The strength of the weakest link: How firms avoid sickness absence among workers with few substitutes

by

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Abstract

This paper analyzes how firms behave in order to reduce the risk of major production disruptions caused by sickness absence. We conjecture that firms are particularly sensitive to absence in positions where the employees have few close coworker substitutes. Consistent with this notion, we show that workers employed in such positions experience considerably less absence conditional on individual characteristics, establishment fixed effects and detailed occupational dummies. The main mechanism for this low level of absence is targeted selection of employees with low absence rates prior to recruitment—endogenous behavioral responses are of less importance. Workers in jobs with few substitutes are also somewhat more likely to separate from their firms or to be relocated to jobs with more substitutes within these firms if they do become absent. Overall, the results suggest that firms rely heavily on targeted employee selection, rather than on induced behavioral adjustments, in order to avoid work interruptions in key positions. We further show that job-to-job movers are overrepresented among workers entering jobs with few substitutes. This finding is consistent with the notion that firms rely on employees' previous employment status when selecting employees into sensitive positions.

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1 Introduction

Sickness absence is a major concern for many firms, both because of continued wage payments during absence and because of potential production disruptions (Barmby and Stephan, (2000)). Previous theoretical research has suggested that the production in small firms should be particularly sensitive to sickness absence.[1] These predictions have been verified by extensive empirical research which has documented that sickness absence rates tend to be significantly lower in the aforementioned firms, suggesting that substantial efforts are made by these firms to reduce the risk of sickness absence among the employees.[2]

While the overall nature (i.e. size) of the firm (or workplace) that employs a particular employee is known to be a strong predictor of the employee's proneness to sickness absence, less is known about the importance of the employee's job characteristics at the workplace. In line with the workplace size argument above it seems reasonable to expect that the number of occupationally close coworkers (coworkers within the same occupational code) also should be a good predictor of sickness absence. The hypothesis being that the costs of production disruption from sickness absence should be increasing as the number of occupationally close coworkers decreases, because nobody can fill in for the missing worker on the production line. To our knowledge the association between sickness absence and the number of occupationally close coworkers in the workplace has however never been examined.

Using rich Swedish register data we are able to perform a robust test of the aforementioned hypothesis and are able to show that employees performing a particular task (as captured by occupational classifications) are significantly less absent if they perform this task in an environment where they have few occupationally close coworkers, conditional on establishment dummies. This piece of evidence supports the notion that production disruptions caused by sickness absence are indeed very costly and suggest that firms go to considerable lengths to keep sickness absence low in key positions within the firm.

[1] See Weiss (1985), Coles and Treble (1996) and Barmby and Stephan (2000).
[2] See Allen (1981), Barmby and Stephan (2000), Dionne and Dostie (2007) and Ose (2005).

An additional but equally important question is how firms manage to establish the relation between sickness absence and the number of close coworkers that we document. Oyer and Schaeffer (2010) discuss the various strategies that firms can employ in order to extract the best possible output from its labor force spending. Essentially, the personnel economics literature has traditionally focused on the impact of incentives schemes on productivity through effort and self-selection into and out of jobs (e.g. Lazear (2000)). But recently, it has been noted that firms also can improve their labor productivity by relying on the right tools for selecting employees.

The wider labor economics literature has documented a number of strategies used by firms who strive to reduce the information uncertainty when selecting employees to fill vacant positions. In particular, it has been noted that firms appear to rely heavily on various forms of signals drawn from previous labor market history and employment statuses as well as on the private information conveyed through the social networks of current employees.

Eriksson and Rooth (2014) provide a field experiment where the current and past employment histories of young job applicants are varied at random and the results show a clear negative impact on the call-back rate of those who are currently non-employed whereas past events on non-employment are found to be insignificant. Along the same lines, although using a very different empirical approach, Fredriksson et al. (2014) show evidence suggesting that there is more mismatch and more separations due to mismatch, suggesting that matches are formed under considerable uncertainty, when employees are hired from non-employment.

In addition, a large literature building on Farber and Gibbons (1996) and Altonji and Pierret (2001) has analyzed the role of labor market experience for market and employer learning about skills in dimensions that otherwise are difficult to observe (such as deep abilities). Parts of this literature (see e.g. Schönberg (2007)) also document the extent of private (or "asymmetric) firm-specific learning. Notably, Hensvik and Skans (forthcoming) show results suggesting that there is considerable learning after recruitment also for more experienced workers, despite the fact that most market learning appears to happen within the first 10 years on the market (Lange (2007)).

