

The Effect of Flexibility on Wage: Evidence from Italian Linked Employer-Employee Data¹

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Abstract

This study aims at evaluating the effect of labor market flexibility on wages. Difference-in-Differences estimators are applied to Italian Linked Employer-Employee Longitudinal Data available for the period 1993-2002. The impact on wages of permanent employees of a reform deregulating the Italian labor market in late 1997 is evaluated. To achieve identification, we exploit a particular feature of the new institutional setup consisting in the introduction of Temporary Agency Workers only in some of the Italian industries. Results show an overall relative increase of wages of employees in sectors involved in the reform. This effect is consistent with labor productivity improvements.

Jel classification: J63, J64.

Key Words: Wage, EPL, Labor Market Flexibility, Difference-in-Differences.

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¹ Very preliminary and incomplete.

1 Introduction

In the recent past many European Governments adopted policies targeted to obtain employment flexibility. The main reasons ground on the need to cope with high unemployment rates and on the belief that a flexible labor market allows to achieve efficiency and productivity gains. The comprehension of the real effects of these labor market policies on labor utilization, unemployment and wages is an important question for policy makers since it can help to evaluate the opportunity of implementing a further deregulation process.

Several studies highlight the relevance of the issue for unemployment flows and unemployment duration showing a positive relation between flexibility, unemployment inflows and employment.² Results are, instead, much more controversial when looking at the relation between flexibility and wage. Autor et al. (2007) find that individual productivity rises along with flexibility. This evidence seems to be supported by the recent investigation of Leonardi and Pica (2013) showing that a rise in EPL could generate negative effects on wages which strongly vary across workers' seniority. On the contrary, Bassanini and Venn (2007) show that it is not clear if partial reforms to EPL would have any impact on productivity. Finally, Ordine and Rose (2015) show that workers entering positions entitled to employment protection experience a reduction in earnings after the introduction of atypical arrangements, which points to a negative effect of flexibility on wages.

Indeed, the impact of deregulation on both wage and productivity is in principle ambiguous and it is not surprising that the empirical evidence does not point toward clear-cut conclusions. In particular, while on the one side flexibility is targeted to ease business activity, to raise efficiency, to foster productivity and therefore to generate upward shifts of labor demand, on the other side it may generate a worsening of the bargaining position of workers underbidding the bargained wage. As things stand, despite this is a burning issue for policy, the evaluation of the effects of deregulation on wage setting remains unsolved.

The purpose of this study is to provide evidence on this respect. We focus on reduction of EPL obtained through the creation of Temporary Agency Workers (TAW) and we evaluate if this influences wage of permanent workers. In particular, in late 1997 Italy undertook a severe labor market deregulation. After the reform, albeit workers in permanent jobs entirely maintained their protections, firms could create new temporary positions by using new contractual forms for fixed-term employment. Within this reform, TAW have been introduced but their use as been confined only to some specific Industries, leaving apart firms operating in Agricultural and Construction sectors. This normative setting generates a quasi-experimental setup which can be used to construct a control group to apply difference-in-differences (DD) procedure in order to evaluate the

² Among others, see Boeri and Jimeno (2005), Boeri and Garibaldi (2007), Berton and Garibaldi (2012), Hijzen et al. (2013) and Nickell et al. (2005). Booth et al. (2002) consider temporary contracts as an important component of labor market flexibility and they define them stepping stones to permanent works as well as dead ends in term of satisfaction, training and wages.

impact of TWA contracts on wage of protected employees. However, thanks to the peculiarity of the Italian normative setting, the analysis can be pushed further. In particular, since EPL varies across firm size, being most binding for plants above 15 employees, it is possible to check whether the effect of TAW on wages of permanent workers changes according to their protection level. This gives us the opportunity to provide evidence concerning heterogeneous effect of flexibility on wages which may depend on the actual EPL enforcement.

The econometric analysis is carried out using a sample of 45,148 dependent workers observed for the period 1993 – 2002 derived from the linked Employer-Employee database of the Work History Italian Panel (WHIP). These longitudinal data allow to handle issues related to unobserved individuals' and firms' components as well as firms' sorting behavior. Indeed, the introduction of a new type of fixed-term contract could generate flows of workers across contracts, employment status and firm size, hence the characteristics in terms of ability and productivity of workers hired in each reference group could also change along with the reform, undermining the consistency of results grounded on before-after analysis applied to repeated cross-sectional data. These problems may be overcome when using Fixed-Effect estimators on panel data.

Our empirical evidence points to an overall relative increase of wages of employees in sectors affected by the reform. This effect is consistent with labor productivity improvements. However, the detected effect strongly varies according to the actual level of employment protection. Interestingly, wages of fully-protected workers in treated sectors tend to rise significantly less than those of other categories. This finding may stem out from an underbidding of insiders' wage related to the availability of new contracts and employment options for firms.

The paper is divided as follows. The Italian institutional setting is briefly described along with the characteristics of the main implemented reforms in Section 2. Section 3 presents our dataset and discusses the empirical model as well as the identification strategy. Section 4 contains the results and presents several robustness and falsification tests. In Section 5 concluding remarks are addressed.

