

COLLECTIVE BARGAINING, WAGE RIGIDITIES AND EMPLOYMENT: AN ANALYSIS USING MICROECONOMIC DATA

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Introduction

Reforms of the regulation of collective bargaining were introduced in Spain in 2010 and 2012. Among other objectives, the aim was to improve the response of wages to business cycle fluctuations. During the recessions that began in 1993 and in 2008, wage adjustment was limited, while employment fell significantly. The regulation of collective bargaining in Spain, which introduced minimum wages that had to be paid by all the firms in a particular sector, irrespective of their situation, was one of the sources of wage rigidities that led to most of the weight of adjustment falling on employment.¹

This article offers an estimate of the impact that wage rigidity had on employment losses at the start of the 2008 recession, before the two latest labour market reforms were introduced. This quantification helps to calibrate the extent to which the increase in wage flexibility associated with the collective bargaining reforms may mitigate the destruction of employment in the event of future falls in demand.

A number of macroeconomic studies of the consequences for employment of the regulation of collective bargaining basically draw their conclusions from international comparisons.² This article, by contrast, uses disaggregated data on individual labour market histories linked to the information available on the collective agreements applicable in each case.

The use of disaggregated data is important in the Spanish context, since the regulation of collective bargaining generated heterogeneous wage dynamics across provinces, industries, and workers at the start of the 1993 and 2008 recessions. Of all the workers covered by a collective agreement, 55% had their conditions of employment determined by sectoral agreements at the provincial level, which were not renegotiated frequently. At the same time, the extension of collective agreements to all workers and firms within the scope of the agreement was automatic when the negotiating parties were, in legal terms, sufficiently representative.³ As a result of these two characteristics, a high proportion of firms ended up being subject to compulsory minimum wages that were infrequently reviewed and that varied from sector to sector and – within the same sector – from province to province.

The response of wage settlements to a change in economic activity has therefore been heterogeneous across sectors and provinces. Even within the same province and sector, the wages of different workers have grown at different rates, depending on how close their wage was to that agreed in the relevant collective agreement.

The disaggregated information allows, on one hand, this degree of heterogeneity in wage setting to be accommodated and, on the other, its effects on the evolution of employment at the start of a recession to be verified.

¹ Various papers of the ECB's Wage Dynamics Network have explored in detail the determinants of the lack of wage adjustment, beyond collective bargaining. See, also, Messina et al. (2010) or Dickens et al. (2007).

² Murtin et al. (2014) observe that in France and Spain, where collective agreements are automatically extended, the rates of outflow from employment are relatively higher and the rates of creation of employment lower than in other countries.

³ See Bentolilla, Izquierdo and Jimeno (2010).

**Collective bargaining,
wages and employment:
results based on
microeconomic data**

A brief overview of studies in countries similar to Spain that have adopted a disaggregated approach for estimating the effect of collective bargaining on employment is presented below. Subsequently, the case of Spain is analysed, first, describing how the wages set by collective agreement were adjusted from the start of the 2008 recession and, second, relating the wage changes and employment losses observed for a sample of workers whose wages were determined at the time by sector-level collective agreements.

Various studies have documented that, after adjusting for changes in the composition of employment over the cycle, the Spanish and Italian labour markets showed a higher degree of wage rigidity than other advanced economies.⁴ One possible explanation for this behaviour is that wages in these countries were largely determined by collective agreements that were infrequently revised, so that, at the start of a recession, a significant number of workers had wage increases set by multi-year agreements signed during the expansion phase. As a result, one would observe in countries like Italy and Spain that, although wage settlements in newly signed collective agreements do respond to changes in local or aggregate unemployment, the prevalence of multi-year collective agreements with pre-set increases makes the wage response at the aggregate level much smaller.⁵ At the same time, when there are workers receiving higher wages than those set in the relevant collective agreement, the change in wage growth set in the agreement is only part of the total wage response. For example, the wage increases set in agreements may be offset in the case of these workers by a reduction in other wage components.⁶

The extent to which wage rigidities associated with collective bargaining affect individual earnings, and their potential impact on employment, can be directly examined using microeconomic data obtained from the linking of information on firms, workers and agreements. For example, it has been observed in Italy with this type of data that between 1991 and 1999 the wages of a significant portion of workers grew at rates close to those set in the relevant collective agreement, indicating the presence of nominal rigidities. Furthermore, the unemployment rate was higher in those provinces in which larger numbers of workers were subject to these rigidities.⁷ Likewise, in Portugal, it has been observed that in the four months following the extension of a collective agreement, the firms affected reduce their employment by around 2 percentage points (pp) more than firms in similar sectors. This reduction was more pronounced during the last recession and relatively greater among smaller firms.⁸ With Portuguese data it has also been possible to establish that the impact of the extension of a collective agreement on the labour costs of a firm is greater the higher the proportion of workers whose wages were already close to the wage rates established by such agreement.⁹

