the firm than their non-family peers.[15]

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[13] According to Statistics Norway, approximately 26% of the working population was employed part-time over the period 2006-2014. This percentage is 31% in my overall sample of managers and workers in family firms. The observation that family members working in the family firm more often work part-time is consistent with Kustec 2020a.

[14] The percentage of employees with a master's degree is quite low due to the classification of education levels made by the data provider, Statistics Norway. Bachelor-level degrees take three to four years in duration, while master-level degrees take five years or longer in duration. These definitions are consistent with the education levels that were in place before the transformation of the educational system in 2003, which was introduced to comply with the Bologna process. The majority of individuals in my sample graduated before this transformation, explaining why the percentage of master-degree graduates is low.

[15] Note that the occupation is reported by occupational code STYRK-08, which assigns lower numbers for higher positions within the firm, and higher levels for lower positions. The negative difference in occupation between family and non-family workers, therefore, indicates that family workers work in

All these differences are likely to result in different salary levels across employees, and have to be taken into account in all my analyses.

1.4.2 Results of the baseline model

Estimations of the baseline model over the pooled sample are summarized in Table 1.4.

Last column of Table 1.3 compares the unconditional means of salaries between family and non-family employees, which results in a negative pay gap for managers, but a positive one for workers. Column (1) of Table 1.4 indicates that the results are not driven by time-varying macro factors, such as the 2008 financial crisis. However, further analysis is needed, as results do not account for observational differences between different types of firms and their employees.

Results of the first attempt to account for these differences are reported in column (2), where ATE estimates are conditioned on *year*, and individuals' *contracted working hours*, *age*, and *gender*. The pay gap decreases for managers, however, it remains significantly negative. The pay gap for workers, on the other hand, increases significantly. Column (3) repeats the analysis of column (2) but includes three more individual characteristics: *tenure*, *education level*, and *occupation*. Controlling for occupation turns out to be the most important covariate for the group of workers.[16] In addition to covariates from column (3), column (4) controls for the following firm characteristics: *size*, *performance*, *age*, *location*, and *industry*. Results suggest that firm characteristics strongly affect the pay gap and therefore must not be ignored when estimating it. The pay gap increases significantly for workers, while it changes its sign for the managers, going from negative to positive. After controlling for relevant firm char-

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higher positions.

[16] Note that occupation makes no contribution to estimating the pay gap for managers, since they all have the same occupation classification as observed in Table 1.3.

acteristics, family managers earn significantly more than their non-family counterparts.

Column (5) of Table 1.4 shows results of ATE estimation controlling for all individual and firm characteristics included in columns (1)-(4). The average family manager earns about 38,000 NOK more per year, which is 6.7% more than his non-family counterpart.[17] The difference in salaries in absolute and relative terms is even larger for workers. A family worker earns about 48,000 NOK more than a non-family one, a 13.5 percentage difference. Overall, Table 1.4 documents a positive pay gap between family and non-family employees, which suggests that controlling families behave in a nepotistic manner and indicates how important it is to include relevant individual and firm covariates in the ATE estimation.

Appendix Table A5 repeats the analysis of column (5) of Table 1.4 year by year. The first noticeable result is that the pay gap is quite stable over the years. Looking at the counterfactual salaries of non-family employees, it is clear that the salaries were on the upward trend, and that there is a small dip in the years following the 2008 financial crisis. In these years the pay gap is also below the pooled sample's pay gap, which might indicate that the financial crisis slowed down the salaries of family employees more. However, there are also some other years that stand out that cannot be explained by any government policy reform or time trends.

To make sure that the overlap assumption is satisfied in my baseline model I plot the distribution of the propensity score, i.e. the probability of an employee belonging to the controlling family. Figure 1.1 indicates considerable overlap for both managers and workers, which indicates that the first-stage model satisfactory identifies the ATE.[18]

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[17] To get the percentage difference in salaries, I divide the ATE estimator (37.8) by the counterfactual salary of non-family manager (562.5), which results in 6.7%.

[18] Note that in the case of overlap assumption being violated, statistical software cannot identify the ATE and reports an error.

One alternative explanation of why family employees earn more is that they might work more, for which they are rightly compensated. The outcome variable, *Salary*, captures the overall income from work an employee receives from the employer and does not distinguish between income from regular salary and overtime. In addition to the covariate that is already included in the analysis, *Contracted working hours*, my data also captures limited information about the hours an employee actually spends at work. I use this information as an additional covariate in Table 1.5.[19] As seen in column (2) of Table 1.5, including the actual working hours as an additional covariate does not change the overall result. I further divide the sample of employees based on whether an employee works overtime or not. Results are presented in columns (3)-(5). The pay gap is positive for all subgroups of employees. Separate analysis also shows that family employees spend significantly less time at work than their non-family counterparts (not reported), which means that the pay gap cannot come as a result of family members working more.

1.4.3 Alternative ATE estimators

I repeat my analysis of estimating the pay gap using various ATE methods. The biggest difference between ATE estimators is the way how covariates are weighted in creating a counterfactual outcomes. However, since all estimators are based on the same assumptions, the difference between them should not be of a major empirical importance (Imbens 2015). Results are summarized in Appendix Table A6.

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[19] The variable is self-reported from the firms and captures the number of average weekly working hours in the 4 weeks before the reporting date. Because the variable is self-reported, I do not include it in my main analysis due to validity concerns.

Inverse-probability weighting (IPW)

In contrast to RA estimators that model the outcome, the IPW estimators model the probability of treatment (propensity score). IPW estimators adjust for differences in the propensity score and estimate means of potential outcomes by weighting averages of the observed outcomes with the inverse propensity score. IPW first estimates propensity score $\hat{p}(X)$, and estimates the ATE as:

$$ATE = N^{-1} \sum_{i=1}^{N} \left(\frac{w_i Y_i}{\hat{p}(X_i)} - \frac{(1-w_i)Y_i}{1-\hat{p}(X_i)} \right) \ , \tag{1.5}$$

where Y_{it} is individual i's salary, X_i is the vector of covariates, and w_i is the treatment dummy variable that equals 1 for family employees and 0 otherwise.

Results of IPW estimation of ATE are reported in column (2) of Appendix Table A6. Results support the conclusions made from Table 1.4; however, IPW ATEs are larger for managers but smaller for workers compared to the RA estimates.

Matching estimators

Both RA and IPW are regression methods and are by design not completely robust to the substantial differences between treated and control subjects (Imbens 2015). Matching, on the other hand, is. To calculate the counterfactual for each individual, matching estimators use the average outcomes of individual's nearest neighbours. In other words, for each treated individual, the procedure finds similar control individuals (similar in either covariates or the propensity score), and uses their outcomes to impute the missing potential outcome for the treated individual.

Column (3) of Appendix Table A6 presents the results from matching on covariates.

I again include the standard individual and firm covariates. I require exact matches for individuals' gender and tenure, and the firm's location. Overall, results support the conclusions made from Table 1.4; however, the ATE is larger with matching.

Column (4) of Appendix Table A6 presents the results from matching on the propensity score, which is estimated with a probit model. Results are quite similar to RA estimates from Table 1.4 for managers, but the ATE for workers is substantially lower.

Overall, the analyses from this section show that results from Table 1.4 are generally sensitive to the choice of an ATE estimator. However, one has to acknowledge that the magnitude of the ATE estimator can vary from method to method.

1.4.4 Interaction of ownership and employment

Family firms are not a homogeneous group of firms. They differ in many aspects, one of which is the presence of minority shareholders. As seen in Table 1.6 panel A, about 77% of family firms are owned by a single family, while minority shareholders are present in only 23% of the firms. Since the presence of minority shareholders can affect the pay gap between family and non-family employees, a family firm's ownership structure must be taken into account.

The effect of the family's ownership on the pay gap is not clear. On the one hand, the pay gap might be smaller for multiple-owner family firms because minority shareholders bring additional monitoring and refrain the family from activities that would be detrimental to the value of the firm (see, e.g., discussion in Villalonga et al. 2015). On the other hand, if monitoring is insufficient, families can pay out excessive compensation to their own members as a way of diverting resources out of the firm at the expense of minority shareholders (Johnson et al. 2000; Atanasov et al. 2014).

Also firm employees differ with respect to the equity they invest in the firm. Own-

ers and non-owners are considerably different since the latter do not bear any costs or enjoy any benefits that come with ownership, such as the cost of under-diversification or non-pecuniary benefits. As seen panel B of Table 1.6, the ratio of owners among family employees is disproportionate to non-family employees. More than 40% of family employees have some equity invested in the firm, the share being 75% for managers and 35% for the workers (not reported). This percentage is 2% for non-family employees, the share being 8% and less than 2% for managers and workers, respectively (not reported).

Employee's ownership can affect the pay gap in several ways. First, since non-family owners have more bargaining power than non-owners, they can demand to be compensated for the lack of control and limited opportunities they have within a family firm. Second, owners who work in the firm enjoy some non-pecuniary, benefits which can potentially be greater for family employees. Among non-owners, only family employees receive certain non-pecuniary benefits, such as pleasure and pride, although the benefits they receive are still lower than the benefits of family owners.

Due to imbalances in the subgroup sizes based on the family's and individual's ownership, I repeat the ATE estimation separately for every subgroup. Results are present in Table 1.7. The results point to an interesting interaction of ownership and employment that has not been explored before.

Looking at the counterfactual salary that the ATE procedure estimates in columns (4) and (5), it seems like owners earn significantly more than their non-owner counterparts. As is confirmed in a separate analysis in Appendix Table A7, the result is present for both single- and multiple-owner family firms. Since private firms have less liquid shares and less diversified owners (Edmans and Holderness 2017), the result that owner-employees earn more compared to their non-owner peers supports the hypothesis that

owners demand to be compensated for the under-diversification cost that they bear.

Table 1.7 shows that the only subgroup of family employees that earns more than their non-family counterparts are non-owner employees in single-owner family firms (column (2)). As seen in column (4), there is no pay gap between non-owner employees in multiple-owner family firms. The fact that this pay gap is positive in single-owner family firms, but non-existent in multiple-owner family firms, suggests that potential nepotistic behaviour is somewhat mitigated in the presence of minority shareholders.

Column (5) shows that the small group of non-family owners is the group of employees within the firm that earns the most.[20] This interesting result persists when the independent variable also accounts for dividend payments (column (6)). This result is not surprising since Norway has aligned dividend and labour income taxes (Sørensen 2005). Owner employees have, therefore, no tax reasons for shifting income between dividends and salary.

1.4.5   Salary levels in non-family firms

I complement my sample with private non-family firms and their employees to investigate the drivers of salary levels in family firms. Table 1.8 compares the salary levels of non-family employees with employees in non-family firms, while Table 1.9 compares the salary levels of family employees with employees in non-family firms.

Column (4) of Table 1.8 shows that non-family owners earn approximately the same than their counterparts in non-family firms.[21] This result points to the length family firms have to go to attract and retain talented non-family employees. Their future opportunities are somewhat limited when they work in the family firm and it seems that

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[20] Note that the comparison between family and non-family owners is not possible for single-owner family firms since only family members hold equity in the firm.

[21] This result also persists when accounting for dividends (not reported).

family firms compensate them for this lack of control and the opportunity costs they bear as family firm's employees.

Columns (3) and (5) of Table 1.9 indicate that family owners working for their family's firm earn less than they would have earned elsewhere.[22] This result is consistent with the idea that family employees are willing to accept below-market salaries because of the non-pecuniary benefits that they receive from ownership, such as pride and satisfaction from representing their family and its identity.

Employees without equity in multiple-owner family firms earn approximately the same as they would by working in a non-family firm (see column (3) in Table 1.8, and column (4) in 1.9). This is, however, not the case for non-owner employees in single-owner family firms. Family non-owner employees earn more than they would elsewhere (column (2) in 1.9), while their non-family counterparts earn less (column (2) in 1.8). Overall, these results suggest that families compensate family non-owners with above-market salaries if they can, while such nepotistic behaviour is somewhat mitigated in the presence of minority shareholders.

1.4.6 Robustness

Family firms are a heterogeneous group of firms. It is therefore important to investigate separate subsamples of firms to see whether my results are driven by a small group of firms. I primarily focus on the sensibility of the result that nepotism is present only in single-owner family firms, while minority shareholders in multiple-owner family firms limit the favouritism of family members. In the next analyses I compare family and non-family employees without equity in various subsamples of family firms.

The most important covariate at the firm level that affects the pay gap is the firm's

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[22] This result also persists when accounting for dividends (not reported).

size. I divide the firms into terciles based on their total assets. I repeat the analysis on a subsample of firms from the first (Small firms) and the third tercile (Big firms) in Appendix Table A8, and find a positive pay gap in both groups of firms. As suggested by Currie and McConnell (1992), I find that larger firms pay higher salaries to their employees. The pay gap is larger in absolute terms in larger single-owner family firms as well. The pay gap diminishes in smaller firms for family managers, however it stays significant for family workers. Interestingly, the pay gap for family workers in smaller firms is also significantly positive in multiple-owner family firms (column (6)).

Appendix Table A9 repeats the ATE estimations on a subsample of better and worse performing firms. I again divide the firms into terciles, this time based on their performance measured by ROA, and estimate the pay gap on a subsample of firms from the first (Bad performing firms) and the third tercile (Good performing firms). It is somewhat expected to find a positive pay gap in firms that are doing well and can afford to pay family employees higher salaries. One could expect that the family employees forgo a fraction of their salaries when the firm is not doing so well. Results show that the positive pay gap remains significant in good, as well as, bad performing single-owner family firms. The positive pay gap is also present for good performing multiple-owner family, but it is only significant for the group of workers.

Family's control in single-owner family firms can also be restrained with a presence of an unrelated CEO. Appendix Table A10 divides firms based on the family status of the firm's CEO and repeats the ATE analysis on a subsample of non-owners. The results in columns (2) and (3) are consistent with the hypothesis that the family's nepotistic behaviour is restrained under an unrelated CEO. Such presence of outside control significantly decreases the pay gap for managers, which becomes negative at a 10% significance level. However, the pay gap for workers decreases only to a small degree.

Interestingly, the presence of unrelated CEO significantly increases the pay gap for family managers in multiple-owner family firms.

In addition, I investigate a unique trade-off in family firms, a trade-off between the firm's growth, family's control, and family's liquidity. A successful balance between the three is crucial for firm's long-term survival (De Visscher, Mendoza, and Ward 2011). Families might prefer internal financing since they are reluctant to share control and want to ensure a long-term survival of their firm (Villalonga et al. 2015). When firms have to finance future investments, family members can agree to accept lower salaries because there is a growing need for the capital within the firm. In return, family members get higher salaries during the times of stagnation when the need for investment capital is lower. To test this hypothesis, I repeat the analysis of Table 1.7 diving the sample of firms based on their industry's growth opportunities.

I measure an industry's growth opportunities by calculating an average three-year percentage increase in sales of all firms in that industry.[23] I then divide firms in my sample into terciles based on this measure. Columns (2) and (5) of Appendix Table A11 present ATE estimates for firms operating in industries with high growth opportunities (high-growth firms), while columns (3) and (6) present estimates for firms operating in industries with low growth opportunities (low-growth firms). The results show that the pay gap is lower in high-growth firms, suggesting that family members adjust their salary according to the need for internal financing within the firm. This result is especially pronounced in multiple-owner family firms, where the pay gap is negative in high-growth firms, but positive in the low-growth ones. These results support the hypothesis that family members are willing to trade off their salaries for the firm's future growth.

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[23] Results are robust to using alternative measures of growth opportunities.

1.5 Conclusion

This paper sets out to find whether family employees earn significantly more than their non-family counterparts. Nepotism, greater job security, and non-pecuniary job characteristics can all affect family employees' salary levels. In my baseline model, I use the ATE estimation and find that family employees earn significantly more after controlling for employee and firm characteristics. However, my baseline model does not take into account that both controlling families and firms' employees are heterogeneous groups that differ with regard to the amount of equity they invest in the firm. Firms can either be 100% owned by a single family or the controlling family can share ownership with minority shareholders. Also employees can either own some shares in the firm themselves or not. Because both a family's and an individual's ownership are endogenous, and because there are imbalances between these subgroup sizes, I repeat my ATE analysis on a various subgroups.

I estimate the ATE separately for single- and multiple-owner family firms, and separately for owner and non-owner groups of employees. Results point to an interesting interaction of ownership and employment that has not been explored before. I show that only family non-owners in single-owner family firms earns more than their counterparts. In these firms family non-owner employees earn more than they would have if employed elsewhere, while non-family employees earn less, which suggests the nepotistic behaviour. In multiple-owner family firms, on the other hand, non-family and family employees without equity earn approximately the same, and additional analysis reveals that their salaries are similar to what they would have earned if employed in a non-family firm. These results suggest that a family's nepotistic behaviour is somewhat mitigated by the presence of minority shareholders.

I also find that owners always earn significantly more compared to their non-owner counterparts, and that family owners earn significantly less compared to non-family owners. Additional analysis shows that family firms attract non-family employees by offering them equity and similar salary they would have received as employees in a non-family firms. Family owners, on the other hand, earn significantly less than they would have if they were not working in their family's firm. These results suggest that family owners receive some non-pecuniary benefits that non-family owners do not, and point to the lengths that family firms must go to attract and keep talented non-family employees.

Overall, my results suggest that families express nepotism by paying their members without equity more than any other employer would. By compensating them for their lack of equity and control in the firm, families might avoid family conflicts. However, such behaviour is limited in the presence of minority shareholders who bring additional oversight to the firm.

1.6 Figures and tables

Figure 1.1: Density plots of the probability of being a family employee

Panel A (B) displays the estimated kernel density of the predicted probabilities of an individual being a family manager (worker), and of an individual being a non-family manager (worker). Predicted probabilities are based on employees' contracted working hours, age, gender, and individual and firm covariates described in Section 1.2.2. Definition of covariates can be found in Table 1.4.
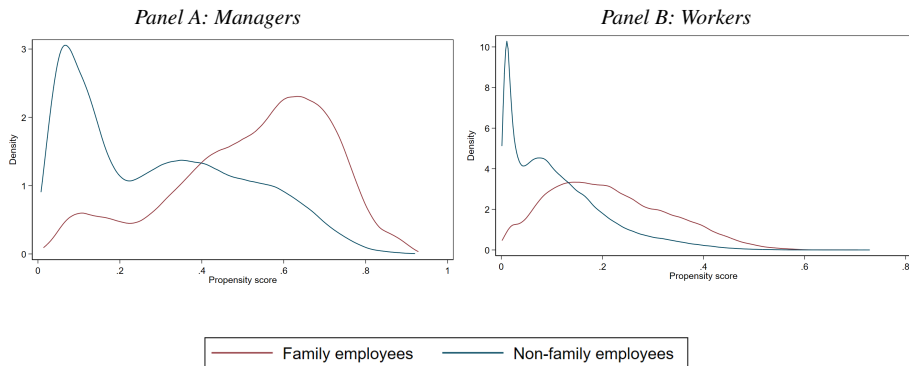
Table 1.1: The prevalence of family firms and descriptive statistics of Norwegian private limited-liability firms

Panel A of this table shows the frequency of family firms in the economy by industry over the period 2006-2014. Family firm is a firm in which the controlling family holds the ultimate stake of 50% or more. Family is a group of owners who are related by blood or marriage up to the second degree of kinship. Panel B shows the descriptive statistics of family and non-family private limited-liability firms. All variables are defined in Appendix Table A1. Total assets and Payroll expense are measured in millions of Norwegian Kroner (NOK). Total assets, ROA, and industry-adjusted ROA are winsorized at the 5 and 95 percent level. Individual-year observations report the number of individuals employed by family or non-family firms across all years.

Panel A: Family firms by industry

	Ratio of family firms to all firms	Number of firm-year observations
Retail and wholesale	80 %	197,742
Transport, tourism	76 %	66,943
Agriculture, forestry, fishing	76 %	10,026
Mining, oil, heavy industry	74 %	3,269
Construction	73 %	105,247
Light industry	72 %	59,254
Services	69 %	157,588
Publishing, media, IT	53 %	31,157
Total	73 %	631,226

Panel B: Descriptive statistics

	Family firms			Non-family firms		
	Mean	Median	Std. Error	Mean	Median	Std. Error
Total assets (million NOK)	9.84	3.27	0.03	11.4	3.82	0.05
Number of employees	15.2	5.00	0.14	16.4	6.00	0.18
Firm age	12.7	10.0	0.02	10.5	8.00	0.03
City (pct.)	27.0	0.00	0.07	31.0	0.00	0.11
ROA (pct.)	6.03	6.05	0.03	5.79	6.09	0.05
ROA, industry-adjusted (pct.)	1.88	2.26	0.03	1.45	2.05	0.05
Payroll expense (million NOK)	5.67	1.24	0.06	6.81	1.80	0.11
Firm-year observations		463,238			167,988	
Individual-year observations		6,601,755			2,605,125	

Table 1.2: Distribution properties of family firms across all years

This table shows descriptive statistics of family firms over the period 2006-2014. Mean values year by year are reported in Appendix Table A4. All variables are defined in Appendix Table A1. Total assets are measured in millions of Norwegian Kroner (NOK). Total assets, ROA, and industry-adjusted ROA are winsorized at the 5 and 95 percent level.

