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Abstract

We estimate sickness absences on Mondays and Fridays which fall between a weekend and public holidays, so called "bridging days". Many public holidays change their day of the week over the years. We find that sickness absences are considerably lower on bridging days than on regular Mondays and Fridays. Based on an investigation of diagnoses with unobservable symptoms, we do not find indications for changes in shirking behavior by workers.

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Keywords: sickness absence, moral hazard, bridging days

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1. Introduction

Workers are better informed about their health status than their employers, and, occasionally, also than their doctors. This information asymmetry could lead to improper use of sickness absences, i.e., shirking. When the value of leisure is greater, a worker might shirk more often.[1] In many countries, the day of the week of certain public holidays varies over the calendar years, because they always fall on a fixed date. This variation creates „bridging days" which are Mondays or Fridays that are between a weekend and a public holiday. Bridging days allow for a longer absence from work and could increase utility from leisure. It seems plausible that more workers will shirk by calling in sick on bridging days than on other Mondays or Fridays. This might be particularly true when workers receive sick pay and are insured against income loss from sickness, as is the case in almost all advanced industrial countries (Scheil-Adlung and Sandner, 2010). Since in most firms economic activity is lower on bridging days, we might also expect less presenteeism, i.e., workers who go to work despite being ill, which would also lead to more sickness absences.

We use Social Security data for Austria to analyze whether sickness absences on bridging days are indeed more or less frequent than on similar Mondays and Fridays. The literature provides some evidence for increased absenteeism when the marginal utility of leisure is greater. For Sweden, Thoursie (2004; 2007) finds that the sickness rate increases during major sports events, and around employees' birthdays. In both studies, the effect was limited to young men, whereas women and older men did not show any irregular absence patterns. Shi and Skuterud (2015) find that Canadian workers are more likely to be absent from work when the weather is better. These results can be interpreted as evidence for (more) shirking when the relative value of leisure is greater. With respect to bridging days, the

[1] In fact, certain days that are associated with increased marginal utility of leisure (e.g., weekends, traditional festivities or family events such as births and marriages) have become part of industrial relations. Labor laws and (collective) contracts typically account for these occurrences with provisions that mandate wage premiums or time off (Brown and Sessions, 1996).

evidence is mixed. Broström et al. (2004, p55) find "no support for the anecdotal evidence that work absence is higher" on bridging days. Ben Halima et al. (2018) find that workers tend to use bridging days to prolong a weekend or an official public holiday.

2. Data and empirical strategy

We use Austrian Social Security Data (ASSD, for details see Zweimüller et al., 2009) for Upper Austria, one large Austrian region that in 2016 accounted for approximately 17.8 percent of workers and 16 percent of firms in Austria. The data cover the years 2006 to 2016 and provide daily information on all employees in dependent employment, except for civil servants.

We augment this dataset with data on sickness absences from the statutory health insurance. Sickness absences are recorded by medical doctors who provide the start and end of an absence, as well as the medical diagnosis (ICD-10, see WHO, 2016).[2] Each worker is linked to the employer via a unique firm identifier and we construct firm-level information, such as firm size, for each firm.

We construct a panel of firms' sickness absences for every day from the 1st of January 2006 to the 31st of December 2016. Our unit of observation is the individual firm and we restrict the data to Mondays and Fridays and exclude Mondays and Fridays which were public holidays. In this period, there were 45 bridging days. Our sample contains 36.9 million firm-day observations on 67,634 firms.

We estimate firm-fixed effects panel regressions to control for unobserved firm-specific heterogeneity, because firms might differ in determinants of sickness absences, such

[2] In Austria, each worker is required to see a medical doctor if he/she is unfit for work. The doctor informs the social security with details of the sickness. The employer is informed about the expected end of the sickness spell. Employers risk fines if workers work during their sickness absences.

as monitoring or prevention policies.[3] We estimate the sickness rate *s* in firm *i* on a specific calendar day *t*:

$$s_{it} = \alpha_0 + \alpha_1 \text{ Monday} + \theta \text{ Bridging Day} + X_{it}\,\gamma + \text{Month}_t + \eta_i + \varepsilon_{it},$$

where 'Monday' is a binary variable that indicates if the day was a Monday (=1) or a Friday (=0), and 'Bridging Day' indicates whether the day was a bridging day or a regular Monday or Friday. The sickness rate s_{it} is calculated as the number of sick workers divided by the total workforce in firm *i* on day *t*. We use firm level cluster-robust standard errors. The main parameter of interest is θ, which compares sickness absences on bridging days with other Mondays or Fridays. To control for seasonal fluctuations, we include indicators for the calendar month. The covariate vector X_{it} contains firm-level characteristics. These are the median wage, the lower and upper quartiles of the workers' age distribution, the firm's mean share of women, and the sickness rate in the preceding week. We calculate sickness rates for different types of spells, based on duration, and focus primarily on spells of one day duration.[4]

