

Contract and Labor Effort: An assessment

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Abstract

The aim of this study is to examine the relation between contract arrangements and labor effort and, specifically, to verify whether temporary workers exert different level of effort, respect to permanent ones. Propensity score techniques have been used to compare effort of people who have acquired a temporary job with that of people who started, in the same period, a permanent job. Effort is measured by indicators known in literature (absenteeism and overtime work, paid and unpaid) and the analysis covers the period from 2006 to 2013, before and during the Great Recession. In order to indirectly investigate the presence of unobservables, a sensitivity analysis is performed testing the robustness of the results to specific violations of the CIA (according to the methodology proposed by Ichino et al.). Data comes from a unique data set taken from Italian Labor Force Survey.

Jel Codes: J41, M55

Keywords: effort, Absenteeism, Employment Protection Legislation, Temporary Work

1. Introduction and main results

In common theoretical settings, effort has often been defined in relation to shirking, i.e. the provision of "minimal effort" (Shapiro and Stiglitz, 84), but its definitions are essentially empirical and measures may vary depending on the scope of the research. In economic literature, the most widely used indicator for effort is absenteeism at work (Engellandt and Riphon, 2005, Ichino and Riphon 2004, Barmby, 2002)². In most recent works it is also possible to find the opposite concept of presenteeism (which could be defined effort above its optimal level, see Hirsch et al., 2015). Overtime working, both paid and unpaid, is considered also to be an indicator (Engellandt and Riphon, Givord and Wilner, 2014)³.

Some papers have shown an inverse relationship between economic fluctuations (aggregate unemployment) and effort (absenteeism) at individual level. The explanation is that in periods of downturns, job insecurity rises and that a pro-cyclical absence rate is in line with a "discipline" role

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²A brief discussion on absenteeism as an instrument of screening device may be found in Amilon and Walleto (2009).

³Overtime working as a measure of effort was explored, between others, by Anger (2008): she suggests an internal signaling model, in which workers may signal a higher value to the firm by supplying overtime (unpaid).

of unemployment in moral hazard context. The pro cyclical absence rate, could be also the result of a change in the composition of the labor force: worker that exert low effort (absenteeism) are more subject to be retained in period of downturns (Scoppa and Vuri, 2014, Leigh 1985). But downturns may affect temporary and permanent workers in a different way, (Oecd, 2009) according to their regulation in the labor market. A strand of literature has focused on the incentive role of contracts having shown that contract arrangements (and institutional features) affect worker's effort in a number of cases (Lazear and Rosen, 1981, Holmstrom, 1982, Ichino and Riphon, 2001, Engellandt and Riphon, 2005, Barmby 2002, Barmby et al. 1991, Ichino and Riphon 2005). One of the main findings is that firms may view the initial fixed-term contract as a screening device and the temporary workers may be inclined to act as (mimic) "a good worker" - exerting more effort than they would have done in a situation with greater job security - in order to be taken on with a permanent contract (Riphon and Thalmaier, 2001). In such a situation, workers will reveal their ability, resolving the asymmetric information problem of the firm. Since Employment Protection Legislation and institutional settings influence both the possibility of prosecuting a temporary contract and the probability of being fired for a permanent worker, this may affect the effort exerted by the worker. Specifically, regulation determines the differential between the firing costs of permanent and temporary workers (the "firing-cost gap"), an important factor affecting the duality of labor markets (Dolado et al., 2013). Moreover, Job protection, in an efficiency wage setting, is equivalent of monitoring (Ichino and Riphon, 2004) and the probability of a renewal of the contract (or to be fired) is affected by changes (manipulation) in monitoring rate and/or of job protection regulation. Consequently, ensuring protection from firing, other variables held constant, has the same effect of a decrease in monitoring rate. Ichino and Riphon (2004) had shown that, for new entrants, the number of days of absence at work has grown once employment protection is granted and a temporary worker is taken on with a permanent contact. The main aim of this work is to investigate these issues providing new empirical evidence on the behavior of temporary and permanent workers. More precisely, the intention is to explore, whether workers employed with

temporary contract exert different levels of effort, compared to those who are in permanent positions in a dual labor market context in different phases of the cycle, observing differences in behavior between men and women. An emphasis is given to endogeneity issues that typically may arise when comparing permanent and temporary workers. In this framework the presence of unobservable factors is carried out by examining the robustness of the results, testing specific failures of the CIA, according to a methodology proposed in Ichino et al. (2008). The analysis mainly focuses on those who enter in a job after a period of inoccupation and it covers the period from 2006 to 2013. Evidence shows that temporary contracts affect absenteeism but not (paid and unpaid) overtime work (as seen in Engellandt and Riphan). Regarding absenteeism, a different behavior emerges across distinct phases of the business cycle: Until 2011, only limited differences in absenteeism among temporary and permanent workers have been noted: temporary contracts seem to affect absences of women more than those of men. After 2012, close to the second downturn, the dissimilarity between temporary and permanent workers has grown significantly both for men and women.

The paper is organized as follows: the next section describes some characteristics and the institutional setting in Italy. Section 3 deals with the data, section 4 describes the empirical strategy, section 5 summarizes the results and the sensitivity analysis. Concluding remarks close the paper.

2. The case study: Recession in a dual labor market

The extent of employment losses suffered during economic downturn, the duality of Italian labor markets, and the recent developments in labor law make Italy a suitable case for study the relation between worker's effort and labor contracts.

Italy, as many other countries was hit by a double dip Recession. Since the beginning of the downturn the GDP declined by more than seven percent points and approximately one million of jobs have been lost (fig 1). In the two year period 2008-09, i.e. the first phase of the recession, the

impact on employment was relevant, although diminished in part by a fall in the average hours worked due to measures of internal flexibility (i.e. working time accounts and short time work). After two years of positive growth, after 2011, the second phase of recession has started and the slowdown had also a strong impact on employment, hitting temporary workers in a particular way (see fig. 2). As a result of the prolonged worsening of Italian economy, after 2011, also expectations of agents about the future of the economy has fallen sharply.

These developments took place in a country characterized by a dual labor market, with a high degree of employment protection in the regular segment (i.e. a strict firing regulation applying to permanent workers), and a high degree of flexibility in the use of temporary contracts. This is due to the way flexibility has been introduced in the country: Italy have gradually liberalized fixed term contracts, maintaining the same regulation for permanent workers (open ended contracts). This liberalization occurred through three important labor law reforms.

Since 1962, fixed term contract was not permitted in the country, but during the nineties, a number of exceptions to this principle had rapidly grown. In 1997, a piece of legislation (Legge Treu) has introduced, among other things, the Temporary Agency Work. Then in 2001, a comprehensive reform, based on an EU directive, has extended the scope of temporary contracts, which became allowed as long as the motivation for their use was given in writing (Garibaldi and Taddei, 2013). Finally, in 2003, (Biagi Law), introduced various other “atypical” labor contracts, the most important of which is “Contratto a progetto”. The reforms, seems to have a positive effect in Italian labor market in upturns but not in downturns (Boeri, 2012)⁴ and they might have an effect on prospects on the probability of temporary workers to be renewed and for permanent workers the possibility to be fired.

⁴In 2015, a new piece of legislation (“Jobs Act”), took place modifying substantially the regulation of permanent contracts. The new discipline, removes, with few exceptions, the application of the reinstatement remedy in case of unlawful dismissal (but only for new entrants), in favor of a seniority based severance pay mechanism. In 2011, a piece of legislation, mainly addressed on social security issues, has already partially reduced the possibility of reinstatement. It is worth to say that just before Jobs Act, temporary contracts also were already liberalized (Decreto Poletti).

