The Role of Productivity in Wage Setting: Differences across the Spanish Regions

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Roberto Bande*
Melchor Fernández*
Víctor M. Montuenga**

Abstract

The aim of this paper is to provide new estimates for the wage-productivity relationship among the Spanish manufacturing industries. We start describing some indicators about wage dispersion in the manufacturing industries across Spanish regions. Then we estimate a wage-setting specification in order to identify the wage-productivity relationship. Our results show substantial inter-industry differences in the Spanish regions that may be explained by the national wage bargaining mechanism.

* Universidade de Santiago de Compostela. Departamento de Fundamentos da Análise Económica. Facultade de Ciencias Económicas e Empresariais. Avenida Xoan XXIII s/n. 15704 Santiago de Compostela. A Coruña (Spain). E-mail: rbande@usc.es. Phone: +34 981 56 31 00 Ext. 11666. Fax: +34 981 54 71 34.
** Universidad de La Rioja. Departamento de Economía y Empresa. Edificio Quintiliano. C/ Cigüeña, 60. 26004 Logroño. (Spain). E-mail: victor-manuel.montuenga@dee.unirioja.es. Phone: +34 941 29 93 73. Fax: +34 941 29 93 93.

1. Introduction

The accession of Spain to the European Union has brought into light the problem of the economic disparities between the Spanish regions, with a number of studies focusing on the income distribution and regional convergence.[1] Employment and unemployment have also received attention [Bentolila and Jimeno (1998) and Bentolila (1997)] as the evolution of aggregate employment across the Spanish regions has been far from being homogeneous in the last decades. In the mid seventies, none of the 17 regions had a noticeable gap between labour force and employment. However, in the last two decades employment has followed very different patterns among the regions, notwithstanding all of them have observed an increase in the net number of unemployed workers. The unemployment rates hide the behaviour of two different variables (labour force and employment), and concerning these two elements, the evolution, as mentioned, is heterogeneous. A number of regions have observed an increase in both the labour force and employment (Cantabria, Cantabria, Murcia, Navarra, Pais Vasco); others have observed an increase in the labour force with an stagnant level of employment (Andalucía, Aragón, Asturias, Castilla-León, Extremadura, Comunidad Valenciana), and lastly, some regions have observed a reduction in the net number of employed workers, regardless of the labour force (Baleares, Cataluña, Castilla-La Mancha, Galicia, Madrid, La Rioja) (see graph 1 in the appendix).

It is interesting to find an explanation to this evolution, which is firmly coupled with the evolution of the unemployment rates. Many candidates have been proposed in the literature to be responsible for the explanation of employment patterns; as the wage setting mechanism, the sectorial composition of employment (which is related to the existence of differences concerning the occupation profiles and, hence, on the employees skill level), or the regional specific characteristics of unemployed workers. Among all of them we will focus on the wage setting mechanism at the regional level, as the real wage is one of the main determinants in employment determination.

In the existing literature, traditionally, the estimation of wage equations was based on a bargaining model, where workers and firms set the real wage, and then the firm sets its profit-maximising employment level, in a right-to-manage fashion. This bargain is usually taken at the industry level (with nation wide agreements), and hence it is likely to find wage differentials among sectors, because it is not plausible to assume neither homogeneous inside sector conditions nor homogeneous bargaining power of workers

or firms. As a result, it seems reasonable to observe differences concerning wage increases among sectors, as a function of the bargaining power of the economic agents. As a general rule, in the existing literature, the workers bargaining power has been proxied by the degree of indexation of wages to the evolution of particular characteristics of this groups of agents (mainly the industry productivity), and hence the higher the bargaining power the higher the connection between wages and productivity.