We also use diagnoses to construct a sub-category of sickness absences with mainly unobservable symptoms, as these illnesses are arguably particularly sensitive to moral hazard. This category comprises intestinal infectious diseases (ICD-10 code A0), unspecified backpain (M5), as well as migraine (G43), headache (R51), and other headache syndromes (G44). We use these types of sickness absences as a proxy to test if absence rates on bridging days might be caused by changes in shirking behavior.

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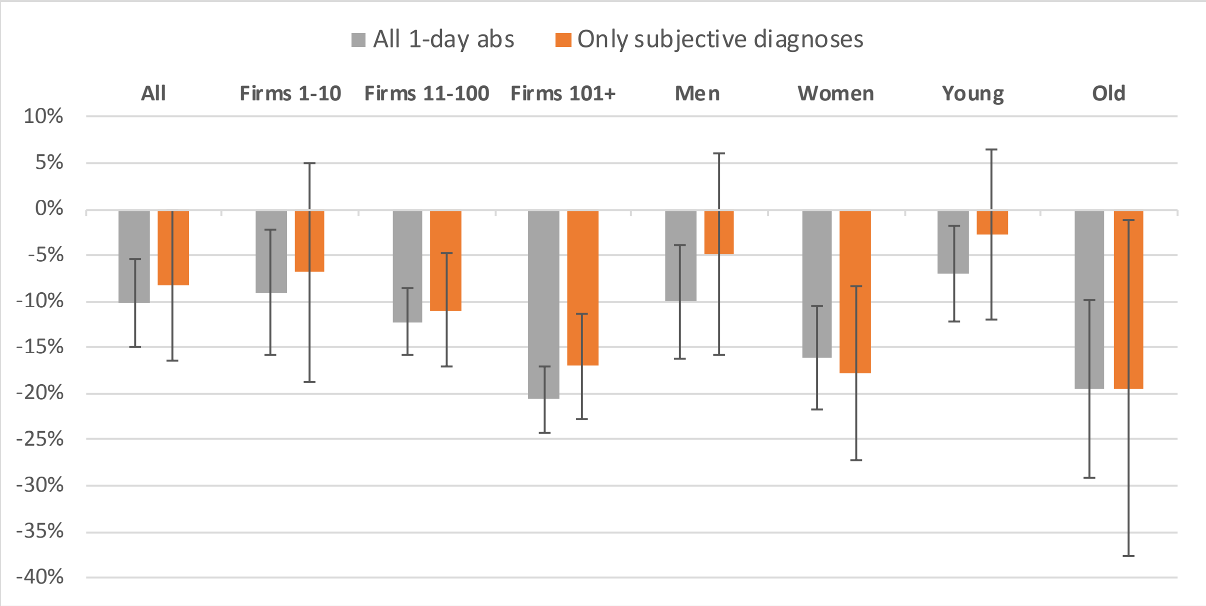
[3] Labor legislation mandates that workers must provide a medical certificate for all absences of more than three days. Employers may request a certificate from the first day.

[4] For very short leave periods, physicians are likely to issue sickness certificates without questioning the patient's request (Carlsen and Nyborg, 2017).

3. Results

Figure 1: Estimated differences in sickness rates on bridging days relative to regular Mondays or Fridays (% change).



Note: The graph details changes in sickness rates on bridging days relative to regular Mondays or Fridays. Each bar represents a percentage change (coefficient / mean value) from a separate fixed-effect panel regression and whiskers indicate the 95% C.I. 'Young' refers to workers under 30, 'Old' to workers over 50. Numbers of observations are listed in Table 1.

Figure 1 presents our main results which indicate that there are fewer sickness absences on bridging days than on other comparable work days. These results are based on one-day absence spells. We find a consistent pattern across diagnoses, with no significant differences between illnesses with unobservable symptoms and the other illnesses. Table 1 shows more detailed results for sickness rates based on absence spells with different lengths. Shorter absence spells are less likely to extend over bridging days, which can be explained by the public holiday and the weekend. Long absence-spells, on the other hand, are not affected by this effect. To assess the robustness of our results, we restrict the estimations to further sub-samples, such as different time periods, economic sectors, and worker types (blue-collar vs. white collar). We also excluded weeks with public holidays on Wednesdays, Saturdays or Sundays. The results are stable and available upon request.

