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CLAIM, OFFER AND INFORMATION IN WAGE BARGAINING

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Abstract

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Keywords: claim; offer; collective bargaining; wage; panel data.

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IN WAGE BARGAINING

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ABSTRACT: A stylized private-information model on the determination of the initial works council wage claim and the initial firm (counter)offer is analyzed in the context of the Spanish Collective Bargaining system. The Spanish system forces agents to make initial offers at the beginning of the negotiation process. Thus, initial firm offers are expected to reveal very little information. Our findings confirm such a guess. Moreover, we found that initial offers crucially depend on aggregate bargaining conditions, price expectations and those variables that reflect the characteristics of the negotiation unit. However, the latter set of variables enters differently in both offer equations.

KEYWORDS: CLAIM, OFFER, COLLECTIVE BARGAINING, WAGE, PANEL DATA.
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I. Introduction.

The process of wage bargaining has been analyzed in the literature in various ways. There is a strand of the literature that ignores the implicit negotiation problem and stresses on the analysis of wage outcomes.[1] Another relevant strand of the literature tries to model the strategic bargaining problem and its solution. Following this line, early work focused on explaining why union's wage demands should fall during a conflict.[2] During the eighties, the developments in noncooperative bargaining theory help in explaining the union's claims by specifying the negotiation procedure in detail.[3] For instance, Admati and Perry (1987) show that, in an incomplete information context, agents could strategically delay agreements. More recently, Cramton and Tracy (1992, 1994) consider a model of wage bargaining with multiple and time-varying threats. In both cases, the formation of the initial claim and offer, both of which are conditional on the bargaining procedure, is described in detail.

For analyzing empirically the wage bargaining process we have sufficient data on wage and strike outcomes. However, there is dearth of data on the sequence of offers and counteroffers that agents make. Although some authors try to circumvent this problem by means of experimental evidence,[4] to the best of our knowledge, there is no empirical work using *real* data on the sequence of offers. We dispose of a data set on initial bargaining offers that could help us shed some light on the empirical relevance of some features of the bargaining process.

In more detail, we analyze the determinants of the union's initial *claim* and the firm's initial *offer* in the context of a private-information model of union contract negotiations.[5] Assuming the firm has private-information about its willingness to pay, we want to know how the union tries to screen this information using its first initial claim. From the point of view of the firm offer, we would like to evaluate the amount of information the initial offer reveals, given the bargaining procedure and the aggregate information. Furthermore, we would like to assess whether or not the union incorporates the common knowledge information to its initial claim in a different way that what the firm does. Formally, our empirical approach could be understood as an adaptation of the Cramton and Tracy

(1992, 1994) model to the current Spanish bargaining structure. However, the analysis is conditional on particular characteristics of the collective bargaining and the bargaining procedure in Spain. This is such that, after a given union's initial, the firm is forced to counteroffer before a given deadline (usually a week after the claim was made). In such circumstance, the offer reveals little information regarding the firm (for instance, in 1987, 47.0 per cent of the offers were equal to the nationwide employers association reference offer), as against what we find in Cramton and Tracy framework.

This empirical exercise is carried out using a sample of large firms from the "*Negociación Colectiva en las Grandes Empresas en España*" (NCGE), a yearly survey on bargaining and other issues conducted by the Spanish Ministry of Economy. It provides data on initial bargaining positions, negotiation timing, strike activity, wage increase settlements and other relevant economic variables (see the Appendix).

The rest of the paper goes as follows. In section II we describe the most relevant features and figures of the Spanish negotiation framework. The empirical model and the econometric specification are described in section III. The main results are presented in section IV. Finally, section V concludes.

II. Spanish negotiation framework and data.

a. Spanish negotiation framework.

Bargaining procedures in Spain, as in other European countries, are quite different from those in the US or Canada.[6] Bargaining occurs at industry-wide and firm levels simultaneously, terms of industry-wide agreements being a binding floor for all firms in the sector, i.e., the so-called "mandatory extension" principle. Union's affiliation is low but its power is high because unions carry negotiations at industry-wide level. The coverage of the system is notably high. During the period 1984-91, almost 82 per cent of all employees were covered by collective agreements and 20 per cent of these correspond to firm-level agreements in large firms.

Most employees have indefinite contracts. Current working and payment conditions are settled in an additional protocol called "convenio colectivo" which stipulates the wages and hours of work

over a number of years. However, wage increases are negotiated or renegotiated on a near yearly basis. Elected works councils substitute unions in firm-level negotiations and, as a major difference to other European countries, can call for a strike. It seems that the main motivation of the decision to negotiate at the firm-level bargaining in Spain is to distribute firm-specific quasi-rents (Palenzuela and Jimeno, 1996).

The negotiation at the firm-level proceeds as follows. It starts when the council makes a wage increase *claim*. The institutional setting is such that the firm must counteroffer immediately or, at least, before a given deadline. If this *offer* equals the above *claim*, there is an immediate agreement. If not, they alternate offers until they reach an agreement. Meanwhile, the council uses a latent strike threat. However, it is unusual to call for a strike before both the *claim* and the *offer* are made, i.e. *the wage increase platform* is announced. Additionally, both of the agents involved receive aggregate (and industry) signalling. At the aggregate level, the employers association recommends to its members an initial offer (reference offer, RO). Likewise, nationwide unions recommend an initial claim (reference claim, RC) to their works council members.

b. Aggregate and sample evidence about wage bargaining

In Table 1 we summarize some characteristics of the negotiation process in the NCGE and some aggregate determinants during 1982-1993. During the period 1982-86, with the exception of 1984, there were annual nationwide agreements which guided firm-level negotiations. Nationwide agreements fixed a wage change band which acted as a reference point in fixing industry or firm level settlements. From 1987, there have not been any nationwide agreements, but the nationwide employers association and the most powerful unions have respectively announced yearly reference offers and claims.[7] Note that (comparing the first and the second period mentioned) the existence of an aggregate agreement in a given year reduces the length of the negotiation process at the firm-level. Notice also that for the entire period, the level of conflicting activity has been significantly low. This is a consequence of both, a very low conditional duration of strikes (not higher than five days) and a strike incidence between 10 and 15 per cent.[8] In Figure 1 we plot the observed (average) initial claim,

initial offer and agreement against the inflation rate in 1982-1993. The persistent difference between both initials highlights the presence of some kind of private information regarding the level of profitability of firms. Finally, we must point out that, with one exception (1987), the inflation rate is higher than the inflation target fixed by the government.