**Wage adjustment in
collective agreements
in Spain during the crisis**

During the recession that began in Spain in 2008, wage adjustment was initially slow, since aggregate wages continued to grow until 2011, while employment was falling notably. At the same time, given that the most common level of collective bargaining in Spain was the sectoral/provincial level, firms from a single sector of activity, but located in provinces with

4 For example, a first approximation to the measurement of wage rigidities is to calculate the fraction of workers whose nominal wages have not changed in a given year or, alternatively, have increased at the same rate as inflation [see Dickens et al. (2007)]. A second approach attempts to calculate the response of wage growth to fluctuations in the rate of unemployment, having adjusted for cyclical changes in the characteristics of employed persons [see Haefke et al. (2013) for the United States, Carneiro et al. (2012) for Portugal De la Roca (2014) for Spain].

5 See Rosolia (2015) and Bentolila, Izquierdo and Jimeno (2010).

6 See Cardoso and Portugal (2005).

7 See DeVicienti et al. (2007).

8 See Martins (2014).

9 See Guimaraes et al. (2014).

	1993		2009	
	% workers	Wage growth (a)	% workers	Wage growth (a)
	2.6	4.69	8.0	0.99
Signed during the year following the one indicated in the column	65.9	5.05	20.8	1.75
Signed during the year indicated in the column	27.5	6.31	31.5	2.45
Signed two years before the one indicated in the column	2.5	6.55	37.0	2.58

SOURCE: Banco de España, based on the Register of Collective Agreements 1990-2012.

a The column "Wage growth" shows the wage growth agreed in percentage points for 1993 (second column) and 2009 (fourth column) for a provincial sectoral agreement, without an indexation clause.

collective agreements signed at different times, were subject to different wage rates. This disparity accentuates the negative impact on employment of a fall in aggregate demand at the beginning of a recession.¹⁰

By way of illustration, Table 1 compares the wage growth established in provincial level agreements at the start of the 1993 and 2008 recessions, distinguishing between agreements by when they were signed. During the first recession, the sectoral agreements signed in 1992 set nominal wage increases for 1993 of around 6.5%, while the agreements signed during the following two years set them at around 5%. During the 1993 recession, firms employing a third of workers were subject to wage increases set in expansion phases. At the start of the 2008 recession, firms employing almost 70% of workers were subject to agreements that increased their labour costs of more than 2%, while the firms employing the remaining 30% applied wage increases of around 1%.

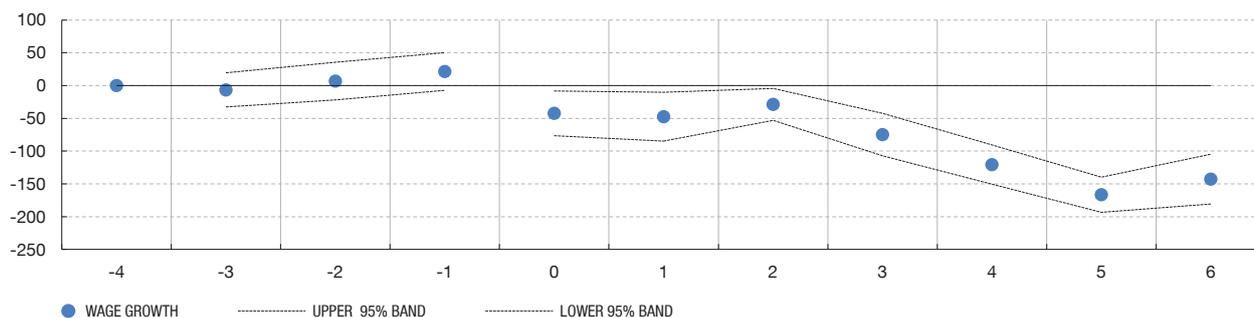
Identification of the precise moment when agents change their perceptions regarding the behaviour of the economy (and, therefore, when wage adjustment should occur) is a complex task. In the case of the last recession it has been documented that expectations changed rapidly following the failure of Lehman Brothers on 15 September 2008,¹¹ so that this date can be used to separate those collective agreements signed during the expansion phase (before 15 September 2008) from those signed during the recession (after that date). Analysing the evolution of the nominal wages agreed for 2009, it is observed that the sectoral collective agreements signed between October 2007 and August 2008 established very similar nominal wage increases to those recorded in the previous expansion period, while the agreements signed after 15 September 2008 established lower wage increases, the difference between these two magnitudes being statistically significant (see Chart 1). This observation suggests that wage adjustment in that recession, once it commenced, was particularly rapid, but limited to newly signed agreements.

