Shirking and Employment Protection Legislation: Evidence from a Natural Experiment

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Evidence from a Natural Experiment

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Abstract: In 1990 a reform in Italy has modified the employment protection legislation for employees of small firms (with fewer than 16 employees) making much more costly for firms to dismiss workers, while leaving unchanged the employment protection in large firms. Using a sample of administrative data (WHIP) from National Institute of Social Security we compare absenteeism rates (used as a proxy of shirking) in small and in large firms in the years just before (1989) and after (1991) the reform, with a difference-in-differences estimator. In line with theoretical predictions, we find a strong increase (around 18%) in shirking of workers employed in small firms after the increase in dismissal costs. This finding is robust to alternative definitions of small firm and to different time periods.

JEL classification: J41; M51; J45.

Keywords: Absenteeism; Shirking; Employment Protection Legislation; Difference-in-differences.

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1. Introduction

Employees in Italy are almost fully-insured against earnings losses due to illness. The Italian Institute of Social Security (INPS) pays for sick leave benefits after the third day of absence and collective employment contracts establish that employers pay for the first three days: a worker usually ends up obtaining almost 100 percent of his/her wage for absences due to health problems.

Since the worker's effective state of health is typically costly to observe for the employer or for public authorities, sickness absences may hide opportunistic behavior, that is, the full-coverage insurance creates a moral hazard problem for employees, who are induced to take days off, gaining a wage without providing any effort.

In a recent body of literature – see, among others, Riphahn (2004), Ichino and Riphahn (2005), Ichino and Maggi (2000), Barmby, Sessions and Treble (1994) – absenteeism is used as an indicator of worker shirking.

The typical mechanism used by firms to provide incentives to workers and prevent their shirking is through the threat of firing them in case of shirking detection (Shapiro and Stiglitz, 1984). However, this threat is less effective if the employment protection legislation (EPL) makes extremely costly for firms to dismiss workers. Therefore, workers tend to provide less effort and to be more absent, other things being equal, the more stringent the employment protection is.

We aim to shed light on this mechanism, showing that a labor market reform introduced in Italy in 1990, which has drastically increased firing costs for small firms, has induced the employees of those firms to shirk more. Since the reform has left unchanged dismissal costs for firms with more than 15 employees, using a difference-in-differences estimator we compare the variation in absence rates in small firms (the "treated group") with variation in large firms employees (the "control group").

Our paper is inspired by two recent works: Ichino and Riphahn (2005) and Kugler and Pica (2008). Our results complement their findings about the effects of EPL. Ichino and Riphahn (2005) find that the employment protection legislation has important effect on worker's behavior, in that a higher protection from dismissal, by making less likely the risk of being fired, encourages employee shirking. They use data from a single large Italian bank considering employees' behavior during and after probationary period (the initial three months of employment), since during the probationary period workers may be dismissed by the firm without any cost, whereas after probation employees enjoy a very high degree of employment protection. From their analysis it emerges that employee absenteeism strongly increases after probation, confirming theoretical predictions. Similarly, Riphahn (2004) finds that public sector

employees with 15 years of tenure – who are "almost un-dismissable" – provide less effort than other employees.

Kugler and Pica (2008) analyze the effects of 1990 Italian reform of the employment protection legislation on worker and job flows, finding that the increase in dismissal costs for small firms has a negative impact on hiring and firing in these firms[1]. Similarly to Kugler and Pica (2008), we use a difference-in-differences approach, but we focus on the impact of the 1990 EPL reform on worker absenteeism rather than on job flows.

We use a large dataset based on Social Security administrative records (WHIP), in which it is observed if an employee has received during a year sickness benefits. We estimate the probability of a worker of being absent, controlling for firm and individual characteristics, showing that small firm employees after the reform strongly increased absenteeism, in comparison to large firm employees.

The paper is organized as follows. Section 2 presents the WHIP dataset and describes the institutional background. In Section 3 we show difference-in-differences estimates. Section 4 carries out some robustness exercises. Section 5 concludes.

2. The Data and the Institutional Background

2.1. The Data

The dataset we use for our empirical analysis is the public-use version of *Work Histories Italian Panel (*WHIP*)*, provided by LABORatorio Revelli (Turin) and drawn from administrative records of the National Institute of Social Security (INPS).[2] WHIP is a panel of private firms employees[3] followed for the years from 1985 to 1999, a 1:180 random sample of the universe of employees constituting about 62.000 observations per year. WHIP reports information on worker's age, gender, professional qualification, gross wage, hiring and firing date, firm size (1-9 employees; 10-19; 20-199; 200-999; 1000 or more), geographical area of work, industry, weeks of work.

