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THE STRATEGIC ROLE OF MINIMUM SECTORAL WAGES IN OLIGOPOLY: A CASE FOR THE SPANISH LABOUR MARKET

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This paper investigates the role that minimum sectoral wages play in industries with market power. Using a simple Monopoly Union-Cournot Competition model, we argue that during sectoral contracting, technologically superior firms have strategic incentive to opt for sectoral wages high enough to increase their inefficient rivals' costs. Then, so long as the labour market institutions sustain mandatory extension, the minimum sectoral wage deal would redistribute business to efficient employers (as well as earnings to both high-paid and low-paid employees) and would thus negatively affect sectoral employment.

Keywords: Monopoly Union, Oligopoly, Minimun Wage, Majority Coalition

(*JEL* J31, J51, L13)

1. Introduction

The minimum wage institution has been among the major components of many contemporary labour market setups, particularly in Europe[1];

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[1] In many European countries, wage contracting is centralized at the national (and/or the sectoral) level. Moreover, firm-level wage contracts are also present with or without *mandatory extension* over the centralized wage deals (see Layard *et al.*, 1991; Rogers and Streek, 1994). In the former case, centralized wages act as minimum wage floors for any firm in the economy (and/or the particular industry) That is, any firm, whether or not it participates in any negotiation, should pay at least this wage to its employees

however, it is still controversial. Recently, there has been renewed interest, both theoretical and empirical, in the economic and social impact of minimum (statutory and/or sectoral) wages (Dolado *et al.*, 1996, 1997; Saint-Paul, 1996; Freeman, 1996), most probably motivated by the persistently high unemployment rates in EU countries. These recent studies seem to lead to the following two conclusions.

First, in the context of imperfect labour markets, there is no clear-cut theoretical support for the claim that minimum wages generate unemployment. Under *conditions of monopsony*, that is, whenever firms maintain some discretion over the wage, a minimum wage can be set without necessarily reducing employment. It can be further argued that, in the presence of a minimum wage, the employment outcome in a (single) monopsonistic labour market might be the same as if this market were operating under perfectly competitive conditions. However, if asymmetries exist across labour markets (or across segments of the same market) a single minimum wage may in fact reduce aggregate employment, though all sub-markets are monopsonistic (see Dolado *et al.*, 1996).

Second, the minimum wage (statutory/sectoral) always acts as a redistributive tool, shifting the earnings distribution in favour of the low-paid employees. Moreover, in particular regarding minimum sectoral wages, recent evidence suggests that there are adverse employment effects on low-paid earnings (see e.g. Dolado *et al.*, 1997); clearly because a subset of low-paid workers are left unemployed.

What the recent literature implies, therefore, is that, in the presence of asymmetries, a bargained sectoral wage *mandatorily* extended to all firms (e.g., a minimum sectoral wage) may in fact generate sectoral unemployment in equilibrium. However, regarding the political economy of such an institution, a two-fold question remains: First, besides the workers who are displaced from their jobs, who else in the labour market is harmed by the minimum sectoral wage institution? Second, besides the subset of workers that finds employment under a higher wage contract, who else benefits from it? In other words, since not everybody in the labour market benefits from the minimum wage, in whose best interest is it for this institution to be sustained?

So far, there has been no clear explanation as to whether, and under which conditions, economic agents may strategically opt for minimum sectoral wage contracts, in order to affect the overall outcome in both the labour and the product markets in their own favour. Moreover, it has not yet been explicitly investigated whether such considerations may in fact provide a plausible rationale for the persistence of unemployment in unionized sectors, when asymmetries –and thus, conflicts of interests– across firms and/or unions are present. In this paper, we examine these questions by explicitly modeling the labour-product market strategic interactions in the context of an observed institutional setup, where minimum sectoral wage deals play a major role, as in the Spanish labour market. The stylized facts regarding the key institutional aspects of the labour market in Spain are briefly discussed below (see also, Jimeno and Toharia, 1994; Palenzuela and Jimeno, 1996).

First, regarding the structure of collective bargaining, there are three levels: National, sectoral and firm-level. The scope of bargaining, at least explicitly, excludes employment (Jimeno, 1992). At the first nationwide level, the minimum statutory wage (*Salario Mínimo Interprofesional*) is collectively set. The second industry-wide level establishes minimum bargained wages for all working categories (except white-collar) in each sector. At the third, firm-level wage bargains are struck, which cannot however contradict the terms of sectoral agreements. Hence, the latter de *facto* establish a second layer of minimum wages, above the minimum statutory ones.[2]

Second, in both effective (second and third) levels, bargaining is conducted between the employers' and workers' representatives. The larger proportion of the workers is affiliated with the two major unions, UGT and CC.OO, but they may also (by virtue of the Workers' Charter (1980)) belong to no union at all. What shapes a crucial feature of the Spanish system, nonetheless, is that collective agreements are enforceable on all workers regardless of their union status. That is, while in Spain union membership is below 15%, there is *mandatory extension* of the sectoral contract, acting as a minimum wage floor, during any firm-level negotiation.

Third, at the firm-level, workers' representatives form work councils which are entitled to bargain firm-level wages. This "open shop" union system, along with mandatory extension of sectoral contracts, explains the high coverage (above 70%), despite the aforementioned low unionization rate. In contrast, the coordination of employers during collective bargaining seems to be low (Dolado and Jimeno, 1997). Therefore,

[2]In fact, there have been no national agrreements after 1986 (see Palenzuela and Jimeno, 1996).

what is of particular importance for our modeling purposes is that, even if a subset of employers do not participate in sectoral contracting, their *work council* may choose to enforce the minimum sectoral wage during firm-level negotiations.

We study the implications and the consequences of the above setup by developing a simple sectoral model, in which two technologically asymmetric firms compete a la Cournot in the product market. In the labour market, wage contracting is structured in two sequential stages. In the first, firms and unions collectively choose the minimum sectoral wage. In the second, each firm separately deals with its own monopoly union. Each union chooses a firm-specific wage that, due to mandatory extension, must be at least equal to the minimum wage contract. Finally, firms choose their employment and outputs. Restricting attention to subgame perfect equilibria, our findings reveal the strategic role that the sectoral wage plays in the rivalry among firms, its redistributive function, as well as its negative consequences on sectoral employment. As expected (Layard *et al.*, 1991), the efficient firm's advantage in the product market is extended to the labour market since, even though this firm pays higher firm-specific wages, it effectively faces lower costs per efficiency unit of labour. Therefore, the efficient firm would (if it could) strategically opt for a sufficiently high minimum sectoral wage, since it would thus impose higher labour costs upon its rival.

