The Effect of Employment Protection on Shirking.
A Comparison of Absenteeism During and After Probation.

Andrea Ichino
(EUI, CEPR and IZA)
Regina T. Riphahn
(University of Mainz, CEPR and IZA) *

PRELIMINARY VERSION NOT TO BE QUOTED
November 15, 2000

Abstract

Employment protection systems are known to generate significant distortions in *firms'* hiring and firing decisions. We know much less about the impact of these regulations on *workers'* behaviour. The goal of this paper is to fill in this gap and in particular to assess whether the provision of employment protection induces shirking among workers in the form of absenteeism.

Our analysis is based on weekly observations for the 858 white collar workers hired by a large Italian bank between January 1993 and February 1995. These workers begin to be protected against firing only after the 12th week of tenure and we observe them for one year. We show that absenteeism increases significantly once employment protection is granted. We also discuss whether this evidence can be used to estimate the output loss caused by employment protection systems in Italy via the effect on absenteeism. A conservative estimate is that this loss amounts to 0.4 percent of the output produced by workers currently protected.

*Address correspondence to: Andrea Ichino, European University Institute, 50016 San Domenico (Fi), Italy, e-mail: ichino@iue.it. We would like to thank Pietro Ichino, Klaus Engelmann, Soren Johansen and seminar participants at Princeton, MIT and UPF for very useful comments. Sascha Becker provided excellent research assistance.

1 Introduction

A large literature has studied the effect of employment protection systems on the propensity of firms to hire and fire, showing that these effects are important and capable of causing significant inefficiencies.[1] Much less is known about the distortionary effects of employment protection systems on the behaviour of workers. The goal of this paper is to fill in this gap and in particular to assess whether the provision of employment protection induces shirking among workers in the form of absenteeism.

To achieve this goal we exploit "quasi-experimental" personnel data generated by the institution of *probation*. This institution characterizes hiring procedures in many countries[2] and in particular in Italy, the origin of our data. In the Italian case newly hired workers are subject to a probation period in which they can be fired at will by the employer. At the end of this period, full firing protection is granted to the workers. Since Italy is the OECD country with the most stringent protection against firing[3], the change of job security implied by the end of probation is equivalent, from the viewpoint of the worker, to the change from a "US style" weak protection system to the most protective of the "European style" systems.[4] Therefore, behavioral changes that occur at the end of the probation period provide a powerful indicator of the effects of employment protection.

Our analysis is based on weekly observations for 858 white collar workers hired by a large Italian bank between January 1993 and February 1995. These workers were subject to a probation period of three months after which they received full protection. We observe them for one year and can therefore compare their weekly absenteeism with and without job security. We show that absenteeism increases significantly once employment protection is granted. On the basis of this evidence we also discuss to what extent it is possible to extrapolate and estimate the output loss caused by employment protection systems in Italy via the effect on absenteeism. A conservative estimate is that this loss amounts to 0.4 percent of the output produced by male workers currently protected, who are approximately

[1] See the initial contributions by Lazear (1990), Bentolila and Bertola (1990), Bertola (1990) and later, among others, Hopenayn and Rogerson (1993), Saint-Paul (1993), Grubb and Wells (1994), Bertola and Ichino (1995), Acemoglu and Angrist (1998), Garibaldi (1998), Kugler (1999), OECD (1999), and Kugler and Saint-Paul (2000).

[2] See for example Riphahn and Thalmaier (1999) for Germany.

[3] See, for example, Grubb and Wells (1994) and OECD (1999). Virtually, firing costs are higher in Italy than everywhere else because this is the only country in which, if firing is not sustained by a just cause, the firm is always forced to take back the employee on payroll and to pay the full wage that he/she has lost during the litigation period plus welfare contributions; in addition, the firm has to pay a fine to the social security system for the delayed payment of welfare contributions up to 200% of the original amount due.

[4] A change in the opposite direction, i.e. from full protection to no protection, was almost going to become reality in Italy in the occasion of the referendum on firing regulations which took place in May 2000. The referendum did not reach the quorom of 50 percent of voters and therefore the outcome did not have any effect. But if a the quorum had been reached and the "Yes" votes had been the majority (as it was among those who voted), overnight Italy would have become similar to the US in terms of (absence of) firing regulations.

30 percent of the employed Italian labor force.

The paper is organized as follows. Section 2 describes the data and the "quasi-experiment" that generates them. Section 3 presents the basic evidence on the effect of the end of probation on absenteeism. Section 4 discusses to what extent this evidence can be used to evaluate the output consequences of the counterfactual experiment of removing employment protections in Italy. Section 5 concludes.

2 The Data

The firm studied in this paper is a large bank with many branches disseminated all over the Italian territory and with a century–long tradition of activity at the heart of the Italian financial system. At the end of 1992, 17,971 employees worked in this bank of which 14,266 were white collar workers. From the bank's Personnel Office we received detailed information on the work history of 545 men and 313 females hired in white collar jobs between January 1, 1993 and February 28, 1995.[5] For each hired employee we constructed a panel of weekly observations covering the first full year of tenure. During the initial three months after hiring, these workers were on probation and could be fired at will, while during the remaining nine months of the observation period they were fully protected against firing according to the standard Italian legislation.[6]

These 858 workers are a relatively homogeneous group of young individuals at the beginning of their career and with similar educational backgrounds. The average age is 25 and 95 percent of them are below age 30. Half of them have a college degree and almost all have a high school degree.[7] The large majority of these degrees is in banking and economics (70 percent) with an additional 10 percent in law. It is also important to keep in mind that 98 percent of these workers are hired at the entry level in the bank hierarchy, traditionally with internal labor market careers ahead of them.

For each worker we computed the number of days of absence officially classified as "due to illness" in each calendar week of observation. This is the indicator of absenteeism on which we will base our evaluation of the shirking effect of employment protection.[8] Since the first calendar week of work is shorter for all workers not hired on a Monday, absenteeism in

[5] These personnel data have also been used by Ichino and Ichino (1999) and Ichino and Maggi (2000).