3. Indicators and Data

The data used in the study are taken from the Italian Labor Force Survey (ILFS), a household based survey on individuals aged 15 years or older. ILFS provides, on a quarterly basis, a quite rich dataset with many observations (about 200.000 individuals per wave) containing a wide set of control variables of personal information (gender, age, education, marital status, among others) as well as of "work features" (e.g. the type of contract, sector and occupation). Data on wages have been introduced only in 2009. In ILFS, the absence indicator describes if the worker was absent the entire week prior to the survey. The cause for the absence has been asked in a further question. In order to focus on absenteeism due to sickness and personal reason, those who are not at work because of programs implying forced reduction in working time (and pay) have been excluded from the sample⁵. The overtime work indicator points out whether in the week prior to the survey they have worked overtime hours. Another question of the survey asks if the overtime hours have been remunerated and this allows getting the unpaid overtime work indicator. It is noteworthy that in the ILFS poll the questions relate to the week prior to the survey and all the effort indicators are binary variables. This study makes use of a unique dataset, created for this purpose, taken from the quarterly Italian Labour Force Survey. ILFS is conducted quarterly as a 2-2-2 rotating panel and each household member is interviewed in two consecutive surveys and, after being excluded from the sample for two quarters, s(he) is re-interviewed in another two consecutive quarters. This has permitted the building of three "two year" short panels, composed of different sub samples in which there are three observations for every individual. Specifically, each one of the panels is composed by four different sub samples in which there are three observations for every individual, observed after one quarter and then after one year. The short panels refer, respectively, for the two year periods 2006/07, 2009/10 and 2012/13.

⁵Maternity leave is not excluded since its length is at least partially a choice of the individual. However it involves a negligible part of the sample.

4. Empirical Strategy

The ad hoc dataset allows carrying out the peculiar strategy used in this paper (Paggiaro et al., 2008). This study considers more closely individuals that find a job after a period of unemployment (inoccupation). More precisely, the study is focused on those who seek work and successfully find it after one year on the basis of pre-determined characteristics. The rich data on observable characteristics make reasonable adopting a matching strategy in which the reference population is given by the stock of individuals seeking work at time T_1 and successfully find it (with a temporary or permanent, open end contract between T_1 and T_2). The two alternative treatments are, respectively, temporary and permanent job, and, obviously, the outcome is the effort, observed at time T_2 ⁶. The pre-treatment characteristics are collected at time T_0 . More formally, the Average Treatment of the Treated⁷ is given by:

$$E(Y_1 - Y_0) | T = 1$$

Where the binary variable denotes the potential outcome, effort, according to treatment status and take value 1 if the subject entering in the job (between T_1 and T_2) is temporary employed and 0 otherwise (if s/he is permanently employed). Treatment and potential outcomes are affected by a set of observable variables W , but unobservable factors may also affect it. When the conditional independence assumption (CIA) holds we have:

$$E(Y_1 - Y_0 | T = 1) = E(E(Y_1 - Y_0 | T = 1, W)) = E(E(Y_1 | T = 1, W) - E(Y_0 | T = 0, W) | T = 1)$$

As is well known, it means that, conditioning on observed covariates W , treatment assignment is independent of the potential outcome in the case of no treatment. In this case the observed outcomes of control units can be used to estimate the counterfactual outcome. Since CIA is not directly testable, in this paper I performed the sensitivity analysis for matching proposed by Ichino et al.

⁶ In the two years short panels described in section 3, effort is observed, respectively, along years $T_2 = 2007, 2010$ and 2013 .

⁷ Since effort is measured by binary variables, the outcome is given by the fraction of people who declared to be absent at work or do paid of unpaid overtime working, among temporary and permanent workers.

(2011), the aim of which is to assess if the estimates derived under the CIA assumption are robust with respect to specific failures of this hypothesis⁸. The methodology is presented with more details in section 8. Moreover, as said, the results are tested on an alternative sample composed by those who are employed at T_1 (see Appendix A).

5. Results

5.1. Descriptive analysis

The analysis presented in this section is performed on cross section data⁹ (see section 3) and it covers various years before and during the Great Recession. Here, the binary effort outcome is related on an indicator of temporary employment and a wide group of control variables. The results (table 1) show that type of contract is related with absenteeism at work (in year 2007 2011 and in 2013)¹⁰. The negative sign means that, as expected, the probability of being absent from work is lower for a worker employed with a temporary contract, than for his/her counterpart with a permanent contract, holding other variables constant. Other results show that the absence probability is higher for women, decrease with education and it is lower in the southern regions and for non-nationals and varies across sectors. Moreover, that of people who live alone show a lower probability to be absent from work than couples (with or without children). Differently from previous results, overtime indicator (table 2 and 3), both paid and unpaid, is not related to the type of contract meaning that temporary workers does not appear significantly more likely to work overtime hours than permanent ones. This outcome appears to be robust for each estimate both for paid and unpaid overtime working. Other results show that the propensity for doing unpaid work hours increases with age is more widespread in the North East of the country than in the South,

⁸Ichino et al (2008), pp. 215 f. f.

⁹The self-employed and Armed Forces are excluded from the sample.

¹⁰It could be worthy, in order to have a better interpretation of the results, noting that if we consider all absences, included those caused by short time work programs (STW), type of contract becomes significant for all the years considered in the analysis in explaining absenteeism. STW schemes were a way to retain workers in bad economic times and were particularly used in the first part of recession (see also section 2). Since, Short Time Work apply only to permanent workers, they increase the absence rate of this group of workers, and type of contract becomes more significant in explaining absence at work.

varies across sector and is higher for those who have duties and responsibilities as a coordinator in their job. Generally, overtime work is more widespread among those who live alone than in couples (both married and unmarried). Again, paid and unpaid overtime working show similar results.

5.2. Main results

In the causal analysis, focused on those who seek work at T_1 and are employed one year later at T_2 with a “temporary” or a “permanent” contract, the Propensity Score Matching is based on pre-treatment characteristics of individuals referred at time T_0 (age, geographical area, marital status, level of education, nationality, labor market status at T_0 , student or not). PSM it's implemented by the Nearest Neighbor Algorithm¹¹. Results (table 4) show that differences among temporary and permanent workers remain significant after matching. The sign of the Average Treatment of the Treated (ATT) indicates that there is a causal effect of being in a temporary contract in reducing absenteeism at work. Specifically, the ATT estimate is significant before the downturn ($T_2=2007$) and, the observed probability to be absent is five percentage points lower for temporary workers than for permanent ones. When considering gender separately, the ATT result is significant only for women. This is consistent with previous literature (Ichino and Riphon 2004, Engellandt and Riphon 2005). In $T_2=2010$, in a phase of recovery of economy, the ATT results are not significant (both for men and women). Turning to the second phase of the recession ($T_2=2013$), when the total amount of employment loss was quite severe and expectations on the evolution of the economy were going downwards (fig. 2 in section 2) the ATT turning to be significant both for men and women and is higher respect to the period before the recession: this time the probability to be absent is eight percent lower for temporary workers than in the case of open end contracts. Furthermore, the ATT is higher for women than for men. Although the research is focused on that of people that have been entered in a job after a period of unemployment, in order to have a more comprehensive view of the

¹¹In NN, matching, the comparison is made between the each treated unit and the control unit with the closest propensity score. In this case, allowing for replacement, a control unit could be the best match of more than one treated unit.

phenomenon (and to verify the robustness of the estimates), the results are tested on a different sample. The analysis is carried out on those who have been employed in T1 (in a temporary or permanent contract). The results (table A1) show that, here, differences in absenteeism continues to be significant before and in the second period of the recession: but the ATT result is lower respect the previous case: this may reflect a partially different behavior of that of people that have been previously unemployed with respect of those who have had already a job. It is also confirmed the dissimilarity between men and women. Taken together, these results suggest a difference in the behavior in absenteeism between temporary workers, which appears more relevant for those who come from the state of not employment. In a dual labor market context, the macroeconomic outlook and the poor employment prospects may have raised the perception of job insecurity of temporary workers especially of those who comes from unemployment. Thus, when considering the absence indicator, the results seems to be in line with a “discipline” role of unemployment (Vuri and Scoppa). Since the recession, as is known, has affected men more than women, this may explain the ATT estimate becoming significant for men during the second phase of the downturn.

Turning on overtime work, the differences are not significant: this result also confirms that of the previous section and it’s robust when considering both paid and unpaid overtime work. Moreover, the same indication comes from the alternative sample. Thus differences between temporary and permanent workers are not significant when considering this indicator of effort. This might be related with the determinants of overtime work: since is considered a tool for firms to react to fluctuations in production, a pro cyclical pattern could be observed¹².

5.3 Discussing the plausibility of the Conditional Independence Assumption

In this section, evidence on the reliability of matching estimates is provided, following the framework proposed by Ichino et al. (2008). Specifically, the analysis is aimed to test the sensitivity of the ATT estimates with respect to an unobservable variable U that affects both the potential

¹² See Bauer and Zimmermann (1999).

outcome (Y_i) and the selection into treatment (T_j), after controlling for observable covariates W .