	Mean	Median	Std. Error	Min.	Max.	Skewness	Kurtosis
176,172 firm-year observations							
Total assets (million NOK)	9.86	4.50	0.04	0.07	78.6	3.10	13.0
Number of employees	11.7	7.00	0.06	2.00	1745	22.0	847
Fraction of family empl. (pct.)	27.0	25.0	0.04	0.08	88.9	0.69	2.61
Family's ownership (pct.)	93.7	100	0.03	50.1	100	-1.98	5.52
Firm age	14.4	12.0	0.03	0.00	155	2.13	12.5
City (pct.)	22.3	0.00	0.10	0.00	100	1.33	2.77
ROA (pct.)	7.28	6.86	0.04	-44.1	52.4	-0.32	4.67
ROA, industry-adjusted (pct.)	3.20	3.09	0.04	-58.0	59.1	-0.37	4.74

Table 1.3: Descriptive statistics of family and non-family employees

This table shows the descriptive statistics of family and non-family managers (Panel A) and workers (Panel B) employed by family firms over the period 2006-2014. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. All variables are defined in Appendix Table A1. Salary is measured in thousands of Norwegian Kroner (NOK) and is winsorized at the 5 and 95 percent level. The last column reports the results of a two-sample t-test, allowing for unequal variances between the two groups. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A: Managers

	Family managers			Non-family managers			Difference
	Mean	Median	Std. Error	Mean	Median	Std. Error	in means
Salary (thousand NOK)	533	517	1.18	581	550	0.83	-47.6***
Age	49.1	49.0	0.06	45.2	45.0	0.04	3.87***
Male (pct.)	66.9	100	0.24	68.0	100	0.19	-1.19***
Full-time (pct.)	89.7	100	0.15	95.9	100	0.08	-6.16***
Tenure 5 years (pct.)	68.7	1.00	0.24	53.9	1.00	0.20	14.8***
Bachelor degree (pct.)	26.3	0.00	0.22	29.5	0.00	0.18	-3.19***
Master degree (pct.)	3.97	0.00	0.10	4.64	0.00	0.08	-0.67***
Occupation	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Individual-year obs.		38,617			61,804		

Panel B: Workers

	Family workers			Non-family workers			Difference
	Mean	Median	Std. Error	Mean	Median	Std. Error	in means
Salary (thousand NOK)	339	338	0.45	334	346	0.15	4.49***
Age	39.5	38.0	0.03	36.5	35.0	0.01	2.98***
Male (pct.)	51.2	100	0.10	63.8	100	0.04	-12.6***
Full-time (pct.)	58.9	100	0.10	69.1	100	0.04	-10.2***
Tenure 5 years (pct.)	49.0	0.00	0.10	32.7	0.00	0.04	16.3***
Bachelor degree (pct.)	17.2	0.00	0.08	13.0	0.00	0.03	4.21***
Master degree (pct.)	3.23	0.00	0.04	2.28	0.00	0.01	0.95***
Occupation	5.27	5.00	0.00	5.91	6.00	0.00	-0.64***
Individual-year obs.		250,080			1,714,644		

Table 1.4: Treatment effect estimates over the period 2006-2014

This table reports results of the average treatment effect (ATE) estimation for family managers and workers over the period 2006-2014. Estimation of the average treatment effect year by year is reported in Appendix Table A5. The outcome, Salary, is the sum of cash wages, salaries, and bonuses, including care and parental benefits received during the calendar year and is measured in thousands of Norwegian Kroner (NOK). All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates described in Section 1.2.2. Individual covariates include tenure (5 years), education level, and occupation. Firm covariates include firm total assets, performance, age, location, and industry. All variables are defined in Appendix Table A1. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Dependent variable: Salary				
	ATE regression adjustment estimation				
	(1)	(2)	(3)	(4)	(5)
Managers					
Mean pay gap	-48.1***	-33.9***	-37.2***	47.3***	37.8***
	(1.43)	(1.34)	(1.33)	(1.49)	(1.52)
Counterfactual salary	581.2***	578.9***	580.2***	558.8***	562.5***
of non-family managers	(0.83)	(0.83)	(0.82)	(0.82)	(0.82)
Individual-year obs.	100,381	100,381	99,584	98,463	97,719
Workers					
Mean pay gap	4.95***	33.1***	19.1***	61.5***	48.4***
	(0.48)	(0.38)	(0.43)	(0.56)	(0.64)
Counterfactual salary	334.6***	331.6***	360.1***	330.6***	359.0***
of non-family workers	(0.15)	(0.14)	(0.15)	(0.14)	(0.15)
Individual-year obs.	1,963,422	1,963,422	1,666,611	1,921,539	1,632,795
Covariates					
Year	Yes	Yes	Yes	Yes	Yes
Contracted working hours	No	Yes	Yes	Yes	Yes
Individual's age and gender	No	Yes	Yes	Yes	Yes
Individual covariates	No	No	Yes	No	Yes
Firm covariates	No	No	No	Yes	Yes

Table 1.5: Treatment effect estimates over the period 2006-2014 by employees' time spent at work

This table reports results of the ATE estimation for family managers and workers over the period 2006-2014 by their actual working hours spent at work. Columns (1) and (2) capture all employees in family firms, while column (3) captures employees who work as many hours as agreed to in their employment contract, column (4) employees who work overtime, and column (5) employees who work less than agreed. The outcome variable in all columns is individual's salary. All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 1.4, column (5). All variables are defined in Appendix Table A1. In addition to standard covariates, columns (2)-(5) include actual working hours as an additional covariate. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	All employees		Work as agreed	Work more	Work less
	(1)	(2)	(3)	(4)	(5)
Managers					
Mean pay gap	37.8***	37.0***	32.4***	42.8***	77.4***
	(1.52)	(1.51)	(1.66)	(4.95)	(5.21)
Counterfactual salary	562.5***	563.0***	589.6***	390.7***	488.5***
of non-family managers	(0.82)	(0.82)	(0.86)	(2.97)	(2.88)
Individual-year obs.	97,719	97,711	79,755	8,478	9,478
Workers					
Mean pay gap	48.4***	49.5***	55.8***	33.4***	54.7***
	(0.64)	(0.64)	(0.88)	(0.92)	(1.69)
Counterfactual salary	359.0***	359.2***	417.3***	205.2***	326.4***
of non-family workers	(0.15)	(0.15)	(0.17)	(0.25)	(0.46)
Individual-year obs.	1,632,795	1,631,819	1,089,954	379,435	162,430
Covariates	Yes	Yes	Yes	Yes	Yes
Actual working hours	No	Yes	Yes	Yes	Yes

Table 1.6: Number of family firms and their employees divided by ownership
characteristics

Panel A shows a number of family firms in the sample divided by the ownership stake controlling family
has in a firm. Single-owner family firms are family firms without minority shareholders, i.e. firms where
controlling family owns a 100% of the firm. Multiple-owner family firms are family firms with minority
shareholders. Panel B shows the number of employees divided by family status and their equity invested
in the firm. Number of firms reports the number of all firm-year observations, while number of employees
reports the number of individual-year observations across all years.

Panel A: Number of family firms

	All family firms	(pct.)
Number of firms	176,172	
Single-owner family firms	135,843	77.1
Multiple-owner family firms	40,329	22.9

Panel B: Number of employees

	All employees	(pct.)	Family employees	(pct.)	Non-family employees	(pct.)
Number of employees	2,065,145		288,697		1,776,448	
Owners	149,147	7.22	116,967	40.5	32,180	1.81
Non-owners	1,867,896	90.4	170,233	59.0	1,697,663	95.6

Table 1.7: Treatment effect estimates over the period 2006-2014 by families' and employees' ownership stake

This table reports results of the ATE estimation for family managers and workers by their equity invested in the firm over the period 2006-2014. Columns (1)-(2) capture single-owner family firms, while columns (3)-(6) capture multiple-owner family firms. Columns (1) and (3) capture all employees, columns (2) and (4) capture non-owner employees, while columns (5) and (6) capture owner employees. The outcome variable in columns (1)-(5) is individual's salary. The outcome variable in column (6) is salary plus dividends received from the firm during the calendar year. All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 1.4, column (5). All variables are defined in Appendix Table A1. In addition to standard covariates, columns (5) and (6) also include individual's ownership stake. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Single-owner family firms		Multiple-owner family firms			
	All	Non-owners	All	Non-owners	Owners	Owners
	(1)	(2)	(3)	(4)	(5)	(6)
Managers						
Mean pay gap	26.0***	16.8***	48.9***	11.0	-6.84	-3.80
	(1.80)	(3.79)	(2.73)	(7.55)	(5.77)	(6.26)
Counterfactual salary	534.1***	538.6***	613.1***	602.3***	634.2***	670.1***
of non-family managers	(1.02)	(1.02)	(1.33)	(1.58)	(5.37)	(5.84)
Individual-year obs.	63,996	44,090	33,723	18,214	12,807	12,807
% of family managers	*42.9*	*17.1*	*29.1*	*8.44*	*63.4*	*63.4*
Workers						
Mean pay gap	48.9***	21.4***	49.8***	-1.16	-29.3***	-28.9***
	(0.68)	(0.83)	(1.45)	(1.95)	(1.92)	(2.08)
Counterfactual salary	338.0***	365.0***	405.5***	393.6***	555.6***	581.4***
of non-family workers	(0.18)	(0.18)	(0.28)	(0.30)	(1.40)	(1.56)
Individual-year obs.	1,130,560	1,073,217	502,235	414,544	47,564	47,564
% of family workers	*14.1*	*9.50*	*8.59*	*4.93*	*45.6*	*45.6*
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Individual's own. stake	No	No	No	No	Yes	Yes

Table 1.8: Estimation of the average treatment effect for non-family employees over the alternative sample

This table reports results of the ATE estimation for family firms' non-family employees over the period 2006-2014. All columns report the results of the analysis over the alternative sample that in addition to family firms from the final sample also includes non-family firms that satisfy sample selection filters 1 and 2. Column (1) estimates the pay gap between all non-family employees in family firms and all employees in non-family firms. Column (2) ((3)) estimates the pay gap between all non-family employees without equity in single-owner family firms (multiple-owner family firms) and non-family firms. Column (4) compares non-family owner employees in multiple-owner family firms with owner employees in non-family firms. The outcome variable in all columns is individual's salary. All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 1.4, column (5). All variables are defined in Appendix Table A1. In addition to standard covariates, column (4) also includes individual's ownership stake. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Non-family firms versus:	All family firms	Single-owner family firms	Multiple-owner family firms	
	All	Non-owners	Non-owners	Owners
	(1)	(2)	(3)	(4)
Managers				
Mean pay gap	-37.6***	-18.0***	0.26	-6.83
	(0.89)	(1.19)	(1.55)	(3.53)
Counterfactual salary of	660.3***	583.6***	597.2***	673.7***
managers in non-family firms	(0.55)	(0.93)	(0.97)	(1.27)
Individual-year obs.	209,874	79,919	60,052	35,342
Workers				
Mean pay gap	-22.0***	-11.0***	1.92***	-3.90**
	(0.18)	(0.20)	(0.28)	(1.35)
Counterfactual salary of	420.7***	369.0***	391.9***	597.0***
workers in non-family firms	(0.13)	(0.17)	(0.18)	(0.49)
Individual-year obs.	3,556,757	1,960,582	1,383,018	207,013
Covariates	Yes	Yes	Yes	Yes
Individual's own. stake	No	No	No	Yes

Table 1.9: Estimation of the average treatment effect for family employees over the alternative sample

This table reports results of the ATE estimation for family firms' family employees over the period 2006-2014. All columns report the results of the analysis over the alternative sample that in addition to family firms from the final sample also includes non-family firms that satisfy sample selection filters 1 and 2. Column (1) estimates the pay gap between all family employees in family firms and all employees in non-family firms. Column (2) ((4)) estimates the pay gap between all family employees without equity in single-owner family firms (multiple-owner family firms) and all employees without equity in non-family firms. Column (3) ((5)) estimates the pay gap between all family employees with equity in single-owner family firms (multiple-owner family firms) and all employees with equity in non-family firms. The outcome variable in all columns is individual's salary. All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 1.4, column (5). All variables are defined in Appendix Table A1. In addition to standard covariates, columns (3) and (5) also include individual's ownership stake. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Non-family firms versus:	All family firms	Single-owner family firms		Multiple-owner family firms	
	All	Non-owners	Owners	Non-owners	Owners
	(1)	(2)	(3)	(4)	(5)
Managers					
Mean pay gap	10.1***	2.11	-55.5***	16.4*	-22.5***
	(1.96)	(4.30)	(2.46)	(7.46)	(3.24)
Counterfactual salary of	653.5***	575.7***	628.5***	588.8***	659.1***
managers in non-family firms	(0.58)	(1.00)	(1.61)	(1.01)	(1.34)
Individual-year obs.	186,679	50,923	50,561	44,914	38,777
Workers					
Mean pay gap	36.5***	11.1***	-52.8***	1.27	-36.8***
	(1.06)	(1.12)	(1.32)	(1.96)	(1.89)
Counterfactual salary of	444.4***	383.3***	574.7***	389.4***	592.7***
workers in non-family firms	(0.15)	(0.19)	(0.53)	(0.20)	(0.51)
Individual-year obs.	2,327,986	1,090,441	238,480	1,009,332	202,847
Covariates	Yes	Yes	Yes	Yes	Yes
Individual's own. stake	No	No	Yes	No	Yes

1.7 Appendix Tables

Appendix Table A1: Definition of variables

This table documents the definitions of the variables used in the empirical analysis.

Variable	Definition
Firm-level variables	
City	A dummy variable that equals 1 if the firm is located in one of the Norway's five largest cities, and 0 otherwise. Norway's five largest cities by population are Oslo, Bergen, Trondheim, Stavanger, and Bærum.
Family firm	A firm in which the controlling family holds the ultimate stake of 50% or more. Family is a group of owners who are related by blood or marriage up to the second degree of kinship.
Family's ownership	The ultimate equity stake held by firm's controlling family.
Firm age	The number of years since the firm was founded.
Firm's industry growth opportunities	Average three-year percentage increase in sales of all firms in firm's industry.
Fraction of family employees	The number of family non-CEO employees divided by the number of all non-CEO employees employed by the family firm. Family employee is firm's non-CEO employee that is also a member of firm's controlling family.
ROA, industry-adjusted	The difference between ROA and the average of its two-digit NACE benchmark in the observation year.
Multiple-owner family firm	A dummy variable that equals 1 for family firms with minority shareholders, and 0 otherwise.
Non-family firm	A firm in which no family holds the ultimate stake of 50% or more. Family is a group of owners who are related by blood or marriage up to the second degree of kinship.
Number of employees	Total number of individuals employed in the firm.
Payroll expense	The sum of cash wages, salaries, and bonuses, including care and parental benefits firm pays to its employees during the calendar year.
ROA	Net income divided by total assets averaged over the past 2 years. ROA is winsorized at the 5 and 95 percent level.
Single-owner family firm	A dummy variable that equals 1 if the controlling family owns 100% of the firm's equity, and 0 otherwise.
Total assets	Book value of assets in millions of Norwegian Kroner (NOK). Total assets are winsorized at the 5 and 95 percent level.

Individual-level variables

Age	Individual's age in the observation year.
Bachelor degree	A dummy variable that equals 1 if an individual has completed a degree from higher education up to four years in duration, and 0 otherwise.
Actual working hours	Actual hours an employee spends at work per week. The variable is self-reported from the firms and captures the number of average weekly working hours in the last 4 weeks before the reporting date.
Contracted working hours	A categorical variable divided into three categories: working 37.5 hours per week (full-time employment), working 25 hours per week, and working 15 hours per week.
Education level	A categorical variable divided into five categories: secondary school or below, high school, bachelors, masters, and PhD.
Family employee	A dummy variable that equals 1 if individual is firm's non-CEO employee that is also a member of firm's controlling family, and 0 otherwise.
Full-time	A dummy variable that equals 1 if individual is employed by the firm full-time (37.5 hours per week, lunch excluded), and 0 otherwise.
Individual's ownership stake	The ultimate equity fraction held by the employee.
Male	A dummy variable that equals 1 for males, and 0 for females.
Managers	A group of non-CEO employees at the top-management level that consists of a firm's senior officials and its department and other non-CEO managers who have the responsibility of oversight over employees at lower-hierarchy levels.
Master degree	A dummy variable that equals 1 if an individual has completed a post-graduate degree from higher education, and 0 otherwise. The majority of these degrees is five years or longer in duration.
Non-owner employee	A dummy variable that equals 1 if an employee has no invested equity in the firm, and 0 otherwise.
Owner employee	A dummy variable that equals 1 if an employee has invested equity in the firm, and 0 otherwise.
Occupation	Individual's occupation as reported by Norwegian occupational code STYRK-08 which is based on the ILO international standard classification of occupations.
Salary	The sum of cash wages, salaries, and bonuses, including care and parental benefits received during the calendar year.
Tenure 5 years	A dummy variable that equals 1 if individual is employed by the firm for more than 5 years, and 0 otherwise.
Workers	A group of non-CEO employees not employed at a management-level position. The group consists of technicians, associate professionals, and white- and blue-collar workers.

Appendix Table A2: Treatment effect estimates of family and non-family firms'
employees over the period 2006-2014

This table reports results of the average treatment effect estimation (ATE) for family firms' employees over the period 2006-2014. Family firm is a firm in which the controlling family holds the ultimate stake of 50% or more. Family is a group of owners who are related by blood or marriage up to the second degree of kinship. The outcome, Salary, is the sum of cash wages, salaries, and bonuses, including care and parental benefits received during the calendar year and is measured in thousands of Norwegian Kroner (NOK). All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 1.4, column (5). All variables are defined in Appendix Table A1. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

| | ATE regression adjustment estimation | | | | |
	(1)	(2)	(3)	(4)	(5)
Mean pay gap	-42.3***	-15.8***	-7.49***	-19.0***	-11.2***
	(0.17)	(0.13)	(0.12)	(0.13)	(0.12)
Counterfactual salary of	439.9***	420.7***	439.0***	424.0***	442.6***
non-family firms' employees	(0.15)	(0.12)	(0.12)	(0.12)	(0.12)
Individual-year obs.	9,200,824	9,200,824	8,168,554	8,982,595	7,987,388
Covariates					
Year	Yes	Yes	Yes	Yes	Yes
Contracted working hours	No	Yes	Yes	Yes	Yes
Individual's age and gender	No	Yes	Yes	Yes	Yes
Individual covariates	No	No	Yes	No	Yes
Firm covariates	No	No	No	Yes	Yes

Appendix Table A3: Employment in family firms

Panel A of this table shows the descriptive statistics of family firms divided based on the employment of family members over the period 2006-2014. Panel B shows the frequency of family employees in family firms that employ both, family and non-family employees. All variables are defined in Appendix Table A1.

Panel A: Descriptive statistics (mean and median values)

Employees	Total assets (mill. NOK)	Number of employees	Fraction of family empl. (pct.)	Family's ownership (pct.)	Firm age	City (pct.)	ROA (pct.)	ROA, ind.-adj. (pct.)	Firm-year observations
Only non-family	11.5	19.6	0.00	91.1	11.8	30.3	4.63	0.71	227,966
	3.14	*4.00*	*0.00*	*100*	*9.00*	*0.00*	*5.22*	*1.59*	
Family and non-family	9.86	11.7	27.0	93.7	14.4	22.3	7.28	3.20	176,172
	4.50	*7.00*	*25.0*	*100*	*12.0*	*0.00*	*6.86*	*3.09*	
Only family	3.40	1.26	1.00	97.4	11.3	28.3	7.56	2.34	59,100
	1.26	*1.00*	*1.00*	*100*	*9.00*	*0.00*	*6.47*	*1.72*	

Panel B: Representation of family members

	Ratio of family employees	Individual-year observations
Managers	38 %	100,421
Workers	13 %	1,964,724
Non-CEO employees	14 %	2,065,145

Appendix Table A4: Descriptive statistics - Mean values year by year

This table shows descriptive statistics of family firms over the period 2006-2014. Family firm is a firm in which the controlling family holds the ultimate stake of 50% or more. Family is a group of owners who are related by blood or marriage up to the second degree of kinship. All variables are defined in Appendix Table A1. Total assets are measured in millions of Norwegian Kroner (NOK). Total assets, ROA, and industry-adjusted ROA are winsorized at the 5 and 95 percent level.

	2006	2007	2008	2009	2010	2011	2012	2013	2014	All
Total assets (million NOK)	9.20	9.82	9.72	9.56	9.58	10.0	10.3	10.3	10.2	9.86
Number of employees	11.6	11.9	11.6	11.4	11.5	11.9	11.7	11.9	11.9	11.7
Fraction of family employees (pct.)	27.1	27.1	27.1	27.2	27.1	26.9	26.9	26.9	26.9	27.0
Family's ownership (pct.)	93.4	93.5	93.5	93.7	93.7	93.7	93.8	93.9	93.9	93.7
Firm age	13.4	13.5	13.8	14.2	14.6	14.9	15.0	14.9	14.9	14.4
City (pct.)	22.7	22.1	22.0	22.1	22.2	22.2	22.6	22.5	22.5	22.3
ROA (pct.)	8.64	10.3	7.11	6.11	5.56	6.70	7.11	6.70	7.49	7.28
ROA, industry-adjusted (pct.)	3.17	3.82	3.92	3.42	2.74	2.98	2.76	2.86	3.14	3.20
Firm-year observations	18,176	19,652	19,441	19,324	19,742	19,797	19,689	20,050	20,301	176,172

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Appendix Table A5: Treatment effect estimates year by year

This table reports results of the year by year ATE estimation for family managers and workers. The outcome variable in all columns is individual's salary. All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 14, column (5). All variables are defined in Appendix Table A1. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Managers									
Mean pay gap	28.2***	36.5***	38.2***	34.6***	35.5***	47.5***	44.5***	40.6***	31.4***
	(4.73)	(4.53)	(4.50)	(4.60)	(4.65)	(4.43)	(4.43)	(4.60)	(4.47)
Counterfactual salary of non-family managers	513.2***	536.7***	547.6***	545.7***	554.1***	564.0***	583.7***	598.1***	605.5***
	(2.31)	(2.34)	(2.39)	(2.46)	(2.44)	(2.44)	(2.53)	(2.48)	(2.50)
Individual-year obs.	9,713	10,483	10,532	10,526	10,952	11,218	11,078	11,554	11,663
Workers									
Mean pay gap	39.39***	45.7***	44.5***	40.7***	45.7***	53.8***	55.5***	54.3***	53.7***
	(1.84)	(1.85)	(1.87)	(1.87)	(1.85)	(1.98)	(1.96)	(1.98)	(2.01)
Counterfactual salary of non-family workers	325.4***	344.0***	354.7***	354.1***	354.0***	362.8***	372.6***	377.7***	381.3***
	(0.42)	(0.43)	(0.44)	(0.45)	(0.44)	(0.45)	(0.47)	(0.47)	(0.47)
Individual-year obs.	166,947	181,744	180,290	177,889	181,593	184,345	183,546	187,275	189,166
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix Table A6: Estimation of the average treatment effect with alternative methods

This table reports results of the ATE estimation with alternative estimation methods described in Section 1.4.3. The propensity score for IPW estimation and propensity score matching is estimated with a probit model. The outcome variable in all columns is individual's salary. All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 1.4, column (5). All variables are defined in Appendix Table A1. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	RA estimation	IPW estimation	Matching on covariates	Matching on propensity score
	(1)	(2)	(3)	(4)
Managers				
Mean pay gap	37.8***	46.0***	47.7***	39.2***
	(1.52)	(2.01)	(1.77)	(2.05)
Counterfactual salary of non-family managers	562.5***	558.9***	n.a.	n.a.
	(0.82)	(0.86)		
Individual-year obs.	97,719	97,719	97,719	97,719
Workers				
Mean pay gap	48.4***	27.4***	56.8***	27.2***
	(0.64)	(1.77)	(0.84)	(1.10)
Counterfactual salary of non-family workers	359.0***	358.2***	n.a.	n.a.
	(0.15)	(0.15)		
Individual-year obs.	1,632,795	1,632,795	1,632,795	1,632,795
Covariates	Yes	Yes	Yes	Yes

Appendix Table A7: Treatment effect estimates for owners over the period 2006-2014

This table reports results of the ATE estimation for family non-owner employees over the period 2006-2014. Column (1) captures all firms and estimates the pay gap between all owner employees and non-owner employees (i.e., employees without equity in the firm). Columns (2) and (3) compare family owners with family non-owners in single-owner family firms and multiple-owner family firms, respectively. Column (4) compares non-family owners with non-family non-owners in multiple-owner family firms. The outcome variable in all columns is individual's salary. All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 1.4, column (5). All variables are defined in Appendix Table A1. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	All firms	Single-owner family firms	Multiple-owner family firms	
	All employees	Family employees	Family employees	Non-family employees
	(1)	(2)	(3)	(4)
Managers				
Mean pay gap	67.8***	57.4***	74.4***	90.1***
	(1.48)	(2.85)	(7.07)	(3.22)
Counterfactual salary	550.6***	472.4***	534.4***	609.8***
of managers without equity	(0.81)	(2.59)	(6.83)	(1.53)
Individual-year obs.	95,017	27,452	9,659	21,362
% of owners	*34.4*	*72.5*	*84.1*	*21.9*
Workers				
Mean pay gap	115.8***	74.0***	83.3***	126.7***
	(0.98)	(1.03)	(1.93)	(1.94)
Counterfactual salary	357.1***	345.5***	378.4***	402.0***
of workers without equity	(0.15)	(0.61)	(1.46)	(0.30)
Individual-year obs.	1,592,668	158,870	42,128	419,980
% of owners	*6.59*	*36.1*	*51.5*	*6.16*
Covariates	Yes	Yes	Yes	Yes