Frequency of collective bargaining and employment losses

In summary, as seen in the previous section, the overlapping of numerous collective agreements meant that at the start of the recession similar firms had to pay very different wage increases. One would expect those firms that had to pay higher wage increases to have suffered larger employment losses than similar firms whose sectoral agreement, having been signed later, established lower wage increases.

¹⁰ See Olivei and Tenreyro (2007) and Card (1990).

¹¹ For example, Hudomiet et al. (2011) collected data on subjective expectations regarding the evolution of the stock market, documenting an abrupt change in the fourth quarter of 2008, around the time of the Lehman Brothers failure.



SOURCE: Banco de España, using the Register of Collective Agreements.

a Predicted value, in basis points, of a regression of wage growth on the quarter in which agreement signed, adjusted by industry, province, multi-year agreement and indexation clause indicators. The values are the deviation with respect to 2.5%, the average growth agreed for 2009 in agreements signed between October and December 2007.

To verify this hypothesis the probability of being unemployed between 2009 and 2010 is compared for workers employed in industries whose agreement for 2009 was signed during the upturn with that of workers whose collective agreement was signed during the recession (again using the failure of Lehman Brothers on 15 September 2008 to mark the cyclical turning point) (see left-hand panel of Chart 2).^{12,13} Between January 2009 and December 2010 the probability of being unemployed was 1 pp higher for workers whose collective agreement for 2009 and 2010 was signed during the expansion than for other workers, the difference being even more marked in the case of workers with temporary contracts.

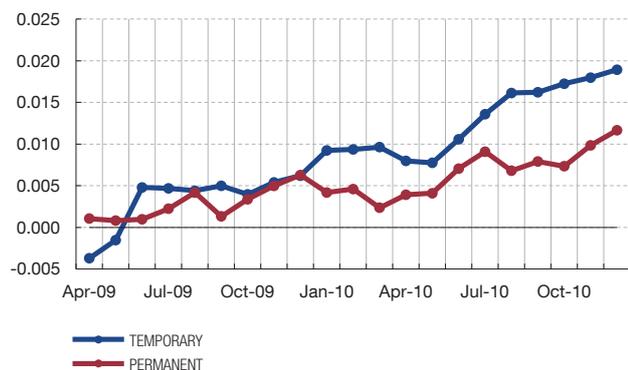
Since collective agreements set minimum wages by sector of activity, province of residence and professional group, one would also expect wage increases and employment losses to have been especially large for workers whose wages were close to the wage rate set in an agreement. In this respect, workers whose wage in 2007 was up to 10% higher than the agreement minimum and whose collective agreement was signed before the failure of Lehman Brothers received a 1 pp higher wage increase than other workers (see Table 2). By contrast, the date of the collective agreement does not affect the wage growth of workers with a wage that exceeded the rate set in the collective agreement by at least 20%. As the right-hand panel of Chart 2 shows, the employment losses were especially large among workers whose wage was close to that set in the relevant collective agreement. Thus, among workers subject to a collective agreement signed during the expansion, those whose wage was closest to the minimum level set in the agreement spent 3% more days unemployed than other workers.

To estimate the magnitude of these effects, a comparison may be made with the loss of employment that would have been observed if the agreements signed before the collapse of Lehman Brothers had been renegotiated with the same wage increases as were established in agreements signed after that date. The result of this exercise suggests that, had the agreements been renegotiated, the unemployment rate of workers whose wage before the recession was no more than 20 pp higher than the agreement minimum wage would have been 50% lower between 2009 and 2010. By contrast, given that the sectoral bargaining only sets minimum earnings, the renegotiation would not have had any effect on the levels of employment of workers whose wage was more than 1.4 times the provincial agreement rate.