Following the notation of section 3, a confounder variable (unobservable) can be considered “dangerous” for the ATT result when¹³:

$$\Pr(Y_0 = 1|T = T, W, U) \neq \Pr(Y_0=1|T, W),$$

$$\Pr(T = 1 |W, U) \neq \Pr T=1|, W).$$

In line with this approach, a set of estimates of the ATT¹⁴ are performed, including in each one a simulated binary variable U that “mimic” an unobservable component like motivation or ability. The parameters defining the distribution of every U are imposed and they are similar to other variables included already in the matching estimates. If the re-estimations of the ATT are relatively insensitive over this range of assumptions about U , it is possible to affirm that Conditional Inference Assumption is more plausible¹⁵. Before presenting evidence, it’s possible to put forward the following arguments in support of the CIA in this case. First of all, the treatment and control groups (temporary and permanent workers) are matched on pre-treatment characteristics and set of covariates includes the labor market status at T_0 which is considered a (rough) indicator of the labor market histories of individuals that may account for unobservable factors¹⁶. Second, the hypothesis is tested on a homogeneous sample: both treatment and control groups are individuals seeking work at T_0 and who find it (with a temporary or permanent contract), in the subsequent period. Third, Italy has a deeply segmented labor market and in such a situation, being in a temporary position presumably reflects being in a certain group of individuals (e.g. the young). In other words, the probability of being a temporary worker may be related to observable characteristics of the

¹³ Nannicini (2007).

¹⁴The baseline estimates in this section have the specific purpose of the robustness of the results. Therefore they may differ from that presented in the previous section.

¹⁵Ichino et al (2008), pp. 316. Obviously, the aim is not to test the CIA since, as is well known, this identifying assumption is non-testable (because the data are uninformative about the distribution of the counterfactual for treated units). This method, however, provides information in order to draw conclusions on the plausibility of the CIA in this case and therefore of matching estimates.

¹⁶ Caliendo M. (2006). p. 74.

individual (such as age, geographical area etc.), rather than to unobservable factors like motivation or ability.

In the sensitivity analysis the parameters of the distribution of the variable U , P_{ij} $i,j=(0,1)$ give the probability that $U=1$, in each of the four groups defined by the treatment status (T_i) and the outcome value (Y_j). These parameters can be chosen to make the distribution of U similar to the empirical distribution of the existing covariates (already used in the matching estimates). For example in table 7, the fraction of $p_{11}=16\%$, indicates the fraction of “skilled” workforce (the unobservable variable) among the temporary workers (the treated), that were absent at work. The other rows assume that the distribution of U is comparable to other variables like, qualification, existence of previous work experience, citizenship, familiar status.

Since, the ATT is positive (in absolute value) and significant for the sample 2006/07 and 2012/13, the sensitivity analysis, focus the attention on these estimates (table 7 and 9). In the former case, the ATT results differ by a tenth of a percentage point with respect to the baseline estimate (obtained in the absence of confounding effects). In the case of skill behaving like the Italian citizenship (a dummy variable), this results is associated with an outcome effect of 2.7, and a selection effect of 1.6. Then, controlling for observables, U (skill) has a slightly positive effect on the relative probability to be absent in case of no treatment ($2.7 > 1$) and a higher effect on the relative probability of being treated ($1.6 > 1$). However, the ATT is still relatively close to the experimental benchmark. When considering women separately, the simulated ATT is always higher than the baseline estimate suggesting the existence of a bias, but the confounder does not kill the baseline estimate and the results are again close to it. Also, in 2012/13, ATT results seem to be robust: even in presence of an outcome effect of 3.5 the ATT differs, again, one tenth of a percentage point. All in all this sensitivity analysis shows that, when ATT results are positive and significant, the inclusion of U that “mimic” the distribution of some covariates, the baseline result is not ‘killed’ by

the inclusion of U in the matching set. Therefore, these simulations exercise seems to support the robustness of the matching estimates.

6. Conclusions

This analysis explores whether workers with a temporary contract exert a different effort, compared to those who are in permanent positions, observing different phases of the cycle and differences in behavior between the sexes. A peculiar matching strategy (Paggiaro et al., 2008) is adopted, making use of short panels coming from the quarterly LFS. The study is mainly focused on those who enter in a job after a period of inoccupation and it covers the period between 2006 and 2013. The robustness of the results is tested by verifying specific violations of the CIA according to the methodology proposed by Ichino et al. (2008). Evidence shows that temporary contracts affect absenteeism but not (paid and unpaid) overtime work. Considering absence indicator, a cyclical pattern in workers' behavior seems to emerge: in a period of recovery (2010), results show limited differences in effort between temporary and permanent workers whilst, during the second phase of the recession (2013), the effect of having a temporary contract in reducing absenteeism at work is higher. A possible interpretation is that, in a dual labor market context, the poor prospects might influence strongly effort of temporary workers because of increase insecurity in line with a "discipline effect" of unemployment. Moreover, the effect of being temporary workers on absenteeism is stronger for women than for men: this is consistent with previous literature. Since the recession has affected men more than women, it could be argued that men involved in temporary work feel more insecure at work. On the other hand, when considering overtime work, the differences between temporary and permanent workers are not significant: this result appears robust to the estimates of all samples. This could be related with the pro cyclical pattern of overtime work.

7. Appendix A, Robustness Checks

Table A1 and following, report the results of estimations carried out on the alternative sample. The subset examined is composed by those who are employed in T1 with temporary or permanent contract (instead of the “not employed” of the previous estimates, section 5.2). The results show that, differences in absenteeism at work remain significant before the recession and during the second period of the downturn, in line of the previous estimates: but the ATT result is lower (table A1). This may reflect a partially different behavior in effort in those who previously unemployed respect to that of people who have already a job. It is also confirmed the dissimilarity between men and women. The ATT referred to Overtime indicator (both paid and unpaid) remains not significant (table A2 and A3).

8. References

- Anger, S. (2008), “Overtime work as a signaling device”, *Scottish Journal of Political Economy*, Blackwell Publishing Ltd. Vol. 55 (2), pp. 167–189.
- Amilon, A. & Wallete, M. (2009), “Work absence a signaling factor for temporary workers?”, *Labour*, Blackwell Publishing Ltd., Vol. 23(1), pp. 171-194.
- Bauer T. & Zimmerman K. (1999) “Overtime work and Overtime compensation in Germany”, *Scottish Journal of Political Economy*, Blackwell Publishing Ltd. Vol. 46 (4), pp. 419–436
- Barmby, T.A. (2002) “Worker Absenteeism: a Discrete Hazard Model with Bivariate Heterogeneity”, *Labour Economics*, Elsevier, Vol. 9(4), pp. 469-476.
- Barmby, T. A. & Orme, C. D. & Treble, John G, (1991), “Worker Absenteeism: An Analysis Using Microdata”, *Economic Journal*, Royal Economic Society, vol. 101, pp. 214-29.
- De Paola, M., Scoppa, V. & Pupo, V. (2014), “Absenteeism in the Italian Public Sector: The Effects of Changes in Sick Leave Policy”. *Journal of Labor Economics*, University of Chicago Press, Vol. 32(2), pp. 337-360.
- Dolado, J. & Ortigueira, S. & Stucchi R. (2012). "Does dual employment protection affect TFP?, Evidence from Spanish manufacturing firms", *CEPR Discussion Papers* 8763.
- Garibaldi, P. & Taddei, F. (2013) “Italy: A dual labour market in transition Country case study on labour market segmentation” *Economic and Labour Market Analysis Department ILO*, Sector Employment Working Paper No. 144.

Givord, P. & Wilner, L. (2014), "When does the stepping stone work? Fixed term contracts versus temporary agency work in changing economic conditions", *Journal of Applied Econometrics*, John Wiley & Sons, Ltd. Vol.30.

Engelland, A. & Riphahn, R. T. (2005), "Temporary contracts and employee effort", *Labour Economics*, Elsevier, vol. 12(3), pp. 281-299.

Ichino, A. & Riphahn, R. T. (2001), "The effect of employment protection of worker effort", *Labour Economics*, Elsevier, vol. 12(3), pp. 281-299.