Aggregate studies have found that the elasticity of nominal wages to productivity is generally high, with estimated coefficients close to one, but these studies lack the possibility to calculate the insider power. Hence, the interest has moved to dissaggregated studies. Particularly, the wage setting mechanism has received an increased interest in the last decade, and has been empirically analysed in Spain through the estimation of wage equations at the industry level. Andrés and García (1991, 1993) and Bentolila and Dolado (1992) have questioned previous aggregate results and show that under the homogeneity assumption (i.e. insiders power is equally distributed among sectors) the insiders power is low, being more important the degree by which wages respond to the general conditions in the labour market. However, the homogeneity assumption implies that the effect of the wage bargain outcome on employment is *nullified*, because industries with favourable economic conditions will absorb those workers expelled from those industries with difficulties. If we relax the assumption, results change, as Draper (1993) and Fernández and Montuenga (1997) have shown. Specifically, the latter authors find a dual behaviour in the Spanish manufacturing industry: in those sectors where productivity grows above the average (so-called dynamic sectors) real wages depend primarily on labour market general conditions. In turn, in those sectors where productivity grows below the average (so called lagging) insiders have a greater bargaining power. This implies that given an exogenous shock, the dynamic sectors (which are the candidates to absorb the workers from the lagging sectors) are not able to create employment.

At the regional level, similar studies have been developed [Rodríguez (1998) for Asturias and Bande and Fernández (1999) for Galicia] and find that considerable differences exist within Spanish regions concerning the wage setting mechanism at the industry level, which could explain, at least partially, the regional evolution of employment.

Given the effects that real wages exert on employment, if we find differences on the wage setting mechanism, particularly, on the insider power, we may explain

employment differences, and hence, unemployment patterns, both within a region and between regions. Thus, the aim of the paper is to identify differences in the wage setting mechanism in the regional sectors.

In this context the paper is organised as follows. Section 2 briefly describes the employment and unemployment patterns in the Spanish regions in the last decades, as well as some productivity and wage dispersion indicators. Section 3 presents a simple theoretical bargaining model. Section 4 will show the empirical results. Finally, section 5 concludes.

2. Some evidence on Spanish regional data

Table 1. Evolution of productivity and wages. Period 1987-1992.

	Average Productivity Growth (in %)	Average Real Wage growth (in %)	Productivity Dispersion (sd. Deviation)	Wage dispersion(sd deviation)
Andalucía	2.2	3.9	0.67	0.55
Aragón	3.1	3.5	0.62	0.49
Asturias	4.7	3.8	0.64	0.55
Baleares	0.6	2.3	0.59	0.65
Canarias	1.1	1.7	0.68	0.62
Cantabria	4.1	3.4	0.59	0.57
Cataluña	3.9	4.7	0.57	0.40
Castilla-La Mancha				
Castilla-León	3.3	2.9	0.70	0.56
Extremadura	3.4	3.2	0.74	0.73
Galicia	3.1	3.0	0.62	0.59
Madrid	2.7	3.8	0.50	0.36
Murcia	4.6	3.1	0.55	0.57
Navarra	3.3	3.1	0.56	0.45
País Vasco	4.0	3.5	0.55	0.41
Rioja	3.9	2.4	0.60	0.63
Valencia	3.6	4.1	0.64	0.44

From the observation of Table 1 we can make some comments we point out in turn. First, there exists a clear heterogeneous pattern across regions in the industrial wages and productivity. The existence, at the first level, of a nation-wide bargaining mechanism produces that wage differentials across regions are smaller than labour productivity ones. Even though a majority of regions present similar growth rates for both variables, there exist some especial cases that break this “apparent” general rule. Thus, labour productivity in Andalucia grew almost two per cent points behind wages, and this difference was about one per cent in Cataluña and Madrid. On the contrary, in regions like Asturias, Cantabria, Murcia and La Rioja, productivity increased

substantially above that wages. In this context, Baleares and Canarias can be considered as outliers given the relative small size that industry represents in terms of employment and output.

Second, regarding sectorial dispersion within a region, the values observed, again, show a certain degree of heterogeneity. Labour productivity dispersion is clearly higher than in wages, again due to the centralised character of wages bargain, but quite similar across regions. Wage dispersion varies notably from some regions to others. So, the standard deviation across sectors in Madrid (0.36) is approximately a half of the one from Galicia (0.73).