2 The Labor Market Reform of 1997 and the Quasi-Experimental Setup

Until the beginning of the nineties the Italian labor market was considered as characterized by one of the most binding EPL among European countries. In fact, since 1973, the Italian legislation allowed for individual dismissal of any type of workers only in the presence of misconduct. Layoffs related to financial and economic reasons were not permitted and sanctioned according to firm size. On the one hand, firms employing more than 15 employees were obliged to re-hire the worker and to entirely pay foregone income. On the other hand, firms employing less

than 15 employees, should pay to the worker only a monthly forfeit hence, in the latter case, these employees could be considered as practically unprotected from the risk of layoff.³

In late 1997, a severe labor market deregulation took place through the legislative decree 196/1997. Although permanent workers maintained their protection according to firm size, temporary jobs were introduced along with several atypical arrangements so that all firms, independently of their size and sector, could operate in the presence of a largest set of labor contracts. Furthermore, effort to rise flexibility were taken forward by introducing TAW, i.e., a particular form of temporary working involving a triangular arrangement wherewith a temporary work agency hires a worker for the purpose of placing him at the disposal of a third company - the user enterprise – for a temporary assignment. TAW is often employed on an ongoing base and the rational for using this type of job arrangement tends to be related to hiring and firing costs saving. Some information concerning the extent of the use of TAW during the period under study is provided by data of the Italian Ministry of Labor which report that in 2003 more than two thousand agencies were registered all over the country.

Because of the peculiarity of these work arrangements, the Italian legislator decided to forbid their use in two sectors, namely the Agricultural and the Construction ones. The reason steams out from the need to provide some additional tutelages to employees typically involved in the main activities of these sectors who typically are unskilled, not educated and often coming from the poorest social class. In this work we make use of this exogenous separation among sectors to evaluate to what extent more flexible labor markets influence wages of different workers' categories. To enrich our identification strategy we also make use of a further legal modification affecting the use of TAW in Italian industries. Specifically, at the end of 1999, the legislative decree 488/1999 allowed the adoption of TAW in the previously excluded. The presence of this particular normative setting gives us the possibility of testing specifically the causal effect of TAW on wage and to handle caveats related to confounding trends that may arise when comparing heterogeneous Industries.

3 Data and Strategy

3.1 The Data

The empirical analysis undertaken in this study is based on data coming from the Work Histories Italian Panel (WHIP). These are linked employer-employee data providing several information on workers' and firms' characteristics. We use the part of the survey covering

³ The 15 employees threshold is computed by considering the specific establishment rather than the whole firm. However, in case the single plant belongs to a firm employing more than 60 employees in the same province, the most binding employment protection applies independently of plant size. To fix the threshold, apprentices and temporary workers with tenure shorter than nine months are not considered, while part-time workers and all other temporary contracts are included.

dependent workers and, in this specific case, the dataset provides several information on workers' and firms' characteristics including plants' dimension, type of contract, wage, industry, qualification and so on. Variables are described in Table A1 in the Appendix. Our dataset is made of about 45.000 permanent workers observed for the period 1993-2002. We remark that the data do not contain measurement errors since they reflect those registered by the Italian Bureau of Pension System (*INPS*) and by the Tax Agency (*Agenzia delle Entrate*) and used to calculate social security and insurance contribution as well as the cutoff threshold to assess plants' dimension and EPL enforcement.

3.2 Preliminary Statistics and Wage Patterns

Before starting our analysis, we point out that we have deliberately decided not to include Agricultural workers in our econometric study. The use of this particular Industry could be questioned since it is heavily exposed to seasonality issues as well as climate variability that may drive labor demand and eventually wages. Furthermore, the WHIP's notes suggest a prudential use of data about workers in the Agricultural sector because it is difficult to obtain reliable information from workers employed in this sector especially if they work in small Family farms. For these reasons, we decide not to make use of this sector in the reported analysis to avoid concerns about the quality of the data for the control group.

At this stage, it is interestingly to show some wage pattern for the period 1993-2002 according to workers' Industry, i.e., Manufacturing, Services, Construction. In Figure 1 we report the mean of monthly real wage over time as well as time trends allowing for a break at the time of the reform (1997).⁴ Some crucial points must be remarked. Firstly, all series present an increasing trend before and after the reform. On top of that, trends appear to be very similar across the series and this supports the common time trend assumption required to apply DD techniques and to avoid meaningless results. Notwithstanding, in our empirical analysis, the presence of multiple periods and multiple groups enables us to implement further statistical test to address concerns related to common trends.

In Figure 2 we plot kernel density of real wages for three references years, i.e. 1993, 1998 (first year after the reform) and 2002. Some insights can be gathered by inspecting these series. First of all, from 1993 onwards there is a generalized economic growth as can be noted from the shift of the curve to the right and in the last two periods the mode is less concentrated than before. The right side of the curves is thicker from 1998, meaning that a proportion of employees earn more than the modal wage. Differences across years are as expected. By differentiating the kernel density plot of monthly real wage by sectors in the same years - Figure 3, 4, and 5 for Services, Manufacturing, and Construction respectively - we can infer that most of the variation is due to

⁴ Real monthly wages are obtained using the Consumer Price Index provided by the Italian Statistical Institute (INPS) considering 2002 as the base year.

changes in the services wage distribution. Indeed, in contrast with other sectors, in the service sector we notice after reform a shift of the curves to the right for workers with relatively low wages and for those with relatively higher wages.

Finally, Table 1 and Table 2 report average values of wage related to individuals' and firms characteristics. Values confirm the common time trend assumption, as the difference between wages of treated (Manufacturing and Services) and control (Construction) group is approximately constant and they also validate a generic growth as wage are a little bit higher in the post reform period. The average wages related to characteristics as gender, age, qualification and so on are largely consistent with our expectations.

