Unions and Collective Bargaining in the Wake of the Great Recession: Evidence from Portugal

John T. Addison, Pedro Portugal and Hugo Vilares

Abstract

Against the backdrop of its industrial relations architecture, characteristic of the 'southern European group' and intimately linked to the recommendations of the Troika, this paper examines four key aspects of Portuguese collective bargaining. First, it provides definitive estimates of private sector union density for that nation. Second, it models the determinants of union density at firm level. Third, it yields estimates of the union wage gap for different ranges of union density. The final issue examined is contract coverage. The received notion that the pronounced reduction in the number of industry-wide agreements and extension ordinances of late is to be equated with a fall in coverage is shown to be a chimera, the number of workers covered by new and existing agreements remaining largely unaffected by the economic crisis. The reduced frequency of new agreements and extensions is instead attributed to downward nominal wage rigidity in low-inflation regimes.

John Addison is at the Darla Moore School of Business and Durham University Business School. Pedro Portugal is at the Bank of Portugal and the Nova School of Business and Economics. Hugo Vilares is a graduate student at the London School of Economics and Political Science.

1. Introduction

Portugal is one of a number of countries within the Euro zone to have experienced a major external balance problem, leading to financial support by the *Troika* (the European Commission, the European Central Bank, and the International Monetary Fund) in return for the joint therapy of fiscal consolidation and structural reforms. Portugal's external problem may be seen as the outcome of a competitiveness crisis stemming from a decade of misalignment between (rising) wages and (lagging) productivity growth (For a full diagnosis, see Blanchard 2007). One mechanism underlying this misalignment was the country's wage setting architecture that failed to deliver the necessary responsiveness of wages to their underlying determinants. This failure was exacerbated by the conjunction of a low inflation regime with severe nominal wage rigidity, resulting in burdensome employment losses (Carneiro *et al*. 2014).

Now the role of collective bargaining systems in achieving efficiency – to be equated with the ability of the economy to maintain a low average unemployment rate and to limit fluctuations in the unemployment rate in response to economic shocks – has been the topic of considerable policy interest in recent years (see Addison 2015), and in this regard the Portuguese model has been allied to labour market rigidity and heightened reliance on quantity adjustment. But Portugal does not stand alone. It is not atypical of the group of southern European nations in terms of its industrial relations infrastructure and in particular high degree of collective bargaining coverage and social dialogue, albeit accompanied by union fragmentation, lack of articulation in collective bargaining, and material informality in the labour market. An additional commonality has been the historical importance of the *favor laboris* principle, which in the Portuguese case has traditionally meant that successor collective agreements can only improve on the terms of the immediate past agreement. More generally, Portugal is representative of continental European nations – indeed in the vanguard – in respect of its extension (of collective agreement) procedures, employment protection legislation, and decline in union density from its peak circa 1980.

In consequence, Portugal was one three southern (and other) European nations placed under the scrutiny of the *Troika* and pressured to push through material reforms to its collective bargaining system (inter al.) in the wake of their economic difficulties/sovereign debt crises. As we shall see, the quid pro quo for financial assistance included sharp curbs on extension agreements that were perceived to produce downward wage rigidity – for example, Martins (2014b: 3) argues that extension ordinances promote nominal wage rigidity through the setting of around 30,000 wage floors – and greater unemployment.

Notwithstanding the importance of the great recession and *Troika* policies to contemporary industrial relations in Portugal, therefore, is important to discuss the pre-existing architecture of collective bargaining to understand the behavioural shift sought by that agency and also to properly address the nature of the so-called crisis in collective bargaining which is widely perceived to be more acute for southern European nations in general and Portugal in particular than elsewhere in Europe (see, for

example, Cruces *et al*. 2015). To this end, we have first to describe the bargaining framework in Portugal and its evolution both before and in response to the economic crisis. This will enable us to address the functionality of the wage bargaining system and to speak of a standstill rather than an overt crisis in collective bargaining.

Having outlined the bargaining framework, measurement of overall union density is a key component of any discussion of there being a developing crisis in collective bargaining. Unfortunately, countries often lack official statistics on union density. Portugal is one such country. The consequence is that prior estimates of private-sector union density for that nation are little more than informed guesstimates. Fortunately, a solution to this problem has recently become available with the availability of the *Relatório Único*, or Single Report, conducted by the Office for Strategy and Planning (in the Ministry of Employment, Solidarity and Social Security). That is, we can now derive accurate estimates of union density. We provide the first such estimates for Portugal using these new data for the years 2010 through 2013. Even if there has certainly occurred a steady erosion in union density since 1980, we report broad stability over this four-year period with average density a little over 10 per cent. For its part, collective agreement coverage approximates 90 per cent over the same interval. The extension phenomenon that helps explain this disparity between density and coverage will be addressed throughout the paper.

Again using the *Relatório Único*, and following on the provision of economy-wide statistics on density, our cet. par. analysis then examines the determinants of density at firm level. Among other things, we report that union density is highest in those sectors and activities sheltered from product market competition. More generally, it is firms with higher union density that are observed to drive the bargaining process.

The next part of our analysis presents a stylized version of a recent investigation into the union premium (see Addison *et al*. 2015). That study explores a high-dimensional fixed effects regression model and then offers a smoothed nonlinear function relating wages to union density at firm level. Our modification simply collapses that nonlinear relationship into five union density intervals. We find evidence that our measure of the union wage gap is sharply increasing in firm density. Changes in the premium are investigated as a further check on the stability of the collective bargaining system.

Returning to the theme of European crisis management, the chief structural reforms sought by the *Troika* included greater decentralization of collective bargaining, derogations from industry agreements at workplace level, close attention to what countries can afford in setting national minimum wages (i.e. linking increases to broad competitiveness and efficiency audits), and cutting back on extension agreements. In its dealings with the agency in 2011, as documented in the next section, the Portuguese government agreed to a number of such measures. Most notably from the perspective of the present paper, extension agreements were initially frozen and the procedures for such extension subsequently reset by

the government. Additionally, any increase in the nation-wide minimum wage was meant to be made conditional on economic and labour market developments.

The data seemingly suggest that the government measures on extension agreements have had a distinct chilling effect on collective bargaining. Thus, the number of new agreements has fallen dramatically and with them the number of extension ordinances. It is just a short step to argue – as have a number of influential observers – that collective bargaining is in crisis mode. But we choose instead to focus on the fact that, although new agreements have stalled, coverage under *existing agreements* (and operational extensions) has remained basically unchanged. Furthermore, since new agreements cannot generally be less favourable to employees than the agreements they succeed, the decline in new agreements is less to be construed as structural (i.e. a crisis in collective bargaining) than as indicative of the difficulty in securing increases in nominal wages (that are admittedly less likely to be extended) in a deflationary environment. *Vulgo*: real wages (or wage costs) are not declining *enough*. In short, we interpret fewer agreements and extensions as associated with downward nominal wage rigidity combined with a severe recession rather than the 'upward nominal wage rigidity' experienced in more normal times (see Guimarães *et al*. 2015). This interpretation does not mean that the Portuguese collective bargaining system is fit for purpose or for that matter to deny that structural changes are in the offing.

The outline of the paper is as follows. First, we review the structure of Portuguese collective bargaining. Second, we describe the main datasets used in this inquiry and the base elements involved in modelling the determinants of union density and the wage gap. Third, we present some introductory descriptives followed by the main findings of the paper. A summary concludes.

2. The bargaining framework

Portuguese law makes provision for three types of collective bargaining at national, regional, and local level, although it is the case that contemporary wage setting has been dominated by the widespread use of administrative instruments such as government extensions of agreements entered into by the bargaining parties. First, there is a modicum of firm-level bargaining signed by an individual company and one or more unions, resulting in so-called *Acordos de Empresa* (or AEs) that are important in the oil sector and transport and communications. Somewhat more important in terms of direct impact are collective agreements signed by several employers that are not part of an employers' association and one or more trade unions, known as *Acordos Colectivos de Trabalho* (or ACTs), that are significant in the financial sector and utilities. However, it is industry-level/branch or sectoral agreements, so-called *Contratos Colectivos de Trabalho* (CCTs), negotiated between one of more employers' associations and one or more unions, that predominate. As a result, CCTs in conjunction with extension agreements that are very largely are based on them (the other option is to extend ACTs) explain levels of collective bargaining

coverage in the order of 90 per cent of workers despite a marked decline in union density that extends back over 30 years (see Visser 2015) and that we now estimate for the private sector at around 10 per cent. The vast majority of agreements are signed by unions linked to the two major union confederations: the CGPT-IN or General Confederation of Portuguese Workers (*Confederação Geral dos Trabalhadores Portugueses - Intersindical Nacional*), and the UGT or General Workers' Union (*União Geral de Trabalhores*). The gaps in coverage are largely in personal and other services, and in public administration where, despite centralized negotiations between the government and the trade unions, wages are decided upon unilaterally by the government. The wages of employees in publicly-controlled companies, such as public transportation and the postal service, are collectively bargained in the normal way.

