DIW BERLIN

SOEP The German Socio-Economic Panel Study

A Natural Experiment on Sick Pay Cuts, Sickness Absence, and Labor Costs

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Abstract

We estimate the overall reform effects of a reduction in statutory sick pay levels on sickness absence behavior, labor costs, and the creation of new jobs. A federal law reduced the legal obligation of German employers to provide 100 percent continued wage pay for up to six weeks per sickness episode. From October 1996 onwards, statutory sick pay was decreased to 80 percent of foregone gross wages. This measure increased the ratio of employees with no days of absence by about 7.5 percent. The mean number of absence days per year decreased by about 5 percent. The effects were more pronounced in East Germany, which can be explained by a stricter application of the new law in this region. Effect heterogeneity is of relevance since singles, middle-aged full-time employed people, and the poor revealed stronger behavioral adaptations than the population average. According to our calculations, the reform reduced total labor costs by about €1.5 billion per year, which might have led to the creation of around 50,000 new jobs. We derive all numbers by means of difference-in-differences, longitudinal survey data from the SOEP, and two control groups.

Motivation

- Surprisingly little research has been conducted on the relationship between sickness absence and sickness benefits…
- …especially as compared to its high relevance for
  - labor supply,
  - labor costs & productivity,
  - population health, and
  - social insurance systems.

Aim of paper

- Estimate the overall effect of a cut in statutory sick pay cut on sickness absence behavior, labor costs, and job creation in Germany

Health Reform to be evaluated

- Reduction of short-term sick pay for sickness spells up to six weeks from 100 % to 80 % of foregone gross wages (from October 1, 1996)

Dataset and Sample

- SOEP: German household panel (since 1984)
- We contrast the pre-reform years 1994/1995 to the post-reform years 1997/1998; no 1996, since law became effective on October 1, 1996
- Respondents in gainful employment, aged 18 to 65; no observations with missings
- No employees with work accidents (since unaffected by reform)
- No employees with long-term sickness; ~ 5% of sample (since long-term sick pay was reduced at the same time; objective is to estimate impact on short-term sickness; need to be discarded to avoid contamination of the estimated effects)

2. Variables, Methods, and Descriptives

Dependent Variables

1. **Total number of absence days: *Daysabs***
   "How many days off from work did you have in 19XX because of illness? Please enter all days, not just those for which you had a doctor's certificate."
- The big advantage is to have a measure on the *total* number of absence days
- Seven respondents (0.03 %) indicated a total number of absence days of more than 100 (!) although we dropped all those with a long-term sickness spell of more than six weeks.
- To reduce the influence of outliers and to make the samples more homogenous, we generate a second variable:

2. ***Missed30***
   Includes all respondents with up to 30 absence days (98.45 % of the sample included in ***Daysabs***)

Difference-in-Difference Count Data Model

Zero-inflated NegBin2 model

$$\begin{aligned}\varphi(y|\mu,\alpha) &= \int f(y|\mu,\nu)\times\gamma(\nu|\alpha)\,d\nu \\ &= \int_0^\infty \left(\frac{e^{-\mu\nu}\{\mu\nu\}^y}{y!}\right)\left(\frac{\nu^{\delta-1}e^{-\nu\delta}\delta^\delta}{\Gamma(\delta)}\right)d\nu \\ &= \frac{\Gamma(\alpha^{-1}+y)}{\Gamma(\alpha^{-1})\Gamma(y+1)}\left(\frac{\alpha^{-1}}{\alpha^{-1}+\textcircled{p}}\right)^{\alpha^{-1}}\left(\frac{\textcircled{p}}{\textcircled{p}+\alpha^{-1}}\right)^y\end{aligned}$$

$$\textcircled{p} = exp(x'_{it}\beta) = exp(\lambda p 9 T_t + \pi D_i + \theta DiD_{it} + s'_{it}\psi + \epsilon_{it})$$

Post-reform dummy | ***Interaction:* time dummy*treatment dummy**

Treatment dummy
Treatment Group 1
- 1 if affected by law (employees in private sector, no trainees)
- 0 if in Control Group 1 (Public sector employees, trainees)

OR:

Treatment Group 2
- 1 if affected by law (employees in private sector, no trainees)
- 0 if in Control Group 2 (self-employed)