In Table 2 we distinguish four distinct types of outcomes of the bargaining process. The most common outcome (column 1) implies an unknown sequence of alternating offers after a works council initial claim and a firm's initial offer (that is, at least three offers are necessary in reaching an agreement). It shows strike incidence of 16 per cent and a negotiation length of slightly above three months. The other three types of outcomes (columns 2 to 4) are related to initial claims and/or initial offers accepted. In all these cases both the strike incidence and the length of negotiation are lower than in regular disagreement outcomes. As expected, the lowest strike incidence and length of negotiation is achieved when the firm accepts the union's initial claim (column 2). Notice also the relatively high strike incidence when work councils get initial claim but only after being initially rejected. This type of outcome implies that works council's wage concession curves are horizontal with respect to the length of negotiations.

Table 3 provides further information about how initial positions are generated. Both of them are, in a great majority of cases, above their respective reference offers. With respect to firm offers, several comments are in order. First, it seems that any initial firm offer must be (to be credible) as high as the RO, which is closely related to the government's inflation target. Second, there is an important fraction of offers that coincide with the RO, which in turn has very little information about the true demand state of the firm. In regard to offers below or above the RO, we pose the following empirical question: do they signal to the works council the demand state of the firm or do they reflect the influence of the observables (either aggregate or bargaining unit information)? On the part of works council claim, there is also an important fraction of claims which coincides with the RC. Note also the increase in the fraction of claims from that fall below the RC as this may reflect a change of strategy on part of the employees.

Finally, in Figure 2, we show, year by year, the relationship between the initial claim and offer and the nationwide reference points: that of the employers' association (vertical line) and that of nationwide unions (horizontal line). Two clear patterns arise. On the one hand, the fraction of claims below the RC is greater in the latter part of the sample period. While on the other, the fraction of offer below the RO decreases in the latter part of the sample period. On the other hand, note that there is little relationship between claim and offers in any of the years considered implying that works councils' claims have limited influence in employers' offers.

III. Economic and econometric framework.

As mentioned before, the Spanish bargaining framework is such that bargaining starts at the time the works council makes an initial wage *claim*, w_{it}^c (in logs). In signaling models, the claim is assumed to be a function of what the union (works councils in our case) expects a unit of labor is worth for the firm ($\hat{q}_{it}$) and, simultaneously, other reduced-form determinants X_{it}. Formally:

$$w_{it}^c = \alpha_c \hat{q}_{it} + \beta_c' X_{it} + f_i^c + u_{it}^c \quad t=1,...,T_i; i=1,...,N \qquad [1]$$

where f_i^c is a firm specific component and u_{it}^c is a serially uncorrelated error term. The main prediction from signalling models is such that α_c must be positive. That is, higher expected profitability implies higher expected claim.

On the part of the firm, the underline initial wage *offer*, $\tilde{w}_{it}^o$, is made taking into account the above claim, knowing the true value of q_{it}:[9]

$$\tilde{w}_{it}^o = \alpha_o q_{it} + \gamma_o w_{it}^c + \beta_o' X_{it} + f_i^o + u_{it}^o \quad t=1,...,T_i; i=1,...,N \qquad [2]$$

where f_i^o is a firm specific component and u_{it}^o is a serially uncorrelated error term. After the claim has being announced, the firm decides either to accept such a claim or make, before a formal deadline (at time *k*), a counter*offer*, (w_{it}^o), which is related to the underline offer in the following way:

$$w_{it}^{o} = \tilde{w}_{it}^{o} \quad if \quad \tilde{w}_{it}^{o} \leq w_{it}^{c}$$
$$w_{it}^{o} = w_{it}^{c} \quad if \quad \tilde{w}_{it}^{o} > w_{it}^{c} \qquad [3]$$

Consequently, the observed initial offer is censored from above by the initial claim. Note that those observations in which the claim has been accepted are very little informative about the underline offer. In that case, we should proceed is to restrict the estimation sample to those observations in which the claim has been rejected (informative offers) while considering the selection induced by the rejection of the initial claim. However, given the fact that the censoring occurs in a very little fraction of cases (less than four per cent of the cases), we proceed as there are no censoring problems, i.e.,

$$w_{it}^{o} = \gamma_{o} w_{it}^{c} + \alpha_{o} q_{it} + \beta_{o} X_{it} + f_{i}^{o} + u_{it}^{o}; \qquad if \quad s_{it} = 0 \qquad [4]$$

where $s_{it}=1$ if the initial claim is accepted by the firm and zero otherwise.

The characteristics of the Spanish bargaining structure restricts the kind of theoretical model we can take as a reference. For instance, having at least one offer from each agent (without fixed intervals between offers), we may reject both a screening model in which the union makes all the offers (Hayes, 1984, and Card, 1990) and an alternating offers model with a fixed interval between offers (Grossman and Perry, 1986, and Kennan and Wilson, 1989). Recently Cramton and Tracy (1992 and 1994) have proposed a signalling model with multiple threats or time-varying threats that is adequate to represent, at least partially, the underlining negotiation structure of our data.

