Wage Differentials and Unemployment in Italy: a Regional Perspective*

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Abstract

This paper investigates the functioning of local labour markets in Italy considering different geographical areas (macro-areas, regions, provinces). In the light of the growing differences in unemployment rates between Northern and Southern areas, we analyse the existence of a negative relation linking wage levels to local unemployment rates - i.e., the wage curve. Using micro data on wages (INPS) matched to highly disaggregated unemployment rates (LFS), we specify and empirically test different wage equations. On the basis of our results, we find no evidence for the existence of a "wage curve".

JEL code: J3, J6, R1

Keywords: unemployment, wages, regions

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1. Introduction

The existence and persistence of significant differences in economic conditions and in factor prices across areas within a country are common phenomena to most industrialised countries[1]. The above evidence might be difficult to reconcile with the "standard" description of the functioning of labour markets. However, when "amenities"[2] are allowed to vary substantially across areas, dispersion in wages and economic conditions may well characterise a (long run) equilibrium. In this context, the analysis of local labour markets can provide useful insights for the co-existence of very prosperous regions - with low unemployment rates and high incomes - and less prosperous ones - with higher unemployment rates and lower incomes.

This paper aims at investigating the functioning of local labour markets using highly disaggregated data. In particular, the focus will be placed on the relationship linking wage levels to local unemployment rates.

In section 2, we discuss some theoretical implications. Section 3 presents the Italian institutional setting, while section 4 offers an overview of the main stylised facts concerning the functioning of local labour markets in the last decades. The empirical analysis of the wage - (local) unemployment relationship and the econometric model estimated are presented in section 5. The last section contains the concluding remarks and some implications for policy.

2. Unemployment and wages

The relationship between unemployment and wages has often been object of controversies. According to the textbook analysis of the labour market, local unemployment may result from asymmetric shocks affecting the demand or the supply of labour and from wages failing to adjust to the market clearing level. In this context, the relationship between wage and unemployment is a temporary phenomenon characterising the adjustment process on the labour market. Alternatively, when reference is made to those theories in which the existence of imperfect competition on either product or labour markets (or both) is assumed, unemployment may well be considered as a key feature of the equilibrium. In other words, an "equilibrium" relation between wages and (local) unemployment might exist (Nickell, Layard and Jackman, 1991; Blanchflower and Oswald, 1994a).

A vast empirical literature has investigated the different hypotheses suggesting the existence of a relationship between wages and unemployment. Traditionally, empirical studies have focused on the relation between the *variation* of wages and the *level* of unemployment. The existence of such trade-off – the Phillips curve - is considered a well established feature of the functioning of labour markets as well as a tool for economic policy (Bean, 1994; Fabiani *et al.*, 1997).

The focus of the present analysis, however, departs from the standard Phillips curve framework, in that it is assumed that there might be a long run "equilibrium" relation between the *level* of wages and the *level* of local unemployment. In other words, we shall not be concerned with an analysis of the adjustment process in a local labour market when perturbed by a shock, but rather the focus will be on those factors which affect the relationship between the wage paid to workers in a given area and the unemployment rate prevailing in the same area. This relation, after the seminal work of

Blanchflower and Oswald, is better known as the "wage curve" (Blanchflower and Oswald, 1990, 1994a, b).

In the remainder of this section we shall consider some possible theoretical explanations which may help to interpret the features of the wage curve in the Italian context.

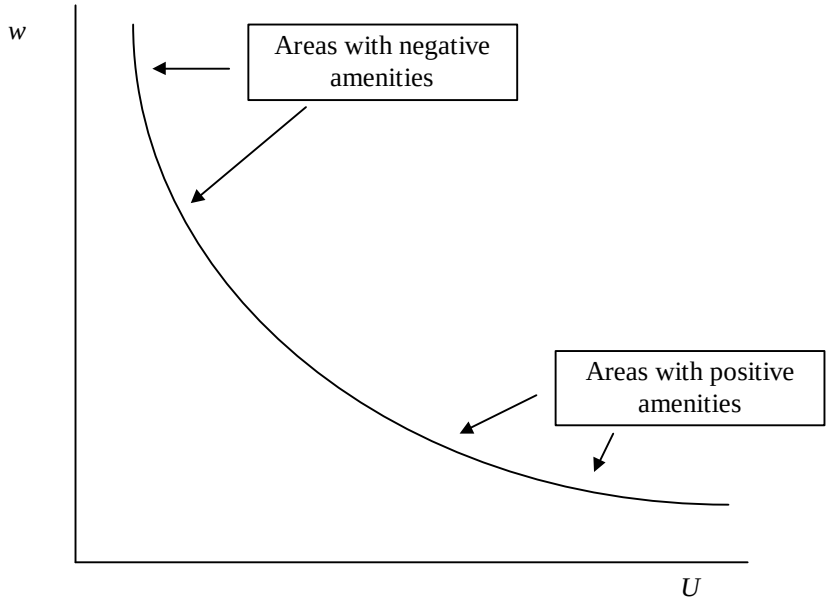
2.1. Compensating differentials, migration flows and equilibrium

According to the compensating differentials hypothesis, individuals living in areas characterised by some unpleasant attributes need to be adequately compensated for the disutility in which they incur by living and working there. In equilibrium, there is a pecuniary compensation associated to disadvantaged areas such that the expected utility is equalised across all the different locations[3].

When local unemployment is high, workers weight the utility they get out of wages paid in the area by the probability of obtaining a job therein and move across areas responding to the different arbitrage conditions which characterise local wages and unemployment. Costless mobility occurs up to the point in which expected utility is equalised across areas: this is the "no-mobility" equilibrium. In this context, the (long run) spatial correlation between wages and unemployment across areas is positive: that is, areas with high unemployment also pay higher wages.

However, it has been argued that the hypothesis of costless mobility might be irrealistic and that the existence of fixed costs may well characterise the mobility decisions of individuals. In this case, a move across areas will be an optimal response only when "permanent" conditions vary (long run), while no move will be observed when conditions vary only "temporarily" (short run). Areas with different degrees of amenities will lie along the equilibrium locus satisfying the local wage-unemployment trade-off (fig. 1)[4].

Figure 1 - The wage curve



In other words, when the hypothesis that localisation choices are made only at discrete intervals and that mobility costs in the short run are prohibitively high, then a (no mobility) equilibrium without migration flows across areas may be shown to exist (Blanchflower and Oswald, 1994).

It can be noted that while "permanent" labour market conditions - across areas - are not generally observed, the trade-off between "current" levels of wages and unemployment - within areas - can be easily investigated. The latter will be the main focus of the present study.