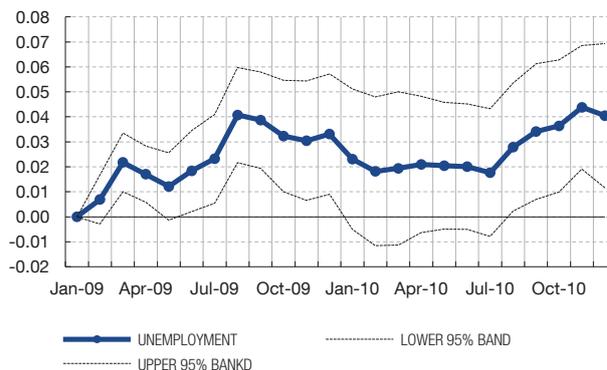
¹² The wage change set may reflect changes in agents perceptions of inflation or expected unemployment.

¹³ For further details, see Díez-Catalán and Villanueva (2014).

PROBABILITY OF BEING UNEMPLOYED, IF COLLECTIVE AGREEMENT SIGNED BEFORE 15 SEPTEMBER 2008 (a)



MONTHLY PROBABILITY OF BEING UNEMPLOYED, FOR WAGES CLOSE TO AGREEMENT (b)



SOURCE: Banco de España, using the Register of Collective Agreements and the Continuous Sample of Working Histories.

- a This panel presents the increase in the monthly probability of being unemployed associated with a collective agreement signed before 15 September 2008 estimated by means of linear regressions of the probability of being unemployed on the date on which the agreement is signed, industry and province indicators.
- b This panel presents the increase in the monthly probability of being unemployed associated with a collective agreement signed before 15 September 2008 for the sample of workers who in December 2007 received a wage that exceeded the agreement minimum for the sector by no more than 20%. The model includes collective agreement indicators.

In short, the fact that employment losses and labour cost increases are concentrated among workers with wages close to an agreement rate established during the expansion suggests that at the start of the recession the wage rigidity associated with collective agreements acted as an aggregate shock transmission mechanism.

Final comments

The low degree of wage adjustment in Spain during the initial years of the recession has been singled out as a factor that may have contributed to the heavy job destruction that took place between 2009 and 2010. The evidence presented in this article, based on disaggregated information combining data on agreements, wages and the employment situation of workers, shows that there were particularly heavy employment losses among workers subject to collective agreements signed in the expansion phase, which set relatively high wage increases. Specifically, at the start of the 1993 and 2008 recessions wage conditions varied considerably owing to the existence of multi-year collective agreements signed during the upturn, which established large wage increases for a significant proportion of workers. By contrast, other groups of workers, subject to collective agreements signed in the recession, received wage increases more in line with the change in macroeconomic conditions. Also a higher probability of loss of employment is detected among workers subject to agreements signed during upturns, an effect that is exclusively due to those whose wages were closest to the minimum set in the agreement. The estimates presented suggest that for this group of workers a renegotiation of the provincial agreement would have reduced the probability of being unemployed by up to 50%.

Since 2010, various labour reforms have been implemented to make the regulation of collective bargaining in Spain more flexible. Among other measures, mechanisms have been introduced that make it easier for firms to cease to apply higher-level collective agreements. Until more data (preferably microeconomic data like those used here) are available on collective bargaining developments since the application of these reforms, a comprehensive and rigorous evaluation of their effects is impossible. That said, the evidence presented in this article suggests that, given the orientation of the reforms,

	Wage growth observed (a)	Proportion of days unemployed (b)
	(1)	(2)
1 Agreement signed before 15.9.2008 and wage 0-10% above agreement minimum	0.0102 (0.0042)	0.034 (0.010)
2 Agreement signed before 15.9.2008 and wage 10-20% above minimum	0.0057 (0.0041)	0.024 (0.010)
3 Agreement signed before 15.9.2008 and wage 20-40% above minimum	0.002 (0.003)	0.010 (0.007)

SOURCE: Banco de España, based on the Register of Collective Agreements 2008-2010 and the Continuous Sample of Working Histories.

- a The coefficients, estimated by ordinary least squares, measure how the wage growth in 2009 of workers who remain in their jobs varies depending on both the distance between the wage of the worker in December and the agreement minimum and the date on which the collective agreement is signed [see Díez-Catalán and Villanueva (2014)].
- b The coefficients, estimated by ordinary least squares, measure how the proportion of days not worked during 2009 and 2010 varies depending on both the distance between the wage of the worker in December 2007 and the agreement minimum and the date on which the collective agreement is signed [see Díez-Catalán and Villanueva (2014)].

adjustment to unexpected reductions in the demand for labour can be expected to take place in future more through wage changes than through heavy employment losses.

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