[6] See footnote 3. There were also 8 other workers hired during the same period (6 men and 2 females) who separated from the firm before the end of the first year. 3 were fired while on probation, 1 immediately after and the remaining 4 quit to other firms or for unknown motives. Since these workers could not be observed for a full year, and in particular for enough time after the end of probation, we were forced to drop them from the analysis. It should be noted that the 3 who were fired during probation did not have any absence episode while at the bank.

[7] Only 12 workers have just the compulsory junior high school degree.

[8] We replicated our analysis also with three other indicators of absenteeism (occurrence of an absence episode, occurrence of an episode of delay in morning arrival and minutes of delays in morning arrival) finding qualitatively similar results, which we do not report to save space.

this week cannot be compared with absenteeism in later weeks. We therefore dropped the first calendar week of observation for all workers.[9] Another complication is that since the length of probation is defined in months, the number of calendar weeks of probation may change across workers. All workers were however on probation for at least 12 weeks, and the corresponding observations are the ones we use to measure employees' behaviour in the absence of employment protection. We consider the 40 weeks of observation after the end of probation, as the period in which to evaluate absenteeism in the presence of employment protection. As a result each worker is observed for 52 calendar weeks. Our sample is therefore composed of 28,340 worker-week observations for males and 16,276 worker-week observations for females.

The majority of workers (52 percent of male and 69 percent of female employees) is absent at least once during the period of observation. However, overall, absence episodes are relatively rare: 98 percent of all worker-week-observations are characterized by no absence for males, compared to 96 percent for females. As a result, the average number of days of absence per week in the sample is low: 0.05 for males and 0.09 for females. Note, however, that these averages correspond to 1 percent and 1.8 percent of the weekly working time (5 days), respectively. Furthermore, focusing on the weeks in which absence episodes occur, their average length is 2.4 days for males and 2.5 days for females (i.e. approximately half of the weekly working time). So, absence episodes are, in general, relatively rare events, but a majority of workers is absent at some point during the year and absenteeism implies on average a substantial loss of working time and therefore output for these workers.

3 Absenteeism During and After Probation

3.1 Basic facts

Figures 1 and 2 depict the extent of absenteeism during and after probation for the male and female subsamples. Absenteeism is measured by the average number of days of absence for each of the 52 fully observed weeks of tenure. The vertical line corresponding to week 12 indicates the end of probation. For males (Figure 1) this event appears to be associated with a clear change of regime: After probation the average number of days of absence is always higher then during probation. Absenteeism increases immediately after full protection is granted. For females (Figure 2) the change of regime is less evident, but still apparent, as the average number of days of absence is lower before than after probation.

If all workers were hired in the same period of the year, for example July, probation would take place during the summer and the arrival of the fall would coincide with receiving full protection. In this case an increase of absenteeism observed after the end of probation

[9] Another adjustment of the duration of probation had to be made for workers who were absent during the initial probation period. Following the probation rules of the bank, we prolonged a worker's original time of probation by the number of days that they were absent during probation.

could simply be due to seasonal effects. This is, however, not the case. Figures 1 and 2 do not change after removing the effect of monthly dummies, nor do the other results presented here. Seasonality does not affect our results because hiring is uniformly distributed over the calendar year.[10]

In Table 1 we assess the size of the regime change effect displayed in the figures and test its statistical significance. Looking first at males in Panel A, the table reports estimates of a Poisson regression of the days of absence per week on an indicator that takes value 1 for the weeks after probation. The model is estimated using the sample of 28,340 worker-week observations for men and standard errors are computed controlling for within individual correlation of the error terms. The estimated coefficient is reported in column 1 as an Incidence Rate Ratio (IRR). After probation, the incidence of absenteeism is three times as high than during probation. The asymptotic t-statistic suggests that this difference is highly statistically significant.

Columns 2 and 3 report the average number of days of absence during and after probation as predicted by the model, with 95 percent confidence intervals in parentheses. In the first twelve weeks of tenure, only 0.4 percent of working time[11] is lost because of absenteeism, while in the remaining forty weeks the loss increases to 1.2 percent of the total. The difference between the two predictions (column 4) suggests that when full protection is granted the loss of total working time for males increases by the equivalent of 0.8 percent of total working time.

The estimated IRR for females in Panel B is significantly smaller and not statistically significant at conventional levels. However, the predicted change of days of absences associated with the end of probation for females (column 4) is very similar to the one computed for males and might be considered to be *economically* significant: The loss of working time implied by the change of regime is 0.8 percent for both genders. Thus, the smaller IRR in column 1 for females compared to that for males is due to females' higher initial absenteeism already during probation. For the firm the loss of working time appears substantial for both samples.

The estimates reported in Table 1 do not control for worker characteristics. At first sight one may wonder whether these results would change when characteristics like age at hiring, education and features of the work environment were included in the regression. Since by construction the probation indicator is uncorrelated with time invariant characteristics, their inclusion should not (and indeed does not) change the estimated coefficients.[12] More interesting and informative is the analysis of interactions between the probation effect and individual or local characteristics, which we discuss next.

[10] De-seasonalized results are not reported here to save space but are readily available from the authors.

[11] This number is obtained by dividing the prediction of 0.02 days of absenteeism during probation by the total weekly working time of 5 days. The same procedure is followed below.

[12] These results, as those with seasonality controls, are omitted for brevity but are available from the authors. See below in Section 4.1 for results which control for time varying characteristics like tenure.

3.2 Heterogeneity of Probation Effects

The evidence on heterogeneity in the response to probation incentives is described in Tables 2 and 3 separately for males and females. For males the results suggest that individual characteristics like education change overall absenteeism but do not affect the absolute impact of the end of probation on days of absence. On the contrary, branch characteristics which create an environment more conducive to absenteeism, interact significantly with the absolute impact of the end of probation.