Different hypotheses have been recently proposed in the literature to explain the co-variation (in equilibrium levels) of wages and unemployment. In terms of efficiency wage models low unemployment requires higher wages to deter workers' shirking (Shapiro and Stiglitz, 1984) and to reduce labour turnover (Salop, 1979). Alternatively, when wages are determined through collective bargaining the unemployment rate plays the role of moderating trade unions wage aspirations: the higher the number of jobless individuals the lower the bargaining power of unions.

The main result, in terms of wage-unemployment equilibria, under the above hypothesis is that (local) unemployment and the level of wages, within each area, will be negatively correlated.

Note that a negative relationship between "current" levels of wages and unemployment is not necessarily in contradiction with the concept of compensating differentials and with the idea that - *ceteris paribus* - "permanent" levels of wages might be positively correlated (in the long run) to unemployment rates across areas. While the former describes deviations of unemployment and wage from the permanent features which characterise each area, the latter describes an equilibrium of such permanent features across different areas.

In the next sections both these aspects will be analysed in the case of Italy. Firstly, we shall try to investigate the existence of a positive relation between permanent values of wage and unemployment at a local level looking at the structure of wage and local unemployment differentials (given the existence of a "no mobility" equilibrium, as shown by the very low migration flows across Italian regions[5]). Then, we shall study the equilibrium conditions of the current values of the same variables (i.e., how wage levels react to variation of local unemployment rates) over the period 1981-1993.

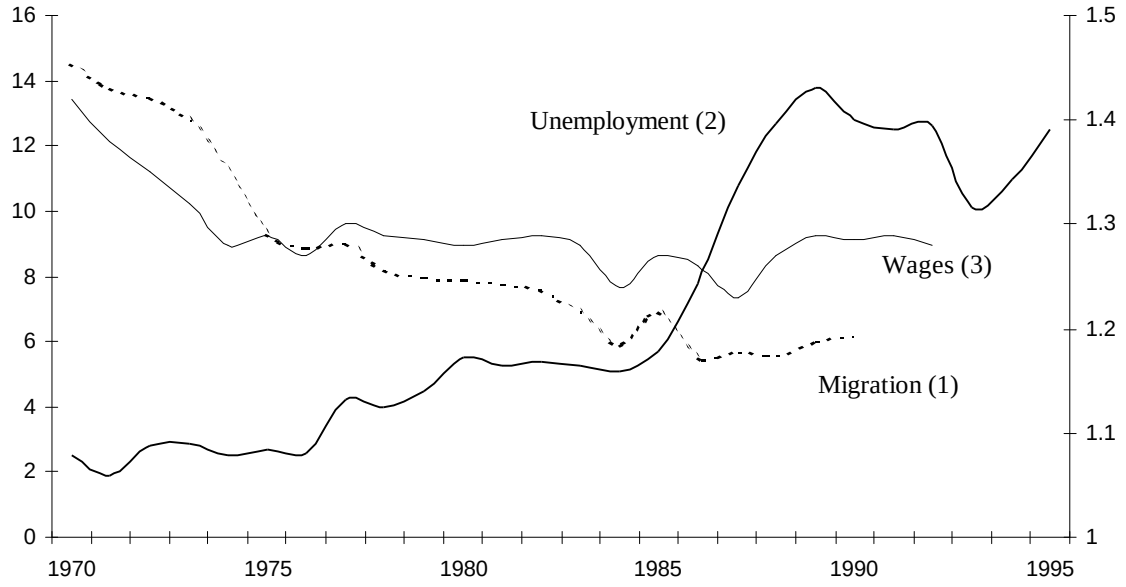
3. The Institutional Setting

In Italy the debate on the existence of significant differences in local labour market conditions has a long standing tradition and has been associated with a long sequence of policy measures and "special" regimes. In particular, the latter have regarded the more disadvantaged areas of the country (mainly located in the Southern regions), the so-called "Mezzogiorno". The main policies implemented in recent decades were aimed at promoting faster convergence in income levels across areas, through national collective bargaining and (after 1968) through the abolition of the so-called "gabbie salariali" (which were used to set wage differences in collective negotiations across areas). At the same time, faced with a constant gap in productivity levels and a different degree of competitiveness between Northern and Southern regions, a substantial flow of transfers and subsidies (mainly in the form of cuts in social security contributions) was directed towards firms operating in the more depressed areas. In the political arena the focus has been placed on the rigidities emerging from these institutional arrangements and, in particular, on the constraints imposed on the

functioning of local labour markets (in terms of distortions of both relative factor prices and competitiveness with respect to local economic conditions).

The empirical evidence also shows how, in the last two decades, there has been a progressive polarisation of labour market conditions in different areas of the country (mainly the North-South divide). As shown in figure 2, growing unemployment differentials and the reduction in (internal) migration flows - from the South to the North of Italy – are two worrying features of it. In a number of previous studies, the relationship between wages and unemployment was showed to be rather weak, with significant differences existing between small and large firms and between Northern and Southern regions (Bodo and Sestito, 1994; Faini, 1995; Casavola *et al.*, 1995).

Figure 2 – Migration flows, unemployment and wage differentials across areas (North – South), 1970-95.



Source: Istat
Left scale: (1) Migration flows out of South/total Southern population and (2) Unemployment differentials (South-North)
Right scale: (2) Relative wages (North/South)

The political debate has recently been centred again on the lack of flexibility and segmentation of local labour markets. However, despite general consensus among economists and policy makers on the need of establishing a closer link between local economic conditions and the functioning of the labour market, the proposals vary substantially as to which are the desirable measures to implement. In this respect, some favour a new form of *gabbie salariali* for (national) collective bargaining, while others argue in favour of a complete decentralisation of wage bargaining.

Furthermore, the institutional changes which, in recent years, have taken place both in the composition and in the determination of labour costs (i.e. elimination of the wage indexation mechanism - the *scala mobile* - and seniority premia; the tripartite incomes policy agreement of July

1993), as well as the progressive reduction of transfers and subsidies to firms operating in the South should be seen as a mean to increase the overall flexibility of the labour market.

In the light of the above considerations, it might be useful to investigate further the nature of the wage-unemployment differences which characterise local labour markets, and also see whether a more flexible wage bargaining system could effectively guarantee a closer link between local unemployment and wage levels. In other words, what it is needed is an estimate of the elasticity that links wages to local unemployment.

In the remainder of this work some of the issues discussed above will be addressed.

4. Some Stylised Facts

In this section some stylised facts concerning the functioning of local labour markets are presented and particular attention is paid to the evolution of wage and unemployment differentials between Northern and Southern regions.

