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 family and non-family employees. 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. However, further analysis reveals this is not the case for all groups of employees. Because both controlling families and employees are not homogeneous groups with respect to the equity invested in the firm, the pay gap is highly contingent on individual's and family's ownership stakes. I show that the positive pay gap is only present for non-owner employees in firms where family owns a 100% of firm's equity. In these firms, family non-owner employees earn more than they would if employed elsewhere, while non-family employees earn less. Furthermore, I show that in firms with minority shareholders all non-owner employees earn approximately the same regardless of their family status, and that their salaries are similar to salaries of employees in widely-held firms. Family owners, on the other hand, always earn less than their non-family counterparts. This result persists when accounting for dividends suggesting family firms do not use dividend payments as a substitution for salary. Overall, results suggest that families compensate their members without equity with above-market salaries, and that the presence of minority shareholders limits such behaviour.

Preliminary and incomplete:
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1 Introduction

Nepotism, i.e. the advancement of relatives on the basis of family 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's performance (Pérez-González 2006; Bennedsen, Nielsen, Pérez-González, and Wolfenzon 2007).

Nepotism, therefore, suggests family employees are paid more for the same work as 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 the fixed salary of these employees is higher in firms with widespread family ties. 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 salaries of non-managerial employees in non-family and family firms, and find that the latter offer lower salaries in exchange for a 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 why family employees would be willing to accept lower salary 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 (Quinn 1977, Pollak 1985, Kandel and Lazear 1992).

In this paper I set out to find whether 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 family members derive utility not only from the 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. First, the ATE estimation takes into the account the differences in covariate distributions between family and non-family employees. When the two groups of employees differ substantially in their characteristics, OLS estimators will be biased (Imbens 2014). 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 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 profession. 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 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 is that they work more for which they are also compensated. As my outcome variable does not distinguish between

income from the regular salary and overtime, I address this issue by using the number of working hours an employee actually spent at work as an additional covariate.[1] I also divide my sample based on whether an employee works overtime or not. The overall result stays 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's employees, differ with regard to the equity they invest in the firm. Family firms with and without minority shareholders (hereafter, single-family and multiple-family firms, respectively) are two heterogeneous groups of firms, and one has to acknowledge the differences between them that can affect the pay gap. First, the pay gap might be smaller for multiple-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 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, not clear.

On the other hand, owners face some costs and enjoy some benefits from their investment in the firm, which can affect their salary. Because these costs and benefits differ for family and non-family employees, employee's 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 a better job security. Second, owners who

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

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, 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.

The ratio of single-family firms is disproportional to multiple-family firms; more than 77% of family firms in my sample 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 also 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-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 is coming 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 indicates that family firms do not use dividend payments as a substitution for salary. Additional analysis shows that family firms attract non-family employees by offering them equity and similar salary they would receive as employees in widely-held firms. Family owners, on the other hand, earn significantly less than they would if they were not working in their family's firm. These results suggest that non-pecuniary benefits from ownership are particularly strong for family employees.

Third, the only subgroup of family employees that earns more than their non-family counterparts are non-owner employees in single-family firms. In multiple-family firms, i.e., firms where minority shareholders are present, non-family and family employees without equity earn approximately the same. Further analysis shows that their salaries are also similar to what they would earn in a widely-held firm. In single-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-family firms. The most important covariate that affects the pay gap on a 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 than in bigger firms. In addition, I investigate a unique trade off in family firms, a trade off between firm's growth and family's liquidity needs. Because families are reluctant to share control, they might prefer internal financing during the times of investment growth (see, e.g., discussion in Villalongaet 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 firm's growth opportunities are high. This result is particularly strong in multiple-family firms as well, and it suggests that family members have a direct long-term interest in the family's income and welfare beyond their lifetimes, and that in return they are willing to accept lower salaries.

The paper connects to several strands of literature. First, it empirically examines family's nepotistic behaviour in terms of the pay gap between family and non-family em-

ployees. 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 (Gomez-Mejia, Larraza-Kintana, and Makri 2003) or a more flexible working schedule (Bandiera, Lemos, Prat, and Sadun 2017). Gomez-Mejia 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 by the firm. Although agency theory suggests family employees act as additional monitors, 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 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 salary levels of family firms' employees.

Finally, my paper relates to the literature that analyses 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 research methodology, the data set and summary statistics in Section 2. I show the statistical tests of my baseline model and the estimation with alternative ATE estimators in Section 3 and 4. I examine the interaction between ownership and employment in greater detail in Section 5, and perform some robustness checks in Section 6. I conclude in Section 7.

2 Data and methodology

This chapter specifies the baseline model in Section 2.1, describes the data in Sections 2.2 and 2.3, and reports summary statistics in Section 2.4.

2.1 The baseline model

For estimation of the average treatment effect (ATE) many researchers use the ordinary least square (OLS) regression methods. However, since OLS is not taking into the account the differences in the covariate distributions between the treatment and the control group, OLS estimates can be biased (Imbens 2014). In such settings, the ATE estimators are an attractive alternative to OLS estimators. There exist several ATE estimators that are either based on a model for the outcome variable, a model for treatment assignment, or a model based on matching. There is no definite way to select one of the ATE estimators since all of them require the same assumptions and should, therefore, produce similar results (Imbens 2014). My baseline model for estimating the ATE is a regression adjustment (RA) method, a method that models the relationship between the outcome and control variables (covariates). I discuss the reasons for using this estimator after the description of the method and its assumptions.

Let the Y_i denote the outcome of interest, in my case, the annual income from em-

ployment (salary) of employee i. An employee is either the member of employing firm's controlling family ($w_i = 1$) or not ($w_i = 0$). His salary arguably depends on the treatment of belonging to the controlling family, therefore $Y_i(1)$ denotes the salary of a family- and $Y_i(0)$ denotes the salary of a non-family employee. The challenge of estimating the pay gap 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, I create the counterfactual by estimating employee's average treatment effect (ATE) of belonging to the controlling family. RA model uses a regression model to predict potential outcomes adjusted for covariates and estimates the ATE in two steps. First, the RA runs two separate regressions for each treatment group:

$$\text{for family employees, } w_i = 1: \qquad Y_i(1) = \alpha_1 + \beta_1 + \gamma_1 X_i + e_{1i} \tag{1}$$

$$\text{for non-family employees, } w_i = 0: \qquad Y_i(0) = \alpha_0 + \gamma_0 X_i + e_{0i} \ , \tag{2}$$

where the outcome Y_i is individual i's salary, and X_i is a vector of observable covariates that are potentially related to the outcome. In the second step, the RA fits separate equations (1) and (2), and uses averages of the predicted outcomes over all individuals in the sample to estimate the counterfactual outcome means:

$$\text{for family employees, } w_i = 1: \qquad \hat{m_1}(X_i) = E[Y_1|X_i] \tag{3}$$

$$\text{for non-family employees, } w_i = 0: \qquad \hat{m_0}(X_i) = E[Y_0|X_i] \ . \tag{4}$$

Taking into account individuals' characteristics X_i, $\hat{m_1}(X_i)$, therefore, estimates a potential salary of the individual with these characteristics if he is a family employee, while $\hat{m_0}(X_i)$ estimates a potential salary he receives as a non-family employee. The key step in the RA method is creating a counterfactual with the computation of fitted values for each outcome

for all individuals in the sample. For example, we only use observations of family employees to obtain $\hat{m}_1$, but we need $\hat{m}_1(X_i)$ for non-family employees as well.

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

$$ATE = N^{-1} \sum_{i=1}^{N} [\hat{m}_1(X_i) - \hat{m}_0(X_i)] \ , \tag{5}$$

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 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:

$$(Y_i(0), Y_i(1) \quad \perp \quad w_i \quad | \quad X_i \ . \tag{6}$$

Although ignorability is fundamentally untestable, it has intuitively a better chance of holding when X_i is richer. I discuss variables included in the vector X_i in the next section.

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

$$0 < P(w_i = 1|X_i) < 1 \ . \tag{7}$$

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, 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 find his non-family counterpart with similar characteristics X_i, and vice versa.