The first panel of Table 2 explores the interaction between the effect of probation and education. We split the sample in two educational groups (those with a college degree and those without) and estimate the Poisson model of Table 1 separately for each educational group. Column 4 shows that the absolute impact of the end of probation on days of absence is very similar in the two groups. However, columns 2 and 3 show that college graduates are always less absent, independent of whether they are on probation or not. As a result, the effect of the end of probation on the incidence rate is bigger for the more educated, as suggested by the comparison of the estimates in column 1.[13]

The second panel of Table 2 splits the sample of male workers on the basis of the average absenteeism in their branches. The "Low (High) absenteeism branch" group includes workers in branches where the average number of days of absences in the month before hiring was below (above) the median average number of days of absence over all branches in that month. Hence we can explore the interaction between the effect of probation and local propensity to absenteeism. Column 4 shows that the absolute effect of probation is bigger in branches characterized by more absenteeism. However, in column 2, newly hired workers in the two groups behave similarly during probation. As a result, the effect of the end of probation on the IRR is bigger in branches were absenteeism is higher.

The following three panels focus on other branch characteristics that may indicate the existence of an environment more conducive to absenteeism. This is for example the case of big branches where more absenteeism is observed, perhaps because monitoring is more difficult or because the absence of one worker has a more limited effect on branch output.[14] More absenteeism is also observed in branches with a lower proportion of managers in the workforce, probably because these are branches, where "career oriented" workers sort themselves or where monitoring is stricter.[15] Finally, a higher fraction of females in the branch is also associated with more absenteeism, probably because females, more often than men, are induced to be absent by family duties.[16] Table 2 shows that the effect of the end of probation on incidence rates (column 1) as well as the absolute effect on days (column 4)

[13]Note, however, that the p-value of a test for the equality of the two IRRs does not allow to reject that they are equal at standard levels of significance. The same is true for the other similar tests in Tables 2 and 3. Thus the pattern of evidence suggested by these tables, although interestingly coherent, is weak from a statistical point of view.

[14]We use the median size of all branches to discriminate between the two groups.

[15]We use the median fraction of managers in all branches to discriminate between the two groups.

[16]We use again the median fraction of females in all branches to discriminate between the two groups.

tends to be higher, where the environment is more conducive to absenteeism.[17] Somewhat surprisingly, instead, no difference is observed when we focus, in the last panel of Table 2, on the distinction between northern and southern branches, although as discussed by Ichino and Maggi (2000), on average more absenteeism is observed in the south.[18]

The evidence for females, presented in Table 3, is similar to that for men, although there are some important differences. Most notably, the effect of probation is never statistically significant among female employees, who work in environments characterized by low absenteeism, and it is always significant in the opposite type of environment. Particularly remarkable is the interaction between the effect of probation and the local fraction of female employment (fourth panel in Table 3). When a female worker is hired in a predominantly male branch, the end of probation has basically no effect on absenteeism. If the branch is instead one in which women are strongly represented, both the absolute and the incidence rate effects of the end of probation are large and statistically significant. Also, the effect of the branch-region differs between the sexes: For females hired in the south, absenteeism increases significantly after the 12th week of work, while no significant effect is observed in the north.[19]

In sum, there seems to be substantial evidence suggesting that newly hired male workers are significantly less absent during probation than once they are fully protected against firing. The evidence is less strong for female workers, but for both genders the difference between the two periods tends to be larger in a local environment conducive to absenteeism. Next, we discuss the implications of these results.

4 Discussion

In the previous sections we have shown that the end of probation implies a substantial change of the degree of protection against firing and is associated with a significant loss of working time and therefore output. It is tempting to explore the possibility of using these results to evaluate what would be the increase of output associated with the hypothetical experiment of reducing the degree of protection in the Italian labor market, making it equal to the degree prevailing during probation for the newly hired workers in our bank (i.e. essentially no protection).

Such an ambitious extrapolation from our "case-study" is meaningful only if some crucial conditions are satisfied. First, the observed association between the end of probation and the loss of working time should be due to the "causal effect" of the sudden increase in protection

[17] The differences are, however, not statistically significant as we noted already.

[18] In this panel we drop observations of 10 male workers, who changed region of work during the first tenure year.

[19] In this panel we drop observations of 4 female workers, who changed region of work during the first tenure year.

against firing and not due to a spurious association determined by an underlying positive relationship between tenure and absenteeism. Second, the causal effect of the increase in protection on absenteeism should not be limited to the first weeks after the end of probation, as it would happen if workers simply deferred absence episodes during probation to look better. Third, the absenteeism effect of a change in protection due to the end of probation for the newly hired workers of our firm, should be representative of the effect of a similar change of protection for the average Italian worker under protection. At least, there should be reasons to believe that the effect we estimate is a lower bound of the economy-wide effect. We discuss these three issues in turn.

4.1 Alternative Explanations of the Tenure - Absenteeism Correlation

One might argue, that the absenteeism effect described in Section 3 may not be due to the change in employment protection occurring at the end of probation. There are two plausible reasons why individual shirking may increase after hiring even without probation. One is the career concern mechanism pointed out by Holmstrom (1982): If a worker's ability is unobservable and if individual output is used by supervisors to make inference on ability, workers have an incentive to exert more effort in order to bias the process of inference in their favor. However, the returns to exerting effort are bigger the more there is uncertainty about ability. Early in the process, when there is less information, supervisors put more weight on individual output when revising their beliefs. But later, when uncertainty decreases, individual output becomes less relevant for inference on ability. Hence, the incentive to exert effort is high at the beginning of a career but then declines with tenure. In this case, inasmuch as absenteeism measures lack of effort, one would observe absenteeism growing with tenure independently of probation.

