Drivers of Effort: Evidence from Employee Absenteeism *

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Abstract

We analyze determinants of employee effort. We use detailed information on absent spells of all employees in 2,600 firms in Denmark as a proxy for effort in specifications in which we control for important determinants of absenteeism like age, gender and health status. Using movers we decompose absent days into an individual component (e.g., motivation, work ethic) and a firm component (e.g., incentives, corporate culture). We find the firm component to be significant in explaning difference in absenteeism across firms. Moreover, we find the firm component to be correlated with family firm status with family firms causing a decrease in absenteeism. Finally, we analyze the mechanisms behind this effect.

Keywords: family firms; organizational structure; employee effort

JEL Classification:

1 Introduction

Employee effort is of utmost importance for firm productivity. Firms can affect employee effort with their policies and the type of environment they offer workers. Workers effort provision is affected when their compensation is tied to their own output (Lazear (1986); Lazear (2000)), when they compete with peers for a promotion (Lazear & Rosen (1981)), when they work in the presence of people they are socially tied to (Bandiera et al. (2010)), among others. An alternative approach to achieve a labor force that exert high effort is by selecting employees that intrinsic motivation and high work ethic.

In this paper we study the determinants of employee effort both at the individual level and at the firm level. First, at the individual level we analyze whether sources of effort differences arise from variation in individual characteristics or from differential corporate policies/environments. The answer to this question should inform firms' policies: should they devote most of their energy in recruiting the "right" type of employees or should they instead focus on designing an organizational structure that elicits effort of their employees. Second, at the firm level we analyze the differences across firms on average employee effort. In this part we account for the effect of selection of employees to firms and estimate the fraction of the difference in average effort driven by employee selection and firm policies/environment.

Effort is extremely difficult to measure. Indeed, it is the standard unobserved variable in principal-agent models. In this paper we use an administrative survey of firms that contains precise information on absent spells of all employees in 2,600 firms in Denmark. We use this measure as a proxy for effort in specifications in which we control for important determinants of absenteeism like age, gender and health status. In addition to being a proxy for effort, workplace absenteeism is important in its own right since it is the single most influential determinant of labor supply.

We use an event study methodology around the time of employees move firms to separate the contribution of individual and firm factors. Imagine an employee who moves from a firm with high average absence to a firm with low absence. If the main driver of the absence differential is firm specific (e.g. culture, monitoring, incentives), we would expect the mover's absence to drop immediately to a level close to that of the employees of the destination firm. If, on the contrary, the absence differential is driven primarily by individual characteristics (e.g., employee loyalty or work ethic), we would expect the mover's absence to remain constant after the move. We find that prior to a move, an employee absence is close to that of his co-workers at his origin firm. After the move, there is discontinuous jump in mover behavior with employee days absent moving 60% of the way towards the average days absent of his new co-workers at the destination firm.

We next study the determinants of days absent *across firms*. At the individual level, we decompose days absent into an individual worker effect and a firm effect following the methodology of Abowd et al. (1999) (henceforth AKM). This methodology identifies these two effects using employees who switch firms ("movers"). We aggregate these effects at the firm level and compare differences across firms. When we compare firms with above the median average days absent with firms that are below the median, we find that 53% of the difference is driven by firm policies/environment.

Since an significant part of the variation in employee behavior at the firm level is driven by firm policies/environment we turn to studying firm attributes that correlate with these firm fixed effects. We find that family firm status (i.e., whether the firm is controlled by a family) is strongly correlated with these firm fixed effect. Specifically, we find that family firms have a larger firm fixed effect than non-family firm suggesting that they provide incentives and/or an environment that promotes less worker absenteeism. Other variables such as size and profitability are not correlated with these firms effects.

Interestingly there is large body of academic and anecdotal evidence suggesting that family firm status affect employee behavior. The direction of the effect is, however, ambiguous. On the one hand, employees of family firms might exert less effort. Family firms might have a more difficult time motivating non-family employees as these workers might be concerned that nepotism, rather than meritocracy, would determine promotions. Non-family employees might also be discouraged if they end up having to spend time embroiled in family conflicts (Poza (2013)). On the other hand, family firm status could boost employee motivation. It is possible that family owners, due to their long-term horizons, have a comparative advantage at sustaining implicit labor contracts, which might be reciprocated by workers with cooperative behavior (Sraer & Thesmar (2007), Ellul et al. (2014)). It could also be that their large ownership stakes motivates family owners to monitor more or be tougher with labor (Mueller & Philippon (2011)), leading to higher effort provision. Our results are consistent with the second set of explanations.

Finally, we explore potential mechanisms that contribute to the lower absences in family firms. We present evidence that there are harsher consequences for shirking in family firms. Although we find that absences reduce the probability of a wage increase in all firms, this relation is stronger in family firms. Thus explicit incentives contribute to explain the lower absences in family firms. We also find that loyalty might be one of the potential channels that contributes to the lower absences in family firm. We find that employees that have family members who are current or past employees in the same firm have lower days absent. Furthermore this effect is more pronounced in family firms. Due to their longer time horizons, family owners may have a comparative advantage at sustaining implicit labor contracts, which may be reciprocated by workers with greater loyalty.

The paper relates to several strands of literature. First, we relate to literature that examines factors that affect effort provision in firms (i.e. Lazear (1986); Lazear (2000); Lazear & Rosen (1981);Bandiera et al. (2010). We provide evidence that firm ownership is another potential factor. Second, we contribute to a better understanding of the drivers of the performance differentials between family and non family firms (Perez-Gonzalez (2006); Bennedsen et al (2007); and Villalonga and Amit (2006)). Third, the paper contributes to a recent literature that explores the role of labor in family firms (Sraer & Thesmar (2007); Mueller & Philippon (2011); Ellul et al. (2014)). We contribute to this literature by showing the positive impact on family ownership on employee effort provision. Finally the paper contributes both to the academic literature and policy debate on how to reduce absenteeism in the workplace. Absenteeism is an economically important factor on its own. The European Commission estimated in 2011 that work related ill health can cost EU member states anything from 2.6% to 3.8% of their GDP (European Commission (2011)). This has lead to a large research on how to reduce absenteeism in firms where the focus to a large extent has been on incentives and specifically how to design and distribute the burden of sick leave pays on employees, employers and governments (see e.g. Scheil-Adlung & Sandner (2010)). There has also been intensive research into how to structure workplaces and empower managers to reduce absenteeism in firms (see Porter & Steers (1973) and Nicholson & Johns (1985)).

2 Data and Descriptive Statistics

2.1 Data sources

Survey of employees' absences. Our main data source is the survey of days absent collected by Statistics Denmark. Statistics Denmark collects absence data for all employees in the central government, local government, and for a selected sample of private firms. The survey of private firms covers firms with more than 10 employees: a representative sample of firms with 10 to 250 employees and all firms with more than 250 employees.

The data covers 2,600 unique firms from 2007 to 2012 (not all firms are included in every year).

The data reports each spell of absence for each employee in the sample firms. For each spell, the data contains the employee national identification number (CPR number), firm identifier, workplace identifier, start day, end day, and absence category. There are four absence categories: "Own Sickness", "Child Sickness", "Work Accident" and "Maternity/Paternity related absence". In the analysis below we focus on the category "Own Sickness" since the reporting of other categories is rare.[1]

Matched employer-employee data. We also use the matched employer-employee dataset from the "Integrated Database for Labour Market Research" (IDA database) at Statistics Denmark. In addition to the employer's identification number (CVR), the IDA dataset contains employee's demographic information such as age and gender and the employee's position in the organization. The position in the firm is based on the Danish occupational code that is defined based on the international standard classification of occupations (ISCO). We have access to this dataset for every year in the period 1995 - 2013.

Hospitalization data. Data on hospitalizations is from the National Patient Registry (NPR) at Statistics Denmark. This dataset records all public hospital interactions in the country and contains the individual national identification number, the number of hospitalization days per calendar year, and the primary medical diagnosis of patients based on the classification of diseases of the World Health Organization[2].

Firm financial information. Financial data are from *Experian*, which is a private data provider in Denmark. *Experian* provides us with a dataset that covers financial statements for all firms that are incorporated in Denmark. The data set includes all information that every limited (and public traded) firm is required to file to the Ministry of Economics and Business Affairs. Firms are required to disclose the value of total assets, as well as the value of their operating and net income. Even though most of the firms in *Experian* are privately held, external accountants audit firm financials in compliance with Danish corporate law. The *Experian* dataset includes a firm identifier (CVR number) which allow us to link the Absence data with the *Experian* data.

2.2 Days absent

In this section we describe our main outcome variable, the days absent variable from the surveys conducted by Statistics Denmark as well as the relevant regulatory and institutional environment.

First, we present suggestive evidence that the days absent variable contains valid information.

1. Our results do not change when we include the other absence categories as well.
2. http://www.who.int/classifications/icd/

To do this, in Figure 1a, we plot the number of days absent as a function of hospitalization days. Since these two variables come from different sources (absent days comes from a survey of firms and hospitalization days from administrative data collected from hospitals), it is reassuring to observe the high positive correlation between them. Most employees have zero hospitalization days in a year, however, among those who are hospitalized there is a significant variation in the length of their stay. The effect of hospitalization on days absent is large. For example, employees who spend more than 20 days in hospital are absent 2-3 months.