Moreover, in the WHIP dataset for each year is reported if the worker has benefited of the so-called "indennità di malattia", a payment for sick leave made by INPS after the third day of absence. Therefore, we observe if the worker in a given year has made at least one spell of absence of four days or more, but we do not observe the total number of days of absence. The payment of sick leave is made by INPS for the blue-collars of all industries and for white collars of the sectors "Wholesale and Retail Trade" and "Hotels and Restaurants". We consider only

[1] Boeri and Jimeno (2005) also study the effects of 1990 reform on job flows.
[2] See www.laboratoriorevelli.it/whip/. The WHIP dataset has been recently used, among others, by Kugler and Pica (2008) and Boeri and Jimeno (2005).
[3] Self-employed, public employees or agriculture employees are not represented in the WHIP dataset.

these categories and exclude, in addition, apprentices, cadres and managers.[4] Unfortunately, data on sickness benefits are available for the first time for the year 1989, which comes just one year before the 1990 EPL reform.

Our dependent variable is a dichotomous variable, *Absent*, which takes on the value of one if the employee in the year has benefited of INPS sickness benefits, and zero otherwise.

2.2. The Institutional Background: The Employment Protection Legislation in Italy and the 1990 Reform

As it is well-know, Italy has one of the strictest employment protection legislation among OECD countries (see OECD, 1999; Boeri and Jimeno, 2005). Individual dismissals are allowed only if there exists a "just cause" (for productive reasons or for severe misconduct of the employee). In case of dismissal the worker can appeal to a Court. If the judge rules that the dismissal is "unfair" the consequences for the employer are different according to the firm size: in firms with more than 15 employees the worker has the right to receive as compensation: 1) all the foregone earnings after the dismissal until the sentence; 2) either an extra financial compensation of 15 months earnings or he has to be reinstated in the firm (the choice is up to the worker). In addition, the firm has to pay the legal costs and a penalty for the delayed payment of social security contributions. In firms with less than 16 employees, the firm has to pay the legal costs, but it's up to the employer the right to choose the re-employment of the worker or the payment of a financial compensation ranging between 2.5 and 6 months wages.

Interestingly, before the reform of 1990 (Law No. 108, May 1990), firms with less than 16 employees were exempted from "just cause" rule and were allowed to fire their employees "at will". Therefore, dismissal costs for small firms have been drastically increased by the 1990 reform, but they remained significantly lower compared to the costs faced by firms employing more than 15 employees.

Another reform of EPL was introduced in the last part of 1991: collective dismissals (downsizing) have become less costly for firms larger than 15 employees. While, on the one hand, the 1991 reform should have reduced dismissal costs for large firms, making them more similar to small firms, on the other hand, it is doubtful if this reform could affect individual behavior since, at least in principle, it refers only to collective dismissals determined by business cycle or firm's economic crisis.

[4] Managers and cadres sickness benefits are not paid by INPS. Until 2007 apprentices had no right to sick leave benefits.

3. Absenteeism and EPL: An Econometric Analysis

In order to show the effects of the stringency of EPL on worker absenteeism, we exploit the 1990 Italian reform which increased considerably dismissal costs for small firms while leaving unchanged the protection for larger firm employees.

We use a difference-in-differences estimator to compare the absenteeism rates for small and large firms before and after the 1990 EPL reform. Therefore, our treatment group – affected by the policy change – are small-firm employees, whereas the control group – not affected by the policy change – are large firm employees.

Our key identifying assumption is that in the absence of treatment the differences in absenteeism rates between treated and control groups are the same over time.

The reform was introduced in May 1990. Since only yearly data are available, we exclude from our analysis the year 1990. In our basic specification we compare 1989 with 1991 outcomes. Moreover, we consider as small the firms with 9 or fewer employees (*Small*) and as large firms with 20 or more employees. In practice, we exclude the intermediate category, that is, firms with 10-19 employees, since in it are included both affected and unaffected firms.

We consider only full-time employees (with at least 48 weeks of work per year), and exclude workers who in the considered years were on maternity leave or who obtained unemployment benefits. Considering only 1989 and 1991, we end up with a sample of approximately 38,000 observations.

Table 1 shows the differences in absenteeism between small and large firm employees. The first column reports absenteeism rates in 1989 (the year immediately before the reform) and the second column reports absenteeism rates in 1991 (the year after the reform). The first and second row report absenteeism, respectively, in small and in large firms.

Absenteeism in large firms, around 30%, is much higher than in small firms, but it has remained constant between 1989 and 1991. Absenteeism in small firms was 15.7% in 1989 but it increased by nearly 3 percentage points in 1991. This figure is also the difference-in differences estimate (significant at the 1 percent level) of the effect of EPL reform on absenteeism, given that large firm absenteeism was almost unchanged.

Table 1. Difference-in-differences estimates of the effect of 1990 EPL reform on worker absenteeism.