Under the two assumptions above, the ATE can be consistently estimated at the standard parametric $\sqrt{N}$ rate without conditioning on the distribution of outcome (Y_0, Y_1). In this setting is the ATE estimation, therefore, preferred to alternative models which can only be justified by relying on much stronger functional form assumptions (Wooldridge 2010, Imbens 2014).

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 return the result which is impractical for the analysis of extensive data. Second, RA method demands a weaker form of the overlap assumption since it is able to predict a counterfactual also in regions in which there is little data. RA estimators stay stable close to 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 propensity score in Section 4.1.

2.2 Outcome variable and covariates

My outcome variable in the ATE estimation is the individual's annual salary received from their main employer. It 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.

As discussed in the previous section, the ignorability assumption is more likely to be satisfied if the vector X_i contains as many relevant covariates as possible. Salary levels of employees likely reflect differences in their individual characteristics and characteristics of their employers, which have to 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 profession. 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 observed gender pay gap in the population. Contracted working hours capture whether an individual is full- or part-time employed. Tenure is measured by a dummy variable that equals 1 if 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 profession is his occupation as reported by Norwegian occupational code STYRK-08 (STYRK-08 is based on the ILO international standard classification of occupations).

At the firm level, I control for firms' size, firm performance, age, location, and industry in which the firm operates in. 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). Older firms have through the years developed a reputation and stability on the market and may consequently pay lower salaries, while younger firms have to attract employees by paying them more. Firm's location is measured as a dummy variable that equals 1 if firm is located in one of the Norway's five largest cities.[2] Firm's location is an important covariate since it controls for

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

the differences in supply and demand of the work force and potential employers in larger and smaller cities. Finally, I control for industry differences by using two-digit NACE industry codes.

All accounting variables are winsorized at the 5 percent level and adjusted for the consumer price index (CPI) using 2015 as a base year.

2.3 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 profession. To obtain individual's income I use the individual-level tax filing database obtained by the Norwegian Tax Administration. Tax filings contain information on the various sources of individual's annual income, e.g. income from employment and/or self-employment, property, dividend, and interest income.

To connect employees data with their employers' information I use the firm accounting database. This database consists of accounts for all private limited liability firms and is provided by the Norwegian register of companies, the *Brønnøysund Register*.[3] Quality of 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.[4] The failure of submitting firm accounts eventually results in deletion from the register of companies and

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

[4]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 operating revenues and total assets lower than 6 and 23 million Norwegian Kroner (NOK) respectively, and with less than 10 full-time employees.

forced liquidation.

For identifying family firms I use ownership database that measures the ultimate (direct plus indirect) ownership of all owners, and 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 family relationship database is from Statistics Norway. Finally, I use family relationship database to identify firm's employees who are members of the largest owner-family but not necessarily owners themselves.

To obtain my final sample, I add the following filters:

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 of housing prices in Norway over the period which is likely to affect financial result 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. I use ultimate stakes for calculation of the family's ownership. Since multiple-class shares are rare in Norway (Ødegaard 2007), I do not distinguish between share classes.

4. I include only family firms that employ 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 employees' compensation. Adding these firms in 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.

Insert Table 1 here

Table 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 the number of employees. As documented by Bøhren, Stacescu, Almli and Søndergaard (2018), family firms have a higher mean and median return on assets, measured by either with or without industry adjustment. This overview shows that family firms present important and successful economic entities, providing employment for more than 70% of 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 1. 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, e.g., Breda 2018 for a review).

Insert Table 2 here

Panel A of Table 2 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.[5] 13% of family firms, on the other hand, employ only family members. In order to examine the compensation of family firm employees

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

contingent on 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 their employees are related to the controlling family. These firms are neither the biggest nor the smallest among all family firms in the economy, however, they present a group of best-performing firms. To make a distinction that firm's employees have different levels of responsibilities, I further divide them into managers and workers based on their occupation. Managers is a group of non-CEO employees at the top-management level, and it consists of firm's senior officials, department and other non-CEO managers who have a responsibility of an oversight over employees at lower-hierarchy levels. As seen in Panel B of Table 2, there are more than 100,000 manager-year observations in my final sample. 38% of them are members of firm's controlling family. Workers is 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 them are members of the controlling family.

2.4 Summary statistics

I show the detailed summary statistics of firms and employees in my final sample in Tables 3 and 4.

Insert Table 3 here

Panel A of Table 3 reports the mean values of firms' accounting variables year by year. Since they are quite stable over time, I focus on the pooled sample in Panel B. An average firm in my sample has almost 10 million NOK (about 1 million EUR) in total assets, and employs more than 11 employees. Both measures proxy for firm's 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

quite large. On average a quarter of employees are family employees.[6] Family's average equity stake is 93.7%, while the median is 100%. About 77% of family firms in my sample are 100% owned by a single family. 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's 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 economic boom before the crisis in 2008.

Insert Table 4 here

Table 4 presents summary statistics for managers (Panel A) and workers (Panel B) employed in family firms in my sample. Family managers on average earn less than their non-family counterparts. A simple two-sample t-test shows 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. Both family managers and workers are on average older, more likely to be female and part-time employed, and are more likely to be employed in the firm for more than five consecutive years. An average family manager is less educated than a non-family one. Family workers are, on the other hand, on average more educated and take higher positions within the firm than their non-family peers. All these differences are likely to result in different salary levels across employees, which suggests that controlling for these variables is important in all my analyses.

[6]Note here that the minimum of 0.00 is a result of a rounding error. By design must the fraction of family employees 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 2.3).

3 Results of the baseline model

Estimations of the baseline model over the pooled sample and year by year are summarized in Tables 5 and 6, respectively.

Insert Table 5 here

Column (1) of Table 5 shows results of a simple two-sample t-test. Comparing the unconditional means of salaries between family and non-family employees results in a negative pay gap for managers, but a positive one for workers. However, further analysis is needed as these results do not account for possible time trends and observational differences between different types of firms and their employees. Results of the first attempt to account for these differences are reported in column (3) where ATE estimates are conditioned on year, and individual's contracted working hours, age, and gender. The pay gap decreases for managers, however, it remains significantly negative. Pay gap for workers, on the other hand, increases significantly. Column (4) repeats the analysis of column (3) but includes three more individual characteristics: tenure, education level, and profession. Controlling for profession turns out to be the most important for the group of workers.[7] In addition to year, individual's contracted working hours, age, and gender, column (5) controls for the following firm characteristics: size, performance, age, location, and industry. Results suggest that firm characteristics strongly affect the pay gap and must, therefore, 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 characteristics, family managers earn significantly more than their non-family counterparts.

Column (6) of Table 5 shows results of ATE estimation controlling for all individual and firm characteristics included in columns (2)-(5). Family manager earns about 38,000

[7]Note that profession makes no contribution to estimating the pay gap for managers since they all have the same profession classification as observed in Table 4.

NOK more per year, which is 6.7% more than his non-family counterpart.[8] Difference in salaries is in absolute and relative terms even bigger for workers. Family worker earns about 48,000 NOK more than a non-family one, which presents a 13.5 percentage difference. Overall, Table 5 documents a positive pay gap between family and non-family employees which suggests family's nepotistic behaviour, and it indicates how important it is to include relevant individual and firm covariates in the ATE estimation.

To make sure 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 indicates considerable overlap for both managers and workers, which indicates that the first-stage model satisfactory identifies the ATE.[9]

Insert Table 6 here

Table 6 repeats the analysis of column (6) of Table 5 year by year. The first noticeable result is that pay gap is quite stable over the years, however there a years that clearly stand out. Pay gap is much lower for managers in 2006 and 2014, and lower for workers in 2006 and 2009. I do not find any evidence that this is a result of any government policy reform or time trends.

Insert Table 7 here

One alternative explanation of family employees earning more is that they work more for which they are compensated. The outcome variable I use captures the overall income from work an employee receives from the employer, and it does not distinguish between income from regular salary and overtime. My data also contains limited information of

[8] To get the percentage difference in salaries, I divide the ATE estimator (37.77) by the counterfactual salary of non-family manager (562.49) which results in 6.7%.

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

hours an employee actually spends at work, which I use here as an additional covariate.[10] As seen in column (2) of Table 7, including the actual working hours as an additional covariate does not change the overall result. I further divide my sample of employees based on whether an employee works overtime or not. Results are presented in columns 3-5 in Table 7. Separate analysis shows that family employees spend significantly less time at work than their non-family counterparts (not reported), which means that the pay gap is not a result of family members working more.