Ichino A., Mealli F. & Nannicini T., (2008). "From temporary help jobs to permanent employment: what can we learn from matching estimators and their sensitivity?". *Journal of Applied Econometrics*, John Wiley & Sons, Ltd., vol. 23(3), pp. 305-327.

Ichino A. & Riphahn R.T. (2004), "Absenteeism and Employment Protection: Three Case Studies", *Swedish Economic policy Review*, n. 11, pp. 95-114.

Ichino, A. & Riphahn, R. T. (2005), "The Effect of Employment Protection on Worker Effort: a Comparison of Absenteeism During and After Probation", *Journal of European Economic Association*, n. 3, pp.120-143.

Lazear Edward P & Rosen, Sherwin (1981), "Rank-Order Tournaments as Optimum Labor Contracts", *Journal of Political Economy*, University of Chicago Press, vol. 89(5), pp. 841-64.

Johansson, P. & Marten P. (2002). "Assessing the Effect of Public Policy on Worker Absenteeism", *Journal of Human Resources* 37(2), pp. 381-409.

Mancini, M. (2011), "Labor Effort and temporary jobs: evidence for Italy", *Quaderni del Dipartimento di Economia, Finanza e Statistica* n. 95, Università di Perugia.

Mancini, M. & Pappalardo, C., 2006, "Evaluating The Impact of Labour Market Regulation on the Size Growth of Italian Firms," *Politica economica - Journal of Economic Policy (PEJEP)*, Il Mulino, 3, pp. 399-424.

Nannicini T. (2007) "Simulation-based sensitivity analysis for matching estimators" *The Stata Journal* (2007) Vol. 7, 3, pp. 334-350.

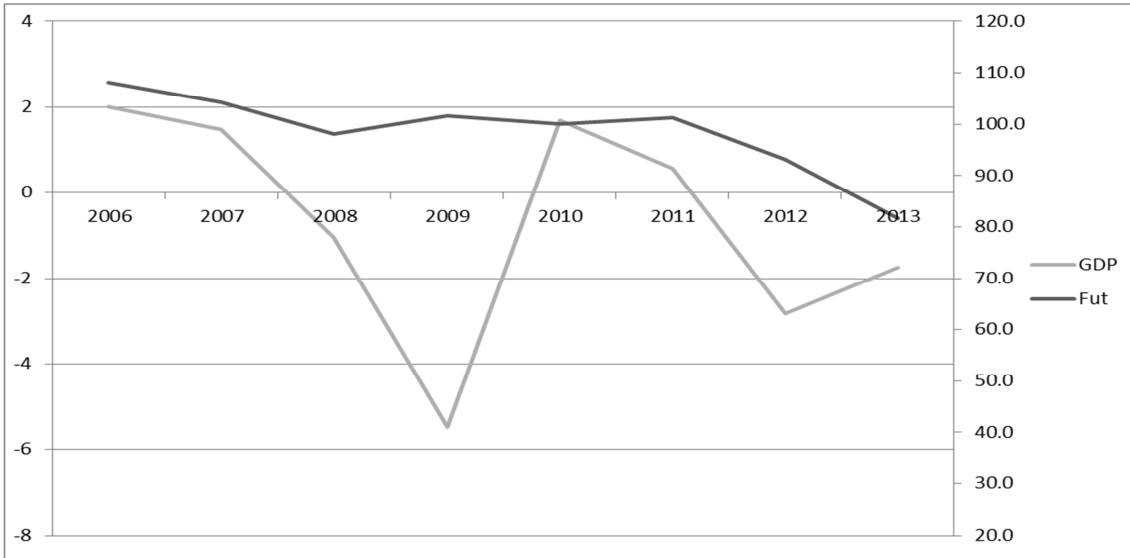
Paggiaro A., Rettore, E. & Trivellato, U. (2009). "The effect of experiencing a spell of temporary employment vs. a spell of unemployment on short-term labour market outcomes", *IRVAPP Progress Report*.

Riphahn, R. T. & Thalmaier, A., (2001). Behavioral Effects of Probation Periods: An Analysis of Worker absenteeism, *Jahrbücher für Nationalökonomie und Statistik (Journal of Economics and Statistics)*. 221(2), 179-201;

Scoppa, V. & Vuri ,D. (2014) "Absenteeism, unemployment and employment protection legislation: evidence from Italy", *IZA Journal of labor Economics*, Springer.

Shapiro, C. & Stiglitz, J. E. (1985), "Equilibrium Unemployment as a Worker Discipline Device", *American Economic Review*, vol. 74(3), 433-44.

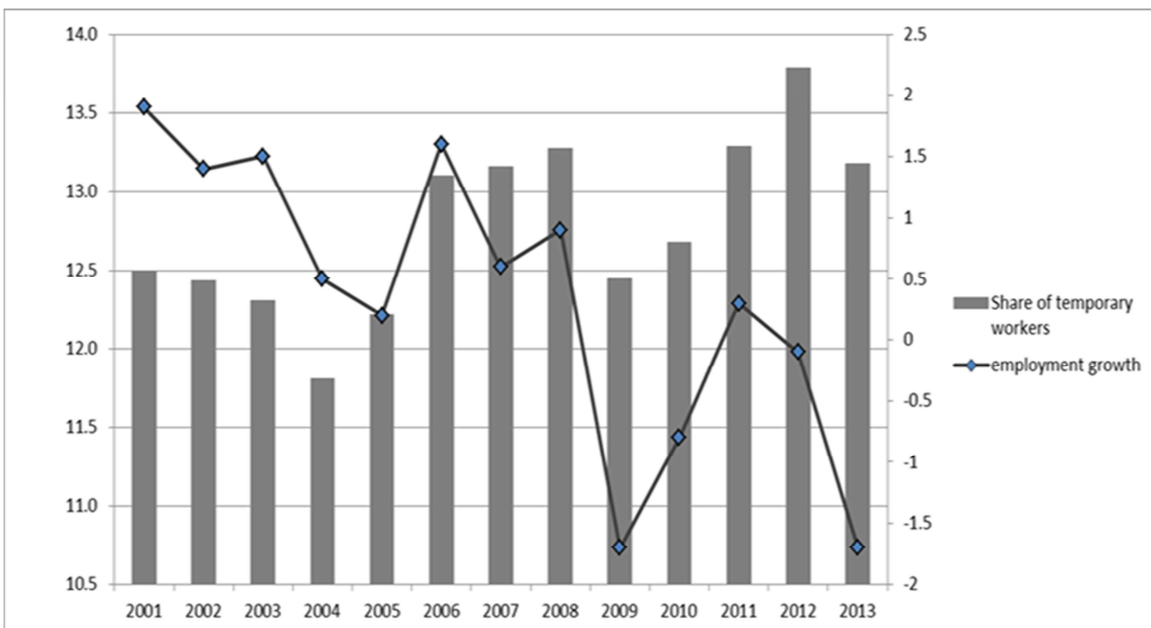
Fig. 1 GDP growth and Expectations on the Economic Situation (Fut) in Italy (2006-2013)



Source: ISTAT

Note: Gdp Growth, chain linked values; Fut is the balance of the replies to four queries about next year economic evolutions. Balance=(-200) when all respondents expect a sharp improvement(worsening) in next year economic evolutions. Balance=0 implies that the aggregate belief is neutral.