3.2 The Identification Strategy

The identification strategy of the impact of TAW on wages of permanent workers presented in this study is based on the exogenous threshold separating Industries which can exploit the availability of these new labor arrangements. We consider all dependent workers and we separate them according to the industry where they are employed. Then, we compare wages of workers employed in those sectors who can benefit from the presence of TAW with those of workers employed in sectors which have not been affected by the reform. Under the assumption that nothing else happened that may have affected differently wages in these sectors, the difference between these two differences should provide the effect that TAW have on wage of permanent workers.

Formally, we separate those workers according to the year of the reform (after 1997) and we apply a difference-in-differences procedure (DD) using the following wage equation:

$$w_{it} = \mathbf{X}_{it}\boldsymbol{\beta} + \delta_0 A_i + \delta_1 (\text{Serv_Man})_{it} + \delta_2 A_i (\text{Serv_Man})_{it} + u_{it} \quad (1)$$

where i indicates the generic individual, t indicates time (in year) A is a dummy variable equal to 1 for all periods after the reform. The dependent variable is the logarithm of monthly real wage earned by individual i . In the RHS of eq. (1), \mathbf{X} indicates a set of control variables (both time variant and invariant) while $\text{Serv_Man} = \{0; 1\}$ indicates the "treatment" and takes the value of 1 if individual i at time t is employed in a firm whose sector is either Manufacturing or Services where TAW can be adopted. Our parameter of interest is δ_2 which measures the relative variation in wage for workers in treated sectors after the reform compared to the others. Eq. (1) will be modified according to different specifications and tests discussed in Section 4.

At this stage, it is important to pose attention on the use that can be made of other exogenous characteristics which fix thresholds in the Italian labor market. Considering that EPL varies according to firm size, we can exploit an additional exogenous source of variation to

evaluate if wages of dependent workers have been affected by the introduction of TWA conditional upon their protection levels, i.e., conditional upon their degree of insidersness.

Since we have precise information concerning plants' dimension and EPL enforcement, we can estimate the following wage equation:

$$w_{it} = \mathbf{X}_{it}\boldsymbol{\beta} + \delta_0 A_i + \delta_1 (\text{Serv_Man})_{it} + \delta_2 (A \times \text{Serv_Man})_{it} + \delta_3 (\text{Large-Firms})_{it} + \delta_4 (\text{Serv_Man} \times \text{Large-Firms})_{it} + \delta_5 (A \times \text{Large-Firms})_{it} + \delta_6 (A \times \text{Serv_Man} \times \text{Large-Firms})_{it} + u_{it} \quad (2)$$

where Large-Firm is a dummy variable taking value 1 only if individual i at time t is employed as a permanent worker in a firm whose dimension (more than 15 employees) implies full employment protection. To build up the empirical model, firstly we separate workers employed in industries that have been affected by the creation of TAW (Serv_Man). Secondly, we separate workers according to plant dimension, i.e., according to their employment protection level (Large-Firm). Then we construct the difference within worker in affected and unaffected industries and the difference within workers according to their employment protection level. By differentiating out these two differences we obtain the estimate of the causal effect of the deregulation introduced by means of TWA on the wage of workers entitled to employment protection. In this case the parameter we are interested in is δ_6 .

3.3 Addressing Some Caveats

The approach highlighted in paragraph 3.2 is not straightforward. At the outset, it should be pointed out that the introduction of a new type of fixed-term contract could generate flows of workers across type of contracts, employment status and sectors. Moreover, the characteristics in terms of ability and productivity of workers hired in each reference group could also change after the reform. To deal with this concern we implement Fixed-Effect estimator which, given our panel data structure, allows for differentiating out all observed and unobserved individual fixed components.

On top of that, it should be recognized that almost at the same time of the reform, Italy rejoined the SME after the devaluation of the Italian currency occurred in 1992. Many would argue that Services and Manufacturing sectors could have been affected differently from this event than the Construction one in terms of foreign demand. This may have induced changes in relative employment and productivity differentials among sectors casting some doubts on the causal interpretation of the results. To tackle this issue, we make use of the fact that in late 1999 the use of TAW has been extended to previously excluded sectors so that whenever a wage effect is related to the presence of a more flexible market due to TAW, we should see that differences in wages between sectors should be present for the period 1998-2000 and should disappear later on.

A further concern is related to possible anticipation effects deriving from the fact that the reform was announced in February 2003 and then introduced in September. Indeed, people could have changed their behavior before the reform so that our parameters could be biased. We tackle the issue by presenting a robustness check made by excluding from our analysis all workers employed during 2003 to avoid distortions related to prospective behavior anticipating the effect of the reform.

4 Results

4.1 Double Differences with Multiple Groups and Time Periods

In order to analyze the effect of the introduction of a new labor market policy (law 196/1997) on monthly real wages of permanent dependent workers, we start applying the strategy highlighted in eq. (1). At this first stage, the sample consists in 31,614 individual observations among 1993 – 1999. The same dependent worker is observed during 7 years considering only a single work-relation in the same firm. We consider workers employed in firms that belong to Services, Manufacturing and Construction industries so that we have workers in both exposed and not exposed sectors. The balanced panel gives us the opportunity to observe the same employee before and after the reform. Moreover, at the end of 1999, with the law 488/1999 further changes in the Italian labor system occurred so that firms in the construction sector could also benefit from the use of TAW. This is the reason why at this stage, we voluntarily stop observations at 1999 ensuring that control group will never enter in the treated.

