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Exporters versus domestic wage adjustment during the Great Recession in Spain

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Abstract

During the Great Recession southern European economies belonging to the Euro area could not devaluate their domestic currency as they did in previous recessions. In the absence of an exchange rate devaluation policy option, they were forced to an internal devaluation (i.e. to reduce domestic prices and wages in order to stimulate exports and job creation). In this paper we document the extent of the wage adjustment and the differences in the adjustment patterns followed by exporting versus domestically-oriented firms in Spain during the Great Recession. We use linked employer -- employee data to document that wages at exporting firms are higher than at domestic firms, due in part to a composition effect, and mainly to the existence of a wage premium. We show a significant reduction in the exporter wage gap between 2006 and 2010 due to changes in characteristics but more importantly to a sharp reduction of the wage premium paid by exporters. This finding suggests that exporting firms are showing a higher wage moderation than domestically-oriented firms.

1. Introduction

The Great Recession (2007–2010) is, for many European economies and in particular the Spanish economy, the first recession since the creation of the Euro. The adoption of the single currency has meant the transfer of monetary policy to the European Central Bank as well as the impossibility of resorting to devaluation of the national currency. These policy constraints pose a serious challenge to traditional market adjustment mechanisms in Spain. The internal –soaring unemployment– and external –current account deficit– imbalances require that intense adjustments –so-called internal or competitive devaluation– act simultaneously to reduce unemployment and boost exports. In this paper, we document the extent of the wage adjustment and the differences in adjustment patterns undertaken by exporting versus domestic firms in Spain during the Great Recession.

Exporters are exceptional performers when compared with domestically-oriented companies. They are more productive and pay higher salaries than domestic firms.[1] Most of the explanations regarding the exporter wage gap are based on the Melitz (2003) model. Under this framework, firms differ in productivity and, given the existence of fixed costs of serving foreign markets, only the most productive firms export. Wages could differ for similar workers among exporting and domestic firms due to the existence of frictions in the labor market. One strand of the literature assumes that frictions are caused by different rent-sharing mechanisms: efficiency wages, as in Amiti and Davis (2012), fairness consideration in the wage bargaining process, as in Egger and Kreickemeier (2012), or collective bargaining, as in Felbermayr et al. (2011). A common feature of these models is that workers are randomly allocated across firms and rents that firms share with workers vary with productivity or profits. Another strand of the literature assumes that frictions in the labor market are caused by search and matching costs, as in Davidson and Matusz (2004) and Helpman et al. (2010). All these papers have in common that the worker-firm specific match friction is ex-ante unobservable and that bargained wages vary with firms' revenues.

In past recessions, the Spanish economy has gone through large exchange rate devaluations. For instance, during the 1992–1995 recession the peseta suffered four subsequent devaluations totalling 30% with respect to the DM.[2] The continued re-adjustment of the Spanish economy through currency devaluations reveals the rigidity of nominal variables (i.e. prices and wages) in reaching their equilibrium levels. Instead, after the adoption of the Euro, traditional demand-sided policies have become far more limited, and traditional adjustment via currency devaluation, as was the case in previous recessions, is no longer a feasible option.[3] The bottom line is that in the absence of the traditional adjustment mechanism, the Spanish economy is doomed to experience a sustained path of wage moderation in order to gain competitiveness with respect to trade partners and to stimulate aggregate

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[1]Many papers have documented this and other facts. See, for example, Wagner (2012) for a survey of the literature.

[2]On 17 September 1992, the peseta was devalued by 5 percent. But soon after, on November 23, given the enormous losses of foreign exchange reserves, the Bank of Spain had to devalue it an additional 6 percent. There was a further devaluation of 8 percent in May 1993, and in March 1995, a final devaluation of 7 percent.

[3]Fiscal policy under the EMU is also severely constrained which forces individual countries to keep inflation levels close to those of trade partners within the Euro Area. Persistent inflation differentials generate competitiveness losses and cast doubts on the suitability of the wage-setting procedure.

demand through exports. In order for this to happen, wages paid by companies whose main markets are in other countries show greater moderation, due to, for instance, their ability to avoid signing wage revision clauses in collective agreements or linking wages to performance.[4]