A caveat, particularly relevant in the Italian case, is related to the presence of a large share of the labour force employed in the underground economy. Whilst the effective size of this non-regular form of employment is not known, its effect on the functioning of local labour markets might be relevant. This is an obvious limit in any analysis of the wage-unemployment relationship which the present study shares with previous work and which should be born in mind in the interpretation of the results.

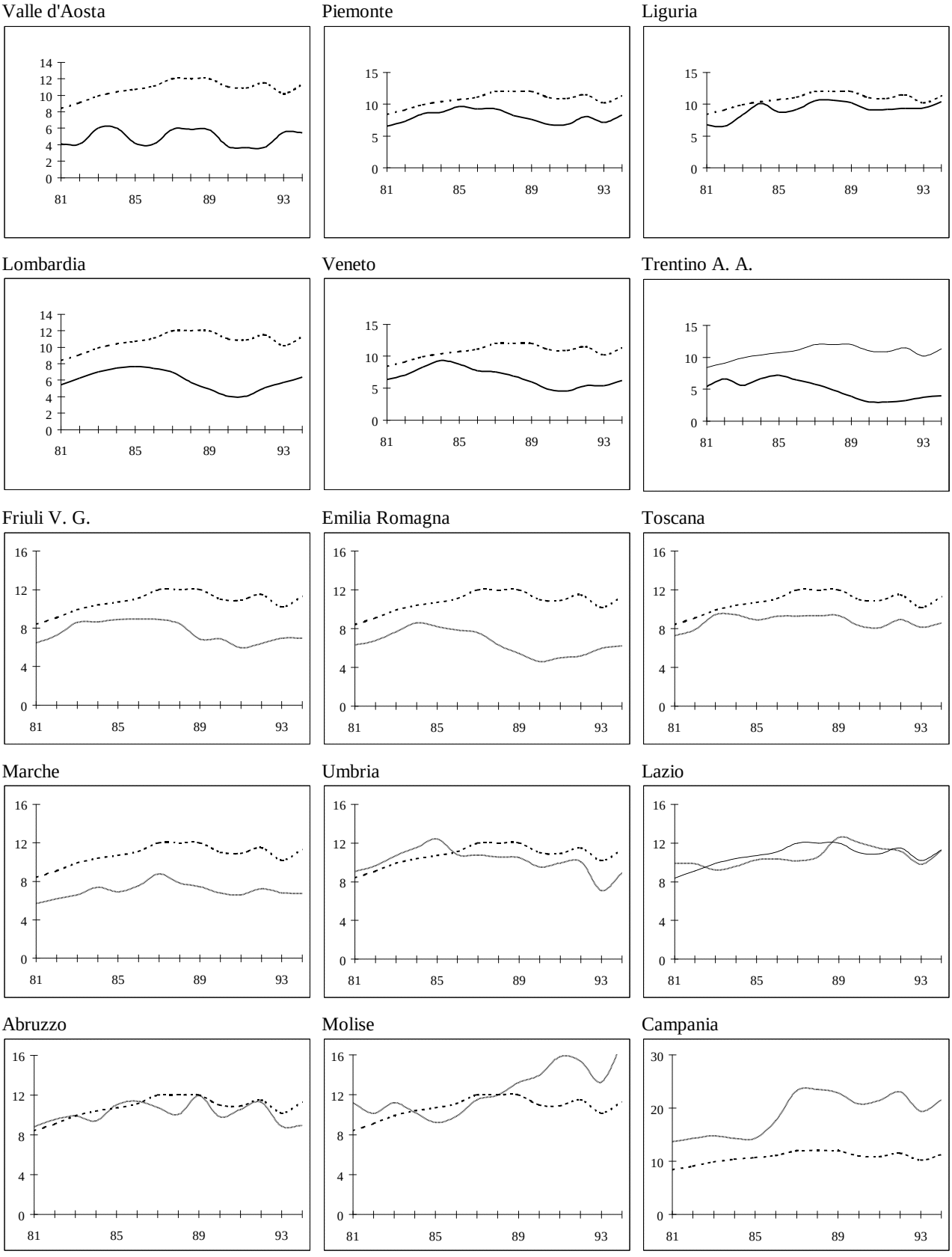
In Italy, unemployment rates show considerable differences across areas. Besides the traditional divide between North (about 6-8%) and South unemployment rates (about 15-20%), there are noticeable differences also among provinces within the same region. Those differences underline the existence of a very low geographical mobility of Italian workers and exhibit a significant persistence over time (Faini *et al.*, 1996).

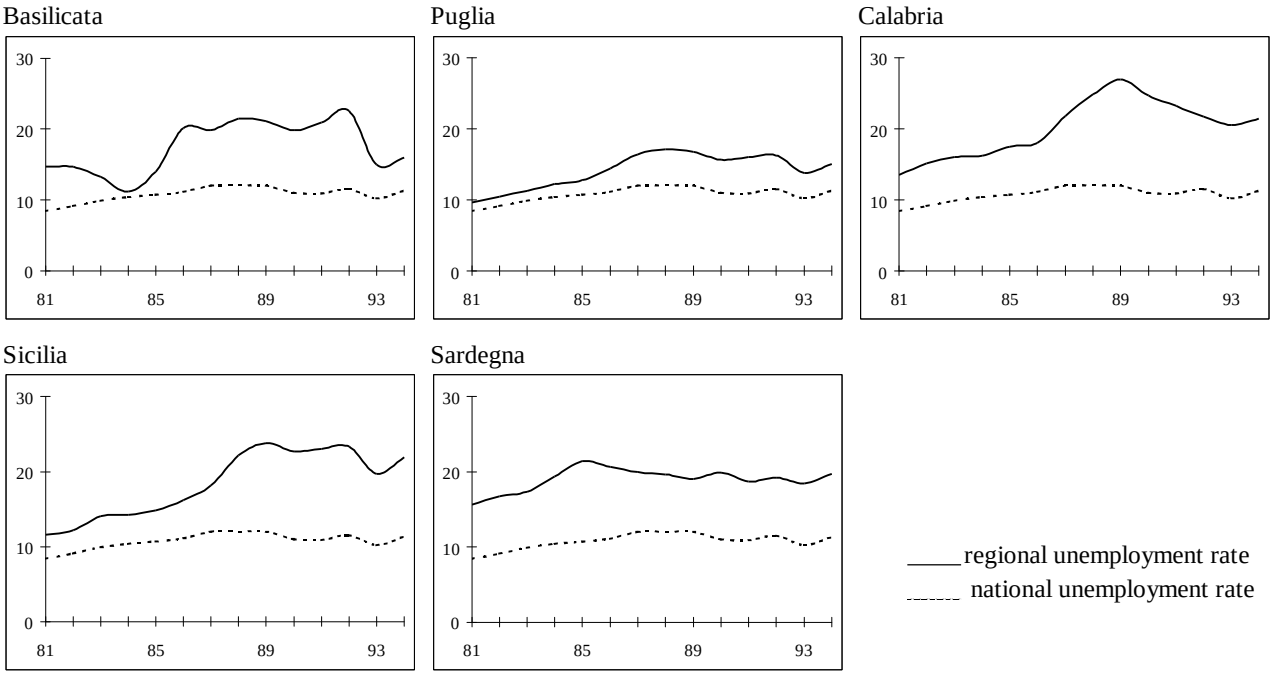
As shown in figure 3, in 1995 the South-North unemployment ratio was nearly five time higher than the one registered in 1970, with significant increases mainly in the second half of the eighties. Regional unemployment rates are always below the average national one in all the Northern regions, while the opposite (i.e., regional unemployment rates higher than national one) is true in the South of Italy.