The industry-level or sectoral agreements may cover a range of industry-specific occupations but as the system does not rule out parallelism or overlapping collective agreements a single enterprise may be covered by two or more agreements depending on the union affiliation of the workers (although as a practical matter the content of most of the agreements is similar, the respective tables of wages tending to be the same). The situation may be further stratified if the firm in question straddles more than one line of economic activity, thereby belonging to one or more employer associations. As a result of fragmentation, therefore, several agreements may coexist for the same region, occupation, and firm. Horizontal or occupation-based agreements are also possible, although they are infrequent largely because the law gives precedence to vertical sectoral agreements many of which are signed by a large number of primary unions that may include occupation-based unions.

Portuguese collective agreements are at once both extensive and general. They are extensive insofar as they cover many categories of worker. They are general in that they set only minimum conditions of which the most important is the base level monthly wage. Other terms and conditions most frequently covered are working time, night work, overtime, shift rates, and additional social benefits (see Addison *et al*. 2015). The focus is upon wage floors rather than anticipated wage growth that in in some centralized bargaining regimes such as Sweden have been incorporated directly into sectoral agreements. In a typical year, about 300 agreements are in place, determining around 30,000 wage floors for the corresponding job titles or professional categories (*Categorias Profissionais*), one consequence of which is that employers in principle have freedom of manoeuvre to tailor remuneration to their prevailing economic circumstances. (On the determinants of the contractual wage and the *wage cushion*, or difference between actual wages and the contractual wage set for each worker category, see Cardoso and Portugal 2005.)

Until recently, it has been the case that Portuguese collective agreements remain in place until a new agreement is signed. This important feature of collective agreements is statutory, as in Spain,

whereas in Italy it is established by collective agreement. Coupled with the *favor laboris* principle that new agreements should yield more favourable conditions that those they are replacing,[1] this provision has meant that collective agreements have tended to be revised regularly only insofar as wages are concerned, their other terms and conditions often being left untouched for many years. Recent changes in the labour code mean that collective agreements can now expire if they are not renewed. Although more sweeping changes had been envisaged under the labour code of 2003, the status quo ante until late 2014 was as follows. Collective agreements expired five years after they had last been agreed, or five years after one of the parties had indicated its intention to renegotiate their terms and conditions. That said, the collective agreement would continue to apply for at least 18 months after this, to allow negotiations to take place. Indeed, either of the parties had a period of 12 months during which to request the appointment of an arbitrator to draw up new terms and conditions. New rules for the extended validity period (*sobrevigência*) of collective agreements came into force on 1 September 2014, under the seventh amendment to the 2009 labour code. Specifically, the expiry period was reduced from five years to three years, and the period of continuation upon expiry reduced from 18 months to 12 months. In addition, whenever there is an interruption of negotiations, including conciliation, mediation or voluntary arbitration for more than 30 days, the period of 'survival' is suspended and the period of negotiation with suspension cannot exceed 18 months.[2]

The most potent mechanism shaping the formation of wages has traditionally been the systematic generalization via extension ordinances or *Portarias de Extensão* of industry-wide agreements (and occasionally ACTs) by the Ministry of Employment, following a request from either or both of the parties to the agreement. (Voluntary extensions are also common, while employers who sign an agreement with a trade union(s) usually extend its application to the entire workforce, irrespective of the worker's union status.) The upshot of this near automatic procedure is that even agreements reached by trade unions and employers' associations with very low representation have had a strong impact in setting wage floors. Roughly 70 to 80 per cent of the labour force benefit from collective agreements without being members of the signatory organizations. Finally, in the absence of one of the representatives, or in the presence of strategic delays in negotiations/refusals to negotiate, the Ministry of Employment can regulate the sector directly through an Ordinance of Working Conditions, or *Portarias de Condições de Trabalho.* (An arbitration process, either mandatory or voluntary, may be set in motion to unfreeze 'blockages'.) The extension mechanism in conjunction with the large number of job titles set down in the typical sectoral agreement together explain the 30,000 (informal) minimum wages referred to by Martin (2014b). Observe that among the firmament of European extension arrangements, or their functional equivalents, those in Portugal, Spain, Greece, and Italy have traditionally been among the most far reaching (Visser 2013: Table 4).

In addition to the extension procedure, wage floors are also set under national minimum wage machinery, set up in 1974. The minimum wage can exceed that set under sectoral bargaining. This guaranteed monthly minimum wage (*Retribuição Mínima Mensal Garantida* or RMMG) was virtually stagnant in real terms between 2002 and 2006, leading to an agreement between the social partners (government, the trade union confederations, and the employers' confederation) in 2006 allowing for an increase of almost 30 per cent, to be phased in over five years and setting a medium-term target value €500 by 2011. It has been estimated that the share of minimum wage earners among full-time workers aged 18 to 61 years rose dramatically from 6.7 per cent of total employment in 2006 to 16.6 per cent in 2010 (Carneiro *et al*. 2012: 451).

Both systems of minimum wages – nation-wide and collectively bargained/extended – were disrupted by the economic crisis of 2011/12. As part of the *Memorandum of Understanding*[3] concluded between the Portuguese government and *Troika* in May 2011 it was agreed among other things that the procedures for extending collective agreements would be changed, even prior to which the government committed to restrict the extension of collective agreements.[4] In October 2012 the government announced new criteria for the administrative extension of collective agreements taking into account the representativeness of the negotiating organizations and the implication of such extension for non-affiliated firms. Most importantly, agreements could only be extended if at least one union and one employers' organization requested it and the wider signatory organizations employed more than one-half of the employees in the relevant industry. However, in June 2014 this Resolution was modified: by way of dilution, extensions were exempted from the 50 per cent rule if more than 30 per cent of firms affiliated to the employer association consisted of micro, small, and medium-sized companies (employing up to 250 employees). As far as the national minimum wage was concerned, the *Memorandum* proposed to make any increase in the minimum wage conditional on economic and labour market developments. The minimum wage was duly frozen and in 2012 and 2013 it stood at the level of 2011 (viz. €485). It was not uprated to €505 – a little above the medium-term target – until October 2014. However, with effect from January 1, 2016, the minimum wage was raised to €530.

The economic crisis and the response of the public authorities to it are credited with some fairly dramatic changes in Portuguese collective bargaining. In particular, the decline in the number of Portuguese collective agreements and worker coverage have been the subject of several critical European Observatory of Working Life reports (e.g. EurWORK 2014), while the topic of so-called radical decentralization affecting all crisis EU nations and leading to the *destruction* of national collective bargaining systems has been identified as a key paradigm shift by Schulten (2013).

Nevertheless, in addition to the reversals noted above, there has been little evolution in *atypical collective agreements*, by which is meant the ability of works councils and other representative bodies of

workers at plant level to conclude collective agreements at the workplace. The current legal position is that works councils can negotiate at this level in firms with a minimum of 150 employees but only in circumstances where this is authorized by the trade union. The latter provision reflects the constitutional provision that competence to concude collective agreements is the exclusive preserve of the trade unions. Reform proposals favoring so-called *Acordo Geral de Empresa* that can be signed independently of the trade union had to be abandoned in the face of strong union opposition in the Standing Council for Social Concertation (*Comissão Permanente da Concertação Social* or CPCS).[5]

3. The datasets

The main dataset used in the present inquiry is the *Relatório Único* for the four years 2010 through 2013. The data are collected through a mandatory questionnaire to every establishment with at least one wage earner, and the survey is conducted by the Office for Strategy and Planning in the Ministry of Employment, Solidarity and Social Security. The *Relatório Único* replicates its precursor the *Quadros de Pessoal* (Personnel Tables) other than in one important respect. The new dataset for the first time contains a question on unionism, asking of the manager respondent: "Indicate the number of workers for whom you have knowledge of their membership in a union (because they are union officials, because you deduct membership dues from their salary, or because the worker informed you about his/her membership so as to determine which particular collective regulation is applicable to their case)." This information allows the researcher to measure the union density of the firm, rather than establish the union membership or otherwise of individual workers. It is likely to provide a more objective and consistent measure of unionism than union sources because of the pecuniary and legal underpinning of the survey question – the only source of understatement arising where the employee wishes to hide his or her union affiliation from the employer. We note parenthetically that there is a large gap between the figures provided by the unions and the union density estimates of the government (see http://www.worker-participation.eu/National-Industrial-Relations/Countries/Portugal/Trade-Unions).

Data are given on each establishment (its location, economic activity, employment, number of temporary employees, legal structure, and sales) and for each of its employees (their gender, age, education, skill, occupation, tenure, earnings, and work schedule). The earnings data are both detailed and accurate. The information pertains to the gross wage for normal hours of pay (or *base wage*) together with both regular and irregular benefits, overtime pay and hours, and wage bargaining mechanism/type of contract. The full-wage, or total compensation, is the wage variable used in estimating the union wage gap or premium. The accuracy of this information is assured by its administrative nature and the fact that by law the wage and all other information in the survey has to be made publicly available at the establishment.

