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The Italian Wage Curve resurrected after the 1993 Labor Market Reforms

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Abstract

Available estimates of the Italian wage curve have cast doubts on its existence during the eighties and early nineties. In 1993, the Italian wage bargaining system went through important reforms. Has the wage curve resurrected after 1993? This conjecture is tested using WHIP longitudinal micro data, spanning the period 1985-1999. We highlight a significant structural break after 1993. However, the elasticity of total wages to unemployment remains small; this because only the wage drift, which represents on average about 25% of total wages, is sensitive to local unemployment.

Keywords: wage curve, wage drift, panel data, institutional reforms
JEL classfication: J30, J60

1. Introduction

The existence of an inverse relation between wage levels and local unemployment (the so-called wage curve) has been confirmed empirically in many countries. For Italy available estimates have cast doubts on its existence during the eighties and early nineties. In 1993, however, the Italian wage bargaining system went through important reforms, also aimed at increasing its flexibility and responsiveness to local conditions. Accordingly, one may expect the wage curve to resurrect after 1993. This conjecture is tested using the recently released WHIP longitudinal data, spanning the period 1985-1999, and the 1990-99 sub-sample for which both total wages and the wage drift – i.e. wages over and above those set by national bargaining – can be observed. Our results point to the existence of a significant structural break after the 1993 reform. The elasticity of total wages to local unemployment becomes negative and statistically significant but its size remains small. This is because only the wage drift, which represents on average 25% of total wages, displays sensitivity to local unemployment.

Related literature. Since 1990 a wide stream of literature on the wage curve has been produced. A recent survey (Nijkamp et al., 2005) mentions at least 1000 estimates, for almost every OECD country. Blanchflower and Oswald's constant, i.e. a wage-unemployment elasticity close to 10% everywhere, decreases to an average 7% after taking into account the "publication bias". However, more recent works using individual data from administrative sources instead of surveys, i.e. works that control for individual effects and are based on highly reliable data on wages, obtain a much lower elasticity. Bell et al. (2002) on U.K. data obtain a short run elasticity as low as 2.5% referred to the most deregulated labour market in Europe. There are relatively few studies on Italy. Blanchflower and Oswald (1994) attributed to Italy an elasticity as high as 11%, but the result is not robust to the inclusion of regional fixed effects. The point is worth a brief discussion. Excluding regional fixed effects, they measure the between region W-U elasticity, that in Italy is structurally high (constantly over time southern regions are characterized by high unemployment and low wages; the reverse holds for northern regions). On the contrary, the within region W-U elasticity, i.e. the short run responsiveness of wages to local unemployment changes, is computed when regional fixed effects are included. This is the kind of responsiveness we are interested in. Consistently with Blanchflower and Oswald's result, Chiarini and Piselli (1997) through a multivariate cointegration model using quarterly time series data for manufacturing sector over the period 1976-1993 found some support for the wage curve in the long run but not in the short run. Lucifora and Origo (1999) conducted a detailed analysis on the existence and the extent of the wage curve with the use of administrative microdata referred to the period prior to the institutional reforms of the early 1990s. The unemployment rate coefficient is not significant in their estimates. On the contrary, Montuega et al. (2003) using individual data from the ECHP survey relative to the period 1994-2001 found a negative elasticity equal to -3.9%, although in general their estimated elasticities are unbelievably high.

The Wage Setting Process before and after the 1993 Reform. Prior to 1993 an automatic price-indexation clause determined wages together with the collective bargaining process. A three-levels bargaining process was

in place: nation-wide, industry-wide and firm-specific; the three levels were not formally coordinated and often covered the same topics (e.g. wages, working conditions, employment levels), chasing each other conquests with an egualitarian spirit and little consideration for local labour and product market conditions. The July 1993 agreement among trade unions, employers unions and the Government depicted a new bargaining system, based on a two-levels coordinated bargaining process. Every two years the first - national - level sets wages according to the inflation rate targeted by the Government for the following 24 months. The second one, at the regional or firm level, is supposed to be geared by profit sharing considerations. The automatic price-indexation clause was dismantled. The aim of this reform was both to curb inflationary pressure and to make wages more responsive to local conditions, through the second level of bargaining. The first target has been undebatably achieved, while the actual extent of innovation in the wage setting process is debated, as some observers have stressed the maintenance of a rather centralised system. So it is important to bring the issue to the data and test the significance of a structural break in the Italian wage determination process after 1993.

The paper is organized as follows. Section 2 outlines the methodology employed. Empirical results are discussed in section 3. Section 4 concludes. The appendix presents the data and the actual specification used.