A vivid literature is analyzing the role of social networks for firms' selection of recent employees. Most notably, Hensvik and Skans (forthcoming) use an economy-

wide data set showing that firms who recruit former coworkers of current employees into high-skilled jobs are able to find workers with better skills in dimensions that are difficult to observe (i.e. cognitive abilities) whereas easily observed abilities (schooling) are lower. See also Brown et al. (Forthcoming), Yakubovich et al. (2006) and Fernandez et al. (2000) for firm-specific studies of similar processes, Beaman and Magruder (2012) for an intriguing field experiment, and Kramarz and Skans (2014) and Dustmann et al (2010) for other economy-wide empirical studies of employee selection through social networks.

Based on the suggestions in the previous literature we examine if the low level of sickness absence in positions with few close coworkers is caused by (1) targeted selection of employees with low absence rates prior to recruitment (Entry), (2) endogenous responses (Behavior) or (3) targeted separations (Exit). We show that workers who are hired to jobs with few substitutes had much lower absence rates already before the recruitment (Entry). We find little convincing evidence in favor of systematic changes in absence behavior for workers who are recruited into jobs with few substitutes (Behavior) and systematic separations of recently hired workers who become absent within jobs with few substitutes (Exit).

Overall, these results suggest that firms manage to reduce absence in sensitive positions mainly through selective hiring. We also make an effort into documenting the hiring strategies resulting in this pattern. We show that job-to-job movers are overrepresented among workers entering jobs with few substitutes but that experience is uncorrelated with the number of substitutes. The results are thus consistent with the notion that workers' previous employment status is very important for firms when they select who to hire (cf. Eriksson and Rooth (2014)).

The remainder of the paper is structured as follows. Section 2 describes the data and clarifies crucial definitions. The empirical specifications and results are presented in section 3. Section 4 concludes.

2 Data

In this section we describe our data sources and provide descriptive statistics on the samples used for analysis.

2.1 Data sources and definitions

We use Swedish register data for the private sector between the years 1997-2010. The data contains detailed information on various worker and establishment characteristics. The data is used to construct two separate samples; one for incumbent employees and one for new hires. The sample of incumbent employees are drawn from the years 1999-2000 while the new hires are drawn from 1997-2007. Throughout the paper we drop managers and labor market entrants (less than 5 years since they graduated from their highest education).

The measure of absence that we use in this paper is sickness absence spells longer than two weeks. We use a number of different concepts related to sickness absence. For the sample of incumbent employees we are interested in *present* sickness absence. Present sickness absence is the observed sickness absence in year t which is the year when we observe that a certain individual holds a certain position. For the sample of new hires we are interested in *pre-hire* and *post-hire* sickness absence. The term pre-hire sickness absence is here defined as the sum of the indicator variables for having at least one sickness absence spell of 2+ weeks duration per year in t-3, t-2 and t-1 divided by 3.[3] Post-hire sickness is defined correspondingly for the years t+1, t+2 and t+3.

We use the term *substitutes* for the number of other workers within the same combination of establishment and occupation (ISCO-88, 3d). An employee is *unique* if the number of substitutes is zero.

2.2 Descriptive statistics for the sample of incumbents

Table 1 describes the sample of incumbent employees. These are private sector employees that were employed in Sweden in 1999-2000. About 11 % of the workers work in unique positions (0 substitutes). Workers in relatively unique positions (0-5 substitutes) predominantly work in small establishments. These workers are also somewhat older and have a higher share of women. Workers in relatively unique positions have a similar education to the other employees but more often work in skilled professions suggesting that they have key positions within the firms. Finally, workers with many substitutes have a higher wage (due to the fact that they work in bigger establishment) and a higher rate of sickness absence. .

[3] The recruitment takes place in year t.

2.3 Descriptive statistics for the sample of new hires

Table 2 describes the sample of new hires. These are private sector workers that were hired in the years 1997-2007. We have roughly 400,000 observations. Employees that are hired to jobs with relatively few substitutes work in smaller establishments, are older and have a higher share of women. These employees also tend to work in more skilled professions than the other new hires while the education level is similar between the two groups. New hires in jobs with relatively few substitutes have a somewhat lower mean wage while their sickness absence probability in the year they were hired (year t) is roughly the same as that of new hires in jobs with many substitutes.