The restrictions imposed on the raw dataset were as follows. First, we limited our analysis to full-time workers in mainland Portugal. Part-timers are excluded primarily because trade unions and employers bargain over full-time wages. Furthermore, their inclusion would require us explicitly to model the labour supply decision over the number of hours worked. Second, we excluded workers from agriculture, forestry, and fishing as well as those in public administration whose wages are not collectively bargained. Third, individuals aged under 16 years and above 65 years at survey date were excluded. (The former individuals are those in reserved professions, such as theatre and sports activities, otherwise exempted from the legal minimum working age, while the latter individuals constitute another special group of those above retirement age.) The final restriction was that the worker's monthly wage had to be at least 80 per cent of the mandatory minimum wage, which here corresponds to the lowest admissible wage for apprentices. Our final sample for the density computations comprises some 612,336 year-firm observations, which correspond to some 301,724 firms matched by identifying number, representing 2,758,197 individuals matched by identifying number, gender, and year of birth, and 48,913 jobs matched by code of the collective agreement occupational category.

Computation of the union wage premium will also use data from the *Relatório Único*, the sample now comprising 2,697,114 workers, 298,185 firms, and 48,222 job-titles. However, our analysis of downward nominal wage rigidity in high and low inflation regimes, in which we effect comparisons between matched samples of workers across the years 1985, 2009, and 2013, will perforce draw on the *Quadros de Pessoal* for the former two years.

The third principal dataset used in this inquiry lists all *new* agreements and extensions of collective agreements between January 2008 and December 2014, and is maintained by the Ministry of Economics from the texts of both the individual collective agreements and extension orders. We take Martins' (2014b: Table 2) estimates based on these data as indicators of the *flow* of collective agreements, and update and supplement this information with data from union and official sources, respectively the UGT (2014) and BTE (*Boletim do Trabalho e Emprego*) Online (2015), on the flow of agreements and extension ordinances. These data will be juxtaposed against stock data from the *Relatório Único* (and the *Quadros de Pessoal*) to examine the validity of the assertion that profound changes in the numbers of extensions and new agreements imply sharp falls in coverage.

4. Modelling

We address in turn the models used to estimate union density and the union wage gap. The context of both constructs are expanded upon in section 6. Given that the remaining components of our analysis are

based on simple tabulations of collective agreements/extensions and presentation of nominal wage change distributions, they too are not addressed here.

To estimate the determinants of firm unionism we deploy a count regression model and, in recognition that many firms in the sample do not have any unionized workers (287,056 firms, or 95.1 per cent of the total), we elect to use a zero inflated count model. More specifically, since the non-zero observations may be over-dispersed, we use a zero inflated negative binomial model (ZINB) after Lee *et al*. (2001).

The zero inflated negative binomial model can be written:

$$\Pr(\mathrm{y}|\mathrm{x}) = \begin{cases} \rho + (1-\rho)\mathrm{e}^{-\lambda(\mathrm{x},\mathrm{u})} & \text{for } \mathrm{y} = 0 \\ (1-\rho)\frac{\mathrm{e}^{-\lambda(\mathrm{x},\mathrm{u})}\lambda(\mathrm{x},\mathrm{u})^{\mathrm{y}}}{\mathrm{y}!} & \text{for } \mathrm{y} \geq 1 \end{cases},$$

where y denotes the count of the expected number of union workers at the firm, x are the covariates influencing unionization, u is an error term, and $\rho \in [0, 1]$ is a zero-inflated parameter obtained through a simple logit parameterization:

$$\rho = \frac{\exp(\tau)}{1+\exp(\tau)}.$$

Observed data often display empirical variances larger than their means, implying the existence of an "overdispersion" problem. This may reflect the existence of firm unobserved heterogeneity. The problem can be circumvented by adding the random variable u to the vector of explanatory variables. This will allow for the expected value to differ from the variance. But conditional on the error u, y follows a Poisson distribution. If we assume that u follows a gamma distribution, then the unconditional distribution of y is a negative binomial. In other words, $\lambda(x, u) = \exp(x'\beta + \log u)$, with u following a gamma distribution, and where $E(u|x) = 1$ and $Var(u|x) = 1/\delta$. Furthermore, we included an artificial covariate, log N, reflecting the size of the workforce to account for exposure to the "risk" of being unionized. That is, $\lambda(x, u) = \exp(x'\beta + \log N + \log u)$, where N is number of workers in the firm. Proceeding this way, the specification lends itself to a convenient interpretation as a fractional regression model.

The dependent variable in the model is the number of unionized workers at the firm. The independent variables in the model are (average) worker characteristics and firm characteristics. The former comprise a continuous measure in age, and the proportions of females, foreign nationals, and individuals in various educational categories. The firm characteristics are the share of public equity, and dummies for establishment size (6), industry (30) and time because of our use of all waves of the *Relatório Único*. Our second model links union density to the union wage gap. It takes into account the results given by Addison *et al.* (2015) showing that it is unwise to assume that union density

impacts linearly on (log) wages. That study seeks to decompose the union wage gap in terms of the contributions of worker, firm, and job title heterogeneity in the framework of a high-dimensional fixed-effects regression model. Its main finding is that the wage gap largely reflects the allocation of workers to firms with distinct wage policies due to the heterogenous presence of unions at firm/sector level rather than unobserved worker quality or differences among job titles, and we will take this interpretation as the main driving force behind the union wage gap. Observe that the union wage gap in this model – that is, prior to the decomposition exercise – gives the cet. par. average difference in wages at a given firm resulting from the specific union density rate of that firm via a two-stage estimation. Essentially the first step of the procedure is a wage regression with standard controls but a separate fixed effect corresponding to each level of union density in the database. That is, there is a different wage intercept capturing the impact of the firm's particular density rate on a worker's compensation. In a second step, a kernel regression is used to smooth these fixed effects. The outcome of this exercise shows that the impact of union density is highly nonlinear. Specifically, it is miniscule up to 20 per cent density but increases steeply thereafter, reaching a maximum at around 70 per cent density.

As an approximation to the flexible functional form of the full model, the worker earnings function that we deploy here substitutes four union dummies (and the omitted category) for the 4,828 individual union fixed effects. Our estimating equation is thus specified as:

$$\log w_{ift} = \beta x_{ift} + \sum_{k=1}^{4} \eta_k ud_{ft}^{k} + \varepsilon_{ift} \ ,$$

where $\log w_{ift}$ is the log of monthly gross compensation for the individual worker *i* in firm *f* at year *t* and, in addition to the union dummies, x_{ift} is a vector of explanatory variables and ε_{ift} denotes an idiosyncratic error term.

The four union density dummies (ud_{ft}^{k}) are as follows: greater than zero but less than or equal to 25 per cent, greater than 25 per cent but less than or equal to 50 per cent, greater than 50 per cent but less than or equal to 75 per cent; and greater than 75 per cent. The base controls to be used at the level of the worker are age, age squared, tenure, tenure squared and dummy variables for gender, and education level; for the firm, they are industry and size dummies. In addition, there are time dummies.

5. Introductory descriptives

We preface our cet. par. findings and estimates of the stock of workers covered by collective bargaining instruments with some aggregate statistics on union density and mostly secondary flow data on worker coverage by collective agreement. Table 1 provides three sets of estimates of trade union density covering the period 1980 to 2013. The first are taken from Blanchflower and Bryson (2003: 211) and point to a

sharp reduction (a little under 50 per cent) in membership over the final two decades of the last century. The next set of estimates are broadly comparable in construction and are taken from the OECD (2015). They now show a much reduced rate of decline over the first decade of the present century and even a slight uptick as of 2012. As noted earlier, our own estimates shown in the last row of the table rely on administrative data from the *Relatório Único* – rather than union sources – and exclude the public sector if not public enterprises. Perhaps more important than the difference between our data and those of the OECD, only partly occasioned by this exclusion,[6] is the broad stability of private sector union density over the last four years for which the data are available. That is, union density held at a little above 10 per cent in the face of economic crisis and retrenchment.

(Table 1 near here)

Table 2 plots the *flow* of collective agreements and their coverage from 2008 to 2014. This is where the real drama unfolds. Between 2008 and 2013 there occurred a precipitous fall in the number of new sectoral agreements (84.3%), multi-company agreements (33.3%), and single-firm agreements (49.5%). albeit with indications of an uptick in the coverage of all types of new agreement as well as some churning in agreement type in 2014. On aggregate, the number of workers covered by new collective agreements fell from 1,894,846 to 242, 676 (or by 87.2%) between 2008 and 2013, followed by a very modest increase of 1.5 per cent in the combined flows in 2014. The last column of the table reveals an even more dramatic fall off in the number of extension agreements of 93.1 (90.1) per cent between 2008 and 2013 (2014). The table does not give the number of workers affected by these extension agreements as the authorities do not collect information on the number of affiliated workers in each signatory union and the universe of workers potentially covered by a given bargained instrument of collective bargaining. As a result, the available information simply reports the workers covered by each instrument independently of its origin, either by affiliation or extension.

(Table 2 near here)

The latter data have been interpreted as indicating a major rupture of the industrial relations system in Portugal that has excluded large numbers of workers from collective agreements. But the popular notion that the Portuguese reforms have resulted in a major overall reduction in the coverage of collective agreements is to confuse flows with stocks, namely the number of workers covered by new agreements and extension orders and those covered by *existing* agreements and ordinances. In short, Table 2, dealing with flows, has to be considered alongside stock data. To anticipate our subsequent findings, we shall report that the number of workers covered by collective agreements has, in common with union density, evinced broad stability in recent years and that there is little evidence in the flow data to herald the disappearance of collective bargaining.