4 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 2014).

4.1 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 the 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:

$$ATE = N^{-1} \sum_{i=1}^{N} \left(\frac{w_i Y_i}{\hat{p}(X_i)} - \frac{(1 - w_i) Y_i}{1 - \hat{p}(X_i)} \right) , \tag{8}$$

[10] 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.

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

Insert Table 8 here

Results of IPW estimation of ATE are reported in Table 8. In general, they support the conclusions made from Table 6, however, IPW ATEs are larger for managers but smaller for workers compared to the RA estimates.

4.2 Matching estimators

Both RA and IPW are regression methods and are by design not completely robust to the substantial differences between treated and control individuals (Imbens 2014). 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.

Insert Table 9 here

Table 9 presents the results from matching on covariates. Again, I include the standard individual and firm covariates. I require exact matches for individual's gender and tenure, and firm's location. Overall, results support the conclusions made from Table 6, however, the ATE is larger with matching.

Insert Table 10 here

Table 10 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 6 for managers, however, the ATE for workers is substantially lower.

Overall, the analyses from this section show that results from Table 6 are in general not sensitive to the choice of an ATE estimator. However, one has to acknowledge that the magnitude of the ATE estimator can vary a lot from method to method.

5 Interaction of ownership and employment

Family firms are not a homogeneous group of firms. They differ in many aspects, one of them is the presence of minority shareholders. As seen in Table 11, Panel A, about 77% of family firms are owned by a single family, while minority shareholders are present in only about 23% of the firms. Since a presence of minority shareholders can affect the pay gap between family and non-family employees, one has to take the ownership structure of a family firm into the 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-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 not sufficient, 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).

Insert Table 11 here

Firm employees differ with respect to the equity they invest in the firm as well. Owners 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. The ratio of owners among family employees is disproportional to non-family employees, which can be seen Table 11, Panel B. 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 (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 the 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, however, 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 12. Panel A presents the results for single-family firms, and Panel B for multiple-family firms. Results point to an interesting interaction of ownership and employment that has not been explored before.

Insert Table 12 here

Looking at the counterfactual salary that the ATE procedure estimates in columns (2) and (3), it is evident that owners earn significantly more than their non-owner counterparts. The result is present for single- and multiple-family firms, and is confirmed in a separate analysis in Appendix 2. The result that owners earn more supports the hypothesis that owners demand to be compensated for the under-diversification cost that they bear.

Panel B, column (3), shows that the small group of non-family owners is the group of employees within the firm that earns the most.[11] This interesting result also persists when accounting for dividends in column (4). Table 13, columns (3) and (4), show that non-family owners earn approximately the same than their counterparts in non-family firms.

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

This result points to the length family firms have to go to attract and keep talented non-family employees. Their future opportunities are somewhat limited when they work for the family firm and it seems that family firms compensate them for the lack of control and the opportunity costs they bear as family firm's employees. Since the pay gap between family and non-family owners is negative, Table 13 indicates that family owners working for their family's firm as they would earn elsewhere.[12] This result is also confirmed for family employees in single-owner family firms in column (4) of Table 14. These results suggest that non-pecuniary benefits from ownership are particularly strong for family employees.

Insert Table 13 here

Insert Table 14 here

Panel A, column (2), shows that the only subgroup of family employees that earns more than their non-family counterparts are non-owner employees in single-family firms. As seen in Panel B, column (2), there is no pay gap between non-owner employees in multiple-family firms. The fact that this pay gap is positive in single-family firms, but non-existent in multiple-family firms, suggests that family's nepotistic behaviour is somewhat restricted in the presence of minority shareholders. This is also confirmed by Tables 13 and 14. Non-owners employees in multiple-family firms earn approximately the same than they would earn if employed in a widely-held firm (Table 13, column (2)).[13] Non-owners employees in single-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 if they can, while such nepotistic behaviour is somewhat restricted in the presence of minority shareholders.

[12]The result is also confirmed by a separate analysis but not reported in Table 12 due to the lack of space.

[13]Since there is no pay gap between family and non-family non-owner employees, column (2) of Table 13 indicates that also family non-owners earn approximately the same as they would if employed in a widely-held firm.

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-family firms, while minority shareholders in multiple-family firms limit the favouritism of family members.

Insert Table 15 here

The most important covariate on a firm-level that affects the pay gap is firm's size. I divide the firms into terciles based on their size measured in total assets. I repeat the analysis on a subsample of firms from the first (Small firms) and the third tercile (Big firms) in Table 15, and find 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 substantially larger in absolute terms in larger single-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 significantly positive also in multiple-family firms (column (6)).

Insert Table 16 here

Table 16 repeats ATE estimations from Table 15 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 can afford to pay family employees higher salaries, however one could expect family employees forgo a fraction of their salaries when the firm is not doing so well. Results show the positive pay gap remains significant in bad performing

single-family firms. In good performing firms, the pay gap is significant for workers, but not managers. Interestingly, the positive pay gap for workers is also present for good performing multiple-family firms.

Insert Table 17 here

Family's control in single-family firms can also be restrained with a presence of a professional CEO. Table 17 divides firms based on the family status of the firm's CEO and repeats the ATE analysis on a subsample of non-owners. Columns (2) and (3) confirm the hypothesis that the family's nepotistic behaviour is restrained under a professional CEO. His presence significantly decreases the pay gap for managers, which becomes negative at a 10% significance level. However, the pay gap for workers decreases only for a small degree. Interestingly, the presence of professional CEO significantly increases the pay gap for family managers in multiple-family firms.

In addition, I investigate a unique trade off in family firms, a trade off between firm's growth, family's control, and family's liquidity. A successful balance between between the three is crucial for firm's long-term survival (de Visscher 2016). 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 the investment capital is lower. To test this hypothesis I repeat the analysis of Table 12 diving the sample of firms based on their industry's growth opportunities.

Insert Table 18 here

I measure growth opportunities of an industry by calculating an average three-year

percentage increase in sales of all firms in that industry.[14] I then divide firms in my sample into terciles based on this measure. Columns (2) and (5) of Table 18 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). Results show that the pay gap is lower in high-growth firms, suggesting that family members adjust their salary according to the need for the internal financing within the firm. This result is especially pronounced in multiple-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 firm's future growth.

7 Conclusion

This paper sets out to find whether family employees earn significantly more than their non-family counterparts. Nepotism, great job security, and non-pecuniary job characteristics can all affect salary levels of family employees. 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, in my baseline analysis, I do not take into the account that both controlling families and firm's employees are heterogeneous groups that differ with regard to the amount of equity they invest in the firm. Firms can either be a 100% owned by a single family, or there might be some other minority shareholders. Employees, on the other hand, can either own some shares in the firm or not. Because neither family's nor individual's ownership is not exogenous, and because there are imbalances between these subgroup sizes, I repeat my analysis on a various subgroups.

I estimate the ATE separately for single- and multiple-family firms, and separately for

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

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-family firms earns more than their counterparts. In these firms, family non-owners earn more than they would if employed elsewhere, while non-family employees earn less. In multiple-family firms, on the other hand, I show that non-family and family employees without equity earn approximately the same, and that their salaries are similar to what they would earn if employed in a widely-held firm. These results suggest that family's nepotistic behaviour is somewhat restricted in the presence of minority shareholders.

I also find that owners always earn significantly more than 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 receive as employees in a widely-held firms. Family owners, on the other hand, earn significantly less than they would if they were not working in their family's firm. These results suggest family owners receive some non-pecuniary benefits that non-family owners do not, and point to the length family firms have to 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 the 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 monitoring to the firm.