A different way to check the validity of the days absent variable is to observe the effect of hospitalization by age. In Figure 1b we split our sample into young (20 to 45 years old) and old (45 to 65 years old) employees but keep the focus on the relationship between hospitalization days and days absent. The figure shows that throughout the distribution of hospitalization days, older employees have longer absences relative to younger employees, perhaps due to a longer recovery period.

Second, we show preliminary evidence that there is a discretionary component in the number of days absent. To do this, we split the employees based on characteristics that we believe affect their willingness to take more days off work and observe whether these groups behave differently. For example, to the extent that there is a discretionary component in days absent, we would expect employees with more responsibility to return to work sooner. Figure 1c focuses on the relationship between hospitalization days and days absent for employees in different positions in the firm. Throughout the distribution of hospitalization days, employees with high position in the organization have shorter absences than employees in lower positions. The difference disappears for long hospitalization. This could be because our sample is very limited in this part of the distribution or because incentives play a small role for extremely sick employees.

Third, we note that variation in days absent across firms is unlikely to be the result of different firm vacation policies. In Denmark the number of employee vacation days is almost entirely determined by a combination of the law and collective bargaining. The law specifies that all employees have the right to 5 weeks (25 days) of holidays every year. Furthermore, collective bargaining between the central employer and employee organizations for specific industries can adjust this general vacation rule. However, importantly for our study, these adjustments are negotiated with the unions and not at the firm level.

Fourth, is also unlikely for days absent to vary across firms due to differential reporting. Indeed, the reimbursement policy of sickness benefits provide firms with incentives to report employees' absences as soon as they start. This is because the firm is required to pay sickness benefits the first 30 days with the Danish government paying after this initial period.

Finally, we present suggestive evidence that employees' absences matter for the firm. While some studies take this as a given, (Flabbi & Ichino (2001) state "workers who are more often and for longer periods absent are less productive for the firm...''), this is not necessarily the case. Although absences reduce contemporaneous labor provision, it is possible that employees compensate for the lost time by working more efficiently or by working overtime when they return to the workplace.

To perform the analysis we estimate the following model:

$$OROA_{jt} = \gamma_j + \mu_t + \eta absence_{jt} + x_{it}\theta + \zeta_{jt}\delta + e_{ijt} \ , \tag{1}$$

where $OROA_{jt}$ is each firm-year observation of operating return on assets. γ_j is firm fixed effect, μ_t is year fixed effect, and ζ_{jt} are firm controls. The variable $\mathrm{absence}_{\mathrm{jt}}$ is the mean days absent over all employees in firm j at time t.

The results are presented in Table A1. Columns 1, 2 and 3 presents results for firms with less than 100 employees, more than 100 employees, and above 300 employees, respectively. All Columns include firm controls and firm fixed effects. In Columns 2 and 3, the coefficient on average days absent, η, is negative and significant indicating a negative correlation between the average days absent and performance. We do not find a correlation for firms with less than 100 firms. Smaller firms though have noisier data on performance. These results are only preliminary evidence of the effect of days absent on performance, but they are not conclusive. It could well be that employees decide to take more days off in response to poor firm performance. Since estimating this relation is not the purpose of this paper, we leave this task for future work. We note however that in a different setting, Herrmann and Rockoff (2010) find large causal effect of teacher absence on productivity.

2.3 Descriptive Firm and Employee Statistics

Table 1 Columns 1 present summary statistics for the universe of Danish firms and Column 2 reports information for firms in our sample. Column 3 presents differences between our sample and the population of firms in Denmark.

To assess firm performance in the absence of stock price information, we use operating return on assets (OROA). Operating return on assets (OROA) is measured as the ratio of earnings before interest and taxes (EBIT) to the book value of total assets. OROA is a natural proxy for performance, as it compares the cash flows from operations to the value of assets, and is not distorted by capital structure decisions. The average OROA of limited liability firms in Denmark for the years 2007-2012 is 7.6%. Firms in our absence sample have lower OROA than those in the population and the difference is 2.7 percentage points, which is statistically significant at any conventional level. We find a similar pattern when we study Net Income/Assets as reported in the second row of Table 1. Row 3 reports firm size measured by asset size. Due to the survey selection criteria, the absence sample consists of larger firms. The significant size differences are confirmed in Row 4, which reports the natural logarithm of asset size, and in Row 5, which report the average number of employees. Row 6 reports the mean age of firms. For the population of firms, the average age is almost 23 years. Firms in the absence sample are 13 years older than the average private company in Denmark and this difference is very significant.

In sum, Table 1 confirms that the absence sample consists of larger and older firms than the average firm in Denmark.

Table 2 presents summary statistics for the employees in all Danish firms (Column 1) as well as for firms in our sample (Column 2). Column 3 presents differences between our sample and the population of firms in Denmark. Again we report the average over the sample years from 2007 to 2012.

Row 1 in Table 2 reports the wage level. The average wage level for all employees is 306,750 Danish Kroner which is approximately 41,229 EUR [3]. For the absence sample firms the average wage level is 425,184 DKR or 57,148 EUR. Thus the larger firms in the absence sample firms pay on average 147,087 DKR more per employee. The second row in Table 2 reports average employee age which for the population of firms is 38.52 years. Workers in the absence sample is on average 41.3 years and the difference of 3.3 years is statistically significant on a 5% level. The third row reports gender composition of the workforce. On average almost 2/3 of the employees are males. There are 5% more females in the absence sample.

The fourth row reports average hospitalization days for employees per year. Since most employees have zero hospitalization days, the average is low (0.25) in the population and in the absence sample (0.20). It is interesting to notice that the average hospitalization days is almost 5.2% lower in the absence sample than in the population a difference that is statistically significant. The last row reports average number of absence per year due to “Own Sickness” as reported in the absence data. The average employee is absent 7.6 days a year.

3. The average exchange rate in the period 2007 to 2012 was approximately 7.44 Danish Kroner to one Euro.

To sum up, the sample of firms we use in this study consist of a large sample of firms in Denmark that is biased towards larger firms. Because we focus on these larger firms it follows that our sample relative to the average of all incorporated firms consist of firms with higher assets, more employees and higher average salary.

3 Main results

3.1 Decomposition of employees' days absent

Our main goal is to study the determinants of employees' absenteeism. We assume that days absent can be described by the following model:

$$y_{ijt} = \alpha_i + \beta x_{it} + \gamma_j + \mu_t + e_{ijt}, \tag{2}$$

where each observation is a person i employed by firm j in year t. y is annual number of days absent. The terms $\alpha_i + \beta x_{it}$ capture the employee contribution to days absent. This component is the same regardless of the firm at which the individual works. It contains an employee fixed effect (α_i) that captures observable and unobservable time-invariant characteristics such as loyalty, motivation, etc. It also contains the effect of time-varying observable individual characteristics (βx_{it}) such as age and health status. The term γ_j is the firm fixed effect which captures the effect of firm policies (incentives, monitoring) or its environment (corporate culture) on the days absent. This effect is the assumed to be the same for all employees in the firm. μ_t is the year fixed effect.

The method we use to estimate this three-way fixed effect model is from Abowd et al. (1999) (AKM), which allows to identify three-way fixed effects of high dimension. In order to separately identify the firm fixed effects γ_j from employee fixed effect α_i in equation (2) the sample needs to include employees that switch firms. However, one of the advantages of the AKM method is that, as long as there is one mover in a firm, it is able to estimate the fixed effect of the non-movers as well. AKM provides an algorithm based on these moves that allows us to construct the set of firms and employees for which their fixed effect can be identified (the connected set). In our case, the largest connected set includes 98.7% of employees and 82.6% of firms. [4]

One potential concern with this setting is that the movement of employees is not random. For

4. Graham et al. (2012) and Ewens & Rhodes-Kropf (2015) offer more detail on the methodology, its strengths and its limitations

example, it could be that employees with a negative shock to their motivation move to firms with high absenteeism and vice versa. In this case the firm fixed effect would capture some of the effect of reduced motivation. In the next section we use the event study method to address this concern. In the years before the move we do not observe employee absence becoming more similar to the absence of the employees at the destination firm, which largely mitigates the concern.

Another potential concern is that there could be a ”matching” component in the move, i.e. when employees move they would always move to a firm in which they might enjoy more working so there would be a reduction in their absence. If there was a matching component we would expect the absenteeism increases for employees moving from firm j to firm j' to be different from absenteeism decreases for those who make the opposite transition. We test this potential concern using Figure 2. Figure 2 plots the change in days absent against the difference in absenteeism between the destination and origin firm. The relationship is symmetric above and below zero and linear and shows that the increase in days absent when employees move from j to j' is equal with the decrease in days absent when an employee moves from j' to j. Furthermore the slope of the line is 0.60 suggesting an average firm fixed effect of 0.60 (which is consistent with our decomposition results).[5].