Fig. 2 Employment growth and share of temporary workers in Italy (2001-2013)



Source: ISTAT

Table 1 Determinants of the probability to be absent at work

	2007	2009	2011	2013
Temporary Cont.	- 0.303 ^{***}	-0.071	-0.267 ^{***}	-0.529 ^{***}
	(0.00)	(0.26)	(0.00)	(0.00)
Woman	0.634 ^{***}	0.527 ^{***}	0.592 ^{***}	0.534 ^{***}
	(0.00)	(0.00)	(0.00)	(0.00)
Low education	-0.114	-0.122	-0.176 [*]	0.050
	(0.21)	(0.13)	(0.03)	(0.53)
Medium education	-0.047	-0.194 ^{**}	-0.213 ^{**}	-0.107
	(0.54)	(0.00)	(0.00)	(0.11)
Region: North East	0.110	0.129 [*]	0.198 ^{***}	0.158 [*]
	(0.05)	(0.01)	(0.00)	(0.00)
Region: Center	0.008	-0.027	0.097	0.027
	(0.90)	(0.65)	(0.12)	(0.64)
Region: South	-0.322 ^{***}	-0.204 ^{***}	-0.144 [*]	-0.051
	(0.00)	(0.00)	(0.01)	(0.36)
Italian Citizenship	-0.113	-0.639 ^{***}	-0.042	0.042
	(0.27)	(0.00)	(0.57)	(0.55)
Age	0.007	0.000	0.010	0.025
	(0.59)	(0.98)	(0.44)	(0.071)
Age squared	-0.014	-0.007	-0.008	-0.030
	(0.39)	(0.64)	(0.60)	(0.06)
Couple no sons	0.131	0.189 ^{**}	0.082	0.079
	(0.08)	(0.00)	(0.23)	(0.21)
Couple with sons	0.0986	0.247 ^{**}	0.155	0.084
	(0.29)	(0.00)	(0.06)	(0.28)
Single with son	-0.218 [*]	-0.177	-0.060	-0.036
	(0.04)	(0.07)	(0.53)	(0.69)
Sector: Agriculture	0.048	0.304 [*]	0.050	0.530 ^{***}
	(0.767)	(0.020)	(0.745)	(0.00)
Energy Industry	0.173	0.159	0.266 ^{***}	0.331 ^{***}
	(0.39)	(0.43)	(0.00)	(0.00)
Transport (Ind.)	-0.235 ^{**}	0.259 ^{***}	0.215 [*]	0.652 ^{***}
	(0.00)	(0.00)	(0.04)	(0.00)
Construction	-0.091	0.306 ^{**}	-0.275 ^{**}	-0.208 [*]
	(0.42)	(0.00)	(0.00)	(0.02)
Trade	-0.382 ^{***}	-0.254 ^{**}	-0.246	-0.004
	(0.00)	(0.00)	(0.06)	(0.97)
Hotels & Rest.	-0.309 [*]	-0.169	-0.083	-0.224
	(0.02)	(0.17)	(0.50)	(0.06)
Transports (Serv.)	-0.486 ^{***}	-0.047	-0.188	-0.240
	(0.00)	(0.68)	(0.29)	(0.16)
Banking, Real Est.	-0.343 [*]	-0.114	-0.179	-0.638 ^{***}
	(0.013)	(0.36)	(0.24)	(0.00)
Business Serv.	-0.390 ^{***}	-0.095	-0.186	-0.307 ^{**}
	(0.00)	(0.28)	(0.06)	(0.00)
Government	0.018	-0.147	-0.293 ^{**}	-0.148
	(0.84)	(0.13)	(0.00)	(0.14)

Services: other	-0.465 ^{***}	-0.450 ^{***}	-0.685 ^{***}	-0.862 ^{***}
	(0.00)	(0.00)	(0.00)	(0.00)
Occupation: Director	-0.478	-0.250	-0.193	-0.091
	(0.06)	(0.25)	(0.47)	(0.75)
Scientists	-0.0785	-0.137	-0.0131	-0.158
	(0.55)	(0.27)	(0.91)	(0.19)
Technicians	-0.236 [*]	-0.062	-0.236 [*]	-0.347 ^{**}
	(0.02)	(0.53)	(0.03)	(0.00)
Clerks	-0.293 ^{**}	-0.218 [*]	-0.153	-0.276 [*]
	(0.09)	(0.04)	(0.17)	(0.01)
Serv. Sales workers	-0.021	-0.055	-0.166	-0.293 ^{**}
	(0.82)	(0.53)	(0.09)	(0.00)
Skilled workers	0.072	-0.009	0.117	0.0204
	(0.45)	(0.91)	(0.20)	(0.81)
Craft and related	0.147	0.236 ^{**}	0.266 ^{**}	0.288 ^{**}
	(0.16)	(0.01)	(0.00)	(0.00)
Managing direct.	0.218	-0.268	-0.548 [*]	-0.569 [*]
	(0.26)	(0.17)	(0.01)	(0.01)
Managers	0.191	0.093	-0.369 ^{**}	0.086
	(0.11)	(0.43)	(0.00)	(0.48)
Office workers	0.026	0.054	-0.028	0.119
	(0.72)	(0.47)	(0.72)	(0.14)
Coordination role	-0.188 ^{**}	-0.027	0.093	0.046
	(0.03)	(0.65)	(0.11)	(0.37)
Part time worker	0.049	-0.092	-0.055	-0.068
	(0.41)	(0.11)	(0.38)	(0.24)
Constant	-2.85 ^{***}	-2.179 ^{***}	-3.169 ^{***}	-3.310 ^{***}
	(0.00)	(0.00)	(0.00)	(0.00)
<i>N of observations</i>	45895	44061	42958	39146
<i>pseudo R²</i>	0.022	0.024	0.024	0.031

p-values in parentheses.

^{*} *p* < 0.05, ^{**} *p* < 0.01, ^{***} *p* < 0.001

Note: logit estimates. The references categories are: Gender: male; Education: high; Region: North; Occupation: Elementary; Citizenship: Foreign; Job position: blue collar; family status: single without son.

Table 2 Determinants of the probability to work overtime

	2007	2009	2011	2013
Temporary Cont.	-0.106	-0.105	-0.054	-0.128
	(0.09)	(0.16)	(0.51)	(0.18)
Woman	-0.476***	-0.407***	-0.397***	-0.388***
	(0.00)	(0.00)	(0.00)	(0.00)
Low education	-0.302***	-0.400***	-0.458***	-0.490***
	(0.00)	(0.00)	(0.00)	(0.00)
Medium education	-0.113	-0.106	-0.175*	-0.206**
	(0.06)	(0.08)	(0.01)	(0.01)
Region: North East	0.187***	0.064	0.114*	0.115
	(0.00)	(0.21)	(0.04)	(0.07)
Region: Center	0.00	-0.020	-0.140*	-0.010
	(0.90)	(0.70)	(0.03)	(0.93)
Region: South	-0.857***	-0.660***	-0.843***	-0.651***
	(0.00)	(0.00)	(0.00)	(0.00)
Italian Citizenship	0.156	0.415***	0.171	0.445***
	(0.10)	(0.00)	(0.05)	(0.00)
Age	0.099***	0.100***	0.0907***	0.101***
	(0.00)	(0.00)	(0.00)	(0.00)
Age squared	-0.132***	-0.127***	-0.113***	-0.124***
	(0.00)	(0.00)	(0.00)	(0.00)
Couple no sons	-0.122*	-0.190**	-0.318***	-0.290***
	(0.04)	(0.00)	(0.00)	(0.00)
Couple with sons	0.078	-0.0012	-0.144	-0.051
	(0.28)	(0.98)	(0.08)	(0.55)
Single with son	-0.107	-0.0519	-0.224*	-0.338**
	(0.20)	(0.56)	(0.02)	(0.00)
Sector: Agriculture	-0.517**	-0.731**	-0.983**	-0.814*
	(0.00)	(0.00)	(0.00)	(0.03)
Energy Industry	0.295	0.271	0.241**	0.285**
	(0.05)	(0.09)	(0.01)	(0.01)
Transport (Ind.)	0.256***	-0.173*	-0.0549	-0.316
	(0.00)	(0.02)	(0.67)	(0.07)
Construction	-0.00425	-0.455***	0.159	0.246*
	(0.96)	(0.00)	(0.12)	(0.02)
Trade	0.0182	0.0249	0.274	0.003
	(0.81)	(0.76)	(0.06)	(0.98)
Hotels & Rest.	0.105	0.0628	0.215	0.538***
	(0.37)	(0.62)	(0.08)	(0.00)
Transports (Serv.)	0.348***	0.107	0.246	0.464**
	(0.00)	(0.28)	(0.11)	(0.00)
Banking, Real Est.	0.245*	0.386***	0.311*	0.360*
	(0.01)	(0.00)	(0.01)	(0.01)
Business Serv.	0.165*	0.144	0.0109	0.234
	(0.05)	(0.09)	(0.92)	(0.06)
Government	0.260***	0.231**	0.448***	0.942***
	(0.00)	(0.00)	(0.00)	(0.00)
Services: other	-0.062	-0.211	-0.049	-0.196