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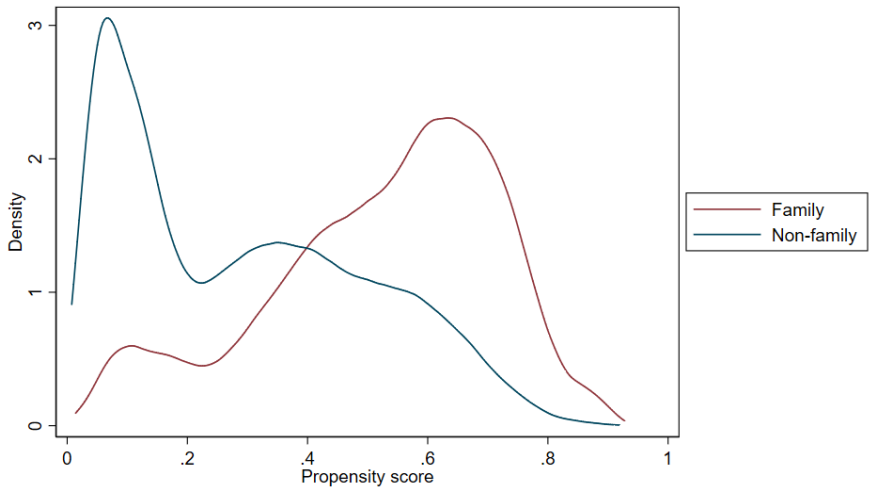
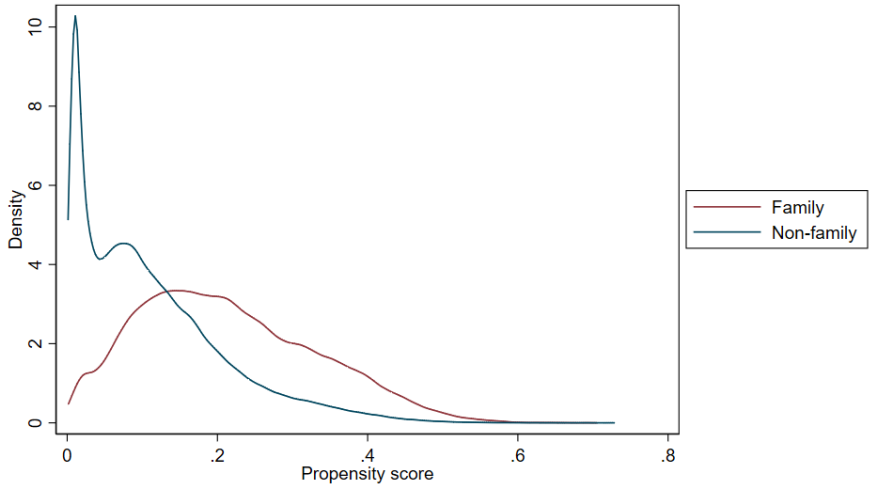
Figure 1

Density plots of the probability of being a family employee

Panel A: Managers



Panel B: Workers



This figure displays the estimated density of the predicted probabilities that an employee is a family member and the estimated density of the predicted probabilities that an employee is not a family member. Predicted probabilities are based on employees' contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5.

Table 1:
The prevalence of family firms and descriptive statistics of Norwegian private limited-liability firms

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 of Norwegian private firms

	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 (percent)	27.0	0.00	0.07	31.0	0.00	0.11
ROA (percent)	6.03	6.05	0.03	5.79	6.09	0.05
ROA, industry-adjusted (percent)	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
Number of firm-year observations		463,238			167,988	
Number of individual-year observations		6,601,755			2,605,125	

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. Total assets is book value of assets. Number of employees is the total number of individuals employed by the firm. Firm age is the number of years since the firm was founded. City is a dummy variable that equals 1 if the firm is located in one of the Norway's five largest cities. ROA is net income divided by total assets averaged over the past 2 years. Industry-adjusted ROA is the difference between ROA and the average of its two-digit NACE (European industry classification system) benchmark. Payroll expense is the sum of cash wages, salaries, and bonuses, including care and parental benefits firm pays to its employees during the calendar year. 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. Number of individual-year observations reports the number of individuals employed by family or non-family firms across all years.

Table 2:
Employment in family firms

Panel A: Family firm descriptive statistics (mean and median values)

	Total assets (million NOK)	Number of employees	Fraction of family employees (percent)	Family's own. stake (percent)	Firm age	City (percent)	ROA (percent)	Industry-adj. ROA (percent)	Number of firm-year observations
Only non-family employees	11.5	19.6	0.00	91.1	11.8	30.3	4.63	0.71	227,966
	3.14	*4.00*	*0.00*	*100.0*	*9.00*	*0.00*	*5.22*	*1.59*	
Family and non-family employees	9.86	11.7	0.27	93.7	14.4	22.3	7.28	3.20	176,172
	4.50	*7.00*	*0.25*	*100.0*	*12.0*	*0.00*	*6.86*	*3.09*	
Only family employees	3.40	1.26	1.00	97.4	11.3	28.3	7.56	2.34	59,100
	1.26	*1.00*	*1.00*	*100.0*	*9.00*	*0.00*	*6.47*	*1.72*	

Panel B: Family members representation in family firms with family and non-family employees

	Ratio of family employees	Number of individual-year observations
Managers	38 %	100,421
Workers	13 %	1,964,724
All non-CEO employees	14 %	2,065,145

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. 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. Family employee is firm's non-CEO employee that is also a member of firm's controlling family. Total assets is book value of assets. Number of employees is the total number of individuals employed by the firm (excluding CEOs). Fraction of family employees is number of family non-CEO employees divided by the number of all non-CEO employees employed by the firm. Family's ownership stake is the ultimate equity share held by firm's controlling family. Firm age is the number of years since the firm was founded. City is a dummy variable that equals 1 if the firm is located in one of the Norway's five largest cities. ROA is net income divided by total assets averaged over the past 2 years. Industry-adjusted ROA is the difference between ROA and the average of its two-digit NACE (European industry classification system) benchmark. 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.

Table 3:
Family firm descriptive statistics

Panel A: Mean values year by year

	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 (percent)	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Family's ownership stake (percent)	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 (percent)	22.7	22.1	22.0	22.1	22.2	22.2	22.6	22.5	22.5	22.3
ROA (percent)	8.64	10.3	7.11	6.11	5.56	6.70	7.11	6.70	7.49	7.28
Industry-adjusted ROA (percent)	3.17	3.82	3.92	3.42	2.74	2.98	2.76	2.86	3.14	3.20
Number of firm-year observations	18,176	19,652	19,441	19,324	19,742	19,797	19,689	20,050	20,301	176,172

Panel B: Distribution properties across all years

	Mean	Median	Std. Error	Minimum	Maximum	Skewness	Kurtosis
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	1745.0	22.0	847.3
Fraction of family employees (percent)	0.27	0.25	0.00	0.00	0.89	0.69	2.61
Family's ownership stake (percent)	93.7	100.0	0.03	50.1	100.0	-1.98	5.52
Firm age	14.4	12.0	0.03	0.00	155.0	2.13	12.5
City (percent)	22.3	0.00	0.10	0.00	100.0	1.33	2.77
ROA (percent)	7.28	6.86	0.04	-44.1	52.4	-0.32	4.67
Industry-adjusted ROA (percent)	3.20	3.09	0.04	-58.0	59.1	-0.37	4.74

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. Total assets is book value of assets. Number of employees is the total number of individuals employed by the firm (excluding CEOs). Fraction of family employees is number of family non-CEO employees divided by the number of all non-CEO employees employed by the firm. Family's ownership stake is the ultimate equity share held by firm's controlling family. Family employee is firm's non-CEO employee that is also a member of firm's controlling family. Firm age is the number of years since the firm was founded. City is a dummy variable that equals 1 if the firm is located in one of the Norway's five largest cities. ROA is net income divided by total assets averaged over the past 2 years. Industry-adjusted ROA is the difference between ROA and the average of its two-digit NACE (European industry classification system) benchmark. 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.

