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Sickness absence: Worker and establishment effects

Mahmood Arai and Peter Skogman Thoursie*

Summary

■ In this paper, we examine the determinants of absence due to illness for workers in Swedish establishments. The main question concerns to what extent absence due to illness can be related to worker effects and to what extent workers' sick-reporting behavior can be linked to group effects associated with employing establishments. Our results indicate the existence of substantial establishment-level variation in sickness absence; a variation that cannot be explained by the standard worker and establishment characteristics used in the earlier literature.

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The previous literature on the determinants of sickness absence has primarily used individual data to examine the pattern of sickness absence across workers. A few studies use establishment-level data to characterize the role of establishment characteristics for sickness absence.[1] No previous study, however, analyzes the overall pattern of sickness absence taking into account both worker and establishment characteristics. The purpose of this study is to do just that and distinguish between worker and establishment level-effects in sickness absence behavior.[2]

The relative importance of worker and establishment effects is closely related to the relative emphasis policies should put on worker or employer incentives to reduce sickness absence. Theoretically, sickness absence may be governed by worker characteristics and behavior alone or, at the other extreme, may predominantly be the result of establishment effects implying no major variation in sickness absence between workers in the same establishment. In the former case, policy should focus on individual health and the incentives influencing when individuals' report sick. The latter case implies policies toward improving working conditions and employers' incentives to improve the work environment. In the real world, sickness absence is likely to be the result of a mixture of these two sources, implying a combination of the two policy strategies.

Workers are grouped in establishments facing similar working environments. Though many existing individual (worker) data sets include indicators for working conditions, defined as job characteristics,

* *We have benefited from comments by Lena Nekby, Sten Johansson, an anonymous referee and the editor of this issue.*

[1] For a review of previous studies, see Section 1 below.

[2] Ichino and Maggi (2000) study variation in sickness absence across different establishments within a large Italian Bank by means of a fixed coefficient model and report substantial across-group variation in sickness absence behavior.

information on the many interesting establishment-level characteristics that may influence sickness absence is not readily available in existing data. An important feature of an establishment is, for example, its economic performance and profitability. The organization of work and workplace social norms are likely to be other important determinants for both the psycho-social working conditions in the workplace and the sickness absence behavior.[3] Obviously, this type of group characteristics (group effects) cannot be studied using ungrouped individual (worker) data.

An important problem, however, when relying on establishment-level data concerns the lack of individual information implying that many worker-effects are aggregated and conceived as group effects. This issue is closely related to the sorting of workers into establishments. Workers might be grouped into establishments with varying characteristics according to certain personal characteristics that are known or unknown to the researcher. This feature of the data creates a dependence between worker absence within an establishment. If this dependence is not taken into account, it might lead to incorrect inference.

Our results indicate the existence of substantial establishment-level variation in sickness absence, which cannot be explained by the standard worker and establishment characteristics used in the earlier literature.

We conclude that establishment effects are at least as important as the common individual predictors of sickness absence used in the economics literature. Similar to previous studies, regional and industry variation in sickness absence is also found but our results indicate comparable establishment-level variation within regions and industries.

The remainder of the paper is organized as follows. The related literature is summarized in the next section, followed by a description of the overall pattern of sickness absence across individuals, establishments, industries and counties in Section 2. Section 3 examines the establishment effects on sickness absence and investigates the relative importance of individual and establishment effects. Finally, the paper is concluded in Section 4.

[3] See e.g. Lindbeck et al. (1999) for an analysis of the role of social norms for individual economic behavior.

1. Related literature

The following overview of previous studies aims at giving a brief account of some of the most important results obtained in the recent empirical economic literature regarding sickness absence and should not be seen as a complete overview of the related literature.[4]

Previous work on the determinants of labor absence has primarily addressed the issue of economic incentives.[5] These studies focus on the impact of the replacement ratio on sick reporting behavior and use variations in the replacement ratio caused by reforms in sickness insurance policies to assess the impact of economic incentives on sick-reporting behavior. A common conclusion of this literature is that economic incentives significantly affect the sick reporting behavior.