Alternatively, individual shirking might increase over the first tenure months because the worker has to learn about the social norms in the newly joined branch of the firm. If a worker derives dis-utility from work but needs a job to maintain her monthly income, then the conflict is apparent: The individual will resolve the countervailing interests of working as little as possible and ensuring not to be laid off by shirking as much as local employment conditions allow. If these employment conditions or social norms are unknown when the contract commences, the risk-averse worker will initially prefer to supply too much rather than too little work. Over time the individual learns about the norms and shirking increases to maximize utility subject to the perceived norm, or "no firing condition." Also this mechanism may explain a positive slope in early tenure absenteeism.

To establish whether these hypotheses are indeed able to explain the significant probation effect described in Section 3, we repeated the analyses described in Table 1 above, this time adding quadratic tenure effects to the model. If the probation effect is due to a misspecification of the tenure profile, it should disappear once a polynomial in tenure is added to the

specification.

Table 4 presents the estimates of the effect of the end of probation obtained controlling for quadratic tenure effects. The results indicate a large positive effect of probation for men, which is economically and statistically significant. While the coefficient estimate is somewhat smaller compared to the model without tenure controls, the predicted absolute change in absence probabilities is almost identical. For females the positive probation effect disappears when controlling for a quadratic polynomial in tenure. This suggests that for women tenure mechanisms like the ones discussed above might dominate the effect of the end of probation.

4.2 The "Deferral" Hypothesis

Probation may reduce absence behavior by motivating individuals to postpone necessary absences until they enjoy employment protection. Such deferral behavior should determine an increase of absenteeism only in the first weeks after probation and not later. If this were the case, it would be difficult to extrapolate from observed differences in absenteeism during and after probation the effect of a long-term change of employment protection regulations.

To test for evidence of deferral behavior, we repeated the Poisson estimations of Section 3 separating the "after probation indicator" in two dummies: one for the first month after probation and the other for later months. If the deferral hypothesis holds, we would expect a higher first month effect and a lower permanent effect of protection. The estimation results are presented in Table 5 and show that neither for men nor for women there is a significant difference in absence behavior in the two post probation periods. Actually, absenteeism seems to be lower immediately after probation as opposed to later. Therefore, we are confident that our findings do not result from deferral behavior.

4.3 Possibility of Extrapolation

The evidence presented in Section 3 suggests that, at least for males, the loss of working time due to absenteeism is approximately three times higher after the end of probation than before. Can we use this evidence to approximate what would happen to absenteeism in Italy if employment protection regulations were abolished for all workers?

Several arguments suggest that the evidence based on our "quasi-experiment' would overestimate the effect of a global change of firing regulations. Figures 3 and 4 help to understand the problem. Our analysis evaluates the difference in absenteeism around the end of probation, i.e. absenteeism level A (after probation) minus level B (during probation), in Figure 3. The crucial question is how this difference relates to the difference between level C (with employment protection) and level D (without employment protection) in Figure 4.

It should first be noted that absenteeism level A, which we measure for the period after probation, is likely to underestimate level C, the absenteeism of an average Italian worker under employment protection. This because the newly hired workers in our bank are a

homogeneous sample of young individuals. Hence, they are probably healthier than the average worker in the same bank as well as in the economy at large. Furthermore, our newly hired workers are at the beginning of their careers and even after the end of probation they are likely to be affected by the strong incentives generated by the promotion tournaments in the bank.[20] Support for this expectation is offered by a comparison of absenteeism in our sample with that in the rest of the bank and in the overall Italian economy. In 1995, the average weekly number of days of absence for all male white collar workers in our bank was 0.07. If this number were representative of level C in Figure 4 it would be higher than level A in Figure 3 which is given by the weekly number of days of absence after probation for males in our sample (i.e. 0.06; see Table 1). The difference between absenteeism in our sample and in the economy at large is even larger: Using the 1995 wave of the Survey of Household Income and Wealth collected by the Bank of Italy, which is a representative sample of the Italian population, the weekly number of days of absence for white collar, non self-employed males was 0.11.[21] These comparisons suggest that at least for males, the absenteeism measured for our newly hired workers after probation can be considered a lower bound of the absenteeism of Italian white-collar workers receiving employment protection.

However, it is quite likely that also the absenteeism measured during probation for our workers (level B in Figure 3) underestimates the level of absenteeism that would prevail among the Italian protected labor force if protection were eliminated (level D in Figure 4). To reduce this bias we could consider a more realistic estimate of the level of absenteeism during probation, e.g. by looking only at absenteeism computed for those workers whose probation takes place in the late fall or winter months (i.e. from mid October to end of March). In this way we can approximate more closely what could be considered the level of unavoidable absenteeism. Note that this number is still based on the behaviour of young and healthy workers, who have to work for only three months without employment protection. However, the fact that it is computed during the winter generates an upward bias with respect to the yearly average level of unavoidable absenteeism, because in these months illness episodes are more frequent than in the rest of the year. For males, the weekly number of days of absence during probation taking place in "bad weather" months is 0.04, while the overall average for probation weeks is 0.02 (see Table 1). For females these figures are 0.08 and 0.06, respectively.

A conservative estimate of the effect of eliminating employment protection in the Italian economy on absenteeism could then be based on these calculations and in particular on the hypothesis that this effect is essentially zero for females, but equal to 0.02 days per week for males. This figure corresponds to 0.4 percent of the weekly working time of the workers in our sample. We can further assume that the employment protection received by

[20] At our bank, white collars workers are usually considered for a first promotion during their second year of tenure.

[21] For females absenteeism in our sample (0.10) is surprisingly higher than in the rest of the bank (0.09), but still lower than the average for all female employees in the overall economy.

white collar workers in our firm applies to 47 percent of the Italian working population.[22] Using again the Survey of Household Income and Wealth, approximately 62 percent of the protected workers are males. Hence, male protected workers amount to approximately 30 percent of the employed Italian labor force. If females are not affected by a change of firing regulations and disregarding general equilibrium effects, we can conclude that the elimination of employment protection would increase the working time of approximately 30 percent of Italian workers by about 0.4 percent.