Appendix Table A8: Treatment effect estimates for non-owner family employees over the period 2006-2014 by firm size

This table reports results of the ATE estimation for family non-owner employees over the period 2006-2014. Columns (1)-(3) capture single-owner family firms, while columns (4)-(6) capture multiple-owner family firms. Columns (1) and (4) capture all family firms, while columns (2) and (5) ((3) and (6)) capture firms that fall into the third (first) tercile by firm size, measured by total assets. The outcome variable in all columns is individual's salary. All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 1.4, column (5). All variables are defined in Appendix Table A1. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Single-owner family firms			Multiple-owner family firms		
	All firms	Big firms	Small firms	All firms	Big firms	Small firms
	(1)	(2)	(3)	(4)	(5)	(6)
Managers						
Mean pay gap	16.8***	21.4***	5.97	11.0	14.2	9.14
	(3.79)	(5.04)	(4.97)	(7.55)	(9.03)	(13.4)
Counterfactual salary	538.6***	575.9***	370.9***	602.3***	626.9***	352.48***
of non-family managers	(1.02)	(1.13)	(3.26)	(1.58)	(1.63)	(7.66)
Individual-year obs.	44,090	33,193	3,634	18,214	15,752	631
Workers						
Mean pay gap	21.4***	25.4***	18.1***	-1.16	0.74	11.0***
	(0.83)	(1.37)	(0.89)	(1.95)	(2.61)	(2.62)
Counterfactual salary	335.0***	371.3***	246.4***	393.6***	417.9***	262.68***
of non-family workers	(0.18)	(0.23)	(0.40)	(0.30)	(0.34)	(0.96)
Individual-year obs.	1,073,217	654,259	155,217	414,544	318,541	27,812
Covariates	Yes	Yes	Yes	Yes	Yes	Yes

Appendix Table A9: Treatment effect estimates for non-owner family employees over the period 2006-2014 by firm performance

This table reports results of the ATE estimation for family non-owner employees over the period 2006-2014. Columns (1)-(3) capture single-owner family firms, while columns (4)-(6) capture multiple-owner family firms. Columns (1) and (4) capture all family firms, while columns (2) and (5) ((3) and (6)) capture firms that fall into the third (first) tercile by firm performance, measured by ROA. The outcome variable in all columns is individual's salary. All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 1.4, column (5). All variables are defined in Appendix Table A1. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Single-owner family firms			Multiple-owner family firms		
	All firms	Good performers	Bad performers	All firms	Good performers	Bad performers
	(1)	(2)	(3)	(4)	(5)	(6)
Managers						
Mean pay gap	16.8***	-2.00	20.2***	11.0	13.6	12.3
	(3.79)	(7.90)	(5.59)	(7.55)	(13.2)	(12.6)
Counterfactual salary	538.6***	555.2***	511.8***	602.3***	601.7***	575.8***
of non-family managers	(1.02)	(2.04)	(1.75)	(1.58)	(3.10)	(2.91)
Individual-year obs.	44,090	11,924	14,285	18,214	4,909	5,412
Workers						
Mean pay gap	21.4***	23.9***	20.6***	-1.16	9.34**	-0.88
	(0.83)	(1.45)	(1.44)	(1.95)	(3.20)	(3.38)
Counterfactual salary	335.0***	341.7***	318.7***	393.6***	393.0***	368.3***
of non-family workers	(0.18)	(0.33)	(0.31)	(0.30)	(0.55)	(0.54)
Individual-year obs.	1,073,217	324,746	331,982	414,544	132,043	115,316
Covariates	Yes	Yes	Yes	Yes	Yes	Yes

Appendix Table A10: Treatment effect estimates for non-owner family employees over the period 2006-2014 by the CEO's family status

This table reports results of the ATE estimation for family non-owner employees over the period 2006-2014. Columns (1)-(3) capture single-owner family firms, while columns (4)-(6) capture multiple-owner family firms. Columns (1) and (4) capture all family firms, while columns (2) and (5) ((3) and (6)) capture firms with a family (unrelated) CEO. The outcome variable in all columns is individual's salary. All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 1.4, column (5). All variables are defined in Appendix Table A1. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Single-owner family firms			Multiple-owner family firms		
	All firms	Family CEO	Unrelated CEO	All firms	Family CEO	Unrelated CEO
	(1)	(2)	(3)	(4)	(5)	(6)
Managers						
Mean pay gap	16.8***	26.4***	-33.9*	11.0	7.80	31.1*
	(3.79)	(3.90)	(14.8)	(7.55)	(9.19)	(12.7)
Counterfactual salary	538.6***	521.8***	626.5***	602.3***	577.4***	637.3***
of non-family managers	(1.02)	(1.14)	(2.42)	(1.58)	(2.12)	(2.38)
Individual-year obs.	44,090	33,466	7,359	18,214	9,904	7,678
Workers						
Mean pay gap	21.36***	20.7***	18.6***	-1.16	0.42	-8.44
	(0.83)	(0.82)	(5.36)	(1.95)	(2.10)	(5.13)
Counterfactual salary	335.0***	331.6***	378.3***	393.6***	390.2***	406.0***
of non-family workers	(0.18)	(0.19)	(0.55)	(0.30)	(0.37)	(0.53)
Individual-year obs.	1,073,217	884,459	117,744	414,544	264,505	134,314
Covariates	Yes	Yes	Yes	Yes	Yes	Yes

Appendix Table A11: Treatment effect estimates for non-owner family employees over the period 2006-2014 by firm's growth opportunities

This table reports results of the ATE estimation by firm's growth opportunities over the period 2006-2014. Columns (1)-(3) capture single-owner family firms, while columns (4)-(6) capture multiple-owner family firms. Columns (1) and (4) capture all family firms, while columns (2) and (5) ((3) and (6)) capture firms that fall into the third (first) tercile by firm's industry growth opportunities. All columns report regression adjusted ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates used in Table 1.4, column (5). All variables are defined in Appendix Table A1. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Single-owner family firms			Multiple-owner family firms		
	All firms	High growth	Low growth	All firms	High growth	Low growth
	(1)	(2)	(3)	(4)	(5)	(6)
Managers						
Mean pay gap	16.80***	-11.8	28.1***	11.0	-5.2	20.0*
	(3.79)	(7.04)	(4.55)	(7.55)	(12.5)	(9.45)
Counterfactual salary	538.6***	574.3***	524.5***	602.3***	625.9***	589.3***
of non-family managers	(1.02)	(1.91)	(1.19)	(1.58)	(2.68)	(1.94)
Individual-year obs.	44,090	12,575	31,498	18,214	6,523	11,671
Workers						
Mean pay gap	21.36***	13.6***	24.5***	-1.16	-9.69**	6.09*
	(0.83)	(1.54)	(1.00)	(1.95)	(3.12)	(2.52)
Counterfactual salary	335.0***	366.6***	320.7***	393.6***	412.1***	380.2***
of non-family workers	(0.18)	(0.32)	(0.21)	(0.30)	(0.46)	(0.39)
Individual-year obs.	1,073,217	333,938	738,580	414,544	173,668	240,647
Covariates	Yes	Yes	Yes	Yes	Yes	Yes

Chapter 2   Underperformance in family successions:

The role of outside work experience

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Abstract

The underperformance of family successors relative to professional CEOs in family-owned businesses has been repeatedly documented. We show that this underperformance is entirely driven by inside successors who already work in the firm at the time they take over, and find that two-thirds of inside family successors do not have work experience outside the family firm. Outside successors, who are also drawn from the family but are recruited from outside the firm, perform on par with professional CEOs. This result holds up even when we compare only those successors that are sons of the outgoing CEO. When we exploit the variation in the magnitude of successors' outside work experience, we find that it explains a substantial part of the performance gap between inside and outside family successors. Further, we document a similar performance gap between inside and outside professional CEOs in family firms.

2.1 Introduction

Successors in family-controlled businesses are often drawn from within the family. However, several studies indicate that the selection of family successors is financially detrimental for the average firm. Firms that appoint a family successor subsequently underperform those that hire an external successor (Barth, Gulbrandsen, Schønea 2005; Pérez-González 2006; Villalonga and Amit 2006; Bennedsen, Nielsen, Pérez-González, and Wolfenzon 2007; Bloom and Van Reenen 2007).

This finding is often believed to reflect a "small pool-effect." The preference for family successors increases the chance that successors' inherent talent is inferior to what firms can hire in the market for CEOs (see, e.g., Burkart, Panunzi, and Shleifer 2003; Pérez-González 2006).

Other mechanisms, however, may also be at play. In this paper we explore another noticeable characteristic of family successors—the fact that many have little work experience outside the family firm. Extensive exposure to the family business culture can be beneficial, aiding the transfer of firm-specific skills to future generations, but may also entail costs. Younger generations grow up observing the family run the firm and work under supervision of their parents. They may develop set perceptions of the best way of conducting business, internalizing parents' beliefs and business norms, and hesitate to realign corporate strategy when required.[1]

We examine the importance of family successors' past work experience for subsequent performance by studying changes in performance and firm policy variables around CEO successions in the population of Norwegian family-controlled corporations over a

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[1] Van den Steen (2010) models homogeneous corporate cultures as comprised of individuals with shared beliefs and values, and show that they are more efficient at doing what they already do, but engage in less experimentation and collection of information.

fifteen year period. We show that the relative underperformance of family successors is entirely driven by successors who already work in the firm at the time they take over. Such internally recruited successors underperform relative to successors who are also drawn from the family but are recruited from outside the firm. Outside family successors' performance is, notably, on par with that of professional CEOs. The root of family successors' inferior performance, therefore, may not be family succession per se, but a lack of cognitive diversity.

From the population of family firms, we identify approximately 2,500 firms where the family retains control after CEO transition. The tendency for internal successors is pervasive. Almost 50 percent of successors are family members that either work in the firm, or sit on its board, four years prior to the year of CEO transition (*inside* successors). Family successors recruited from outside the firm (*outside* successors) comprise 20 percent of all transitions, and unrelated CEOs make up around 30 percent. 70 percent of family successors are children of the outgoing CEO. Sons are by far the most common type of successor for both inside and outside successors, and eldest sons are about three-fold as likely as younger sons to take over.[2]

We trace out past employment of inside and outside successors. The classical family firm model where generations work together is still a fitting description of many firms today. Approximately two-thirds of internally recruited children of the outgoing CEO are not observed to have work experience outside the family firm, having worked internally for up to 10 years. For externally recruited children, approximately one third are observed to have worked in the family firm previously, and worked for more than one external employer while away from the firm on average. Notably, outside sons return

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[2] Kustec 2020a shows that the tendency for eldest son to take over the family business is lower when he has brothers.

with more CEO and management-level experience than inside sons possess.

Why are so many family successors placed in a formal role in the firm well in advance of taking over? One answer is that the transfer of firm-specific assets and human capital takes considerable time. Such assets are often intangible and involve the maintenance of stakeholder relationships, e.g. trust, reputation, and networks.[3] Another answer is that to preserve control of the business, the family fosters identity and loyalty by involving members in ownership and management. If younger generations settle in different cities and pursue different careers, they risk becoming too removed and eventually lost for the family business.

We set up an empirical model that estimates changes in corporate performance and policy variables following CEO transition as the change in the firm-specific average value (fixed effect) of the variable.[4] Initial regressions establish that family successions overall underperform successions that involve professional CEOs, in line with the existing literature. Family successors are poorer at generating revenue, they have lower asset turnover, and employment grows slower. They underperform unrelated successors by 1.2 percentage points, measured in terms of OROA, by 15 percentage points measured in terms of asset turnover, and by 10 and 7 percent measured in terms of sales and employment growth.[5]

Family successions are then split into inside and outside successions and the model is re-estimated. The deterioration in profitability is now concentrated on the group of in-

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[3] In the Resource-Based View of the Firm (Wernerfelt 1984; Barney 1991), firms' competitive advantages arise from bundles of specialized assets and skills residing inside the organization. It is often proposed that intangible assets and skills are more easily transferred in family firms, see e.g. Bennedsen, Fan, Jian, and Yeh (2015), and Habbershon and Williams (1999).

[4] Fixed effects models have been used to study persistence in corporate policies also by Bertrand and Schoar (2003), and Cronqvist, Low, and Nilsson (2009).

[5] Our data closely resembles that employed by Bennedsen et al. (2007) who study the population of Danish family firms. They estimate an OROA performance gap of 1.4 percentage points which is close to our estimate of 1.2 points.

side successors, is highly significant, and the performance of outside family successors and professional CEOs are statistically indistinguishable. The difference in coefficient estimates between inside and outside family successors is of the same magnitude as that between family and unrelated successors, and essentially accounts for the entire gap.

What is the mechanism for this result? A small pool-effect could be at play, because inside family successions contain a higher proportion of sons, and sons are a subset of the family. This can be examined by comparing the performance of inside sons to outside sons, as both are drawn from the same limited pool. Re-estimating the model for sons, we find that also inside sons underperform outside sons. The pattern of insiders' underperformance persists even when we only compare the eldest sons.

Two alternative channels for insiders' underperformance are considered. First, insiders may develop inferior management skills because they tend to occupy a junior position in the firm until they take over. Second, they may be more constrained ex post by the outgoing CEO because the two already have a history of working together. The latter type of interference is difficult to observe, but the scope would seem the largest in cases where senior is given a seat on the board. We continue to estimate the difference between son-successors and add these controls to the regressions. Successors' prior CEO experience has little effect on results. While firms that retain senior as a director experience higher growth, the effect works similarly on both inside and outside sons, leaving insiders' underperformance intact.

We then explore the effect of past work experience outside the family firm. Successors that have experienced a variety of business cultures may draw on a broader set of competencies compared to successors with a mono-cultural work background. We count the number of firms in which successors have been employed, which varies for both inside and outside sons. Added to the regression, the variable is positively associ-

ated with measures of growth and efficiency, and lowers estimated marginal effects of both insider and outsider performance to the extent that the difference between inside and outside sons is no longer significant at conventional levels, although the underlying pattern remains. These results suggest that the successors with multiple work experiences are performing somewhat better.

The mechanism can be addressed from a different angle by considering the group of family-controlled firms that hire professional CEOs. These firms recruit half of their successors internally. Arguably, inside unrelated successors have a higher degree of congruence with the family owners that select them than their outside counterparts. Considering inside versus outside unrelated successors, we again find that inside successors tend to underperform, although the pattern is somewhat less pronounced than in related successions.

Our analysis speaks to the fundamental question of whether the family has some inherent advantage as a structure for the organization of production. Family-owned firms are often found to outperform other firms in the cross-section (see, e.g., Anderson and Reeb 2003; Amit and Villalonga 2014; Berzins, Bøhren, and Stacescu 2020), but this accomplishment seems difficult to sustain across generational transitions. The uniqueness of the family business is that personal relationships are integrated with the firm's activities in manners that comes to bear on corporate policies (Pollak 1985; Bertrand and Schoar 2006). We highlight the widespread practice to put successors in place in the firm well ahead of the time of succession. Conceivably, this preference is rooted in the family's desire to develop successors who are simultaneously informed about its business and loyal to its mission. The downside of this choice may be financial. Families, however, may be making this trade-off with open eyes, prioritizing loyalty to family norms and vision over financial gains.

It is possible to interpret our results in an alternative light where outside work experience proxies for inherent talent, rather than cognitive diversity. In that interpretation, only high quality children are able to find outside jobs. The positive correlation between performance and the number of outside positions or time spent outside the family firm, then reflects that very talented children tend to work in several outside firms. In this interpretation, outside work experience is purely a signal of talent, and our results imply that families should use external experience as a sorting mechanism in the selecting of successors instead of primogeniture.

The paper proceeds as follows: The next section, Section 2.2, describes our data sources and how we construct the sample of CEO transitions. Section 2.3 explains our empirical model, and Section 2.4 discusses the results. Section 2.5 concludes.

2.2 Data and sample construction

We construct a data set of family firms that undergo a CEO transition starting from administrative data on the population of Norwegian corporations and their owners over the period 2005-2015 obtained from the Norwegian Tax Authority. Wealth is taxed in Norway, so corporate owners and their direct stakes are observable and this is a unique characteristics of our data. We compute indirect (ultimate) ownership stakes by iterating over owners in cases where firms are owned by other firms, accounting for cross-ownership, until we are able to identify an individual as the ultimate owner.

Firm-owner pairs can then be matched to public registry data of firm and owner-specific variables and information about kinship between individuals available from Statistics Norway. We employ registry data on a range of social and economic information, including employment, family relations, gender, and age. Firm-level accounting

data is obtained from the Brønnøysund firm registry. Ownership data are available from 2005, accounting and employment data from 2000. All variables are described in Appendix Table B1.

The sample is then constructed through the following steps. First, some basic cleaning is performed on the population of corporations. We want to retain only firms that are active and above a (low) threshold size. Firms with average sales below 0,25 million NOK and average total assets below 1 million NOK are eliminated, as measured by 2015-prices (approximately 31,000 and 124,000 USD, respectively). This is desirable as after 2006 Norwegian taxation of dividends provides incentives to incorporate very small personal firms with little activity. Further, we eliminate financial and real estate firms, firms in the agricultural sector (which is subsidised), and public services.

The next step identifies family firms that undergo a CEO transition. We match domestic owners with information about their formal roles in corporations, including CEO positions, and determine the set of CEO transitions.[6] We then find the family members of the outgoing CEO and their combined ownership in the firm. Family is defined on blood or marriage up to the second degree of kinship, except we do not include siblings-in-law. That is, it includes the outgoing CEO's grandparents, parents, partners, children, grandchildren, children-in-law, siblings, nephews and nieces, aunts, uncles, and cousins.

To be meaningfully characterized as a family firm, a family must wield substantial control. We define substantial control as instances where the outgoing CEO's family indirectly owns at least 33.4% of equity. The 33.4% threshold stake gives the family a negative majority according to Norwegian corporate law. It enables the family to block important decisions pursuant to the future control of the firm.[7] To keep the analysis

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[6] Foreign owners are omitted from the regressions because they cannot be matched with other data.

[7] Owners with stakes at or above 33.4% can block changes in the articles of association, prevent mergers, demergers, and distributions via write-downs of equity.

tractable, we omit firms that undergo more than one CEO transition. We also omit firms with multiple CEOs—in such firms, a CEO transition would not necessarily imply a shift in management control. We also exclude CEOs that are CEOs in more than one firm to avoid double-counting incoming-outgoing CEO pairs in case transitions occur in multiple firms simultaneously.

For the empirical analysis, we require that firms are founded no later than 2006 and have at least four years of accounting observations before and after CEO transition for the purpose of estimating average levels of firm performance variables on either side of transition with a reasonable level of accuracy. This limits the CEO transitions we can consider in the period 2005-2011, resulting in a sample of 4,473 family-controlled firms that undergo a CEO transitions. The average number of observations per firm is 13.4 and the median is 15.

Because ownership is observable in our sample, we are able to define the treatment and control group quite precisely. To evaluate the effect of choosing successors from within the family, one should compare successions where the family preserves managerial control *in addition to* ownership control to successions where the family preserves ownership control but it passes managerial control to someone from outside the family.

The 4,473 transitions thus fall into four categories: In the largest subset, 1,780 cases comprising 39.8 percent, the controlling family remains in control after transition and the incoming CEO belongs to the family of the outgoing CEO, where family is defined as above. This is what we typically understand as a family succession. However, the subset of successions where a CEO transition is accompanied by a loss of family control is equally large. In 1,741 cases, or 38.9 percent, the family's equity stake drops below the 33.4% threshold ex post and the new CEO is unrelated. In almost 60 percent of these cases, the family's ex post stake is zero, i.e. the firms have been sold. In a small number

of cases, 153, or 3.4 percent, the successor comes from the family but the family's stake falls below the threshold. Transitions involving a loss of family ownership control are not an appropriate benchmark for evaluating family succession, even if the firms continue to be controlled by a family, because the identity of the family has changed, and these 1,894 observations are dropped.

In the last category, 799 cases, or 17.9 percent, the family retains its controlling stake and the successor is unrelated. We thus observe that far more firms are sold than are converted to professional management. Eventually, this leaves us with a sample comprised of 2,579 family-controlled firms that undergo a managerial succession during the period 2005-2011.

2.3   Empirical model

The starting point is a regression model that closely resembles the approach employed in the literature comparing the performance of family and unrelated CEO successors. We estimate a fixed-effect regression model, much in line with the analysis of Bennedsen et al. (2007) and Pérez-González (2006).[8] We later modify the model to focus on the difference between inside and outside family successors.

$$Y_{it} = \beta_{0i} + \beta_1 \text{FAM}_{it} + \beta_2 (1 - \text{FAM}_{it}) + \beta_x X_{it} + \varepsilon_{it} \ , \qquad (2.1)$$

where Y_{it} is a generic firm financial variable and the indicator variable FAM_{it} equals one for firms that experience related (family) CEO successions at date $T = 0$ such that

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[8] The difference is that Bennedsen et al. (2007) and Pérez-González (2006) do not estimate an outright fixed-effect model, but compare three-year differences, and they do not estimate the coefficients to family and non-family successions in one regression. Our specification uses all available observations before and after CEO transition to estimate the difference in the average levels.

FAM$_{it}$ takes the value of one in all years $T \geq 0$. The coefficient β_{0i} is a firm fixed effect and the coefficients of interest are β_1 and β_2 which capture the effect of CEO transitions for related and unrelated CEOs, respectively. Specifically, they capture how the average level of a performance or corporate policy variable changes around the time of CEO transition. If performance or policies systematically change around CEO transition, β_1 and β_2 should both be significantly different from zero. If the change for firms that select related successors is generally different from firms that select unrelated successors, β_1 and β_2 should also be significantly different from each other. The fixed effects allows each firm to have a firm-specific level of Y_{it}.

In addition, we include control variables, X$_{it}$, for firm size (total assets), cash ratio, OROA, and firm age.[9] OROA proxies for investment opportunities, cash ratio for external financing need, and firm age for life-cycle effects. For the latter, we include a dummy for each age decile from 10 and below, to 50 and above. For each year, we adjust Y_{it} for the average industry level defined according to the 2-digit NACE industry code (equivalent to including year-industry fixed effects). The estimated values of β_1 and β_2 therefore reflect changes in performance relative to other sample firms in the same industry.

Some measures of the dependent variable are logged, wherefore the coefficient estimates of β_1 and β_2 reflect percentage changes. In those case, a coefficient estimate of, say, 5.50 implies that following CEO transition, Y on average increased by 5.5 percent relative to its ex ante level. When a variable is already measured in percent, such as OROA, or we scale it by 2-year average Total assets, we do not log it, and the coefficient estimates the change in percentage points. Prior to logging we truncate variables by 5% in each tail, in order to eliminate excess kurtosis in the distribution of the variable.

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[9] In regressions where Y_{it} is OROA we leave this variable out from the set of control variables.