In the RHS of eq. (1), \mathbf{X}_{it} includes 13 control variables (gender, age, place of birth, firm size, firm's start date, work place, contribution rebate, qualification/skills, job start date, wage supplementary fund, illness benefits, maternity benefits, and time dummy variables).

The dependent variable is the logarithm of monthly real wage earned by individual i . A_i is a dummy variable equal to 1 for all periods after the reform, in this case for 1998 – 1999, while $\text{Serv_Man} = \{0; 1\}$ indicates the “treatment” and takes the value of 1 if individual i at time t is employed in a firm whose sector is Services or Manufacturing. Table 3 contains results.

In column (1) we estimate eq. (1) with a Pooled OLS regression model, the coefficient of interaction term $\text{Serv_Man} \cdot A$ is the estimated value of δ_2 which is our parameter of interest. Although the estimated coefficient is not significant when using OLS, it becomes highly significant when a more robust Fixed-Effect regression model is estimated (column (2)). This implies that there has been a relative increase in wage of permanent workers in the sector affected after the reform with respect to that of employees in firms belonging to the construction sector.

4.2 Evaluating the Effect of TAW on Wage According to EPL Enforcement

In this section, we pose our attention to employment protection variation across firm size in order to evaluate if wages of dependent workers have been affected by the introduction of more flexibility conditional upon their degree of insidersness. We implement the difference within sectors according to the level of protection of workers.

In the RHS of eq. (2) *Large-Firms* is a dummy variable taking value 1 if individual i at time t is employed as a permanent worker in a firm whose dimension (more/equal to 20 employees) implies full employment protection. To build up the empirical model, firstly we separate workers employed in industries that have been affected by the creation of TAW (Services and Manufacturing). Secondly, we separate workers according to plant dimension, i.e., according to their employment protection level (*Large-Firms*). Then we construct the difference within worker in affected and unaffected industries and the difference within workers according to their employment protection level. By differentiating out these two differences we obtain an estimate of the causal effect of the deregulation introduced by means of TWA on the wage of workers entitled to employment protection. In this case the parameter we are mainly interested in is δ_6 and results are reported in Table 4. The coefficient of interest associated to the “ $A \times \text{Serv_Man} \times \text{Large-Firms}$ ” interaction varies according to the columns associated to different settings.

As before we present both pooled OLS and Fixed Effect regression model and these are reported in column (1) and column (2) of Table 4 respectively. In the RHS of eq. (2), \mathbf{X}_{it} includes 14 control variables (gender, age, place of birth, firm size, firm's start date, work place, contribution rebate, qualification/skills, job start date, wage supplementary fund, illness benefits, maternity benefits, tfr-fund and time dummy variable). To ensure that the introduction of new rules in late 1999, does not invalidate our results we do the analysis excluding years of work after 1999. After that, as the limit that allows to split the workers between protected and unprotected by firm size is the threshold of 15 employees, to ensure that the comparison is robust, firms with a number of employees between 10 and 19 are excluded from the sample.

The estimated coefficient confirms the direction of the effect on wages. The significance is stronger than before at a 0.001 level and the magnitude of the effect is greater. The value 0.048 of the coefficient confirms a positive effect on the wages of the group of employees who could benefit from the presence of TAW. Moreover we find a significantly different effect of the introduction of TAW on wages. In particular, permanent workers employed in large plants record a wage increase of about 0.0286 which is statistically different from that recorded by employees in small plants.

4.3 Addressing Confounding Trends

A key concern arises at this stage. Albeit previous results are robust according to several specifications, there can still be systematic differences between treated and control groups. In particular, it is possible to argue that, after the re-joining of SME after the devaluation of the Italian currency occurred in 1992, Services and Manufacturing sectors could have been affected differently from this event than the Construction one in terms of foreign demand. This may have induced changes in relative employment and productivity differentials among sectors casting some doubts on the causal interpretation of the results. In order to control for possible confounding trends we apply the following strategy.

Since at the end of 1999 the Construction sector could also benefit from TAW we can do a multiple period analysis where we explicitly test if the effect of TAW disappears after that they becomes an option for the Construction sector too.

In particular we estimate the following equation:

$$w_{it} = \mathbf{X}_{it}\boldsymbol{\beta} + \delta_0 A_i + \delta_1 (\text{Serv_Man})_{it} + \delta_2 (1998-1999) \times (\text{Serv_Man})_{it} + \delta_3 (2000-2002) \times \text{Serv_Man}_{it} + u_{it} \quad (3)$$

In the RHS of eq. (1), \mathbf{X}_{it} includes 13 control variables (gender, age, place of birth, firm size, firm's start date, work place, contribution rebate, job start date, wage supplementary fund, illness benefits, maternity benefits and time dummy variables).

The dependent variable is the logarithm of monthly real wage earned by individual i . (1998-1999) is a dummy variable equal to 1 for all periods after the reform where TAW were available only for Service and Manufacturing Sector, while (2000-2002) takes the value of 1 only for observations recorded during a time period where no normative differences characterize the considered sectors. If our identification procedure is correct, we should detect a positive and statistically significant parameter δ_2 and a non statistically significant parameter δ_3 .