Note, however, that this estimate is rather conservative because of its underlying assumptions, such as no absenteeism effect for females, and because it disregards other effects of employment protections, e.g. changes in other dimensions of shirking and reduced work effort. What we have estimated here is only the output consequence derived from a significant change of job security on absenteeism. The overall output effect of a change of employment protection might very well be larger.

5 Conclusions

Using the "quasi-experimental" evidence generated by the institution of *probation periods*, we have shown that the end of these periods is associated with a significant increase of absenteeism. Our sample considers 858 newly hired Italian white collar workers during their first 52 weeks of tenure, of which the initial 12 are weeks of probation. Since the end of probation implies an increase of job security comparable to a change from a "US style" weak protection system to the most protective of the "European style" systems, we argue that the behavioural change observed at the end of probation is a causal effect of the change of employment protection.

We discuss the conditions under which this causal interpretation is plausible and allows to extrapolate an estimate of the output loss caused by the employment protection system in Italy via the effect on absenteeism. A conservative estimate is that this loss amounts to 0.4 percent of the output produced by male workers currently protected, i.e. approximately 30 percent of the employed Italian labor force.

We have no criterion to establish whether this loss is large or small, nor do we want to venture into an evaluation of whether it is socially optimal to offer employment protection when this causes a loss of output. However, since we cannot find any estimate of what this output loss might be in the existing literature, our finding may contribute to inform the social choice on the optimal degree of employment protection offered to workers.

[22] It does not apply for example to managers, self employed workers and in firms with less than 16 employees (Ichino, P. 1999).

References

Acemoglu D. and J. Angrist (1999), "Consequences of Employment Protection? The Case of The Americans with Disabilities Act", NBER WP 6670.

Bentolila S. and G. Bertola (1990), "Firing Costs and Labor Demand: How Bad is Eurosclerosis?", *Review of Economic Studies* 57, 381-402.

Bertola G. (1990), "Job Security, Employment and Wages", *European Economic Review* 34, 851-866.

Bertola G. and A. Ichino (1995), "Wage Inequality and Unemployment: US vs. Europe", in Rothemberg J., B. Bernanke (eds.), "NBER Macroeconomics Annual 1995", MIT Press.

OECD (1999), "Employment Outlook", chapter 2, Paris.

Garibaldi P. (1998), "Job Flow Dynamics and Firing Restrictions", *European Economic Review* 42(2), 245-75.

Grubbs D. and W. Wells (1994), "Employment Regulations and Patterns of Work in EC Countries", in OECD "Economic Studies" 21, 7-58.

Holmstrom B. (1982), "Managerial Incentive Problems - A Dynamic Perspective" in: *Essays in Economics and Management in Honor of Lars Wahlbeck*. Helsiniki: Swedish School of Economics, reprinted in: *Review of Economic Studies* 66, 169-182.

Ichino P. (1996), "Il Lavoro e il Mercato. Per un Diritto del Lavoro Maggiorenne", Milano, Mondadori.

Ichino A. and G. Maggi (2000), "Work Environment and Individual Background: Explaining Regional Shirking Differentials in a Large Italian Firm" *Quarterly Journal of Economics*.

Ichino A. and P. Ichino (1999), "Discrimination or Individual Effort? Regional Productivity Differentials in a Large Italian Firm" in: John C. Haltiwanger et al. (eds.), *The Creation and Analysis of Linked Employer–Employee Data*, North–Holland.

Hopenhayn H. and R. Rogerson (1993), "Job Turnover and Policy Evaluation: A General Equilibrium Analysis", *Journal of Political Economy* 101(5), 915-938.

Kugler A. D. (1999), "The Impact of Firing Costs on Turnover and Unemployment: Evidence from the Colombian Labour Market Reform", *International Tax and Public Finance* 6, 389-410.

Kugler A. D. and G. Saint-Paul (2000), "Hiring and Firing Costs, Adverse Selection and Long Term Unemployment", Universitat Pompeu Fabra, mimeo.

Lazear E. P. (1990), "Job Security Provisions and Unemployment", *Quarterly Journal of Economics* 105, 699-726.

Riphahn R. and A. Thalmaier (1999), "Absenteeism and Employment Probation", IZA Discussion Paper No. 67, Bonn.

Saint-Paul E. P. (1993), "On the Political Economy of Labor Market Flexibility", *NBER Macroeconomics Annual*.

Table 1: Absenteeism During and After Probation

	Estimated Incidence Rate Ratio	Predicted days of absence during probation	Predicted days of absence after probation	Absolute Change	N. of obs.
	1	2	3	4	5
PANEL A: MALES					
Effect of end	3.05	0.020	0.061	0.041	28,340
of probation	(6.16)	(0.014-0.025)	(0.051-0.073)		
PANEL B: FEMALES					
Effect of end	1.68	0.059	0.099	0.040	16,276
of probation	(1.77)	(0.059-0.099)	(0.079-0.124)		

Note: Maximum likelihood estimates based on a Poisson regression of days of absence per week on a dummy taking value 1 in the weeks after the end of probation. The coefficient in column 1 is presented as an Incidence Rate Ratio and the asy. t-statistics are reported in parentheses. Columns 2 and 3 show the predictions of the model for the two values of the probation dummy; the 95 percent confidence intervals of these predictions are reported in parentheses. Column 4 shows the difference between the predictions of columns 3 and 2. Standard errors for the computations of asy. t-statistics and confidence intervals are adjusted for within individual correlation.