With regards to the timing of CEO-transition we treat it as exogenous, similar to Bennedsen et al. (2007). It is possible that the decision to change CEO is caused by firm-specific variables such as past poor performance, but this is less of a concern in our setting for the reason that we are estimating difference-in-difference effects and include firm fixed effects in the regression specification such that firm-characteristics like poor performance will be absorbed into the fixed effect. Also, our sample is comprised entirely of firms that undergo a CEO-transition, that is, both treatment and control firms experience transition, leaving it unlikely that differences between related and unrelated successions are driven by such firm-specific differences.

Model (2.1) is then adapted to estimate the difference between inside and outside family successors:

$$Y_{it} = \beta_{0i} + \beta_1 \text{FAM}_{it} \cdot \text{INSIDE}_i + \beta_2 \text{FAM}_{it} \cdot \text{OUTSIDE}_i + \beta_3 (1 - \text{FAM}_{it}) + \beta_x X_{it} + \varepsilon_{it} \quad (2.2)$$

where INSIDE_{it} indicates that a successor is formally associated with the firm four years prior to the year of succession. A formal association means that the successors is either an employee in the firm or has a seat on the firm's board. We apply a three-year threshold to ensure that inside successor's relation with the firm is of a meaningful duration. About 10 percent of inside successors have a seat on the board but are not simultaneously employed. The indicator variable OUTSIDE_{it} equals one for all other successors. This specification basically breaks the gap between FAM_{it} and $(1 - \text{FAM}_{it})$ in model (2.1) into three gaps, allowing us to examine not just how inside family successors compare to outside family successors (whether β_1 equals β_2), but also how each of them compares to unrelated successors—retaining the observations that pertain to unrelated successors in the regression sample.

2.4 Empirical analysis

2.4.1 Descriptive statistics

Table 2.1 shows the distribution of 2,579 CEO successions onto related, unrelated, inside and outside successions (panel A), as well as basic information about average firm size and age.

Family successions constitute 69.0 percent of sample firms and inside successors make up 70.5 percent of family successions, 1,255 firms, compared with 525 outside family successions. Unrelated successions are split evenly into inside and outside successions with 405 and 394 firms, respectively. Family succession firms are somewhat older than unrelated successions (17.3 versus 14.5 years), but smaller in size. Average size shows that the Norwegian population is made up of many small firms, on average family succession firms have a balance sheet of 1.18 million USD compared with 1.59 million USD for firms with unrelated successors. There is no difference between the size of inside and outside family succession firms, but firms tend to be a bit older in the case of inside successions (19.0 years compared with 13.1 years).

Table 2.2 documents the concentration of ownership in the sample firms measured two years prior to CEO transition. Most of the firms in our sample are closely held. Family ownership is considerably higher in firms that select family successors, where the outgoing CEO's family on average controls 93.1 percent of equity compared with 71.4 percent in unrelated successions. Firms with family successions also have fewer owners, 2.82 compared with 3.69 in unrelated successions. There is little difference between inside and outside family successions. In the former, the incoming CEO receives a higher ownership stake on average ex post, whereas in the latter, the outgoing CEO has a higher ownership stake ex ante (which may reflect that the firms in the outside

succession cases are somewhat younger).

The incoming CEO is given equity in both types of successions. In family succesions, the family stake and the number of family owners is virtually unchanged, suggesting that equity of the outgoing CEO is transferred to the successor, whereas professional CEOs receive an equity stake of around 20 percent, which increases the number of owners. The difference between inside and outside successions is negligible.

Table 2.3 presents summary statistics of the firm-level performance and policy variables employed in the regressions.

Family succession firms are on average smaller, have fewer employees, but generate comparable returns, whether industry-adjusted or not. These firms have also a bit lower asset turnover and they invest considerably less. These differences apply both before and after CEO transition. Firms that inside and outside family successors take over are similar in size, but the latter have fewer employees. Outside family succession firms perform worse ex ante, but seem to catch up ex post. They also invest significantly more than inside family succession firms, but still less compared to firms with an unrelated successor.

2.4.2 Regressions

Inside versus outside family successors

First, model (2.1) is estimated to establish that our data can replicate the results of previous studies. As shown in Table 2.4, this is the case. Family successors significantly underperform unrelated successors. The results also hold when we instrument successions in a manner similar to Bennedsen et al. (2007).[10] We focus our discussion on the

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[10] Instrumental variable estimation of the βs requires at least two instruments to be able to identify β_1 and β_2 from the model (2.1), which we implement with Stata's *xtivreg*-command. For the first instrument,

OLS estimates as the IV estimates appear somewhat large.

We consider a range of different performance and policy variables and report only those that display a significant difference between family and unrelated successions.[11] Firms with family successors experience inferior growth and generation of revenue. The estimated coefficient on ln(operating revenue) is -6.11, which implies that revenue growth is 6.11 percent lower after transition, on average. Employment growth falls by 2.17 percent. This translates into lower returns on assets, OROA and ROA, in addition to lower asset turnover—a measure of how efficient firms are at using their asset to generate revenue. The OLS estimates of OROA, ROA, asset turnover, and the level of investment are not statistically significant themselves, but the estimated difference to the unrelated successions are very significant, except for investment. The estimated coefficient of change for family successors is not always statistically significant, the difference to the estimate for unrelated CEOs usually is. The difference between family and unrelated successors in OROA is 1.2 percentage points (ROA is not significant), which is the same order of magnitude as Bennedsen et al. (2007). The gap in sales and unemployment growth is large at 15 and 7 percent, respectively, and the difference in asset turnover is 15 percentage points.

Next, family successors are split into inside and outside successors and we estimate model (2.2). Underperformance is now exclusively concentrated on inside successors, and all of the estimate coefficients are larger in absolute value and estimated with more precision (individually significant), in addition to being significantly different from the

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we follow Bennedsen et al. (2007) and Tsoutsoura (2015) and use the gender of the firstborn child of the outgoing CEO. As the second instrument, we construct a measure of the number of males among the firstborn children of those of the outgoing CEO's siblings that are owners in the firm. The intuition is that, besides being random, the higher the number of male children within the inner circle of the owner, the more likely it is that the firm will experience a related CEO-transition because the pool from which the next generation CEO can be drawn is larger.

[11] For example, estimated differences in leverage and cash ratios were not significant.

coefficients for outside successors—except for investments.[12] The performance difference between family and unrelated successors now appears as a difference between inside family successors on one side and outside family and professional successors on the other. The gap between inside and outside family successors is 1.8 in terms of OROA and 1.3 in terms of ROA. The gap in sales and employment growth is 10.6 and 7.1 percent, and the gap in asset turnover 25.9 percent. These differences are not that different from the estimated differences between family and unrelated successors in Table 2.4, that is, they account for all of the original gap.

Notably, when we compare the performance of outside family successors to that of unrelated successors, they are statistically indistinguishable. In other words, family successors that do not have a formal relation with the family firm four years prior to taking over perform equally well as professional CEOs.

Figure 2.1 plots average corporate performance before and after CEO transition for the group of inside and outside family successors. The four measures are all annually industry adjusted. The difference in the ex post slope of inside and outside successors is evident—inside successors tend downwards, outside successors tend upwards. The ex ante trends of inside and outside successors do not appear to differ substantially, although the performance of outside successors in some cases picks up a year prior to the formal instalment of the incoming CEO. This partly reflects that CEO transition is based on ultimo year observations of the CEO's identity. The successor may actually have been installed in the beginning of a year, but we cannot observe at what point during the year transition has occurred.

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[12] In this case the difference in investment levels between insiders and outsiders is significant at the 11 percent level.

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The composition of family successors

Above, we showed that outside successors' performance is on par with that of professional CEOs. In this section, we present statistics that describe inside and outside successors and their work experience.

We display the family relations of inside and outside successors in Table 2.6 and some basic characteristics in Table 2.7.

Children, partners, and siblings of the outgoing CEO are the most frequent successors, in that order. Sons are by far the most common successors and make up 59 and 47 percent of inside and outside family successors, and eldest sons are three times more frequent than younger sons, comprising 44.3 and 33.5 percent, respectively. It is noticeable that there are more sons in the group of inside successors, but this fact is not driven by primogeniture, because the prevalence of firstborn sons in the two groups is the same as reported in Table 2.7.

Interestingly, the lower frequency of outside sons is not matched by a correspondingly higher prevalence of daughters. Instead, partners are more common in outside successions (21.1 and 12.6 percent, respectively), but are as frequent as daughters in inside successions (12.4 percent). Table 2.7 reveals that this is likely because the outgoing CEO is on average younger in firms that choose outside successors, and have children that are too young to take over management. Also, there is a higher prevalence of divorced CEOs in the outside successor group.

Departing CEOs are, on average, around 65 years of age when an inside child takes over, a few years younger when outside children take over. Successor-children are around 38 years old in the inside succession cases and a few years younger in the outside succession cases. The average age of the departing CEO's oldest child falls considerably

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in partner- or sibling-successions, implying that in many cases the child is too young to assume managerial responsibility.

We collect information about the past employment experiences of family successors in Table 2.8. We focus our comparisons on successor sons, since we perform several regressions with focus on sons later on.

The first entry displays the fraction of successors that have been employed in the family firm prior to the threshold definition (prior to date T-4). Considering inside sons, 88.7 percent were already employed in the firm four or more years prior to taking over. The figure is not 100 percent, implying that the association of 11.3 percent of successors was only through a board directorship. Only 18 percent of outside sons are observed to have had a prior employment relation with the firm. The figures for daughter-successors are comparable to those of sons, for partners and siblings the figure is somewhat lower; around 70 percent of inside successors were employed at the firm five years prior to taking over.

The second entry records the fraction of successors observed to have been employed in a different company at any time prior to the threshold definition, i.e. four years or earlier. This is the case for around 20 percent of inside sons and daughters, around 30 percent of inside partners and siblings, and, by construction, for all outside successors. Outside successors have on average worked in over two different firms, whereas inside children have worked on average in 0.35-0.42 different firms and partners and siblings in around 0.6 firms.

Considering the positions successors are recruited from, a considerably higher fraction of outside sons and siblings have CEO or management-level experience. 6.12 and 16.3 percent of inside sons have CEO and management-level experience, compared with 13.9 and 23.7 percent of outside sons. Perhaps surprisingly, the pattern is the opposite

for daughter and partner successors. Last, the firm employs more family members other than the incoming and outgoing CEO in inside successions where children take over (around 65 percent of firms) compared with outside successions (around 50 percent of firms). It appears that when firms engage more members of the controlling family, they give successors a formal role earlier. Interestingly, when partner and siblings take over, the tendency is the opposite; perhaps reflecting that in some cases partners and siblings are an intermediary bridge between the departing CEO and his children.

More information about the employment history of outside successors is displayed in Table 2.9. Relative to the year of CEO transition, outside sons were last employed in the firm around 6.25 years earlier on average. For daughters and siblings the figure is a little lower, for partners a little higher. More than half of those employment relations were of part-time nature for sons, 83.3 were of part-time nature for daughters and 62.5 percent for partners. At the time of last employment, children-successors are around 27 years of age, and partners and siblings are in their forties.

One may wonder whether outside successors are truly outsiders. By construction the family firm is that which experiences a CEO transitions, but many businesses consist of several individually incorporated firms. Is it possible that outsiders are hired from firms that are part of a wider business group? Our ownership data allows us to identify whether two firms have the same owners. We therefore check whether the firm from which outside successors are recruited are owned by the family of the departing CEO. We call such firms "related firms." As can be seen in Table 2.9, around 10-22 percent of outside successors come from related firms, highest for sons. This, hence, does not seem to be a large concern, and may partly reflect that we have omitted individuals that are CEOs in multiple firms. This ensures that even if a successor has worked in a related firm, he would have worked under a CEO different from his father (or other

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family member). It is, therefore, less likely that the related firm is just an extension of the firm the successor eventually takes over.

Truncation is a second issue to consider because we can trace employment history only back to 2000. One may gauge the importance of truncation by considering past employment of successors in outside transitions that occur after 2011, which we are omitting in the regressions because they violate our requirement that four years of accounting data is available post transition. These 2012-2014 transitions give us the longest possible time series backwards in time and are shown in Table 2.10.

The average age of successors at transition is unchanged. We now observe that a considerably larger fraction of outside successors have worked in the family firm prior to taking over and the engagement also lies further back in time. In the 2005-2011 sample, only 20 percent of children are observed to have worked in the firm, the fraction is now 35-40 percent. The work engagement now lies around 8 years back in time compared to 6 years in the regression sample, which seems consistent with our suspicion of truncation. The number of observations, however, is quite low at 72, and the fraction that have previously worked in the family firm turns out to be very sensitive to the length of the sample. Our best estimate of the fraction of outside successors with previous inside work experience, therefore, lies between the 20 percent of the 2005-2011 sample and the 40 percent of the 2012-2014 sample; approximately one third.

For inside successors, the longer observation period increases the average number of years the successors has worked in the family business prior to taking over to around 9 years, and close to 10 years for sons. We have more observations of inside successors, so we feel more comfortable with the estimate that about a third of sons have outside employment experience. This fraction is higher for daughters and other successors.

All in all, we conclude that around two thirds of inside son successors have no work

experience outside the family firm and around one third of outside son successors have previously worked in the family firm. The tendency for early recruitment of future generations is therefore quite pervasive.

Inside versus outside sons

We now investigate further the mechanism behind the underperformance of inside successors. The composition of inside and outside successors is not quite similar because there are more sons among the former. If there is a preference for sons, and perhaps even eldest sons, the pool of successors becomes very small indeed. Sons are still the predominant group among outside successors, so it appears that the preference for sons is strong in both types of successions. In addition, Table 2.7 indicates that age constraints may partly explain the higher prevalence of partners in outside successions.

The importance of the small pool-effect can be assessed by comparing the performance of inside sons to outside sons, as sons are drawn from the same limited pool. Table 2.11 panel A shows the results of this estimation. The difference in performance of inside and outside sons is intact and statistically significant at the five percent level for several of the variables. For OROA, the difference is now significant only at the 11.6 percent whereas the significance of investment is now close to 5 percent. The standard errors of the coefficient estimates have increased relative to Table 2.5 due to the lower number of observations. In panel B we shrink the pool even further and compare the performance of eldest sons—the pattern is clearly still that insider underperforms although the difference is significant at the five percent level only for revenue growth and asset turnover. The small pool-effect, therefore, does not appear to be driving insiders' underperformance.

Another noticeable difference between inside and outside family successors uncov-

ered in Table 2.8 is that outsiders return to the family firm with more managerial experience. Inside successors may have accumulated less skills exactly because they have been in a junior position. Presumably, those insiders who were in a CEO position before being recruited back to the family firm, have the best prerequisites for succeeding when taking over. We add a control for (inside and outside) successors that were recruited to the family firm from a CEO position, and continue to compare son-successors to account for the small pool-effect. That barely affects the results, as shown in Table 2.12 panel A.[13]

In panel B, we examine the potential for interference by the outgoing CEO and control for his continued presence on the board. The outgoing CEO's presence may constrain especially inside sons when a father and a son have a history of working together, and when the father-son personal relationship complicates the succession. Although senior's formal presence is associated with higher growth in sales and employment, the effect works on both inside and outside sons, and the underperformance of inside sons remains intact.

We then explore the role of outside experience further. From Table 2.8 we know that 20.9 percent of inside sons in the regression sample have work experience from a different firm. That means we have variation in the magnitude of outside work experience in both groups. Adding the number of past outside employers to the regressions, in Table 2.12 panel C, we find that this variable is positively associated with growth in operating revenue and employment, and with asset turnover. Thus, a multiple employer background appears to improve the performance of the incoming CEO. Furthermore, the difference between inside and outside sons is now only significant at the 5 percent level for asset turnover, and completely insignificant for OROA, investment and employment

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[13] We obtain similar results if we apply a dummy for management-level experience.

growth. For ROA and operating revenue, the difference is significant only at the 13 percent level.[14] In the Appendix Table B2, we add all three controls simultaneously, and the results are very close to those in Table 2.12 panel C.

In panel D we control for the length of time a successor has worked outside the family firm, and we see a similar pattern. Thus, accounting for the extent of outside experience seems to be able to account for a substantial part of insiders' underperformance. We interpret this as an indication that experience of a variety of business cultures adds to successors' management competencies.[15]

We want to explore more the notion that the benefit of outside work experiences is the exposure to different business cultures and beliefs. It turns out that half of the professional CEOs in the sample are also recruited from inside the firm. Because the family continues to exert control also in the unrelated successions, it is likely that the inside successor is selected exactly because he shares beliefs and values with the outgoing CEO and his family. In Table 2.13 we rearrange the regression and split unrelated successors into inside and outside successors as well. There are close to 400 firms in each group, which is 125 firms less than the group of outside family successors, but we still observe a pattern very similar to that of family successors. The differences in asset turnover, operating revenue and employment growth are highly significant at the 1 percent level. ROA is significantly different at the 10 percent level.

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[14] The correlation of the number of past outside employers with outside son successors is 0.51 and -0.09 with inside son successors.

[15] The correlation of the years of outside employers with outside son successors is 0.44 and -0.07 with inside son successors.

2.5 Conclusion

We study changes in the performance of family-owned firms around CEO succession and find, in line with previous studies, that successors that are drawn from the family of the outgoing CEO significantly underperform other successors.

A large percentage of family successors do not have work experience outside the family firm they take over, and their underperformance is limited to successors who already work in the firm before taking over. Although such inside successors are comprised of more sons, we shows that it cannot be explained by a small pool-effect. Further, it does not seem to be caused by observed differences in management-level skills or outgoing CEO presence. A substantial part of the difference can be accounted for by measures of the extent of outside work experience.

We propose that mono-cultural business background in the family firm is behind this result. We can imagine two explanations. Either successors' skill set is less developed due to a lack of experience, or successors identify so closely with the family that the family's identity and norms are favoured above financial considerations.

2.6 Figures and tables

Figure 2.1: Corporate performance of inside and outside family successors

All variables are industry-adjusted, i.e. calculated as a difference between the value of the variable and the average of its two-digit industry benchmark in the observation year. Variables are defined in Appendix Table B1. Sample: 2001-2015. CEO successions: 2005-2011.
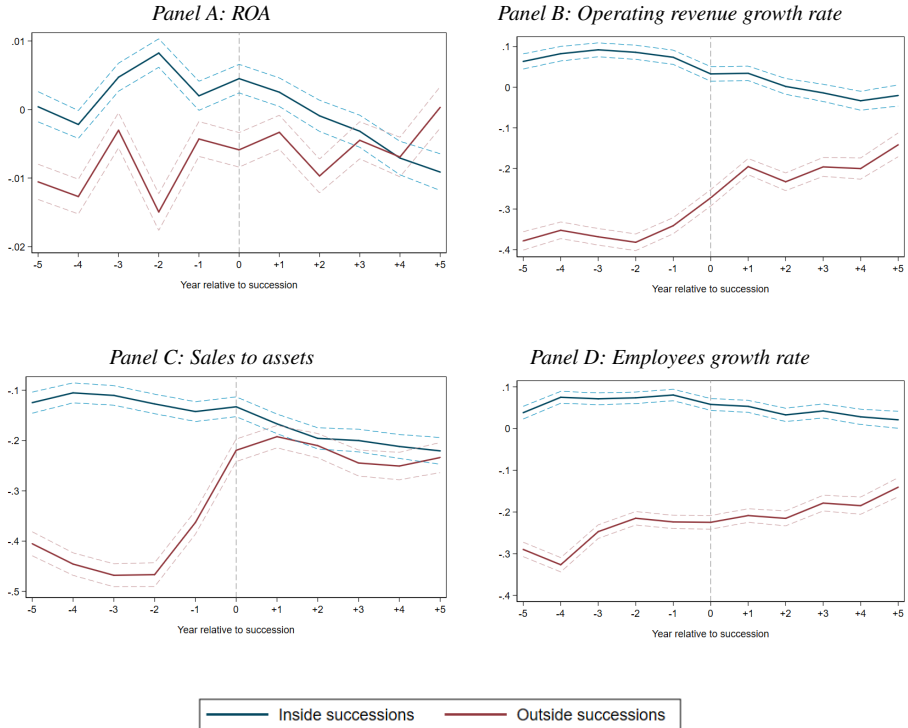
Table 2.1: Observations and basic firm characteristics

Panel A shows the number of firms in our sample and Panel B reports their age and size at succession. Looking at firms where the family of the outgoing CEO owns on average at least 33.4% in 2 years before and 2 years after succession, successions are classified into two categories: family successions, where the successor is a member of the family, and unrelated successions. We further distinguish between inside and outside successors. Inside successors had a formal role as employees or board members four years prior to taking over as CEO, while outside successors did not. *Firm age* is the number of years since the firm's incorporation. *Firm size* is the book value of total assets, winsorized at the 5 and 95 percent level. The average exchange rate in 2015 was equivalent to 8.06 NOK per USD (*source: Norges Bank*). Difference in means is calculated in a two-sample t-test, allowing for unequal variances between the two groups. CEO successions: 2005-2011.

Panel A: Observations

	Number of firms	Share of firms (percent)	Number of firm-year observations	Inside successor firms	Outside successors firms
Family successions	1,780	69.0	24,286	1,255	525
Unrelated successions	799	31.0	10,327	405	394
Total	2,579		34,613	1,660	919

Panel B: Firm age and size

	Average firm age at succession	Average firm size at succession	
	(years)	(mill. NOK)	(mill. USD)
Family successions			
Inside successors	19.0	9.49	1.18
Outside successors	13.1	9.49	1.18
Unrelated successions	14.5	12.8	1.59
Inside family = unrelated (p-value)	*(0.000)*	*(0.000)*	
Outside family = unrelated (p-value)	*(0.055)*	*(0.000)*	

Table 2.2: Ownership by CEOs and their families by type of succession

This table shows the ownership stakes of firm CEOs, the ownership stakes of CEOs' families, and the number of owners. Panel A reports averages for variables 2 years before succession, and Panel B reports averages for variables 2 years after succession. Looking at firms where the family of the outgoing CEO owns on average at least 33.4% in 2 years before and 2 years after succession, successions are classified into three categories: inside and outside family successions, and unrelated successions. Inside family successors had a formal role as employees or board members in the firm four years prior to taking over as CEO, while outside successors did not. Variables are defined in Appendix Table B1. CEO successions: 2005-2011.