Table 4:
Family and non-family employees descriptive statistics

Panel A: Managers descriptive statistics

	Family managers			Non-family managers			Difference
	Mean	Median	Std. Error	Mean	Median	Std. Error	in means
Salary (thousand NOK)	533.4	517.5	1.18	581.0	550.2	0.83	-47.6***
Age	49.1	49.0	0.06	45.2	45.0	0.04	3.87***
Male (percent)	66.9	100.0	0.24	68.0	100.0	0.19	-1.19***
Full-time (percent)	89.7	100.0	0.15	95.9	100.0	0.08	-6.16***
Tenure 5 years (percent)	68.7	1.00	0.24	53.9	1.00	0.20	14.8***
Bachelor degree (percent)	26.3	0.00	0.22	29.5	0.00	0.18	-3.19***
Master degree (percent)	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
Number of individual-year observations.		38,617			61,804		

Panel B: Workers descriptive statistics

	Family workers			Non-family workers			Difference
	Mean	Median	Std. Error	Mean	Median	Std. Error	in means
Salary (thousand NOK)	339.2	338.1	0.45	334.7	346.4	0.15	4.49***
Age	39.5	38.0	0.03	36.5	35.0	0.01	2.98***
Male (percent)	51.2	100.0	0.10	63.8	100.0	0.04	-12.6***
Full-time (percent)	58.9	100.0	0.10	69.1	100.0	0.04	-10.2***
Tenure 5 years (percent)	49.0	0.00	0.10	32.7	0.00	0.04	16.3***
Bachelor degree (percent)	17.2	0.00	0.08	13.0	0.00	0.03	4.21***
Master degree (percent)	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***
Number of individual-year observations.		250,080			1,714,644		

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 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. Salary is the sum of cash wages, salaries, and bonuses, including care and parental benefits received during the calendar year. Age is the individual's age. Male is a dummy variable that equals 1 if individual is male. Full-time is a dummy variable that equals 1 if individual is employed by the firm full-time. Tenure 5 years is a dummy variable that equals 1 if individual is employed by the firm for more than 5 years. Bachelor degree is a dummy variable that equals 1 if an individual holds a bachelor degree. Master degree is a dummy variable that equals 1 if an individual holds a master degree. Occupation is individual's occupation as reported by Norwegian occupational code STYRK-08 (STYRK-08 is based on the ILO international standard classification of occupations). 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. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 5:
Estimation of the average treatment effect over the period 2006-2014

	Dependent variable: Salary					
	T-test	ATE regression adjustment (RA) estimation				
	(1)	(2)	(3)	(4)	(5)	(6)
Managers						
ATE	-47.65***	-48.09***	-33.88***	-37.21***	47.35***	37.77***
	(1.44)	(1.43)	(1.34)	(1.33)	(1.49)	(1.52)
Counterfactual salary of non-family managers	581.02***	581.20***	578.86***	580.18***	558.80***	562.49***
	(0.83)	(0.83)	(0.83)	(0.82)	(0.82)	(0.82)
Number of individual-year obs.	100,381	100,381	100,381	99,584	98,463	97,719
Workers						
ATE	4.49***	4.95***	33.10***	19.12***	61.46***	48.45***
	(0.48)	(0.48)	(0.38)	(0.43)	(0.56)	(0.64)
Counterfactual salary of non-family workers	334.69***	334.64***	331.64***	360.12***	330.63***	359.04***
	(0.15)	(0.15)	(0.14)	(0.15)	(0.14)	(0.15)
Number of individual-year obs.	1,963,422	1,963,422	1,963,422	1,666,611	1,921,539	1,632,795
Covariates						
Year	No	Yes	Yes	Yes	Yes	Yes
Contracted working hours	No	No	Yes	Yes	Yes	Yes
Individual's age and gender	No	No	Yes	Yes	Yes	Yes
Individual covariates	No	No	No	Yes	No	Yes
Firm covariates	No	No	No	No	Yes	Yes

This table reports results of the average treatment effect (ATE) estimation for family managers and workers employed in 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. 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). Column (1) reports the results of a two-sample t-test. Columns (2)-(6) report regression adjustment ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Individual covariates include tenure, education level, and profession. Tenure is measured by a dummy variable that equals 1 if individual is employed by the firm for more than 5 years. Individual's education level is measured as a categorical variable divided into five categories: secondary school or below, high school, bachelors, masters, and PhD. Occupation is individual's occupation as reported by Norwegian occupational code STYRK-08 (STYRK-08 is based on the ILO international standard classification of occupations). Firm covariates include firm's size, firm performance, age, location, and industry. Firm size is measured by firm's total assets, the book value of assets. Firm performance, ROA, is net income divided by total assets averaged over the past 2 years. Both, total assets and ROA, are winsorized at the 5 and 95 percent level. Firm age is the number of years since the firm was founded. Firm location is measured by a dummy variable that equals 1 if the firm is located in one of the Norway's five largest cities. Industry classification is based on two-digit NACE (European industry classification system) codes. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 6:
Estimation of the average treatment effect year by year

	Dependent variable: Salary; ATE RA estimation									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	Pooled
Managers										
ATE	28.22***	36.53***	38.19***	34.65***	35.52***	47.46***	44.50***	40.56***	31.45***	37.77***
	(4.73)	(4.53)	(4.50)	(4.60)	(4.65)	(4.43)	(4.43)	(4.60)	(4.47)	(1.52)
Counterfactual salary of non-family managers	513.18***	536.74***	547.59***	545.75***	554.14***	564.03***	583.70***	598.06***	605.52***	562.49***
	(2.31)	(2.34)	(2.39)	(2.46)	(2.44)	(2.44)	(2.53)	(2.48)	(2.50)	(0.82)
Number of individual-year obs.	9,713	10,483	10,532	10,526	10,952	11,218	11,078	11,554	11,663	97,719
Workers										
ATE	39.39***	45.68***	44.52***	40.69***	45.74***	53.81***	55.54***	54.33***	53.72***	48.45***
	(1.84)	(1.85)	(1.87)	(1.87)	(1.85)	(1.98)	(1.96)	(1.98)	(2.01)	(0.64)
Counterfactual salary of non-family workers	325.45***	344.05***	354.71***	354.12***	354.01***	362.85***	372.57***	377.71***	381.32***	359.04***
	(0.42)	(0.43)	(0.44)	(0.45)	(0.44)	(0.45)	(0.47)	(0.47)	(0.47)	(0.15)
Number of individual-year obs.	166,947	181,744	180,290	177,889	181,593	184,345	183,546	187,275	189,166	1,632,795
Covariates										
Year	No	No	No	No	No	No	No	No	No	Yes
Contracted working hours	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual's age and gender	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table reports results of the year by year average treatment effect (ATE) estimation for family managers and workers employed in family firms. 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. 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 the columns report regression adjustment ATE estimators, conditioning on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 7:
Estimation of the average treatment effect by inverse-probability weighting (IPW) year by year

	Dependent variable: Annual salary; IPW estimation									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	Pooled
Managers										
ATE	38.89***	43.19***	49.29***	41.80***	40.51***	52.07***	51.94***	47.55***	40.06***	46.03***
	(6.82)	(7.65)	(5.83)	(5.88)	(6.18)	(5.11)	(5.35)	(5.49)	(5.22)	(2.01)
Counterfactual salary	511.49***	535.76***	545.70***	543.38***	551.79***	559.86***	579.44***	592.44***	600.17***	558.86***
	(2.36)	(2.39)	(2.46)	(2.56)	(2.53)	(2.55)	(2.70)	(2.68)	(2.70)	(0.86)
Number of individual-year obs.	9,713	10,483	10,532	10,526	10,952	11,218	11,078	11,554	11,663	97,719
Workers										
ATE	22.41***	27.82***	25.91***	18.48***	25.69***	29.47***	33.83***	27.06***	30.78***	27.37***
	(4.73)	(4.12)	(5.61)	(5.45)	(5.61)	(6.13)	(4.65)	(6.03)	(4.97)	(1.77)
Counterfactual salary	324.59***	343.10***	353.87***	353.39***	353.29***	362.04***	371.66***	376.77***	380.42***	358.18***
	(0.42)	(0.43)	(0.45)	(0.45)	(0.45)	(0.45)	(0.47)	(0.47)	(0.48)	(0.15)
Number of individual-year obs.	166,947	181,744	180,290	177,889	181,593	184,345	183,546	187,275	189,166	1,632,795
Covariates										
Year	No	No	No	No	No	No	No	No	No	Yes
Contracted working hours	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual age and gender	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table reports results of the year by year average treatment effect (ATE) estimation by inverse-probability weighting (IPW) for family managers and workers employed in family firms. The propensity score for IPW estimation is estimated with a probit model. 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. 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 the columns report IPW ATE estimators, conditioning on year, contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 8:
Estimation of the average treatment effect by nearest-neighbour matching on covariates year by year