	(0.56)	(0.07)	(0.71)	(0.20)
Occupation:	0.390*	0.0239	-0.469	0.196
Directors				
	(0.03)	(0.89)	(0.05)	(0.50)
Scientists	0.351**	0.252	-0.225	0.098
	(0.00)	(0.06)	(0.13)	(0.56)
Technicians	0.423***	0.292*	-0.0238	0.275
	(0.00)	(0.01)	(0.85)	(0.06)
Clerks	0.223*	0.217	-0.0487	0.0268
	(0.03)	(0.06)	(0.70)	(0.86)
Serv. Sales workers	0.440***	0.306**	-0.172	0.402**
	(0.00)	(0.00)	(0.14)	(0.00)
Skilled workers	0.345***	0.010	-0.099	0.164
	(0.00)	(0.92)	(0.36)	(0.20)
Craft and related	0.258*	0.132	-0.019	0.003
	(0.01)	(0.25)	(0.87)	(0.98)
Managing direct.	-0.304*	-0.249	-0.039	0.145
	(0.05)	(0.13)	(0.84)	(0.53)
Managers	-0.044	-0.008	0.007	0.131
	(0.64)	(0.94)	(0.95)	(0.35)
Employees	0.028	-0.008	-0.022	-0.012
	(0.65)	(0.92)	(0.79)	(0.90)
Coordination role	0.627***	0.631***	0.588***	0.387***
	(0.00)	(0.00)	(0.00)	(0.00)
Part time worker	-0.374***	-0.556***	-0.493***	-0.428***
	(0.00)	(0.00)	(0.00)	(0.00)
Constant	-4.299***	-4.561***	-4.13***	-5.12***
	(0.00)	(0.00)	(0.00)	(0.00)
<i>Number of obs.</i>	44535	43307	41679	37731
<i>pseudo R2</i>	0.061	0.057	0.052	0.058

p-values in parentheses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: logit estimates. The references categories are: Gender: male; Education: high; Region: North; Occupation: Elementary; Citizenship: Foreign; Job position: blue collar; family status: single without son.

Table 3 Determinants of the probability to do unpaid overtime work

	2007	2009	2011	2013
Temporary Cont.	-0.107	-0.099	-0.051	-0.051
	(0.13)	(0.25)	(0.58)	(0.64)
Woman	-0.555***	-0.471***	-0.455***	-0.456***
	(0.00)	(0.00)	(0.00)	(0.00)
Low education	-0.214*	-0.299**	-0.386***	-0.343**
	(0.01)	(0.00)	(0.00)	(0.00)
Medium education	-0.008	-0.038	-0.113	-0.078
	(0.90)	(0.61)	(0.20)	(0.41)
Region: North East	0.233***	0.089	0.122	0.030
	(0.00)	(0.13)	(0.05)	(0.69)
Region: Center	0.001	-0.071	-0.205**	-0.077
	(0.98)	(0.29)	(0.00)	(0.36)
Region: South	-0.906***	-0.652***	-0.920***	-0.781***
	(0.00)	(0.00)	(0.00)	(0.00)
Italian Citizenship	0.207*	0.521***	0.316**	0.540***
	(0.04)	(0.00)	(0.00)	(0.00)
Age	0.117***	0.115***	0.085***	0.109***
	(0.00)	(0.00)	(0.00)	(0.00)
Age squared	-0.154***	-0.145***	-0.110***	-0.137***
	(0.00)	(0.00)	(0.00)	(0.00)
Couple no sons	-0.0482	-0.188*	-0.225**	-0.297***
	(0.48)	(0.01)	(0.00)	(0.00)
Couple with sons	0.110	0.021	-0.075	-0.014
	(0.19)	(0.81)	(0.43)	(0.89)
Single with son	-0.077	-0.060	-0.254*	-0.333*
	(0.42)	(0.56)	(0.03)	(0.01)
Sector: Agriculture	-0.492*	-0.522*	-0.812*	-0.837
	(0.02)	(0.04)	(0.01)	(0.07)
Energy Industry	0.492**	0.610***	0.460***	0.564***
	(0.004)	(0.001)	(0.000)	(0.000)
Transport (Ind.)	0.439***	0.055	0.085	-0.105
	(0.000)	(0.543)	(0.568)	(0.610)
Construction	0.175	-0.293*	0.298*	0.521***
	(0.106)	(0.032)	(0.015)	(0.000)
Trade	0.147	0.259**	0.364*	0.244
	(0.104)	(0.008)	(0.030)	(0.235)
Hotels & Rest.	0.079	0.044	0.362*	0.665***
	(0.566)	(0.775)	(0.013)	(0.000)
Transports (Serv.)	0.487***	0.264*	0.292	0.643**
	(0.000)	(0.025)	(0.125)	(0.002)
Banking, Real Est.	0.302*	0.548***	0.363*	0.318
	(0.014)	(0.000)	(0.028)	(0.134)
Business Serv.	0.340***	0.360***	0.233	0.591***
	(0.000)	(0.000)	(0.085)	(0.000)
Government	0.426***	0.338***	0.642***	1.260***
	(0.000)	(0.001)	(0.000)	(0.000)

Services: other	-0.0784	0.0151	-0.243	-0.407
	(0.547)	(0.911)	(0.172)	(0.077)
Occupation:				
Directors	-0.0494	-0.267	-0.738*	0.413
	(0.837)	(0.310)	(0.036)	(0.364)
Scientists	0.287*	0.264	-0.384*	-0.148
	(0.044)	(0.099)	(0.027)	(0.474)
Technicians	0.342**	0.296*	-0.00843	0.156
	(0.003)	(0.025)	(0.952)	(0.363)
Clerks	0.280*	0.271*	-0.0547	0.0407
	(0.017)	(0.046)	(0.704)	(0.814)
Serv. Sales workers	0.443***	0.446***	-0.087	0.429**
	(0.000)	(0.000)	(0.513)	(0.008)
Skilled workers	0.367***	0.153	-0.060	0.315*
	(0.000)	(0.206)	(0.606)	(0.029)
Craft and related	0.316**	0.261*	0.0247	0.122
	(0.004)	(0.043)	(0.839)	(0.421)
Managing direct.	-0.597**	-0.875***	-0.916**	-0.645
	(0.003)	(0.000)	(0.002)	(0.103)
Managers	-0.456***	-0.562***	-0.343*	-0.553**
	(0.000)	(0.000)	(0.023)	(0.005)
Employees	-0.087	-0.067	-0.154	0.002
	(0.209)	(0.433)	(0.115)	(0.986)
Coordination role	0.562***	0.639***	0.539***	0.389***
	(0.000)	(0.000)	(0.000)	(0.000)
Part time worker	-0.303***	-0.481***	-0.396***	-0.410***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-5.084***	-5.455***	-4.495***	-5.855***
	(0.000)	(0.000)	(0.000)	(0.000)
<i>Number of obs.</i>	44535	43307	41679	37731
<i>pseudo R2</i>	0.062	0.050	0.055	0.063

p-values in parentheses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: logit estimates. The references categories are: Gender: male; Education: high; Region: North; Occupation: Elementary; Citizenship: Foreign; Job position: blue collar; family status: single without son.

Table 4 Effect of being permanent on the probability to be absent at work

		2006/07			2009/10			2012/13	
	ATT	Treated	Controls	ATT	Treated	Controls	ATT	Treated	Controls
Whole sample	-0.05	1269	978	-0.03	1244	785	-0.08	1156	613
	(-2.80)			(-1.66)			(-4.12)		
Males	-0.01	522	425	-0.02	581	374	-0.08	560	295
	(-0.62)			(-0.72)			(-2.42)		
Females	-0.05	747	553	-0.02	633	411	-0.11	594	318
	(-2.38)			(-0.87)			(-3.58)		

Note: ATT estimation with the nearest neighbour algorithm. The First-row ATT is the baseline estimate for the whole sample. The ATT is estimated also separately for male and females. Standard error in parentheses.