This line of reasoning was first used in the literature on "Raising Rivals' Costs" (see, e.g., Salop and Scheffman, 1983, 1987; Williamson, 1968). Salop and Scheffman (1983, 1987) discuss a number of strategies that dominant firms may use to diminish the market share, or even induce the exit, of their rivals. In a model where a dominant firm faces a competitive fringe, they show that the dominant firm can use cost-raising strategies to increase its profits by eroding the position of its rivals. That is, a dominant firm may raise the price of an input used by all the firms in the industry above its competitive price, in order to steal business from its rivals. In fact, as we show in this paper, the institution of minimum sectoral wages provides an unusually natural setting for these arguments to apply.

In Spain, under the open shop union system and the mandatory extension of sectoral agreements, our findings suggest that efficient firms have incentive to lobby the representatives of *work councils* during sectoral wage negotiations for minimum wages high enough to impose high binding costs on their inefficient rivals. In principle, the latter might react by not participating in sectoral wage contracting and proposing sub-minimum wages to their workers, after the wage contract has been struck. However, as long as the sectoral wage deal proves to be (as our findings show) in the best interest of at least a subset of their workers, compliance with it can always be sustained through the *open shop union-work council-mandatory extension* scheme. That is, even if union membership in inefficient firms is low, the particular subset of workers who may find employment within each firm under the sectoral wage contract (mostly senior workers), should effectively be considered as belonging to a firm-specific union whose representatives were eligible to participate in sectoral wage negotiations. Subsequently, the same workers are also entitled to bargain the firm-level wage, and, therefore, (being time-consistent) confirm the sectoral agreement via their work council's appeal to mandatory extension. Hence, as we show, it is also in the best interests of inefficient employers to participate in sectoral wage contracting in order to avoid even higher losses. Apparently, the missing part of our analysis regards only those workers in a subset of small-scale firms who are, actually, not represented at all during sectoral wage contracting. These workers may therefore ex-post engage in "underground" wage arrangements with their own employers.[3] While we do not examine it explicitly here, we can nonetheless assert that, since sectoral wage bargainers are aware of this option, they may always (via their Stackelberg leadership) minimize the emerging wage differentials by consistently adjusting the sectoral wage agreement downwards (see Vlassis, 1998). However, as evidenced by the high coverage rate of sectoral agreements in Spain, this possibility should not be expected to affect significantly the level of the minimum sectoral wage deal and, therefore, its consequences regarding employment and distribution.

In summary, our findings suggest that it is the particular form of the minimum wage institution in Spain (i.e., sectoral wage deals mandatorily extended), which always accommodates the efficient firms' strategic interest in stealing business from, or even marginalizing, their labour intensive rivals, by raising their costs. Hence, we may claim that, under these circumstances, the minimum wage institution should be reasonably expected to generate persistent negative effects on sectoral

[3]As Dolado *et al* (1997) point out, this instance effectively arises whenever (small-scale inefficient) employers "fail to recognise their workers' legal representation" (i.e unions) and thus sectoral wage contracts may be difficult to enforce.

employment. Furthermore, even though efficient firms "pay high wages to their employees anyway" (see, e g., Freeman, 1996), we clearly suggest that these firms, in fact, benefit from the minimum wage institution; as do both the high-paid and the low-paid employees. Then, as long as inefficient firms are –along with the unemployed– the ones losing from the minimum sectoral wage institution, it is the above distribution of interests that effectively sustains it, despite its negative effects on sectoral employment.

The rest of the paper is organized as follows: Section 2 presents the model. In section 3 the strategic role of the minimum sectoral wage is demonstrated. Section 4 provides illustrations and discussion of the robustness of our main results. Finally, section 5 concludes, with particular reference to the Spanish labour market.

2. The model

We consider a homogeneous good sector where two firms, endowed with different technologies, compete in quantities in the product market. For simplicity, we assume that firms are endowed with one-factor (labour) technologies that exhibit constant returns to scale.[4] Firm 2 possesses a superior technology to firm 1. In particular, the inefficient firm 1´s production function is $y_1 = N_1$, and efficient firm 2´s is $y_2 = kN_2$ with $1 < k$, where y_i denotes firm i´s output, N_i its employment level, and k the relative efficiency of technologies. Market (inverse) demand is given by $P(Y)$, with $P'(Y) < 0$ where $Y = y_1 + y_2$ is the aggregate output We also assume that the industry revenue, $YP(Y)$, is concave.[5]

The labour market is unionized. Workers are organized into two separate, firm-specific unions. This assumption is *ex-ante* appealing, since firms with different production processes often employ workers differing in their training and skills. It is even more appealing *ex-post*, since as is shown in this paper, technological asymmetries create conflicts

[4] For instance, a firm endowed with a two-factor Leontief technology, produces with such a linear, one-factor (labour) technology in the short-run, if its amount of capital is not too small

[5] Note that concavity of industry revenues implies cardinal supermodularity of the Cournot game in which the action set of one firm is in the reverse order. In fact, an even weaker condition, i e. $P(Y)$ is *log-concave*, guarantees that the "reversed" Cournot game is an ordinally supermodular game Uniqueness of equilibrium is then guaranteed, because in the Cournot game the best response functions turn out to be contractions (see Novshek, 1985; Amir, 1996).

of interests between employees of different firms during the determination of the minimum wage. In fact, as the most-preferred minimum wages of the two unions are not the same, the unions by acting together cannot change the median voter in a way that improves both their positions.[6] Let union i be firm i's union. Assume that unions are of the utilitarian type (Oswald, 1982); that is, union i's objective is

$$U_i(\omega_i, N_i) = (\omega_i - w_0)^{\varphi} N_i, \qquad [1]$$

where ω_i is firm i's wage rate and $w_0 > 0$ the outside option,[7] with $\varphi \in (0, 1]$ being the elasticity of substitution between wage level and employment of the union. The labour market institution specifies wage negotiations at both the sectoral and the firm levels. In addition, it provides *mandatory extension* of the sectoral wage bargains. We assume, for simplicity, that unions have the power to set wages at the firm level, i.e. they are Monopoly Unions.[8] Therefore, the timing of the game is as follows. In the first stage, firms and unions collectively choose a minimum sectoral wage w_m. In the second stage, each Monopoly Union chooses ω_i, under the restriction that this cannot be less than w_m. Finally, firms compete in quantities. We restrict attention to subgame perfect equilibria.