In the first work mentioned, when the counteroffer is made at a freely chosen time, say τ, it reveals all the private information of the firm. In fact the counteroffer is a Rubinstein offer and is immediately accepted by the union. In such circumstances, the offer is fully informative. However, the Spanish institutional setting is such that firms must counteroffer immediately or, in any case, before a given deadline, say at time k. Consequently, we do not expect the firm offer to reveal much of the firm information. Thus, in the Spanish case, the offer is, in most of the cases, non-informative. Consequently, the key coefficient of the offer equation, α_o, must be close to zero. Note that for coherency γ_o must be also close to zero. Additionally, both the claim and the offer are expected to be

related, possibly in a very different manner, with both aggregate and firm specific variables, all of them which are in the vector X.

In essence, our claim and offer equations may be considered as standard wage equations and consequently, we can specify a dynamic structure for them. Learning or reputation may influence the current outcome of the negotiation process. Additionally, a single negotiation is embedded in an indefinite negotiation process. Thus, current negotiation cannot be isolated from past (or future) negotiation rounds.

Given that the claim and offer data are not in levels, but are expressed as a rate of change, we can rewrite a dynamic version of both equations as:

$$\Delta w_{it}^{c} \approx \mu_c \Delta w_{it-1}^{c} + \delta_c(L) w_{it-1} + \alpha_c \bar{q}_{it} + \beta_c' X_{it} + f_i^{c} + u_{it}^{c} \qquad [5]$$

$$\Delta w_{it}^{o} \approx \mu_o \Delta w_{it-1}^{o} + \delta_o(L) w_{it-1} + \gamma_o \Delta w_{it}^{c} + \alpha_o q_{it} + \beta_o' X_{it} + f_i^{o} + u_{it}^{o}; \ \ if \ \ s_{it}, s_{it-1} = 0 \qquad [6]$$

Notice that in the latter case, the relevant sample is constructed by picking up at least two consecutive outcomes in which the initial claim is rejected. The sample constructed in such a way will be denoted as the *offer sample*.[10] Likewise, the original sample will be denoted as the *claim sample*. Regarding the estimation of equations [5] and [6] -ignoring the potential censoring problem- there are several important considerations. First, the unobservability of $\bar{q}_{it}$, the union's expectation about how worthy is a unit of work for the firm. We assume that agents are rational and following McCallum (1976) and Wickens (1982), we replace $\bar{q}_{it}$ by q_{it} and use instrumental variable methods. Second, least squares in any of both equations may produce inconsistent estimates as long as there are variables potentially correlated with either the error term or the idiosyncratic heterogeneity effect. We take into account both problems, not using a IV estimator over the first-differenceD equations of [5] and [6], but the (two-stage) estimation method proposed by Arellano and Bover (1995). This estimator largely improves the performance of the first-differenced method alone, as recently noted by Blundell and Bond (1995). This method, in addition to the orthogonality restrictions implied by the first-differenced equations $\{E(\Delta u_{it}^{k} z_{is}), k = c,o; t > s+1; t = 3,..,T_i\}$, also exploits the orthogonality restrictions among the error in either [5] or [6] with all the predetermined instruments

$\{E(u_{it}^{k}\Delta z_{is}),k=c,o;t>s;t=3,..,T_i\}$. A Sargan (1988) test evaluates the validity of the orthogonality restrictions employed.

IV. Empirical results.

a. Data and variables

As mentioned in section I, the basic data source we use in the NGCE, an annual survey which offers information about collective bargaining of firms with more than two hundreds workers. The available sample covers a time span of 7 years, from 1985 to 1991. From the raw data set we select those observations which contain information about claim, offer, agreement, and the starting and the ending date of the negotiation process. The basic statistics of this data set are presented in the Appendix.

We distinguish three groups of variables: those which correspond to specific characteristics of the bargaining unit, those which refer to some features of the current or previous bargaining process and those which capture aggregate effects.

In the first group, the value added per employee is included as a proxy for the firm's demand. It is expected to push up the initial claim and to have little (null) effect over the offer, given the characteristics of the Spanish bargaining framework. In addition, we also include the percentage of sales in the local market as an indirect measure of competitive pressure.

Furthermore, in this group we also include a set of variables which account for potential differences between union power: the percentage of the workers within the council which belong to CCOO and UGT (the two most important nationwide unions), to middle sized unions, to regional unions and small groups of representatives (other groups including professional unions are omitted). We also consider a dummy which takes into account the presence of a single union within the works council. This is because a single union within the works council has no coordination problems and, as a result, could have a greater negotiation power. The size of the bargaining unit is controlled by the lagged number of employees. We also include the concession of a cost of living allowance clause in the previous year agreement. In order to capture the effect of the negotiation timing, we include a dummy if the negotiation process starts after the expiration of the last agreement about wage increases.

At the aggregate level we distinguish between industrial and nation-wide effects. We include

the number of days lost by strike per employee in the industry which acts as a proxy for the aggregate bargaining pressure. An increase in the industry (or nationwide) unemployment rate or a decrease in the change of the industry employment level can be expected to lower both the claim and the offer. Higher the expected level of inflation,[11] higher are expected to be both initials, as far as sufficiently many agent think of inflation as the minimum guaranteed wage change.[12]

Moreover, we also include the mean negotiated wage change settlement in the same region (or combination of regions, in the case of a multiplant bargaining unit) in the previous month. This variable proxies information that agents have about other bargaining units actions and could capture spillover effects (see McConnell, 1989). It should contribute to the improvement of our specification in at least two directions. First, it offers some demand information not directly observable to the econometrician at the regional levels. Second, other firms' wage settlements may enter directly into wage negotiations through the reservation wage and/or the profit function. The former variables are dated at the beginning of the negotiation process in the claim and offer equations and are expected to put upward pressures over the outcome.