Table 5 Effect of being permanent on the probability to work overtime

		2006/07			2009/10			2012/13	
	ATT	Treated	Controls	ATT	Treated	Controls	ATT	Treated	Controls
Whole sample	-0.02	1269	998	0.01	1244	785	0.00	1156	613
	(-1.78)			(0.56)			(0.19)		
Males	-0.03	522	436	0.03	581	374	0.01	560	295
	(-1.10)			(0.34)			(0.65)		
Females	-0.02	747	562	0.01	660	419	0.00	596	318
	(-1.37)			(0.69)			(0.14)		

Note: see Table 4.

Table 6 Effect of being permanent the probability to do unpaid overtime work

		2006/07			2009/10			2012/13	
	ATT	Treated	Controls	ATT	Treated	Controls	ATT	Treated	Controls
Whole sample	0.01	1269	998	0.01	1244	817	0.03	1156	613
	(0.45)			(1.79)			(0.39)		
Males	-0.01	522	436	0.02	581	398	0.00	560	295
	(-0.22)			(1.11)			(0.18)		
Females	0.00	739	561	0.01	663	419	0.01	596	318
	(-0.09)			(0.69)			(1.20)		

Note: see Table

Table 7 Sensitivity analysis, absence 2006-2007: Effect of calibrated confounders.

	Fraction U=1 by treatment/outcome				Outcome Eff.	Selection Eff.	ATT	SE
	P ₁₁	p ₁₀	p ₀₁	p ₀₀				
No Confounder	0.00	0.00	0.00	0.00			-0.06	0.02
Neutral Confounder	0.50	0.50	0.50	0.50			-0.06	0.02
Confounder Like:								
Woman	0.67	0.59	0.66	0.56	1.63	1.11	-0.06	0.02
University	0.16	0.13	0.15	0.08	2.18	1.65	-0.06	0.02
North West	0.22	0.22	0.18	0.18	1.06	1.34	-0.06	0.02
Italian	0.94	0.96	0.97	0.93	2.68	1.61	-0.06	0.02
Couple without sons	0.80	0.79	0.82	0.75	1.61	1.23	-0.06	0.02
Couple with sons	0.12	0.07	0.11	0.07	1.74	0.97	-0.06	0.02
Prev. employed	0.33	0.35	0.37	0.30	1.45	1.29	-0.06	0.02

Note: ATT estimates with nearest neighbour algorithm, including U, a binary confounding factor. The parameters of the distribution of the variable U, P_{ij} $i,j=(0,1)$ give the probability that $U=1$, in each of the four groups defined by the treatment status (T_i) and the outcome value (Y_j). The process is repeated 500 times. The selection effect is The average estimated odds ratio of U in the logit model of ($Pr, T=1, U,W$).

Tab. 8 Sensitivity analysis, absence 2009-2010: Effect of calibrated confounders.

	Fraction U=1 by treatment/outcome				Outcome Effect	Selection Effect	ATT	SE
	P ₁₁	p ₁₀	p ₀₁	p ₀₀				
No Confounder	0.00	0.00	0.00	0.00			-0.02	0.01
Neutral Confounder	0.50	0.50	0.50	0.50			-0.03	0.02
Confounder Like:								
Woman	0.60	0.53	0.48	0.53	0.86	1.04	-0.03	0.02
University	0.14	0.11	0.10	0.10	1.12	1.17	-0.03	0.02
North West	0.26	0.19	0.27	0.20	1.57	0.95	-0.03	0.02
Italian	0.88	0.92	0.83	0.86	0.93	1.76	-0.03	0.02
Couple without sons	0.57	0.72	0.75	0.74	1.14	0.87	-0.03	0.02
Couple with sons	0.21	0.09	0.08	0.07	1.16	1.28	-0.03	0.02
Prev. employed	0.36	0.34	0.27	0.30	0.85	1.21	-0.03	0.02

Note: See table 7.

Tab 9 Sensitivity analysis, absence 2012/13: Effect of calibrated confounders

	Fraction U=1 by treatment/outcome				Outcome Effect	Selection Effect	ATT	SE
	P11	p10	p01	p00				
No Confounder	0.00	0.00	0.00	0.00			-0.08	0.02
Neutral Confounder	0.50	0.50	0.50	0.50			-0.09	0.03
Confounder Like								
Woman	0.69	0.51	0.50	0.52	0.95	1.00	-0.09	0.03
University	0.17	0.14	0.20	0.11	2.17	1.23	-0.09	0.02
North West	0.14	0.23	0.19	0.21	0.89	1.16	-0.09	0.02
Italian	0.89	0.90	0.86	0.75	2.28	2.82	-0.09	0.03
Couple without sons	0.64	0.69	0.64	0.61	1.18	1.39	-0.08	0.02
Couple with sons	0.06	0.09	0.16	0.09	1.86	0.88	-0.08	0.02
Prev. employed	0.25	0.34	0.41	0.29	1.74	1.17	-0.09	0.03

Note: see table 7.

Table A1 Effect of being in a temporary contract on the probability to be absent at work, alternative sample

		2006/07			2009/10			2012/13	
	ATT	Treated	Controls	ATT	Treated	Controls	ATT	Treated	Controls
Whole sample	0.00	3053	28437	-0.01	2979	27306	-0.02	2591	25867
	(-0.40)			(-0.00)			(-2.00)		
Male	0.00	1465	16415	-0.01	1498	15132	-0.01	1249	13709
	(-0.26)			(-0.42)			(-0.88)		
Female	-0.03	1599	12108	-0.02	1482	12174	-0.03	1341	12158
	(-2.37)			(-1.48)			(-2.42)		

Note: ATT estimation with the nearest neighbour algorithm. The First-row ATT is the baseline estimate for the whole sample. The ATT is estimated also separately for male and females. Standard error in parentheses.

Table A2 Effect of being temporary on the probability to work overtime, alternative sample

		2006/07			2009/10			2012/13	
	ATT	Treated	Controls	ATT	Treated	Controls	ATT	Treated	Controls
Whole sample	-0.01	3064	28619	0.00	2785	25145	-0.01	2902	26387
	(-1.07)			(-0.06)			(-1.55)		
Men	-0.02	1465	16483	0.00	1411	14223	-0.01	1429	14091
	(-1.63)			(-0.55)			(-0.88)		
Women	-0.01	1599	12136	0.00	1374	10922	-0.01	1473	12296
	(-0.96)			(0.48)			(-1.02)		

Note see Table A1.

Table A3 Effect of being temporary on the probability to do unpaid overtime, alternative sample

		2006/07			2009/10			2012/13	
	ATT	Treated	Controls	ATT	Treated	Controls	ATT	Treated	Controls
Whole sample	-0.01	3064	28619	0.00	2785	25145	0.01	2902	26387
	(-1.12)			(0.53)			(0.92)		
Men	-0.02	1465	16483	0.00	1411	14223	0.00	1429	14091
	(-1.98)			(-0.08)			(0.08)		
Women	-0.01	1599	12136	0.01	1374	10922	0.01	1473	12296
	(-1.46)			(0.62)			(0.8)		

Note see Table A1.

Table A4 Matching variable description 2006/2007, main sample

	N. of obs.	Mean	Std. Dev.	Min	Max
Male	2247	0.421	0.494	0.0	1
Education: Low	2247	0.463	0.499	0.0	1
Education: medium	2247	0.425	0.494	0.0	1
Education: high	2247	0.110	0.313	0.0	1
Region: North West	2247	0.204	0.403	0.0	1
Region North East	2247	0.186	0.389	0.0	1
Region Center	2247	0.130	0.336	0.0	1
Region: Islands	2247	0.149	0.356	0.0	1
Region South	2247	0.332	0.471	0.0	1
citenzship: italian	2247	0.950	0.219	0.0	1
Age	2247	33.717	11.755	15.0	65
Age squared	2247	12.750	8.828	2.3	42.3
Position: single	2247	0.056	0.230	0.0	1
Position: couple without son	2247	0.772	0.420	0.0	1
Position: Couple with son	2247	0.074	0.262	0.0	1
Position single parent	2247	0.098	0.297	0.0	1
Student	2247	0.188	0.391	0.0	1
Employed	2247	0.331	0.471	0.0	1

Note: Main sample (Not employed at time 1). All the predetermined variables are taken at T. See Section 3