Third, when observing the evolution of regional unemployment rates (graph 1) a quite similar pattern appears for all of them. Throughout the sample (we take data from the Spanish Labour Force Survey, *Encuesta de Población Activa*, for the democratic period, 1977-1998), there is a general increasing trend, only interrupted during the period 1986-91 which roughly coincides with the period under study. Thus, during the period 1987-92 there was a common decline in unemployment rates for all regions. The industrial reconversion and redeployment undertaken by the first socialist government during 1982-1986 led to a decrease in the number of unemployed during the latest eighties. However, the loosening in the fiscal policy and the restrictive monetary policy accomplished afterwards implied an upward shift in the unemployment rate trend. It is important to note that, although the behaviour was quite similar across regions, the starting levels were not, and then regions with unemployment rates higher than 25 per cent (Andalucía, Extremadura and Canarias) coexisted with regions whose unemployment rates were smaller than a 15 per cent (Aragón, Baleares and Cataluña).

3. A simple bargaining model

In this section we focus on a simple wage bargaining model, which will provide the microfoundations to our estimates on the wage setting mechanism. The starting point in this model is the real wage bargain between workers and firms, in which not only the real wage is set, but also the employment level at the firm (or at the industry). The procedure followed here is derived from the efficient contract model of McDonald and Solow (1981) and is sketched in Blanchflower and Oswald (1994).

Consider a bargaining model with supernormal rents. These have to be split, somehow, between workers and the employer. We assume that real wages are determined by a

Nash bargaining problem, in which ρ is the bargaining power of employees. The problem is to maximise

$$V(w,n) = \rho \cdot \ln\{U(w) - U(w^a)\} + (1-\rho)\cdot \ln \pi \tag{1}$$

where *U(·)* is the union's utility function from wages, w^a is the wage available in the event of breakdown in the bargaining (alternative wage) and π is the firm´s profit. This formulation relies on the assumption that in the event of bargaining failure the firm earns zero profits and the workers w^a. Define profits as *f(n)-w·n* where *f(·)* is a concave revenue function (*p=1*) and *n* is the firm's employment. Solving the maximisation's problem (see Appendix) we get a first-order Taylor approximated expression

$$w \cong w^a + \frac{\rho}{1-\rho} \cdot \frac{\pi}{n}$$

that solving it properly yields

$$w = (1-\rho)\cdot w^a + \rho \cdot x \tag{2}$$

where *x* stands for labour productivity.

As it is usually assumed, the alternative wage can be explained by some determinants; $\overline{w}$, the going wage in other sectors of the economy (what we call the "average" wage), *b*, the unemployment benefits and *u*, the unemployment rate.

$$w = (1-\rho)\cdot w^a(\overline{w}, b, u) + \rho \cdot x \tag{3}$$

In particular, we can re-express this average wage in terms of what we label as the "expected" wage in turn

$$w^a = (1-u)\cdot \overline{w} + u \cdot b \tag{4}$$

which provides us with the equation to be estimated

$$w = (1-\rho)\cdot w^a + \rho \cdot x + \varepsilon \tag{5}$$

where w^a is computed as indicated above and ε is an stochastic disturbance.

The elaboration of the expected wage is not an easy task, since the choice of the outside "average" wage and the unemployment rate present some possibilities. The environment in which the firm makes its decisions determines which is the accurate measure for expected wage and unemployment. Since firm decisions are involved both in regional and sectorial conditionings, several alternative measures may be considered. Region-wide average wage, sector-wide average wage, wages in the leading sector of the nation/region, wages in the leading region… and so on. Likewise happens with unemployment rate. As any definition of variables could be equally advocated and their combinations will result countless, we restrict ourselves to two specific definitions of the expected wage:

(A) Regional expected wage, w_r^a: It is derived when average wage is the sectorial-average wage in region *r*, and unemployment is measured by the regional unemployment rate.

(B) National expected wage, w^a: It comes from considering the average wage of the industry in the whole nation, as the average wage and the national/industrial unemployment rate.