6. Main findings on union density, the wage gap, and stock data on coverage

Table 3 presents the regression estimates from the negative binomial model discussed in section 4. Observe firstly the positive relationship between average age and the fraction of unionized workers in the firm, indicating the increased propensity on the part of the worker to become unionized with age. The negative association between membership and nationality (here the share of foreign workers) is also familiar. Less anticipated is positive association between the share of females in the firm and union density, although it is only marginally significant. (The coefficient estimate of 0.0710 means that increasing the share of females by 10 percentage points increases union density by 0.07 per cent.) Evidently, traditional gender-based supply and demand have become moot with the increased labour market exposure of females. For its part education is strongly associated with union membership: the relationship is near monotonic, the omitted category being those with no schooling.

(Table 3 near here)

Perhaps the clearest association of all is the monotonic relation between firm size and union membership, most likely reflecting scale economies to unions in the supply of union services, as well as potential collective voice benefits. Note, too, the sharply higher membership rates in companies with greater public equity. It is frequently argued that the 'dispersed' nature of property rights in such circumstances together with implicit guidelines on collective bargaining operating in public administration (not included in the sample), where government assumes the position of employer, provides encouragement to higher union density in publicly-owned firms.

Finally, among the sectoral dummies (not separately identified in the table), the cases of Finance and Insurance Services and Transportation and Storage Services are important. The former branch is the sole private sector industry where the labour unions offer a system of private healthcare benefits to workers. (Note the analogy here with modern cross-country union studies linking the presence of a Ghent system to the growth in union density and its attenuation – as a result of the emergence of independent unemployment insurance funds providing such insurance without requiring union membership – to the decline in union membership/density; see, respectively, Schnabel 2013; Böckerman and Uusitalo 2006). The latter industry is well known for its inelastic demand, small share of labour costs in total costs, and pervasive featherbedding. Other important sectors are Oil Refined Products and Electricity and Water, oligopolistic sectors with an historical prominence of public equity, which despite its erosion under successive privatization schemes likely has legacy effects on collective bargaining arrangements.

We turn next to the association between union density and the union wage gap, using the modified (first-stage) procedure described earlier, in which four density dummies substitute for individual union fixed effects in each worker's wage equation. Table 4 summarizes the model in presenting

regression coefficients for the density dummies ([>0%, ≤25%]; [>25%, ≤50%]; [>50%, ≤75%]; and [>75%]), the omitted dummy being union density = 0%. Results from four separate specifications are reported. The first contains just the union density dummies; the second adds a set of worker controls; the third adds firm controls; and the fourth includes a single additional control for occupation. It will be recalled that in addition to the occupational control, the worker controls consist of age and age squared, tenure and tenure squared, and dummy variables for gender and educational level while the firm arguments are industry and size dummies

(Table 4 near here)

As can be seen from Table 4, once density climbs above one-quarter of the firm's workforce, the union premium is sizeable and survives the incorporation of worker, firm, and occupational controls. For example, absent controls, in those workplaces where more than 75 per cent of the workforce is unionized the average value of the premium is 61.11 per cent. With the addition of worker and firm controls, the corresponding values are less at 34.0 and 14.95 per cent, respectively, indicating that union workers are more highly educated and the importance of a firm's location and size. Finally, adding in occupation controls causes a no appreciable change in the premium, indicating that for this dataset at least the controversy over the inclusion of the occupational controls in augmented Mincerian wage equations is perhaps overdrawn.

These estimates of the union premium for Portugal are really rather substantial. First of all, they exceed findings based on individual wage and membership data reported for Britain and even the United States. For example, Blanchflower and Bryson's (2003: 210) cross-country estimates point to a union wage gap for Portugal of 19.6 per cent in 1998/99, well before the onset of economic crisis. This is not to downplay the difficulties involved in estimating the union premium, such as misclassification and selection biases in conventional studies using membership data or to minimize the problems arising in comparing estimates in which the unit of observation is typically the individual rather than as here the firm. Indeed, where most workers are covered by collective agreements focusing on union membership effects is not particularly valuable and investigation of union wage effects should instead address the question of the effects of collective bargaining arrangements on wages. This emphasis is perhaps clearest in case of German research where studies have investigated the impact of collective agreements on the hourly wage of an average worker employed in an average firm, distinguished between individual worker coverage and firm-level shares of covered employees, sought to estimate the causal effect of sectoral collective bargaining on the wage structure, and provided selectivity-adjusted estimates controlling for the nonrandom selection of workers with unobservable skills into the various contractual regimes (see the summary in Addison *et al.* 2014: 128-32). But there is nothing in this literature to suggest that *contemporaneous* estimates of the Portuguese wage gap are other than very substantial.

Recently, however, some plant-based estimates of the union wage gap more in the spirit of those provided here have been reported for the United States. In particular, DiNardo and Lee (2004) use a regression discontinuity design to estimate the effects of being in a unionized environment relative to a nonunionized environment, using the narrow margin between union success and failure in representation elections. Evidence of a discontinuous relationship between the vote share and wages is deemed to be the true effect of unionization by eliminating any confounding election and omitted variable biases. DiNardo and Lee find small and mostly negative union effects. As a practical matter, however, this methodology captures only union effects at the margin. This is made clear in an events study analysis by Lee and Mas (2012) of the effect of new unionization on publicy-traded firms' equity values, 1961-1999. The authors report substantial losses in a firm's market value following a union election of $40,500 per unionized worker, which value can be equated with a union premium of around 10 per cent. In addition to addressing the issue of how equity values respond to certification elections, Lee and Mas also estimate events study models for elections with varying degrees of union support. Their results indicate a clear negative association between abnormal returns and vote share. Although there is no discernible discontinuity at the 50 per cent union vote threshold, a greater than 60 per cent share for example is associated with negative cumulative average returns in the range 20-30 per cent while a formal discontinuity estimate of union victory is indistinguishable from zero, allowing these findings to be reconciled with the DiNardo-Lee result without vindicating the regression discontinuity design. The conclusion is that our estimates for Portugal are consistent with but continue to exceed U.S. plant-based estimates based on material union victories in representation elections.

Second, our results are obtained in a framework that recognizes, as have other studies (e.g. Bryson 2014), that wage gains are a function of localized bargaining power. But in Portugal there is an additional wrinkle, namely the substantial disparity between the number of unionized workers and the number of workers covered by collective agreements. This disparity varies significantly among industries and sizes of firm. In this context, the generalized use of extension ordinances that extend to the entire sector agreements reached between unions and employer federations with weak or very weak representation is especially problematic. Such unions and employers' federations will likely represent larger firms and better paid workers. These, then, are the likely leaders in the wage updating exercise and the process one of cartelization. And in circumstances where the use of extension regulations serves to erode representation through time, the problem of a misalignment between bargained wages and wages that are feasible is compounded and reflected in higher unemployment. Finally, when adverse economic conditions impede further increase in wages, given low inflation and the need for real wage realignment, and without an ability to pass through wage revisions to the entire sector, the result is bargaining standstill.

As a secondary exercise, we estimated the average union wage gap regression model separately for each year of the 2010-2013 sample period. We failed to detect that the union premium had changed with the severity of the recession, irrespective of the union density interval considered. If anything, the results pointed to a slight increase in the union wage gap over time. While this outcome might suggest that nominal wage rigidity may be stronger in higher union density firms, the more general reading would be that inertia of the wage structure plays a dominant role and that the crisis has yet to produce a major shift in the impact of collective bargaining.

(Table 5 near here)

This narrative returns us to the issue of coverage. In Table 2 we reported the dramatic fall-off in new agreements and new extension ordinances after 2010, drawing on Martins (2014b) *inter al.* Other observers have misleadingly concluded from these data that the changes since 2008 have left a little over 1.5 million workers without coverage and that the decline in collective bargaining has reached crisis point (EurWORK 2014). In Table 5, using data from the *Relatório Único* for 2010-2013 and from the *Quadros de Pessoal* for 2008-2009, we report that the number of workers covered by an existing or new instrument of collective bargaining – either the collective agreement or the extension ordinance based on it – has declined more modestly from 90.5 per cent of all workers in 2008 to 89.2 per cent of all workers in 2013.

(Figure 1 near here)

We supplement the material in Table 5 with information on the component instruments in Figure 1 which also gives information on the total number of workers affected. By way of clarification, the category referred to as 'other' picks up the other non-bargained instruments such as Regulations of Working Conditions and arbitration where the Ministry of Employment, or an independent third party, regulates the sector directly and not just orders that simply enlarge the franchise of a bargained instrument. Clearly, the bulk of extension agreements are assigned here to branch agreements or CCTs. The most notable feature of Figure 1 is the broad-based stability in the coverage of the various types of agreements over the sample period. The contrast with the information contained in Table 2 is sharp. That said, the number of covered workers does appear to have fallen by 562,578 or a little over 20 per cent from 2008 to 2013. Although not contesting that there has been a decline – if not the cataclysmic fall suggested by an incorrect reading of Table 2 – we would caution that some of decline has to do with the changeover from the *Quadros de Pessoal* to the *Relatório Único* in 2010.