Panel A: Averages before succession

	Outgoing CEO's ownership stake (pct.)	Outgoing CEO family's ownership stake (pct.)	Number of owners	Number of family owners
Family successions				
Inside successors	47.0	93.4	2.70	2.43
Outside successors	60.0	92.2	2.87	2.14
Unrelated succession	55.5	71.4	3.69	1.70
Average	52.0	86.3	3.10	2.15

Panel B: Averages after succession

	Successor CEO's ownership stake (pct.)	Successor CEO family's ownership stake (pct.)	Number of owners	Number of family owners
Family successions				
Inside successors	49.7	92.1	2.76	2.32
Outside successors	45.9	94.1	2.82	2.17
Unrelated succession	20.0	22.0	4.32	1.12
Average	40.0	71.7	3.25	1.93

Table 2.3: Firm summary statistics prior to succession

This table reports averages for variables before and after succession in Panel A and Panel B, respectively. Looking at firms where the family of the outgoing CEO owns on average at least 33.4% in 2 years before and 2 years after succession, successions are classified into three categories: inside and outside family successions, and unrelated successions. Inside family successors had a formal role as employees or board members in the firm four years prior to taking over as CEO, while outside successors did not. All values, unless indicated otherwise, are reported in percent, and winsorized at the 5 and 95 percent level. Variables are defined in Appendix Table B1. Total assets are measured in millions of Norwegian Kroner (NOK). Difference in means reports the difference between family inside and outside successor firms, and is calculated in a two-sample t-test, allowing for unequal variances between the two groups. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: 2001-2015. CEO successions: 2005-2011.

| | Family succession | | | | Unrelated succession |
	All firms	Inside successors	Outside successors	Difference in means	All firms
Panel A: Averages before succession					
Total assets (million NOK)	8.06	8.34	7.39	0.95	10.5
	(0.30)	(0.35)	(0.56)		(0.57)
Number of employees	8.62	9.20	6.95	2.25***	10.6
	(0.21)	(0.24)	(0.40)		(0.40)
OROA (pct.)	12.1	12.6	10.8	1.80*	13.0
	(0.28)	(0.29)	(0.65)		(0.47)
ROA (pct.)	7.81	8.10	7.06	1.04	8.78
	(0.22)	(0.23)	(0.53)		(0.37)
OROA, industry-adjusted	-0.46	-0.01	-1.64	1.63*	-0.76
	(0.26)	(0.27)	(0.62)		(0.45)
ROA, industry-adjusted	-0.24	0.07	-1.04	1.11*	-0.38
	(0.21)	(0.22)	(0.51)		(0.36)
Sales to assets (pct.)	2.14	2.26	1.84	0.41***	2.35
	(0.03)	(0.03)	(0.06)		(0.05)
Capex to ppe (pct.)	53.0	50.0	61.8	-11.8*	72.4
	(1.91)	(1.90)	(4.99)		(3.67)
Firm-year observations	11,133	8,498	2,635		4,811
Panel B: Averages after succession					
Total assets (million NOK)	10.4	10.1	11.0	-0.89	14.3
	(0.36)	(0.41)	(0.71)		(0.66)
Number of employees	9.34	9.74	8.30	1.45*	12.3
	(0.23)	(0.27)	(0.45)		(0.42)
OROA (pct.)	8.67	8.88	8.16	0.72	10.7
	(0.28)	(0.32)	(0.53)		(0.48)
ROA (pct.)	5.74	5.88	5.40	0.48	7.19
	(0.23)	(0.27)	(0.45)		(0.40)
OROA, industry-adjusted	-1.57	-1.32	-2.19	0.87	-0.83
	(0.27)	(0.31)	(0.52)		(0.46)
ROA, industry-adjusted	-1.07	-0.88	-1.52	0.65	-0.74
	(0.22)	(0.26)	(0.44)		(0.38)
Sales to assets (pct.)	1.92	1.98	1.79	0.19**	2.23
	(0.03)	(0.03)	(0.06)		(0.04)
Capex to ppe (pct.)	49.0	44.7	59.3	-14.6**	67.6
	(1.78)	(1.85)	(4.08)		(3.50)
Firm-year observations	11,371	7,833	3,538		4,711

Table 2.4: Change in firm performance and policies around succession by succession-type

Panel A shows the coefficients from a panel OLS regression of the variable indicated in the column heading, according to regression specification (2.1) in Section 2.3. Panel B shows the coefficients from a panel instrumental variable (IV) regression of the variable indicated in the column heading. The IV regression estimates (2.1) by 2SLS, and we use the following two instruments. First, the gender of the firstborn child of the outgoing CEO. And second, the number of males among the firstborn children of those of the outgoing CEO's siblings that are owners in the firm. Their joint F-statistics from two first stages of 2SLS are reported at the bottom of the table. Looking at firms where the family of the outgoing CEO owns on average at least 33.4% in 2 years before and 2 years after succession, successions are classified into two categories: family successions, where the successor is a member of the family, and unrelated successions. All variables are defined in Appendix Table B1. Difference reports a p-value of Wald test comparing the coefficients for family and unrelated successions. Firm controls include firm age, and total assets, cash ration, and OROA (except in column 1), all lagged for 1 year. All variables are annual, and winsorized at the 5th and 95th percentiles. Firm clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: 2001-2015. CEO successions: 2005-2011.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	Capex/ ppe	ln(Employees)
Panel A: OLS regression						
Family successions	-0.37	-0.22	-6.11***	1.83	-1.92	-2.17*
	(0.30)	(0.22)	(1.27)	(2.02)	(2.58)	(1.03)
Unrelated successions	0.82	0.20	4.84*	16.7***	-0.92	4.99**
	(0.43)	(0.32)	(1.88)	(2.99)	(3.88)	(1.70)
Difference (p-value)	0.018	0.246	0.000	0.000	0.812	0.000
Firm-level control variables	yes	yes	yes	yes	yes	yes
Firm fixed effects	yes	yes	yes	yes	yes	yes
Year-industry fixed effects	yes	yes	yes	yes	yes	yes
Adjusted R-squared	0.31	0.31	0.86	0.71	0.06	0.85
Observations	31,923	31,216	30,554	31,216	27,555	26,405
Panel B: IV regression						
Family successions	-2.43*	-1.83*	-13.1**	-14.1*	-0.31	-5.89
	(0.94)	(0.73)	(4.51)	(6.67)	(6.81)	(3.64)
Unrelated successions	9.62**	7.65**	47.0**	81.9**	7.22	26.5*
	(3.43)	(2.68)	(16.0)	(25.1)	(26.7)	(13.3)
Difference (p-value)	0.005	0.004	0.003	0.002	0.816	0.050
Firm-level control variables	yes	yes	yes	yes	yes	yes
Firm fixed effects	yes	yes	yes	yes	yes	yes
Year-industry fixed effects	yes	yes	yes	yes	yes	yes
F(instruments - family s.)	60.8***	56.7***	66.2***	56.7***	53.1***	52.3***
F(instruments - unrelated s.)	38.9***	36.3***	39.7***	36.3***	32.6***	33.8***
Observations	30,824	30,148	29,494	30,148	26,641	25,494

Table 2.5: Change in firm performance and policies around succession for inside and outside family successors and unrelated successors

The table shows the coefficients from a panel OLS regression of the variable indicated in the column heading, according to regression specification (2.2) in Section 2.3. All regressions are run with firm and year-industry fixed effects. Looking at firms where the family of the outgoing CEO owns on average at least 33.4% in 2 years before and 2 years after succession, successions are classified into three categories: inside and outside family successions, and unrelated successions. Inside family successors had a formal role as employees or board members in the firm four years prior to taking over as CEO, while outside successors did not. Definitions of variables are available in Appendix Table B1. Difference reports a p-value of Wald test comparing the coefficients for insider and outsider family successors. Firm controls include firm age, and total assets, cash ration, and OROA (except in column 1), all lagged for 1 year. All variables are annual, and winsorized at the 5th and 95th percentiles. Firm clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: 2001-2015. CEO successions: 2005-2011.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	Capex/ ppe	ln(Em- ployees)
Family successions						
Inside successors	-0.84**	-0.52*	-8.44***	-4.21*	-3.85	-3.46**
	(0.32)	(0.23)	(1.34)	(2.10)	(2.73)	(1.13)
Outside successors	1.00	0.74	2.19	21.7***	5.37	3.61
	(0.66)	(0.51)	(3.35)	(5.09)	(5.53)	(2.67)
Difference (p-value)	0.010	0.020	0.004	0.000	0.114	0.016
Unrelated successions	0.81	0.19	4.82*	16.6***	-0.94	4.98**
	(0.43)	(0.32)	(1.88)	(2.99)	(3.88)	(1.70)
Outside family = unrelated successor (p-value)	0.801	0.354	0.497	0.393	0.332	0.667
Controls and fixed effects	yes	yes	yes	yes	yes	yes
Adjusted R-squared	0.31	0.31	0.86	0.71	0.06	0.85
Observations	31,923	31,216	30,554	31,216	27,555	26,405

Table 2.6: Relation between outgoing and successor CEOs in family successions

This table shows a family relation between the outgoing CEO and his/her successor in family successions. Inside successors had a formal role as employees or board members four years prior to taking over as CEO, while outside successors did not. CEO successions: 2005-2011.

	Total successions	Inside successors	(pct.)	Outside successor	(pct.)
Parent-son	984	737	(58.7)	247	(47.1)
Parent-eldest son	*732*	*556*		*176*	
Parent-daughter	222	156	(12.4)	66	(12.6)
Partners	266	155	(12.4)	111	(21.1)
Siblings	197	145	(11.6)	52	(9.90)
Child - parent	56	35	(2.79)	21	(4.00)
Parent - son/daughter-in-law	53	25	(1.99)	28	(5.33)
Parent - grandchild	1	1	(0.08)	0	(0.00)
Uncle - nephew	1	1	(0.08)	0	(0.00)
Total	1,780	1,255		525	

Table 2.7: Characteristics of family outgoing and successor CEOs by successor-type

This table shows characteristics of family outgoing and successor CEOs at succession by successor-type. Looking at family succession firms, successors are classified into two categories: inside successors, where successors had a formal role as employees or board members four years prior to taking over as CEO, and outside successors. Reported are mean values of the variables. ***, **, and * next to the variable means for inside successors indicate that the difference between insiders and outsiders is significant at the 1%, 5%, and 10% level, respectively. CEO successions: 2005-2011.

| | Inside successors | | | | | Outside successors | | | | |
	Sons	Daughters	Partners	Siblings	Others	Sons	Daughters	Partners	Siblings	Others
Senior's age	64.8***	66.6**	51.6***	48.0***	49.6	62.7	63.4	46.1	41.2	51.1
Successor's age	37.6***	38.7**	50.7***	45.5***	52.2*	34.9	36.0	45.2	39.7	46.4
Senior has no sons (pct.)	0.00	34.6	21.9	32.4	33.9	0.00	45.5	18.9	19.2	28.2
Divorced senior (pct.)	3.80*	3.21	16.1	7.59	12.9	8.50	6.06	18.9	13.5	8.16
Age of the oldest child	40.1***	41.1*	25.5***	20.8***	26.8	37.7	38.3	19.0	14.4	27.9
Male firstborn (pct.)	69.2	26.9	49.0	46.9	36.8	67.2	22.7	56.8	63.0	42.6

Table 2.8: Past work experiences of family successors by successor-type

This table shows past work experiences of family successor CEOs by successor-type. Looking at family succession firms, successors are classified into two categories: inside successors, where successors had a formal role as employees or board members four years prior to taking over as CEO, and outside successors. Definitions of variables are available in Appendix Table B1. Reported are mean values. *** next to the variable names indicates that the difference between insiders and outsiders is significant at the 1% level. CEO successions: 2005-2011.

| | Inside successors | | | | | Outside successors | | | | |
	Sons	Daughters	Partners	Siblings	Others	Sons	Daughters	Partners	Siblings	Others
Past employment in the family firm (pct.)	88.7***	89.7***	71.6***	72.4***	64.5***	18.0	16.7	9.09	3.85	4.08
Worked outside the family firm (pct.)	20.9***	21.2***	35.0***	31.4***	41.7***	100	100	100	100	100
No. of past outside employers	0.42***	0.35***	0.68***	0.57***	0.65***	2.27	2.18	2.35	2.17	2.37
Past CEO position (pct.)	6.12**	4.49	9.80	11.8	14.5	13.9	4.55	7.21	19.2	18.4
Past manager-level position (pct.)	16.3	23.3	25.8	14.0	37.8	23.7	12.5	35.5	27.8	16.7
Other family employees (pct.)	64.2***	65.2	30.0	46.2	50.9	47.5	51.1	37.5	50.0	50.0

Table 2.9: Past work experiences of family outside successors by successor-type

This table shows past work experiences in the family firm of family outside successor CEOs by successor-type. Outside successors did not have a formal role as employees or board members in the firm four years prior to taking over as CEO. Definitions of variables are available in Appendix Table B1. Reported are mean values. CEO successions: 2005-2011.

| | Outside successors | | | | |
	Sons	Daughters	Partners	Siblings	Others
No. of years since last family firm employment	6.25	5.73	6.60	5.50	5.00
Part-time last family firm employment (pct.)	55.9	83.3	62.5	0.00	100
Successor's age at the last family firm employment	26.4	27.0	46.2	41.5	50.0
Recruited from related firm (pct.)	22.4	16.7	11.8	9.62	16.3

Table 2.10: Employment history of family successors in 2012-2014 successions

This table shows employment history of family outside and inside successor CEOs by successor-type in Panel A and B, respectively. Inside successors had a formal role as employees or board members in the firm four years prior to taking over as CEO, while outside successors did not. Definitions of variables are available in Appendix Table B1. CEO successions: 2012-2014.

	Sons		Daughters		Others	
	N	Mean	*N*	Mean	*N*	Mean
Panel A: Outside successors						
Successor's age at succession	74	36.0	17	37.5	42	46.9
Past employment in the family firm (pct.)	72	37.5	17	29.4	42	23.8
No. of years since last family firm employment	27	7.85	5	8.40	10	7.30
Successor's age at the last family firm employment	27	27.7	5	27.6	10	36.3
Panel B: Inside successors						
Successor's age at succession	299	39.1	62	40.9	155	50.5
No. of years in the family firm before succession	299	9.91	62	9.18	155	8.07
Past employment in the family firm (pct.)	299	93.3	62	88.7	155	81.9
Worked outside the family firm (pct.)	296	33.8	61	45.9	152	44.1

Table 2.11: Change in firm performance and policies around succession for inside and outside sons, other family and unrelated successors

The table shows the coefficients from a panel OLS regression of the variable indicated in the column heading including firm and year-industry fixed effects. Looking at firms where the family of the outgoing CEO owns on average at least 33.4% in 2 years before and 2 years after succession, Panel A (B) classifies successions into four categories: inside and outside parent-son successions (parent-eldest son successions), other family successions, and unrelated successions. Inside successors had a formal role as employees or board members in the firm four years prior to taking over as CEO, while outside successors did not. Definitions of variables are available in Appendix Table B1. Difference reports a p-value of Wald test comparing the coefficients for inside and outside successors. Firm controls include firm age, and total assets, cash ration, and OROA (except in column 1), all lagged for 1 year. All variables are annual, and winsorized at the 5th and 95th percentiles. Firm clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: 2001-2015. CEO successions: 2005-2011.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	Capex/ ppe	ln(Em- ployees)
Panel A						
Parent-son successions						
Inside successors	-0.75	-0.70*	-4.69**	-0.36	0.54	-0.61
	(0.39)	(0.28)	(1.48)	(2.43)	(3.23)	(1.33)
Outside successors	0.67	0.61	7.94*	25.1***	14.6*	6.11
	(0.83)	(0.61)	(3.98)	(6.37)	(7.24)	(3.38)
Difference (p-value)	0.116	0.047	0.003	0.000	0.066	0.065
Other family successions	-0.29	0.05	-11.6***	-2.53	-9.68**	-6.15***
	(0.46)	(0.34)	(2.32)	(3.47)	(3.70)	(1.83)
Unrelated successions	0.81	0.19	4.91**	16.7***	-0.82	5.03**
	(0.43)	(0.32)	(1.88)	(2.99)	(3.88)	(1.70)
Controls and fixed effects	yes	yes	yes	yes	yes	yes
Adjusted R-squared	0.31	0.31	0.86	0.71	0.06	0.85
Observations	31,923	31,216	30,554	31,216	27,555	26,405
Panel B						
Parent-eldest son successions						
Inside successors	-0.89*	-0.80*	-4.31**	0.04	1.06	-0.11
	(0.44)	(0.30)	(1.61)	(2.84)	(3.55)	(1.52)
Outside successors	0.44	0.56	6.07	19.6**	14.5	5.60
	(0.98)	(0.72)	(4.57)	(7.22)	(8.85)	(4.07)
Difference (p-value)	0.213	0.075	0.033	0.012	0.150	0.190
Other family successions	-0.20	0.00	-9.04***	0.19	-6.42*	-4.60**
	(0.40)	(0.30)	(1.91)	(2.87)	(3.24)	(1.48)
Unrelated successions	0.81	0.19	4.89**	16.7***	-0.84	5.03**
	(0.43)	(0.32)	(1.88)	(2.99)	(3.88)	(1.70)
Controls and fixed effects	yes	yes	yes	yes	yes	yes
Adjusted R-squared	0.31	0.31	0.86	0.71	0.06	0.85
Observations	31,923	31,216	30,554	31,216	27,555	26,405

Table 2.12: Change in firm performance and policies around succession for inside and outside sons, other family and unrelated successors controlling for successors' past experiences

The table repeats the analysis from Table 2.11, additionally controlling for successors' past experiences. Panel A controls for whether the successor was a CEO of an AS/ASA firm four years prior to succession. Panel B controls for whether the senior sits on the board four years after the succession. Panel C controls for the number of employers the successor had up to four years prior to succession. Panel D controls for the number of years the successor spent outside the family firm prior to succession. All regressions are run with firm and year-industry fixed effects. Looking at firms where the family of the outgoing CEO owns on average at least 33.4% in 2 years before and 2 years after succession, successions are classified into four categories: inside and outside parent-son successions, other family successions, and unrelated successions. Inside sons had a formal role as employees or board members in the firm four years prior to taking over as CEO, while outside sons did not. Definitions of variables are available in Appendix Table B1. Difference reports a p-value of Wald test comparing the coefficients for insider and outsider sons. Firm controls include firm age, and total assets, cash ration, and OROA (except in column 1), all lagged for 1 year. All variables are annual, and winsorized at the 5th and 95th percentiles. Firm clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: 2001-2015. CEO successions: 2005-2011.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	Capex/ ppe	ln(Em- ployees)
Panel A						
Parent-son successions						
Inside successors	-0.71	-0.69*	-4.75**	-0.86	0.49	-0.73
	(0.39)	(0.28)	(1.48)	(2.44)	(3.25)	(1.33)
Outside successors	0.80	0.65	7.88	23.9***	14.4*	5.84
	(0.85)	(0.62)	(4.02)	(6.47)	(7.30)	(3.45)
Difference (p-value)	0.101	0.045	0.003	0.000	0.070	0.074
Past CEO position	-0.70	-0.17	0.89	7.32	0.08	1.88
	(0.80)	(0.59)	(4.00)	(5.73)	(7.48)	(3.64)
Other family successions	yes	yes	yes	yes	yes	yes
Unrelated successions	yes	yes	yes	yes	yes	yes
Controls and fixed effects	yes	yes	yes	yes	yes	yes
Adjusted R-squared	0.31	0.31	0.86	0.71	0.06	0.85
Observations	31,910	31,203	30,541	31,203	27,543	26,400
Panel B						
Parent-son successions						
Inside successors	-0.87	-0.80*	-9.01***	-2.47	-2.15	-5.04**
	(0.52)	(0.37)	(2.09)	(3.27)	(3.99)	(1.77)
Outside successors	0.57	0.52	4.02	23.2***	12.1	1.76
	(0.88)	(0.65)	(4.22)	(6.79)	(7.71)	(3.59)
Difference (p-value)	0.114	0.045	0.002	0.000	0.062	0.062
Senior sits on the board ex post	0.18	0.16	7.07**	3.46	4.35	7.13***
	(0.50)	(0.36)	(2.32)	(3.55)	(3.84)	(1.93)
Other family successions	yes	yes	yes	yes	yes	yes
Unrelated successions	yes	yes	yes	yes	yes	yes
Controls and fixed effects	yes	yes	yes	yes	yes	yes
Adjusted R-squared	0.31	0.31	0.86	0.71	0.06	0.85
Observations	31,923	31,216	30,554	31,216	27,555	26,405

	OROA	ROA	ln(Op. revenue)	Sales/ assets	Capex/ ppe	ln(Em- ployees)
Panel C						
Parent-son successions						
Inside successors	-0.81*	-0.75**	-6.01***	-3.13	-0.54	-2.37
	(0.40)	(0.28)	(1.52)	(2.49)	(3.29)	(1.36)
Outside successors	0.43	0.36	1.60	12.3	8.92	-3.70
	(1.01)	(0.73)	(5.07)	(7.51)	(8.48)	(4.01)
Difference (p-value)	0.230	0.137	0.133	0.043	0.269	0.745
No. of past outside employers	0.11	0.10	2.87*	5.86***	2.42	4.07***
	(0.25)	(0.18)	(1.24)	(1.58)	(1.76)	(0.85)
Other family successions	yes	yes	yes	yes	yes	yes
Unrelated successions	yes	yes	yes	yes	yes	yes
Controls and fixed effects	yes	yes	yes	yes	yes	yes
Adjusted R-squared	0.31	0.31	0.86	0.71	0.06	0.85
Observations	31,881	31,179	30,517	31,179	27,518	26,372
Panel D						
Parent-son successions						
Inside successors	-0.71	-0.62*	-6.94***	-4.30	-0.52	-3.06*
	(0.40)	(0.28)	(1.52)	(2.50)	(3.33)	(1.35)
Outside successors	0.87	0.93	-1.08	9.98	10.1	-4.93
	(0.97)	(0.71)	(4.65)	(7.26)	(8.53)	(3.83)
Difference (p-value)	0.113	0.033	0.213	0.053	0.213	0.634
No. of years outside the family firm	-0.03	-0.05	1.45***	2.44***	0.71	1.76***
	(0.08)	(0.06)	(0.38)	(0.53)	(0.63)	(0.30)
Other family successions	yes	yes	yes	yes	yes	yes
Unrelated successions	yes	yes	yes	yes	yes	yes
Controls and fixed effects	yes	yes	yes	yes	yes	yes
Adjusted R-squared	0.31	0.31	0.86	0.71	0.06	0.85
Observations	31,881	31,179	30,517	31,179	27,518	26,372

Table 2.13: Change in firm policies around succession for inside and outside successors

The table shows the coefficients from a panel OLS regression of the variable indicated in the column heading including firm and year-industry fixed effects. Looking at firms where the family of the outgoing CEO owns on average at least 33.4% in 2 years before and 2 years after succession, successions are classified into four categories: inside and outside family successions, and inside and outside unrelated successions. Inside successors had a formal role as employees or board members in the firm four years prior to taking over as CEO, while outside successors did not. Definitions of variables are available in Appendix Table B1. Difference reports a p-value of Wald test comparing the coefficients for insider and outside successors. Firm controls include firm age, and total assets, cash ration, and OROA (except in column 1), all lagged for 1 year. All variables are annual, and winsorized at the 5th and 95th percentiles. Firm clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: 2001-2015. CEO successions: 2005-2011.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	Capex/ ppe	ln(Em- ployees)
Family successions						
Inside successors	-0.83**	-0.51*	-8.51***	-4.33*	-3.89	-3.57**
	(0.32)	(0.23)	(1.34)	(2.10)	(2.73)	(1.13)
Outside successors	1.01	0.74	2.16	21.7***	5.34	3.55
	(0.66)	(0.51)	(3.35)	(5.10)	(5.53)	(2.67)
Difference (p-value)	0.010	0.021	0.003	0.000	0.113	0.015
Unrelated successions						
Inside successors	1.11	0.63	0.08	9.36**	-3.42	-0.58
	(0.56)	(0.41)	(2.01)	(3.51)	(4.52)	(1.99)
Outside successors	0.41	-0.44	12.2***	27.2***	3.09	14.2***
	(0.66)	(0.49)	(3.67)	(5.30)	(6.64)	(3.00)
Difference (p-value)	0.412	0.086	0.004	0.005	0.405	0.000
Controls and fixed effects	yes	yes	yes	yes	yes	yes
Adjusted R-squared	0.31	0.31	0.86	0.71	0.06	0.85
Observations	31,923	31,216	30,554	31,216	27,555	26,405

2.7 Appendix Tables

Appendix Table B1: Definition of variables

This table documents the definitions of the variables used in the empirical analysis.