Note that from equation (5) we consider both the inside-sector variables (productivity) and the general conditions in the labour market (through the expected wage). In the context of the wage bargain we may consider two extreme strategies. First, workers may set the real wage as a function of labour productivity (*x*) exclusively, such that they maintain the current level of employment; second, workers may set the real wage independently of the evolution of productivity, such that if this wage grows, workers are demanding a higher share in output distribution, which leads employment to fall.

4. Empirical Evidence

In this section we provide estimates of the wage equations proposed in Section 3 for the manufacturing industries at the regional level in Spain. Specifically, we consider the data set provided by the Industrial Survey (*Encuesta Industrial*) for the sample period 1987-1992, for a panel of 89 manufacturing branches, for each of the 17 Spanish regions. The empirical counterpart of expression (5) for any region *j* is

$$w_{i,t} = \beta_1 + \beta_2 x_{i,t} + \beta_3 w^a{}_{i,t} + \varepsilon_{i,t}$$

where $w_{i,t}$ is the real wage of the *i*-th branch at period t, $x_{i,t}$ is real labour productivity of the *i*-th branch and $w^a_{i,t}$ is the alternative wage for each branch within a particular region (either regional or nation-wide). Note that the coefficient β_2 will capture the workers bargaining power, ρ.

We define the variables included in the regressions in the following way. The real wage is proxied by the hourly labour cost; labour productivity is measured as the ratio of real value added per worked hour,[2] and we will provide two measures for the alternative wage. First it is calculated as the average real wage outside the branch within the region. Second, we consider the average real wage outside each region.[3] All variables were deflated by the Gross Value Added Manufacturing regional deflator, provided by the BD-MORES database. A panel, consisting of 89 branches for each region, was estimated by a fixed effects model. Results are summarised in Table 2 for the first definition of the expected wage, in the Appendix.

From these estimates we may draw some initial conclusions. We observe very different elasticities of the real productivity variable, which reflect very different insider power among the Spanish regions. These estimated coefficients lie in a wide range between 0.06 and 0.42. This result confirms that the insider power is not equally distributed among the Spanish regions. Second, the coefficients on the alternative wage are also highly heterogeneous with coefficients close to one (0.96) and coefficients close to zero (0.08). However, at a first sight we may conclude that in general, productivity matters less than alternative wages, and given the differences observed between the estimated coefficient for this alternative wage variable, we conclude that the degree of wage flexibility is also highly heterogeneous, a result found elsewhere (Villaverde (1999)). However, we observe that in a group of regions productivity plays an important role in wage setting, especially when comparing with other regions. Thus, Baleares, Canarias, Cantabria, Madrid, Murcia and Navarra show a very high elasticity of productivity (up to 0.42) whereas Andalucía, Aragón, Cataluña, La Rioja and Valencia show a low coefficient.

Table 3 summarises the estimations when we consider the nation-wide alternative wage. Note that the estimated coefficients for the productivity variable are identical to those obtained in the first estimation, except for Cataluña, where the coefficient is a half of the initial one. This confirms that the estimated elasticity of real wages to productivity is robust with respect to the general conditions in the labour market. Second, note that, again, alternative payment considerations do matter in bargaining, because the

elasticities of the alternative wage are generally higher than those for productivity. However we find that in a number of regions, the national alternative wage is more important than the regional measure (Aragón, Asturias, Cantabria, Cataluña, Madrid, and País Vasco), while other regions give more weight to the region-speficic alternative wage than to the national measure (Andalucía, Baleares, Canarias and Castilla-La Mancha).

These results may look unsatisfactory, as we do not observe great differences between the wage setting mechanisms. However this, plausibly, is due to the high level of aggregation, as within each region the performance in terms of productivity growth, employment and wage setting is very different (as shown in Section 2). The wage dispersion, in fact, is high (the same happens for productivity growth), and hence we decided to group the different sectors in order to identify homogeneous wage setting behaviour within each region. For this purpose, we use the definition proposed in Draper (1993) and in Fernández and Montuenga (1998), by which we focus on the average growth rate of productivity. Hence, those branches where productivity grows over the nation average will be called "dynamic branches", while those branches where productivity grows below the national average will be called "lagging branches". This classification is important in terms of the employment performance of each branch, and becomes relevant when the homogeneity assumption (i.e. the insider power is equally distributed among sectors) is relaxed.