Another question analyzed in the related literature is to what extent different social insurance schemes overlap due to differences in the economic incentives between such schemes. Larsson (2002) estimates such effects and finds that the probability of reporting sick increases as the expiration date of the unemployment insurance approaches. In addition, there seems to be incentives for the unemployed to report sick when the sickness benefits associated with sickness insurance are higher than the unemployment benefits. Such an incentive mechanism occurs in Sweden when an individual has an income level between the two different income ceilings in the unemployment and sickness insurance systems.

The pro-cyclical pattern of sickness absence has been confirmed in numerous empirical studies.[6] There are a number of potential explanations for this pattern. High unemployment levels may affect the propensity for an employed worker to report sick as a higher level of sick reporting increases the risk of job loss. A second mechanism is related to the absence behavior of more absence-prone marginal

[4] For alternative overviews which also cover earlier literature, see e.g. Andrén (2001a) and Brown and Session (1996).

[5] See e.g Andrén (2001b-d); Barmby et al. (1991, 1995); Broström et al. (2002); Brown et al. (1999); Gilleskie (1998); Henrekson and Persson (2004); Ichino and Riphahn (2001); Johansson and Palme (1996, 2002); Larsson (2002); Rikner (2002); Skogman Thoursie (2002); and Winkelmann (1999).

[6] Pro-cyclical sickness absence has been established in e.g. Arai and Skogman Thoursie (2001), Askildsen et al. (2002); Bäckman (1998); Lantto and Lindblom (1987); and Lidwall and Skogman Thoursie (2000).

workers who enter and leave the work force in various states of the business cycle. Finally, health is adversely affected in economic booms. Both Arai & Skogman Thoursie (2001) and Askildsen et al. (2002) report results indicating that pro-cyclical incentives dominate any possible selection effects. Hesselius (2003), on the other hand, reports evidence in support of the selection hypothesis, i.e. that less absence-prone workers are more likely to remain employed in a recession.

A few studies use establishment-level data to characterize the role of establishment characteristics for labor absence. Edling (1993) reports evidence of lower sickness absence in Swedish establishments where workers have a higher degree of job autonomy. Szücs et al. (2003) find that workers' anxiety about future reorganizations at the establishment increases the absence due to illness. Ichino and Maggi (2000) study the variation in labor absence across different establishments within a large Italian Bank by means of a fixed coefficient model and report substantial across-group variation in sick reporting behavior.

2. The overall pattern of sickness absence

In order to analyze the overall pattern of sickness absence, we use a sample of 227,637 workers employed in 337 establishments, based on matched registers for all workers employed in establishments included in the 1991 Swedish Establishment Survey (SuperAPU).[7] In order to avoid observations on young workers in the entrance phase of labor market participation, we limit the sample to workers between 30 and 64 years old in 1991. We further restrict our analysis to establishments with more than 29 employees to allow for within-establishment variation in sickness absence and its determinants.[8] Note that to examine the relative importance of individual and establishment variation in sickness absence, we need data at both the worker and the establishment level. A natural source of such data is matched registers. These type of data rarely include information on sickness absence, however. Our data set is the only one available for

[7] See le Grand et al. (1996). The sample used here is a random sample of the original sample. Due to computational limitations, we reduced the number of observations from 363,330 to 227,637 by a 0.2 employment-weighted random draw of establishments.

[8] For more details on the data, see the introduction in Vilhelmsson (2002).

Sweden, fulfilling both the above requirements. A drawback of register data, however, is the lack of detailed information on the health status of individuals and their working conditions. To our knowledge, survey data including such information for all individuals in a substantial number of establishments are not available.[9]

Our measure of absence due to illness is the number of days a worker has reported sick (with compensation for income loss from the sickness insurance system) during the period January 1, 1991—December 31, 1991. There is no information available on the number of sickness spells per worker. This implies that the measure of sickness absence for two workers with the same number of sick days, but with a different number of spells, is treated equally.