In this paper, we evaluate how this mechanism worked in Spain between 2006 and 2010. First, we compare workers' wages at exporting and domestic companies along the wage distribution, before and after the Great Recession, during a period when labor market institutions remained largely unaltered.[5] Using a Oaxaca-Blinder type decomposition, we are able to decompose the wage gap paid by exporting versus domestic firms into three components: differences in characteristics of the workforce, differences in returns of those characteristics, and differences in residuals. After that, we analyze how those components have evolved during the crisis. Our findings show a reduction in wage differences between exporters and domestic firms for most parts of the distribution, mainly due to changes in the wage structure (i.e. returns); although changes in characteristics also play an important role. This finding highlights the enormous difficulty domestic-oriented firms face in reducing labor costs, and it helps explain why companies resort to layoffs when they face negative demand shocks. Moreover, these results suggest that exporters are more flexible in setting wages than domestic firms. This finding highlights a novel issue in the literature, that of the exporter wage premium: exporters pay higher wages than domestic firms, but they also face more volatile wages along the business cycle.

The paper is organized as follows. In Section 2 we describe the data and the methods used in the empirical analysis. In Section 3 we present the results, and in Section 4 we conclude.

2. Data and method

To evaluate how wages evolve in the Spanish labor market we use data from the Wage Structure Survey–WSS (*Encuesta de Estructura Salarial*) collected by the Spanish National Statistics Institute (INE) in collaboration with Eurostat. The WSS is a public data set that contains detailed information on salaries, worker characteristics, and job characteristics of a large sample of wage-earners in establishments across the whole economy. We select the 2006 and 2010 waves to compare the first and final years of the Great Recession affecting the world economy. Each year represents an independent sample of individuals and firms.

The specification of the wage equation follows the human capital model. Our departure model is a simple version of the Mincer regression model:

$$w_{it} = Z'_{it}\beta_t + u_{it}, \tag{1}$$

where Z_{it} is a vector of worker characteristics, β_t reflects the skill price structure and is

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[4]Most collective agreements in Spain include wage indexation clauses based on the forecasted inflation rate and wage revision clauses for when actual inflation exceeds the government forecast. Increasing competition poses the question whether individuals' productivity and firm performance should be used as a reference for wage indexation.

[5]In September 2010, the socialist Government passed the first labor market reform to facilitate job dismissals. Although we use wage data from October 2010, its effects are highly unlikely to be reflected immediately. In February 2012, the conservative Government designed a more ambitious labor market reform to facilitate wage cuts.

Table 1: Descriptive statistics

| | 2006 | | 2010 | |
	Exporter	Domestic	Exporter	Domestic
PANEL A				
Hourly Wage				
10th percentile	6.3	5.3	6.8	5.7
25th percentile	8.0	6.2	8.6	6.9
50th percentile	10.6	7.8	11.3	9.1
75th percentile	14.4	11.0	15.5	13.2
90th percentile	19.4	15.5	20.9	18.7
PANEL B				
Sex				
Male	76.0	76.8	74.6	72.4
Female	24.0	23.2	25.4	27.6
Age				
Younger than 30	18.7	23.3	12.9	15.7
Between 30 and 49	58.0	56.9	65.1	63.6
50 or older	23.3	19.7	22.0	20.7
Education				
Low	47.2	60.6	38.6	42.0
Medium	35.1	26.6	38.1	34.2
High	17.7	12.8	23.4	23.8
Tenure				
Less than 2	18.9	29.1	13.2	17.8
Between 2 and 6	26.6	29.5	27.8	31.8
Between 7 and 9	11.5	10.4	11.9	12.0
10 or more	43.0	31.0	47.0	38.4
Observations	20,246	56,761	18,114	37,610

Notes: Panel A shows real hourly wage in constant 2006 Euros at different percentiles of the wage distribution. Panel B displays employment shares in percentage and the number of observations in the regression sample.

allowed to vary over periods with the aim of capturing changes in returns of skills, and u_{it} is the residual.

The variable of interest, w_{it}, is the log hourly wage in constant 2006 Euros. Wages comprise the real gross monthly salary plus any extraordinary payments made by the firm during the month of October.[6] The hours of work are calculated as the number of hours actually worked, taking into account regular and irregular hours and discounting non-paid days for each employee. In our sample, we only consider full-time workers and establishments

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[6]The surveys only include workers who were on the payroll during the whole month of October. Eurostat and National Agencies use this month because it is less affected by seasonality and other effects than other months of the year.

from the private manufacturing sector. Therefore, the final results are conditional on the sample selected.[7]

The explanatory variables contain, as regressors, the conventional human capital controls plus dummies for eight industries, eight occupations, and seven regions.[8] We introduce non-parametric controls of individuals' characteristics with indicator categories of the following variables: sex, age (three categories: < 30, 30–50 and 50+), education (three levels: low, medium and high), and tenure (four levels: < 2, 2–6, 7–9, 10+). With this specification, we are controlling all the relevant sources of observable worker heterogeneity and the potential changes in the returns to skill.