3 Empirical analysis

In this section we describe the main empirical specification and present our main results.

3.1 Empirical specification

We are studying the predictive effect of the number of coworker substitutes on different sickness absence outcomes while controlling for individual characteristics, establishment size, establishment fixed effects and detailed occupational dummies. Formally we use the following model:

$$Y_{ijp} = \gamma_1 I[S_{ijp} = 0\ to\ 1] + \gamma_2 I[S_{ijp} = 2\ to\ 5] + \alpha_j + \alpha_p + D_t + \beta X_{it} + \delta Z_{jt} + \varepsilon_{ijp} \qquad (1)$$

The outcome is a sickness absence measure for worker (i) in establishment (j) and profession (p). The profession/occupation is based on a 3-digit occupational code (ISCO-88, 3d). $I[S_{ijp} = 0\ to\ 1]$ is an indicator variable for having 0 or 1 occupationally close coworkers. $I[S_{ijp} = 2\ to\ 5]$ is an indicator variable for having 2, 3, 4 or 5 occupationally close coworkers. γ_1 and γ_2 are the parameters of interest.

3.2 Results for incumbents

Our study of the relationship between the number of occupationally close coworkers and sickness absence within the sample of incumbent employees in panel A in Table 3 reveals that employees have significantly lower sickness absence if they work in an environment with few occupationally close coworkers. The model predicts a decrease in

sickness absence probability by about 1.5 percentage points (from a baseline probability of about 12 %) when going from having more than 5 occupationally close coworkers to 0-1 occupationally close coworkers. The result holds conditional on individual characteristics (including ability proxied by wage), establishment size, establishment fixed effects and occupational dummies. The magnitude of the effect is substantial considering that it is equivalent to reducing an individual's age with 27 years. Interestingly, the result also holds if we reduce the sample to incumbents with a maximum of 3 years of tenure. Looking at the coefficient for the 2-5 substitutes variable we can also note that the effect becomes smaller in absolute value when the number of substitutes is somewhat increased.

3.3 Results for new hires

In this section we search for the explanation to the low sickness absence rates among the workers with few occupationally close coworkers that we documented in section 3.2. We do this by performing analyses on a sample of new hires in two steps. First, we consider potential mechanisms for the documented association. In a second step we examine if some of the hiring strategies suggested by previous research can deepen our understanding of the processes involved.

3.3.1 Mechanisms

There are arguably *three* mechanisms that can explain why employees that work in an environment with few occupationally close coworkers exhibit lower sickness absence rates. *First*, firms might use targeted selection of employees with low pre-hire sickness absence when recruiting to the aforementioned positions. We will call this mechanism the *Enter-mechanism*. *Second*, workers might adjust endogenously once hired (i.e. new hires in jobs with few occupationally close coworkers decrease their sickness absence rate relative to other new hires). Such a process could potentially happen because of incentive schemes created by the employer and/or through peer pressure. We will call this mechanism the *Behavior-mechanism*. *Third*, exhibiting high rates of sickness absence in key positions might result in separation from the job, either through separation from the firm or through relocation to another job within the firm with more occupationally close coworkers. We will call this mechanism the *Exit-mechanism*.

We start our analysis of the new hires by considering the association between post-hire sickness absence and the number of occupationally close coworkers in the job that

the new hire is recruited to (Panel A, Table 4). This is to evaluate if firms are successful with their recruitments, i.e. if realized sickness absence actually is lower among new hires with few substitutes. The average sickness absence probability in three post-hire years is indeed significantly lower for workers recruited to positions with few occupationally close coworkers, the effects being of a somewhat smaller magnitude compared to what we found for the incumbents.

Given that new hires recruited to positions with few substitutes exhibit low post-hire sickness, how is this achieved? Panel B in Table 4 presents results for the *Enter-mechanism*. The results clearly shows that new hires in jobs with few occupationally close coworkers had relatively lower sickness absence rates already before recruitment, suggesting the use of pre-hire sickness absence as a sorting criterion when hiring to these positions. Going from having more than 5 substitutes to having 0-1 substitutes is associated with a decrease in average pre-hire sickness absence probability of about 0.6 percentage points with the effect being significant on the 1 % level. Thus, there is strong evidence in favour of the *Enter-mechanism* being active. It is also interesting to note that the coefficient on the 2-5 substitutes variable is somewhat smaller in absolute terms indicating that screening for low sickness absence gradually becomes less important as the number of substitutes increases.