Results are showed in Table 5. The sample is now made up of 45,148 observations over 10 years. In column (1), as before we estimate eq. (1) with a Pooled OLS regression model. The interaction term equals unity only if the employees who work in firms whose sector is Services or Manufacturing in the years after 1998-1999 is positive and statistically significant. This parameter capture difference in wage of workers in treated and untreated sectors with respect to our reference time period which is 1993-1997. Interestingly, the parameter capturing differences in wage of workers in these sectors between our reference time and the period 2000-2002 is not significant, pointing for a positive effect of TAW on wages. The value statistically significant at 0.001 level in column (2), where eq. (1) is estimated by a Fixed Effect regression model. Numbers are consistent with those reported in previous tables.

5 Concluding Remarks

This analysis investigates whether wages of permanent workers are affected by the introduction of a flexible regime. To this purpose we implement an empirical investigation relying on the reduction of EPL obtained through the creation of TAW in some Italian industries.

We find some evidence of a generic increase of wages in industries exposed to the reform. Moreover we verify that the positive effect is relatively less important for protected workers hired permanently.

This result could be related to a decrease of turnover costs implying an improvement of labor productivity. At the same time, since firms could create new temporary positions, the availability of new “outside options” may lead to a reduction of the bargaining power of permanent workers.

According to our results a labor market deregulation may actually change the relative bargaining power reducing insider power of permanent protected workers associated to the availability of new contracts and employment strategies adopted by firms.

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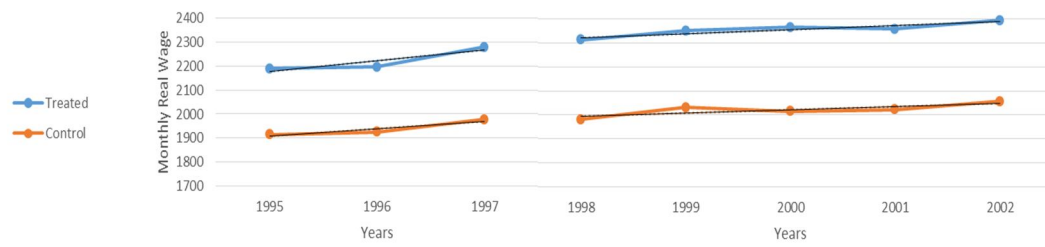


Figure 1 - Mean of Monthly Real wage for Treated and Control Group Before and After the 1997 reform: Treated Group is a group of dependent workers hired in Service or Manufacturing Sectors; Control Group is a group of dependent workers hired in Construction Sector.

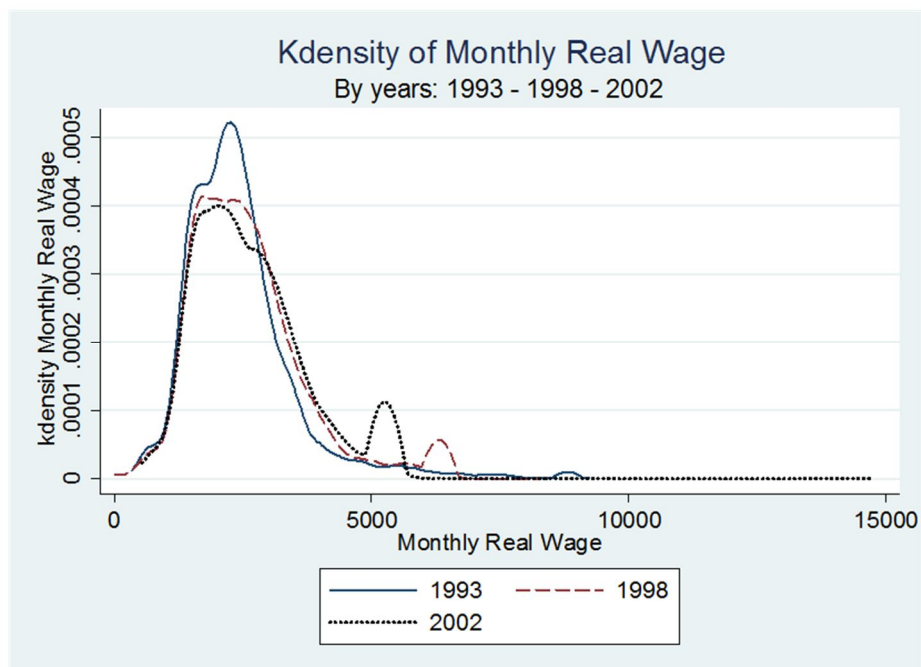


Figure 2 - Kernel density of Monthly Real Wage by Year

Note: Our elaboration WHIP data. The horizontal axis measures monthly real wage on vertical axis k-density of monthly real wage per year; in service and construction sectors, for three reference years.