Hence, we classify the branches within each region into one of these groups, construct the corresponding panel and estimate equation (5) for each panel. Results are summarised in tables 2 and 3, depending on the definition for the alternative wage variable.

First, and beginning with the regional alternative wage estimation, we observe that the elasticities of the real wage with respect to productivity and the alternative wage are highly heterogeneous and hence, we will try to identify different wage setting mechanisms. Generally, the dynamic branches set their real wages with respect to the alternative wage (i,e. the estimated coefficient for this variable is higher than the estimated coefficient for productivity) except in Cantabria. Second, in Andalucía, Castilla León and La Rioja productivity plays a minor role in the wage setting in these dynamic branches. Finally, in Canarias, Murcia, Navarra and País Vasco it seems that the weight of each factor is balanced. Concerning the lagging branches, we find that generally, these sectors give a higher importance to productivity than the dynamic

branches. Note that in Cantabria, where the dynamic branches gave more weight to productivity than to alternative wages, the lagging branches have an opposite behaviour, giving more importance to productivity. In Aragón, Cataluña, Galicia and Valencia the lagging branches fix their real wage mainly with respect to the alternative wage, while in Baleares, Castilla-León and Madrid the lagging branches show a more balanced performance.

These results change when we consider the national alternative wage. We observe that generally, the dynamic branches set their real wage with respect to the regional alternative wage, giving a lesser importance to productivity. However, when we consider the lagging branches, we observe that these sectors take the *national* alternative wage as a reference for the bargaining, relating then their wage to outside conditions, not only to the industry but also to the regional economy, because the estimated coefficient for the national alternative wage is generally higher than the estimated coefficient for the regional alternative wage.

Given these results, we observe that the performance in terms of employment after a shock in the economy will be very different depending on the region, because not all of the dynamic branches have the same chances to create employment, while the lagging branches will be affected by external labour markets conditions.

5. Conclusions

In this paper we have provided new evidence on the relationship between real wages and productivity in the Spanish economy. After some initial considerations concerning wage and productivity dispersion among the 17 Spanish regions, we have presented a simple theoretical wage bargain model, where workers and firms negotiate the real wage, and the firm sets the employment level. We have shown that the observed real wage may be seen as the outcome of two countervailing forces, the workers bargaining power (proxied as the degree of indexation of real wage to productivity, reflecting the inside-sector conditions) and the alternative payment measures, reflecting that workers also take care of wage differential between industries and/or regions. We have estimated a panel of 89 manufacturing branches for each of the 17 Spanish regions in order to identify the underlying wage setting mechanism.

The empirical evidence has shown that the degree of heterogeneity regarding the weight of productivity and the alternative wage in the different regions is high, reflecting that workers bargaining power is not geographically equally distributed. Additionally, we

have observed that the distinction among dynamic branches (i.e. those branches where productivity is growing above the national average) and lagging branches (i.e. those branches where productivity grows below the national average) is important in order to explain the regional wage behaviour. Specifically we have found that generally, dynamic branches set their real wage with respect to both factors, while lagging branches give a higher importance to alternative payment considerations. Moreover, lagging branches give more importance to the national alternative wage than to the regional measure. This implies that these sectors are linking their wage performance to outside conditions, instead to their own regional labour market conditions. This may be an important factor behind employment patterns. First, the lagging branches are more likely to destroy employment, because productivity is growing below the average and the real wage is not related to their specific conditions. This may be related to the wage bargain process, which many times is taken at the national level. Second, the dynamic branches (that are the sole candidates to absorb these expelled workers) cannot create enough employment, because they are fixing their real wage giving a high share to productivity. Hence, we believe that this behaviour may be one of the leading forces behind the heterogeneous performance of employment and unemployment in the Spanish regions.