3.2 From employee to firm level difference in days absent

Equation (2) allows us to assess the importance of employee characteristics vis-a-vis firm determinants in explaining individual behavior. However, our goal in this paper is to study drivers of differences *across firms*. While employee characteristics play a major role in explaining behavior at the individual level, this result might not translate to the firm level. If, for example, the distribution of employee characteristics is the similar across firms, the majority of the difference across firms would be explained by firm factors.

In this section we follow closely Finkelstein et al. (2014) in estimating the fraction of the difference in days absent across firms that is due to employees and the fraction that is due to firm policies/environment.

We let c_{it} be the individual contribution to days absent. Specifically:

$$c_{it} = \alpha_i + \beta x_{it} \tag{3}$$

5. If all variation in absenteeism was due to firm effects we would expect this plot to have slope of one, and if it was all due to employees the slope would be zero

We also define the average days absent for a firm, $\bar{y}_j$, by taking the average days absent of all its employee in a given year and then averaging across time. We define $\bar{c}_j$ analogously. Also, when we define $y_J = \frac{1}{\#J}\sum_{j\in J}\bar{y}_j$ to refer to the average across a group of firms J. We define $\bar{c}_J$ and γ_J analogously.

The difference in average absence between any two firms j and j' is the sum of the differences of the firm and the employee components:

$$\bar{y}_j - \bar{y}_{j'} = \gamma_j - \gamma_{j'} + \bar{c}_j - \bar{c}_{j'}. \tag{4}$$

Similarly, to compare the days absent in two different groups of firms, M and N, we note that

$$\bar{y}_M - \bar{y}_N = \gamma_M - \gamma_N + \bar{c}_M - \bar{c}_N. \tag{5}$$

Finally the share of difference in absence between groups of firms M and N attributable to the firm policies/environment is

$$S_{firm} = \frac{\gamma_M - \gamma_N}{\bar{y}_M - \bar{y}_N} \tag{6}$$

and the share attributable to employees is:

$$S_{firm} = \frac{\bar{c}_M - \bar{c}_N}{\bar{y}_M - \bar{y}_N} \tag{7}$$

Table 3 presents the results of these shares for different classification of firms. Panel A presents the results when the shares are constructed using parameter estimated of Equation (2) without including time varying employee characteristics. Column (1) decomposes the difference in average absence between above-median and below median firms. The overall difference is 6.29 days. We find that 53 percent of the difference in average absence is due to firms, while 46 percent of the difference is due to the effect of employee characteristics. The estimate is quite precise. Columns (2)-(5) present different partitions of firms and show that the results on firm share remain similar. Firm factors account for 58 percent of the difference between top and bottom quartile (Column (2)), 60 percent of the difference between the top and bottom decile(Column (3)), and 65 percent of the difference between the top and bottom 5 percent(Column (4)). Panel B shows that the results are similar when we also control time varying employee characteristics, specifically age and hospitalization. The firm share ranges from 53 to 64 percent.

We repeat this analysis using days absent in spells that start on Monday or Friday or spells that start within two days around a national holiday. This measure is more likely to capture the discretionary component of days absent. Table A4 presents the results. Both the results based on the basic model (Panel A) and the results using employee time-varying controls, show that the firm share ranges from 57 to 70 percent, consistent with our main results in Table 3.

3.3 Event study

In Figure 3 we visualize event study around an employee move to present a simple and clear visual of the contribution of the firm and individual effect to employee absence. Borrowed from Finkelstein et al. (2014), this method derives from a regression model and can be considered as an improved version of common event study design using sample averages.

We normalize the days absent variable, y_{it}, as follows:

$$y_{it}^{share} = \frac{y_{it} - \bar{y}_{o(i)}}{\bar{y}_{d(i)} - \bar{y}_{o(i)}} \tag{8}$$

where $\bar{y}_{d(i)}$ ($\bar{y}_{o(i)}$) is the average days absent of employees in the destination (origin) firm. The measure y_{it}^{share} is exactly zero when days absent of the mover is at the average days absent of employees at the origin firm and it takes the value of one when days absent of the mover are at the average of his peers at the destination firm.

The behavior of y_{it}^{share} around a move is informative about the share of the variation in days absent that is due to the employee and to the firm. In the extreme case in which days absent is unrelated to firm policies/environment, we should see no change in employee behavior around a move. On the other extreme, if individual characteristics do not affect employee attendance, then y_{it}^{share} should be close to zero before the move (all employees in the origin firm including the mover should exhibit similar behavior) and close to one after it. In all other cases in which both employee and firm characteristics affect employee behavior, a larger increase in y_{it}^{share} would indicate a bigger role played by the firm policies/environment.

However, several problems need to be dealt with the indicator. Variance of y_{it} might be large due to influence of individual characteristics or time effect and can obscure the real trend if not well controlled. Thus, time fixed effect μ_t and individual characteristics x_{it} that might change across years should be included for control. Furthermore, entry and exit in the dataset can cause pre- and post-trends and may change the distribution of population. Individual fixed effect can be introduced to control the bias. Finally, variance of y_{it}^{share} could be unnecessarily large when employee faces a very small influence of move, referring to small difference between $\bar{y}_{d(i)}$ and $\bar{y}_{o(i)}$. Thus, we use a regression based method to avoid these problems, which is implemented upon our two-way fixed effect model.

Note that Equation (2) without time-varying controls can be rewritten as

$$y_{ijt} = \alpha_i + \gamma_{o(i)} + (\gamma_{d(i,t)} - \gamma_{o(i)}) + \mu_t + x_{it}\beta + e_{ijt} \tag{9}$$

where $o(i)$ is mover i's original employer and $d(i,t)$ is mover i's employer at time t. If at time t mover i is still in his old position, $d(i,t) = o(i)$.

$$\gamma_{d(i,t)} - \gamma_{o(i)} = \begin{cases} 0 & \text{if } d(i,t) = o(i) \\ S_\gamma(\bar{y}_{d(i,t)} - \bar{y}_{o(i)}) & \text{if } d(i,t) \neq o(i) \end{cases} \tag{10}$$

Thus,

$$y_{ijt} = \tilde{\alpha}_i + S_\gamma \cdot (\bar{y}_{d(i,t)} - \bar{y}_{o(i)})1\{r(i,t) > 0\} + \mu_t + x_{it}\beta + e_{ijt} \tag{11}$$

Person fixed effect and original firm fixed effect are combined as one $\tilde{\alpha}_i$. S_γ is share of firm we have defined. If we know the true mean of absent days for origin firm and destination firm we can estimate this model and check if S_γ is significantly different from 0 and, if so, what the value of S_γ is. We use sample mean as approximate for $\bar{y}_{d(i,t)}$ and $\bar{y}_{o(i)}$ and estimate the following model instead

$$y_{ijt} = \tilde{\alpha}_i + \lambda_{r(i,t)} \cdot (\hat{y}_{d(i,t)} - \hat{y}_{o(i)}) + \mu_t + x_{it}\beta + e_{ijt} \tag{12}$$

This is the model that we use for event study. $\hat{\lambda}_{r(i,t)}$ is plotted against relative year $r(i,t)$ to show complete trend before and after move. The figure shows a sharp, discontinuous jump at the time of the move, from 0 to approximately 0.6. As discussed above, the size of this jump can also be interpreted as an estimate of a weighted average of firm share S. Under the assumptions of our model, the plot should be flat in the years before and after the move. In practice, the plot shows no post trend and a small downward pre-trend.

3.4 Absence Variation due to Firms and Firm Characteristics

Table 3 showed that a large part of the variation in average days absent is attributable to firms. Our goal in this section is to examine firm characteristics that are correlated with the firm fixed effects, $\gamma_j' s$. In Table 4, Columns 1 -7, we aggregate the firm fixed effects into different groups. y_R and γ_R denote the simple averages across firms in group R of y_j and γ_j estimated from Equation (2). In Column 1 we compare family and non-family firms. Row 1 shows the difference in average absence y_j between family and non family firms. We observe that family firms have 1.225 days lower absence compared to non family firms. Row 2 presents the difference if firm fixed effects γ_R of the two groups. The t-test comparison of the two groups shows that firm-specific factors contributes to explain a difference of 0.9282 days of absence between family and non-family firms.[6] The result of the comparison shows that indeed family firms have lower absences compared to non family firms. Furthermore, the comparison result illustrates that beyond the influence of employee observable and time-invariant unobservable characteristics there is a firm specific component that reduces absences in family firms. In Columns 2 we compare firms above and below median in size (based on assets) and in Column 3 we compare firms in the top and bottom quartile of size. We are looking into size since size might be driving differences in absence as size might be correlated with reporting accuracy. We do not find a significant difference in firm fixed effects between the large and small companies. Moreover in Columns 4 and 5 we investigate whether debt is correlated with lower firm fixed effects as we would hypothesize according to the disciplinary role of debt (e.g. Jensen & Meckling (1976) and Jensen (1986)). We do not find any significant difference in the firm fixed effects in firms with low and high debt. Finally in Columns 6 and 7 we split firms according to profitability but also we do not find any significant differences in firm fixed effects between groups of firms with high and low profitability. In sum, across a number of characteristics, the only one that is correlated with the firm fixed effect is family control.