The same overall trend is found when provincial unemployment rates are considered. In figure 4 we report the percent deviation of provincial unemployment rates from the national average, for two time periods: 1981-1989 (figure 4a) and 1990-1995 (figure 4b)[6]. In the eighties (figure 4a) the relative position of Northern provinces improved as compared to most Southern provinces, while the structure of unemployment differentials appears much more stable during the nineties (figure 4b).

Figure 4 shows the existence of a certain stability in the ranking of Italian provinces by unemployment differentials, suggesting that some specific characteristics of the areas may also influence both the existence and persistence of unemployment rates at the local level.

Figure 3 – Evolution of regional and national unemployment in Italy, 1981-95





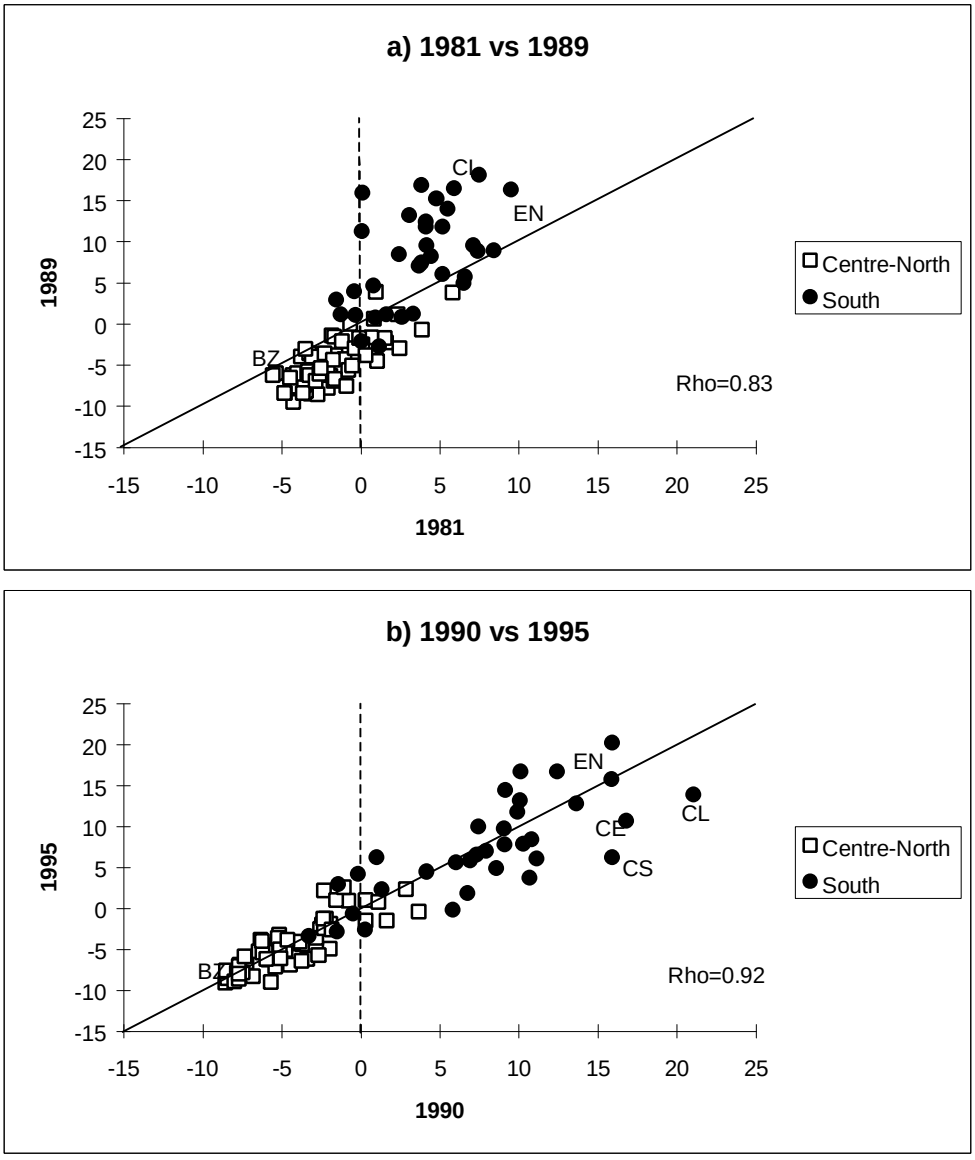
Source: Istat

In figure 5 we report the structure and the evolution of provincial wage differentials by skill. Wage differentials have been computed as deviations of provincial wages from national averages, over the period 1979-1993, separately for manual (figure 5a) and non manual workers (figure 5b). The scattered diagram indicates that the structure of wage differentials across Italian provinces is rather stable over time and that wage differences exist also among workers with similar qualifications but employed in firms operating in different provinces. For both manual and non-manual workers it emerges that, in general, Northern provinces pay higher wages. The evidence is less clear cut for non-manual workers who are characterised by a significant wage dispersion also within each region.

At this point it would be interesting to study more closely the relationship between wages and unemployment at the local level. One obvious feature of the previous analysis is that some "permanent" characteristics appear to shape the long term structure of both wages and unemployment levels across areas in Italy. However, when the focus is placed on flexibility issues and on the ability of local labour market to adjust to specific shocks, then what is really necessary for the identification of the wage curve is how variations in current unemployment are related to variations in current wages across areas. In other words, it is important to purge the analysis from the long term features (observable and unobservable) that characterise local labour markets (the so-called "fixed or permanent effects").