Table 2: Heterogeneity of the Effect of Employment Protection on Absenteeism for Males

Type of Heterogeneity	Estimated Incidence Rate Ratio	Predicted days of absence during probation	Predicted days of absence after probation	Absolute Change	N. of obs.
	1	2	3	4	5
No college degree	2.40	0.030	0.073	0.043	12,480
(240 workers)	(3.78)	(0.019-0.047)	(0.057-0.094)		
With college degree	4.35	0.012	0.052	0.040	15,860
(305 workers)	(5.32)	(0.007-0.019)	(0.041-0.067)		
P-value of diff. = 0.097					
Low absenteeism branch	2.64	0.021	0.055	0.034	11,960
(230 workers)	(3.60)	(0.014-0.031)	(0.040-0.076)		
High absenteeism branch	3.37	0.020	0.065	0.045	16,380
(315 workers)	(4.84)	(0.012-0.032)	(0.053-0.081)		
P-value of diff. = 0.506					
Small branch	2.22	0.026	0.058	0.032	12,948
(249 workers)	(3.43)	(0.016-0.042)	(0.045-0.074)		
Big branch	4.28	0.015	0.063	0.048	15,392
(296 workers)	(5.44)	(0.009-0.023)	(0.049-0.082)		
P-value of diff. = 0.063					
Few managers branch	3.31	0.019	0.062	0.043	16,952
(326 workers)	(4.86)	(0.012-0.031)	(0.051-0.077)		
Many managers branch	2.72	0.022	0.059	0.037	11,388
(219 workers)	(3.65)	(0.014-0.035)	(0.043-0.082)		
P-value of diff. = 0.591					
Few females branch	2.70	0.023	0.063	0.040	13,572
(261 workers)	(4.37)	(0.015-0.036)	(0.048-0.083)		
Many females branch	3.50	0.017	0.059	0.042	14,768
(284 workers)	(4.25)	(0.009-0.029)	(0.047-0.075)		
P-value of diff. = 0.484					
North	3.25	0.020	0.065	0.045	17,836
(343 workers)	(5.41)	(0.013-0.031)	(0.053-0.080)		
South	3.09	0.018	0.056	0.038	9,984
(192 workers)	(3.22)	(0.009-0.033)	(0.040-0.079)		
P-value of diff. = 0.902					

Note: Maximum likelihood estimates based on Poisson regressions of days of absence on a dummy for the weeks after the end of probation, using the sub-samples indicated in each row. For the definition of the different sub-samples see the text. The estimated coefficient of column 1 is presented as an Incidence Rate Ratio. In parenthesis: asy. t-statistics in column 1; 95 percent confidence intervals in columns 2 and 3.

Table 3: Heterogeneity of the Effects of Employment Protection on Absenteeism for Females

Type of Heterogeneity	Estimated Incidence Rate Ratio	Predicted days of absence during probation	Predicted days of absence after probation	Absolute Change	N. of obs.
	1	2	3	4	5
No College	1.45	0.071	0.103	0.032	9,516
(183 workers)	(0.94)	(0.033-0.154)	(0.081-0.130)		
College	2.23	0.042	0.093	0.051	6,760
(130 workers)	(3.06)	(0.029-0.058)	(0.059-0.147)		
P-value of diff. = 0.912					
Low absenteeism branch	1.57	0.073	0.114	0.041	8,008
(154 workers)	(0.97)	(0.030-0.176)	(0.080-0.162)		
High absenteeism branch	1.85	0.045	0.083	0.038	8,268
(159 workers)	(3.10)	(0.033-0.062)	(0.065-0.106)		
P-value of diff. = 0.745					
Small branch	1.43	0.066	0.094	0.028	8,892
(171 workers)	(0.79)	(0.027-0.159)	(0.074-0.121)		
Big branch	2.08	0.049	0.103	0.054	7,384
(142 workers)	(3.12)	(0.036-0.068)	(0.070-0.153)		
P-value of diff. = 0.456					
Few managers branch	1.91	0.047	0.090	0.043	9,620
(185 workers)	(3.68)	(0.035-0.063)	(0.068-0.119)		
Many managers branch	1.47	0.076	0.110	0.034	6,656
(128 workers)	(0.71)	(0.027-0.210)	(0.076-0.161)		
P-value of diff. = 0.640					
Few females branch	1.03	0.071	0.073	0.002	7,592
(146 workers)	(0.59)	(0.028-0.185)	(0.056-0.096)		
Many females branch	2.55	0.047	0.120	0.073	8,684
(167 workers)	(4.76)	(0.035-0.064)	(0.087-0.165)		
P-value of diff. = 0.079					
North	1.52	0.077	0.118	0.041	9,256
(178 workers)	(1.09)	(0.037-0.160)	(0.087-0.160)		
South	2.14	0.033	0.070	0.037	6,812
(131 workers)	(3.08)	(0.022-0.049)	(0.052-0.095)		
P-value of diff. = 0.455					

Note: Maximum likelihood estimates based on Poisson regressions of days of absence on a dummy for the weeks after the end of probation, using the sub-samples indicated in each row. For the definition of the different sub-samples see the text. The estimated coefficient of column 1 is in the form of Incidence Rate Ratios. In parenthesis: asy. t-statistics in column 1; 95 percent confidence intervals in columns 2 and 3.

Table 4: Absenteeism During and After Probation, Controlling for Tenure

Absence indicator	Estimated coefficient	Prediction during probation	Prediction after probation	Absolute Change	N. of obs.
	1	2	3	4	5
PANEL A: MALES					
Days of absence	2.25	0.029	0.066	0.037	28,340
	(2.10)	(0.014-0.060)	(0.052-0.083)		
PANEL B: FEMALES					
Days of absence	0.83	0.113	0.094	-0.019	16,276
	(-0.52)	(0.057-0.222)	(0.071-0.122)		

Note: Maximum likelihood estimates based on a Poisson regression of days of absence per week on a dummy taking value 1 in the weeks after the end of probation and on a quadratic polynomial of time elapsed since hiring. The coefficient in column 1 is presented as an Incidence Rate Ratio and asy. t-statistics are reported in parentheses. Columns 2 and 3 show the predictions of the model for the two values of the probation dummy; the 95 percent confidence intervals of these predictions are reported in parentheses. Column 4 shows the difference between the predictions of columns 3 and 2. Standard errors for the computations of Asy. t-statistics and confidence intervals are robust and adjusted for within individual correlation.