4 Exploring Potential Channels

The results of Table 4 show that family firms employees have less absences even after we take out the effect of employee selection. In this section, we examine potential mechanisms that can contribute to the lower absences in family firms. We investigate explicit incentives, loyalty and ownership.

6. The absolute values of family and non-family average firm fixed effect are more difficult to interpret since the firm fixed effect can differ by a constant according to the model setting.

4.1 Promotions, Separations and Wage Increases

Table 5 presents the effect of employee absenteeism on employee promotions, separations, and salary increases, and whether there is a differential effect for family versus non family firms. In Columns (1)-(3) the dependent variable is the indicator variable promotion that takes the value 1 if the employee received a promotion and 0 otherwise. In Columns (4)-(6) the dependent variable is the indicator variable separation that takes the value 1 if the employee left the company and 0 otherwise. In Columns (7)-(9) the dependent variable is an indicator that takes the value 1 when the employee receive a wage increase. In Column 1 the coefficient of *Absence* shows that absenteeism is negatively related to promotion, which further supports the idea that firms care about employee absenteeism. In terms of economic magnitude one additional day of absence decreases the probability of promotion by 0.01% (the average annual probability of promotion in the sample is 7%). Nevertheless we do not find any difference between family and non-family firms in the effect of absenteeism on promotion.

Regarding separation, the coefficient of *Absence* in Columns (4) shows that absenteeism is positively related to employee separation from the firm.[7] Furthermore, in Column (5) the coefficient of the interaction $FamilyXAbsence$ shows that in family firms the effect of absence on separations is even larger. In Column (6) we add employee fixed effects and although the economic magnitude of the interaction coefficient remains similar, it is not statistically significant.

Another mechanism to reward employees is through salary increases. The coefficient of *Absence* in Column (7) shows that one additional day of absence decreases the probability of receiving a wage increase by 0.06% (the average annual probability of wage increase in the sample is 6%). Moreover in Column (8) the coefficient of the interaction $FamilyXAbsence$ shows that in family firms the effect of absence on salary increases is higher. The coefficient of the interaction remains the same when we add employee fixed effects in Column (9). This result further supports that there are harsher employee consequences of absenteeism in family firms relative to non family firms. Thus difference in incentives might be one potential mechanism that contributes to the lower absences in family firms.

4.2 Legacy Employees

In this section we analyze whether employee loyalty might be one of the potential channels that contributes to the lower absences in family firm. Due to their longer time horizons, family owners may have a comparative advantage at sustaining implicit labor contracts, which may be reciprocated by

7. The data do not allow to distinguish voluntary versus involuntary separations.

workers with greater loyalty.

We identify a group of employees who are more likely to be loyal to the firm. Specifically we are focus on employees that have family members who are current or past employees in the same firm. We call these individuals legacy employees. Since our goal is to capture employees who have ties with the firm, we require that their family members were employees at the firm for at least 3 years. Furthermore, to ensure that we are capturing a pure loyalty effect and not other explicit incentives like ownership we exclude employees related to the controlling family. We test whether legacy employees have lower days absent and whether this effect is more pronounced in family firms.

Table 6 examines the relation between employee absence and legacy employees. Column 1 estimates the impact of legacy employees in a simple model without control or fixed effects. The coefficient on legacy employees is negative but not statistical significant at any conventional level. In Column 2 we add firm and year fixed effects and the impact of legacy employees now become statistically significant within a family firm. Hence, in family firms legacy employees have fewer days absent. Furthermore, this effect becomes larger and statistical stronger when we add controls for personal characteristics of the employees (Column 3) and even more when we add firm level control variables (Column 4). In Column (5) we show the result holds both economically and statistically when we have industry, year and task fixed effects. And in Column (6) the same is true when we control for wage levels. Moreover after we control for employee characteristics (Column 3) the coefficient on Legacy becomes significant and remains significant as we add more controls for firm characteristics (Column 4), task fixed affects (Column 5) and controls for wages (Columns 6).[8]

To sum up legacy employees are highly correlated with having lower average absence. We acknowledge that our analysis does not provide causal evidence, but we still claim that this suggestive evidence is consistent with loyalty of employees playing a role in absences. We also notice that whereas the effect is present in all firms it is economically stronger within family firms. This is consistent with the notion that many family firms have stronger values that penetrate the firms and affect the loyalty and behavior of employees.

4.3 The role of ownership

In previous Tables we showed that employees of family-controlled firms have lower absences. The influence of the family though might not only be operating through control but also through ownership.

8. Our results are robust when we exclude employees whose relatives are working in the firm during our sample period.

To investigate the role of family ownership we focus within family controlled firms and we examine whether employees of firms with family ownership above 20 percent have different average absence compared to employees in family controlled firms without concentrated family ownership. Table 7 shows the results. We observe that throughout Columns 1-6 employees in family controlled firms that also have concentrated family ownership have lower absence compared to employees in family firms without concentrated ownership. The result is both statistically and economically significant. The difference ranges from 1.5 to 1.8 days lower absence. The results in Table 7 show that family ownership might also be another potential mechanism driving the lower absences in family firms.

4.4 Absences along the hierarchy

Table A3 examines the relation between family firm status and absences as a function of the employee position in the organization. Column (1) studies managers and high level employees, Column (2) refers to intermediate levels employees and Column (3) to lower level employees. Interestingly, in Column (1), the coefficient on *Family* is not statistically significant and shows that there is no difference in absence between managers in family firms and managers of non-family firms. Columns (2) and (3) show that our result is driven by intermediate and lower level employees.

In a recent paper Bandiera et al. (2013) study differences in CEO behavior in family and non-family firms and find that family CEOs record 8% fewer working hours relative to professional CEOs. Table A3 shows that our results are not inconsistent with theirs since the difference is absences we uncover is driven by low and intermediate level employees.

We find that, on average, employees of family firms exert more effort. This result appears at odds with the commonly held belief that incentives in family firms are muted due to the reduced probability of promotion for non-family employees ("tournament effect"). However, as we mention in the introduction, it is possible that other factors (more monitoring, harsher consequences for absenteeism, employee loyalty) outweigh the tournament effect.

In Table 8 we provide evidence for the tournament effect. The key insight is that since members of the controlling family usually end up obtaining positions higher up in the firm, this reduction in incentives for non-family employees should be stronger as non-family employees move up in the organization.

To test this idea, we use a difference-in-difference methodology. The first difference is between family and non-family firm employees at different levels of the organization. This difference controls for all factors that affect effort at a given seniority level. The second difference is between senior and non-senior employees. This difference controls for the average effect of the ownership form on effort. The positive coefficient on the interaction terms indicates that, in family firms, incentives to exert effort are reduced as employees move up (relative to employees of non-family firms).

5 Conclusion

We analyze determinants of employee effort. We use detailed information on absent spells of all employees in 2,600 firms in Denmark as a proxy for effort in specifications in which we control for important determinants of absenteeism like age, gender and health status. Using movers we decompose absent days into an individual component (e.g., motivation, work ethic) and a firm component (e.g., incentives, corporate culture). We find the firm component to be significant in explaining difference in absenteeism across firms. Moreover, we find the firm component to be correlated with family firm status with family firms causing a decrease in absenteeism. Finally, we analyze the mechanisms behind this effect. We find evidence that explicit incentives and loyalty are potential factors driving differences between family and non-family firms.

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Figure 1a: Hospitalization and Absence Days

This figure presents the average absence days per year for different days of hospitalization that year.

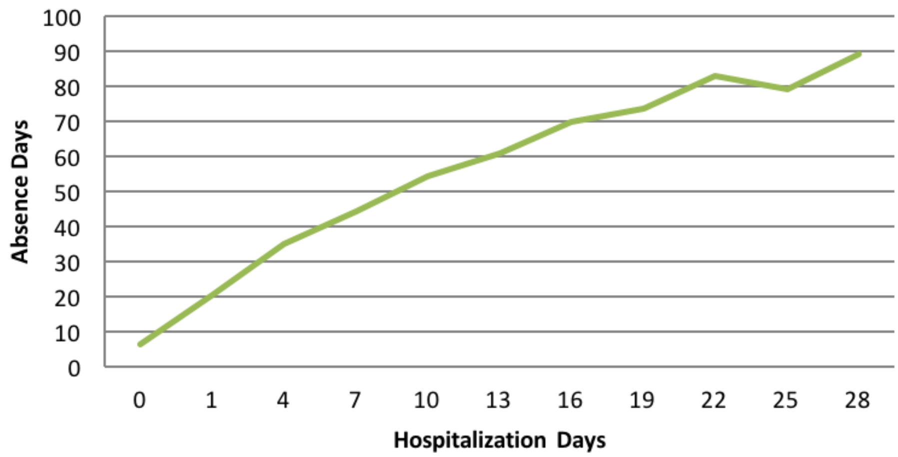

Figure 1b: Hospitalization and Absence Days by Age Groups

This figure presents the average absence days per year for different days of hospitalization that year for employees 20 to 45 years old (full line)and employees 45 to 65 years old (dashed line).