Our data also contain information on the highest attained educational level, age, gender, industry affiliation, and the ownership structure of the employing establishment, i.e., public ownership (municipality, county council or government) or private ownership. Using the establishment identity number, it is possible to track individuals back to 1986 and construct dummy variables for seniority, i.e., the number of years an individual is employed at the same establishment. Category levels are constructed for those with less than one year of seniority, for one to two years, two to three years and so on, up to five or more years at the same establishment. Finally, wages are measured as a monthly full-time equivalent wage-rate in 1991.

Sample statistics for the entire sample are reported in Table 1 (see Table 1, column 1). As can be seen, the mean number of sick days is 25 days and there is large variation in the number of sick days across workers, represented by the standard deviation of 64.8. Women constitute 60 percent of the sample. This is higher than the female share in the workforce, because large establishments are over-represented in the Establishment Survey and women work in large public-sector establishments to a larger extent than men.[10]

[9] Such data are also very demanding to collect, which is not feasible within the realm of this study.

[10] The over-representation stems from the fact that APU originates from the sample of workers included in the individual database, The Swedish Level of Living Survey 1991. These individuals were matched to their employing organizations and APU surveys all workers employed in the identified establishments. Vilhelmsson (2002) analyzes the potential consequences of the over-representation of large firms and concludes that the Establishment Survey provides a good representation of the Swedish work force.

Table 1. Means and frequencies for the 1991 SuperAPU sample of workers aged 30-64 in establishments with at least 30 employees

	Samples with average establishment absent-day intervals			
	All	[4.5,18.7]	[18.7,27.3]	[27.3,93.8]
	Individual level			
Absent days	25.4 [64.8]	15.1 [45.5]	23.8 [61.5]	33.4 [76.0]
Age	44.1 [9.0]	44.5 [9.0]	44.1 [9.0]	43.9 [9.1]
Female (1.0)	0.6	0.29	0.63	0.74
Immigrant (1.0)	0.14	0.12	0.14	0.15
Number of children	0.97 [1.1]	0.91 [1.1]	1.01 [1.1]	0.97 [1.1]
Blue collar (1.0)	0.43	0.28	0.45	0.49
Monthly full-time				
wage SEK 1000	15 [5]	18 [6]	15 [5]	14 [5]
Education levels:				
elementary	0.11	0.12	0.12	0.09
compulsory	0.07	0.08	0.07	0.07
upper secondary < 12 yrs.	0.34	0.22	0.35	0.40
upper secondary	0.10	0.17	0.08	0.07
university < 3 yrs.	0.21	0.13	0.22	0.23
university	0.17	0.27	0.16	0.14
Seniority:				
0-1 years	0.06	0.07	0.05	0.06
1-2 years	0.08	0.08	0.09	0.07
2-3 years	0.08	0.07	0.08	0.09
3-4 years	0.12	0.09	0.11	0.16
4-5 years	0.15	0.15	0.15	0.15
> 5 years	0.51	0.54	0.52	0.48
No. of workers	227637	48460	96281	82896
No. of establishments	337	112	112	113

Notes: Standard deviations in brackets. The samples in columns 2-4 are generated by dividing the overall sample into three parts containing the same number of establishments, based on the ranking of establishments' average sick days.

The average number of sick days varies substantially between industries as shown in Table 2.[11] The industry-average number of sick days ranges from 9 to 36 days. The unweighted standard deviation of

[11] Industries are initially aggregated to 10 levels. Each industry is then categorized separately for each sector; municipality, county council, government and the private sector. When one industry-specific sector cell is too small, sectors in the same industry are merged. For example, for the building and construction industry, the municipality, county council and government sectors are merged into one industry category for the public sector. Another example is the trade industry which only constitutes one category including all sectors.

the industry-average number of sick days is 7 days. The corresponding employment-weighted standard deviation is 4 days.