Variable	Definition
Firm accounting variables	
Capex to ppe	The ratio of capital expenditures to PPE (property, plant, and equipment) lagged by 1 year. Capex is reported in percent.
Capital expenditures	The change in fixed assets plus depreciation.
Cash ratio	Cash and cash equivalents to book value of assets.
Dividend payout ratio	Dividend-payments scaled by net income.
Employees growth rate	See Ln(Employees).
Firm age	The number of years since the firm's incorporation.
Firm size	The book value of firm's assets in millions of Norwegian Kroner (NOK).
Ln(Employees)	The natural logarithm of total number of employees.
Ln(Operating revenue)	The natural logarithm of firm's total operating revenue in millions of Norwegian Kroner (NOK).
Number of employees	Total number of employees.
Operating revenue growth rate	See Ln(Operating revenue).
OROA	The operating income to 2-year average book value of assets. OROA is reported in percent.
ROA	Net income to 2-year average book value of assets. ROA is reported in percent.
Sales to assets	Sales to 2-year average book value of assets. Sales to assets are reported in percent.
Total Assets	Book value of assets in millions of Norwegian Kroner (NOK).

Industry-adjusted variables are calculated as a difference between the value of the variable and the average of its two-digit industry benchmark in the observation year.

Industry classification is based on two-digit NACE (European industry classification system) codes.

All accounting variables are winsorized at the 5 and 95 percent level.

Other firm variables

Family firm	A dummy variable that equals 1 if the controlling family holds the ultimate stake of 33.4% or more in 2 years before and 2 years after succession, and 0 otherwise. Family is a group of owners who are related by blood or marriage up to the second degree of kinship, except we do not include siblings-in-law.
Family succession	A dummy variable that equals 1 if the successor is a member of the firm's controlling family, and 0 otherwise.
Inside succession	A dummy variable that equals 1 if the successor had a formal role as an employee or a board member four years prior to taking over as CEO, and 0 otherwise.
Number of family owners	Number of firm's owners that are members of the controlling family.
Number of owners	Number of firm's owners.
Outside succession	A dummy variable that equals 1 if the successor did not have a formal role as an employee or a board member four years prior to taking over as CEO, and 0 otherwise.
Ownership stake	The ultimate equity stake held by the individual measured in percentages.
Unrelated succession	A dummy variable that equals 1 if the successor is not a member of the firm's controlling family, and 0 otherwise.

Outgoing CEO's characteristics

Age of the oldest child	Age of the outgoing CEO's oldest child at succession.
Divorced senior	A dummy variable that equals 1 if the outgoing CEO has children with more than 1 partner, and 0 otherwise.
Male firstborn	A dummy variable that equals 1 if the outgoing CEO's firstborn child is male, and 0 otherwise.
Senior's age	The age of outgoing CEO at succession.
Senior has no sons	A dummy variable that equals 1 if the outgoing CEO has no sons, and 0 otherwise.
Senior sits on the board ex post	A dummy variable that equals 1 if the outgoing CEO sits on the board four years after the succession, and 0 otherwise.

Successor's characteristics

Eldest son	A dummy variable that equals 1 if the successor is the outgoing CEO's eldest son, and 0 otherwise.
No. of past outside employers	Number of employers the successor had up to four years prior to succession (family firm not included).
No. of years outside the family firm	Number of years the successor spend working outside the family firm prior to succession.
No. of years in the family firm before succession	Number of years the successor worked in the family firm prior to succession.
No. of years since last family firm employment	Number of years since outside successor's last family firm employment.
Other family employees	A dummy variable that equals 1 if there were other family members (in addition to the senior and the successor) working in the family firm four years prior to succession, and 0 otherwise.
Part-time last family firm employment	A dummy variable that equals 1 if the outside successor worked part-time at the last family firm employment, and 0 otherwise.
Past CEO position	A dummy variable that equals 1 if the successor was CEO of an AS/ASA firm four years prior to succession, and 0 otherwise.
Past employment in the family firm	A dummy variable that equals 1 if the successor worked in the family firm four years prior to succession or before that, and 0 otherwise.
Past manager-level position	A dummy variable that equals 1 if the successor had a management position four years prior to succession, and 0 otherwise.
Recruited from related firm	A dummy variable that equals 1 if the successor worked in the firm owned by the same family as the succession firm four years prior to succession, and 0 otherwise.
Successor's age	Successor's age at succession.
Successor's age at the last family firm employment	Outside successor's age at the last family firm employment.
Worked outside the family firm	A dummy variable that equals 1 if the successor worked outside the family firm four years prior to succession or before that, and 0 otherwise.

Appendix Table B2: Change in firm performance and policies around succession for inside and outside sons, other family and unrelated successors controlling for successor's past experiences

The table repeats the analysis from Table 2.11, additionally controlling for whether the successor was a CEO of an AS/ASA firm four years prior to succession, whether the senior sits on the board four years after the succession, and for the number of employers the successor had up to four years prior to succession. All regressions are run with firm and year-industry fixed effects. Looking at firms where the family of the outgoing CEO owns on average at least 33.4% in 2 years before and 2 years after succession, successions are classified into four categories: inside and outside parent-son successions, other family successions, and unrelated successions. Inside sons had a formal role as employees or board members in the firm four years prior to taking over as CEO, while outside sons did not. Definitions of variables are available in Appendix Table B1. Difference reports a p-value of Wald test comparing the coefficients for insider and outsider sons. Firm controls include firm age, and total assets, cash ration, and OROA (except in column 1), all lagged for 1 year. All variables are annual, and winsorized at the 5th and 95th percentiles. Firm clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: 2001-2015. CEO successions: 2005-2011.

	OROA	ROA	ln(Op. revenue)	Sales/ assets	Capex/ ppe	ln(Em- ployees)
Parent-son successions						
Inside successors	-0.86	-0.83*	-10.2***	-5.51	-3.27	-6.65***
	(0.52)	(0.37)	(2.11)	(3.27)	(4.05)	(1.79)
Outside successors	0.43	0.31	-1.99	9.97	6.36	-7.71
	(1.06)	(0.76)	(5.24)	(7.82)	(8.86)	(4.22)
Difference (p-value)	0.213	0.130	0.103	0.043	0.260	0.796
Past CEO position	-0.74	-0.20	0.25	5.49	-0.55	0.93
	(0.80)	(0.59)	(4.04)	(5.81)	(7.49)	(3.64)
Senior sits on the board ex post	0.15	0.15	6.92**	3.41	4.40	6.86***
	(0.50)	(0.36)	(2.32)	(3.54)	(3.86)	(1.92)
No. of past outside employers	0.14	0.11	2.78*	5.68***	2.40	3.94***
	(0.25)	(0.18)	(1.25)	(1.60)	(1.76)	(0.85)
Other family successions	yes	yes	yes	yes	yes	yes
Unrelated successions	yes	yes	yes	yes	yes	yes
Controls and fixed effects	yes	yes	yes	yes	yes	yes
Adjusted R-squared	0.31	0.31	0.86	0.71	0.06	0.85
Observations	31,868	31,166	30,504	31,166	27,506	26,367

Chapter 3   Determinants of family employment

IRENA KUSTEC, BI NORWEGIAN BUSINESS SCHOOL

Abstract

This paper empirically examines determinants of child's employment in the family firm. I show that children are more likely to work in older, larger, less risky firms, and that they decide to pursue employment within a firm even before pursuing higher education. I find that it is the seniors' daughters who are the least likely to be employed in family firms, while seniors' eldest sons are the most likely. Further tests suggest that the sizeable gender gap cannot be explained by the wide range of observables in the analysis. However, the primogeniture gap depends on the pool of potential successors and on the presence of outsiders, i.e. non-family members, within the firm. This suggests that the observed over-representation of the eldest sons among family employees does not result from them having superior skills compared to their siblings.

3.1 Introduction

The next generation's commitment and active involvement within the company are crucial for family firms' survival over generations (see, e.g., discussions in Handler 1994; Sharma and Irving 2005). The children of a family head (hereinafter referred to as the "senior") are often in close contact with the firm from early childhood (De Vries 1993), and they constitute the biggest group of firms' family employees (Parise, Leone, and Sommavilla 2018; Kustec 2020b). While about half of the senior's children are employed in the family firm at one point in their life, the other half decide to work elsewhere from the very beginning of their careers. In this paper I set to empirically examine which personal, familial and firm characteristics play a role in the selection of family employees. Knowing what role these characteristics play can help in our understanding of how a senior's children self-select into working for their family's firm, whether personal factors predetermine family employment, and how families choose the firm's successor.

I use register-based employment and family data over the entire Norwegian population to examine where each of the seniors' children work in 2014. For each child I can identify whether they work in the family firm or not, and I complement this data with the child's demographic, as well as family and firm characteristics. The final sample covers more than 36,000 unique individuals, of which about 21 percent work in the family firm.

I first show that the decision to work in the family firm depends on observable firm characteristics consistent with the predictions from the literature. Children are more likely to work in older, larger, low-risk firms (see, e.g., discussions in Stavrou 1999; Zellweger, Sieger, and Englisch 2012; Bøhren, Stacescu, Almli, and Søndergaard 2018).

I also show that children's personal characteristics that capture their experience and career aspirations play an important role. Results suggest that children decide for the future employment with their family's firm at an earlier age when they also decide about pursuing a higher education.

I next turn my focus on two personal factors determined at the child's birth: gender and birth order. Both of these factors have a long history of being associated with the choice of career and subsequent achievements (see, e.g., discussions in Bertrand 2011; Grinberg 2015; Black, Grönqvist, and Öckert 2018). Literature on family firms acknowledges that gender and birth order often predetermine who joins the family firm or takes over in the generational succession (see, e.g., Bennedsen, Nielsen, Pérez-González, and Wolfenzon 2007; Martinez Jimenez 2009; Yoo, Schenkel, and Kim 2014; Calabrò, Minichilli, Amore, and Brogi 2018; Kustec, Ostergaard, and Sasson 2020). It is, therefore, important to take into account gender and birth order as determinants of family employment.

I find a significant gender and primogeniture gap. Daughters are almost 11 percent less likely to work in the family firm than their oldest brother, and almost 8 percent less likely compared to other brothers. This means that the eldest sons are around 3 percent more likely to be employed in the family firm compared to their younger brothers. This primogeniture gap is narrowed when controlling for having brothers, which suggests that sons increase the pool of potential successors, thereby putting less pressure on the eldest son to join the family firm. Interestingly, results do not follow the same pattern when controlling for having sisters, which might indicate a preference for sons over daughters in family firms.

I proceed with an analysis that considers the effects of additional firm, senior, and child characteristics on the probability of family employment, and the observed primo-

geniture and gender gap. I first take into account the effects of a family sharing control in the firm with outsiders. I find that the primogeniture gap is diminished when the family shares control with minority shareholders or unrelated CEOs, while it is the latter that seems to constrain family employment the most. These results support the view that family's ultimate control may materialize in nepotism, i.e. favouring family members over non-family ones in terms of employment (Pollak 1985; Young, Peng, Ahlstrom, Bruton, and Jiang 2008).

I then turn to investigating senior's family background. I find that the probability of family employment is the highest among children whose parents are not divorced. I also show that this probability decreases when the senior is divorced, and is the lowest when the senior remarries and has additional children. These results support the previous observation that a larger pool of potential successors decreases the probability of family employment, and highlight the importance of good family relationships for children joining the family firm.

It is also important to take into account child's preferences and choices regarding family life as potential determinants of family employment. Children with past employment in the family firm often succeed the senior as CEO (Kustec et al. 2020), while preferences for a high-quality family life might determine whether an individual pursues executive career or not (see, e.g., discussions in Blau and Kahn 2017; Keloharju, Knüpfer, and Tåg 2019). Consistent with that view, I find that children who already have their own families are the least likely to work in their family's firm. The gender and primogeniture gaps are the smallest for this subsample of children; however, even controlling for variables capturing child's parental responsibilities does not completely diminish them.

Examining which of the senior's children work in the family firm, and whether they

are employed based on the gender and birth order rather than merit is important, as they can be one of the firm's crucial assets, as well as a liability. One of the advantages of family employment is loyalty to the firm which can align incentives and limit opportunistic behaviour (Pollak 1985; Ward 1987). Loyalty and having claims on the family resources can also explain why family employees seem to exert higher effort levels than other employees in the firm (Block, Goerke, Millán, and Román 2014; Bennedsen, Tsoutsoura, and Wolfenzon 2018). Children also constitute an important source of a family firm's idiosyncratic knowledge, which is often individual-specific and accessible only to close family members (De Vries 1993).

On the other hand, hiring senior's children might be detrimental to firm's value if their idiosyncratic knowledge of the firm does not outweigh their inferior quality compared to hired professionals (Burkart, Panunzi, and Shleifer 2003; Pérez-González 2006; Bennedsen et al. 2007; Kustec et al. 2020). The presence of nepotism may result in substantial agency costs, such as the lack of monitoring, and enlarged problems of adverse selection (Lubatkin, Schulze, Ling, and Dino 2005; Bennedsen, Pérez-González, and Wolfenzon 2010).[1] In addition, literature often suggests that a larger number of family members involved in a family business increases conflicts among them which can harm firm performance (Davis and Harveston 2001; Olson et al. 2003; Bertrand, Johnson, Samphantharak, and Schoar 2008).

My paper is related to several strands of literature. First, it contributes to the literature on family employees. Two recent studies document the presence of family members among a firm's employees, of which children constitute the largest group (Parise et al. 2018; Kustec 2020b). Despite this, little is known about which family members

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[1] For example, if family firms offer compensational and promotional opportunities to family members without regard to merit, family firms will not be considered a preferable employer for non-family employees and the best potential candidates will choose to work elsewhere.

contribute to a family firm's labour force, or what factors determine their employment. This paper aims to fill this gap.

My paper also relates to the literature on the position of women in family firms. Despite improving gender equality in our society, the stereotypical roles women assume are still apparent when examining the processes by which daughters join the family firm (see the discussion in Martinez Jimenez 2009). Dumas (1990, 1992) argues that women possess certain qualities that can be crucial to the success of a family firm, and that the overall preference for sons contributes to the under-use of resources that could be valuable for family firms. Anecdotal evidence suggests that even though the balance of sons and daughters involved with the firm has improved in the past decade, the imbalance is set to carry on into the next generation. This paper contributes to the above literature by challenging the tradition of preferring male children in family firms, and by identifying circumstances in which daughters face fewer barriers in joining the family business.

Since family successors are most often selected from within the family firm (Kustec et al. 2020), this paper also sheds some light on how families decide about who takes over the business after the senior steps down. Little attention has been given to the characteristics of the pool of potential family successors with the exception of prior literature on the gender specificity in the succession process, which has produced ambiguous results. Zellweger et al. (2012) find no significant difference in succession intentions between senior's sons and daughters, and Aldamiz-Echevarría, Idígoras, and Vicente-Molina (2017) find that the same opportunities are given to senior's children independently of their gender. The results of this paper are, however, consistent with previous evidence of discrimination in the succession process based on gender (see, e.g., Salganicoff 1990; Bennedsen et al. 2007; Kustec et al. 2020).

The paper proceeds as follows. I describe the data and potential determinants of family employment in Section 3.2, and discuss the results in Section 3.3. I conclude in Section 3.4.

3.2 Data and variables

3.2.1 Sample construction

I use several registry databases provided by Statistics Norway and the Norwegian register of companies (The *Brønnøysund Register*) that cover the entire population of private Norwegian limited liability firms, their owners, and their employees for the years 2006-2014. I link the databases through unique individual and firm identifiers.

My starting point is the population of Norwegian limited liability firms and their owners in the year 2006. I then restrict the sample to only family firms, i.e. to firms that are majority-owned (ultimate stake of 50% or more) by individuals related by blood or marriage to up to the second degree of kinship.[2] For each firm I identify a senior, i.e. a family member who is either a CEO, chair or majority owner. For identification reasons I keep only firms where the senior is a senior for only one firm. To ensure family's continued presence in the firm, I further restrict my sample only to firms that are owned by the same family from 2006 to 2014. Finally, I exclude non-operating firms, and firms in sectors that are either regulated, subsidized, or predominantly operating under public sector contracts.

I then use the family relationship database to identify all of the senior's children, and use a matched employee-employer database to identify their employers in 2014.[3]

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[2] I do not distinguish between share classes since multiple-class shares are rare in Norway (Ødegaard 2007).

[3] Both databases are maintained by Statistics Norway.

The main analysis is performed on the cross-sectional sample over senior's children in 2014. I exclude children younger than 18 since they are most likely still in education. Some basic characteristics of children in resulting sample are presented in Table 3.1. The sample consists of more than 42,000 children, 85% (about 36,500) of which are employed in either the family firm or elsewhere. Given my focus on the child's choice of employer, I exclude children who are not in paid employment during the sample year. The final sample consists of almost 36,500 unique individuals, of which about 7,600 (21%) work in their family's firm. All firm accounting variables used in the analyses are winsorized at the 5 percent level and adjusted for the consumer price index (CPI) using 2015 as a base year.

Table 3.1 shows how the sample children are distributed based on their age. The biggest group are children aged 26-35, i.e. children that are mostly done with their education and are in full-time employment. The last column of the table shows the percentage of working children that work in the family firm. The highest percentage is among the youngest children in the sample (18-25 years old). These are also the children that mostly work part-time (not reported) and are likely studying in higher education. As a family employee, one is often entitled to a certain degree of flexibility with respect to a working schedule, which can explain the higher percentage of children working in the family firm for this age group. Among working children aged 26-45 only about 18% work in their family's firm; however, this percentage increases up to more than 22% for children older than 46 years. This might suggest that children return to the family firm around the year of the senior's retirement.

3.2.2 Determinants of family employment

In this section I discuss the importance of the child's and firm's characteristics in determining family employment. The first set of factors that can affect a child's probability of working in the family firm are socio-demographic characteristics. As already briefly discussed in the previous section, the child's *age* may play an important role. Table 3.1 shows that children in various age groups have a different unconditional probabilities of working in their family's firm. In addition, children's age also captures the information about children's experience and career development. *Gender* is another potentially important determinant of family employment. Many daughters face obstacles ahead of joining the family business and many rather seek employment elsewhere (see, e.g., the discussion in Martinez Jimenez 2009). To control for the differences in children's *human capital*, education levels must be taken into account. The child's level and field of education might be important determinants, since they potentially capture children's intentions and opportunities outside the family firm.

Another potentially important determinant is a *type of employment contract* a child has. I control for whether a child is in part- or full-time employment for two reasons. First, many children younger than 26 work part-time while pursuing their education. Second, part-time employment offers a certain amount of flexibility and a better balance of personal and professional life which is, traditionally, more attractive to women than to men.

At the family firm level, family employment may depend on the characteristics of the senior or the firm itself. The *senior's age* is an important determinant since (1) older seniors have more adult working children, and (2) children might be more willing to join the family firm when the senior is close to retirement. Another determinant that

might be important is the *senior's gender*. Mothers tend to spend more time nurturing their children, and, while the gender gap in child caregiving is still present today, the gap was much larger 30-40 years ago (Kitterød 2012). Spending more time with children might contribute to stronger child-mother relationships, and make children rather work for their mothers than their fathers.

One must also take into account family firms' characteristics, such as *age*, *size*, *performance*, and *risk*. Children might prefer to work for larger family firms that have been under the family's control for longer (see, e.g., discussions in Stavrou 1999; Zellweger et al. 2012). Taking employment within the family firm, however, increases the undiversification risk of family members. This increase happens because not just the family's wealth, but also its labour income is dependent mainly on one source, the family firm. Children might, therefore, be more willing to work in their family's firm if the firm is doing well and has stable performance.

The *industry* in which the firm operates is another potentially important determinant of family employment for two reasons. First, family firm prevalence varies considerably across industries (Bøhren et al. 2018). And second, industry characteristics must be considered when children decide about their employment. For instance, some industries might be more male-dominated, which could affect the marginal effect of children's gender in my analyses.

Children's employment also depends on *firm's location*. Living in a large city may provide a child with access to networks and more employment opportunities outside the family firm. Similarly, firms located in a large city have a certain geographical advantages in terms of networks and hiring, and they can afford to rely on family employment to a lower degree.

3.3 Empirical analysis

3.3.1 Descriptive statistics

Table 3.2 shows summary statistics for potential determinants of family employment. Panel A captures personal traits, while panel B captures various firm characteristics that can affect a child's probability of working in the family firm.

As Table 3.1 already suggests, children working in their family firm and elsewhere differ with respect to their age - children working in their family firm are on average a year and a half younger. They are also more likely to be male. The whole final sample of senior's children consists of 52.2% sons and 47.8% daughters, while the percentage of sons is much higher in the subsample of children employed in the family firm (67.0%). The variable *Lives in same municipality* captures the child's place of residence relative to firm's location, and it equals 1 if a child lives in the same municipality as the family firm's headquarters.[4] As one would expect, children that live near their family firm are much more likely to work there as well. They are also more likely to be employed part-time. According to Statistics Norway, approximately 25% of the working population was employed part-time in 2014. This percentage is 30.6% in my overall sample, and it is even higher among children working in family firms.[5] Children working in the family firm are also less likely to be university educated. Table 3.2 shows that less than 23% of children employed in the family firm are university educated, while the corresponding ratio for children working elsewhere is more than twice as large.

Panel B of Table 3.2 reports on firm-level variables that can affect a child's proba-

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[4] A reason for not using a variable that captures the child's location independently of the firm's, is a large correlation between the two variables.

[5] The reason why the percentage of part-time employees in my sample is above the national average is that my sample on average captures younger participants in paid employment compared to the whole working population.

bility of working in the family firm. The difference in seniors' gender is insignificant. Nonetheless, it is important to include seniors' gender as a potential determinant in my analysis, since the female seniors in my sample have on average fewer children than male seniors.[6] The difference in seniors' ages is significant, though small (1.21 years). In line with predictions made in the previous section, family employment is more common in older and bigger firms. There is no difference in firm performance, though children choose to work in less risky family firms. Family employment is also less common in the five largest Norwegian cities.

All these differences reported in Table 3.2 must be taken into account in multivariate analysis of family employment determinants presented in the next section.

3.3.2 Regressions

Table 3.3 reports marginal effects from logit regressions including explanatory variables that are expected to affect family employment as described in Section 3.2.2. The child's educational specialization and firm's industry are included as fixed effects.

Baseline probability is logistic regression's intercept, and it captures the probability of working in the family firm for a reference group of children.[7] A baseline probability of 18.9 in column (1), therefore, implies that an average reference child whose family owns an average family firm has an 18.9% probability of working in this firm.

The marginal effect of child's gender is large and persistent. Sons are 8%-11% more

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[6] This observation might be a result of a more conservative gender role perspective from the 30-40 years ago when women were expected to take on more responsibility for nurturing and caregiving (Kitterød 2012).