The method consists of estimating the model of log wages for two separate groups of workers, those who work in exporting firms (e) and those working in domestic companies (d). An exporter is an establishment whose main market is a foreign one, and a domestic firm is an establishment selling mainly within the country. Importantly, this approach fits the Melitz-type of model of firm heterogeneity, where the most productive firms self-select into export markets, that is, the export status of the firm reveals the single source of plant heterogeneity: the productivity level. According to the theory, firms with higher productivity become larger and simultaneously engage in export activities. That is, the Melitz (2003) model features an exporter wage premium conditional on firm productivity.[9] Therefore, given the systematic relationship between firm characteristics and the export participation present in all the models based on Melitz (2003), the exporting status summarizes, in one single statistic, the basic causal channel at work. In Table 1 we show summarized statistics of the sample by year and by type of establishment.

Juhn et al. (1993) present a method for obtaining different counterfactuals for each group of workers over the whole distribution of wages, much as Oaxaca (1973) and Blinder (1973) do with the mean for male and female workers. The first counterfactual obtains the log wages of workers at either group of firms if they would have been paid fixed prices (e.g. same β's) and held the residual distribution constant, but keeping their separate characteristics (e.g. different Z's). The second counterfactual produces the hypothetical log wage with changing prices and characteristics (e.g. different β's and Z's), but fixing the residual distribution. And the third counterfactual would yield the log wage when changing prices, characteristics and the residual distribution, that corresponds to the original observed log wages. Using those counterfactuals, we decompose the observed difference of log wages between exporter and domestic firms in each period in a first term that captures differences in skills (i.e. characteristics), a second term that captures differences in returns of those characteristics (i.e. coefficients), and a third term capturing differences in unobserved prices and skills (i.e. residuals). For example, the effect of characteristics would be computed as the difference of wages attributed to differences in Z's and in residuals but keeping the returns fixed. Although we employ the Juhn et al. (1993) approach to decompose wages between two

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[7]The number of part-time workers in Spain is extraordinarily low when compared to the European standard. For example, in our sample they only represent around 2 per cent of the number of observations.

[8]Using industry, occupation, and region dummies we account for unobserved wage differentials such as a wide range of compensatory wages.

[9]The theory does not feature an exporter wage premium conditional on firm size or any other arbitrary characteristic. Hence, in a structural estimation there is no room for considering any other variable apart from the export status to differentiate the two groups of firms.

distributions, instead of assuming that the residuals are independent from the covariates, we depart slightly and follow the approach from Melly (2005) and Chernozhukov et al. (2013) and estimate the distribution of the residuals through a family of quantile regressions. Therefore, our decomposition estimates differences between the two distributions (e and d) for each quantile, $\theta \in (0, 1)$, attributed to any of the three components:

$$w_t^e - w_t^d = \text{Coefficients}_t + \text{Characteristics}_t + \text{Residuals}_t$$

We estimate the whole quantile function by setting the number of regression estimates to 150. We use the bootstrap method to consistently estimate the distribution of coefficients. To this end, we set the number of replications to 30, given the high cost in terms of computation time that the method requires.

3. Results

In Figure 1 we describe the magnitude of the wage disparities paid at exporting versus domestic firms as well as each component along the distribution. In each plot, we represent the estimated unconditional exporter wage gap as a solid line, the coefficients effect (the wage premium) as a short-dashed line, the characteristics effect as a dashed-dotted line, and the residuals as a long-dashed line, for every year. Notice that given the type of decomposition used, the total wage gap (solid line) is the sum of the remaining effects (dashed lines). For comparisons, we also represent the conditional mean effect as a solid horizontal line.