Table 2. Industry-average number of sick days and industry number of workers using 1991 SuperAPU sample of workers aged 30-64 in establishments with at least 30 employees

	Mean sick days	No. of workers
Industries:		
Private construction	9	267
Private banking and financial institutions	11	1295
Private electricity and gas	12	1335
Private health and childcare	12	1379
Public electricity and gas	15	275
Private others	15	661
Government health and childcare	18	11177
Trade	18	2112
Private mining	18	1612
Municipality administrations and services	19	509
Government administrations and services	19	7977
Public construction	21	310
Private manufacturing	22	61128
Public manufacturing	22	753
Public others	26	208
County Council administrations and services	27	1269
Municipality banking and financial institutions	27	146
Private transport	28	1848
County council health and childcare	28	110649
Public transport	30	8383
Municipality health and childcare	31	11985
Public Banking	36	2359
Observations		227637

Notes: The standard deviation of the industry-average number of sick days is equal to 7 days. The corresponding employment-weighted standard deviation is equal to 4.

Table 3 showing the number of sick days by county indicates that there is also substantial variation in the average number of sick days between counties. The county-average number of sick days ranges from 19 to 38 days and the unweighted (employment-weighted) standard deviation of the county-average number of sick days is 4 (3) days.

Table 3. County-average number of sick days and county number of workers using 1991 SuperAPU sample of workers aged 30-64 in establishments with at least 30 employees

	Mean sick days	No. of workers
Counties:		
Kalmar	19	1767
Halland	22	4430
Skaraborg	23	7206
Kristianstad	23	6617
Älvsborg	23	13778
Stockholm	24	52779
Kronoberg	24	4546
Östergotland	24	10448
Norrbotten	24	7546
Malmöhus	25	16511
Dalarna	25	4523
Jönköping	25	6695
Göteborg	25	28468
Västmanland	25	7200
Örebro	26	7578
Värmland	26	4666
Södermanland	28	4475
Västra Norrland	28	4975
Blekinge	28	5736
Uppsala	29	10219
Gävle	30	6847
Jämtland	33	2148
Västerbotten	37	8301
Gotland	38	178
Observations		227637

Notes: The standard deviation of the industry-average number of sick days is equal to 4 days. The corresponding employment-weighted standard deviation is equal to 3.

Although the variation in sickness absence between industries and counties is naturally lower than the total variation across workers, which was approximately 64 days, the figures reported above suggest important industry and county variation in sickness absence. By focusing on the variation in sickness absence between industries and counties, however, the potential variation within industries and counties is ignored. By using all workers employed in each of the establishments included in the 1991 Swedish Establishment Survey, we can examine the variation in sickness absence at the establishment level.

The unweighted standard deviation of the establishment average number of sick days is 12 days. The corresponding employment-weighted standard deviation is 8 days, which suggests that establishment variation is important and might not be captured by the coarser aggregation in terms of industries and counties.

As a first method of describing establishment heterogeneity in sickness absence, the sample is divided into three sub-samples based on the ranking of the establishments' average number of sick days. The first sub-sample consists of those 112 establishments with the lowest average number of sick days, the second sample of the 112 establishments with the subsequent average number of sick days, and the final sub-sample of the 113 establishments with the highest average number of sick days. As can be seen in Table 1, columns 2-4, the three sub-samples differ in several respects. The average number of sick days in establishments at the lower part of the distribution is 15.1, whereas the corresponding figure for the higher part is 33.4. One of the major differences in mean characteristics between the three sub-samples is that the fraction of workers with university education is highest in the lower part of the distribution, that is to say in establishments with the lowest number of reported sick days. It is also the case that there are relatively few blue-collar workers in the lower part of the distribution as compared to the other two sub-samples at the higher end of the distribution. The share of female workers is also smaller in the lower than in the higher part of the distribution. Finally, workers belonging to the lower part of the distribution have a higher average monthly wage-rate as compared to the other two sub-samples.