Finally, nationwide unions and employers association prescriptions and aggregate unemployment variables (national rate of unemployment and national long-term unemployment) should play a crucial role in our proposal. They are expected to closely drive firm-level initial offers. Notice that these variables, which only have time series variation, are not identified when including time dummies as regressors. A set of industry dummies is also included.

b. Results.

In Table 4 we present the results of the estimation of the claim and offer equations using the GMM-IV method proposed by Arellano and Bover (1995). We report the results of two different specifications for each equation. All the equations pass the standard testing procedures. In all columns, we found absence of the second order autocorrelation in the first differences error term (which implies that the level error is white noise). Likewise, all of them pass the Sargan (1988) test for the validity of the instruments. For coherency, the same set of instruments –except for that we did not include the lags of the offer in the claim equation– has been employed in all the equations.

[insert Table 4 here]

As expected, the value added per employee plays a different role depending on the equation we consider. It has a positive effect on the initial claim, i.e., the unions translate increases in expected productivity into increases in their initial claims. On the contrary, the effect on the initial offer is statistically insignificant, a result which is expected given the structure of the bargaining process in Spain. Moreover, this key result remains unchanged when we assume the firm to be fully informed about q, that is, when we do not instrument the value added per employee in the offer equation. Thus, due to the short period in which the firms have to counteroffer, their initial offers do not reveal any information about their true situations.

Regarding dynamic and contemporary cross effects, we found a negligible coefficient for the dynamic term in the claim equation and a positive and significant dynamic effect in the offer equation. Both results are consistent with the fact that the works council claims intends to screen the firm information and the firm offer tries not to reveal such information. As expected, the effect of the current claim on the current offer is unimportant. Moreover, the latter effect totally vanishes when we do not instrument the value added per employee, that is, when we assume the firm has no uncertainty on the value added per employee. From our point of view, this supports the following working hypothesis: the claim is less related to the observable information than the offer. Later in this section, we add more evidence to this particular hypothesis.

As in the standard wage equation estimates for the Spanish economy,[13] both claim and offer depend strongly on aggregate conditions. The effect of aggregate variables is even more prominent in the case of the offer equation. Regarding the effect of the aggregate employers association initial is higher in the offer equation than in the claim equation, whereas the reverse result is obtained for the aggregate union's initial.

The effect of the national unemployment rate is more important than that of the industry unemployment rate. On the other hand, the national long-term unemployment rate has different effects in both equations. It has a positive effect in the offer equation, thereby reducing the stabilization role of the unemployment rate, as it was found in some studies when estimating wage equations for the

Spanish economy.[14] The effect of this variable is insignificant in the claim equation.

With respect to other aggregate variables we must point out that the level of industry conflicting activity reduces the degree of disagreement (reduces the claim and increases the offer, the former effect being greater in absolute value).[15] The effect of the expected level of inflation is similar and highly significant in both equations. However, the (average) wage change negotiated at the regional level (which proxies for the available information at the starting of the bargaining process) is significant in the offer equation but not in the claim equation.

It is also important to note that many observables referred to the characteristic of the bargaining unit enter differently, in size and/or in sign, in the two equations considered. Note that when the effect of a given variable has an opposite sign in the two initial offer equations, we can jointly interpret the two coefficients in terms of the degree of disagreement (i.e., the difference between claim and offer).[16] In that sense, the degree of disagreement decreases when the negotiations start after the expiration of the former agreement, since there is less uncertainty and, increases with the size of the bargaining unit. The joint effect of union variables seems to indicate that the degree of disagreement decreases the more important is the presence of the powerful union groups within the works council. Finally, as expected, having indexed the previous agreement (which proxies the likelihood of getting indexation in the current negotiation), has a negative effect on both equations, larger in absolute value in the claim equation.

V. Summary of findings and main conclusions

Throughout this paper we have analyzed claim and offer setting using Spanish data from the NCGE. We have tried to assess how the initial offers are formed. The analysis has considered carefully the econometric methods and testing procedures that this kind of data requires.

Since both initials must be announced at the very beginning of the bargaining process, we found that the works council claim tries to screen the level of profitability of the firm. Furthermore, we found that the firm offer does not reveal (on average) any of the firm information. In addition, the effect of aggregate variables seems to be more important for the initial offer than for the initial claim.

At the same time, employers and employees use the information from the bargaining unit characteristics in a very different way.

Furthermore, both the initial claim and the initial offer are relatively more closely related to aggregate setting than to firm conditions. This illustrates the fact that the current system of wage bargaining leads to an inflationary bias.[17] This constitutes clear evidence in favor of the existence of some sort of wage rigidity in Spain caused, among other reasons, by the combination of the structure of the collective bargaining system and high firing costs for permanent workers.

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Notes.

[1]Typical examples are the Efficiency Wages model [Solow (1979)] and also the Insider-Outsider model [Solow (1985) and Lindbeck and Snower (1986)].

[2]See Kennan (1986) for a detailed survey of earlier work.

[3]In a crucial work, Rubinstein (1982) showed that the alternating offers game with complete information has a unique subgame perfect equilibrium in which the first offer is accepted. [See Binmore et al. (1992) for a survey of theoretical work and Kennan and Wilson (1989 and 1993) for a survey of both theoretical and applied wage bargaining work.]

[4]See Kennan and Wilson for (1993) for a recent survey.