The bottom line with respect to coverage is that reports of the death of Portuguese collective bargaining have greatly been exaggerated by outside observers. This interpretation is underscored by the subsequent dilution of the restrictions on extension agreements, noted earlier, and an uptick in their number from 13 in 2014 to 36 in the first 10 months of 2015. We next proceed to offer a different explanation for the decline in new agreements and extension ordinances.

7. Collective bargaining coverage once more (or downward nominal wage rigidity in high and low inflation regimes)

The notable feature of wage setting in recent years, and in particular at the end of our sample period, is the evidence of extreme nominal wage rigidity. This outcome is the result of a conflation of severe economic contraction and a low rate of inflation. In these circumstances, a revealing exercise is to contrast the nominal wage change distribution in 2013 with that of 1985 when another interval of economic recession was accompanied by *high* inflation. We will also identify another recession year – 2009 – that was accompanied by lower inflation to establish whether there is anything anomalous about 2013. The respective wage change distributions (of job stayers) for 1985, 2009, and 2013 are provided in panels (a), (b), and (c) of Figure 2. In each case the inflation rate is given by the solid vertical line. (We focus here on the base wage since this measure is more closely related to the theoretical notion of a negotiated wage rate. Furthermore, it is less subjected to measurement error than other components of labour remuneration.)

(Figure 2 near here)

Beginning with panel (a) of the figure, it can be seen that a tiny proportion (1.4%) of workers faced nominal wage cuts and a somewhat larger share (4.4%) of workers experienced a wage freeze. Although a large majority of workers had nominal wage increases (94.3%), only 18.4 per cent of workers enjoyed real wage increases; the latter being those individuals located in the wage change distribution to the right of the inflation rate (30%) identified by the vertical line. The share of workers located to the right of the vertical line at zero per cent wage change and to the left of the vertical line corresponding to 30 per cent wage change/inflation of 74 per cent, that is, the fraction of worker with nominal wage increases and real wage decreases, provides a rough indication of real wage contractual flexibility facilitated by a high inflation rate. On net, the average decline in real wages was 5.7 per cent in 1985 which was contemporaneous with the stagnation in GDP (0% growth). Concurrently, the unemployment rate was stable at 8.5 per cent.

The drama of *contemporary* wage adjustment is illustrated in panel (c) of the figure. The wage change distribution nearly collapses at zero per cent nominal wage change. Fully 74.5 per cent of workers had nominal wage freezes – an outcome without parallel in other developed nations – and 21.4 per cent nominal wage gains. Only 3.6 per cent of workers experienced real wage cuts: because the inflation rate was negative, even the small share of workers with nominal wage cuts (4.1 per cent) modestly exceeded the proportion with real wage cuts (3.6 %). Overall, real wages rose by 1.2 per cent on average in 2013, while GDP declined by 2.7 per cent. Meantime, the unemployment rate increased somewhat from 15.5 per cent to 16.2 per cent.

There is no indication that these contemporary developments for 2013 are anomalous in low inflation (actually, deflationary) regimes. Panel (b) of Figure 2 illustrates the corresponding situation in 2009 when the inflation rate was -1.5 per cent as compared with -0.3 per cent in 2013. As can be seen, with higher deflation, almost all workers now enjoyed a real wage increase (97.9%), despite the large fraction of nominal wage freezes (36.5%). Nominal wage cuts were experienced by just 2.5 per cent of workers, some of whom nevertheless saw an increase in real wages. The overall increase in real wages was 4.8 per cent. Meantime, unemployment rose from 7.6 per cent to 9.4 per cent, while GDP declined by 3.2 per cent.

In low inflation regimes, the margin for downward real wage adjustment that would not imply nominal wage cuts is highly circumscribed.[7] The problem of real wage adjustment is of course exacerbated in deflationary times since even material cuts in nominal wages may be consistent with real wage increases. In both sets of circumstances, a large fraction of workers may be expected to experience nominal wage freezes, which is what we observe in Portugal. Apart from this perfect storm, as it were, other reasons why nominal wages have been frozen have been discussed earlier. They reflect the mechanisms that generate automatic nominal wages increases, namely a sharp decline in new collective agreements, the legal limits placed on the extension of such agreements, and a freeze on minimum wage hikes. In short, contemporary Portugal is properly characterized by aggravated nominal wage rigidity. The consequences are presumably to be felt in the future. They include job destruction since the incidence of wage freezes is associated with lower hiring rates and more intensive firm closures (see Carneiro *et al*. 2014), and pent-up wage deflation (or repressed deflation) because firms that are forced to avoid nominal wage cuts will tend to delay future wage increases.[8]

It could be argued that downward nominal wage rigidity may act as a mechanism that, during an economic recession, would smooth income and consumption fluctuations and thereby attenuate the impact of the slowdown on the economy. In the absence of a structural macroeconomic model, however, it is not possible to properly disentangle this stabilization effect from the labour demand effect mentioned above. Be that as it may, the dramatic decline of employment during the Portuguese adjustment program seems to suggest that the wage rigidity channel played a very significant role in driving job destruction.

8. Conclusions

This inquiry has uncovered what to many will be some surprising facts about collective bargaining in Portugal. This is largely the result of our being able to use a new dataset that contains reliable data on union membership in the private sector. We provide not merely the first accurate estimates of union density in Portugal, 2010-2013, but also demonstrate evidence of a sizeable density-related union

premium in an industrial relations regime of near-universal coverage. As with other such estimates, however, causality remains an issue because unions may locate in firms with more generous compensation policies or that are more 'permeable' to union wage demands.

Finally, using the same dataset, despite an unambiguous shift in bargaining momentum that has led to far fewer collective agreements and extensions in the wake of the economic crisis, we report that coverage by collective agreement is largely unaffected once one accounts for the *stock* of existing contracts. Although the bargaining milieu has changed, we argue that this is best seen as a consequence of a low inflation regime in conjunction with a severe economic downturn. Whereas in the past the wage setting system was largely driven by what has been termed 'upward nominal wage rigidity', the present environment is one in which downward nominal wage rigidity has become truly binding.

In short, we have yet to observe a sea-change in Portuguese collective bargaining practice. This is of course not to deny that since the 1990s and during the years preceding the economic crisis there have been changes in the law and industrial relations in Portugal, or that further changes have been made since then in response to the euro crisis with the implementation of the Memorandum of Understanding. Indeed, we have addressed number of these changes. Rather, our point would be that the effect of these changes have been exaggerated by certain influential observers in their diagnosis of the deregulation in the institutional framework. We refer here in particular to the claim that restrictions on the life of expired collective agreements and the extension principle have involved a significant reduction in the number of workers benefiting from and covered by collective agreements. This assertion is to confuse changes in flows with changes in stocks. That said, the decreases in employment that are implied by maintenance of the status quo may be expected increasingly to impact union density, in which circumstance free riding may become more of an issue to unions than heretofore, leading them to be less supportive of the extension mechanism and to focus instead on those groups for whom the unemployment risk is already attenuated. Assuming that unions are able to push for higher wages, therefore, serious declines in coverage may ultimately result.

In the interstices, the main lesson to be carried over from the Portuguese experience charted here to other European economies is that low inflation regimes are likely to lead not only to less frequent wage changes but also to inadequate real wage adjustments if the latter imply nominal wage cuts. Although observers have pointed to a pattern of 'unilateral state interference' in these circumstances (Molina 2014: 21), a more positive approach might be a policy of fiscal devaluation. That is, a reduction in social security contributions financed through higher consumption taxes may provide a practical way of adjusting labour costs in the short run without a continued haemorrhaging of employment.

Acknowledgements

We thank Pedro Martins and Fernando Martins for generously providing data and Lucena Vieira for outstanding computational assistance.

Notes

1. For changes in the law on the suspension of the norms of collective agreements and of labour contracts as well as the terms of the suspension of collective bargaining in situations of company crisis, see Palma Ramalho (2013: 9) and Martins (2014a: 26), respectively.

2. Since contracts can now lapse or lose their validity, it is of interest to determine the vintage of Portuguese contracts. For the year 2009, the frequency and per cent of all workers with contacts of up to 10 years in length were as follows:-

2000	41,192	1.93%
2001	46,995	2.21%
2002	64,729	3.04%
2003	135,502	6.36%
2004	87,629	4.11%
2005	107,979	5.07%
2006	157,031	7.37%
2007	170,233	7.99%
2008	496,709	23.32%
2009	636,396	29.89%

In other words, some 8.71% of all workers were employed under contacts that were more than 10 years old.

3. The terms of the *Memorandum* are available at http://economico.sapo.pt/public/uploads/memorandotroika_04-05-2011.pdf.

4. Other changes under the *Memorandum* included revisions to the unemployment insurance system in terms of the level and duration of benefits, a diminution in employment protection via a reduction in severance payments and the relaxation of protection against individual dismissals, and an expansion of flexible working time arrangements in the form of working time accounts at individual and plant level.

5. Space constraints preclude other than passing reference to the process of social concertation/social dialogue. Suffice it to say here that although the last pact establishing reference values for nation-wide wage increases was in 1996, a number of agreements have been reached in the tripartite CPCS since 1966 of which the 2006 social accord on minimum wages is a practical example. Moreover, many of the proposals in the *Memorandum* relied heavily on another tripartite agreement in March 2011, while some subsequent labour market new reforms had a basis in another such agreement in January 2012. By the same token, modern concertation has been practised without the participation of the largest trade union.