3. The strategic role of minimum wage

Let us first consider the last stage. Define w_i to be firm i's wage per efficiency unit of labor; that is, $w_i = \omega_i/k_i$, with $k_1 = 1$ and $k_2 = k$. Given the wage rates (w_1, w_2), firm i chooses y_i to maximize profits, $\pi_i = P(Y)y_i - w_i y_i$. The first order conditions (focs) are, $i, j = 1, 2$,

$$P'(y_i + y_j)y_i + P(y_i + y_j) = w_i. \qquad [2]$$

[6] In a larger sector with many firms, some unions (most likely those of the most efficient firms) might have incentives to cooperate, but again full cooperation would not be achievable. So long as there exist signifigant technological asymmetries, there would always be some groups of workers that have conflicting interests

[7] It can be thought of as a weighted average of the competitive wage and the unemployment benefit, the weights being the probability to find, or not, employment in the competitive sector. Due to the partial equilibrium nature of our analysis (i e. the sector's size is small relative to the macroeconomy) both ω_i and w_0 can be considered as real arguments since all agents in this sector take the wage deflator to be exogenous Naturally then w_0 is also exogenous

[8] In fact, if the efficient firm has an incentive to strategically use the minimum wage in this extreme case, then it is obvious that it will do so whenever it has some bargaining power in the firm-level negotiations. Under Monopoly Unions firms' wage rates are the highest possible It is then, a priori, hard to believe that the efficient firm will lobby for an even higher cost of labour, as our paper indeed shows

Given that industry revenues are concave, profit functions are concave, $\partial^2\pi_i/\partial y_i\partial y_j < 0$, and $|\partial^2\pi_i/\partial y_i\partial y_j| < |\partial^2\pi_i/\partial y^2{}_i|$. Thus, the above game is supermodular in $(y_i, -y_j)$ and the best response functions are contractions. Thus, there exists a unique equilibrium $(y_1^*(w_1, w_2), y_2^*(w_2, w_1))$ which is quasi-symmetric in the sense that $y_1^*(a, b) = y_2^*(a, b)$. Furthermore, since $\partial^2\pi_i/\partial w_i\partial y_i = -1 < 0$ and $\partial^2\pi_i/\partial w_j\partial y_i = 0$ it follows that $\partial y_i^*/\partial w_i < 0$ and $\partial y_i^*/\partial w_j > 0$. Finally, adding the focs in [2] and totally differentiating, it can be seen that equilibrium industry output is a decreasing function of the sum of wages, i.e. $Y^* = Y^*(w_1 + w_2)$, with $dY^*/d(w_1 + w_2) < 0$.

Next, consider stage-2. Given the rival firm´s wage-rate ω_j, monopoly union i chooses ω_i to maximize $U_i = (\omega_i - w_0)^{\varphi} N_i^*$, under the restriction $\omega_i \geq w_m$, where $N_i^* = y_i^*(w_i, w_j)/k_i$. Equivalently, union i maximizes

$$lnU_i = [\varphi ln(\omega_i - w_0) + lny_i^*(\omega_i/k_i, \omega_j/k_j) - lnk_i] \text{ s.t. } \omega_i \geq w_m. \quad [3]$$

The focs of the unrestricted problem are:

$$\frac{\varphi}{(\omega_i - w_0)} + \frac{1}{k_i}\frac{\partial lny_i^*}{\partial w_i} = 0. \quad [4]$$

The (unrestricted) unions' game is supermodular if $\partial^2 lny_i^*/\partial w_i\partial w_j > 0$. Further, a sufficient condition for this game to have a unique equilibrium is that the slope of the best response functions, $d\omega_i^U/d\omega_j$, be less than 1. A sufficient condition, in turn, for the latter to be true is that $\partial^2 lny_i^*/\partial w_i\partial w_j \leq -(k_j/k_i)\partial^2 lny_i^*/\partial w_i^2$. Thus, to guarantee existence and uniqueness of the equilibrium of the (unrestricted) unions' game, we make the following assumption.

Assumption 1: $0 < \partial^2 lny_i^*/\partial w_i\partial w_j \leq -(k_j/k_i)\partial^2 lny_i^*/\partial w_i^2$.

As is demonstrated in section 4, assumption 1 will be fulfilled at least for some class of market demand functions. Of course, this assumption can be translated (using the focs in [2]) into an expression relating first, second and third order derivatives of the market (inverse) demand function. However, this turns out to be an extremely tedious task that does not shed any further light on what functional forms of market demand lead to a unique equilibrium of the unions' game. Note, however, that assumption 1 is not necessary. As is demonstrated in section 4, existence and uniqueness of equilibrium does not require the last inequality of assumption 1. Further, note that assumption 1 implies log-concavity of y_i^* in w_i (and thus uniqueness of the maximum in [4]). This is not necessary either, however it turns out to be the key sufficient condition under which Proposition 1 below holds.

The best response functions of the restricted problem [3], $\omega_i(\omega_j) = Max[w_m, \omega_i^U(\omega_j)]$, can more conveniently be expressed in terms of the wages per efficiency unit:

$$w_i(w_j) = max[w_m/k_i, w_i^U(w_j)]. \qquad [5]$$

The following proposition summarizes a property of these reaction functions which is crucial to our analysis.