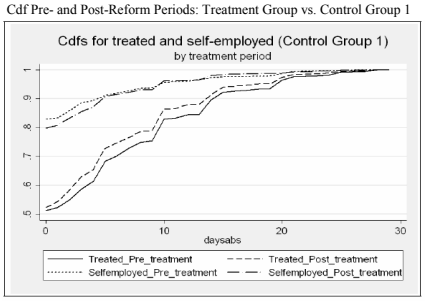
Covariates:
- Personal
- Education
- Job related
- Regional unemployment rate
- Year dummies

Identification

- Main assumption is common time trend
- No selection into or out of treatment: not plausible + job changers can be dropped in robustness checks
- No perfect identification of treated since up to 50% of the employees worked in firms that paid 100% sick pay voluntarily (same in other studies)

→ intention is to estimate *overall* reform effects

Cdf Pre- and Post-Reform Periods: Treatment Group vs. Control Group 1



3. Results and Conclusion

Differences-in-Differences Estimation on the Probability of Zero Absence Days

	Treated vs. Controls 1			*Treated vs. Controls 2*		
Variable	**Model 1**	**Model 2**	**Model 3**	**Model 1**	**Model 2**	**Model 3**
DiDg (d)	**0.0199**	**0.0192**	**0.0271***	**0.0550***	**0.0528***	**0.0506**
	(0.0160)	**(0.0159)**	**(0.0163)**	**(0.0313)**	**(0.0313)**	**(0.0321)**
	[0.2124]	**[0.2270]**	**[0.0969]**	**[0.0783]**	**[0.0915]**	**[0.1151]**
Year 1997 (d)	0.0181**	0.0183**	0.0139	0.0165	0.0162	0.0095
	(0.0089)	(0.0089)	(0.0094)	(0.0104)	(0.0104)	(0.0109)
Year 1995 (d)	-0.0253***	-0.0246***	-0.0170*	-0.0154	-0.0155	-0.0083
	(0.0091)	(0.0091)	(0.0097)	(0.0108)	(0.0108)	(0.0114)
Post reform dummy (d)	-0.0285**	-0.0281*	-0.0648***	-0.0582*	-0.0565*	-0.0869***
	(0.0146)	(0.0146)	(0.0159)	(0.0308)	(0.0308)	(0.0315)
Treatment Group (d)	0.0701***	0.0721***	0.0400***	-0.3255***	-0.3236***	-0.2951***
	(0.0126)	(0.0128)	(0.0135)	(0.0160)	(0.0160)	(0.0204)
Job characteristics	no	no	yes	no	no	yes
Educational characteristics	no	yes	yes	no	yes	yes
Personal characteristics	yes	yes	yes	yes	yes	yes
Regional unemployment rate	yes	yes	yes	yes	yes	yes
State dummies	yes	yes	yes	yes	yes	yes
χ^2	144.2766	397.7178	884.2137	141.9363	401.0296	747.4272
N	19292	19292	19292	14605	14605	14605

(d) for discrete change of dummy variable from 0 to 1; marginal effects are displayed
Marginal effects are calculated at the means of the covariates except for *Post reform dummy*(=1), *Treatment Group 1 (2)*(=1), *Year 1998* (=0), *Year 1997* (=1), and *DiDg* (=1)
* p<0.1, ** p<0.05, *** p<0.01
Zero-inflated NegBin-2 models are estimated; every column stands for one regression model
Standard errors in parentheses are adjusted for clustering on person id
P-values in square brackets

- Reform led to an increase in the ratio of employees with no absence days of about
  - 7.5 % in whole Germany
  - 15 % in East Germany
  - 5 % in West Germany
- Reform led to a decrease in the number of average annual absence days of about
  - 5% in whole Germany
  - 7.5% in East Germany
  - 4% in West Germany

Reductions in Labor Costs

- In Germany, employers provide sick pay up to six weeks; €28.2 billion in 1996
- At that time, high labor costs were claimed to be the main barrier for job creation and were the main reason for the reform

By means of SOEP and frequency weights, labor cost savings effect can be disentangled into

a.) ***Direct savings effect*** due to cut in sick pay:
€ 4.329bn in 1997 & 1998, if every employer had applied law strictly; € 2.165bn, if only half of them did it

b.) ***Indirect savings effects*** due to behavioral reaction:
€ 850m

→ total labor cost savings effect: € 1.5bn per year

Job Creation Effect

- In the mid-1990s, various other studies estimated by means of general macroeconomic simulation models that a reduction in contribution rates by 1 percentage point would lead to 100,000 new jobs
- If related to our savings estimate, this would yield a job creation effect of about 50,000 new jobs
- However, reform was unpopular and perceived as unfair; side-effects like strike costs or decreased productivity due to presenteeism might have offset or even overcompensated the job creation effect