Notes

[1] See, for instance, De la Fuente and Freire (2000).

[2] We consider the ratio value added per worked hour as a correct measure for the productivity variable.

[3] We have considered alternative definitions for this variable, as the maximum wage paid in the region, the wage paid by the higher productivity growth branch, but results were similar to those presented in the text.

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Appendix

The procedure followed here is derived from the efficient contract model of McDonald and Solow (1981). The objective is to

$$\underset{w,n}{Max}\ \rho\cdot\ln\{u(w)-u(w^a)\}+(1-\rho)\cdot\ln\pi$$

whose First Order Conditions are:

$$w:\frac{\rho\cdot u'(w)}{u(w)-u(w^a)}-\frac{(1-\rho)\cdot n}{\pi}=0$$

$$n:\frac{(1-\rho)\cdot[f'(n)-w]}{\pi}=0$$

Rewriting the first one as

$$\frac{u(w)-u(w^a)}{u'(w)}=\frac{\rho}{1-\rho}\cdot\frac{\pi}{n}$$

This expression can be simplified by using the first-order Taylor approximation

$$u(w^a)\cong u(w)+(w^a-w)\cdot u'(w)$$

to a more useful form

$$w-w^a\cong\frac{\rho}{1-\rho}\cdot\frac{\pi}{n}$$

or, alternatively

$$w\cong w^a+\frac{\rho}{1-\rho}\cdot\frac{\pi}{n}$$

Since $\pi=f(n)-w\cdot n$, we obtain

$$w\cong w^a+\frac{\rho}{1-\rho}\cdot\left[\frac{f(n)}{n}-w\right]=w^a+\frac{\rho}{1-\rho}\cdot\frac{f(n)}{n}-\frac{\rho}{1-\rho}\cdot w$$

and solving for the real wage we get the expression

$$w=(1-\rho)\cdot w^a+\rho\cdot x$$

Table 2. Fixed Effects Estimation
1987-1992

	All Branches		Dynamic Branches		Lagging Branches	
	$x_{i,t}$	$w^a_{i,t}$	$x_{i,t}$	$W^a_{i,t}$	$x_{i,t}$	$W^a_{i,t}$
Andalucía	0.12	0.96	0.06	1.06	0.14	0.98
	(0.02)	(0.05)	(0.05)	(0.12)	(0.03)	(0.09)
Aragón	0.11	0.64	0.12	0.54	0.08	0.70
	(0.03)	(0.08)	(0.04)	(0.11)	(0.03)	(0.05)
Asturias	0.21	0.70	0.18	0.69	0.27	0.79
	(0.04)	(0.08)	(0.05)	(0.09)	(0.09)	(0.17)
Baleares	0.35	0.69	0.14	1.01	0.44	0.65
	(0.03)	(0.10)	(0.06)	(0.16)	(0.05)	(0.14)
Canarias	0.34	0.82	0.47	0.53	0.29	0.91
	(0.05)	(0.20)	(0.10)	(0.46)	(0.05)	(0.19)
Cantabria	0.42	0.69	0.69	0.28	0.32	0.82
	(0.04)	(0.10)	(0.08)	(0.16)	(0.05)	(0.18)
Cataluña	0.14	0.08	0.19	0.08	0.04	0.11
	(0.03)	(0.007)	(0.04)	(0.01)	(0.02)	(0.01)
Castilla-León	0.30	0.61	0.10	0.89	0.55	0.77
	(0.03)	(0.07)	(0.03)	(0.09)	(0.05)	(0.11)
Extremadura	0.34	0.86	0.34	0.87	0.30	0.83
	(0.04)	(0.15)	(0.06)	(0.19)	(0.08)	(0.28)
Galicia	0.15	0.95	0.25	0.87	0.07	0.84
	(0.02)	(0.05)	(0.05)	(0.10)	(0.03)	(0.07)
Madrid	0.27	0.65	0.30	0.65	0.24	0.63
	(0.02)	(0.04)	(0.04)	(0.06)	(0.04)	(0.06)
Murcia	0.30	0.72	0.38	0.46	0.31	0.97
	(0.03)	(0.08)	(0.04)	(0.11)	(0.07)	(0.15)
Navarra	0.31	0.52	0.36	0.40	0.15	0.65
	(0.04)	(0.07)	(0.09)	(0.15)	(0.03)	(0.03)
País Vasco	0.23	0.68	0.34	0.46	0.23	0.72
	(0.03)	(0.07)	(0.05)	(0.11)	(0.02)	(0.04)
La Rioja	0.12	0.63	0.06	0.78	0.18	0.46
	(0.03)	(0.09)	(0.05)	(0.13)	(0.04)	(0.12)
Valencia	0.06	0.99	0.17	0.90	-0.003	0.84
	(0.01)	(0.04)	(0.02)	(0.06)	(0.02)	(0.08)