PROPOSITION 1: *$w_2(w) < w_1(w) \leq kw_2(w)$ for all w.*

PROOF: To prove the second inequality, note that for any ω_j and given some w_0, the optimal w_i^U only depends on k_i. Now note that at the optimal choice of w_i^U from [3] we get,

$$\begin{aligned}\frac{\partial^2 \ln U_i}{\partial k_i \partial \omega_i} &= \frac{\partial}{\partial \omega_i}\left[-\frac{\partial \ln y_i^*}{\partial w_i}\frac{\omega_i}{k_i^2} - \frac{1}{k_i}\right] = -\frac{\partial}{\partial w_i}\left[\frac{\partial \ln y_i^*}{\partial w_i}w_i - 1\right]\frac{1}{k_i^2}\\ &= -\frac{1}{k_i^2}\left[-\frac{\partial^2 \ln y_i^*}{\partial w_i^2}w_i + \frac{\partial y_i^*}{\partial w_i}\frac{1}{y_i^*}\right] > 0.\end{aligned}$$

This is so, because by assumption 1 and the fact that $\partial y_i^*/\partial w_i < 0$, the term in square brackets is negative. Therefore, ω_i is strictly increasing in k_i, hence $kw_2^U(w) = \omega_2^U > \omega_1^U = w_1^U(w)$. Now if $w_2(w) = w_2^U(w)$, then $kw_2(w) \geq w_m$, and since $kw_2^U(w) > w_1^U(w)$, we have from [5] that $kw_2(w) \geq w_1(w)$. If $w_2(w) = w_m/k$, then $kw_2(w) \geq kw_2^U(w) > w_1^U(w)$, and since $kw_2(w) = w_m$, we have from [5] that $kw_2(w) \geq w_1(w)$.

To prove the first inequality, note that an equivalent objective for union i is to choose w_i to maximize $lnU_i = [\varphi ln(w_i - w_0/k_i) + lny_i^*(w_i, w_j) + (\varphi - 1)lnk_i]$. Observe that, for any w_j, the optimal w_i only depends on w_0/k_i. Now note that at the optimal choice of w_i,

$$\frac{\partial^2 \ln U_i}{\partial \frac{w_0}{k_i}\partial w_i} = \frac{\partial}{\partial w_i}\left[-\frac{\varphi}{w_i - \frac{w_0}{k_i}}\right] = \frac{\varphi}{(w_i - \frac{w_0}{k_i})^2} > 0.$$

Hence, for given w_j, w_i is strictly increasing in w_0/k_i, and thus $w_1^U(w) > w_2^U(w)$. Now if $w_1(w) = w_1^U(w)$, then $w_1(w) \geq w_m > w_m/k$ and $w_1(w) > w_2^U(w)$; hence $w_1(w) > w_2(w)$. If $w_1(w) = w_m \geq w_1^U(w) > w_2^U(w)$ and $w_1(w) > w_m/k$, hence $w_1(w) > w_2(w)$. Q.E.D.

From Proposition 1 and the fact that $w_i^U(w) > w_0$ and $dw_i^U/dw > 0$ for all w, it follows that there exists an interval $[\underline{w}, \overline{w}]$ such that for all $w_m \in [\underline{w}, \overline{w}]$, the minimum sectoral wage is binding for firm 1´s union, but not for firm 2´s. Moreover, assumption 1 implies that the slope of union 2's best response function, dw_2^U/dw_1, is less than $1/k$; as a result, $\overline{w}$ is finite. Let (ω_1^*, ω_2^*) be the equilibrium firm-specific wage rates, and (w_1^*, w_2^*) be the respective wages per efficiency unit of labor. A low enough minimum wage (i.e. $w_m < \underline{w}$) is not binding for any union, and by Proposition 1, $w_2^* < w_1^*$, even though $\omega_2^* > \omega_1^*$. That is, whilst the efficient firm pays higher firm-specific wages, it effectively faces a lower cost per efficiency unit of labor. On the other hand, for higher values of w_m, the inefficient firm´s union is "obliged" to choose the minimum sectoral wage ($\omega_1^* = w_m$), while the efficient firm´s union can ask for an even higher wage rate, ω_2^*. Note, however, that the inefficient firm´s cost disadvantage, $(w_1^* - w_2^*)$, increases with w_m and, in fact, reaches its maximum when the minimum wage is sufficiently high, so that it becomes binding for both unions. Hence, it is fairly clear that the efficient firm may have a strategic incentive to opt for a high enough minimum sectoral wage. It would, thus, increase its cost advantage against its rival, by shifting the set of the latter's feasible firm-specific wage agreements upwards. Of course, this can only be attained at the cost of the efficient firm paying higher firm-specific wages Therefore, whenever the former "business stealing" effect dominates the latter "higher costs" effect, the efficient firm will lobby for a sufficiently high w_m, so long as the labor market institutions accommodate such arrangements.[9]

Let us then proceed to stage 1. Let $m_{Fi}(m_{Ui})$ represent the minimum wage that maximizes firm i's profits (union i's welfare). Naturally, if the minimum wage is not binding, firms' profits and unions' welfare do not depend on w_m. Suppose now that $\underline{w} \leq w_m \leq \overline{w}$. As the following Proposition shows, output and profits of the inefficient firm always decrease with w_m in this range. Proposition 2 also provides a qualitative condition under which the profits of the efficient firm increase with the

[9] Note that a high enough minimum wage will also increase the relative efficiency wage differential and thus redistribute business to the efficient firm, when firms compete in prices in the product market In such a case, strategic complementarity in prices would moreover imply that the least efficient firm may also have an interest in raising the minimum wage above the unrestricted wage, because price competition would be thus relaxed. Hence, our qualitative results do not change much if Bertrand (rather than, Cournot) competition is assumed in the product market.

minimum wage. As is shown in section 4, this condition always holds in the linear demand case. Also, it holds under some circumstances in the constant elasticity demand case. Note however that, even if this condition is satisfied only for values of the minimum wage close enough to $\underline{w}$, our main result (Proposition 4) remains valid. As is shown in section 4, in the constant elasticity demand case, the efficient firm's profits (as well as both unions' welfare) initially increase and then decrease in w_m. Then the two unions and the efficient firm still have an incentive to lobby for a minimum wage that will be binding for the inefficient firm's employees.