2. Model

The specification of the wage curve has become standard. The one we have chosen aims at being quite general, controlling as much as possible for unobserved heterogeneity both at the individual and at the regional level. Our contribution is twofold. First, we test the existence of a structural break after the 1993 agreement, allowing the w-U elasticity to be different after 1993 in our specification. We expect the wage curve to become steeper. Second, we estimate the wage curve using the individual wage drift. Our prior is that the wage drift displays a higher responsiveness to local unemployment than the total wage. We estimate:

$$\ln w_{ijt} = \theta_i + \theta_j + \theta_t + \sum_j \left(\gamma_j' D_j\right)t + \beta \ln u_{jt} + \beta_{break} \ln u_{jt} D_{1993} + \sum_k \beta_k x_{ijt}^{(k)} + v_{ijt} \qquad (1)$$

where w_{ijt} is the wage or the wage drift of individual *i* in region *j* and year *t*, θ are individual, region and time fixed effects, $\sum_j \left(\gamma_j' D_j\right)t$ are region specific linear time trends, included to capture systematic trends in region specific wage pressure (Bell et al., 2002; Faggio et.al., 2005); u_{jt} is the local unemployment rate, β is the elasticity of interest. We interact u_{jt} and a dummy variable signalling the period after 1993 (D_{1993}) to test $\beta_{break} < 0$. $x_{ijt}^{(k)}$ includes a set of time varying controls. We estimate equation (1) by Within Group; as equation (1) contains region level variables, reported standard errors are corrected for clustering on region and, therefore, for lack of independence of errors within regions (Moulton, 1986). A further issue refers to the possible endogeneity of local unemployment rate. Correlation between u_{jt} and residuals arises if local unemployment is

not correlated only with the θs and $\sum_j \left(\gamma_j' D_j\right)t$ (this is maintained in the WG estimates). This may happen when individual wages are actually able to influence aggregate unemployment rates. As individual wages include a large common contractual component (about 75% of total wages) the possibility cannot be discarded a priori. We allow for the endogeneity of u_{jt} providing an IV estimate for the total wage equation[1]. We use a IV-fixed effects estimator (FE-2SLS) in which both u_{jt} and $u_{jt}D_{1993}$ are instrumented with their first and the second lag (Baltagi and Blien, 1998). We provide the Hansen J statistic (numerically equivalent to the Sargan test when s.e. are robust to heteroskedasticity[2]) on the validity of the instrumens. In this case s.e. can not be corrected for clustering on region but only for clustering on individuals, so we might face downward biased s.e. on the elasticity of interest.

3. Empirical results.

Our main results are reported in Table 1[3]. Before 1993 the W-U elasticity is generally small and statistically insignificant. After 1993 the elasticity in the full sample is -2.8% and statistically significant (col. 1), the same for men (col. 2) and -3.2% for women (col. 3). The break is always strongly statistically significant. Our first result is therefore in favour of a structural break after the 1993 reforms: the Italian wage curve resurrects in the second half of the nineties. The elasticity is well below the Blanchflower and Oswald's -10% constant, but comparable to the -2.5% elasticity estimated for the UK by Bell et al. (2002). To properly compare our results to Bell's ones, we replicate their dynamic specification, including the lagged wage and restricting the sample to males appearing in the sample every year (T=15) to minimize the small T bias on the WG estimator. In this case we expect a lower elasticity, as a balanced sample excludes frequent movers, entrants and less protected workers in general. In fact the short run elasticity after 1993 decreases to -1.4% (s.e. 0.004), but it is still significantly negative[4].

Our second result confirms that the 1993 structural break is fairly homogeneous across groups of workers, and no particular group is driving the result. In fact, the pre and post 1993 unemployment elasticities do not differ across different groups of workers[5].

To allow for endogeneity of unemployment, we estimate the model by FE-2SLS, where both u_{jt} and $u_{jt}D_{1993}$ are instrumented with their first and the second lag (col. 4-6). The Hansen J statistic confirms the validity of the instruments for the whole sample and the male sub-sample, while it fails in the female sub-

[1] The argument clearly does not apply to the individual wage drift.
[2] Baum et al. (2003)
[3] For sample selection and definition of wages and controls see the Appendix.
[4] Results available upon request.
[5] We partitioned the sample by gender (reported in Table 1), age, occupation, firm size, industry (results available upon request).

sample. The estimated W-U elasticity is unchanged with respect to col. 1-3. S.e. are smaller, as we are clustering the variance by individual rather than by region. However even if we tripled them we would still have significantly negative elasticities. Therefore, our third result denies that the Baltagi-Blien type of result is going to show in our data: instrumenting the unemployment rate does not change our main claim that an Italian wage curve can only be found after the 1993 structural break.

Our final result relates to the source of recovered wage flexibility. The wage drift is providing room for flexibility in the wage structure. On the contrary, the base wage is set nationally, with little or no allowance for local labour markets conditions. The elasticity for the wage drift[6] is at -8% after 1993 (col 7-9), while it was -3.7% and only marginally significant before 1993. The 1993 reform did increase the room for local (second level) wage bargaining. Its impact is still fairly limited, as the wage drift covers on average no more than 25% of total wages.

Conclusions

Our results have proved the existence of a significant structural break after 1993, which made wages more responsive to local unemployment. Different segments of the labour market display remarkably similar w-U elasticities and none of them seems to be driving the result. The wage drift (which is bargained locally, through unions or individually) displays a -8% elasticity to unemployment, compared to –2.8% of total wages. At the same time, the fact that the wage drift only takes up about 25% of total wages explains why the wage curve – which managed to resurrect after the 1993 reforms – still looks a bit anaemic.