Panel C in Table 4 deals with the *Behavior-mechanism*. The outcome here is average post-hire sickness probability subtracted by average pre-hire sickness probability. The coefficients are negative meaning that new hires in jobs with few substitutes decrease their sickness absence probability after the hire *relative* to new hires in jobs with more substitutes. However, the estimates have low precision compared to their *Enter-mechanism* counterparts with the estimate on the 2-5 substitutes variable being significant only on the 10 % level. The estimate on the 0-1 substitutes variable only exhibits significance on the 5 % level and it gets even smaller when only considering new hires that were in employment prior to the recruitment (see Table 5).[4] Overall, the evidence thus suggest that the *Behavior-mechanism* is of minor importance in explaining the substitutes-absence correlation.

In panel A in Table 6 we examine the *Exit-mechanism.* Here we only study employees that remain on the same workplace also in t+1. We refer to the average

[4] Pre-hire sickness absence is badly measured for individuals that were in unemployment at the time which is why we run multiple specifications.

sickness absence probability in t and t+1 as *realized sickness absence probability*. We are interested in if new hires that exhibit sickness absence in jobs with few substitutes are punished relatively harder, in terms of job separation (separation from the workplace), than new hires that are sick in jobs where there more substitutes at the workplace. To this end we interact realized sickness with the indicators for 0-1 substitutes and 2-5 substitutes respectively. Exhibiting sickness absence in jobs with few substitutes is indeed associated with a heightened risk of job separation but the association is weak and not statistically significant on conventional levels. In panel B in Table 6 we look at the probability of having more substitutes in t+3 than in t conditional remaining on the workplace until t+3. The results follow the same pattern as those in panel A.

The overall picture emerging from the exercises above is that the *Enter-mechanism* stands out as the only mechanism for which it is possible to draw conclusions with sufficient certainty. Thus, it seems reasonable to conclude that firms manage to reduce sickness absence in positions with few substitutes mainly through selective hiring based on pre-hire sickness probability.

3.3.2 Strategies

Given the results in section 3.3.1 we ask the question: How can firms obtain signals about sickness absence probability for persons that they might be interested in hiring?

First of all the literature seems to suggest that employers interpret current unemployment as a general indicator of untrustworthiness (Eriksson and Rooth (2014)). Thus, based on this robust finding a strong prediction would be that firms mainly recruit from the pool of employed workers when they are trying to fill vacancies that are sensitive with respect to sickness absence. In panel A in Table 7 we test this prediction using the same type of model as before but substituting the sickness measures for the average pre-hire employment probability in the years t-3 to t-1 as the outcome. Consistent with the prediction we find that new hires with a strong pre-hire employment record are overrepresented in jobs with few occupationally close coworkers. New hires in jobs with 0-1 substitutes have an average pre-hire employment probability that is almost one percentage point greater than new hires in jobs with more than 5 substitutes. This association is significant on the 1 % percent level. Consistent with the notion that the sensitivity to sickness absence becomes gradually smaller as the number of

coworkers within the same occupational code increases we also find that new hires with a strong pre-hire employment record are a little less overrepresented in jobs with 2-5 substitutes as compared to jobs with 0-1 substitutes.

The literature also suggests that workers leave traces of information about themselves (e.g. ability and proneness to sickness absence) as they participate on the labor market. More experienced (older) workers have arguably left more traces than less experienced workers. Thus, if firms care so much about having employees with low proneness to sickness absence in positions with few substitutes that they only recruit individuals, to these positions, for which substantial amounts of evidence of certain characteristics exist, then we would expect to see experienced workers to be overrepresented among new hires in jobs with few substitutes. We investigate this prediction in Panel B in Table 7 where we use pre-hire experience as the outcome (proxied by a dummy for being older than 29 years). Although the sign of the coefficients go in the predicted positive direction, the effects are small and statistically insignificant. Thus, there is no evidence to support the prediction that experienced workers should be overrepresented among new hires in jobs with few substitutes.