As a first approximation to the type of analysis discussed above, in figure 6 we plot first differences in provincial wages and unemployment. On inspection of the cloud of points in the diagram, no clear cut negative relationship – as implied by the theoretical framework - between unemployment and wages appears. This results is confirmed even when the relationship is studied separately for manual and non manual workers (figure 7).

Figure 4 – Evolution of provincial unemployment differentials*

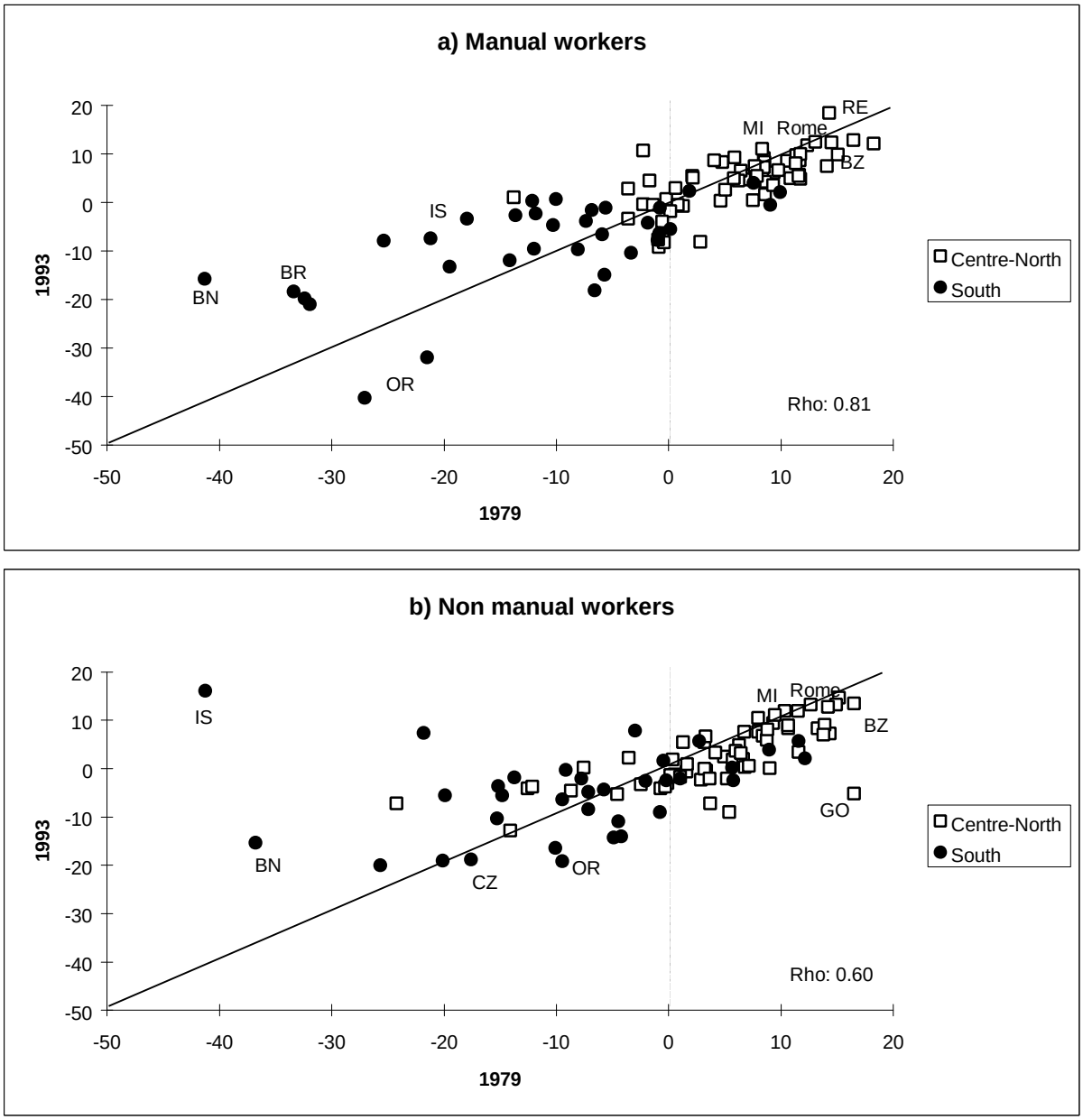


Source: Istat

* For each year, per cent deviation of provincial unemployment rate from national average (Uprov-Unational)

Rho = correlation coefficient

Figure 5 – Evolution of provincial wage differentials by skills*, 1979-93



Source: Inps

* For each year, per cent deviation from national average (Wprov-Wnat); fixed effects on a first stage regression (control variables: economic activity, firm size, sex, age, number of working weeks).

Rho = correlation coefficient

Figure 6 - Unemployment and wages in first differences (95 provinces, 1981-93)