[7] The reference group in column (1) are daughters aged 18-25 without university education who do not live in the same municipality as the family firm operates in, while the senior is their mother younger than 61. The reference group in column (5) are daughters aged 18-25 without university education who work full-time and do not live in the same municipality as the family firm operates in. The senior is their mother younger than 61, and the family firm is located outside the 5 largest cities in Norway.

likely to work in the family firm compared to their sisters (conditional on control variables). In column (5), where all explanatory variables are included in the regression, the marginal effect coefficient is 9.84. In other words, the gender gap in family employment is 9.84% when all explanatory variables are included.

Columns (1)-(4) suggest a U-shaped relationship between a child's age and their probability of working in the family firm. Negative marginal effects of child's age dummies indicate that children aged 18-25 are most likely to work in the family firm. The magnitude of these effects decreases when controlling for education, and diminishes when controlling for whether a child is in part- or full-time employment (column (5)). The development of this relationship indicates that the decision to work in the family firm is made early on when children are considering the pursuit of higher education. This is also supported by the result that the child's education level has a negative effect on their employment in the family firm, i.e. the more educated the child, the less likely they are to work in the family firm. This relationship is somehow expected since being less educated can put constraints on one's employment opportunities outside the family firm.

When it comes to senior's characteristics, Table 3.3 shows no marginal effect of the senior's gender. Results, on the other hand, show a positive marginal effect of older seniors. Since the retirement age in Norway is 67, my results indicate that children are more likely to work in the family firm when the senior retires.

I also find some effects of the family firm's characteristics on the child's employment choice. Firm's age and size have a positive marginal effect on the probability of employment in the family firm, while firm's risk has a negative effect. All these results are in line with the predictions described in Section 3.2.2. Interestingly, there is no effect of firm's performance or location.

Family structure and birth order

An interesting result from Table 3.3 is a large and persistent effect of gender on family employment. This result is in line with existing literature recognizing the preference for sons in family firms, especially the eldest sons (see, e.g., discussions in Martinez Jimenez 2009; and Calabrò et al. 2018). I, therefore, continue my investigation of family employment determinants by examining the effects of family structure and a child's birth order.

Column (1) repeats the analysis of column (5) from Table 3.3. Column (2) includes the dummy for the eldest son as an additional variable in the regression. Results show that sons are 7.78% more likely to be employed in the family firm than their sisters, and that the eldest sons are 3.01% more likely to work in the family firm compared to their brothers, and 10.8% *(7.78 + 3.01)* more likely compared to their sisters. This effect is also present for the firstborn children in column (5); however, since about half of all firstborn children are female, it is harder to separate the gender effect from the birth order effect.[8]

While having siblings decreases the overall probability of being employed in the family firm (not reported), results from columns (3) and (4) show that the drop comes mainly from having brothers. Specifically, children with brothers are almost 2% less likely to work in the family firm themselves (column (3)). Having brothers also decreases the marginal effect of being the eldest son by one third. Column (4), on the other hand, has an opposite effect on the primogeniture, i.e. the gap in the probability of working in the family firm between sons and eldest sons widens. In addition, column (4) shows that the presence of sisters does not significantly affect the probability of family

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[8] Since the results follow a similar pattern for both measures of primogeniture, I am restraining my further discussion and analyses only on the effect of being the eldest son.

employment.

All in all, it seems like only having more sons increases the pool of potential successors, which puts less pressure on the eldest son to join the family firm. These results might, therefore, indicate a preference for sons over daughters in family firms. However, one has to acknowledge that the observed primogeniture and gender differences can result from other firm, senior, and children characteristics and preferences that can influence family employment and are not taken into account in Tables 3.3 and 3.4. I try to identify the reasons for seemingly strong primogeniture and gender effects in next sections.

Sharing control

There are certain costs and benefits for controlling families if they do not share control in the firm with outsiders (see, e.g., the discussion in Bøhren et al. 2018). Some such benefits may materialize in nepotism, i.e. offering employment and promotions to family members without regard to merit (Pollak 1985; Young et al. 2008). It is, therefore, expected that sharing control will affect family employment. Table 3.5 reports results when the effects of sharing control are taken into account.

Column (1) repeats the analysis of column (2) from Table 3.4. Column (2) repeats the analysis of column (1) on a subsample of firms where the controlling family does not share control with outsiders.[9] Column (3) covers firms with either unrelated CEOs or minority shareholders, while columns (4) and (5) cover firms with unrelated CEOs and minority shareholders, respectively.

The first noticeable result is that the baseline probability of family employment is the lowest when the firm is run by a non-family CEO (column (4)). An average reference

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[9] I.e., the firm is 100% owned by the controlling family and run by a family CEO.

child in the subsample of column (4) has a 14.6% probability of being employed in the family firm, while this probability is around 16% in other subsamples.

The second noticeable property in Table 3.5 is that the gender and primogeniture effects differ considerably across subsamples. Results suggest that the significant primogeniture effect is only present in firms where the family does not share control with outsiders (column (2)). In these firms the eldest brothers are 3.43% more likely to be employed in the family firm than their younger brothers, and 11.0% *(7.55 + 3.43)* more likely than their sisters. On the other hand, when the family shares control, the primogeniture effect is insignificant, while the gender effect is contingent on who the outsiders in the firm are. For example, the biggest difference in the magnitude of the gender effect is in the presence of unrelated CEOs in column (4). In this subsample brothers are 5.45% more likely to work in the family firm compared to their sisters, which is a 30 percentage drop in the gender gap compared to column (1). In the presence of minority shareholders, on the other hand, the primogeniture effect seems to spill over to the gender effect. Column (5) reports that brothers are 10.6% more likely to work in the family firm than their sisters, which is about the same percentage as the combined effect of gender and primogeniture from the overall sample (column (1)).[10]

The overall impression from the results in Table 3.5 is that non-family members are somehow able to limit the senior's desire to hire children based on primogeniture, and thus push for more hiring based on skills and ability. It is the unrelated CEOs who poses the most power to affect the family employment as they, in addition to the primogeniture gap, also reduce the gender gap in family appointments. Minority shareholders, on the other hand, do restrict the employment gap between the eldest and the younger sons, however, this gap spills over completely into the gender gap.

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[10] The combined effect of primogeniture and gender gaps in column (1) is 10.8% *(7.78 + 3.01)*.

Senior's family background

In Table 3.6 I control for some of the seniors' characteristics that could potentially affect their view on primogeniture.

Column (1) repeats the analysis of column (2) from Table 3.4. Column (2) of Table 3.6 controls for the senior's birth order. Seniors might be more inclined to pass down the firm to the first son if those seniors are firstborn children themselves. The results presented in column (2) show that this is not the case. The primogeniture preference is similarly unaffected when controlling for the number of the senior's siblings (column (3)). The negative marginal effect of *No. of senior's siblings* suggests that the variable might capture the size of the pool from which family employees are selected.[11]

As seen in column (4), controlling for a senior's divorce affects the probability of family employment the most. Children of the divorced parents are less likely to work in the family firm compared to the children whose parents stay together. The drop in probability is even larger for children who have half-siblings (i.e., the senior remarries), which suggests that the child's probability of working in the family firm decreases as the pool of potential family employees increases.

I further explore the primogeniture and gender effects across subsamples of children based on their parent's divorce. The results are presented in Table 3.7.

Column (1) repeats the analysis of column (2) from Table 3.4. Column (2) repeats the analysis of column (1) on a subsample of family firms with non-divorced seniors, while columns (3) and (4) capture firms with divorced and re-married seniors, respec-

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[11] If a senior has several siblings, they are more likely to have several nieces and nephews who might be competing with the senior's children for the employment in the family firm. This competition lowers the senior's children's probability of working in the family firm, which is captured by the negative marginal effect of *No. of senior's siblings*.

tively.[12]

From the results in Table 3.4 it is clear that the children who are coming from intact nuclear families have the highest overall probability of working in the family firm. An average reference child in this subsample has a 17.7% probability of being employed in the family firm. The baseline probability is 14.1% for children with divorced parents (column (3)), and 10.3% for children with half siblings (column (4)). Two possible explanations for my results come to mind. First, the presence of half-siblings increases the pool of potential family employees, which can decrease a child's probability of working in the family firm. However, this explanation does not explain why the baseline probability also drops for children whose parents divorced, but the senior does not have any additional children with a new partner (column (3)). Another possible explanation takes into account family dynamics. Family relationships between the children and the senior are, arguably, the strongest in intact nuclear families (column (2)), which might suggest that strong family relationships positively contribute to the family employment.

The additional support for the family dynamics explanation of family employment is offered by the marginal effect of the senior's gender. The effect is insignificant for unbroken families, but becomes negative and significant for divorced seniors, i.e. children are less likely to work in the family firm if this means working for their father. Since most children stay with their mother after a separation or a divorce, the relationship they have with their father often suffers (Sætre 2004). The negative marginal effect of the senior's gender, therefore, suggest that good family relationships increase the probability of family employment.

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[12] Column (3) runs a regression over the subsample of children whose parents got a divorce but the senior never had additional children, while column (4) runs a regression over the subsample of seniors who divorced their first spouse and married again. Column (4), therefore, uses the subsample of children from the senior's first and the second marriage.

Table 3.4 also reveals some interesting patterns in the primogeniture and gender effects. In columns (2) and (3) the marginal effect of being the eldest son increases, however, the gender effect decreases by approximately the same percentage. In other words, the gap between the eldest and the younger brothers increases (from 3.01% to 3.93% in column (2) and to 3.33% in column (3)), while the gap between sisters and younger brothers decreases (from 7.78% to 6.96% in column (2) and to 7.66% in column (3)). The gap between the eldest brother and his sisters stays approximately the same in both columns.[13] However, as seen in column (4), this is not the case in the subsample of children with half siblings. In this subsample the effect of being the eldest son is completely diminished. Sons are still 10.6% more likely to work in the family firms than their sisters, but the eldest sons are not significantly more likely to be employed in the family firm than their brothers. These results, therefore, suggest that the senior has a certain preference for the children from the second marriage.

Child's parental responsibilities

The marginal effects of the senior's age in Table 3.3 indicate that children return to the family firm when the senior retires or is thinking of retiring. Perhaps only the children who at one point want to take over the family firm decide to work there before. As is often emphasized in entrepreneurial and managerial literature, preferences for a high-quality family life might determine whether an individual decides for executive career or not (see, e.g., discussions in Blau and Kahn 2017; Keloharju et al. 2019). I investigate whether parental responsibilities affect the probability of family employment and present the results in Table 3.8.

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[13] The gap between the eldest brother and his sisters is 10.8% *(7.78 + 3.01)* in column (1), 10.9% in column (2) and 11.0% in column (3).

Column (1) repeats the analysis of column (2) from Table 3.4. Column (2) repeats the analysis on a subsample of children who have no family of their own (i.e., children who are neither married (nor cohabitor) nor have offspring), while columns (3)-(6) capture children with families.

It is clear that the highest baseline probability of working in the family firm is among children without a family of their own (column (2)). An average reference child in this subsample has a 21.2% probability of being employed in the family firm, while this probability is 12.6% and lower for children with a family. Perhaps unsurprisingly, it is the daughters who seem to have a preference for family life. The percentage of daughters is larger in the subsamples of children with families compared to the whole sample, and it is the largest in the subsample of married children with offspring.

The gender gap is also the largest in column (2). Brothers are 9.46% more likely to be employed in the family firm compared to their sisters, which is almost 18 percent higher than the gender effect over the whole sample presented in column (1). The reason for such a high gender effect might be that this subsample captures those children who plan to create a family of their own in the near future. The observed gender gap might reflect the fact that in the few years after the first childbirth women prioritize work to a lesser extent than men (Keloharju et al. 2019).

Interestingly, the primogeniture effect is also the largest for the children in the first subsample. The eldest brothers are 4.17% more likely to be employed in the family firm compared to their brothers and 13.6% *(9.46 + 4.17)* compared to their sisters. Why the primogeniture effect would be so high in this subsample is puzzling. While there is a larger percentage of sons in this sample, the percentage of the eldest sons does not seem to be significantly higher than in the other subsamples. Another explanation could be that the eldest sons are different with respect to their preferences for competitive

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and risky environments; however, further analysis does not find support for this premise (results not reported).

As seen in column (3), children with their own families have the lowest baseline probability of family employment. The gender and primogeniture gaps are also diminished as compared to the whole sample. The eldest brothers are 1.98% more likely to work in the family firm than their brothers and 8.37% *(6.39 + 1.98)* more likely than their sisters. Controlling for partner and offspring characteristics in columns (4)-(6) shrinks the gender gap. The gender gap is 6.39% in column (3) and 4.73% in column (6) when both types of controls are taken into account. The primogeniture gap, on the other hand, seems to be just little affected by offspring characteristics, but it widens significantly when controlling for partner characteristics. The drop in the gender gap is, however, large enough to offset the increase in the primogeniture gap, so the combined effect of both of these gaps in column (6) is 7.92% *(4.73 + 3.19)*.

Overall, results in Table 3.8 suggest that taking into account children's preferences and choices regarding family life is important when examining the determinants of family employment. However, both the gender and the primogeniture gaps remain strongly significant, and including several control variables that capture children's personal characteristics does not completely diminish these two effects in this setting.

3.4   Conclusion

This paper uses rich data from Norway to empirically examine the determinants of family employment. Whether a senior's children work in the family firm or not depends on those children's personal and family, as well as firm-specific characteristics. Children are more likely to work in older, larger, and less risky firms, and it seems that they

decide for family employment even before deciding to pursue a higher education.

I also document that children's gender and birth order play an important role. The result that daughters are less likely to work in the family firm is insensitive to inclusion of various control variables, and it is in line with the previous literature that points to a preference for sons in family firms. I also show that the senior's eldest son is more likely to join the family firm than his younger brothers. This primogeniture gap is diminished in the presence of unrelated CEOs and minority shareholders, and when the senior is divorced and has children within the second marriage. This suggests that the primogeniture gap is not necessarily a result of the eldest son being more skilled than his siblings.

Since I do not observe individual's preferences and thoughts, it is difficult to adequately explain the observed gender and primogeniture gaps in my analysis. It would, therefore, be wrong for me to claim that the gaps result from controlling families having a bias towards sons, especially towards the eldest ones. However, my results support the notion that if the primogeniture is the main succession logic, other potential successors may have less motivation or opportunity to join the family business.

3.5 Tables

Table 3.1: Senior's children in 2014

This table shows children's characteristics in 2014 by child's age at that year. *Working children* are children who have part- or full-time employment. *Pct. of working children* is the number of working children divided by the number of children in that age group. *Children working in the family firm* are children who have part- or full-time employment in the family firm. *Pct. of children working in the family firm* is the number of children working in the family firm divided by the number of working children in that age group.

	All children		Working children		Children working in the family firm	
Child's age	Number	Share	Number	Pct.	Number	Pct. of working children
18-25	15,051	35.2	11,592	77.0	3,085	26.6
26-35	15,373	35.9	13,663	88.9	2,416	17.7
36-45	10,234	23.9	9,313	91.0	1,663	17.9
46 and older	2,109	4.93	1,898	90.0	425	22.4
Total	42,767	100	36,466		7,589	

Table 3.2: Descriptive statistics for potential determinants of family employment

This table shows the descriptive statistics for potential determinants of family employment. Panel A shows descriptive statistics for children's personal traits, while Panel B shows firm characteristics. *Age* is child's age in year 2014. *Son* is a dummy variable that equals 1 for sons and 0 for daughters. *Lives in same municipality* is a dummy variable that equals 1 if a child lives in the same municipality as the family firm is located in, and 0 otherwise. *Part-time employment* is a dummy variable that equals 1 if a child works part-time, and 0 otherwise. Educational variables show a child's highest education level. *Male senior* is a dummy variable that equals 1 for male and 0 for female seniors. *Senior's age* is senior's age in year 2014. *Firm age* is firm's age in year 2014. *Firm size* is firm's total assets in 2014. *Firm performance* is measured by ROA, while *Firm risk* is the standard deviation of sales divided by the mean sales over the past three years (2011-2013). *Firm location* is a dummy variable that equals 1 if a firm is located in one of the Norway's five largest cities, and 0 otherwise. Difference in means is calculated in a two-sample t-test, allowing for unequal variances between the two groups. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: working children older than 18 in year 2014.

	Children working in the family firm		Children working outside the family firm		Difference
	Mean	Std. Error	Mean	Std. Error	in means
Panel A: Individual characteristics					
Son	67.0	0.54	48.4	0.29	18.6***
Age	29.8	0.10	31.2	0.05	-1.49***
Lives in same municipality	75.7	0.49	54.1	0.29	21.6***
Part-time employment	38.0	0.56	28.6	0.27	9.40***
Education					
High school or below	77.3	0.48	51.1	0.29	26.2***
Bachelor degree	19.6	0.46	34.3	0.28	-14.7***
Master degree	3.02	0.20	14.0	0.20	-11.0***
PhD	0.04	0.02	0.67	0.05	-0.63***
Panel B: Firm characteristics					
Male senior	85.8	0.40	86.1	0.20	-0.31
Senior's age	58.5	0.09	59.7	0.04	-1.21***
Firm age	20.7	0.13	19.7	0.06	1.00***
Firm size	10.8	0.18	6.46	0.07	4.37***
Firm performance	0.07	0.00	0.07	0.00	0.00
Firm risk	0.15	0.00	0.20	0.00	-0.05***
Firm location	21.8	0.47	23.3	0.25	-1.48**
Observations	7,589		28,877		

Table 3.3: Determinants of family employment

This table shows the marginal effects from logit regressions over the final sample. The dependent variable is *Working in the family firm dummy*, which equals 1 if a child works in the family firm in year 2014, and 0 otherwise. *Baseline probability* captures the probability of a reference group. *Son* is a dummy variable that equals 1 for sons and 0 for daughters. *Male senior* is a dummy variable that equals 1 for male and 0 for female seniors. *Child's age* is child's age in year 2014. The reference group are children aged 18-25. *Senior's age* is senior's age in year 2014. The reference group are seniors younger than 61. *Lives in same municipality* is a dummy variable that equals 1 if a child lives in the same municipality as the family firm is located in, and 0 otherwise. *Part-time employment* is a dummy variable that equals 1 if a child works part-time, and 0 otherwise. Educational variables include *child's highest education level* and *educational specialization*. Family firm characteristics include industry dummies based on 2-digit industry code, *firm's age*, *firm's size* measured by total assets, *firm's performance* measured by ROA, *firm's risk* measured as the coefficient of variation for sales from 2011 to 2013, and *firm location* captured by a dummy variable that equals 1 if a firm is located in one of the Norway's five largest cities, and 0 otherwise. Family clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: working children older than 18 in year 2014.

	(1)	(2)	(3)	(4)	(5)
Baseline probability	18.9***	17.2***	17.8***	16.2***	15.9***
	(0.24)	(0.25)	(0.24)	(0.25)	(0.25)
Son	11.8***	8.27***	11.6***	8.40***	9.84***
	(0.43)	(0.46)	(0.42)	(0.46)	(0.47)
Male senior	0.37	0.23	-0.55	-0.55	-0.59
	(0.67)	(0.66)	(0.69)	(0.68)	(0.67)
Child's age in 2014					
26-35	-5.88***	-1.39*	-5.85***	-1.46**	0.97
	(0.57)	(0.57)	(0.57)	(0.56)	(0.56)
36-45	-4.68***	-1.80*	-5.40***	-2.16**	0.57
	(0.79)	(0.77)	(0.78)	(0.76)	(0.76)
46 and older	-0.85	-0.33	-3.67**	-2.02	0.70
	(1.42)	(1.31)	(1.32)	(1.25)	(1.28)
Senior's age in 2014					
61-65	-1.38*	0.21	-0.32	0.72	0.78
	(0.67)	(0.67)	(0.65)	(0.65)	(0.65)
66-70	-1.77*	0.33	0.39	1.68*	1.85*
	(0.82)	(0.82)	(0.83)	(0.82)	(0.82)
71 and older	0.02	2.44*	2.16	3.49**	3.61**
	(1.22)	(1.24)	(1.24)	(1.23)	(1.23)

Continued on next page

	(1)	(2)	(3)	(4)	(5)
Lives in same municipality	13.7***	11.7***	13.4***	11.5***	11.4***
	(0.49)	(0.48)	(0.48)	(0.48)	(0.47)
Part-time employment					7.82***
					(0.51)
Child's education					
Bachelor		-9.23***		-8.42***	-8.47***
		(0.65)		(0.65)	(0.64)
Master		-18.5***		-17.5***	-16.9***
		(0.62)		(0.64)	(0.66)
PhD		-23.1***		-22.1***	-21.9***
		(1.26)		(1.51)	(1.53)
Specialization dummies	No	Yes	No	Yes	Yes
Family firm characteristics					
Age			0.05*	0.07**	0.07**
			(0.02)	(0.02)	(0.02)
Size			0.35***	0.37***	0.37***
			(0.02)	(0.02)	(0.02)
Performance			1.75	2.04	1.87
			(1.37)	(1.33)	(1.33)
Risk			-15.4***	-14.6***	-14.8***
			(1.35)	(1.32)	(1.32)
Location			-0.79	-0.06	-0.08
			(0.56)	(0.55)	(0.55)
Industry dummies	No	No	Yes	Yes	Yes
Observations	36,466	36,431	36,002	35,967	35,967
Pseudo R^2	0.06	0.10	0.10	0.13	0.14

Table 3.4: Family structure and the probability of working in the family firm

This table shows the marginal effects from logit regressions over the final sample. The dependent variable is *Working in the family firm dummy*, which equals 1 if a child works in the family firm in year 2014, and 0 otherwise. *Baseline probability* captures the probability of a reference group. *Son* is a dummy variable that equals 1 for sons and 0 for daughters. *Eldest son* and *Firstborn child* are variables that capture primogeniture. *Eldest son* is a dummy variable that equals 1 if a child is the senior's first son, and 0 otherwise. *Firstborn child* is a dummy variable that equals 1 if a child is the senior's firstborn child, and 0 otherwise. *Brothers* is a dummy variable that equals 1 if a child has any brothers, and 0 otherwise. *Sisters* is a dummy variable that equals 1 if a child has any sisters, and 0 otherwise. All columns control for *child's* and *senior's gender and age* in 2014. Controls include *Lives in same municipality*, *Part-time employment*, educational and family firm controls from Table 3.3. Family clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: working children older than 18 in year 2014.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Baseline probability	15.9***	15.9***	15.9***	15.9***	15.9***	15.9***	15.9***
	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)
Son	9.84***	7.78***	8.46***	7.69***	9.83***	9.81***	9.83***
	(0.47)	(0.61)	(0.62)	(0.61)	(0.47)	(0.47)	(0.47)
Eldest son		3.01***	1.99***	3.16***			
		(0.53)	(0.57)	(0.54)			
Firstborn child					1.29**	0.95*	1.27**
					(0.41)	(0.41)	(0.41)
Brothers			-1.95***			-2.43***	
			(0.46)			(0.43)	
Sisters				-0.69			-0.13
				(0.44)			(0.44)
Child's age	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Senior's age and gender	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	35,967	35,967	35,967	35,967	35,967	35,967	35,967
Pseudo R^2	0.14	0.14	0.14	0.14	0.14	0.14	0.14
% of sons	*52.2*	*52.2*	*52.2*	*52.2*	*52.2*	*52.2*	*52.2*
% of eldest sons	*35.6*	*35.6*	*35.6*	*35.6*	*35.6*	*35.6*	*35.6*
% of firstborn children	*45.7*	*45.7*	*45.7*	*45.7*	*45.7*	*45.7*	*45.7*

Table 3.5: Shared control and the probability of working in the family firm

This table shows the marginal effects from logit regressions. The dependent variable is *Working in the family firm dummy*, which equals 1 if a child works in the family firm in year 2014, and 0 otherwise. *Son* is a dummy variable that equals 1 for sons and 0 for daughters. *Eldest son* is a dummy variable that equals 1 if a child is the senior's first son, and 0 otherwise. Column (1) shows the marginal effects from logit regressions over the final sample. Columns (2) ((3)-(5)) shows the marginal effects from logit regressions over the sub-sample of firms where family does not share control with outsiders (shares control with outsiders). Column (3) covers firms with either unrelated CEOs or minority shareholders, column (4) covers firms with unrelated CEOs, and column (5) covers firms with minority shareholders. All columns control for *child's* and *senior's gender and age* in 2014. Controls include *Lives in same municipality*, *Part-time employment*, educational and family firm controls from Table 3.3. Family clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: working children older than 18 in year 2014.

| | | | | Family shares control | |
| | All family firms | Family does not share control | | Unrelated CEO | Minority shereholders |
	(1)	(2)	(3)	(4)	(5)
Baseline probability	15.9***	15.9***	15.8***	14.6***	16.1***
	(0.25)	(0.29)	(0.46)	(0.62)	(0.57)
Son	7.78***	7.55***	8.56***	5.45***	10.6***
	(0.61)	(0.71)	(1.20)	(1.65)	(1.48)
Eldest son	3.01***	3.43***	1.85	2.15	1.15
	(0.53)	(0.62)	(1.03)	(1.44)	(1.26)
Child's age	Yes	Yes	Yes	Yes	Yes
Senior's age and gender	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	35,967	26,169	9,739	4,994	6,425
Pseudo R^2	0.14	0.15	0.13	0.13	0.13
% of sons	*52.2*	*52.7*	*51.1*	*50.4*	*51.4*
% of eldest sons	*35.6*	*35.8*	*35.1*	*34.2*	*35.3*

Table 3.6: Senior's family background and the probability of working in the family firm

This table shows the marginal effects from logit regressions over the final sample. The dependent variable is *Working in the family firm dummy*, which equals 1 if a child works in the family firm in year 2014, and 0 otherwise. *Baseline probability* captures the probability of a reference group. *Son* is a dummy variable that equals 1 for sons and 0 for daughters. *Eldest son* is a dummy variable that equals 1 if a child is the senior's first son, and 0 otherwise. *Firstborn senior* is a dummy variable that equals 1 if the senior is the firstborn child. *No. of senior's siblings* is the number of siblings senior has. *Divorce* is a dummy variable that equals 1 if senior divorces the first spouse and does not re-marry, and 0 otherwise. *Divorce and re-marriage* is a dummy variable that equals 1 if senior re-marries and has more children after the divorce, and 0 otherwise. *Male senior* is a dummy variable that equals 1 for male and 0 for female seniors. All columns control for *child's* and *senior's gender and age* in 2014. Controls include *Lives in same municipality*, *Part-time employment*, educational and family firm controls from Table 3.3. Family clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: working children older than 18 in year 2014.