4 Conclusion

This paper analyzes how firms behave in order to reduce the risk of major production disruptions caused by sickness absence. We conjecture that firms are particularly sensitive to sickness absence in positions where the employees have few occupationally close coworkers (coworkers within the same occupational code) and that firms should make substantial efforts to reduce the sickness absence probability in these positions.

Our first key result is that employees performing a particular task (as captured by occupational classifications) are less absent if they perform this task in an environment where they have few coworker substitutes, conditional on establishment dummies. Conversely, this implies that workers with few coworker substitutes within their occupation are less absent than other workers within the same establishments, conditional on occupational dummies.

Our second set of results pertains to the mechanisms underlying the low absence rate in the relatively unique positions. We show that workers who are hired to jobs with few substitutes had much lower sickness absence rates already before the recruitment. We

find little convincing evidence in favor of systematic changes in sickness absence behavior for workers who are recruited into jobs with few substitutes and in favor of systematic separations of recently hired workers who become absent within jobs with few substitutes.

Overall, these results suggest that firms manage to reduce absence in sensitive positions mainly through selective hiring. We also make an effort into documenting the hiring strategies resulting in this pattern. We show that job-to-job movers are overrepresented among workers entering jobs with few substitutes but that experience is uncorrelated with the number of substitutes. The results are thus consistent with the notion that workers' previous employment status is very important for firms when they select who to hire (cf. Eriksson and Rooth (2014)).

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Tables

Table 1. Descriptive statistics for incumbent employees by uniqueness

	All	0-5 sub	5+ sub
Workplace			
Unique position	0.111	0.294	0.000
Establishment size	287.218	32.307	440.963
Demographics			
Age	38.271	39.001	37.831
Male	0.640	0.589	0.671
Education			
Pre high school education (< 9 years)	0.001	0.001	0.001
Pre high school education ((≥ 9 years)	0.031	0.029	0.032
High school education max 2 years	0.513	0.494	0.525
High school education 2-3 years	0.208	0.222	0.199
Post high school education (< 3 years)	0.141	0.149	0.136
Post high school education (≥ 3 years)	0.102	0.103	0.101
Postgraduate education	0.005	0.003	0.006
Wage and Benefits			
Monthly wage in t (SEK)	20634.560	19608.903	21253.165
Sickness benefit dummy in t	0.108	0.094	0.116
Professions			
Professionals	0.144	0.149	0.142
Technicians	0.226	0.244	0.215
Clerks	0.131	0.189	0.097
Service workers and shop sales	0.107	0.115	0.102
Skilled agricultural and fishery	0.009	0.018	0.003
Craft and related trades workers	0.168	0.162	0.171
Plant and machine operators	0.170	0.092	0.218
Elementary occupations	0.045	0.032	0.053
Number of observations	868626	161660	706966

The sample is based on private sector employees in Sweden in 1999-2000.

Table 2. Descriptive statistics for new hires by uniqueness

	All	0-5 sub	5+ sub
Workplace			
Unique position	0.114	0.269	0.000
Establishment size	154.067	22.448	250.773
Demographics			
Age	36.419	37.119	35.905
Male	0.622	0.585	0.649
Education			
Pre high school education (< 9 years)	0.010	0.010	0.010
Pre high school education ((≥ 9 years)	0.086	0.075	0.095
High school education max 2 years	0.400	0.397	0.402
High school education 2-3 years	0.261	0.274	0.251
Post high school education (< 3 years)	0.127	0.135	0.121
Post high school education (≥ 3 years)	0.112	0.106	0.117
Postgraduate education	0.004	0.003	0.004
Wages and Benefits			
Monthly wage in t (SEK)	21547.859	20900.615	22023.412
Sickness benefit dummy in t	0.107	0.106	0.107
Professions			
Professionals	0.148	0.145	0.151
Technicians	0.214	0.236	0.199
Clerks	0.132	0.178	0.099
Service workers and shop sales	0.140	0.136	0.144
Skilled agricultural and fishery	0.009	0.014	0.006
Craft and related trades workers	0.146	0.149	0.144
Plant and machine operators	0.144	0.090	0.185
Elementary occupations	0.064	0.053	0.073
Number of observations	402356	83550	318806

The sample is based on private sector new hires in Sweden in 1997-2007.