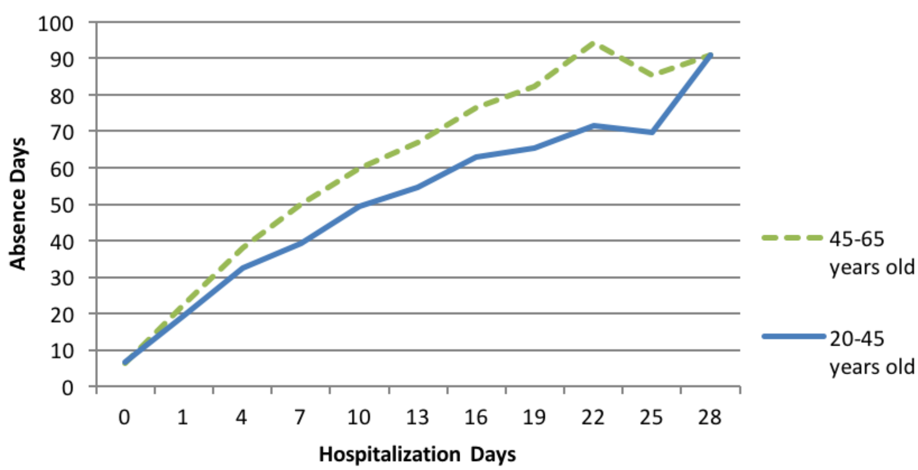

Figure 1c: Hospitalization and Absence Days by Position in Organization

This figure presents the average absence days per year for different days of hospitalization that year for employees with high position in the organization (dashed line) and intermediate and low position in the organization (full line).

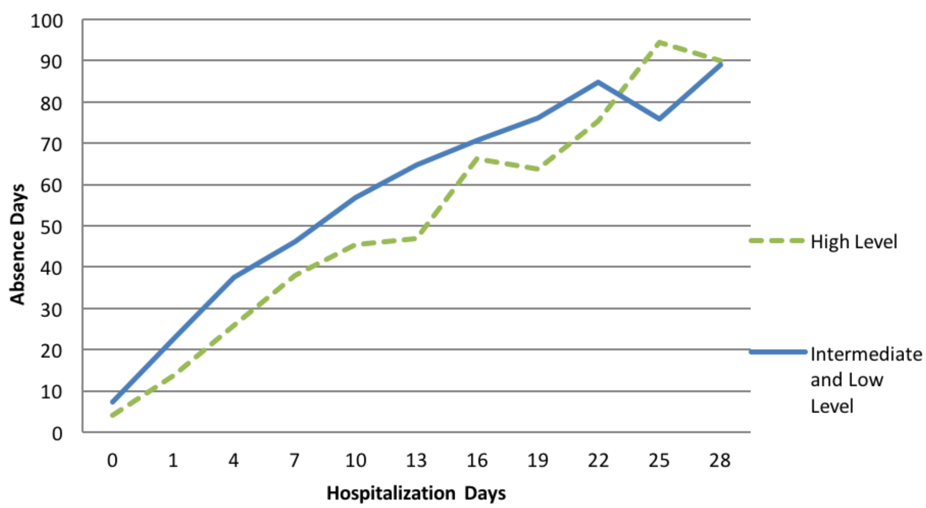

Figure 2: Change in Absence Days By Size of Move

Figure shows the change in absence days before and after the move. For each mover, we calculate the difference δ in average absence between their origin and destination firms, and then group the difference into ventiles. The x-axis displays the mean of δ for movers in each ventile. The y-axis shows, for each ventile, average absence post-move minus average absence pre-move. The line of best fit is obtained from simple OLS regression using the 20 data points corresponding to movers, and its slope is reported on the graph. For comparison, we also compute the average change in absence for a sample of matched non-movers, which we show we the X marker on the graph.

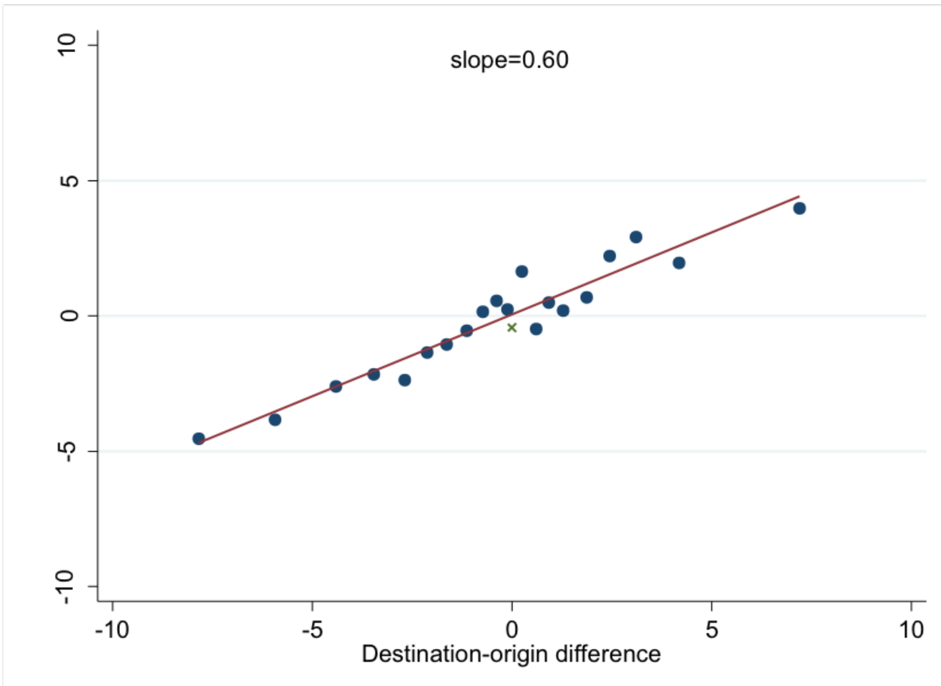

Figure 3: Event Study

Figure shows the coefficient $\hat{\lambda}_{r(i,t)}$ estimated from Equation (12) in Appendix C. The dashed lines are upper and lower bounds at the 95% confidence interval. Appendix C contains details on the graph construction.

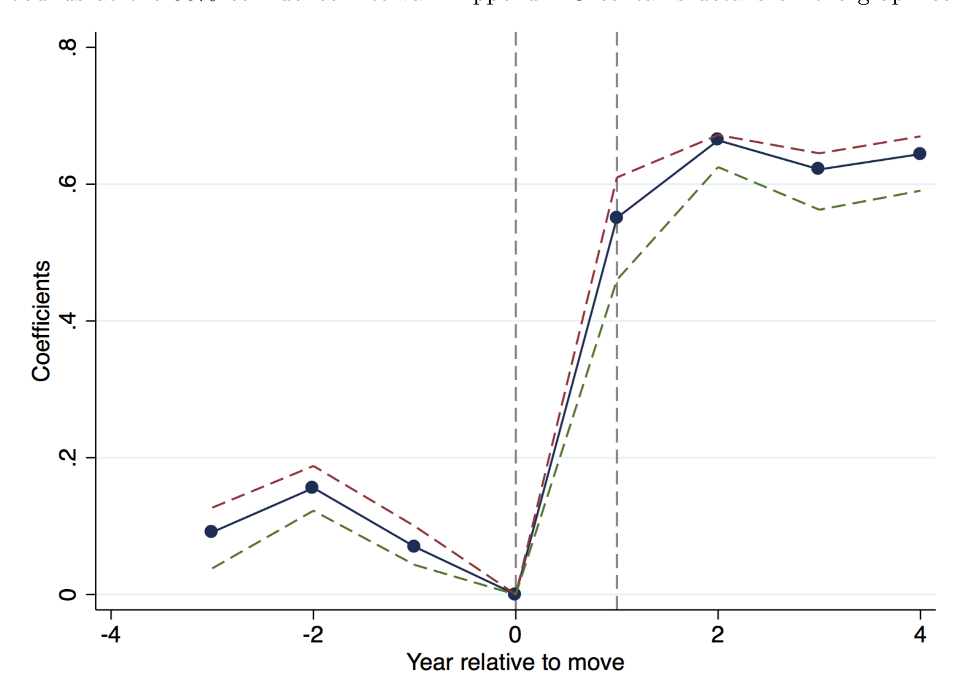

Table 1: Summary statistics for family vs non-family firms

This table presents firm characteristics for all limited liability firms in Denmark during 2007-2012 (column 1) as well as firm characteristics for our sample firms (columns 2). Column 3 presents differences.

	All	All -sample firms	Diff All vs Sample
OROA	0.0757	0.0599	-0.0267***
	(0.0007)	(0.0025)	(0.0026)
	[257,397]	[7,678]	[257,397]
Net Income/assets	0.0433	0.0349	-0.0087***
	(0.0005)	(0.0022)	(0.0023)
	[257,392]	[7,673]	[257,392]
Assets	51.8463	364.1203	321.9191***
	(0.8400)	(9.7585)	(9.7870)
	[257,432]	[7,713]	[257,432]
Ln(Assets)	2.8465	4.9601	2.1789***
	(0.0082)	(0.0340)	(0.0349)
	[257,431]	[7,712]	[257,431]
No. of employees	38.5082	179.0560	145.0036***
	(0.3553)	(3.5823)	(3.5965)
	[257,636]	[7,917]	[257,636]
Firm age	22.9027	35.0215	12.5025***
	(0.1416)	(0.5679)	(0.5860)
	[256,356]	[7,867]	[256,356]

Table 2

This table presents employee characteristics for all limited liability firms in Denmark during 2007-2012 (column 1) as well as for firm characteristics for our sample firms (columns 2). Column 3 presents differences.