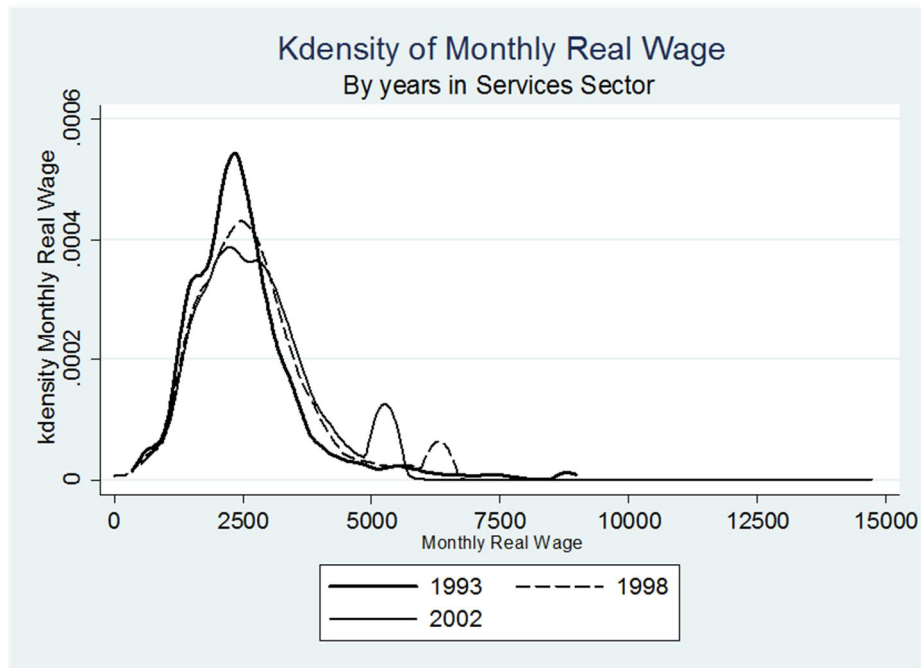


Figure 3; – Kernel density of Monthly Real Wage in Service Sector.

Note: Our elaboration WHIP data. The horizontal axis measures monthly real wage on vertical axis kdensity of monthly real wage per year; in services sector, for three reference years.

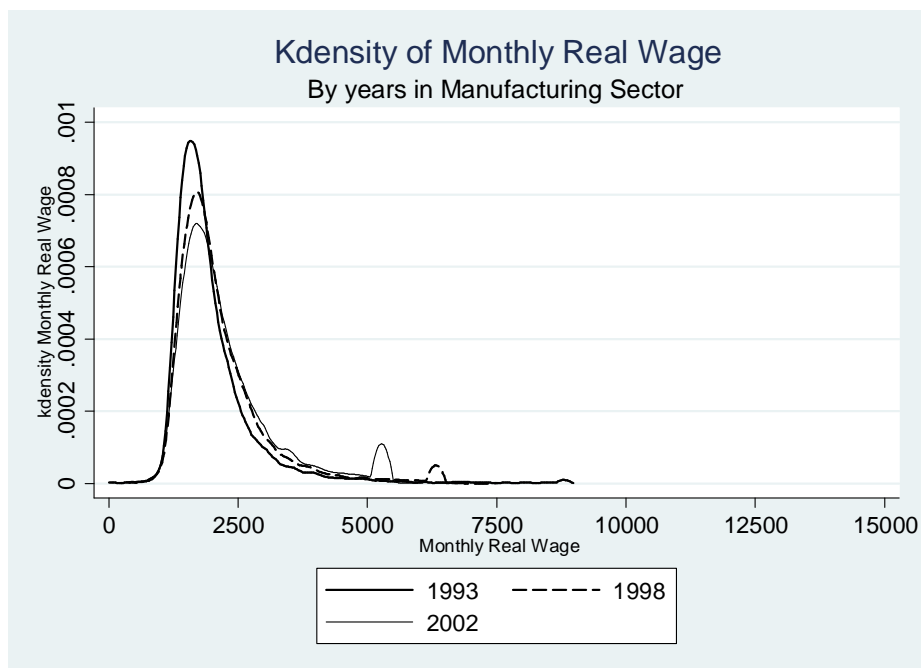


Figure 4; – Kernel density of Monthly Real Wage in Manufacturing Sector.

Note: Our elaboration WHIP data. The horizontal axis measures monthly real wage on vertical axis kdensity of monthly real wage per year; in Manufacturing sector, for three reference years.

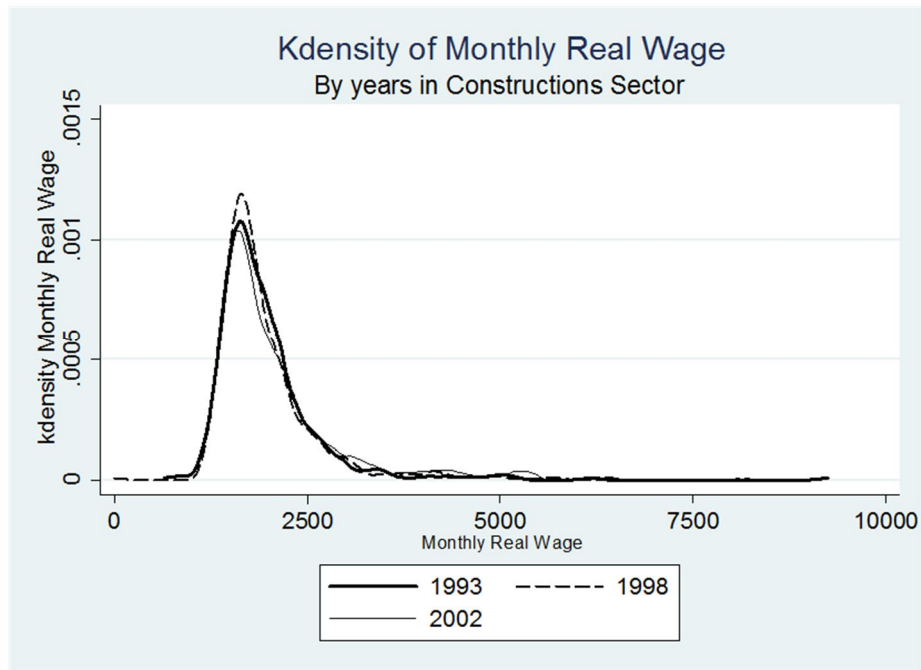


Figure 5 – Kernel density of Monthly Real Wage in Construction Sector.