[5] See Fudenberg, Levine and Ruud (1983), Morton (1983) and Hayes (1984) for earlier asymmetric models on wage negotiation and strike activity.

[6]See Jimeno and Toharia (1994) for a description of the Spanish industrial relations system.

[7]For instance, for 1998 a press release (*Expansion,* 01/15/98) from the main employers association (CEOE) states: "The employers association CEOE recommends to the employers a 1.1 per cent wage increase for the 1998 Collective Bargaining round, 1.0 per cent below the government's inflation target. The employers association also advises to its affiliations affiliated not to accept any agreement regarding wage hours and temporary contracts."

[8]See Jimenez-Martin et al. (1996) for an empirical analysis of strike incidence in Spain using the same data set.

[9]We, instead, could have assumed a weaker assumption: the firm is more informed than employees about q.

[10]In general , we should take into account that $E(u_{it}^{o}/\Delta\tilde{w}_{it}^{o} > \Delta w_{it}^{c})$ is not expected to be zero. However, when the censoring is very small (as in our case) the problem has a limited impact. In our case, similar qualitative and quantitative results are obtained independently of the sample employed (either the offer or the claim sample).

[11]In order to proxy the expected level of inflation we use an ARIMA forecast of this variable.

[12]The data show that agreements are in a great proportion above the expected level of inflation. In fact they are in many cases best linked to government target.

[13]See Andres et al. (1993) for a survey of empirical results for wage equations in Spain.

[14] See Andres and Garcia (1993) and Dolado and Bentolila (1994).

[15]Although there are several studies that include a measure of aggregate strike activity in firm-level wage negotiations (Card (1990) is an example), the process of transmision from sectoral to firm level negotiations it is still unclear.

[16]Note that a greater level of disagreement has strong consequences in the rest of the bargaining process. For instance, as illustrated by Jimenez-Martin et al. (1996), it increases the likelihood of observing a strike during the negotiation.

[17]In words of Blanchard et al. (1995): "In the current system, each level of bargaining establishes a floor on the wages which can be set at the lower level. Sectoral-level bargaining in effect sets a wage floor on firm-level agreements, which can either set wages at the floor, or at a higher level. Thus, firms which are doing well can pay higher wages, but firms which are not doing so well are prevented from paying lower wages. The result is a wage setting system with an inflationary bias. The problem is likely to be particularly acute in times when more re-allocation is needed, as has been the case in Spain with the rapid increase in openness and foreign trade."

Figure 1. Initial claim and offer, agreement and inflation.

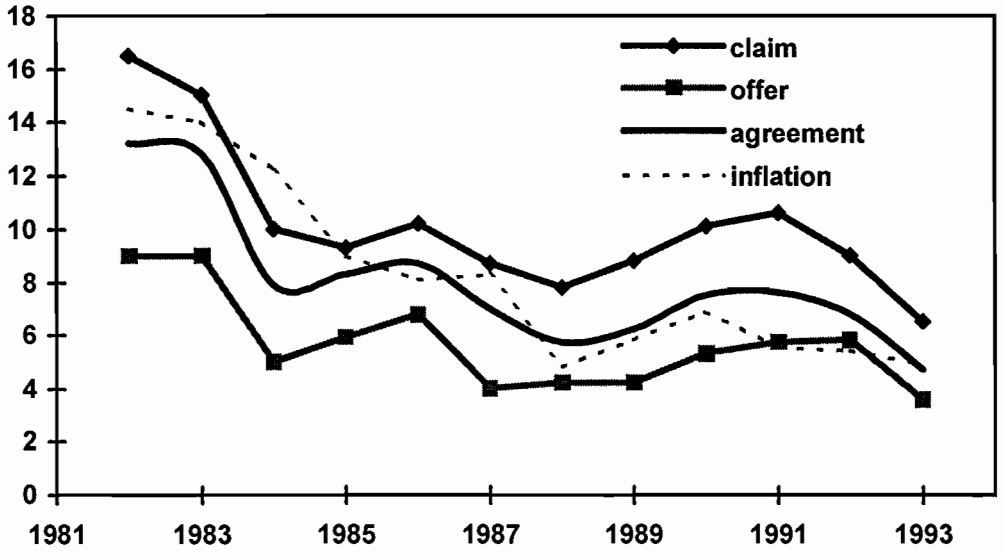


Table 1. Bargaining determinants and outcomes.

	AGGREGATE BARGAINING			NCGE SAMPLE BARGAINING OUTCOMES					INFLATION	
year	nationwide Agreement	RO %	RC %	claim %	offer %	agree %	l_neg days	l_strike hours	Target %	CPI %
1982	Yes	9	11	13.0	9.0	11.02	73	4.6	12.5	14.0
1983	Yes	9.5	12.5	15.0	9.0	11.5	65	4.2	12.0	12.2
1984	No	6.5 to 8	10	10.0	5.0	7.9	87	10.2	8.0	9.0
1985	Yes	5.5	7.5	9.3	5.9	8.3	75	3.0	7.0	8.1
1986	Yes	5.2	8.5	10.2	6.8	8.7	117	2.0	8.0	8.3
1987	No	5.0	8.0	8.7	4.9	7.0	96	6.0	5.0	4.8
1988	No	3 to 5	6	7.8	4.2	5.7	150	2.0	3.0	5.8
1989	No	3 to 6	7	8.8	4.2	6.2	157	4.7	3.0	6.9
1990	No	5	9	10.1	5.3	7.5	131	2.7	5.7	6.5
1991	No	5 to 7	9	10.6	5.7	7.6	121	6.7	5.0	5.5
1992	No	3 to 5	8	9.0	5.8	6.8	133	3.7	5.0	5.3
1993	No	2 to 5	5+	6.5	3.6	4.7	262	1.2	4.5	4.9

R0: From 1982 to 1986 (except in 1984), lower bound of the nationwide recommended agreement band. Since 1987, nationwide employer's recommended reference offer.
RC: From 1982 to 1986 (except in 1984), upper bound of the nationwide recommended agreement band. Since 1987, nation wide union's recommended reference claim.
l_neg: average length of negotiations.
l_strike: Unconditional average number of hours lost by strikes.
Target: Goverment's inflation target.
CPI: December to December Consumer Price Index.
sources: NCGE and *Circular para la Negociación Colectiva*, Employers Association, 1994.