	Dependent variable: Annual salary; ATE nearest-neighbour matching on covariates									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	Pooled
Managers										
ATE	33.97***	52.26***	50.98***	44.19***	40.71***	57.36***	47.71***	48.96***	51.27***	47.74***
	(5.93)	(4.78)	(5.26)	(5.27)	(6.01)	(4.63)	(4.93)	(5.19)	(5.35)	(1.77)
Number of individual-year obs.	9,713	10,483	10,532	10,526	10,952	11,218	11,078	11,554	11,663	97,719
Workers										
ATE	46.12***	55.34***	52.27***	45.72***	50.28***	61.34***	62.11***	66.96***	67.86***	56.84***
	(2.37)	(2.26)	(3.13)	(2.30)	(2.48)	(2.47)	(2.39)	(2.58)	(2.63)	(0.84)
Number of individual-year obs.	166,947	181,744	180,290	177,889	181,593	184,345	183,546	187,275	189,166	1,632,795
Covariates										
Year	No	No	No	No	No	No	No	No	No	Yes
Contracted working hours	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual age and gender	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table reports results of the year by year average treatment effect (ATE) estimation by nearest-neighbour matching on covariates for family managers and workers employed in family firms. 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. 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 the columns report nearest-neighbour ATE estimators, matching individuals based on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. Exact matches are required for individual's gender and tenure, and firm's location. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 9:
Estimation of the average treatment effect by nearest-neighbour matching on propensity score year by year

	Dependent variable: Annual salary; ATE nearest-neighbour matching on propensity score									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	Pooled
Managers										
ATE	27.52***	44.73***	35.22***	35.57***	31.39***	40.02***	47.02***	43.86***	29.69***	39.23***
	(6.28)	(5.67)	(6.39)	(5.84)	(6.24)	(5.31)	(5.28)	(6.55)	(5.43)	(2.05)
Number of individual-year obs.	9,713	10,483	10,532	10,526	10,952	11,218	11,078	11,554	11,663	97,719
Workers										
ATE	18.64***	23.50***	23.45***	24.37***	24.16***	34.54***	37.48***	32.99***	31.42***	27.22***
	(2.97)	(3.33)	(3.63)	(3.21)	(3.34)	(3.02)	(3.25)	(3.35)	(3.17)	(1.10)
Number of individual-year obs.	166,947	181,744	180,290	177,889	181,593	184,345	183,546	187,275	189,166	1,632,795
Covariates										
Year	No	No	No	No	No	No	No	No	No	Yes
Contracted working hours	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual age and gender	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

This table reports results of the year by year average treatment effect (ATE) estimation by nearest-neighbour matching on propensity score for family managers and workers employed in family firms. The propensity score is estimated with a probit model. 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. 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 the columns report nearest-neighbour ATE estimators, matching individuals based on the propensity score. Propensity score is a scalar function of contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 10:

Estimation of the average treatment effect over the period 2006-2014, by employee's time spent at work

	Dependent variable: Salary; ATE RA estimation				
	All employees		Work as agreed	Work more	Work less
	(1)	(2)	(3)	(4)	(5)
Managers					
ATE	37.77***	37.04***	32.41***	42.84***	77.41***
	(1.52)	(1.51)	(1.66)	(4.95)	(5.21)
Counterfactual salary of non-family managers	562.49***	563.03***	589.56***	390.67***	488.50***
	(0.82)	(0.82)	(0.86)	(2.97)	(2.88)
Number of individual-year obs.	97719	97711	79755	8478	9478
Workers					
ATE	48.45***	49.50***	55.83***	33.38***	54.68***
	(0.64)	(0.64)	(0.88)	(0.92)	(1.69)
Counterfactual salary of non-family workers	359.04***	359.16***	417.33***	205.25***	326.44***
	(0.15)	(0.15)	(0.17)	(0.25)	(0.46)
Number of individual-year obs.	1,632,795	1,631,819	1,089,954	379,435	162,430
Covariates					
Year	Yes	Yes	Yes	Yes	Yes
Contracted working hours	Yes	Yes	Yes	Yes	Yes
Individual's age and gender	Yes	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes	Yes
Actual working hours	No	Yes	Yes	Yes	Yes

This table reports results of the average treatment effect (ATE) estimation for family managers and workers employed in family firms over the period 2006-2014, by their actual working hours spent at work. Columns 1 and 2 capture all employees of family firms, while column 3 captures employees who work as many hours as agreed to in their employment contract. Column 4 captures employees who work overtime, and column 5 employees who work less than agreed. 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. 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 the columns report regression adjustment ATE estimators, conditioning on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. In addition to standard covariates, columns 2-5 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.

Table 11:
Number of family firms and their employees divided by ownership characteristics

Panel A: Number of family firms

	All family firms	(percent)
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	(percent)	Family employees	(percent)	Non-family employees	(percent)
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

Panel A of this table shows the number of family firms in my sample, divided by the ownership stake controlling family has in a firm. 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. Single-family firms are family firms without minority shareholders, i.e., firms where controlling family owns a 100% of the firm. Multiple-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. Family employee is firm's non-CEO employee that is also a member of firm's controlling family. 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.

Table 12:

Estimation of the average treatment effect over the period 2006-2014, by family's and employees' ownership stake

Panel A: Single-family firms

	Dependent variable: Salary		
Group 1	F employees	F non-owner empl.	F owner empl.
	vs.	vs.	vs.
Group 2	NF employees	NF employees	NF employees
	(1)	(2)	(3)
Managers			
ATE	36.03***	16.80***	52.89***
	(1.80)	(3.79)	(2.15)
Counterfactual salary	534.15***	538.64***	543.35***
of *group 2* managers	(1.02)	(1.02)	(1.02)
Number of individual-year obs.	63,996	44,090	56,448
Number of *group 2* indi-year obs.	36,544	36,544	36,544
Workers			
ATE	48.93***	21.36***	117.05***
	(0.68)	(0.83)	(1.47)
Counterfactual salary	338.02***	335.03***	341.99***
of *group 2* workers	(0.18)	(0.18)	(0.18)
Number of individual-year obs.	1,130,560	1,073,217	1,029,011
Number of *group 2* indi-year obs.	971,690	971,690	971,690
Covariates			
Year	Yes	Yes	Yes
Contracted working hours	Yes	Yes	Yes
Individual's age and gender	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes

Table 12 - *Continued on next page*

Panel B: Multiple-family firms

	Dependent variable: Salary			Dependent variable: Salary + dividends
Group 1	F employees	F non-owner empl.	F owner empl.	F owner empl.
	vs.	vs.	vs.	vs.
Group 2	NF employees	NF non-owner empl.	NF owner empl.	NF owner empl.
	(1)	(2)	(3)	(4)
Managers				
ATE	48.87***	11.03	-6.84	-3.80
	(2.73)	(7.55)	(5.77)	(6.26)
Counterfactual salary	613.08***	602.29***	634.17***	670.07***
of *group 2* managers	(1.33)	(1.58)	(5.37)	(5.84)
Number of individual-year obs.	33,723	18,214	12,807	12,807
Number of *group 2* indi-year obs.	23,913	16,676	4,686	4,686
Workers				
ATE	49.83***	-1.16	-29.30***	-28.92***
	(1.45)	(1.95)	(1.92)	(2.08)
Counterfactual salary	405.46***	393.59***	555.56***	581.43***
of *group 2* workers	(0.28)	(0.30)	(1.40)	(1.56)
Number of individual-year obs.	502,235	414,544	47,564	47,564
Number of *group 2* indi-year obs.	459,093	394,115	25,865	25,865
Covariates				
Year	Yes	Yes	Yes	Yes
Contracted working hours	Yes	Yes	Yes	Yes
Individual's age and gender	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes
Individual's ownership stake	No	No	Yes	Yes

This table reports results of the average treatment effect (ATE) estimation for family managers and workers employed in family firms by employees' equity invested in the firm over the period 2006-2014. Panel A (B) captures single-family (multiple-family) firms, i.e., family firms without (with) minority shareholders. Column 1 captures all employees of family firms in the subsample, while column 2 captures non-owner employees. Panel A, column 3 compares family owner-employees with non-family non-owner employees. Panel B, columns 3 and 4 compare family and non-family owner-employees. 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. The outcome in columns 1, 2 and 3 is Salary, the sum of cash wages, salaries, and bonuses, including care and parental benefits received during the calendar year. The outcome in panel B, column 4 is salary plus dividends, the sum of cash wages, salaries, and bonuses, including care and parental benefits plus dividends received from the firm during the calendar year. Both outcomes are measured in thousands of Norwegian Kroner (NOK). All the columns report regression adjustment ATE estimators, conditioning on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. In addition to standard covariates, columns 3 and 4 in panel B also include individual's ownership stake. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 13:

Estimation of the average treatment effect over the period 2006-2014, comparing employees in multiple-family firms *(group 1)* with employees in non-family firms *(group 2)*

	Dependent variable: Salary			Dependent variable: Salary + dividends
Group 1	FF employees	NF non-owner empl.	NF owner empl.	NF owner empl.
	vs.	vs.	vs.	vs.
Group 2	NFF employees	NFF non-owner empl.	NFF owner empl.	NFF owner empl.
	(1)	(2)	(3)	(4)
Managers				
ATE	-12.13***	0.26	-6.83	-4.98
	(1.22)	(1.55)	(3.53)	(3.75)
Counterfactual salary of *group 2* managers	668.39***	597.22***	673.68***	693.01***
	(0.55)	(0.97)	(1.28)	(1.33)
Number of individual-year obs.	183,140	60,052	35,342	35,342
Number of *group 2* indi-year obs.	149,417	43,376	30,656	30,656
Workers				
ATE	-8.44***	1.92***	-3.90**	-0.95
	(0.27)	(0.28)	(1.35)	(1.46)
Counterfactual salary of *group 2* workers	444.23***	391.94***	597.04***	617.33***
	(0.14)	(0.18)	(0.49)	(0.52)
Number of individual-year obs.	2,628,209	1,383,018	207,013	207,013
Number of *group 2* indi-year obs.	2,125,974	988,903	181,148	181,148
Covariates				
Year	Yes	Yes	Yes	Yes
Contracted working hours	Yes	Yes	Yes	Yes
Individual's age and gender	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes
Individual's ownership stake	No	No	Yes	Yes

This table reports results of the average treatment effect (ATE) estimation for employees employed in multiple-family firms, by employees' equity invested in the firm over the period 2006-2014. Column 1 captures all employees employed by family and non-family firms, while column 2 (3 and 4) captures non-owner non-family employees (owner employees). Multiple-family firm is a firm in which the controlling family holds the ultimate stake of 50% or more, but less than 100%. 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 the columns report regression adjustment ATE estimators, conditioning on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. 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.

Table 14:

Estimation of the average treatment effect over the period 2006-2014, comparing employees in single-family firms *(group 1)* with employees in non-family firms *(group 2)*

	Dependent variable: Salary			
Group 1	FF employees	NF non-owner empl.	F non-owner empl.	F owner empl.
	vs.	vs.	vs.	vs.
Group 2	NFF employees	NFF non-owner empl.	NFF non-owner empl.	NFF owner empl.
	(1)	(2)	(3)	(4)
Managers				
ATE	-48.17***	-18.03***	2.11	-55.54***
	(1.02)	(1.19)	(4.30)	(2.46)
Counterfactual salary	647.45***	583.65***	575.65***	628.45***
of *group 2* managers	(0.56)	(0.93)	(1.00)	(1.61)
Number of individual-year obs.	213,413	79,919	50,923	50,561
Number of *group 2* indi-year obs.	149,417	43,376	43,376	30,656
Workers				
ATE	-26.90***	-10.98***	11.14***	-52.76***
	(0.21)	(0.20)	(1.12)	(1.32)
Counterfactual salary	418.63***	369.00***	383.32***	574.66***
of *group 2* workers	(0.14)	(0.17)	(0.19)	(0.53)
Number of individual-year obs.	3,256,534	1,960,582	1,090,441	238,480
Number of *group 2* indi-year obs.	2,125,974	988,903	988,903	181,148
Covariates				
Year	Yes	Yes	Yes	Yes
Contracted working hours	Yes	Yes	Yes	Yes
Individual's age and gender	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes
Individual's ownership stake	No	No	No	Yes

This table reports results of the average treatment effect (ATE) estimation for employees employed by single-family firms, by employees' equity invested in the firm over the period 2006-2014. Column 1 captures all employees employed by family and non-family firms, while columns 2 and 3 (4) capture non-owner employees (owner employees). Single-family firm is a firm in which the controlling family holds a 100% of equity. Family is a group of owners who are related by blood or marriage up to the second degree of kinship. The outcome in columns 1, 2 and 3 is Salary, the sum of cash wages, salaries, and bonuses, including care and parental benefits received during the calendar year. The outcome in column 4 is salary plus dividends, the sum of cash wages, salaries, and bonuses, including care and parental benefits plus dividends received from the firm during the calendar year. Both outcomes are measured in thousands of Norwegian Kroner (NOK). All the columns report regression adjustment ATE estimators, conditioning on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. In addition to standard covariates, columns 3 and 4 also include individual's ownership stake. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 15:

Estimation of the average treatment effect for non-owner family employees over the period 2006-2014, by firm size

	Dependent variable: Salary; ATE RA estimation					
	Single-family firms			Multiple-family firms		
	All firms	Big firms	Small firms	All firms	Big firms	Small firms
	(1)	(2)	(3)	(4)	(5)	(6)
Managers						
ATE	16.80***	21.45***	5.97	11.03	14.17	9.14
	(3.79)	(5.04)	(4.97)	(7.55)	(9.03)	(13.41)
Counterfactual salary of non-family managers	538.64***	575.94***	370.93***	602.29***	626.90***	352.48***
	(1.02)	(1.13)	(3.26)	(1.58)	(1.63)	(7.66)
Number of individual-year obs.	44,090	33,193	3,634	18,214	15,752	631
Workers						
ATE	21.36***	25.41***	18.07***	-1.16	0.74	11.02***
	(0.83)	(1.37)	(0.89)	(1.95)	(2.61)	(2.62)
Counterfactual salary of non-family workers	335.03***	371.28***	246.41***	393.59***	417.89***	262.68***
	(0.18)	(0.23)	(0.40)	(0.30)	(0.34)	(0.96)
Number of individual-year obs.	1,073,217	654,259	155,217	414,544	318,541	27,812
Covariates						
Year	Yes	Yes	Yes	Yes	Yes	Yes
Contracted working hours	Yes	Yes	Yes	Yes	Yes	Yes
Individual's age and gender	Yes	Yes	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes	Yes	Yes

This table reports results of the average treatment effect (ATE) estimation for family non-owner managers and workers employed in family firms by firm size over the period 2006-2014. Columns 1-3 (4-6) capture single-family (multiple-family) firms, i.e., family firms without (with) minority shareholders. I divide family firms into three terciles based on their size, measured by total assets. Columns 1 and 4 capture all all family firms, while columns 2 and 5 (3 and 6) capture firms that fall into the third (first) tercile by firm size. 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. 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 the columns report regression adjustment ATE estimators, conditioning on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 16:

Estimation of the average treatment effect for non-owner family employees over the period 2006-2014, by firm performance

	Dependent variable: Salary; ATE RA estimation					
	Single-family firms			Multiple-family firms		
	All firms	Good performers	Bad performers	All firms	Good performers	Bad performers
	(1)	(2)	(3)	(4)	(5)	(6)
Managers						
ATE	16.80***	-2.00	20.18***	11.03	13.59	12.32
	(3.79)	(7.90)	(5.59)	(7.55)	(13.19)	(12.64)
Counterfactual salary of non-family managers	538.64***	555.24***	511.85***	602.29***	601.72***	575.84***
	(1.02)	(2.04)	(1.75)	(1.58)	(3.10)	(2.91)
Number of individual-year obs.	44,090	11,924	14,285	18,214	4,909	5,412
Workers						
ATE	21.36***	23.87***	20.61***	-1.16	9.34**	-0.88
	(0.83)	(1.45)	(1.44)	(1.95)	(3.20)	(3.38)
Counterfactual salary of non-family workers	335.03***	341.75***	318.73***	393.59***	393.04***	368.31***
	(0.18)	(0.33)	(0.31)	(0.30)	(0.55)	(0.54)
Number of individual-year obs.	1,073,217	324,746	331,982	414,544	132,043	115,316
Covariates						
Year	Yes	Yes	Yes	Yes	Yes	Yes
Contracted working hours	Yes	Yes	Yes	Yes	Yes	Yes
Individual's age and gender	Yes	Yes	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes	Yes	Yes