Another way of examining differences between establishments is to look at the complete distribution of average establishment number of sick days, mean age and female share. These distributions are illustrated in Figures 1a-c (note that all workers belonging to an establishment with a certain average number of sick days are included in the columns). Figure 1a indicates that there is large variation in the average number of sick days between establishments. The establishment average number of sick days ranges from 5 to 94 days, even if the vast majority of employees work in establishments with an average number of sick days between 15 to 40 days.

Figure 1a. Distribution of Establishment—average days of absence

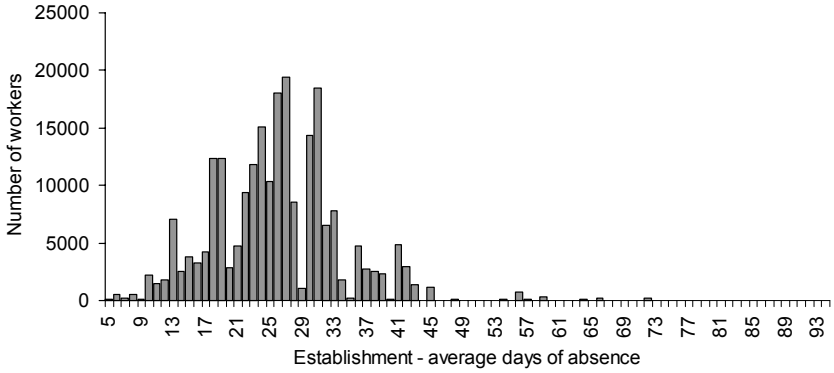

Figure 1b. Distribution of Establishment—average age

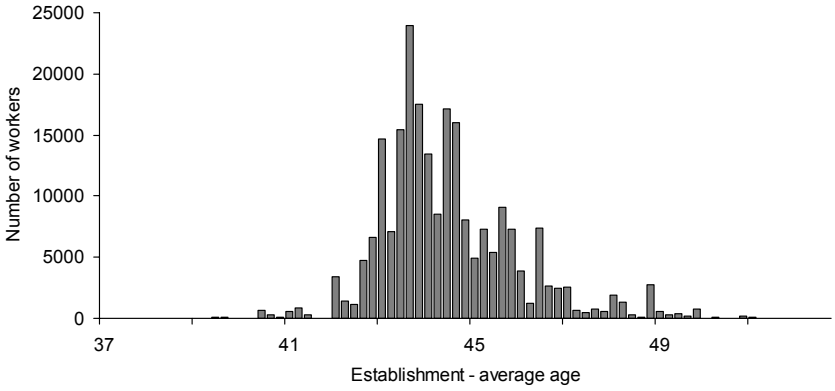

Figure 1c. Distribution of Establishment—share of female workers

Figures 1b-c show that differences between establishments are also found regarding mean establishment age, as well as mean establishment female share.[12] Some employees work in establishments with a very low age structure with mean establishment ages below 40, others in establishments with mean ages above 40. Most employees are found in establishments with mean ages ranging between 42 and 45 years, however. As regards the establishment female share, a substantial part of the workers are found to work in establishments dominated by females. As shown in Figure 1c, there are several establishments where females constitute 80 percent or more of all employees at the establishment.

To summarize, an examination of the data reveals that there is substantial variation in sickness absence across workers, industries and counties. In addition, the descriptive statistics indicate that there seems to be a large establishment variation in sickness absence rates. What needs to be further explored is the potential variation between establishments within industries and counties.

[12] Note that the mean establishment age and the mean establishment female share include all workers in the establishment, i.e. they are calculated before the sample was selected to ages 30-64.

3. Establishment effects

The overall variation in the number of workers' sick days measured as the standard deviation of sick days is 64 days. The considerable size of this variation cannot be explained by the information available in the data. Large differences in sick days between two individuals can be the result of, for example, varying health status, an indicator of which is not available in the data. As such, the variation in sick days cannot fully reflect differences in our available indicators for individual characteristics and establishment affiliation. This means that though we control for a number of important determinants of sickness absence, substantial variation in health remains within cells defined by our individual and employer characteristics. On the other hand, small differences in sick days—a couple days—are more likely to be purely random. The objective of our analysis, however, is to compare the relative importance of the role of individual characteristics, as measured in the economic literature to date, to the role of establishment effects. Therefore, we do not expect our models to fully explain the substantial variation in workers' sick days. Part of the observed variation in establishment-level sickness absence is likely to stem from differences in worker characteristics across establishments.