6. Otherwise consistent post-2000 data provided by Visser (2015) suggest lower density rates of 18.3 and 18.5 per cent in 2011 and 2012, respectively.

7. We might also note the situation in 2012 when inflation was a modest 2.1 per cent and hence closer to the 2013 (and 1985) situation than that of 2009. Here, roughly the same share of workers experienced wage freezes as in 2013 (76%) although fully 86 per cent of workers now experienced real wage decreases, much as in 1985. This was an interval of rapidly rising unemployment (up from 12.7% in 2011 to 15.5% in 2012) and sharply lower GDP (-3%).

8. According to Nunes (2016: 18), in 2013 the level of wage freezes in the Portuguese labour market prevented real wages from declining by 6 to 7 per cent.

References

Addison, J. T. (2015). 'Collective Bargaining Sytems and Macroeconomic and Microeconomic Flexibility: The Quest for Appropriate Institutional Forms'. IZA Discussion Paper No. 9587. Bonn: Institute for the Study of Labor.

_____, Portugal, P. and Vilares, H. (2015). 'Sources of the Union Wage Gap: Results from High-Dimensional Fixed Effects Regression Models'. IZA Discussion Paper No. 9221. Bonn: Institute for the Study of Labor.

_____, Teixeira, P., Evers, K. and Bellmann, L. (2014). 'Indicative and updated estimates of the collective bargaining premium in Germany'. *Industrial Relations*, 53 (1): 125-56.

Blanchard, O. (2007). 'Adjustment within the Euro: The difficult case of Portugal'. *Portuguese Economic Journal*, 6 (1): 1-21.

Blanchflower, D. and Bryson, A. (2003). 'Changes over time in union relative wage effects in the U.K. and the U.S.A. revisited." In J.T. Addison and C. Schnabel (eds.), *International Handbook of Trade Unions*. Cheltenham and Northampton: Edward Elgar, pp. 197-245.

Böckerman, P. and Uusitalo, R. (2006). 'Erosion of the Ghent system and union membership decline: Lessons from Finland'. *British Journal of Industrial Relations*, 44 (2): 283-303.

Bryson, A. (2014). 'Union Wage Effects.What are the Economic Implications of Union Wage Bargaining for Workers, Firms, and Society?' *IZA World of Labor*. doi: 10.15185/izawol.35.

BTE (Boletim do Trabalho e Emprego) Online. (2015). Lisbon: Gabinete de Estratégia e Planeamento, Ministro do Trabalho, Solidariedade e Segurança Social. Available at: te.gep.msess.gov.pt/pesquisa_avancada.php.

Cardoso, A. R. and Portugal, P. (2005). 'Contractual wages and the wage cushion under different bargaining settings'. *Journal of Labor Economics*, 23 (4): 875-902.

Carneiro, A., Guimarães, P., and Portugal, P. (2012). 'Real wages, and the business cycle: Accounting for worker, firm, and job heterogeneity'. *American Economic Journal*: *Macroeconomics*, 4 (2): 133-52.

_____, Portugal P. and Varejão, J. (2014). 'Catastrophic job destruction'. *Journal of Macroeconomics*, 39 (B): 444-57.

Cruces, J., Álvarez, A., Trillo, F. and Leonardi, S. (2015). "Impact of the euro crisis on wages and collective bargaining in southern Europe – a comparison of Italy, Portugal and Spain'. In G. Van Gyes and T. Schulten (eds.), *Wage Bargaining under the New European Economic Governance. Alternative Strategies for Inclusive Growth*. Brussels: European Trade Union Institute (ETUI), pp. 93-137.

Dias, J. and Cerdeira, M. C. (2011). 'Recent trends in wages and collective bargaining in Portugal'. *Sociologia On Line*, 2: 345-67. Available at: http://revista.aps.pt/cms/files/artigos_pdf/ART4dc40dc2ca2dd.pdf.

DiNardo, J. and Lee, D. S. (2004). 'Economic impacts of new unionization on private sector employers: 1984-2001'. *Quarterly Journal of Economics*, 119 (4): 1383–1441.

EurWORK. (2014). 'Portugal: Decline in Collective Bargaining Reaches Critical Point'. Dublin: European Foundation for the Improvement of Living and Working Conditions'. Available at:

http://www.eurofound.europa.eu/observatories/eurwork/articles/working-conditions-industrial-relations/portugal-decline-in-collective-bargaining-reaches-critical-point.

Guimarães, P., Martins, F. and Portugal, P. (2014). 'Upward Nominal Wage Rigidity'. Mimeo, Banco de Portugal. Available at: https://www.bundesbank.de/Redaktion/EN/Downloads/Bundesbank/Research_Centre/Conferences/2014/2014_06_12_eltville_session5_paper.pdf?__blob=publicationFile.

Lee, D. S. and Mas, A. (2012). 'Long-run impacts of unions on firms: New evidence from financial markets, 1961-1999'. *Quarterly Journal of Economics*, 127 (1): 333-78.

Lee, A. H., Wang, K. and Yau, K. K. W. (2002). 'Analysis of zero-inflated Poisson data incorporating extent of exposure'. *Biometrical Journal*, 43 (8): 963-75.

Martins, D.C. (2014a). 'Labour Law in Portugal between 2011 and 2014'. Unpublished paper. Available at: http://islssl.org/wp-content/uploads/2014/08/Portuguese-National-Report.pdf.

Martins, P. S. (2014b). '30,000 Minimum Wages: The Economic Effects of Collective Bargaining Extensions'. IZA Discussion Paper No. 8540. Bonn: Institute for the Study of Labor.

Nunes, A. (2016). 'Wage Adjustments under Extreme Downward Nominal Wage Rigidity'. Mimeo, Nova School of Business and Economics. Available at: https://run.unl.pt/bitstream/10362/16590/1/Nunes_2016.pdf.

Molina, O. (2014). 'Self-regulation and the state in industrial relations in southern Europe. Back to the future?' *European Journal of Industrial Relations*, 20 (1): 21-36.

OECD. (2015). 'Trade Union Density'. *OECD StatExtracts*. Paris: Organisation for Economic Co-operation and Development. Available at: http://stats.oecd.org/Index.aspx?DataSetCode=UN_DEN.

Palma Ramalho, M. R. (2013). 'Portuguese Labour Law and Industrial Relations during the Crisis'. ILC Governance and Tripartism Department Working Paper No. 54. Geneva: International Labour Office.

Available at: http://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---dialogue/documents/publication/wcms_232798.pdf.

Schnabel, C. (2013). 'Union membership and density: Some (not so) stylized facts and challenges'. *European Journal of Industrial Relations*, 19 (3): 255-72.

Schulten, T. (2013). 'The Troika and Multi-employer Bargaining. How European Pressure is Destroying National Collective Bargaining Systems'. Global Labour Column No. 139. Available at: /fileadmin/GLU_Column/papers/no_139_Schulten.pdf.

UGT. (2014). *Relatório Anual da Negociaçao Colectiva 2014.* Lisbon: União Geral de Trabalhores. Available at: https://www.ugt.pt/NC_relatorioanual2014.pdf.

Visser, J. (2013). 'Wage Bargaining Institutions – from Crisis to Crisis'. Economic Papers 488, *European Economy*. Brussels: European Commission-General for Economic and Financial Affairs.

Visser, J. (2015). 'ICTWSS: Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts in 51 Countries between 1960 and 2014'. Version 5.0. Amsterdam: Amsterdam Institute for Advanced Labour Studies. Available at: http://www.uva-aias.net/2088.

TABLE 1

Trade Union Density in Portugal, 1980 – 2013

Study	Year										
	1980	1990	1995	1998	2000	2005	2008	2010	2011	2012	2013
Blanchflower and Bryson (2003)	52	40	30	25	-	-	-	-	-	-	-
OECD (2015)[a]	-	-	-	-	21.6	21.3	20.5	19.3	19.5	20.5	-
This study[b]	-	-	-	-	-	-	-	10.8	10.2	10.4	10.1

Notes: [a]Values extracted on 4 March 2015 from *OECD.StatExtracts* (available at http://stats.oecd.org/Index.aspx?DataSetCode=UN_DEN).
[b]Computed from the *Relatório Único* 2010 - 2013.

TABLE 2

The Flow of Collective Agreements by Type, and Extensions, 2008 - 2014

Year	Type of Collective Agreement				Extension (PEs)
	Sectoral (CCTs)	Multi-Employer (ACTs)	Company Agreements (AEs)	Total	
2008	172 (1,778,216)	27 (47,232)	97 (69,398)	296 (1,894,846)	131
2009	142 (1,299,371)	22 (59,902)	87 (37,952)	251 (1,397,225)	103
2010	141 (1,309,267)	25 (64,455)	64 (33,344)	230 (1,407,066)	113
2011	93 (1,160,080)	22 (52,737)	55 (24,102)	170 (1,236,919)	17
2012	36 (291,068)	9 (26,645)	40 (9,009)	85 (327,662)	12
2013	27	18	49	94 (242,676)	9
2014	49	23	80	152 (246,388)	13

Notes: Numbers of collective agreements, and workers covered (in parentheses). Earlier values are reported by Dias and Cerdeira (2011); and, for slightly different values, see EurWORK (2014). The data contained in the last two rows of the table are consistent with but not strictly comparable to those reported by Martins (2014b).