PROPOSITION 2: *For all* $w_m, \underline{w} \leq w_m \leq \overline{w}$,

a) $y_1^*(w_m)$ *and* $\pi_1(w_m)$ *are strictly decreasing functions.*

b) If the slope of the efficient firm's (unrestricted) reaction function is sufficiently small, then $y_2^*(w_m)$ *and* $\pi_2(w_m)$ *are strictly increasing functions.*

PROOF: We will first show that π_1 is strictly decreasing in w_m. Since $\pi_i = P(Y^*)y_i^* - w_i y_i^*$, by using the envelope theorem we obtain,

$$\begin{aligned} d\pi_i/dw_m &= -y_i^* dw_i/dw_m + y_i^* P'(Y^*)(\partial y_j^*/\partial w_i)(dw_i/dw_m) \\ &\quad + y_i^* P'(Y^*)(\partial y_j^*/\partial w_j)(dw_j/dw_m) \end{aligned} \quad [6]$$

Further, by totally differentiating the focs in [2] we get,

$$\begin{aligned} \partial y_i^*/\partial w_i &= [P''(Y^*)y_j^* + 2P'(Y^*)]/D < 0; \\ \partial y_i^*/\partial w_j &= -[P''(Y^*)y_i^* + P'(Y^*)]/D > 0 \end{aligned} \quad [7]$$

with $D = P'(Y^*)[P''(Y^*)Y^* + 3P'(Y^*)] > 0$. Hence, $P'(Y^*)\partial y_i^*/\partial w_i = P'(Y^*)\partial y_i^*/\partial w_j + 1$ and from [6],

$$d\pi_1/dw_m = -y_1^*[(1 - dw_2^U/dw_1) - P'(Y^*)(\partial y_2^*/\partial w_1)(1 + dw_2^U/dw_1)] < 0.$$

since $dw_1/dw_m = 1$ and $0 < dw_2/dw_m = dw_2^U/dw_1 \leq 1/k < 1$. We next show that y_1^* is strictly decreasing in w_m. We distinguish two cases: a) $P'' < 0$ and b) $P'' > 0$. Let $P'' > 0$. By the focs in [2] we have, $\pi_1 = -P(Y^*)(y_1^*)^2$. As Y^* decreases with $(w_1 + w_2)$, and thus decreases with w_m, $-P'(Y^*)$ increases with w_m; hence $d\pi_1/dw_m < 0$ implies that y_1^* decreases with w_m. Next, let $P'' < 0$. From the focs in [2], we get $-P'(Y^*)(y_2^* - y_1^*) = (w_1 - w_2)$. In this case, $-P'(Y^*)$ decreases with w_m, and since $d(w_1 - w_2)/dw_m = 1 - dw_2^U/dw_1 > 0$, we conclude that $(y_2^* - y_1^*)$ increases with w_m. Moreover, since $dY^*/dw_m > 0$, $-(y_1^* + y_2^*)$

increases with w_m. Hence, $(y_2^* - y_1^*) - (y_1^* + y_2^*) = -2y_1^*$ increases with w_m.

We now turn to part b). Observe from [6] and [7] that the first two terms of $d\pi_2/dw_m$ are negative, while the last term is positive. Since $dw_1/dw_m = 1$, while $dw_2/dw_m = dw_2^U/dw_1 \leq 1/k$, the positive term under some circumstances dominates the two negative terms, and then the profits of the efficient firm will increase with w_m. In other words, if the increase in the minimum wage raises the inefficient firm's costs much more than it raises the efficient firm's costs, the efficient firm attains higher profits.[10] Equivalently, after some manipulations we get,

$$\frac{d\pi_2}{dw_m} = -y_2^*(1 + \frac{dw_2^U}{dw_1}) \left[\frac{2\frac{dw_2^U}{dw_1}}{1 + \frac{dw_2^U}{dw_1}} - P'(Y^*)\frac{\partial y_1^*}{\partial w_1} \right]. \qquad [8]$$

Note that both terms in the square brackets are positive. Whenever the first term is small enough, the second term dominates and the sign of this derivative is positive.[11] If, in addition, $P'' < 0$, then y_2^* increases with w_m, since $\pi_2 = -P(Y^*)(y_2^*)^2$ and $-P'(Y^*)$ decreases with w_m. On the other hand, if $P'' > 0$, then $dy_2^*/dw_m = (\partial y_2^*/\partial w_1)(dw_1/dw_m) + (\partial y_2^*/\partial w_2)(dw_2/dw_m)$ can be written as (using (7)),

$$\frac{dy_2^*}{dw_m} = \frac{1 + \frac{dw_2^U}{dw_1}}{P'(Y^*)} \left[P'(Y^*)\frac{\partial y_2^*}{\partial w_1} + \frac{\frac{dw_2^U}{dw_1}}{1 + \frac{dw_2^U}{dw_1}} \right].$$

The first term in square brackets is negative, while the second is positive. If the second term is small enough, then the efficient firm's output increases with w_m. If the demand is convex, the condition on output is more stringent than that on profits: If the efficient firm's output increases with w_m, then its profits also increase. Q.E.D.

Proposition 2 tells us that, under some circumstances, an increase in w_m in the range $[\underline{w}, \overline{w}]$ redistributes output to the efficient firm,

[10] As we mentioned above, even if this condition holds only for values of w_m in the neighborhood of $\underline{w}$, the efficient firm still has an incentive to vote for a high enough minimum wage such that it is binding for its inefficient rival's employees. In that case, our main result (Proposition 4) remains valid. This is demonstrated in section 4 for the constant elasticity demand case

[11] Of course, the two terms are not independent As we have already mentioned, the slope of firm 2's unrestricted reaction function can be expressed in terms of first, second and third derivatives of the inverse demand. The second term can also be expressed in a similar way (see (7)). However, it is a very hard task to obtain explicit conditions based exclusively on the form of the inverse demand function

and all the costs of the aggregate reduction in output are borne by the inefficient firm. Henceforth, the efficient firm's profits increase and the inefficient firm's profits decrease. Finally, since total output decreases and production shifts away from the labour intensive firm, sectoral aggregate employment decreases in this range.