	All	All -sample firms	Diff All vs Sample
Employee wage	306,750	425,184	147,087***
	(3143.6150)	(8458.332)	(8864.1990)
Employee age	38.5200	41.1428	3.2780***
	(.1747)	(.2802)	(.3381)
Male	0.6625	0.6207	-0.0523***
	(.0041)	(.0089)	(.0100)
Hospitalization Days	0.2512	0.2095	-.0520***
	(.0017)	(.0038)	(.0042)
Sickness Absence	.	7.6321	.
	.	(.3042)	.
No. of Children	1.3843	1.2647	-.1488***
	(.0093)	(.0170)	(.0200)

Table 3: Decomposition of employee absence

The dependent variable is annual number of absent days. The sample is movers and non-movers. Panel A is based on estimation of equation (2) without including the employee time-varying controls and panel B is based on estimation of equation (2) which includes controls for age and hospitalization. The adjusted R-squared from estimated equation is 0.488. Each column defines a set of firms R and R'based on percentiles of average absence. The first row reports the difference in average days absent overall between the two groups $y_R - y_{R'}$; the second row reports the difference due to firms $\gamma_R - \gamma_{R'}$; the third row reports the difference due to employees $\alpha_R - \alpha_{R'}$; the fourth row reports the share of the difference in average absence between two set of firms that is due to firm $S_{firm}(R; R')$. The last row reports the share of the difference in average absence between two set of firms that is due to employees $S_{employee}(R; R')$. Standard error of the share is calculated by bootstrap of 50 repetitions.

Panel A: base

	Above/below Median	Top/bottom 25%	Top/bottom 10%	Top/bottom 5%
	(1)	(2)	(3)	(4)
Difference in absence				
Overall	6.2948	10.3718	15.6956	20.0801
Due to firm	3.3922	6.0216	9.4964	13.1734
Due to individual	2.9026	4.3502	6.1992	6.9067
Share of difference				
Due to firm	0.5389	0.5806	0.6050	0.6560
	(0.0614)	(0.0524)	(0.0765)	(0.0951)
Due to person	0.4611	0.4194	0.3950	0.3440

Panel B: person control

	Above/below Median	Top/bottom 25%	Top/bottom 10%	Top/bottom 5%
	(1)	(2)	(3)	(4)
Difference in absence				
Overall	6.2881	10.3535	15.6565	20.0462
Due to firm	3.3613	5.9583	9.4164	12.9796
Due to individual	2.9268	4.3952	6.2401	7.0666
Share of difference				
Due to firm	0.5345	0.5755	0.6014	0.6475
	(0.0582)	(0.0507)	(0.0791)	(0.0978)
Due to person	0.4655	0.4245	0.3986	0.3525

Table 4: What matters for firm FE?

This table examines which firm characteristics are correlated with the firm fixed effects, $\gamma_j s$. Columns 1 -7, aggregate the firm fixed effects into different groups. y_R and γ_R denote the simple averages across firms in group R of y_j and γ_j estimated from Equation (2). Row 1 shows the difference in average absence y_j between the two groups. Row 2 presents the difference if firm fixed effects γ_R of the two groups. Row 3 presents the standard errors of the t-test comparison of the firm fixed effects of the two groups. Column 1 compares family and non-family firms. Columns 2 compares firms above and below median in size (based on assets) and Column 3 compares firms in the top and bottom quartile of size. Columns 4 compares firms above and below median in debt and Column 5 compares firms in the top and bottom quartile of debt. Column 6 compares firms above and below median in OROA and Column 7 compares firms in the top and bottom quartile of OROA.

	Family/non-family	Above/below median size	Top/bottom 25% size	Above/below median debt	Top/bottom 25% debt	Above/below median OROA	Top/bottom 25% OROA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Difference in absence							
Overall	-1.2255	0.1428	0.3577	0.2391	0.3413	-0.2120	-0.2589
Due to firm	-0.9282	0.0478	1.0799	-0.0734	-0.589	-0.2971	-0.4346
SE	(0.443)	(0.4418)	(0.7421)	(0.5705)	(0.6563)	(0.4434)	(0.5294)

Table 5: Employee Consequences of Absenteeism: Promotions, Separations and Salary Increases

This table presents the effect of employee absenteeism on employee promotions, separations, and salary increases, and whether there is differential effect for family versus non family firms. In Columns (1)-(3) the dependent variable is the indicator variable promotion that takes the value 1 if the employee received a promotion and 0 otherwise. In Columns (4)-(6) the dependent variable is the indicator variable separation that takes the value 1 if the employee left the company and 0 otherwise. In Columns (7)-(9) the dependent variable is wage increases. Definitions of the variables are provided in Appendix B. In each column, we report estimated coefficients and their standard errors. Heteroscedasticity-robust standard errors (in parentheses)are clustered at the firm level.. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

	Promotion			Separation			Salary Increase		
Dependent Variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$Absence_{t-1}$	-0.0001***	-0.0001***	0.0000	0.0007***	0.0006***	0.0004***	-0.0005***	-0.0006***	-0.0005***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0001)
Family		-0.0055	0.0073		0.0238**	-0.0253		0.0185***	0.0037
		(0.0073)	(0.0321)		(0.0097)	(0.0170)		(0.0066)	(0.0205)
Family × Absence		0.0001	0.0000		0.0004**	0.0004		-0.0006***	-0.0006**
		(0.0001)	(0.0002)		(0.0002)	(0.0002)		(0.0002)	(0.0003)
Age	-0.0007***	-0.0007***	0.0121	-0.0016***	-0.0016***	-0.6553***	-0.0047***	-0.0044***	-0.0399***
	(0.0002)	(0.0002)	(0.0158)	(0.0002)	(0.0002)	(0.0226)	(0.0002)	(0.0001)	(0.0114)
Bachelor Degree	-0.0055*	-0.0055*	-0.0094	0.0090***	0.0094***	-0.2884***	-0.0226*	-0.0028	-0.3556***
	(0.0031)	(0.0030)	(0.0251)	(0.0024)	(0.0024)	(0.0305)	(0.0129)	(0.0018)	(0.0554)
Employee Wage	0.0001***	0.0001***	0.0000	-0.0001***	-0.0001***	-0.0000	0.0001		
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)		
$Assets_{t-1}$	0.0000***	0.0000***	-0.0001*	-0.0000***	-0.0000***	-0.0000	-0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$OROA_{t-1}$	-0.0043	-0.0036	0.0427	-0.1077***	-0.1111***	-0.1384***	0.0210	0.0215*	0.0599*
	(0.0252)	(0.0252)	(0.0825)	(0.0214)	(0.0211)	(0.0322)	(0.0136)	(0.0127)	(0.0324)
Short-term $Debt/Asset_{t-1}$	0.0581***	0.0580***	0.0577	0.0264***	0.0271***	-0.0077	0.0051	0.0098*	0.0185
	(0.0160)	(0.0160)	(0.0421)	(0.0092)	(0.0092)	(0.0150)	(0.0071)	(0.0059)	(0.0192)
Firm Age	0.0002	0.0002	-0.0000	-0.0002*	-0.0002*	-0.0002	-0.0001**	-0.0001	-0.0000
	(0.0001)	(0.0001)	(0.0003)	(0.0001)	(0.0001)	(0.0004)	(0.0000)	(0.0000)	(0.0001)
Male	-0.0027	-0.0027		0.0034*	0.0032*		-0.0150**	-0.0048***	
	(0.0028)	(0.0028)		(0.0020)	(0.0019)		(0.0071)	(0.0013)	
No. of Children	0.0013**	0.0013**		-0.0019***	-0.0019***		-0.0073***	-0.0048***	
	(0.0006)	(0.0006)		(0.0004)	(0.0004)		(0.0017)	(0.0005)	
Constant	0.0161	0.0165	-0.5444	0.1709***	0.1686***	29.4764***	0.2152***	0.2439***	1.9272***
	(0.0174)	(0.0172)	(0.7058)	(0.0152)	(0.0152)	(1.0130)	(0.0226)	(0.0118)	(0.5116)
Observations	726,250	726,250	726,250	795,478	795,478	795,478	743,209	743,210	743,210
R-squared	0.0625	0.0625	0.3930	0.0175	0.0180	0.6925	0.0339	0.0284	0.5859
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employee Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employee FE	No	No	Yes	No	No	Yes	No	No	Yes
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Task FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No.firms	1694	1694	1694	1699	1699	1699	1695	1695	1695