This table reports results of the average treatment effect (ATE) estimation for family non-owner managers and workers employed in family firms by firm performance over the period 2006-2014. Columns 1-3 (4-6) capture single-family (multiple-family) firms, i.e., family firms without (with) minority shareholders. I divide family firms into three terciles based on their performance, measured by ROA. Columns 1 and 4 capture all all family firms, while columns 2 and 5 (3 and 6) capture firms that fall into the third (first) tercile by firm performance. 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. 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 the columns report regression adjustment ATE estimators, conditioning on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 17:

Estimation of the average treatment effect for non-owner family employees over the period 2006-2014, by CEO's family status

	Dependent variable: Salary; ATE RA estimation					
	Single-family firms			Multiple-family firms		
	All firms	Family CEO	Professional CEO	All firms	Family CEO	Professional CEO
	(1)	(2)	(3)	(4)	(5)	(6)
Managers						
ATE	16.80***	26.37***	-33.86*	11.03	7.80	31.06*
	(3.79)	(3.90)	(14.77)	(7.55)	(9.19)	(12.68)
Counterfactual salary of non-family managers	538.64***	521.85***	626.54***	602.29***	577.42***	637.34***
	(1.02)	(1.14)	(2.42)	(1.58)	(2.12)	(2.38)
Number of individual-year obs.	44,090	33,466	7,359	18,214	9,904	7,678
Workers						
ATE	21.36***	20.67***	18.57***	-1.16	0.42	-8.44
	(0.83)	(0.82)	(5.36)	(1.95)	(2.10)	(5.13)
Counterfactual salary of non-family workers	335.03***	331.57***	378.28***	393.59***	390.24***	406.00***
	(0.18)	(0.19)	(0.55)	(0.30)	(0.37)	(0.53)
Number of individual-year obs.	1,073,217	884,459	117,744	414,544	264,505	134,314
Covariates						
Year	Yes	Yes	Yes	Yes	Yes	Yes
Contracted working hours	Yes	Yes	Yes	Yes	Yes	Yes
Individual's age and gender	Yes	Yes	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes	Yes	Yes

This table reports results of the average treatment effect (ATE) estimation for family non-owner managers and workers employed in family firms by CEO's family status over the period 2006-2014. Columns 1-3 (4-6) capture single-family (multiple-family) firms, i.e., family firms without (with) minority shareholders. Columns 1 and 4 capture all all family firms, while columns 2 and 5 (3 and 6) capture firms with a family (non-family) CEO. 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. 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 the columns report regression adjustment ATE estimators, conditioning on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Table 18:

Estimation of the average treatment effect for non-owner family employees over the period 2006-2014, by firm's growth opportunities

	Dependent variable: Salary; ATE RA estimation					
	Single-family firms			Multiple-family firms		
	All firms	High growth	Low growth	All firms	High growth	Low growth
	(1)	(2)	(3)	(4)	(5)	(6)
Managers						
ATE	16.80***	-11.80	28.12***	11.03	-5.23	20.00*
	(3.79)	(7.04)	(4.55)	(7.55)	(12.51)	(9.45)
Counterfactual salary of non-family managers	538.64***	574.32***	524.55***	602.29***	625.89***	589.27***
	(1.02)	(1.91)	(1.19)	(1.58)	(2.68)	(1.94)
Number of individual-year obs.	44,090	12,575	31,498	18,214	6,523	11,671
Workers						
ATE	21.36***	13.58***	24.46***	-1.16	-9.69**	6.09*
	(0.83)	(1.54)	(1.00)	(1.95)	(3.12)	(2.52)
Counterfactual salary of non-family workers	335.03***	366.64***	320.72***	393.59***	412.14***	380.20***
	(0.18)	(0.32)	(0.21)	(0.30)	(0.46)	(0.39)
Number of individual-year obs.	1,073,217	333,938	738,580	414,544	173,668	240,647
Covariates						
Year	Yes	Yes	Yes	Yes	Yes	Yes
Contracted working hours	Yes	Yes	Yes	Yes	Yes	Yes
Individual's age and gender	Yes	Yes	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes	Yes	Yes

This table reports results of the average treatment effect (ATE) estimation for family non-owner managers and workers employed in family firms by firm's growth opportunities over the period 2006-2014. Columns 1-3 (4-6) capture single-family (multiple-family) firms, i.e., family firms without (with) minority shareholders. Columns 1 and 4 capture all 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. Firm's industry growth opportunities are measured by an average three-year percentage increase in sales of all firms in that industry. 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. 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 the columns report regression adjustment ATE estimators, conditioning on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Appendix 1

Estimation of pay differentials between family and non-family firms' employees over the period 2006-2014

	Dependent variable: Salary					
	T-test	ATE regression adjustment estimation				
	(1)	(2)	(3)	(4)	(5)	(6)
ATE	-41.76***	-42.26***	-15.80***	-7.49***	-19.00***	-11.22***
	(0.17)	(0.17)	(0.13)	(0.12)	(0.13)	(0.12)
Counterfactual salary of non-family firms' employees		439.93***	420.73***	439.00***	423.98***	442.63***
		(0.15)	(0.12)	(0.12)	(0.12)	(0.12)
Number of individual-year obs.	9,200,824	9,200,824	9,200,824	8,168,554	8,982,595	7,987,388
Covariates						
Year	No	Yes	Yes	Yes	Yes	Yes
Contracted working hours	No	No	Yes	Yes	Yes	Yes
Individual's age and gender	No	No	Yes	Yes	Yes	Yes
Individual covariates	No	No	No	Yes	No	Yes
Firm covariates	No	No	No	No	Yes	Yes

This table reports results of the average treatment effect estimation 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. Family employee (manager or worker) is firm's non-CEO employee that is also a member of firm's controlling family. 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). Column (1) reports the results of a two-sample t-test. Columns (2)-(6) report regression adjustment ATE estimators, conditioning on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Appendix 2

Estimation of the average treatment effect for owners
over the period 2006-2014

	Dependent variable: Salary			
	All firms	Single-owner family firms	Multiple-owner family firms	
Group 1	owners	F owner empl.	F owner empl.	NF owner empl.
	vs.	vs.	vs.	vs.
Group 2	non-owners	F non-owner empl.	F non-owner empl.	NFF non-owner empl.
	(1)	(2)	(3)	(4)
Managers				
ATE	67.82***	57.41***	74.40***	90.09***
	(1.48)	(2.85)	(7.07)	(3.22)
Counterfactual salary	550.63***	472.39***	534.38***	609.78***
of *group 2* managers	(0.81)	(2.59)	(6.83)	(1.53)
Number of individual-year obs.	95,017	27,452	9,659	21,362
Number of *group 2* indi-year obs.	62,304	7,547	1,538	16,676
Workers				
ATE	115.84***	74.02***	83.33***	126.74***
	(0.98)	(1.03)	(1.93)	(1.94)
Counterfactual salary	357.10***	345.47***	378.38***	401.98***
of *group 2* workers	(0.15)	(0.61)	(1.46)	(0.30)
Number of individual-year obs.	1,592,668	158,870	42,128	419,980
Number of *group 2* indi-year obs.	1,487,761	101,538	20,429	394,115
Covariates				
Year	Yes	Yes	Yes	Yes
Contracted working hours	Yes	Yes	Yes	Yes
Individual's age and gender	Yes	Yes	Yes	Yes
Individual and firm covariates	Yes	Yes	Yes	Yes

This table reports results of the average treatment effect (ATE) estimation for owners employed in family firms over the period 2006-2014. Column 1 captures all family and non-family employees employed by all family firms. Columns 2 captures family employees in single-family firms, i.e., family firms without minority shareholders. Column 3 (4) captures family (non-family) employees in multiple-family firms, i.e., family firms with minority shareholders. 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 the columns report regression adjustment ATE estimators, conditioning on contracted working hours, age, gender, and individual and firm covariates described in the Methodology section. Definition of covariates can be found in Table 5. Robust standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.