Suppose next that $w_m \geq \overline{w}$. Then $dw_2/dw_m = 1/k$. It is clear from [6] that the inefficient firm's profits decrease in this range, too. Thus, without loss of generality, $m_{F1} = \underline{w}$. On the other hand, from [8] the sign of $d\pi_2/dw_m$ can be either positive or negative. The efficient firm's profits may initially increase and then decrease.[12] Since the cost disadvantage of the inefficient firm, $(w_1^* - w_2^*) = (1-1/k)w_m$, increases with w_m in this range, the efficient firm's profits will increase so long as its own higher costs effect remains relatively small. Otherwise, the efficient firm's profits decrease with w_m. Therefore, if the slope of firm 2's reaction function is small enough, then $m_{F2} \geq \overline{w}$. Of course, sectoral aggregate unemployment increases in this range.

Turning attention to the unions' welfare, first note that the efficient firm's union welfare unambiguously increases with w_m, whenever $\underline{w} \leq w_m \leq \overline{w}$. Not only do their wages increase in this range, but also employment for the union members (under the condition of Proposition 2). In fact, this union prefers a minimum wage strictly above $\overline{w}$. This is so, either because profits, output and thus employment for the efficient firm increase initially with w_m for w_m above $\overline{w}$; or because the reduction in employment is of second order for w_m, close enough to $\overline{w}$, while the wage increase is of first order. Therefore, $m_{U2} > \overline{w}$.

Finally, to find the preferred minimum wage for the inefficient firm's union, note that

$$\begin{aligned} dU_i/dw_m \quad \propto \quad & \{\varphi N_i^* + (\omega_i - w_0)\partial N_i^*/\partial w_i\} dw_i/dw_m \\ & + (\omega_i - w_0)(\partial N_i^*/\partial w_j)(dw_j/dw_m). \end{aligned} \quad [9]$$

By the envelope theorem the term in brackets is zero if the minimum wage is non-binding, and negative otherwise. Now the second term of dU_i/dw_m is strictly positive for all $w_m > \underline{w}$, as $\partial N_1^*/\partial w_2 = \partial y_1^*/\partial w_2 > 0$. Therefore, the inefficient firm's union prefers a minimum wage strictly above $\underline{w}$, because around $\underline{w}$ the negative direct effect of raising w_1 is of second order, but there is a positive first order effect from the efficient firm raising its own wage. Hence, $m_{U1} > \underline{w}$.

[12] Obviously, for given k, if w_m is sufficiently high, the inefficient firm shuts down, and further increases in w_m harm the emerging monopolist.

Note however that m_{U1} can be either below or above $\overline{w}$. Obviously, if $m_{U1} \leq \overline{w}$, then $m_{U1} < m_{U2}$. Suppose now that $m_{U1} > \overline{w}$. Given that $\omega_1 = \omega_2 = w_m$, we get from [3],

$$\frac{\partial^2 \ln U_i}{\partial k_i \partial w_m} = \frac{\partial}{\partial w_m}\left[-\frac{\partial \ln y_i^*}{\partial w_i}\frac{w_m}{k_i^2} - \frac{1}{k_i}\right] =$$

$$-\frac{1}{k_i^2}\left[\frac{\partial \ln y_i^*}{\partial w_i} + \frac{\partial^2 \ln y_i^*}{\partial w_i^2}\frac{w_m}{k_i} + \frac{\partial^2 \ln y_i^*}{\partial w_i \partial w_j}\frac{w_m}{k_j}\right] > 0$$

because by [7] $\partial \ln y_i^*/\partial w_i < 0$, and by assumption 1, $0 < \partial^2 \ln y_i^*/\partial w_i w_j \leq -(k_j/k_i)\partial^2 \ln y_i^*/\partial w_i^2$, hence the sum of the last two terms in square brackets is negative. As a result, m_{Ui} is increasing in k_i. Thus again, $m_{U1} < m_{U2}$.

In summary, though total output decreases, the efficient firm's union would opt for a high enough minimum wage so long as the product market is being redistributed to its employer with w_m. In this way, its members could gain higher wages without losing too many jobs. On the other hand, the inefficient firm's union would resist a significant increase in the minimum wage in order to avoid the marginalization of its firm and the resulting drastic decrease in its own members' employment. It is interesting however that the inefficient firm's union would opt for a higher wage floor (and thus wage rate) than the wage it would set as a Monopoly Union. This is also true for the efficient firm's union. The reason is that, effectively, the minimum wage would imply (*ex-post*) "partial collusion" among unions: under the presence of a wage floor (acting as a commitment device), the incentive of any union to undercut its rival, in order to increase employment, would be totally, or partially, offset. The above findings are summarized in Proposition 3.

PROPOSITION 3: *$m_{F1} = \underline{w} < min\{m_{U1}, m_{F2}\}, m_{U1} < m_{U2}, m_{F2} \geq \overline{w}$, and $m_{U2} > \overline{w}$.*

It is by now clear that three out of four "agents", each acting in its own interest, would like to establish a sufficiently high w_m so that the sectoral wage becomes binding for one (or both) union(s) when they set the firm-specific wage rate. It remains to specify the minimum wage that comes out of the sectoral level negotiations. Negotiations among four agents is a rather complex issue, so there is no unique way to model the process. To capture lobbying activities, we model this as a simple voting game. More explicitly, the two firms and the two unions vote simultaneously on a sectoral wage, taking into account its future impact on their profits and welfare. The voting equilibria are then derived by the median voter principle.

PROPOSITION 4: *Any voting equilibrium* w_m^* *is such that* $w_m^* > \underline{w}$.

This is a straightforward consequence of Proposition 3, because the inefficient firm can never be a median voter. Thus, the established minimum sectoral wage will be binding for at least the inefficient firm's employees. For instance, as is shown in the next section, in the linear demand case the median voters are clearly the inefficient firm's union and the efficient firm. Then any $w_m^* \in [min\{m_{U1}, m_{F2}\}, max\{m_{U1}, m_{F2}\}]$ is a voting equilibrium. Note that, due to mandatory extension of the sectoral agreement, if the inefficient firm chooses not to participate in the voting game, the unique voting equilibrium will be $w_m^* = max\{m_{U1}, m_{F2}\}$, i.e. the worst possible one for the inefficient firm´s interest. Therefore, though it always loses due to the structure of the institutional setup, the inefficient firm may at least mimimize these losses by participating in sectoral wage contracting. A similar reasoning applies in the general demand case (where, however, the efficient firm's union might be one of the median voters). Finally, note that the most-preferred minimum wages of the two unions are different. If the two unions decide to act together, then it is clear that in the resulting three-player game the median voter would be the industry-wide union. Obviously, the emerging wage from the voting game would be such that one, at least, of the unions loses as compared to the outcome of the four-player game. Therefore, unions cannot improve both their positions by acting together.