Table A5 Matching variable description 2009/2010, main sample

Variable	N. of obs.	Mean	Std. Dev.	Min	Max
Male	2029	0.471	0.499	0.0	1
Education: Low	2029	0.473	0.499	0.0	1
Education: medium	2029	0.420	0.494	0.0	1
Education: high	2029	0.106	0.308	0.0	1
Region: North West	2029	0.197	0.398	0.0	1
Region North East	2029	0.182	0.386	0.0	1
Region Center	2029	0.156	0.363	0.0	1
Region: Islands	2029	0.156	0.363	0.0	1
Region South	2029	0.309	0.462	0.0	1
citizenship: italian	2029	0.895	0.307	0.0	1
Age	2029	34.975	11.972	16.0	65
Age squared	2029	13.665	9.089	2.6	42.3
Position: single	2029	0.086	0.280	0.0	1
Position: couple without son	2029	0.723	0.448	0.0	1
Position: Couple with son	2029	0.086	0.280	0.0	1
Position single parent	2029	0.106	0.308	0.0	1
Student	2029	0.153	0.360	0.0	1
Employed	2029	0.321	0.467	0.0	1

Note: see table A4

Table A6 Matching variable description 2012/2013, main sample

Variable	N. of obs.	Mean	Std. Dev.	Min	Max
Male	1769	0.483	0.500	0.0	1
Education: Low	1769	0.435	0.496	0.0	1
Education: medium	1769	0.427	0.495	0.0	1
Education: high	1769	0.137	0.344	0.0	1
Region: North West	1769	0.219	0.414	0.0	1
Region North East	1769	0.204	0.403	0.0	1
Region Center	1769	0.163	0.370	0.0	1
Region: Islands	1769	0.149	0.356	0.0	1
Region South	1769	0.265	0.442	0.0	1
citizenship: italian	1769	0.854	0.354	0.0	1
Age	1769	36.659	11.988	16.0	65
Age squared	1769	14.875	9.324	2,56	4225
Position: single	1769	0.114	0.317	0.0	1
Position: couple without son	1769	0.665	0.472	0.0	1
Position: Couple with son	1769	0.092	0.289	0.0	1
Position single parent	1769	0.129	0.336	0.0	1
Student	1769	0.120	0.325	0.0	1
Employed	1769	0.324	0.468	0.0	1

Note: see table A4

Table A7 Matching variable description 2006/2007, alternative sample

Variable	N. of obs.	Mean	Std. Dev.	Min	Max
Male	31492	0.566	0.496	0.0	1
Education: Low	31492	0.375	0.484	0.0	1
Education: medium	31492	0.476	0.499	0.0	1
Education: high	31492	0.145	0.352	0.0	1
Region: North West	31492	0.291	0.454	0.0	1
Region North East	31492	0.242	0.428	0.0	1
Region Center	31492	0.150	0.357	0.0	1
Region: Islands	31492	0.095	0.293	0.0	1
Region South	31492	0.223	0.416	0.0	1
citenzship: italian	31492	0.955	0.208	0.0	1
Age	31492	41.706	10.295	16.0	65
Age squared	31492	18.454	8.525	256.0	4225
Position: single	31492	0.092	0.290	0.0	1
Position: couple without son	31492	0.707	0.455	0.0	1
Position: Couple with son	31492	0.121	0.326	0.0	1
Position single parent	31492	0.080	0.271	0.0	1
Student	31492	0.005	0.070	0.0	1
Employed	31492	0.970	0.170	0.0	1
Scientist	31492	0.092	0.289	0.0	1
Technicians	31492	0.021	0.144	0.0	1
Clerks	31492	0.244	0.429	0.0	1
Services and sales workers	31492	0.128	0.334	0.0	1
Farmers and skilled workers	31492	0.156	0.363	0.0	1
Clerks	31492	0.110	0.312	0.0	1
Craft and related	31492	0.091	0.288	0.0	1
Agriculture	31492	0.022	0.146	0.0	1
Industry	31492	0.307	0.461	0.0	1
Hotels and restaurants	31492	0.032	0.177	0.0	1
Transports (services)	31492	0.057	0.232	0.0	1
Banking, Real estate	31492	0.036	0.185	0.0	1
Business Services	31492	0.069	0.253	0.0	1
Government	31492	0.083	0.275	0.0	1
Healthcare and education	31492	0.198	0.398	0.0	1

Note: Alternative sample (Employed at time 1). All the predetermined variables are taken at T3. See Section 3

Table A8 Matching variable description 2009/2010, alternative sample

Variable	N. of obs.	Mean	Std. Dev.	Min	Max
Male	30288	0.549	0.498	0.0	1
Education: Low	30288	0.347	0.476	0.0	1
Education: medium	30288	0.487	0.500	0.0	1
Education: high	30288	0.164	0.371	0.0	1
Region: North West	30288	0.296	0.457	0.0	1
Region North East	30288	0.236	0.425	0.0	1
Region Center	30288	0.173	0.378	0.0	1
Region: Islands	30288	0.096	0.294	0.0	1
Region South	30288	0.199	0.399	0.0	1
citenzship: italian	30288	0.924	0.265	0.0	1
Age	30288	42.533	10.175	17.0	65
Age squared	30288	19.125	8.562	289.0	4225
Position: single	30288	0.118	0.322	0.0	1
Position: couple without son	30288	0.663	0.473	0.0	1
Position: Couple with son	30288	0.135	0.341	0.0	1
Position single parent	30288	0.085	0.278	0.0	1
Student	30288	0.005	0.068	0.0	1
Employed	30288	0.970	0.171	0.0	1
Scientist	30288	0.093	0.290	0.0	1
Technicians	30288	0.021	0.143	0.0	1
Clerks	30288	0.221	0.415	0.0	1
Services and sales workers	30288	0.136	0.343	0.0	1
Farmers and skilled workers	30288	0.160	0.367	0.0	1
Clerks	30288	0.098	0.297	0.0	1
Craft and related	30288	0.102	0.302	0.0	1
Agriculture	30288	0.024	0.152	0.0	1
Industry	30288	0.290	0.454	0.0	1
Hotels and restaurants	30288	0.037	0.188	0.0	1
Transports (services)	30288	0.058	0.233	0.0	1
Banking, Real estate	30288	0.036	0.186	0.0	1
Business Services	30288	0.075	0.263	0.0	1
Government	30288	0.082	0.274	0.0	1
Healthcare and education	30288	0.195	0.396	0.0	1

Note: see table A7

Table A9 Matching variable description 2012/2013, alternative sample

Variable	N. of obs.	Mean	Std. Dev.	Min	Max
Male	28458	0.526	0.499	0.0	1
Education: Low	28458	0.320	0.467	0.0	1
Education: medium	28458	0.495	0.500	0.0	1
Education: high	28458	0.185	0.388	0.0	1
Region: North West	28458	0.300	0.458	0.0	1
Region North East	28458	0.252	0.434	0.0	1
Region Center	28458	0.184	0.387	0.0	1
Region: Islands	28458	0.092	0.290	0.0	1
Region South	28458	0.172	0.377	0.0	1
citenzship: italian	28458	0.900	0.300	0.0	1
Age	28458	43.882	10.178	16.0	65
Age squared	28458	20.293	8.754	256.0	4225
Position: single	28458	0.136	0.342	0.0	1
Position: couple without son	28458	0.632	0.482	0.0	1
Position: Couple with son	28458	0.138	0.345	0.0	1
Position single parent	28458	0.094	0.292	0.0	1
Student	28458	0.003	0.057	0.0	1
Employed	28458	0.972	0.165	0.0	1
Scientist	28458	0.132	0.338	0.0	1
Technicians	28458	0.016	0.127	0.0	1
Clerks	28458	0.181	0.385	0.0	1
Services and sales workers	28458	0.151	0.358	0.0	1
Farmers and skilled workers	28458	0.128	0.334	0.0	1
Clerks	28458	0.095	0.294	0.0	1
Craft and related	28458	0.117	0.321	0.0	1
Agriculture	28458	0.020	0.140	0.0	1
Industry	28458	0.281	0.450	0.0	1
Hotels and restaurants	28458	0.049	0.215	0.0	1
Transports (services)	28458	0.021	0.144	0.0	1
Banking, Real estate	28458	0.032	0.176	0.0	1
Business Services	28458	0.074	0.261	0.0	1
Government	28458	0.082	0.274	0.0	1
Healthcare and education	28458	0.198	0.399	0.0	1

Note: see table A7