Sources: Martins (2014b: Table 1) for the years 2008-2012; UGT (2014: Figures 2 and 4) for 2013-2014; BTE online (2015) for extension ordinances.

TABLE 3

Determinants of Union Density in Portugal. Dependent Variable: Number of Unionized Employees at the Firm

Variable	Coefficient (s.e)
Average age (in decades)	0.374***
	(0.0152)
Proportion of females	0.0710*
	(0.0379)
Proportion of foreigners	-0.544***
	(0.107)
Proportion of workers with elementary schooling	0.738***
	(0.0665)
Proportion of workers with preparatory schooling	0.708***
	(0.0589)
Proportion of workers with completed high school	0.774***
	(0.0654)
Proportion of workers with college degree	0.893***
	(0.0719)
Proportion of public equity in the firm	1.086***
	(0.0703)
Firm with 10 to 49 employees	0.943***
	(0.0215)
Firm with 50 to 99 employees	1.820***
	(0.0306)
Firm with 100 to 499 employees	2.219***
	(0.0288)
Firm with 500 to 999 employees	2.431***
	(0.0631)
Firm with 1,000 to 4,999 employees	2.615***
	(0.0668)
Firm with more than 5,000 employees	2.905***
	(0.0966)
Year dummies	Yes
Industry dummies	Yes
Constant	-7.073***
	(0.113)
Inflation parameter	-18.830***
	(0.0261)
ln λ	3.010***
	(0.0108)
Log likelihood	-164908.5
No. of observations	612,336

Note: Robust standard errors are in parentheses.

***, **, and * denote statistical significance at the 0.01, 0.05, and 0.10 levels, respectively.

Source: *Relatório Único*.

TABLE 4

Estimated Union Wage Gap (%) for Different Levels of Unionization

Specification	Firm density rate			
	1 - 25%	25 - 50%	50 - 75%	75 - 100%
Without controls	17.59	28.29	63.66	61.11
With controls for worker characteristics	12.31	16.34	38.00	34.00
With controls for worker and firm characteristics	4.41	6.66	20.27	14.95
With controls for worker and firm characteristics and occupation	6.61	7.74	21.07	15.26
(Distribution of unionized workers per group)	(61.67%)	(15.84%)	(9.97%)	(12.53%)

Source: *Relatório Único*.

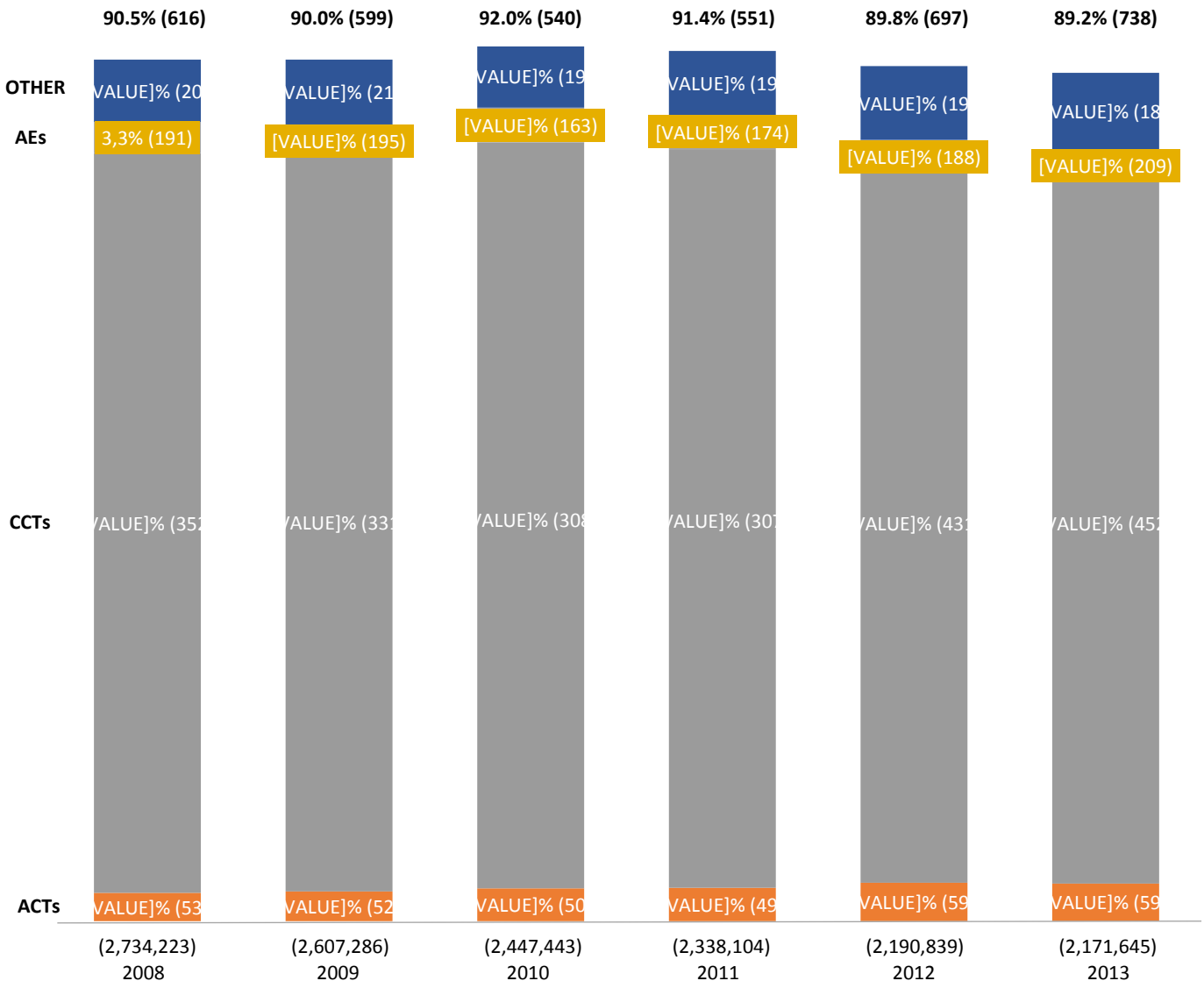
TABLE 5

Workers Covered by an Instrument of Collective Bargaining in Portugal

Year	Union Coverage (%)
2008	90.5
2009	90.5
2010	92.0
2011	91.4
2012	89.8
2013	89.2

Sources: Quadros de Pessoal, 2008-2009; *Relatório Único*, 2010-2013.

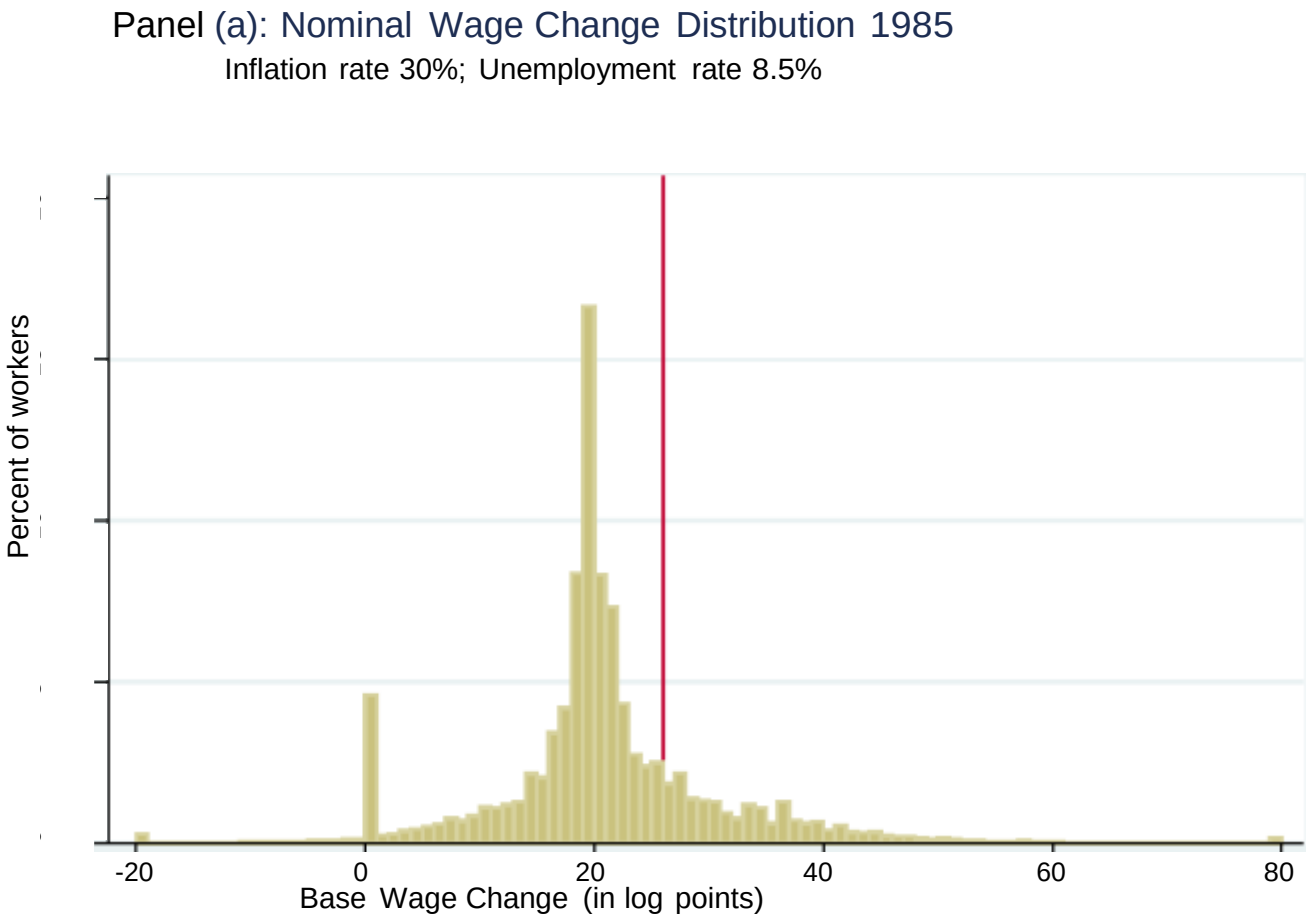
FIGURE 1
The Stock of Collective Agreements by Type, 2008 - 2013