4. Illustrations and discussion

In this section, we analyze and discuss two special cases: (i) the linear demand case and (ii) the constant elasticity demand case. The linear demand case satisfies all our assumptions, thus leading to all the results presented above. In contrast, the constant elasticity demand case fails to meet most of our assumptions. The demand function is too convex to satisfy even the log-concavity condition (see footnote 5). As a consequence, the slope of firm 2's reaction function is not always small enough, and the output of the efficient firm decreases with the minimum sectoral wage; further, the efficient firm's profits and its union welfare are often first increasing and then decreasing with w_m in the $[\underline{w}, \overline{w}]$ range. Interestingly, our main result (Proposition 4) holds true in this case, too.

EXAMPLE 1: The linear demand case

The market inverse demand is linear, $P(Y) = a - Y$. The equilibrium of the Cournot competition stage is given by $y_i^*(w_i, w_j) = (a - 2w_i + w_j)/3$ and $\pi_i^*(w_i, w_j) = (y_i^*)^2$. It can be checked that assumption 1 is satisfied for all k such that the Cournot game has an interior solution, i.e. $k < 2$.

The best response functions in the Unions wage-setting game are:

$$\begin{aligned} w_1(w_2) &= max[w_m, \{a\varphi + \varphi w_2 + 2w_0\}/2(1+\varphi)] \\ w_2(w_1) &= max[w_m/k, \{a\varphi + \varphi w_2 + 2w_0/k\}/2(1+\varphi)] \end{aligned}$$

Note that $\partial w_i^U/\partial w_j = \varphi/2(1+\varphi) \leq 1/4 < 1/k$ for all $0 < \varphi \leq 1$ (since $k < 2$). Given that $P'(Y) = -1$ and $\partial y_1^*/\partial w_1 = -2/3$, the slope of firm 2's reaction function is small enough such that both the output and the profits of the efficient firm increase in the range $[\underline{w}, \overline{w}]$. On the other hand, as $\partial w_i/\partial w_j = 1/k \geq 1/2$ if $w_m \geq \overline{w}$, its output and profits decrease with w_m in the upper range. Therefore, in the linear demand case, we have $\underline{w} = m_{F1} < m_{F2} = \overline{w} < m_{U2}$, and $\underline{w} < m_{U1} < m_{U2}$. Thus, the median voters are the inefficient firm's union and the efficient firm, and any $w_m^* \in [min\{m_{U1}, m_{F2}\}, max\{m_{U1}, m_{F2}\}]$ is a voting equilibrium since, as can be checked, the union welfare as well the firm's profits are quasi-concave in w_m.

EXAMPLE 2: The constant elasticity demand case

The inverse market demand is $P(Y) = Y^{-a}$, where $0 < a < 1$. It can be checked that the Cournot equilibrium outputs and profits are:

$$\begin{aligned} y_i^* &= \frac{(2-a)^{\frac{1}{a}}}{a} \left[w_j - (1-a)w_i\right] (w_1 + w_2)^{\frac{-(a+1)}{a}} \\ \pi_i &= \frac{(2-a)^{\frac{1}{a}}}{a} \left[w_j - (1-a)w_i\right]^2 (w_1 + w_2)^{\frac{-(a+1)}{a}} \end{aligned}$$

The focs of the Unions wage setting game are:

$$\frac{\varphi}{(w_i - \frac{w_0}{k_i})} = \frac{1-a}{(w_j - (1-a)w_i)} + \frac{a+1}{a(w_1 + w_2)}.$$

Let $\varphi = 1$ and $w_0 = 1$. If $a = .5$ and $k = 1.1$, we can check that all, but one, of the results obtained in the previous section hold in this case, too. By plotting the relevant expressions in the range $[\underline{w}, \overline{w}] = [1.621, 1.792]$, we observe that the profits and output of the inefficient firm decrease, while the profits of the efficient firm as well its union welfare increase, with w_m; also, that the inefficient firm's union welfare reaches its maximum at 1.715, inside this range. The output, however, of the efficient firm decreases with w_m, but at a rate lower than the rate of decrease of its rival's output.

In contrast, if we increase the technology differential to $k = 1.5$, both the profits of the efficient firm and the welfare of its union reach their maximum inside the range $[\underline{w}, \overline{w}] = [1.487, 2.429]$, the former at 2.385 and the latter at 1.66 (As above, both outputs and the profits of the inefficient firm are decreasing, and its union welfare reaches its maximum at 1.61). Despite these observations, our main result still holds true: the voting procedure leads to an equilibrium minimum wage strictly above $\underline{w}$, which is thus binding for the inefficient firm's employees (Proposition 4). Similar results are obtained for other values of the parameters, confirming that our main result holds under much more general circumstances than those required by our assumptions.

5. Conclusions

This paper builds upon the argument that, if wage contracting is centralized at the sectoral level, technologically superior firms often have a strategic incentive to pull the sectoral wage deal upwards in order to increase the cost of their inefficient rivals. Given mandatory extension of sectoral wage contracts, efficient firms and all Unions are then shown to have incentive to choose a minimum wage high enough that it virtually becomes binding only for inefficient firms during firm-level wage contracting. As a result, wage rates are higher, firm-specific wage differentials lower, and thus production shifts from labour intensive inefficient firms towards efficient firms. Hence, sectoral employment would (*ceteris paribus*) be lower in equilibrium than if wage deals were decentralized, and/or technological asymmetries were absent. Apparently therefore, under conditions of monopsony, centralized wage contracting, mandatory extension, and technological asymmetries, this paper provides a game-theoretic rationale for claiming that the minimum sectoral wage institution does, in fact, always negatively affect sectoral employment[13] in oligopolistic sectors. In particular regarding the Spanish labour market, our findings seem to be significant for two more reasons.

[13] It is also apparent that our results do not depend on the assumption that Monopoly Unions set the firm-specific wage rates. Similar results can be obtained if we allow for wage negotiations at the firm-level.