Table 2. Descriptive statistics for different types of agreement.

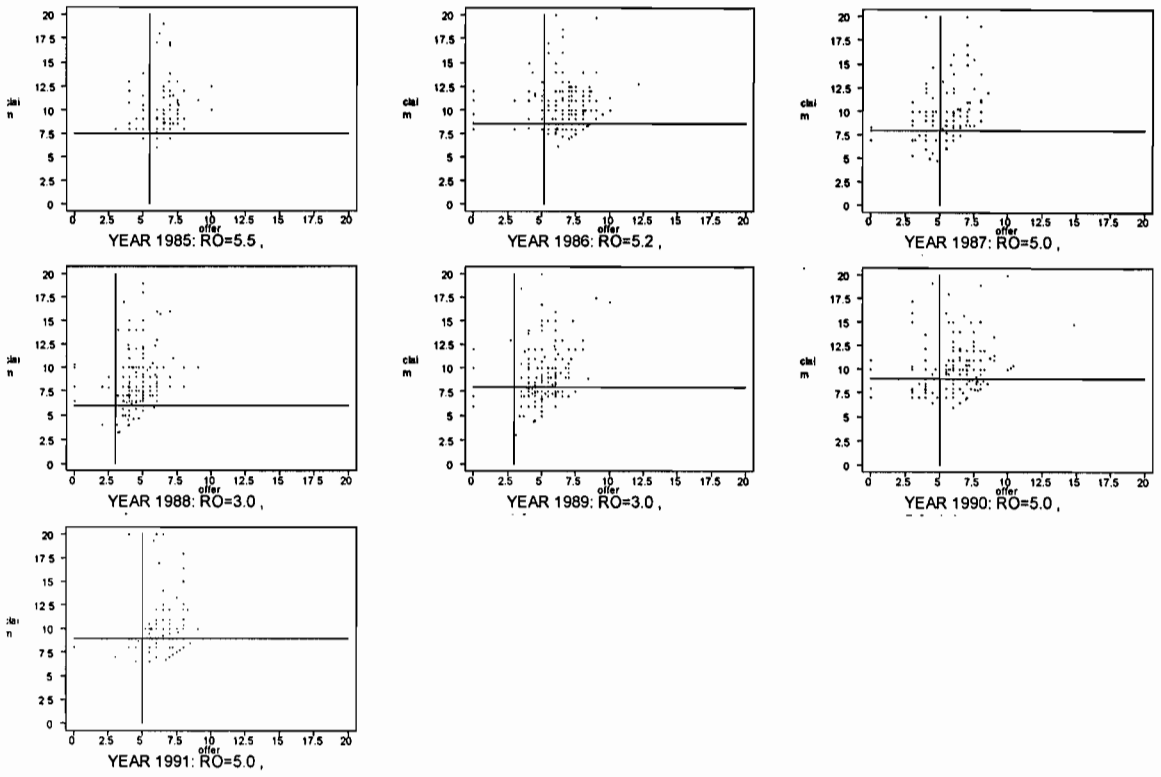
	Regular outcome Claim > Agree > Offer	first union claim accepted after a counteroffer	first firms' offer accepted	First Union Claim Accepted
Claim	10.1	7.4	9.4	7.1
Agreement	7.0	7.4	6.5	7.1
Offer	5.2	5.8	6.5	7.1
Strike incidence	17.0	11.9	6.4	3.1
Length of negotiations	100.7	95.7	74.6	47.5
Observations	1861	42	171	97
(per cent)	(85.1)	(1.9)	(7.7)	(4.4)

Table 3. Claim and offer distribution with respect to reference initials.

	Offer			Claim		
Year	O<RO	O=RO	O>RO	C<RC	C=RC	C>RC
1985	17.2	17.3	65.5	4.8	19.3	75.9
1986	15.2	0.0	84.8	13.0	14.5	72.5
1987	18.6	47.0	34.4	20.6	25.9	53.5
1988	4.5	16.4	79.1	8.7	11.0	80.3
1989	1.4	13.3	85.3	39.7	18.7	41.6
1990	13.5	16.2	70.3	23.2	27.1	49.7
1991	8.7	29.5	61.8	25.3	30.7	44.0

Notes: See below Table 1.

Figure 2. Claim and Offer and aggregate initials in 1985–1991.



Notes: RO: Nationwide employers' association reference offer. RC: Nationwide unions' reference claim.

Table 4. Initial claim and offer determination.