Notes: Percentage values indicate the employment coverage share of each respective instrument/all instruments. Figures in parentheses indicate the number of each respective instrument/all instruments. Figures at base of each column in brackets above year indicate the total numbers of workers covered in thousands.
Sources: Quadros de Pessoal, 2008-2009; *Relatório Único*, 2010-2013.

FIGURE 2

Downward Nominal Wage Rigidity in High and Low Inflation Regimes

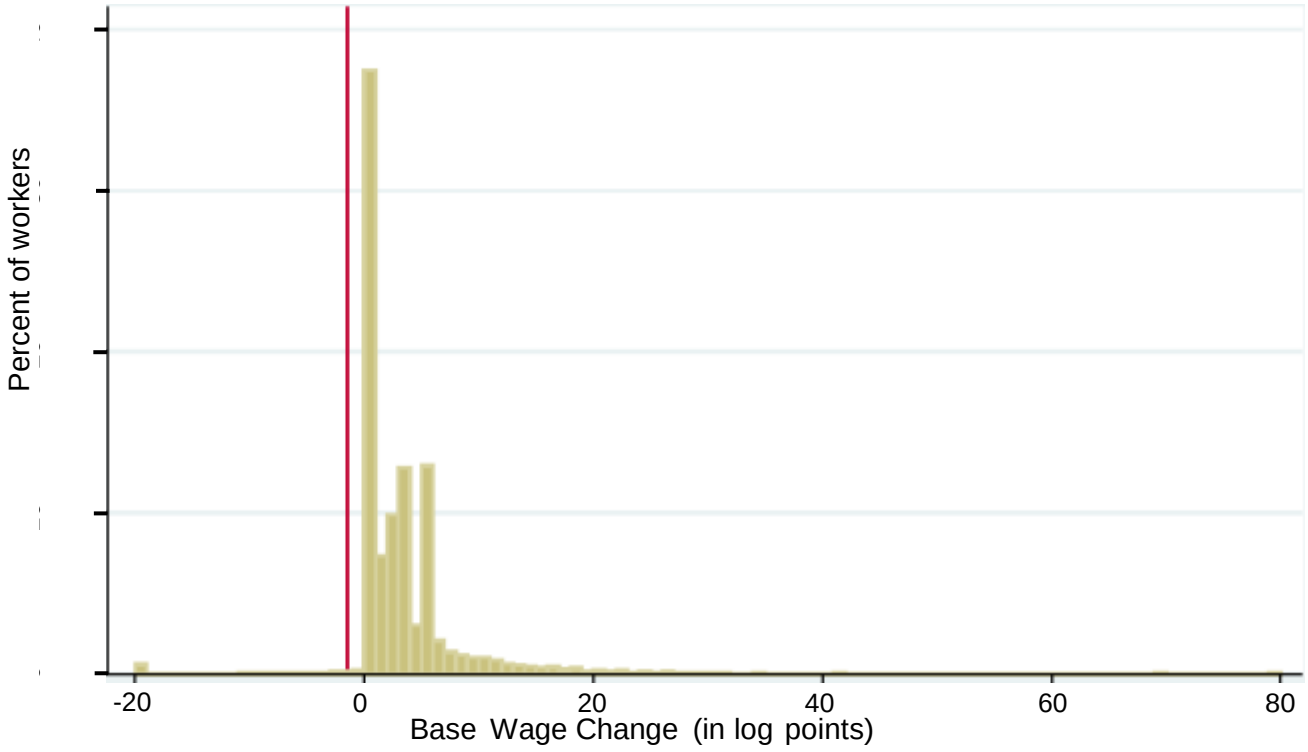


Note: The solid vertical line denotes the inflation rate (in log points).
Source: Quadros de Pessoal

FIGURE 2 Continued…

Panel (b): Nominal Wage Change Distribution 2009

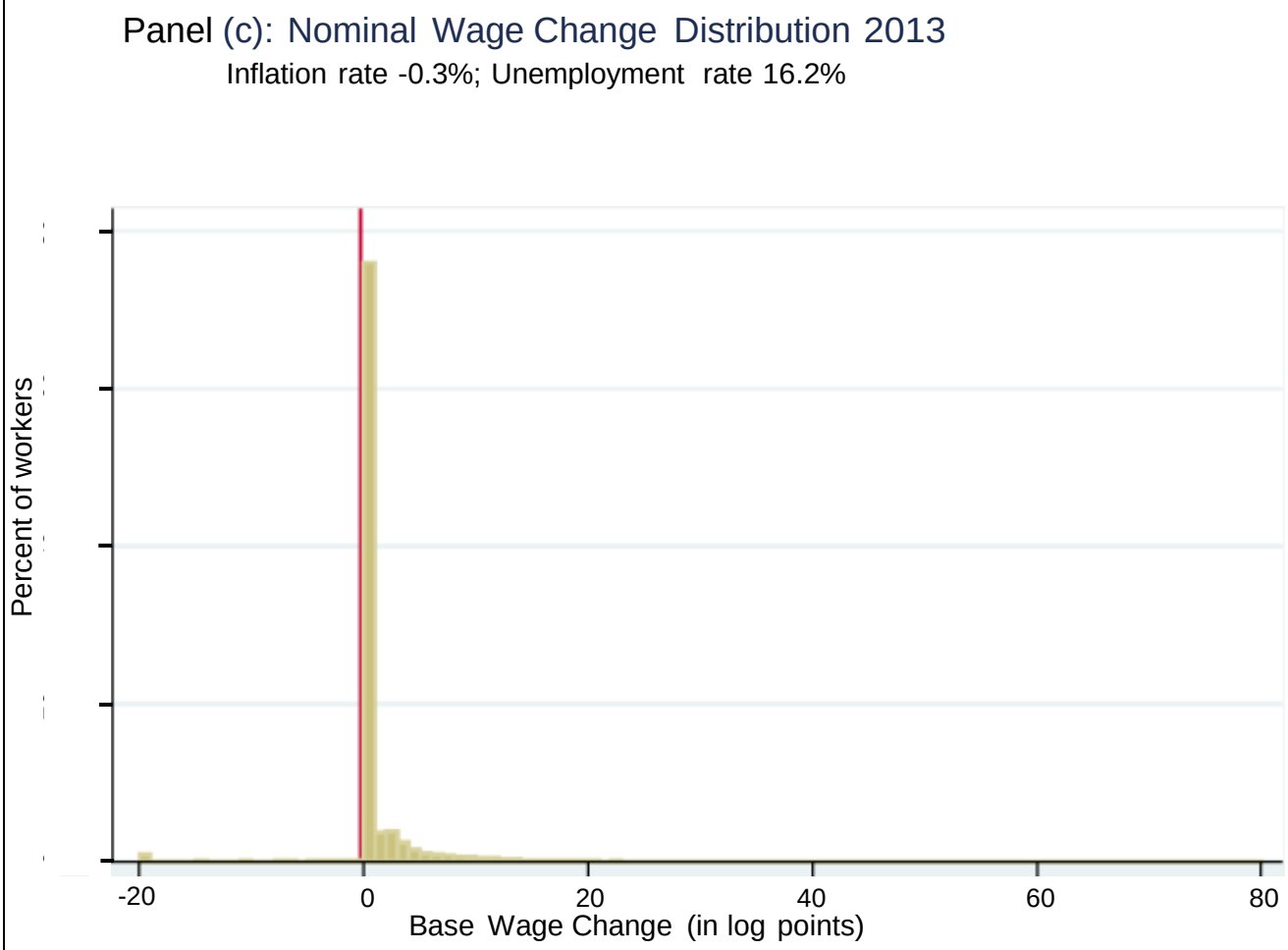
Inflation rate -1.5%; Unemployment rate 9.4%



Note: The solid vertical line denotes the inflation rate (in log points).

Source: *Relatório Único*

FIGURE 2 Continued…



Note: The solid vertical line denotes the inflation rate (in log points).

Source: Relatório Único