Table 5: Evidence on the Deferral Hypothesis

Weekly indicator of absenteeism	First month after probation	Other months after probation	P-value of one-sided test	N. of obs.
	1	2	3	4
PANEL A: MALES				
Days of absence	2.82	3.07	0.32	28,340
	(4.00)	(6.22)		
PANEL B: FEMALES				
Days of absence	1.42	1.70	0.18	12,676
	(1.15)	(1.79)		

Note: Maximum likelihood estimates based on a Poisson regression of days of absence per week on a dummy for the first month ofter probation and a dummy for the remaining months after probation. The coefficient in column 1 is presented as an Incidence Rate Ratio and the asy. t-statistics are reported in parentheses. Column 3 shows the p-value of one sided test that the coefficient for the first months is higher than the coefficient for the other months. Standard errors for the computations of Asy. t-statistics are robust and adjusted for within individual correlation.

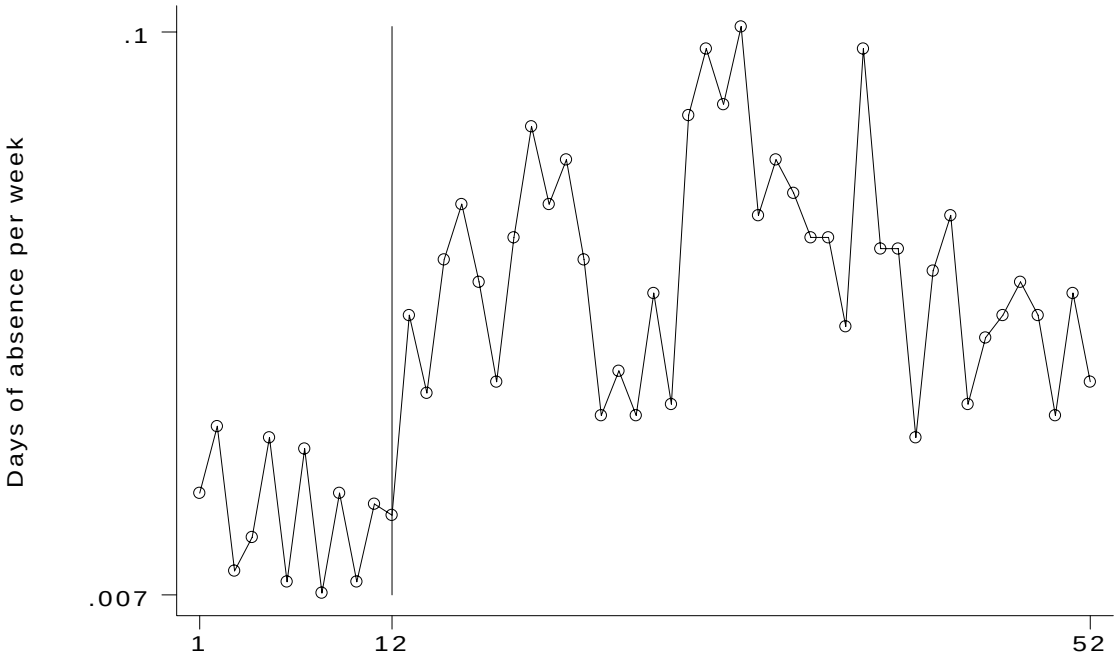

Fig. 1: Absenteeism during and after probation - Males

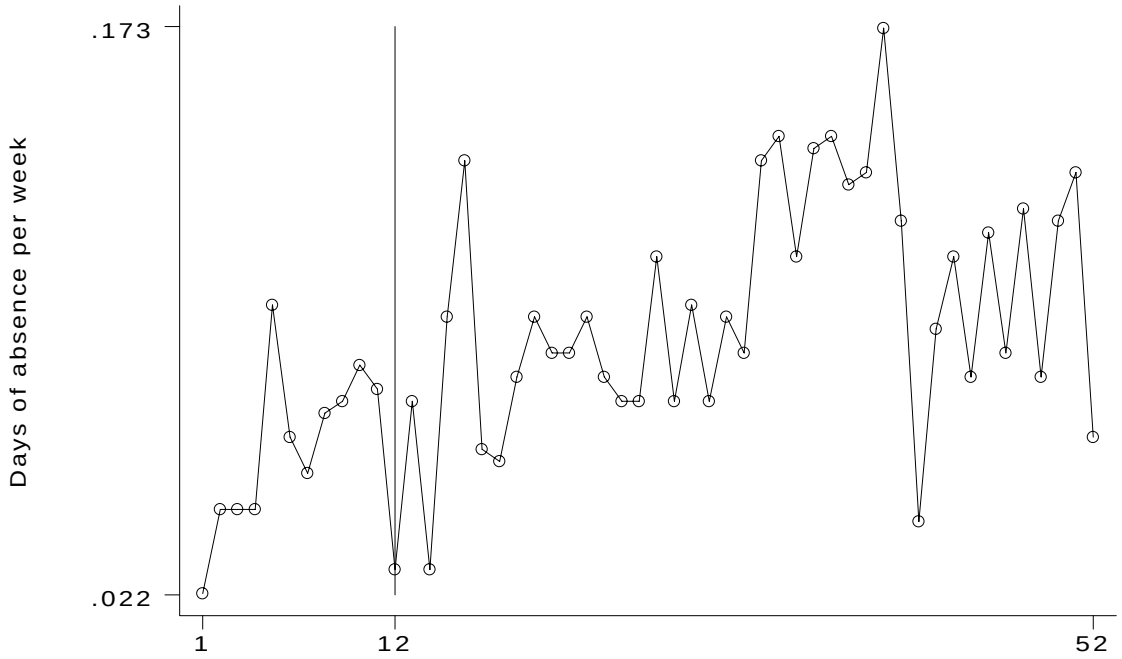

Fig. 2: Absenteeism during and after probation - Females

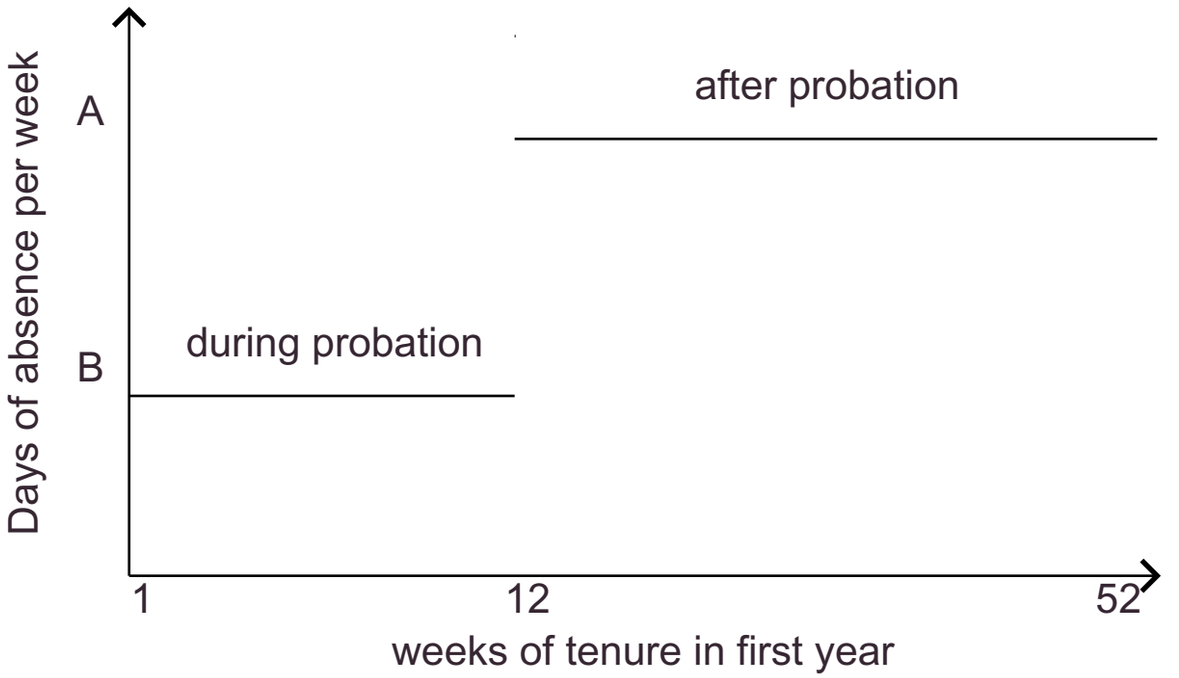

Fig. 3: Observed effect of the end of probation

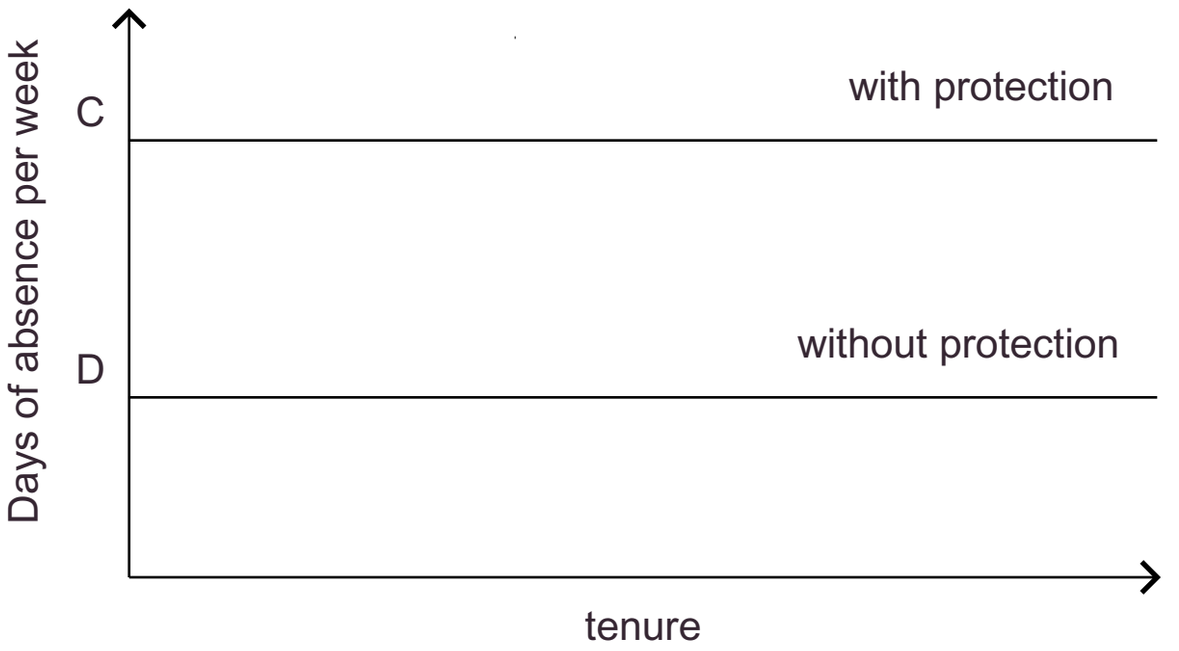

Fig. 4: Unobservable effect of a change of protection