The total estimated –unconditional– exporter wage gap has an inverted-U shape over all the years, and its magnitude has been reduced over the period. The coefficients effect is quite constant in 2006 along all the quantiles –slightly over 0.15 log points– but becomes decreasing –below 0.15– in 2010.[10] The characteristics effect is increasing along the distribution in 2006 and becomes decreasing in 2010. On the other hand, the residuals effect has an inverted-U shape that is replicated in the estimate of the total exporter wage gap. The differences in residuals are non-different from zero for most parts of the distribution in both years, but they are small and positive at the center and negative at the extremes.[11,12]

The total wage gap of exporting versus domestic firms can be largely attributed to differences in wages, and to a lower extent, to differences in workers' characteristics. This is not a novelty in the literature. For example, empirical studies using linked employer-employee data sets show that the wage differences are only partially explained by observed and unobserved individuals' characteristics (see Schank et al. 2007; Munch and Skaksen 2008; Frias et al. 2009).

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[10]We can see that the quantile effects are above the mean effect in 2006. This is due to the sensitivity of the conditional mean to the outliers, in this case, located at the extremes values of the distribution. Note that the method excludes estimates for the lower –below 0.1– and upper –above 0.9– quantiles due to lack of precision.

[11]Given that prices are roughly constant along the distribution we suspect that residuals mask differences in unobserved skills. Therefore, a possible interpretation is that exporter wages are higher in the middle part because up to a point, they represent unmeasured skills. Similarly, there are unmeasured skills at the extremes that operate with opposite sign.

[12]Gayà and Groizard (2015) document that the basic results of this method are robust to the inclusion of firm size and the existence of a firm-level collective agreement as additional regressors.
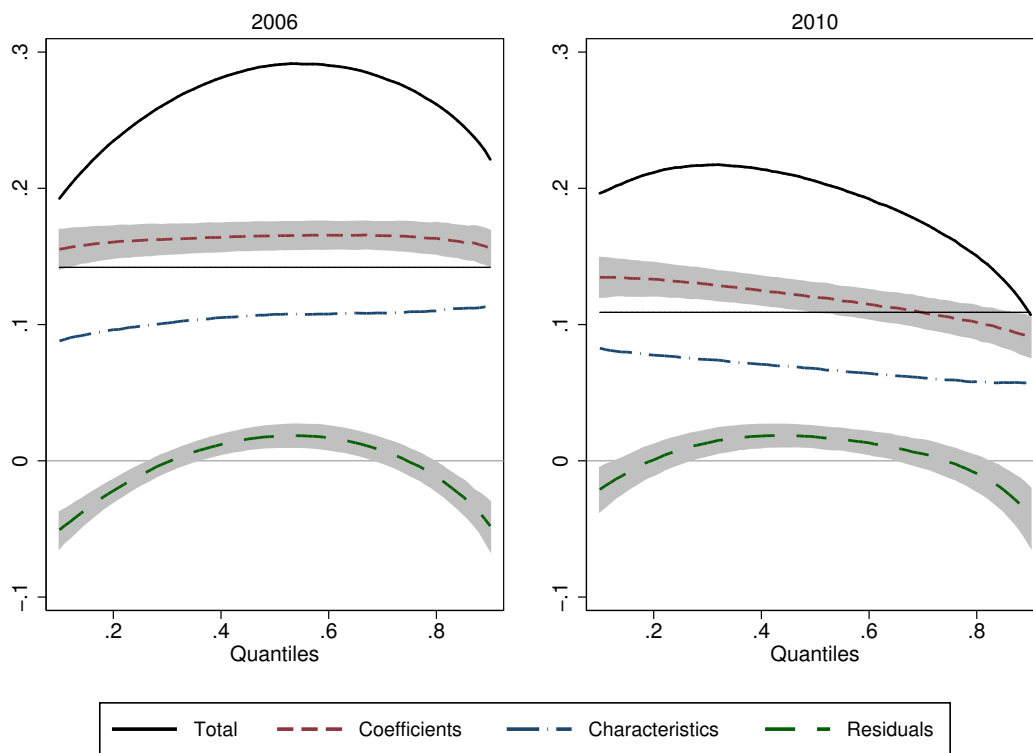
Figure 1: Wage gap decompositions by quantile. The solid horizontal line represents the least squares conditional mean estimate. Shading represent 95% confidence intervals for coefficients' and residuals' differences.