Note: Our elaboration WHIP data. The horizontal axis measures monthly real wage on vertical axis kdensity of monthly real wage per year; in services sector, for three reference years.

Table 1. Descriptive statistics by sectors: number of observations for each group, mean and standard deviation of monthly real wage of workers in each categories for treated (workers in services sector) and control group (workers in construction sector) before and after the law 196/1997

CATEGORIES	VARIABLES	PRE-REFORM				POST-REFORM			
		TREATED (19,537 obs)		CONTROL (3,053 obs)		TREATED (19,490 obs)		CONTROL (3,068 obs)	
		mean	sd	mean	sd	mean	Sd	mean	sd
WAGE	MONTHLY REAL WAGE	2581	1165	1939	691	2742	1153	2012	775
GENDER	Female	2161	887	1779	578	2365	989	1917	606
	Male	2765	1223	1960	702	2906	1180	2024	794
AGE	<24	1909	645	1638	623	1592	503	1500	105
	25 - 32	2139	680	1717	386	2219	728	1689	363
	33 - 50	2747	1230	2051	752	2719	1098	2040	755
	>50	2807	1497	2095	867	3040	1367	2127	951
PLACE OF BIRTH	North West of Italy	2740	1283	1882	590	2972	1252	1966	713
	North East of Italy	2594	1163	1937	612	2759	1167	2065	759
	Center of Italy	2619	1132	1905	920	2801	1119	2013	918
	South of Italy	2420	1063	2030	680	2518	1033	2054	763
	Islands of Italy	2415	1030	2045	799	2482	1028	2027	844
	Foreign	2502	1177	1779	491	2638	1156	1774	523
QUALIFICATION/SKILLS	Bluecollar	1906	652	1776	407	1949	673	1768	422
	Employee (I level)	2820	1129	2180	752	2839	983	2319	806
	Employee (II level)	3892	690	3511	821	4213	842	3950	666
	Manager	6587	1228	5786	1540	5683	469	5573	901
FIRM SIZE: NUMBER OF EMPLOYEES	0/9	1612	538	1684	431	1755	604	1712	465
	10-19	1891	921	1855	716	2054	999	1866	559
	20-199	2131	1138	2062	712	2240	1114	2170	876
	200-999	2536	1086	2332	926	2676	1139	2489	1046
	1000+	2973	1117	2244	573	3130	1063	2297	781
SECTORS	H	1771	714	-	-	1887	767	-	-
	I	2402	886	-	-	2477	894	-	-
	J	2805	1287	-	-	3019	1234	-	-
	K	2404	1027	-	-	2556	1061	-	-
WORK PLACE	North West of Italy	2673	1233	1893	567	2893	1234	1960	694
	North East of Italy	2561	1192	1909	605	2710	1164	2029	766
	Center of Italy	2623	1142	1983	926	2797	1121	2083	976
	South of Italy	2394	1013	1980	646	2479	993	1983	684
	Islands of Italy	2495	1098	2261	1023	2541	1045	2174	765

Table 2. Descriptive statistics by firm size in services sector: number of observations for each group, mean and standard deviation of monthly real wage of workers in each category for treated (protected) and control group (unprotected) before and after the law 196/1997

CATEGORIES	VARIABLES	PRE-REFORM				POST-REFORM			
Only Permanent Contracts Services Sector No obs for Firm Size: 10 →19		TREATED FIRM SIZE: 20→ (16,608 obs)		CONTROL FIRM SIZE: 1→9 (2,060 obs)		TREATED FIRM SIZE: 20→ (16,691 obs)		CONTROL FIRM SIZE: 1→9 (1,965 obs)	
		mean	sd	mean	sd	mean	sd	mean	sd
WAGE	MONTHLY REAL WAGE	2737	1162	1612	538	2891	1139	1755	604
GENDER	Female	2399	898	1517	408	2612	1014	1678	450
	Male	2854	1218	1781	682	2987	1164	1899	800
AGE	<24	2099	581	1416	542	2390	.	1393	267
	25 - 32	2294	657	1482	276	2421	707	1572	308
	33 - 50	2879	1222	1714	631	2858	1083	1767	574
	>50	2990	1511	1730	618	3167	1352	1930	892
PLACE OF BIRTH	North West of Italy	2957	1280	1608	484	3194	1218	1737	507
	North East of Italy	2755	1162	1702	609	2912	1168	1820	567
	Center of Italy	2784	1118	1530	430	2961	1085	1695	699
	South of Italy	2530	1062	1616	692	2613	1020	1810	779
	Islands of Italy	2505	1005	1620	505	2568	1006	1666	327
	Foreign	2706	1188	1540	250	2826	1170	1855	581
QUALIFICATION/SKILLS	Bluecollar	1965	646	1592	449	2002	682	1676	410
	Employee (I level)	3004	1082	1605	535	3013	915	1768	625
	Employee (II level)	3899	688	3710	883	4217	837	4023	1211
	Manager	6666	1149	4796	133	5692	465	4446	.
SECTORS	H	1894	843	1570	403	2011	903	1661	399
	I	2466	874	1781	715	2531	878	1865	708
	J	3003	1264	1577	498	3214	1189	1750	601
	K	2438	1021	2026	1122	2592	1042	2294	1381
WORK PLACE	North West of Italy	2862	1237	1625	491	3086	1220	1771	524
	North East of Italy	2725	1202	1673	573	2865	1172	1798	532
	Center of Italy	2787	1128	1518	415	2955	1085	1669	677
	South of Italy	2511	1012	1520	388	2579	982	1737	601
	Islands of Italy	2560	1044	1825	1077	2604	989	1845	976