If workers were randomly assigned to establishments, we would not observe any significant differences in sickness absence between establishments, unless all establishment differences are due to differences in working conditions.[13] On the other hand, if workers are systematically sorted into establishments based on e.g. age and gender, establishment variation in sickness absence will partially reflect systematic establishment differences in age and gender composition.

Based on an analysis of variance (ANOVA), age, gender and occupational status (measured by a dummy variable indicating blue-collar status) of workers contribute most to explaining the variation in sickness absence across workers among the available individual characteristics in the data. It is possible that the age and gender of workers affect sickness absence differently, depending on the establishment composition with respect to these variables.

An illustrative example is that of an older worker who may have to do more heavy lifts in an establishment with a high share of older workers than in an establishment with a relatively large amount of

[13] By working conditions, we refer to all kinds of establishment factors such as physically and mentally demanding work tasks as well as establishment norms.

healthy, young workers. On the other hand, when workers enjoy working with others of the same age, working in such establishments might lead to greater job satisfaction and thus, a lower absence rate.

In the same manner, it might be physically tougher for women to work in female dominated establishments. The gender composition of a workplace can also affect sickness absence when women are subject to greater pressure (which, in turn, may lead to poorer health) to perform and improve their career possibilities within a male dominated work environment as compared to a female dominated one.[14]

As a first step in investigating establishment variation in sickness absence, we estimate the simplest possible specification with an intercept that is allowed to randomly vary across establishments. This means that we allow establishments to vary in average sickness absence, captured by establishment-specific (random) intercepts. For details of the statistical model used in this section, see Pinheiro and Bates (2000) and Venables and Ripley (1999).[15] The estimated standard deviation of the random intercept is approximately 10 days and significant at conventional levels. This implies that substantial variation in sickness absence exists across establishments (see column 1 of Table 4).

The results reported in Table 4, column 2 indicate that including a rich set of individual characteristics reduces the standard deviation of the random establishment intercepts from 9.53 to 6.16 days. The message of this result is that the establishment effects continue to be at least as important as the individual effects, as specified in our models.

Furthermore, including establishment characteristics such as industry affiliation, geographical location and establishment size leads to a rather small reduction in the standard deviation in the establishment intercepts from 6.16 to 5.34 days (column 3 of Table 4). Moreover, we find that there is no significant effect of establishment size for establishments with more than 29 employees, once we allow for variation in establishment average sickness absence. Running a regression without allowing for random establishment intercepts, returns a sig-

[14] See Alexandersson and Östlin (2000) for a discussion.

[15] In this paper, we use lme in the nlme package of R (R-project home page: http://www.r-project.org/). We have also experimented with a Generalised Mixed-Effects Model assuming Poisson distribution due to the nature of the dependent variable and have estimated our models with Generalised Penalized Quasi Likelihood methods in R. The results are qualitatively the same.

nificant establishment size effect. Previous studies reporting establishment size-effects therefore capture general establishment effects rather than specific size effects.

Table 4. Random establishment-intercept models of the number of sick days using the sample of workers aged 30-64 from the 1991 SuperAPU (standard errors in brackets)