	Before reform (1989)	After reform (1991)	After-Before Difference
Small Firms (1-9 employees)	0.157	0.186	+0.029***
	(0.005)	(0.005)	(0.007)
Large Firms (>20 employees)	0.297	0.298	+0.001
	(0.004)	(0.004)	(0.006)
Large-small firms difference	0.140***	0.111***	0.029***
	(0.006)	(0.006)	(0.009)

Notes: Standard errors are reported in parentheses. The symbols ***, **, * indicate that coefficients are statistically significant, respectively, at the 1, 5, and 10 percent level.

In order to control for several determinants of absenteeism, which could affect the outcome for treated and control group, we carry out a regression analysis and estimate both a Linear Probability model (OLS) and a Probit model. We estimate several specifications of the following model:

$$\Pr(A_{it}=1 \mid X)=\alpha+\beta X_{it}+\gamma Year1991_{t}+\phi Small_{it}+\delta(Small_{it}*Year1991_{t})+\varepsilon_{it}$$

The dependent variable A_{it} takes value equal to one if worker *i* was absent for at least a spell of four days in a given year *t*, (*t*=1989, 1991); $Small_{it}$ is a dummy which takes the value of one if worker *i* is employed in a firm with 9 or fewer employees in *t*; $Year1991$ is a dummy for 1991; $(Small_{it}*Year1991)$ is the interaction term whose coefficient δ measures the treatment effect of our interest; X_{it} is a vector of individual or firm characteristics which could affect absenteeism.

Results are reported in Table 2. Column (1) is our basic specification without any control, estimated with OLS. This is the regression analogue of the difference-in-differences of Table 1. Employees of small firms have a much lower absenteeism rate (−14 percentage points). There is no common increase in absenteeism for small and large firms in 1991. The coefficient on the interaction term (the treatment effect) is positive and strongly significant: worker absenteeism in small firms after the reform increased by 2.9 percentage points, that is, by 18.3%.

Column (2) reports marginal effects obtained through Probit estimates. These estimates show that the probability of absenteeism in small firms increased by 3.8 percentage points, nearly 31%, after the 1990 EPL reform.

In column (3)-(4) we include controls for industrial sectors (10 dummies), geographical areas (5 dummies) and worker professional qualification (a blue-collar dummy). The estimate of treatment effect – both in linear and probit model – remains positive and highly significant (the coefficient is only slightly lower).

Since the changes in the outcome of interest might be caused by compositional changes of treatment and control groups, in columns (5) and (6) we control – in addition to geographical and industry dummies – for several individual characteristics (gender, age, age squared, gross wage (in log)). Confirming standard findings in the literature (see, for example, Dionne and Dostie, 2007), results show that female are more absent than males, absences increase with age but at a decreasing rate,[5] higher earnings tend to reduce absences. The treatment effect is still unchanged (between 2.4 and 3.4 percentage points) and highly significant.

[5] In an alternative specification we use worker tenure instead of age. Results are very similar to the ones reported.

Furthermore, in order to take into account individual unobserved heterogeneity (individual fixed effects) we difference the data across the two years, 1991 and 1989, and estimate with OLS the first-differenced equation, in which ΔA_i is regressed on $\Delta Treatment_i$ and we control for all time-varying factors. Results are reported in column (7). The treatment effect is always positive, although it is now significant at the 5 percent level.

Table 2. Difference-in-differences estimates of the effect of EPL 1990 reform on worker absenteeism

	(1) LPM	(2) Probit	(3) LPM	(4) Probit	(5) LPM	(6) Probit	(7) OLS
Small Firm	-0.140***	-0.142***	-0.129***	-0.131***	-0.153***	-0.153***	-0.124***
	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	0.029
Year 1991 dummy	0.001	0.001	0.006	0.005	0.013**	0.013**	0.063***
	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	0.006
(Small Firm) * (Year 1991)	0.029***	0.038***	0.025***	0.034***	0.024***	0.034***	0.018**
	(0.009)	(0.011)	(0.009)	(0.011)	(0.009)	(0.011)	0.009
Blue Collar			0.078***	0.082***	0.061***	0.066***	
			(0.009)	(0.009)	(0.009)	(0.009)	
Female					0.021***	0.017***	
					(0.006)	(0.006)	
Age					0.007***	0.007***	
					(0.001)	(0.002)	
Age Squared					-0.000***	-0.000***	
					(0.000)	(0.000)	
Log Wage					-0.142***	-0.152***	
					(0.008)	(0.009)	
Constant	0.297***		0.253***		0.942***		
	(0.004)		(0.037)		(0.064)		
Area geographical dummies (5)	NO	NO	YES	YES	YES	YES	YES
Industry dummies (10)	NO	NO	YES	YES	YES	YES	YES
Observations	38333	38333	38329	38329	38135	38135	14063
R-squared (Pseudo R-squared)	0.018	0.016	0.047	0.045	0.056	0.053	0.015
Log-likelihood		-21608.84		-20983.76		-20743.61	
Obs. P		0.260		0.260		0.261	

Notes: The Table reports OLS (columns 1, 3, 5, 7) and marginal effects of PROBIT estimates (evaluated at the mean values of the explanatory variables in the sample) (columns 2, 4, 6). The dependent variable is *Absent*. Standard errors (corrected for heteroskedasticity) are reported in parentheses. The symbols ***, **, * indicate that coefficients are statistically significant, respectively, at the 1, 5, and 10 percent level.