Table 6: Absence and Legacy Employees

This table examines the relation between employee absence and legacy employees. We define legacy employees as employees that have family members who are current or past employees in the firm. We require that their family members were employees at the firm for at least 3 years. We exclude employees related to the controlling family. Definitions of the variables are provided in Appendix B. Heteroscedasticity-robust standard errors (in parentheses) are clustered at the firm level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable: Absence	(1)	(2)	(3)	(4)	(5)	(6)
Legacy	-0.4885	-0.3261	-0.6603**	-0.5877*	-1.1222***	-0.9702***
	(0.3289)	(0.2865)	(0.2877)	(0.3363)	(0.2898)	(0.2917)
Family	-0.8848**	-0.5016*	-0.7331***	-1.0318***	-0.8556**	-1.1111***
	(0.3924)	(0.2840)	(0.2707)	(0.3550)	(0.3318)	(0.3500)
Legacy×Family	-1.2190	-1.1970*	-1.2910*	-2.2942***	-1.8263**	-2.0238**
	(0.7530)	(0.6922)	(0.7641)	(0.8583)	(0.8880)	(0.9033)
Male			-3.9667***	-3.9590***	-3.5224***	-3.4198***
			(0.1448)	(0.1669)	(0.1861)	(0.1570)
Age			0.0287***	0.0283***	0.0081*	0.0191***
			(0.0045)	(0.0055)	(0.0044)	(0.0047)
No of Children			-0.0147	-0.0168	0.0364	0.0803*
			(0.0386)	(0.0455)	(0.0495)	(0.0442)
Bachelor Degree			-3.0712***	-3.0821***	-1.4439***	-2.0243***
			(0.2157)	(0.2334)	(0.1104)	(0.1783)
Hospitalization					21.6981***	21.5084***
					(0.8343)	(0.8407)
Assets_{t-1}				-0.0001	0.0004**	0.0000
				(0.0003)	(0.0002)	(0.0003)
OROA_{t-1}				0.9027	1.1554	1.1036
				(1.1834)	(0.9230)	(1.1229)
Short-term Debt/Asset_{t-1}				-2.1907**	-1.2730*	-1.9108**
				(1.0335)	(0.7425)	(0.9522)
Long-term Debt/Asset_{t-1}				-1.6342	-0.6306	-1.4042
				(1.2237)	(0.8660)	(1.1315)
Firm Age				-0.0101	-0.0062	-0.0074
				(0.0084)	(0.0060)	(0.0078)
Employee Wage						-0.0045***
						(0.0005)
Constant	7.6891***	7.2193***	9.7663***	11.0154***	9.7208***	11.0652***
	(0.3173)	(0.4766)	(0.4481)	(1.0233)	(0.6999)	(0.9941)
Observations	1,827,930	1,700,120	1,577,963	1,109,275	1,109,275	1,103,501
R-squared	0.0001	0.0018	0.0139	0.0147	0.0696	0.0663
Sample	All firms	All firms	All firms	All firms	All firms	All firms
Industry FE	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes
Task FE	No	No	No	No	Yes	No

Table 7: The role of ownership

This table examines the relation between employee absence and family ownership. The sample includes only family controlled firms. We define firms as family controlled if 1) two board members are related with the CEO by blood or marriage or 2) any three board members are related. Family20pc is a dummy variable that takes the value 1 if the firm has at least 20 percent family ownership. Definitions of the variables are provided in Appendix B. Heteroscedasticity-robust standard errors (in parentheses) are clustered at the firm level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable: Absence	(1)	(2)	(3)	(4)	(5)	(6)
Family20pc	-1.8460***	-1.5161**	-1.5916***	-1.7474**	-1.6875***	-1.8209***
	(0.6822)	(0.6768)	(0.5966)	(0.6992)	(0.6076)	(0.6435)
Male			-3.7336***	-3.6269***	-3.3742***	-3.2068***
			(0.2601)	(0.3416)	(0.3168)	(0.3340)
Age			0.0056	-0.0009	-0.0045	-0.0083
			(0.0114)	(0.0137)	(0.0115)	(0.0123)
No of Children			0.1131	0.0605	0.1144	0.1159
			(0.1038)	(0.1181)	(0.1185)	(0.1217)
Bachelor Degree			-1.7448***	-1.8750***	-1.1754***	-1.2983***
			(0.2027)	(0.2331)	(0.2965)	(0.2544)
Hospitalization					18.8407***	18.7622***
					(0.9993)	(0.9926)
Assets_{t-1}				0.1998*	0.2983***	0.2513**
				(0.1170)	(0.1073)	(0.1164)
OROA_{t-1}				-1.7710	-1.5576	-1.8843
				(1.7365)	(1.5870)	(1.7270)
Short-term Debt/Asset_{t-1}				0.4390	0.0024	0.0534
				(1.2889)	(1.1994)	(1.2568)
Long-term Debt/Asset_{t-1}				-1.0501	-1.1682	-1.5696
				(1.2393)	(1.0739)	(1.1474)
Firm Age				-0.0002	-0.0021	0.0032
				(0.0102)	(0.0097)	(0.0098)
Employee Wage						-0.0027***
						(0.0005)
Constant	6.7172***	6.0681***	8.6863***	9.7705***	8.4969***	9.4669***
	(0.2336)	(1.1641)	(1.3271)	(1.8916)	(1.5856)	(1.6919)
Observations	98,992	98,992	92,279	62,280	62,280	61,921
R-squared	0.0001	0.0013	0.0102	0.0104	0.0594	0.0577
Sample	All firms	All firms	All firms	All firms	All firms	All firms
Industry FE	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes
Task FE	No	No	No	No	Yes	No

Table 8: Absence and Tournament Incentives

This table examines the relation between tournament incentives and absence in family versus non family firms. Definitions of the variables are provided in Appendix B. Heteroscedasticity-robust standard errors (in parentheses) are clustered at the firm level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable: Absence	(1)	(2)	(3)	(4)	(5)
Family	-0.9636***	-1.0515***	-1.3742***	-1.2614***	-1.4128***
	(0.3312)	(0.3171)	(0.4089)	(0.3784)	(0.4039)
Senior Manager	-3.8277***	-2.6539***	-2.8330***	-2.8685***	-2.2585***
	(0.3281)	(0.3252)	(0.3038)	(0.2979)	(0.2600)
Family × Senior Manager	0.8713**	0.8644*	0.8661*	1.3363***	0.8245*
	(0.4253)	(0.4461)	(0.4860)	(0.4024)	(0.4602)
Male		-3.7718***	-3.7181***	-3.6796***	-3.4597***
		(0.1387)	(0.1551)	(0.1803)	(0.1556)
Age		0.0300***	0.0279***	0.0285***	0.0357***
		(0.0042)	(0.0052)	(0.0047)	(0.0050)
No. of Children		0.0162	0.0144	0.0404	0.0893*
		(0.0399)	(0.0463)	(0.0547)	(0.0482)
Bachelor Degree		-2.2008***	-2.1040***	-1.5625***	-1.6672***
		(0.1397)	(0.1644)	(0.1205)	(0.1498)
Assets_{t-1}			0.0001	0.0004**	0.0002
			(0.0003)	(0.0002)	(0.0003)
OROA_{t-1}			0.9976	1.3644	1.1049
			(1.1644)	(0.9287)	(1.1391)
Short-term Debt/Asset_{t-1}			-1.9658**	-1.3050*	-1.8676**
			(0.9663)	(0.7504)	(0.9232)
Long-term Debt/Asset_{t-1}			-1.6959	-0.7655	-1.5955
			(1.1579)	(0.8679)	(1.1064)
Firm Age			-0.0086	-0.0061	-0.0071
			(0.0081)	(0.0061)	(0.0077)
Employee Wage					-0.0037***
					(0.0004)
Constant	8.1406***	9.8838***	11.0335***	10.5891***	11.6352***
	(0.4419)	(0.4327)	(0.9841)	(0.7426)	(1.0061)
Observations	1,686,407	1,565,299	1,110,701	1,110,701	1,104,926
R-squared	0.0074	0.0163	0.0172	0.0202	0.0185
Sample	All firms	All firms	All firms	All firms	All firms
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Employee Characteristics	No	Yes	Yes	Yes	Yes
Firm Controls	No	No	Yes	Yes	Yes
Task FE	No	No	No	Yes	No
No.firms	2856	2851	1792	1792	1792

Appendix A Additional Analysis and Robustness Tables

Table A1: Employee Absence and Firm Performance

This table presents the effect of employee absence on firm performance. We estimate the following regression: $OROA_{jt} = \gamma_j + \mu_t + \eta absence_{jt} + x_{it}\theta + \zeta_{jt}\delta + e_{ijt}$, where $OROA_{jt}$ is each firm-year observation of operating return on assets, defined as the ratio of operating income to total assets. γ_j is firm fixed effect, μ_t is year fixed effect, and ζ_{jt} are firm controls. $\mathrm{Absence_{jt}}$, is the mean absence days at the firm-year level. Column 1 presents results for firms with less than 100 employees, Column 2 presents results for firms with more than 100 employees and in Column 3 for firms above 300 employees. In each column, we report estimated coefficients and their standard errors. Heteroscedasticity-robust standard errors (in parentheses)are clustered at the firm level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable: OROA	< 100 employees	100 > employees	300 > employees
Absence	0.0000	-0.0008**	-0.0011*
	(0.0007)	(0.0004)	(0.0006)
Firm Age	-0.0079***	-0.0079***	-0.0065***
	(0.0030)	(0.0015)	(0.0020)
Assets	0.0004	-0.0000	-0.0000
	(0.0029)	(0.0000)	(0.0000)
Constant	0.3120***	0.3740***	0.3228***
	(0.0935)	(0.0586)	(0.0815)
Observations	3,499	4,078	1,932
R-squared	0.8058	0.7127	0.7035
Year FE	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
No.firms	1,652	1,236	550