Table 3 : Difference-in-Differences: by sectors

Dependent Variable	(1)	(2)
	<i>Logarithm of monthly wage</i>	
Services	-0.00189 (0.00663)	-0.04647
Manufacturing	-0.00189 (0.06489)	-0.00189 (0.06489)
A	-0.06303 *** (0.01119)	Fixed -
Serv_Man*A	0.01559 (0.01059)	0.02128 *** (0.00569)
Constant	16.25579 *** (1.48789)	5.19614 *** (0.50583)
Control Variables	Yes	yes
Observations	31,614	31,614
t	1993-1999	1993-1999
/Adj R ² /Overall R ²	0.5563	0.4583
Hausman test		1096.15

Note: Column (1) Pooled OLS estimates; Column (2) Fixed Effect estimates. Standard Errors are in parentheses; Significant at 0.05 level*, Significant at 0.01 level**, Significant at 0.001 level***; Hausman test: Fixed versus Random Effects; Base Year = 1993.

Table 4: Difference-in-Difference-in-Differences: within sectors according to the level of protection of workers.

Dependent Variable	(1)	(2)
	<i>Logarithm of monthly wage</i>	
Coeff.		
$A \times \text{Serv_Man} \times \text{Large_Firms}$	0.0286 ** (0.0092)	0.0243 *** (0.0105)
$A \times \text{Serv_Man}$	0.0486 ** (0.0092)	0.0443 (0.0105)
Control Variables	yes	yes
Observations	45,148	42,242
t	1993 - 2002	1993 - 2002
Overall R ²	0.3206	0.2713
Hausman test	2138.9	1977.76

Note: Column (1) Fixed Effect estimates, entire datasets, all firm size included; Column (2) Fixed Effect estimates, Firm Size with number of employees from 10 to 19 is dropped out. Standard Errors are in parentheses; Significant at 0.05 level*, Significant at 0.01 level**, Significant at 0.001 level***; Hausman test: Fixed versus Random Effects; Base Year = 1993.

Table 5: Difference-in-Difference-in-Differences: Testing the common time trend assumption

Dependent Variable	(1)	(2)
	<i>Logarithm of monthly wage</i>	
Coeff.		
$(1998-1999) \times \text{Serv_Man}$	0.0286 ** (0.0092)	0.0243 *** (0.0105)
$(2000-2002) \times \text{Serv_Man}$	0.0086 (0.0092)	0.0003 (0.0105)
Control Variables	yes	yes
Observations	45,148	42,242
t	1993 - 2002	1993 - 2002
Overall R ²	0.3206	0.2713
Hausman test	2138.9	1977.76

Note: Column (1) OLS Estimates; Column (2) Fixed Effect estimates. Standard Errors are in parentheses; Significant at 0.05 level*, Significant at 0.01 level**, Significant at 0.001 level***; Hausman test: Fixed versus Random Effects; Base Year = 1993.

Appendix

Table A1: Variables Descriptions

Monthly Real Wage	Annual Compensation/ Actual Number of Days Worked*26	
Age	Age of the employees at the year of work	
Job start date	Starting date of the job spell. It is deduced from the contributions paid monthly by the employee. The variable is left censored at January 1, 1985.	
Illness benefits	Flag signaling whether in the reference year the worker received an illness benefit	0=no 1=yes
Maternity Benefits	Flag signaling whether in the reference year the worker received a pregnancy or maternity benefit	0=no 1=yes
Ptime	Flag that indicates a part-time job	0=full-time 1=part-time
Skill level	Distinguishes between various employment positions	1=Apprentice 2=Blue-Collar 3=White-Collar 4=Cadre 5=Manager
Annual Compensation	Total annual compensation in euro	At the fiscal/accounting level it represents the base for calculating social security and insurance contributions paid by the firm, the social burden of the employee and the eventual tax relief applied to employment.
Contribution Rebate	Code that indicates the type of contribution rebate eventually applied to the worker's contract.	1=no rebates 2=training on the job contract 3=re-employment subsidy 4=temporary agency work 5=others 6=apprenticeship
Work_Place	Indicates the geographical area of Italy where employment was performed	1=North-West 2=North-East 3=Center 4=South 5=Islands
Wage Supplementary Fund	Flag signaling whether the employee has received a wage supplement for temporary layoffs	0=no 1=yes
Firm Size Class	Indicates the average number, in classes, of employees employed by the firm during the year	1=0-9 2=10-19 3=20-199 4=200-999 5>=1000
Actual Number of Days Worked	Number of paid working days equivalent to full time.	A day is considered paid when the employer paid compensation subject to tax; A week or month is considered paid if they contain at least one paid day. Conventionally Inps (Italian Social Security Organization) reports paid days based on a 6 day working week; for example a 40 hour week 5 working days corresponds to 6 days 'paid.' The conversion, justified by insurance specifications, implying that one month and one year completely 'paid' are 26 days and 312 days respectively.
Classification of economic activity into 18 sections according to the Ateco91 classification (Istat release of NACE Rev. 1)		F = Construction H=Hotels and restaurants I=Transport and communications J=Financial intermediation and K=Business services