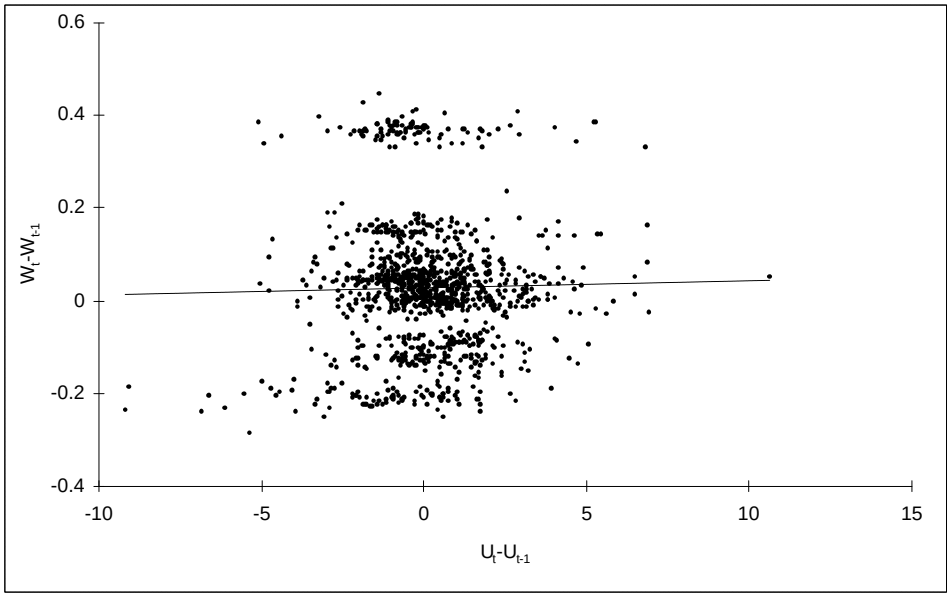
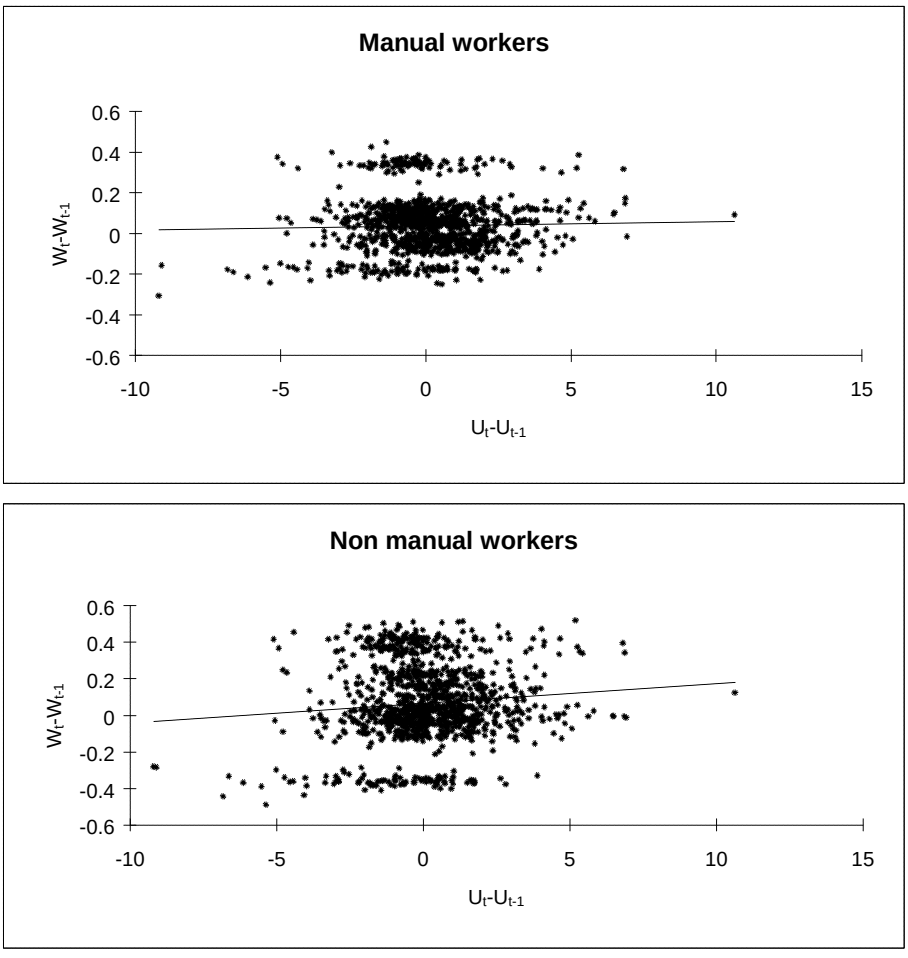


Figure 7 - Unemployment and wages in first differences by skills (95 provinces, 1981-93)



Source: Inps and Istat

5. The Empirical Analysis

5.1. An Econometric specification for the Wage Curve

The specification traditionally adopted in most empirical studies of the wage curve is as follows:

$$w_{ijt} = r_j + t_t + \phi(U_{jt},) + bX_{ijt} + \varepsilon_{ijt} \qquad [1]$$

where w_{ijt} is the (log) wage paid to individual i in the region j at time t; $f(U_{it})$ is some non-linear transformation of the local unemployment rate; r_j and t_t are, respectively, area and time fixed effects, while X_{ijt} is a vector of additional factors that may influence wages; finally, f and b are the parameters to be estimated and e_{ijt} is the error term.

Equation [1] assumes the existence of a long run equilibrium relation between wage levels and local unemployment rates. The expected sign of this relationship - as discussed in a previous section - is negative (f<0). However, if there is some inertia in the adjustment process a reparametrisation of [1] - as in equation [2] below - might be preferable:

$$\Delta w_{ijt} = r_j + t_t + \gamma_1(U_{jt-1},) + \gamma_2 D(U_{jt},) - a w_{ijt-1} + bX_{ijt} + \varepsilon_{ijt} \qquad [2]$$

In the above specification the long run equilibrium - between the *level* of wages and the *level* of local unemployment - is embodied in an Error Correction Mechanism (ECM).

Furthermore, some interesting assumptions can be tested. When $a \approx 1$ and $g = g$ equation [2] reduces to [1]. Also, if $a \approx 0$ the relationship becomes a more traditional augmented Phillips curve; alternatively, when $0<a<1$ we get a more standard partial adjustment wage equation[7].

The coefficient a measures the stickiness of wages to variations of the local unemployment rate: the closer a is to unity, the faster is the adjustment of wages to variations in local unemployment.

It is worth stressing, however, that obtaining unbiased estimates of a can be problematic. Blanchard and Katz (1996) point out how inappropriate wage measures (for example, a measure influenced by the number of days worked, such as average annual earnings) or the presence of sampling errors could lead to an upward biased estimate of that coefficient[8].

5.2. Problems of identification and aggregation bias

In the empirical literature the wage curve, as defined in equation [1], has been often specified (and estimated) as a reduced form assuming the (local) unemployment variable as exogenous. However, if the wage curve is interpreted as a structural relation, it is necessary to introduce some assumptions concerning how the market equilibrium is determined: namely, a relation written either in terms of a price equation or of a labour demand curve is necessary.

The model can be written as follows:

$$w_{ij} = \phi[\ ¦(U_j),\ r_i, |\ \boldsymbol{X}_{ij}\ ] \qquad [3]$$

$$U_j = \varphi(w_{ij}\ ,\ r_j,\ s_j, |\ \boldsymbol{Z}_j) \qquad [4]$$

$$E(G_j) = G^* \qquad [5]$$

where *i* and *j* index, respectively, the worker i and the area j, *w* is the wage level, U_j the local unemployment, s_j a demand shock, and *X* and *Z* are two vectors of control variables (respectively, for the wage curve [3] and the price/labour demand curve [4])[9]. The model is closed by the "no-migration condition" according to which, in equilibrium, expected utility $E(G_j)$ should be equalised across areas and equal to its equilibrium value (G^*).

The identification of equation [3] can be obtained either by assuming that only variations in σ occur (i.e. idiosyncratic shocks affect only the demand), or using Instrumental Variables techniques to instrument local unemployment. A further option is also to consider a recursive model, in which wage levels only depend on past unemployment.