	CLAIM (1) coef. t-st.	*CLAIM (2) coef. t-st.*	*OFFER (3) coef. t-st.*	*OFFER (4) coef. t-st.*
constant	-0.4930 (0.11)	-7.4107 (1.85)	2.0382 (0.92)	-11.716 (5.51)
lagged claim‡	-0.0058 (0.40)	-0.0002 (0.01)	—	—
lagged offer‡	—	—	0.2172 (9.09)	0.1970 (7.94)
current claim†‡	—	—	0.0177 (1.54)	0.0222 (1.87)
change in value added†	0.5536 (3.30)	0.5158 (3.11)	-0.0744 (1.37)	-0.0029 (0.05)
% of sales in the domestic market	0.0668 (0.17)	0.0187 (0.05)	0.0995 (0.78)	0.0990 (0.72)
a single union at the works council	-0.2926 (1.08)	-0.3012 (1.14)	0.1212 (0.94)	0.2210 (1.63)
% of rep. of CCOO at the wc	-0.0102 (0.01)	0.0970 (0.17)	0.4351 (1.80)	0.6311 (2.75)
% of rep of regional unions at the wc	-1.7493 (2.78)	-1.6504 (2.66)	0.2940 (1.16)	0.4603 (1.89)
% of rep of UGT at the wc	-0.7444 (1.49)	-0.7001 (1.42)	0.3910 (1.65)	0.5457 (2.42)
% of small groups at the wc	-0.4593 (0.84)	-0.3725 (0.69)	0.1732 (0.75)	0.3488 (1.55)
lagged strike duration	-0.0152 (1.14)	-0.0136 (1.04)	-0.0076 (2.05)	-0.0070 (1.84)
bargaining started with delay	-0.0799 (0.59)	-0.1760 (1.38)	0.2447 (4.05)	0.2333 (3.69)
COLA signed in the last agreement	-0.4163 (2.79)	-0.5002 (3.44)	-0.1303 (2.14)	-0.2122 (3.44)
lagged employment‡	0.7190 (2.66)	0.7076 (2.67)	-0.3355 (4.52)	-0.1680 (2.16)
lagged wage‡	0.1960 (0.49)	-0.0493 (0.12)	0.3089 (1.13)	0.0097 (0.03)
lagged (twice) wage‡	-0.3618 (2.30)	-0.2943 (1.81)	0.0241 (0.55)	0.1172 (2.33)
industry strike conflicting activity	0.2736 (3.51)	0.2562 (3.33)	0.0672 (3.66)	0.0471 (2.02)
industry unemployment rate	-0.1404 (0.54)	-0.1715 (0.67)	0.1231 (1.52)	-0.1153 (1.91)
change in the industry employment	0.4090 (1.29)	0.1385 (0.20)	-0.5678 (1.34)	0.0638 (0.94)
Expected level of inflation	0.2945 (4.16)	0.3849 (8.00)	0.2610 (7.45)	0.3879 (11.6)
regional wage change signal	0.0512 (1.30)	0.0497 (1.27)	0.0907 (4.94)	0.0811 (4.30)
nationwide employers reference offer	—	0.4444 (6.08)	—	0.4657 (9.15)
nationwide union's reference claim	—	0.1261 (1.36)	—	0.1294 (2.64)
nationwide unemployment rate	—	-2.3301 (1.95)	—	-2.7426 (4.69)
nationwide long term unemployment	—	0.0343 (1.59)	—	0.1131 (6.60)
Specification test				
Wald (df)	(19)	567.5(23)	(20)	1504.4(24)
industry dummies (df)	28.7(7)	31.3(7)	24.1(7)	26.9(7)
time dummies (df)	109.2(5)	No	424.2(5)	No
Sargan (df)	93.47 (90)	98.3 (90)	108.4(106)	123.1(106)
fosc	-2.03	-2.02	-5.73	-5.80
fosc	0.40	-0.37	-1.22	-1.44

Notes: Absolute value t-statistics in brackets.

The variables marked ‡ have been instrumented. Instruments: $z..z_{t-1}$ for first differences equations and $z..z_{t-1}$ for level equations.

Wald: Wald test of the null that the vector of coefficients (excluding time and industry dummies) is zero.

Sargan: Test of the validity of the set of instruments used. Under the null of adequacy, the test is distributed as a χ^2_r, where r is the number of overidentifying restrictions.

fosc (sosc): Test of the absence of first (second) order serial correlation in the error term (Arellano and Bond, 1991).

Appendix. Data and variables.

The data used in this study comes from the NCGE, an annual survey about bargaining in Spanish large firms (more than 200 employees). Each wave provides information about firm main results (sales, value added and profits), employment structure and negotiation by bargaining unit. Despite the survey runs since 1978 we only have information for the period 1985-1991. From the original database, we have excluded those firms that do not report information about some key variables such value added, employment, wage increase agreement, initial positions and length of the negotiation. The summary statistics, the definition and the source -when necessary- of the variables employed are also reported in Table A.1.

Table A.1. Variables. Descriptive statistics, definition and source.

	Claim sample		*Offer Sample*[a]		
Variables	*Mean*	*st dev*	*Mean*	*st dev*	*Definition (when necessary)*
Initial offers and agreement					
Claim	9.835	4.588	10.00	4.690	works council first wage increase claim(%)
Offer	5.423	1.633	5.333	1.500	firm's first wage increase offer (%)
Firm variables.					
Value added per employee	8.563	0.757	8.562	0.750	(in logs)
% of sales in the domestic market	86.6	20.8	86.3	21.1	in percentage
Bargaining unit variables					
A single union at the works council	10.9	31.20	10.2	30.2	dummy (1=single union at the works council)
% of rep. of CCOO at the wc	36.4	25.10	36.80	24.90	in percentage
% of rep of regional unions at wc	05.5	14.20	5.70	14.40	in percentage
% of UGT at the wc	30.6	22.40	3050	22.10	in percentage
% of small groups at the wc	21.2	27.70	20.50	26.90	in percentage
Lagged strike duration	0.157	0.364	0.163	0.369	lagged strike days per employee
Bargaining started with delay	24.5	43.0	23.0	42.1	1 if negotiation starts after the expiration of the last agreement
Lagged COLA signed	74.90	43.40	74.80	43.40	COLA: 1 if the last agreement has a COLA
Lagged employment level	6.418	1.128	6.434	1.100	number of employees in the BU (in logs)
Lagged wage	8.298	0.39	8.300	0.39	wage bill per employee (in logs)
Other variables.					
Working days lost per employee	0.445	1.026	0.458	1.063	industry averages -44 industries. (source: BEL)
Industry unemployment rate	13.45	7.930	13.55	8.050	in percentage –44 industries. (source: EPA)
Change in industry employment	0.025	0.066	0.025	0.065	44 industries (source: EPA)
Expected level of inflation	5.465	1.821	5.407	1.786	ARIMA price increase forecast at the starting date of the negotiation process
Regional wage increase signal	7.351	1.380	7.348	1.382	signed in the month preceding the starting date of the negotiation (%). (source: BEL)
Employers reference offer	4.342	1.011	4.316	1.013	employers association's yearly prescription
Unions reference claim	7.99	0.994	7.986	0.999	nationwide union's yearly prescription
National unemployment rate	18.7	2.001	18.6	1.990	in percentage (source: EPA)
Long term (+2 yr) unemployment	38.4	3.990	38.5	4.040	in percentage (source: EPA)