To further explore the relative wage changes that occurred during the period, we represent the raw difference of each component along the wage distribution between 2006 and 2010. Figure 2 shows how the exporter wage gap has evolved and the sources of the differences. First, the wage gap has lowered for almost all the workers, implying that labor costs at exporting and domestic firms are converging. Labor cost cuts are larger as wages increase, for instance, the wage gap is 0.05 log points lower in the lower queue and about 0.10 lower in the upper queue of the distribution. Second, the sources of the labor cost adjustments are similarly attributed to both changes in characteristics and changes in wages, although the dropping of coefficients has a more pronounced effect than changes in characteristics. Again, we find a negative slope for both coefficients and characteristics, meaning that both are producing larger relative labor cost decreases at the upper part of the distribution. Third, regarding the residuals changes, there is a positive change in residuals in the lower part of the wage distribution but a negligible change in the upper part of wages.

We can see that wage changes at exporting firms, in comparison to domestic companies, are negative for all quantiles, and that they are more intense as we move up through the wage distribution. This is surprising given that exporting is commonly associated with an increase in wage dispersion (see Bernard and Jensen 1997; Baumgarten 2013; Klein et al. 2013); however, our findings suggest that although this can be the case in the long run, the
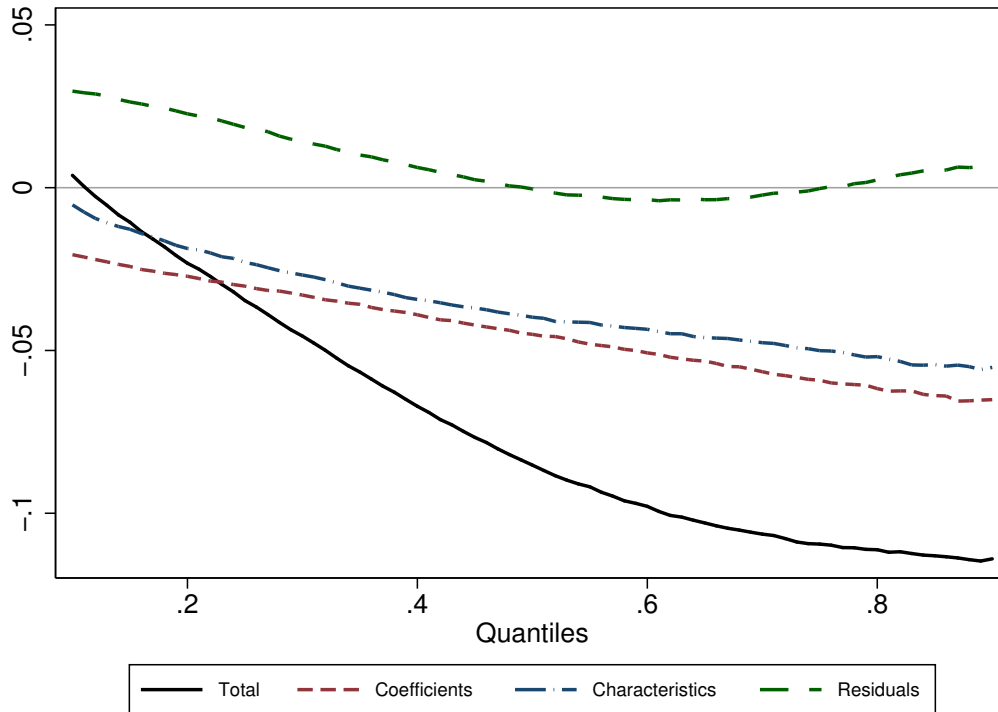
Figure 2: Wage gap changes decomposition, 2006–2010. The solid line represents the unconditional exporter wage gap estimates. The short-dashed line is the price effect, the dotted-dashed line represents the composition effect and the long-dashed line is the residuals effect.

cyclical position of the economy can moderate, or even invert, the contribution of exporting to wage inequality.

4. Conclusion

After the Great Recession, Spain and other southern European countries belonging to the EMU must regain export competitiveness through a wage devaluation process. In order for this to occur without devaluing the currency wage developments in the export sector must show greater moderation. Using a large sample of wage earners in Spain between 2006 and 2010, we show that exporting firms pay higher wages than domestic firms due mainly to the existence of a wage premium. However, there has been a reduction in this gap during the crisis. The decomposition analysis performed shows that this decrease is mainly due to uneven growth of wages in the export sector, even though the changes in the composition of the labor force also operate in the same direction, although to a lesser extent. Moreover, the pattern followed by relative changes in both the coefficients and characteristics curves along the wage distribution shows that larger shifts occur at higher wage levels. These findings would imply that the export sector is contributing to an overall decline of wage inequality during the crisis, while the domestic sector is increasing it.

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