	1	2	3	4
Intercept	8.64*** [-0.58]	11.34*** [1.31]	13.54*** [7.71]	78.86*** [23.67]
Age		0.70*** [0.02]	0.70*** [0.02]	2.62*** [0.44]
Establishment average age				2.01*** [0.5]
Establishment average age* age				-0.04*** [0.01]
Female		7.02*** [0.35]	6.69** [0.36]	12.78*** [0.77]
Establishment female share				6.88*** [2.66]
Female* establishment female share				-11.10*** [1.23]
Education levels:				
compulsory 9 years		-1.50** [0.66]	-1.53** [0.65]	-1.65** [0.66]
upper secondary < 12 yrs.		-5.44*** [0.5]	-5.71*** [0.5]	-5.49*** [0.5]
upper secondary		-8.12*** [0.63]	-8.30*** [0.63]	-8.01*** [0.63]
university < 3 yrs.		-10.4*** [0.62]	-10.8*** [0.62]	-10-2*** [0.63]
university		-7.79*** [0.7]	-8.01*** [0.71]	-7.84*** [0.71]
log establishment size			-0.09 [0.32]	-0.15 [0.33]
County			YES	YES
Industries			YES	YES
Log likelihood	-1271209	-1266150	-1266003	-1265953
Akaike	2542424	2532341	2532135	2532044
Baysian	2542455	2532547	2532807	2532757
STD of random intercepts (95% confidence intervals in parentheses)				
STD (Intercepts)	9.53***	6.15***	5.34***	5.17***
	(8.6,10.5)	(5.5,6.9)	(4.6,6.1)	(4.5,6.0)

Notes: All models include controls for the workers' immigrant and blue-collar status, the number of children as well as seniority and full-time equivalent monthly wage. Detailed results can be obtained from the authors upon request. N =227,637 in 337 establishments.

Adding controls for age and gender composition as well as allowing for variation in age and female slopes with the establishment age average and the establishment gender composition, we find results indicating that a higher establishment female share and average age are associated with a higher expected number of sick days (column 4 of Table 4). The estimated coefficients from the interaction variables show that sickness absence due to age decreases with the establishment mean age and the effect of being female decreases with the establishment female share. These results are, however, reliable only under the assumption of fixed establishment effects for average age and female share. This is a restrictive assumption implying that we only allow the effect of age and gender to vary across establishments by establishment average age and gender composition. Our experiments with a richer set-up allowing for random coefficients of age and female depending both on establishment average age and establishment female share as well as a random term disclose that the interaction effect of age and average establishment age is not robust.

Industries account for part of the variation in sickness absence. Industry categories can be used as a coarse proxy for establishments because of potential common characteristics such as some working conditions within industries. There is also regional variation. Therefore, we have also experimented with models allowing for random county intercepts and random industry intercepts. Controlling for individual characteristics, these models, yield results indicating a variation in average sick days that does not deviate substantially from the standard deviation of the county and industry employment-weighted raw averages that are approximately 4 and 5 days.[16]

In sum, we can conclude that the common individual predictors of sickness absence in the previous economic literature on the subject are at most as important as the establishment effects. There is regional and industry variation in sickness absence, but it is accompanied by a comparable within variation by region and industry across establishments.

[16] These results can be obtained from the authors upon request. For predicting the standard deviation in county intercepts, we include fixed industry intercepts, and analogously include fixed county intercepts when predicting the standard deviation of the industry intercepts.

4. Conclusions

In this paper, we have used a sample of Swedish establishments with information on all employed workers at each establishment to examine the variation in establishment level sickness absence. Starting with a model including only random intercepts, we find that the estimated standard deviation in average sickness absence days is around 10 days of absence. Including a large set of worker and establishment characteristics reduces this variation to 5 days at most, indicating the existence of substantial across-establishment variation in sickness absence.

A large part of the across-establishments variation in sickness absence remains within industries, implying that industry affiliation is a noisy indicator for identifying group-related sickness absence. Another result is that the positive effect of establishment size does not survive the inclusion of establishment random effects. Our main conclusion is that there is substantial group heterogeneity related to establishments beyond the standard indicators examined in the previous literature.

The relative importance of worker and establishment effects is closely related to the relative emphasis policies should put on worker and employer incentives to reduce sickness absence. Our results based on data for 1991 indicate that policy should aim at both individual workers and their employers. However, we wish to emphasize that the absence of similar studies implies caution in over-generalizing our results. Future research should examine the relative role of individual and establishment effects for other years and use a richer set of data including indicators of worker health and establishment working conditions.

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