Empirical estimates of the wage curve are usually based on highly disaggregated data, such that the heterogeneity present in local labour markets both in terms of workers' (i.e. age, education, work experience, etc.) and firms' characteristics (i.e. size, level of unionisation, profitability, etc.) is controlled for. However, the unemployment rate is usually referred to the area where individuals work (or firms are located). The use of variables at different levels of disaggregation may lead to biased estimates if all the individuals who work in the same region share some common factors. More precisely, the estimates of the more aggregated variable (i.e., the unemployment rate) present lower standard errors. From a statistical point of view, this can overestimate the importance of local unemployment in influencing individual wages.

To tackle the problem there are a number of options available. First, estimates can be obtained using cell means (conditional or not on a given set of characteristics) for the more disaggregated variable, where the actual degrees of freedom are determined by the more aggregated variable. Second, a "two stage" procedure has been proposed by Moulton (1986, 1990). In the first step, estimates of area wage differentials (using regional or provincial dummies) conditional on a given set of individual and firms' characteristics are obtained for each period. In the second step, the estimated wage differentials are regressed against local unemployment as well as both time and area fixed effects. This model is estimated using standard errors from first stage regression as weights[10].

5.3. Data and Results

In the empirical analysis we used a matched data set obtained by merging – at the provincial level - individual records on wages, personal and firm characteristics as well as geographical location randomly drawn from the *Istituto Nazionale della Previdenza Sociale* (INPS) archives, with unemployment rates and other local labour market features reported in the Labour Force Survey (LFS).

On average, information on 70,000 individuals per year is available covering employees working in the non-agricultural private sector for the period 1979-1993. Conversely, self-employed, public sector employees and those working in the black economy are not covered[11]. As discussed above, wages are defined as gross weekly earnings and they are inclusive of premia and other periodical payments; social charges on the employer are excluded. The territorial breakdown available corresponds to 95 administrative provinces. Beside standard human capital control variables (such as sex, age, skill), industry (three digit Ateco 81) and firm's characteristics (number of workers), also a number of local labour market and area attributes have been considered in the empirical analysis.

Table 1 presents some estimates of the wage curve for manual and non manual workers separately. The dependent variable used to obtain the estimates reported in table 1 derives from area fixed effects (i.e. conditional mean earnings at the province level) computed in a first stage regression in which, for each year, controls for both worker and firm characteristics were also included.

In column 1 and 2, we report estimates obtained fitting the traditional specification of the wage curve – as described in equation [1] - and we test the validity of the implied restrictions. Since the data appear to reject the restrictions[12], in the remaining columns in table 1, we report estimates of different specification of equation [2] with the dependent variable in first differences and a lagged term on the right-hand-side[13].

In column 1 and 3 we assess the extent of the potential bias due to the omission of (area) fixed effects on the estimate of the elasticity of local unemployment; the latter are included in the remainder specifications. In column 4 and 6, the change in local unemployment was added[14]. It is worth noting that in column 4 the current unemployment rate is used instead of the lagged one. Finally, given the potential simultaneity between wages and local unemployment, in the last column we used an Instrumental Variables (IV) estimator.

In general, results show no evidence for a statistically significant negative relationship linking unemployment rates to wages at a local level. The importance of controlling for (area) fixed effects clearly emerges from the results. As shown in table 1, a spurious (negative) correlation emerges between local unemployment and wages when fixed effects are omitted, but in general the elasticity of wages with respect to local unemployment is positive for manual workers and negative but not statistically significant for non manual workers[15].

Focusing on the dynamics of wages, it is shown that the coefficient α on the lagged dependent variable is always significantly different from both 0 and 1, suggesting that there might be substantial inertia in the adjustment process of wages. In particular, the estimate of the α coefficient appears higher in the case of non manual workers as opposed to manual workers (-0.7 and -0.55 respectively).

Table 1 - Estimates of the Wage Curve by skill

(INPS, 1981-1993)

MANUAL WORKERS							
	GLS (two stages)						**IV**
	dip var. log(w)*		***dip var. Dlog(w)***				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)[#]**
$log(U_t)$	-0.12	0.018	-0.007	0.006	-	-	-
	(26.4)	(4.2)	(4.11)	(1.52)			
$log(U_{t-1})$	-	-	-	-	0.004	0.006	0.005
					(1.23)	(1.55)	(0.84)
DU	-	-	-	-0.00001	-	0.0005	0.0034
				(0.03)		(1.02)	(0.63)
w_{t-1}	-	-	-0.09	-0.542	-0.54	-0.541	-0.594
			(9.4)	(19.33)	(19.36)	(19.38)	(19.72)
$h_{w,U}$	*-0.12*	*0.018*	*-0.08*	*0.011*	*0.007*	*0.011*	*0.008*
fixed effects							
areas (95)	no	yes	no	yes	yes	yes	yes
time (13)	yes	yes	yes	yes	yes	yes	yes
R^2	0.938	0.991	0.956	0.961	0.961	0.961	0.964
N. obs	1235	1235	1235	1140	1140	1140	1045
NON MANUAL WORKERS							
	GLS (two stages)						**IV**
	dip var. log(w)*		***dip var. Dlog(w)***				
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)[#]**
$log(U_t)$	-0.06	-0.001	-0.008	-0.002	-	-	-
	(15.6)	(0.23)	(4.04)	(0.38)			
$log(U_{t-1})$	-	-	-	-	-0.001	-0.002	-0.007
					(0.29)	(0.37)	(0.92)
DU	-	-	-	$-0.5*10^{-5}$	-	-0.0002	-0.0024
				(0.01)		(0.26)	(0.36)
w_{t-1}	-	-	-0.12	-0.71	-0.71	-0.71	-0.721
			(9.7)	(23.56)	(23.59)	(23.56)	(22.34)
$h_{w,U}$	*-0.06*	*-0.001*	*-0.07*	*-0.003*	*-0.001*	*-0.003*	*-0.010*
fixed effects							
areas (95)	no	yes	no	yes	yes	yes	yes
time (13)	yes	yes	yes	yes	yes	yes	yes
R^2	0.97	0.992	0.973	0.975	0.975	0.975	0.978
N. obs	1235	1235	1235	1140	1140	1140	1045

Note: dep.var.: fixed effects from a first stage regression. t-ratios in parenthesis.

* Estimates obtained fitting the traditional specification of the wage curve – as described in equation [4]

[#] The instruments used are one and two lagged unemployment rates (i.e., U_{t-1} and U_{t-2}). Similiar results are obtained even when other instrumental variables measuring the degree of "amenities" of a certain area (such as the average rainy and sunny hours per year, the provincial consumer price deflator, house costs, etc.) are added.

5.4. Testing the robustness of the results

Finally, we investigate the possibility that a negative relationship between wages and local unemployment might exist in specific segments of the labour market, where a higher degree of flexibility might be expected (such as: small firms, selected industries and specific groups of workers). In order to do this, we estimated the wage curve for several sub-sets of our sample. Table 2 presents the main results.