	(1)	(2)	(3)	(4)
Baseline probability	15.9***	15.9***	15.9***	15.8***
	(0.25)	(0.25)	(0.25)	(0.25)
Son	7.78***	7.79***	7.82***	7.71***
	(0.61)	(0.61)	(0.61)	(0.61)
Eldest son	3.01***	3.00***	2.94***	3.01***
	(0.53)	(0.53)	(0.53)	(0.53)
Firstborn senior		0.72		
		(0.45)		
No. of senior's siblings			-0.56***	
			(0.15)	
Divorce				-4.01***
				(0.54)
Divorce and re-marriage				-6.59***
				(0.59)
Male senior	-0.62	-0.63	-0.63	-0.79
	(0.67)	(0.67)	(0.67)	(0.67)
Child's age	Yes	Yes	Yes	Yes
Senior's age and gender	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	35,967	35,967	35,967	35,967
Pseudo R^2	0.14	0.14	0.14	0.14

Table 3.7: Senior's divorce and the probability of working in the family firm

This table shows the marginal effects from logit regressions. The dependent variable is *Working in the family firm dummy*, which equals 1 if a child works in the family firm in year 2014, and 0 otherwise. *Baseline probability* captures the probability of a reference group. *Son* is a dummy variable that equals 1 for sons and 0 for daughters. *Eldest son* is a dummy variable that equals 1 if a child is the senior's first son, and 0 otherwise. *Male senior* is a dummy variable that equals 1 for male and 0 for female seniors. Column (1) shows the marginal effects from logit regressions over the final sample. Column (2) shows the marginal effects from logit regressions over the sub-sample of non-divorced seniors. Column (3) shows the marginal effects from logit regressions over the sub-sample of divorced seniors who did not re-marry. Column (4) shows the marginal effects from logit regressions over the sub-sample of divorced seniors who re-married and had more children with a new spouse. All columns control for *child's* and *senior's gender and age* in 2014. Controls include *Lives in same municipality*, *Part-time employment*, educational and family firm controls from Table 3.3. Family clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: working children older than 18 in year 2014.

	Whole sample	No divorce	Only divorce	Divorce and re-marriage
	(1)	(2)	(3)	(4)
Baseline probability	15.9***	17.7***	14.1***	10.3***
	(0.25)	(0.33)	(0.49)	(0.53)
Son	7.78***	6.96***	7.66***	10.6***
	(0.61)	(0.79)	(1.35)	(1.33)
Eldest son	3.01***	3.93***	3.33**	-0.86
	(0.53)	(0.69)	(1.13)	(1.23)
Male senior	-0.62	1.01	-2.95*	-4.41**
	(0.67)	(0.91)	(1.23)	(1.55)
Child's age	Yes	Yes	Yes	Yes
Senior's age and gender	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	35,967	23,035	7,778	5,117
Pseudo R^2	0.14	0.15	0.12	0.16
% of sons	*52.2*	*52.6*	*52.4*	*50.3*
% of eldest sons	*35.6*	*35.6*	*37.3*	*32.9*
% of male seniors	*86.1*	*87.1*	*81.7*	*87.8*

Table 3.8: Parental responsibilities and the probability of working in the family firm

This table shows the marginal effects from logit regressions. The dependent variable is *Working in the family firm dummy*, which equals 1 if a child works in the family firm in year 2014, and 0 otherwise. *Son* is a dummy variable that equals 1 for sons and 0 for daughters. *Eldest son* is a dummy variable that equals 1 if a child is the senior's first son, and 0 otherwise. Column (1) shows the marginal effects from logit regressions over the final sample. Column (2) shows the marginal effects from logit regressions over the sub-sample of children who are neither married (nor cohabitor) nor have offsprings of their own, while columns (3)-(6) show the marginal effects from logit regressions over the sub-sample of children who are either married (or cohabitor) or have offsprings. *No. of offsprings* is a number of offsprings a child has. *Average age* is an average age of the child's offsprings. *Age of the youngest offspring* is the age of child's youngest offspring. *Partner is university educated* is a dummy variable that equals 1 if a child's partner is university educated, and 0 otherwise. *Partner is employed* is a dummy variable that equals 1 if a child's partner is employed, and 0 otherwise. *Partner is CEO* is a dummy variable that equals 1 if a child's partner is a CEO, and 0 otherwise. All columns control for *child's* and *senior's gender and age* in 2014. Controls include *Lives in same municipality*, *Part-time employment*, educational and family firm controls from Table 3.3. Family clustered standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. Sample: working children older than 18 in year 2014.

	Whole sample	No family	Has a family			
	(1)	(2)	(3)	(4)	(5)	(6)
Baseline probability	15.9***	21.2***	12.6***	12.5***	11.8***	11.6***
	(0.25)	(0.41)	(0.30)	(0.34)	(0.33)	(0.38)
Son	7.78***	9.46***	6.39***	5.93***	5.37***	4.73***
	(0.61)	(0.99)	(0.77)	(0.90)	(0.89)	(1.04)
Eldest son	3.01***	4.17***	1.98**	1.90*	2.72***	3.19***
	(0.53)	(0.91)	(0.67)	(0.78)	(0.76)	(0.88)
No. of offsprings				-0.42		-0.72
				(0.47)		(0.53)
Average age				0.14		-0.20
				(0.24)		(0.27)
Age of the youngest offspring				-0.20		0.09
				(0.22)		(0.25)
Partner is university educated					-1.41*	-1.62*
					(0.58)	(0.68)
Partner is employed					1.10	1.93
					(0.91)	(1.10)
Partner is CEO					-2.53**	-2.51*
					(0.92)	(1.03)
Child's age	Yes	Yes	Yes	Yes	Yes	Yes
Senior's age and gender	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	35,967	13,958	22,009	16,659	17,363	13,169
Pseudo R^2	0.14	0.11	0.17	0.18	0.18	0.20
% of sons	*52.2*	*56.6*	*49.5*	*48.8*	*49.3*	*48.4*
% of eldest sons	*35.6*	*36.5*	*35.0*	*34.6*	*35.2*	*34.7*

Bibliography

Aldamiz-Echevarría, Covadonga, Idoia Idígoras, and María-Azucena Vicente-Molina. (2017). "Gender Issues Related to Choosing the Successor in the Family Business." *European Journal of Family Business*, 7 (1-2), 54-64.

Amit, Raphael, and Belén Villalonga. (2014). "Financial Performance of Family Firms." In Mattias Nordqvist, Leif Melin and Pramodita Sharma, (Ed.), *Handbook of Family Business*, (pp. 157-178). SAGE Publications.

Anderson, Ronald C, and David M Reeb. (2003). "Founding-Family Ownership and Firm Performance: Evidence from the S&P 500." *The Journal of Finance*, 58 (3), 1301-1328.

Atanasov, Vladimir A, Bernard S Black, and Conrad S Ciccotello. (2014). "Unbundling and Measuring Tunneling." *University of Illinois Law Review*, 1, 1697-1738.

Bandiera, Oriana, Renata Lemos, Andrea Prat, and Raffaella Sadun. (2017). "Managing the Family Firm: Evidence from CEOs at Work." *The Review of Financial Studies*, 31 (5), 1605-1653.

Barney, Jay. (1991). "Firm Resources and Sustained Competitive Advantage." *Journal of Management*, 17 (1), 99-120.

Barth, Erling, Trygve Gulbrandsen, and Pål Schønea. (2005). "Family Ownership and Productivity: The Role of Owner-Management." *Journal of Corporate Finance*, 11 (1), 107-127.

Bassanini, Andrea, Thomas Breda, Eve Caroli, and Antoine Rebérioux. (2013). "Working in Family Firms: Paid Less but More Secure? Evidence from French Matched Employer-Employee Data." *ILR Review*, 66 (2), 433-466.

Becker, Gary S. (1981). "Altruism in the Family and Selfishness in the Market Place." *Economica*, 48 (189), 1-15.

Bennedsen, Morten, Joseph PH Fan, Ming Jian, and Yin-Hua Yeh. (2015). "The Family Business Map: Framework, Selective Survey, and Evidence from Chinese Family Firm Succession." *Journal of Corporate Finance*, 33, 212-226.

Bennedsen, Morten, Kasper Meisner Nielsen, Francisco Pérez-González, and Daniel Wolfenzon. (2007). "Inside the Family Firm: The Role of Families in Succession Decisions and Performance." *The Quarterly Journal of Economics*, 122 (2), 647-691.

Bennedsen, Morten, Francisco Pérez-González, and Daniel Wolfenzon. (2010). "The Governance of Family Firms." In Kent H Baker and Ronald Anderson, (Ed.), *Corporate Governance: A Synthesis of Theory, Research, and Practice*, (pp. 371-390). Wiley.

Bennedsen, Morten, Margarita Tsoutsoura, and Daniel Wolfenzon. (2018). "Drivers of Effort: Evidence from Employee Absenteeism." *Journal of Financial Economics*, 133 (3), 658-684.

Bertrand, Marianne. (2011). "New Perspectives on Gender." In David Card and Orley Ashenfelter, (Ed.), *Handbook of Labor Economics, Volume 4b*, (pp. 1543-1590). Elsevier.

Bertrand, Marianne, Simon Johnson, Krislert Samphantharak, and Antoinette Schoar. (2008). "Mixing Family with Business: A Study of Thai Business Groups and the Families Behind Them." *Journal of Financial Economics*, 88 (3), 466-498.

Bertrand, Marianne, and Antoinette Schoar. (2003). "Managing with Style: The Effect of Managers on Firm Policies." *The Quarterly Journal of Economics*, 118 (4), 1169-1208.

Bertrand, Marianne, and Antoinette Schoar. (2006). "The Role of Family in Family Firms." *The Journal of Economic Perspectives*, 20 (2), 73-96.

Berzins, Janis, Øyvind Bøhren, and Bogdan Stacescu. (2018). "The Under-Researched Family Firm: New Insights from Unique Norwegian Data." In Amir Sasson, (Ed.), *At the Forefront, Looking Ahead*, (pp. 99-118). Universitetsforlaget [Scandinavian University Press].

Berzins, Janis, Øyvind Bøhren, and Bogdan Stacescu. (2020). "The Family Firm Premium and Family Characteristics: Evidence from Population Data." *Working Paper, BI Norwegian Business School.*

Black, Sandra E, Erik Grönqvist, and Björn Öckert. (2018). "Born to Lead? The Effect of Birth Order on Noncognitive Abilities." *Review of Economics and Statistics*, 100 (2), 274-286.

Blau, Francine D, and Lawrence M Kahn. (2017). "The Gender Wage Gap: Extent, Trends, and Explanations." *Journal of Economic Literature*, 55 (3), 789-865.

Block, Jörn, Laszlo Goerke, José María Millán, and Concepción Román. (2014). "Family Employees and Absenteeism." *Economics Letters*, 123 (1), 94-99.

Block, Jörn, José María Millán, Concepción Román, and Haibo Zhou. (2015). "Job Satisfaction and Wages of Family Employees." *Entrepreneurship Theory and Practice*, 39 (2), 183-207.

Bloom, Nicholas, and John Van Reenen. (2007). "Measuring and Explaining Management Practices across Firms and Countries." *The Quarterly Journal of Economics*, 122 (4), 1351-1408.

Burkart, Mike, Fausto Panunzi, and Andrei Shleifer. (2003). "Family Firms." *The Journal of Finance*, 58 (5), 2167-2201.

Bøhren, Øyvind, Bogdan Stacescu, Line F Almli, and Kathrine L Søndergaard. (2018). "When Does the Family Govern the Family Firm?". *Journal of Financial and Quantitative Analysis*, 54 (5), 1-71.

Breda, Thomas. (2018). "Working in Family Firms." *IZA World of Labor*, 434, 1-11.

Calabrò, Andrea, Alessandro Minichilli, Mario Daniele Amore, and Marina Brogi. (2018). "The Courage to Choose! Primogeniture and Leadership Succession in Family Firms." *Strategic Management Journal*, 39 (7), 2014-2035.

Combs, James G, Christopher R Penney, T Russell Crook, and Jeremy C Short. (2010). "The Impact of Family Representation on CEO Compensation." *Entrepreneurship Theory and Practice*, 34 (6), 1125-1144.

Cronqvist, Henrik, Angie Low, and Mattias Nilsson. (2009). "Persistence in Firm Policies, Firm Origin, and Corporate Culture: Evidence from Corporate Spin-Offs." *Robert Day School Working Paper No. 2009-2.*

Currie, Janet, and Sheena McConnell. (1922). "Firm-Specific Determinants of the Real Wage." *The Review of Economics and Statistics*, 74 (2), 297-304.

Davis, Peter S, and Paula D Harveston. (2001). "The Phenomenon of Substantive Conflict in the Family Firm: A Cross-Generational Study." *Journal of Small Business Management*, 39 (1), 14-30.

De Visscher, François M, Drew S Mendoza, and John L Ward. (2011). "Financing Transitions: Managing Capital and Liquidity in the Family Business." Macmillan.

De Vries, Manfred FR Kets. (1993). "The Dynamics of Family Controlled Firms: The Good and the Bad News." *Organizational Dynamics*, 21 (3), 59-71.

Dumas, Colette A. (1990). "Preparing the New CEO: Managing the Father-Daughter Succession Process in Family Businesses." *Family Business Review*, 3 (2), 169-181.

Dumas, Colette A. (1992). "Integrating the Daughter into Family Business Management." *Entrepreneurship Theory and Practice*, 16 (4), 41-56.

Edmans, Alex, and Clifford G Holderness. (2017). "Blockholders: A Survey of Theory and Evidence." In Benjamin Hermalin and Michael Weisbach, (Ed.), *The Handbook of the Economics of Corporate Governance, Volume 1*, (pp. 541-636). Elsevier.

Ellul, Andrew, Marco Pagano, and Fabiano Schivardi. (2017). "Employment and Wage Insurance within Firms: Worldwide Evidence." *The Review of Financial Studies*, 31 (4), 1298-340.

Gómez-Mejía, Luis R, Martin Larraza-Kintana, and Marianna Makri. (2003). "The Determinants of Executive Compensation in Family-Controlled Public Corporations." *Academy of management journal*, 46 (2), 226-237.

Grinberg, Alice. (2015). "The Effect of Birth Order on Occupational Choice." *Atlantic Economic Journal*, 43 (4), 463-76.

Habbershon, Timothy G, and Mary L Williams. (1999). "A Resource-Based Framework for Assessing the Strategic Advantages of Family Firms." *Family Business Review*, 12 (1), 1-25.

Handler, Wendy C. (1994). "Succession in Family Business: A Review of the Research." *Family Business Review*, 7 (2), 133-157.

Imbens, Guido W. (2015). "Matching Methods in Practice: Three Examples." *Journal of Human Resources*, 50 (2), 373-419.

Johnson, Simon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer. (2000). "Tunneling." *American Economic Review*, 90 (2), 22-27.

Kandel, Eugene, and Edward P Lazear. (1992). "Peer Pressure and Partnerships." *Journal of Political Economy*, 100 (4), 801-817.

Keloharju, Matti, Samuli Knüpfer, and Joacim Tåg. (2019). "What Prevents Women from Reaching the Top?". *Harvard Business School Research Paper Series No. 16-092*.

Kitterød, Ragni Hege. (2012). "Fedre Deltar Mer I Husarbeid Og Omsorg [Fathers' Increased Participation in Housework and Care]." *Samfunnsspeilet*, 26 (4), 56-63.

Kustec, Irena. (2020a). "Determinants of family employment." *Working Paper, BI Norwegian Business School.*

Kustec, Irena. (2020b). "Nepotism in Family Firms? Evidence from Pay Differentials between Family and Non-Family Employees." *Working Paper, BI Norwegian Business School.*

Kustec, Irena, Charlotte Ostergaard, and Amir Sasson. (2020). "Underperformance in Family Successions: The Role of Outside Work Experience." *Working Paper, BI Norwegian Business School.*

Lubatkin, Michael H, William S Schulze, Yan Ling, and Richard N Dino. (2005). "The Effects of Parental Altruism on the Governance of Family-Managed Firms." *Journal of Organizational Behavior*, 26 (3), 313-330.

Martinez Jimenez, Rocio. (2009). "Research on Women in Family Firms: Current Status and Future Directions." *Family Business Review*, 22 (1), 53-64.

Olson, Patricia D, Virginia S Zuiker, Sharon M Danes, Kathryn Stafford, Ramona K.Z Heck, and Karen A Duncan. (2003). "The Impact of the Family and the Business on Family Business Sustainability." *Journal of Business Venturing*, 18 (5), 639-666.

Parise, Gianpaolo, Fabrizio Leone, and Carlo Sommavilla. (2018). "Family First? Nepotism and Corporate Investment." *BIS Working Papers No. 693.*

Pérez-González, Francisco. (2006). "Inherited Control and Firm Performance." *The American Economic Review*, 96 (5), 1559-1588.

Pollak, Robert A. (1985). "A Transaction Cost Approach to Families and Households." *Journal of Economic Literature*, 23 (2), 581-608.

Salganicoff, Matilde. (1990). "Women in Family Businesses: Challenges and Opportunities." *Family Business Review*, 3 (2), 125-137.

Sharma, Pramodita, and P Gregory Irving. (2005). "Four Bases of Family Business Successor Commitment: Antecedents and Consequences." *Entrepreneurship Theory and Practice*, 29 (1), 13-33.

Shleifer, Andrei, and Robert W Vishny. (1986). "Large Shareholders and Corporate Control." *The Journal of Political Economy*, 94 (3), 461-488.

Sraer, David, and David Thesmar. (2007). "Performance and Behavior of Family Firms: Evidence from the French Stock Market." *Journal of the European Economic Association*, 5 (4), 709-751.

Stavrou, Eleni T. (1999). "Succession in Family Businesses: Exploring the Effects of Demographic Factors on Offspring Intentions to Join and Take over the Business." *Journal of Small Business Management*, 37 (3), 43-61.

Sørensen, Peter Birch. (2005). "Neutral Taxation of Shareholder Income." *International Tax and Public Finance*, 12 (6), 777-801.

Sætre, Aina H. (2004). "Far Er Blitt Viktigere, Men Mor Er Fortsatt Viktigst [Dad's Importance has Increased, but Mom is still more Important]." *Samfunnsspeilet*, 18 (2), 38-46.

Tsoutsoura, Margarita. (2015). "The Effect of Succession Taxes on Family Firm Investment: Evidence from a Natural Experiment." *The Journal of Finance*, 70 (2), 649-688.

Van den Steen, Eric. (2010). "Culture Clash: The Costs and Benefits of Homogeneity." *Management Science*, 56 (10), 1718-1738.

Villalonga, Belén, and Raphael Amit. (2006). "How Do Family Ownership, Control and Management Affect Firm Value?". *Journal of Financial Economics*, 80 (2), 385-417.

Villalonga, Belén, Raphael Amit, María-Andrea Trujillo, and Alexander Guzmán. (2015). "Governance of Family Firms." *Annual Review of Financial Economics*, 7, 635-654.

Ward, John L. (1987). "Keeping the Family Business Healthy: How to Plan for Continuing Growth, Profitability, and Family Leadership." Jossey-Bass.

Wernerfelt, Birger. (1984). "A Resource-Based View of the Firm." *Strategic Management Journal*, 5 (2), 171-180.

Wooldridge, Jeffrey M. (2010). "Econometric Analysis of Cross Section and Panel Data." MIT press.

Yoo, Sean Sehyun, Mark T Schenkel, and Jaemin Kim. (2014). "Examining the Impact of Inherited Succession Identity on Family Firm Performance." *Journal of Small Business Management*, 52 (2), 246-265.

Young, Michael N, Mike W Peng, David Ahlstrom, Garry D Bruton, and Yi Jiang. (2008). "Corporate Governance in Emerging Economies: A Review of the Principal-Principal Perspective." *Journal of Management Studies*, 45 (1), 196-220.

Zellweger, Thomas, Philipp Sieger, and Peter Englisch. (2012). "Coming Home or Breaking Free?: Career Choice Intentions of the Next Generation in Family Businesses." Ernst & Young.

Ødegaard, Bernt Arne. (2007). "Price Differences between Equity Classes. Corporate Control, Foreign Ownership or Liquidity?". *Journal of Banking & Finance*, 31 (12), 3621-3645.

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