Table A2: Family Firms and Employee Absence

This table examines the relation between family firm control and employee absence. We estimate the following regression: $absence_{ijt} = \tau_i + \iota_j + \mu_t + \beta Family_{jt} + x_{it}\theta + \zeta_{jt}\delta + e_{ijt}$, where $absence_{ijt}$ is each person-firm-year observation of absent days. τ_i is task fixed effect, ι_j is industry fixed effect, μ_t is year fixed effect,x_{it} are personal characteristics controls and ζ_{jt} are firm controls. The main variable of interest is $\mathrm{Family}_{\mathrm{jt}}$, which takes the value 1 if a firm is a family firm and 0 otherwise. Definitions of the variables are provided in Appendix B. In each column, we report estimated coefficients and their standard errors. Heteroscedasticity-robust standard errors (in parentheses) are clustered at the firm level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable: Absence	(1)	(2)	(3)	(4)	(5)	(6)
Family	-0.9848**	-0.6031**	-0.8329***	-1.1349***	-0.9298***	-1.1887***
	(0.3942)	(0.2837)	(0.2707)	(0.3532)	(0.3276)	(0.3468)
Male			-3.9651***	-3.9559***	-3.5175***	-3.4197***
			(0.1447)	(0.1670)	(0.1859)	(0.1569)
Age			0.0285***	0.0282***	0.0083*	0.0190***
			(0.0045)	(0.0055)	(0.0044)	(0.0048)
No of Children			-0.0171	-0.0190	0.0350	0.0773*
			(0.0386)	(0.0455)	(0.0495)	(0.0441)
Bachelor Degree			-3.0691***	-3.0804***	-1.4426***	-2.0311***
			(0.2157)	(0.2331)	(0.1104)	(0.1781)
Hospitalization					21.6581***	21.4697***
					(0.8364)	(0.8429)
Assets_{t-1}				-0.0001	0.0004**	0.0000
				(0.0003)	(0.0002)	(0.0003)
OROA_{t-1}				0.8862	1.1419	1.0849
				(1.1808)	(0.9213)	(1.1208)
Short-term $\mathrm{Debt/Asset}_{t-1}$				-2.2022**	-1.2835*	-1.9250**
				(1.0322)	(0.7418)	(0.9518)
Long-term $\mathrm{Debt/Asset}_{t-1}$				-1.6513	-0.6507	-1.4248
				(1.2207)	(0.8638)	(1.1295)
Firm Age				-0.0101	-0.0061	-0.0074
				(0.0084)	(0.0059)	(0.0078)
Employee Wage						-0.0044***
						(0.0005)
Constant	7.6854***	7.2169***	9.7713***	11.0269***	9.7058***	11.0574***
	(0.3182)	(0.4761)	(0.4476)	(1.0241)	(0.7005)	(0.9919)
Observations	1,830,101	1,702,291	1,580,065	1,110,752	1,110,752	1,104,966
R-squared	0.0001	0.0018	0.0139	0.0147	0.0695	0.0662
Sample	All firms	All firms	All firms	All firms	All firms	All firms
Industry FE	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	Yes	Yes	Yes
Task FE	No	No	No	No	Yes	No

Table A3: Position in the Organization

This table examines the relation between family firm control and employee absence for employees with different position in the organization. Column 1 refers to managers and high level employees, column 2 refers to intermediate levels employees and column 3 to lower level employees. Definitions of the variables are provided in Appendix B. Heteroscedasticity-robust standard errors (in parentheses) are clustered at the firm level. ***, **, * correspond to statistical significance at the 1, 5, and 10 percent levels, respectively.

Dependent Variable: Absence	Managers and High Level Professionals	Intermediate Level Employees	Skilled Workers & Elementary Tasks
Family	-0.0545	-0.7956**	-1.6779***
	(0.2561)	(0.3276)	(0.5629)
Male	-3.4354***	-4.0747***	-4.8474***
	(0.1571)	(0.1682)	(0.2737)
Age	0.0345***	0.0134**	0.0606***
	(0.0064)	(0.0061)	(0.0079)
No of Children	-0.2289***	0.0560	0.2144***
	(0.0410)	(0.0659)	(0.0752)
Bachelor Degree	-1.0638***	-2.1218***	-4.1203***
	(0.1220)	(0.2404)	(0.2889)
Assets_{t-1}	0.0004	0.0003	0.0013
	(0.0002)	(0.0004)	(0.0010)
OROA_{t-1}	0.5872	2.6454**	-2.8316**
	(0.6490)	(1.2765)	(1.4124)
Short-term Debt/Asset_{t-1}	0.0907	-1.7234***	-0.2503
	(0.3138)	(0.6648)	(0.6674)
Firm Age	0.0009	-0.0132	0.0051
	(0.0034)	(0.0111)	(0.0093)
Constant	6.4433***	10.5874***	10.9059***
	(0.5185)	(0.6858)	(0.8085)
Observations	421,319	779,952	269,911
R-squared	0.0109	0.0130	0.0132
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Employee Characteristics	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes
No.firms	2499	2565	2227

Table A4: Decomposition of employee absence on Monday, Friday and around holiday

The dependent variable is the annual number of absent days from absence spells that start on Monday or Friday or around a national holiday. The sample is movers and non-movers. Panel A is based on estimation of equation (2) without including the employee time-varying controls and panel B is based on estimation of equation (2) which includes controls for age and hospitalization. Each column defines a set of firms R and R'based on percentiles of average absence. The first row reports the difference in average absent days overall between the two set of firms $y_R - y_{R'}$; the second row reports the difference due to firms $\gamma_R - \gamma_{R'}$; the third row reports the difference due to employees $\alpha_R - \alpha_{R'}$; the fourth row reports the share of the difference in average absence between two set of firms that is due to firm $S_{firm}(R; R')$. The last row reports the share of the difference in average absence between two set of firms that is due to employees $S_{employee}(R; R')$. Standard error of the share is calculated by bootstrap of 50 repetitions.

Panel A: base

	Above/below Median	Top/bottom 25%	Top/bottom 10%	Top/bottom 5%
	(1)	(2)	(3)	(4)
Difference in absence				
Overall	3.0089	4.965	7.5295	9.7189
Due to firm	1.7393	3.0919	5.0956	6.8686
Due to individual	1.2696	1.8731	2.4339	2.8503
Share of difference				
Due to firm	0.5781	0.6227	0.6768	0.7067
	(0.0571)	(0.0544)	(0.0672)	(0.0928)
Due to person	0.4219	0.3773	0.3232	0.2933

Panel B: person control

	Above/below Median	Top/bottom 25%	Top/bottom 10%	Top/bottom 5%
	(1)	(2)	(3)	(4)
Difference in absence				
Overall	3.0023	4.9497	7.4964	9.6809
Due to firm	1.7279	3.0922	5.0937	6.8265
Due to individual	1.2744	1.8575	2.4027	2.8544
Share of difference				
Due to firm	0.5755	0.6247	0.6795	0.7052
	(0.0563)	(0.0535)	(0.0702)	(0.0978)
Due to person	0.4245	0.3753	0.3205	0.2948

Appendix B

Table B1: Definitions of variables

Variable	Definition
Firm Level Variables	
Family	An indicator variable that takes the value 1 if the firm is a family firm and 0 otherwise.
Assets	Measured in real DKK. The source is KOB.
OROA	Source is KOB.
Firm Age	Firm age based on the firm foundation date. The information source is the business registry.
Employee Level Variables	
Male	An indicator variable that takes the value 1 if the person is male and 0 otherwise. The source is the Danish Civil Registration System.
Age	Employee Age. The source is the Danish Civil Registration System.
No Children	The number of living children the employee has. The source is the Danish Civil Registration System.
Wage	Total annual wage of the employee. The information comes from the administrative matched employer-employee dataset (IDA).
College Degree	An indicator variable that takes the value 1 if an employee has completed a bachelor degree. The variable is constructed based on information on the official Danish registry.
Promotion	An indicator variable that takes the value 1 if the employee got a promotion that year and 0 otherwise. The promotion variable is constructed based on information of employee position from IDA.
Separation	An indicator variable that takes the value 1 if the employee left the company that year and 0 otherwise. The separation variable is constructed based on information from IDA.
Legacy Employees	An indicator variable that takes the value 1 if the employee is a legacy employee. We define legacy employees as employees that have family members who are current or past employees in the firm. We require that their family members were employees at the firm for at least 3 years.
Family20pc	Is a dummy variable that takes the value 1 if the firm has at least 20 percent family ownership.