Table 3. The association between present sickness absence and substitutes

Panel A. Sickness (in t)	*All*	*Tenure max 3*
0-1 sub	-0.0173***	-0.0161***
	(0.0019)	(0.0026)
2-5 sub	-0.0121***	-0.0101***
	(0.0016)	(0.0022)
Observations	868,626	414,176
Mean of dependent variable	0.118	0.114
Panel B. Log of wage (in t)	*All*	*Tenure max 3*
0-1 sub	0.0157***	0.0217***
	(0.0021)	(0.0027)
2-5 sub	0.0066***	0.0108***
	(0.0017)	(0.0022)
Observations	868,626	414,176
Mean of dependent variable	9.932	9.927
St.dev. of dependent variable	0.295	0.318

The standard errors are clustered on the workplace level. The reference category is employees with more than 5 substitutes. We include workplace fixed effects, occupation fixed effects and year fixed effects. We further control for gender, age, education, origin, having small children and establishment size. In Panel A we also control for wage. */**/*** significant at the 10 /5/1 percent level.

Table 4. Associations between sickness outcomes and substitutes for new hires

Panel A. Post-hire sickness	*All*
0-1 sub	-0.0122***
	(0.0021)
2-5 sub	-0.0087***
	(0.0017)
Observations	402,356
Mean of dependent variable	0.137
Panel B. Pre-hire sickness	*All*
0-1 sub	-0.0061***
	(0.0020)
2-5 sub	-0.0052***
	(0.0017)
Observations	402,356
Mean of dependent variable	0.120
Panel C. Change in sickness	*All*
0-1 sub	-0.0061**
	(0.0026)
2-5 sub	-0.0035*
	(0.0021)
Observations	402,356
Mean of dependent variable	0.0175

The standard errors are clustered on the workplace*skill level. The reference category is employees with more than 5 substitutes. We include workplace*skill fixed effects, occupation fixed effects and year fixed effects. We further control for gender, age, education, origin, having small children, establishment size and wage. */**/*** significant at the 10 /5/1 percent level.

Table 5. Associations between sickness outcomes and substitutes for new hires that were employed before recruitment

Panel A. Pre-hire sickness	*All*
0-1 sub	-0.0077***
	(0.0021)
2-5 sub	-0.0065***
	(0.0017)
Observations	339,162
Mean of dependent variable	0.110
Panel B. Change in sickness	*All*
0-1 sub	-0.0050*
	(0.0027)
2-5 sub	-0.0013
	(0.0022)
Observations	339,162
Mean of dependent variable	0.0135

The standard errors are clustered on the workplace*skill level. The reference category is employees with more than 5 substitutes. We include workplace*skill fixed effects, occupation fixed effects and year fixed effects. We further control for gender, age, education, origin, having small children, establishment size and wage. */**/*** significant at the 10 /5/1 percent level.

Table 6. Interaction effects on exit probability between sickness and substitutes

Panel A. Exit t+1 to t+2	*All*
0-1 sub * realized sickness	0.0205
	(0.0152)
2-5 sub * realized sickness	0.0042
	(0.0118)
Observations	346,431
Mean of dependent variable	0.266
Panel B. More substitutes (t+3)	*All*
0-1 sub * realized sickness	0.0545
	(0.0389)
2-5 sub * realized sickness	0.0084
	(0.0293)
Observations	115,538
Mean of dependent variable	0.483

The standard errors are clustered on the workplace*skill level. The reference category is employees with more than 5 substitutes. We include workplace*skill fixed effects, occupation fixed effects and year fixed effects. We further control for gender, age, education, origin, having small children, establishment size and wage. */**/*** significant at the 10 /5/1 percent level.

Table 7. Associations between pre-hire characteristics and substitutes

Panel A. Pre-hire employment	*All*
0-1 sub	0.0093***
	(0.0018)
2-5 sub	0.0079***
	(0.0015)
Observations	402,356
Mean of dependent variable	0.911
Panel B. Pre-hire experience	*All*
0-1 sub	0.0023
	(0.0020)
2-5 sub	0.0002
	(0.0017)
Observations	402,356
Mean of dependent variable	0.738

The standard errors are clustered on the workplace*skill level. The reference category is employees with more than 5 substitutes. We include workplace*skill fixed effects, occupation fixed effects and year fixed effects. We further control for gender, age, education, origin, having small children, establishment size and wage. */**/*** significant at the 10 /5/1 percent level.