Table 1: Estimated differences in sickness rates on bridging days (per 1,000 workers) relative to absences on regular Mondays or Fridays, coefficients (p-values).

Spell length	**All**	**Firms 1-10**	**Firms 11-100**	**Firms 101+**	**Men**	**Women**	**Young**	**Old**
1 day	-0.0415	-0.0316	-0.0767	-0.1551	-0.0423	-0.069	-0.0628	-0.0627
	(0.000)	(0.008)	(0.000)	(0.000)	(0.001)	(0.000)	(0.008)	(0.000)
1-3 days	-1.2701	-1.0739	-2.0381	-2.5411	-1.4605	-1.2749	-2.7326	-1.08
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
4-7 days	-1.3976	-1.1566	-2.267	-3.0357	-1.6343	-1.3304	-2.7887	-1.3095
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
8-15 days	-0.3592	-0.282	-0.5986	-0.9396	-0.3551	-0.3768	-0.3839	-0.6277
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
16-41 days	0.0411	0.0444	0.025	-0.0712	0.0414	0.0593	0.2835	-0.3455
	(0.170)	(0.225)	(0.372)	(0.019)	(0.301)	(0.107)	(0.000)	(0.000)
42+ days	0.5392	0.4756	0.6567	0.7408	0.5582	0.5582	0.6083	0.5779
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	36,902,875	29,767,285	6,272,737	862,853	24,238,925	29,104,884	19,572,187	18,296,435

Note: The Table lists coefficients (and their p-values) from separate fixed-effects panel regressions. Rows present results from different restrictions on the sickness absence rates. Columns present results from different sample restrictions. ‘Young’ refers to workers under 30, ‘Old’ to workers over 50.

4. Concluding remarks

To the best of our knowledge, this is the first rigorous attempt to investigate specifically whether bridging days result in inflated sickness absences or not. We exploit longitudinal Social Security data that cover the universe of private sector firms and employees in a large Austrian region for a period of eleven years. Contrary to our expectations, we do not find any evidence for inflated sickness absence rates. Quite conversely, sickness rates are consistently lower on bridging days.

Different explanations can be given for this finding. The low sickness rates might result from strategic behavior on the part of workers. The obvious advantage of bridging days for planning leisure activities could cause employees to be particularly cautious when calling in sick on such days. The fact that we do not observe differences in absence rate patterns across different types of illnesses does however suggest that strategic behavior is not the main driving force behind the low absence rates on bridging days. Another explanation point is that some workers use vacation days and that some employers give their employees an extra day off on bridging days. This explanation seems more in line with our findings and suggests that, contrary to what we might expect, and to what is sometimes suggested by anecdotal evidence, workers do not have more sickness absences on bridging days than on comparable work days.

References

Ben Halima, M. A., Koubi, M., Regaert, C. (2018), The Effects of the Complementary Compensation on Sickness Absence: an Approach Based on Collective Bargaining Agreements in France, *Labour*, 32(3), 353-394.

Brown, S. and J.G. Sessions (1996), The Economics of Absence: Theory and Evidence, *Journal of Economic Surveys*, 10 (1), 23-53.

Broström, G., Johansson, P., Palme, M. (2004), Economic incentives and gender differences in work absence behavior, *Swedish Economic Policy Review*, 11, 33-63.

Carlsen, B., Nyborg, K. (2017), Healer or Gatekeeper? Physicians' Role Conflict When Symptoms Are Non-Verifiable, IZA Discussion Papers No. 10735.

Scheil-Adlung, X., Sandner, L. (2010), Evidence on sick leave: Observations in times of crises, *Intereconomics*, 45(5), 313-21.

Shi, J., Skuterud, M. (2015), Gone fishing! Reported sickness absenteeism and the weather, *Economic Inquiry*, 53(1), 388-405.

Thoursie, P. S. (2004), Reporting sick: Are sporting events contagious?, *Journal of Applied Econometrics*, 19(6), 809-823.

Thoursie, P. S. (2007), Happy birthday! You're insured! Gender differences in work ethics, *Economics Letters*, 94(1), 141-145.

WHO (World Health Organization) (2016), *International statistical classification of diseases and related health problems - 10th revision*, World Health Organization.

Zweimüller, J., Winter-Ebmer, R., Lalive, R., Kuhn, A., Wuellrich, J.-P., Ruf, O., Büchi, S. (2009). Austrian Social Security Database, NRN working papers 0903, JKU Linz, Austria.