Table 2 - The robustness of the results

(INPS, 1981-1993)

Dep. Var. Dlog(w)						
GLS (two stages)						
	Males				**Females**	
	All		**Only Centre-North**		**All**	
$log(U_{t-1})$	-0.003	-	-0.006	-	0.03	-
	(0.88)		(1.47)		(3.0)	
DU	0.00002	-	-0.0005	-	-0.0015	-
	(0.06)		(0.73)		(1.5)	
$log(Usex_{t-1})$	-	-0.0016	-	-0.004	-	0.027
		(0.58)		(1.2)		(2.97)
DUsex	-	0.0004	-	-0.0002	-	$0.9*10^{-5}$
		(0.89)		(0.2)		(0.015)
w_{t-1}	-0.414	-0.414	-0.458	-0.455	-0.417	-0.414
	(16.14)	(16.16)	(13.48)	(13.36)	(14.93)	(14.8)
$h_{w,U}$	*-0.007*	*-0.004*	*-0.013*	*-0.009*	*0.072*	*0.065*
fixed effects						
areas (95)	yes	yes	yes	yes	yes	yes
time (13)	yes	yes	yes	yes	yes	yes
R^2	0.977	0.977	0.985	0.985	0.893	0.892
N. obs	1140	1140	732	732	1140	1140

Note: dep.var.: fixed effects from a first stage regression
t-ratios in parenthesis.

Even after disaggregating the sample, we were unable to detect any negative and statistically significant relationship between wages and local unemployment for the sub-groups considered. Using the elasticity of wages with respect to a measure often considered as a proxy for Italian "core unemployment", that is male unemployment in the North of Italy (see, Bodo and Sestito, 1994; Casavola *et al.*, 1995), we find a negative but still not statistically significant coefficient.

In the case of women, the wage curve results positively sloped (also statistically significant), while changes in the rate of unemployment (i.e., the coefficient ϕ_2) has a negative sign. Although these results might appear somewhat puzzling, they can be rationalised taking into account the different patterns of women's participation to the labour market - as compared with males - and how those patterns can affect the relation between wages and local unemployment. Typically, increases in the (local) unemployment rate - whilst having a negligible effect on wage levels - can significantly increase the flow of discouraged workers, mainly for the less paid, out of the labour market.

6. Concluding Remarks

This study investigated the functioning of the Italian labour market, at a local level, using micro-data. Results show that despite the growing differences in unemployment rates among different areas (mainly between Northern and Southern regions), geographical wage differentials have remained relatively stable over time and fairly insulated from local labour market conditions.

Many results suggest that the traditional negative relationship linking wage levels to local unemployment rates - the wage curve - does not yet appear as a stylised fact of the Italian labour market: the relevant coefficients often show the wrong sign and are in general not statistically significant.

The data used reveal the existence of inertia in the wage adjustment process. In particular, neither a wage curve, nor a Phillips curve specification seem to provide an adequate description of wage determination in Italy. These results appear interesting on the grounds: firstly because they show how micro data can be used to deal with the traditional problems of aggregation and identification which affect analyses based on more aggregated data; secondly as they provide additional evidence which casts some doubts on studies based on either of the above specifications.

The "flatness" of the Italian wage curve contrasts with the high levels of unemployment experienced in Southern regions. One of the possible explanations for the above evidence can be found in the structure of collective bargaining, where national agreements appear to be still effective in ensuring little dispersion in wage levels across areas. Furthermore, if the large size of the informal sector in Italy is taken into account, then these findings might simply indicate that the adjustment does not occur in the regular sector of the economy, but rather outside it. This interpretation seems particularly suggestive, though the lack of information on the informal sector makes it only tentative.

Further research should address the issue of the irregular economy, as well as the use of different sources of micro-data before a more conclusive statement on the existence of a wage-local unemployment relationship in Italy can be made.

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[1] This is typical of both countries with a federal statute (such as USA, Canada, Germany, etc.) and of countries in which the (internal) convergence across areas is not yet accomplished (such as Great Britain, Spain, France, Italy, etc.).

[2] This term is intended to include all those factors (such as environment, weather, as well as economic conditions, etc.) that affect the welfare of individuals living in a certain area.

[3] This idea goes back to the compensating differentials hypothesis by Adam Smith and to the more recent version proposed by Harris and Todaro (1970) in the context of developing countries.

[4] For example, assume the existence of two areas, one more appealing than the other one for the presence of a higher degree of "amenities". In order to respect the long run "no migration equilibrium", the first area will present lower wages and higher unemployment as opposed to the other. Had not been so, the less appealing area would be completely inhabited. Then the two areas, even sharing the same trade-off between wage and unemployment, will take, *ceteris paribus*, different positions on the wage curve: on the top left for less pleasant areas, on the bottom right for more appealing ones.

[5] See figure 2.

[6] Note that when the points in figure 4 are distributed along the main diagonal, it means that the relative structure of differentials has remained (almost) unchanged during the period considered.

[7] In this case the long run elasticity of wages to local unemployment is, $\theta_{w,U} = \gamma/\alpha$.

[8] This kind of bias can be avoided paying particular attention to the measure of wage levels adopted in the empirical analysis: one effective way is to control for the number of hours/days worked (for example, using hourly or weekly earnings instead of annual ones).

[9] In all the equations *t* (indexing time) is omitted.

[10] Equation [5] assumes that mobility flows are equal to zero and that there is no spatial correlation between areas (i.e., cov (w^k, w^h)=0 if k≠h, where k and h are regions). However, the existence of spill-over effects between areas close to each other cannot be excluded *a priori*.

[11] The INPS data set has a longitudinal design and individuals can be followed over time. Approximately one third of the sample is continuously present for the whole period of observation.

[12] Under the two restrictions $\gamma = \gamma_1$ and $\alpha=1$ in equation [2], we obtained values of the Wald test of 67958.5 and 44053.1 for, respectively, manual and non manual workers.

[13] It is important to stress that the reparametrisation of equation [1], given the presence of a lagged dependent variable on the right-hand-side, still implies that the equation is in level – as the theory of the wage curve suggests – and that the error term is not altered by the transformation.

[14] In column 6, the specification reported in [2] is estimated.

[15] Note that using weekly earnings as the dependent variable allows us to take into account also the potential (implicit) elasticity between the number of weeks worked and the unemployment rate. When average annual wages are used instead - as shown by Blanchard and Katz (1996) and Card (1995) - the elasticity of wages to local unemployment may be biased (see section 5.2).