Notes: Standard errors in parentheses

Table 3. Fixed Effects Estimation with alternative definition for $W^a_{i,t}$

1987-1992

	All Branches		Dynamic Branches		Lagging Branches	
	$x_{i,t}$	$W^a_{i,t}$	$x_{i,t}$	$W^a_{i,t}$	$x_{i,t}$	$W^a_{i,t}$
Andalucía	0.12	0.82	0.07	0.89	0.14	0.84
	(0.02)	(0.04)	(0.04)	(0.08)	(0.03)	(0.06)
Aragón	0.11	0.95	0.14	0.91	0.04	0.96
	(0.02)	(0.05)	(0.02)	(0.07)	(0.02)	(0.03)
Asturias	0.21	0.90	0.18	0.90	0.28	1.04
	(0.04)	(0.10)	(0.05)	(0.12)	(0.09)	(0.23)
Baleares	0.35	0.66	0.12	1.01	0.44	0.65
	(0.03)	(0.10)	(0.06)	(0.16)	(0.05)	(0.13)
Canarias	0.34	0.53	0.47	0.23	0.28	0.61
	(0.05)	(0.11)	(0.10)	(0.27)	(0.05)	(0.11)
Cantabria	0.42	0.81	0.71	0.27	0.32	1.02
	(0.04)	(0.13)	(0.08)	(0.19)	(0.05)	(0.2)
Cataluña	0.07	0.11	0.10	0.11	0.04	0.11
	(0.03)	(0.01)	(0.04)	(0.01)	(0.04)	(0.01)
Castilla-León	0.30	0.57	0.10	0.82	0.55	0.72
	(0.03)	(0.06)	(0.03)	(0.09)	(0.05)	(0.10)
Extremadura	0.33	0.81	0.30	0.87	0.30	0.75
	(0.04)	(0.13)	(0.06)	(0.18)	(0.08)	(0.25)
Galicia	0.15	0.95	0.24	0.88	0.08	0.85
	(0.02)	(0.05)	(0.05)	(0.10)	(0.03)	(0.06)
Madrid	0.28	0.85	0.29	0.86	0.25	0.82
	(0.02)	(0.05)	(0.03)	(0.07)	(0.04)	(0.08)
Murcia	0.29	0.71	0.36	0.51	0.29	0.89
	(0.03)	(0.07)	(0.04)	(0.11)	(0.07)	(0.14)
Navarra	0.31	0.63	0.37	0.48	0.13	0.82
	(0.04)	(0.09)	(0.09)	(0.19)	(0.03)	(0.04)
País Vasco	0.23	0.82	0.34	0.55	0.23	0.86
	(0.03)	(0.08)	(0.05)	(0.13)	(0.02)	(0.05)
La Rioja	0.10	0.66	0.02	0.87	0.18	0.43
	(0.03)	(0.09)	(0.05)	(0.12)	(0.04)	(0.12)
Valencia	0.05	0.98	0.15	0.91	-0.005	0.83
	(0.01)	(0.04)	(0.02)	(0.05)	(0.02)	(0.07)
Notes: Standard errors in parentheses						

Graph 1. Quarterly Regional Unemployment Rates

Spain: 1977-1998