Observations per BU	***2***	***3***	***4***	***5***	***6***	***7***
Claim sample: BU	323	188	77	53	39	22
Offer sample: BU	299	169	71	53	36	18

Notes:

a. *The selection criteria is such that the firm rejects the initial claim*

Sources:

NCGE: Negociacion Colectiva en las Grandes Empresas. Ministerio de Economia y Hacienda.

BEL: Boletin de Estadisticas Laborales, Ministerio de Trabajo y Asuntos Sociales.

EPA: Encuesta de Poblacion Activa, Instituto Nacional de Estadistica.

Table 5. Initial offer determination. Alternative specifications.

	(1)	*(2)*	*(3)*	*(4)*
	coef. t-st.	***coef. t-st.***	***coef. t-st.***	***Coef. t-st.***
Constant	4.5948 (1.89)	-7.9842 (3.32)	-0.2251 (0.08)	-13.975 (5.30)
lagged offer‡	0.1961 (7.81)	0.1496 (5.82)	0.2074 (6.60)	0.1561 (4.84)
Current claim†‡	0.0071 (0.57)	0.0070 (0.57)	-0.0171 (0.96)	0.0054 (0.09)
Change in value added†	-0.0544 (0.95)	0.0416 (0.73)	-0.0105 (0.19)	0.1529 (0.86)
% of sales in the domestic market	0.0726 (0.51)	0.0100 (0.06)	0.1858 (1.12)	-0.0261 (1.44)
Single union at the works council	-0.1161 (0.85)	-0.0819 (0.58)	0.1384 (0.90)	0.2506 (1.56)
% of rep. of CCOO at the wc	0.3618 (1.44)	0.6891 (2.99)	0.5637 (2.22)	0.6916 (2.66)
% of rep of regional unions at the wc	0.2218 (0.79)	0.5094 (1.90)	0.1200 (0.43)	0.2188 (0.74)
% of rep of UGT at the wc	0.2219 (0.86)	0.2952 (1.19)	0.4970 (1.93)	0.4429 (1.68)
% of small groups at the wc	0.2957 (1.21)	0.6147 (2.65)	0.1779 (0.70)	0.2564 (0.96)
Lagged strike duration	-0.0054 (1.24)	-0.0058 (1.31)	-0.0045 (0.96)	-0.0049 (0.98)
Bargaining started with delay	0.2965 (4.28)	0.2288 (3.29)	0.2349 (3.08)	0.2240 (2.93)
COLA signed in the last agreement	-0.0817 (1.23)	-0.1787 (2.54)	-0.1517 (1.84)	-0.2321 (2.75)
Lagged employment‡	-0.3933 (4.56)	-0.1864 (2.21)	-0.3141 (2.15)	-0.1327 (0.83)
lagged wage‡	0.1226 (0.41)	-0.4094 (1.38)	0.4976 (1.63)	0.2674 (0.87)
lagged (twice) wage‡	-0.0360 (0.70)	0.0760 (1.37)	0.0223 (0.40)	0.1001 (1.59)
Industry strike conflicting activity	0.0718 (3.27)	0.0501 (2.15)	0.0965 (3.79)	0.0642 (2.38)
Industry unemployment rate	0.0197 (0.23)	0.1051 (1.27)	0.0345 (0.33)	0.0653 (0.56)
Change in industry employment	-0.3198 (0.74)	-0.1257 (0.28)	-1.1012 (2.15)	-1.2181 (2.32)
Expected level of inflation	0.2670 (6.89)	0.4502 (12.7)	0.2805 (6.20)	0.4256 (10.4)
Regional wage increase signal	0.0862 (4.51)	0.0807 (4.14)	0.0770 (3.61)	0.0702 (3.26)
Nationwide employers reference offer	____	0.4268 (7.90)	____	0.4829 (7.73)
Nationwide union's reference claim	____	0.1469 (2.97)	____	0.2254 (3.45)
Nationwide unemployment rate	____	-3.5617 (5.88)	____	-2.2854 (3.07)
Nationwide long term unemployment	____	0.0974 (5.31)	____	0.1364 (6.82)
Specification test				
Wald (df)	???.?(20)	1523.7(24)	???.?(20)	1080.6(24)
Industry dummies	15.6(7)	19.7(7)	14.9(7)	20.3(7)
Time dummies		----	377.9(5)	----
Sargan (df)	107.5(106)	129.7(106)	66.98(67)	87.8(67)
Fosc	-5.72	-6.03	-5.41	-5.15
Sosc	-1.29	-1.34	-1.09	-1.10

Notes: See below table 4