The results could be seen favourably by those commentators that urge for attributing more weight to the decentralised wage setting level – more than what was introduced in 1993 – especially because of the large territorial imbalances and the outsized share of black/hidden economy that characterises Italy. An even more decentralised wage bargaining would probably make the Italian wage structure more flexible. However, whether this is also a recipe for the profound territorial imbalances that continue to hold back Italian growth prospects remains to be seen. Furthermore, our work necessarily focuses on regular dependent workers, whereas it is likely that a much larger W-U elasticity may be found among the "unobservable" self-employees, atypical employees and informal labour market workers. They make up a significant share of employment, especially in the underdeveloped and under-performing South.

Appendix: Data, definitions and sample selection

The empirical analysis uses administrative data drawn from INPS (the Italian Institute for Social Security) archives and processed in a public-use file known as the Worker History Italian Panel (WHIP) by LABORatorio R. Revelli[7]. WHIP is a longitudinal dataset reconstructing the working careers of a 1:90 sample of individuals

[6] For sample selection and actual definition of wage drift see the Appendix.
[7] Full details on the WHIP archive can be found at www.laboratoriorevelli.it/whip.

from 1985 to 1999. Job records are matched to data on the firm where the job is held, constituting a matched employer-employee database. From WHIP we select an unbalanced panel of dependent employees working full time in private firms in May of year *t*. We further select individuals observed for at least two (not necessarily contiguous) years, obtaining about 150,000 workers and 1,200,000 observations.

In table 1, col. 1-6, w_{ijt} is defined as real weekly wage, average over year *t* or over the job spell within *t* if shorter. WHIP records total wage earned and number of days, weeks and months worked (not hours), by year and job. We standardize total yearly wages using the number of paid weeks, as it exists a systematic under-reporting of the number of days worked in southern regions (Contini et al., 2001); this would upward bias daily wages where unemployment rate is known to be at its highest in Italy[8]. Average weekly wages may include some variability in the number of days and hours worked; to control for this, the sample has been restricted to full-time workers and controls for periods of sick leave, maternity leave and temporary layoff (*Cassa Integrazione Guadagni*) during the year have been included[9].

In table 1, col. 7-9, w_{ijt} is defined as wage drift. For each worker, it is computed as the difference between total wage and base wage. The base wage, as stipulated by the national contract the worker belongs to, includes minimum wages (wage floors), cost-of-living allowances, and "third elements". Hence, the drift includes both locally bargained wage components (they account for about half of the total drift and include second level contracts and productivity premia) and individual premia. Contractual wages are available and matched to WHIP for the period 1990-1999 and for about 30 main national contracts, covering 70% of the original sample.

In every specification, $x_{ijt}^{(k)}$ includes the following time varying controls: age (quadratic), dummies for occupation, for firm size (total number of employees), for industry, as well as for spells of health or maternity leave or temporary layoffs. Dummies on 20 administrative Regions and on years, a linear region-specific time trend, as well as individual fixed effects, are always included.

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[8] Nevertheless, as a robustness check, we used as dependent variable in eq. (1) daily wages and yearly wages; the results are unchanged and are not reported.

[9] Re-estimation of the model after excluding workers experiencing spells of health or maternity leave or temporary layoffs did not alter the results and is not reported.

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Table 1

	ALL /1	**Male /1**	**Female /1**	**ALL /2**	**Male /2**	**Female /2**	**ALL /3**	**Male /3**	**Female /3**
	1	2	3	4	5	6	7	8	9
β	-0.006	-0.008	-0.002	-0.004	-0.008	0.004	-0.037	-0.040	-0.030
s.e.	*0.005*	*0.006*	*0.006*	*0.003*	*0.003*	0.008	*0.021*	*0.024*	*0.035*
β+β_break	-0.028	-0.028	-0.032	-0.026	-0.028	-0.024	-0.080	-0.080	-0.090
s.e.	*0.007*	*0.006*	*0.010*	*0.004*	*0.004*	0.010	*0.025*	*0.025*	*0.049*
Hansen J				3.449	0.765	9.784			
Chi- square(2) p-value				*0.207*	*0.682*	*0.008*			
no. Obs	1,207,462	872,937	334,525	1,207,324	872,845	334,479	399,286	297,426	101,860
no. Individuals	148,588	103,168	45,420	148,450	103076	45,374	83,287	59,801	23,486

Controls: year, region, region-specific linear trend, age (quadratic) occupation, firm size industry,paid leave (health, maternity, temporary layoff)
/1: years 1985-1999, all industries, total wage. Whithin group estimator, robust s.e. cluster Region
/2: years 1985-1999, all industries, total wage. FE2sls.Excluded IV: lag 1 and lag2 of regional unemployemnt, also interacted with D1993. Robust s.e., cluster(individuals)
/3: years 1990-1999, selected industries, wage drift. Whithin group estimator, robust s.e. cluster Region
Notice: in sample /3 total U-w elasticity is -0.020 (0.004) all, -0.026 (0.005) males, 0.006 (0.008) females