4. Some Robustness Checks

In order to check the robustness of our results, in this Section we experiment using some alternative samples and a different definition of small firms. Results of Probit estimates are reported in Table 3.

First of all, instead of comparing only outcomes in 1989 vs. 1991, we compare absenteeism in 1989 with the entire subsequent period 1991-1999. We insert a dummy *After* for the entire period 1991-1999 and an interaction term *Small * After* .

Column (1) shows estimates of our basic specification. Column (2) is analogous to regression (1) but adds controls for years, industry, geographical areas and individual

characteristics. In both specifications, the effect of EPL reform on absenteeism in small firms is large (4.5-4.9 percentage points) and highly significant (p-value=0.000).[6]

In columns (3) and (4), to increase comparability between firms we compare the small firm category (1-9 employees) with only firms with 20-199 employees (that is, we exclude firms with 200 or more employees) (only for the years 1989 and 1991). Column (3) shows the basic specification while column (4) adds the usual controls. The treatment effect is always positive and highly significant: absenteeism increases in small firms compared to medium firms of approximately 3 percentage points.

In columns (5) and (6) we consider the excluded firm category with 10-19 employees as small firms together with firms with 1-9 employees. Note that by including in the treatment group also firms with 16-19 employees (which should not be interested by the reform) we are underestimating the treatment effect. Notwithstanding this problem, estimates of basic specification (5) or the complete specification (6) show that the EPL reform has increased absenteeism rate in small firms by around 2.5-2.9 percentage points.

Table 3. Robustness Checks Exercises for the effect of EPL 1990 reform on worker's absenteeism.

	(1)	(2)	(3)	(4)	(5)	(6)
Small Firm	-0.138***	-0.138***	-0.129***	-0.117***		
	(0.006)	(0.006)	(0.007)	(0.008)		
After	-0.022***	-0.013***				
	(0.004)	(0.004)				
(Small Firm) * (After)	0.049***	0.045***				
	(0.008)	(0.008)				
Year 1991 dummy			0.006	0.014**	0.001	0.012**
			(0.007)	(0.007)	(0.005)	(0.005)
(Small Firm) * (Year 1991)			0.030***	0.028**		
			(0.011)	(0.011)		
Small Firm (<20)					-0.119***	-0.132***
					(0.006)	(0.006)
(Small Firm (<20)) * (Year 1991)					0.029***	0.024***
					(0.009)	(0.009)
Female		0.017***		0.003		0.011**
		(0.003)		(0.007)		(0.005)
Age		-0.001		0.001		0.006***
		(0.001)		(0.002)		(0.001)
Age Squared		0.000***		0.000		-0.000***
		(0.000)		(0.000)		(0.000)
Log Wage		-0.101***		-0.087***		-0.145***
		(0.004)		(0.010)		(0.008)
Blue Collar		0.064***		0.084***		0.067***
		(0.004)		(0.010)		(0.008)
Observations	182787	181610	26006	25822	45155	44913
Pseudo R-squared	0.010	0.038	0.017	0.041	0.013	0.047
Log-likelihood	-101610.24	-98394.62	-13954.83	-13568.24	-25281.74	-24346.00
obs. P	0.249	0.251	0.236	0.237	0.255	0.256

Notes: The Table reports marginal effects of PROBIT estimates (evaluated at the mean values of the explanatory variables in the sample). The dependent variable is *Absent*. Standard errors (corrected for heteroskedasticity) are reported in parentheses. The symbols ***, **, * indicate that coefficients are statistically significant, respectively, at the 1, 5, and 10 percent level.

[6] It is likely that this effect captures also a reduction in absenteeism in large firms, due to the reduction of costs of collective dismissals for these firms.

5. Concluding Remarks

A number of papers has shown the effect of EPL on worker and job flows. EPL is also likely to affect worker behavior, but evidence on this aspect is scant.

We have found strong, and highly significant, results that an increase of EPL stringency, by making more costly for employers "disciplinary firing", induce employees to indulge more in opportunistic behavior. More specifically, the Italian 1990 EPL reform which has made more costly for small firms to dismiss their employees, has induced workers to increase sickness absence episodes by around 18%, in comparison to large firm employees.

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