First, our major conclusions seem to be fairly in line with what recent evidence suggests (see, e.g. Dolado *et al.*, 1996, 1997; Palenzuela and Jimeno, 1996). Dolado *et al.* (1997) have found that, under the present status of the Spanish collective bargaining system, sectoral wage bargains reduce wage dispersion (since wages of the low-paid are raised). However, this redistributive effect regarding the earnings of the low-paid is weakened by three factors. First, a non-negligible employment loss which, as we suggest, is due to the production shift favouring efficient firms, and thus increasing unemployment among the low-paid workers. Second, "black market" arrangements for the low-paid workers. And third, by firm-level bargains above the sectoral minima, only regarding the high-paid workers (which in our case are the efficient firms' employees). As our model predicts, all these lead to reduced wage differentials that favour efficient firms and their high-paid employees, as well as a subset of the low-paid who find employment at higher wages (who thus always have incentives to sustain compliance with the minimum sectoral wage), at the cost of inefficient firms, and the subset of workers who are pushed into either unemployment, or the "black labour market". Nonetheless, as shown, it is also in the best interests of inefficient employers to participate in sectoral wage contracting since they may, thus, prevent even higher losses.

Second, our findings imply that, so long as the distribution of interests in the (Spanish) labour market is such as that seen above, the minimum sectoral wage institution would (endogenously) be sustained, despite its persistent negative effects on sectoral employment. In other words, any attempt to reform this institution in a way that would harm the interests of any of our suggested coalition partners (i.e. all unions and efficient firms) would probably encounter their resistance. In this respect, it is not surprising that decentralization of wage bargains –an often proposed unemployment reducing institutional reform– has not yet materialised. Though such a reform should, in general, be expected to reduce unemployment under conditions of "union-oligopoly bargaining" (see, e g., Dorwick, 1989), our analysis shows that, in the context of the Spanish labour market, it should not be expected to achieve consensus on (at least) the part of efficient employers, since it does not accommodate their strategic interests. But is such a reform, really, under the present circumstances an efficiency-enhancing one? The answer is not clear. First, since output is redistributed to more efficient firms, the efficiency properties of the minimum wage institution are unclear, and the decentralization of wage bargains may, in fact, decrease efficiency. Moreover, by means of a broader framework, it might be claimed that decentralization of wage bargains, and thus abandonment of the minimum wage institution, would discourage investments in efficient capital and would, therefore, violate efficiency in the long run. These efficiency issues are open to further research. Further research is also needed to study the implications –as regards the level of the minimum wage and sectoral unemployment– of augmenting technological asymmetries and/or increasing the number of firms in the industry.

References

Amir, R. (1996): "Cournot oligopoly and the theory of supermodular games", *Games and Economic Behavior* 15, pp. 132-148.

Calmfors, L. and J. Driffil (1988): "Bargaining structure, corporatism and macroeconomic performance", *Economic Policy* 6, pp. 13-61.

Corneo, G. (1996): "National wage bargaining in an internationally integrated product market", *European Journal of Political Economy* 11, pp. 503-520.

De Fraja, G. (1993): "Staggered vs. synchronized wage setting in oligopoly", *European Economic Review* 37, pp. 1507-1522.

Dolado, J., F. Kramarz, S. Machin, A. Manning, D. Margolis and C. Teulings (1996): "The economic impact of minimum wages in Europe", *Economic Policy* 23, pp. 319-372.

Dolado, J., F. Felgueroso and J. Jimeno (1997): "The effects of minimum bargained wages on earnings· Evidence from Spain", *European Economic Review* 41, pp. 713-721..

Dolado, J. and J. Jimeno (1997): "The causes of Spanish unemployment: A structural VAR approach", *European Economic Review* 41, pp. 1281-1307.

Dobson, P. (1994): "Multifirm unions and the incentive to adopt pattern bargaining in oligopoly", *European Economic Review* 38, pp. 87-100.

Dorwick, S. (1989): "Union-oligopoly bargaining", *Economic Journal* 99, pp. 1123-1142.

Freeman, R. (1996): "The minimum wage as a redistributive tool", *Economic Journal* 106, pp. 639-649.

Hartog, J. and J. Theeuwes (1992), *Labour Market Contracts and Institutions: A Cross National Comparison*, North Holland, Amsterdam

Hoel, M. (1990): "Union wage policy: the importance of labour mobility and the degree of centralization", *Economica* 58, pp. 139-153.

Jimeno, J. (1992): "Las implicaciones macroeconómicas de la negociación colectiva: el caso español", *Moneda y Crédito* 195, pp. 223-281.

Jimeno, J. and L. Toharia (1994), *Unemployment and Labour Market Flexibility: Spain*, International Labour Office, Geneva.

Layard, R., S. Nickell and R. Jackman (1991), *Unemployment. Macroeconomic Performance and the Labour Market,* Oxford University Press, Oxford.

Novshek, W. (1985): "On the existence of Cournot equilibria", *Review of Economic Studies* 52, pp. 85-98.

Oswald, A.J. (1982): "The microeconomic theory of the trade union", *Economic Journal* 92, pp. 269-283.

Palenzuela, D. and J. Jimeno (1996): "Wage drift in collective bargaining at the firm-level: evidence from Spain", *Annales d'Economie et de Statistique* 41-42, pp. 187-206.

Padilla, J., S. Bentolila and J. J. Dolado (1996): "Wage bargaining in industries with market power", *Journal of Economics and Management Strategy* 5(4), pp. 535-64.

Rogers, J. and W. Streek (1994): "Workplace representation overseas: The works councils story", in *Working under Different Rules*, Freeman, R. (ed), NBER, Rusell Sage Foundation, New York.

Saint-Paul, G. (1996): "Exploring the political economy of labour market institutions", *Economic Policy* 23, pp. 265-315.

Salop, S. C. and D. T. Scheffman (1983): "Raising rival's costs", *American Economic Review* Papers and Proceedings, 73, pp. 267-271.

Salop, S. C. and D. T. Scheffman (1987): "Cost-raising strategies", *Journal of Industrial Economics* 36, pp. 19-34.

Vlassis, M. (1999): "Endogenous wage-compliance and "underground wages" in oligopoly", *Rivista Internazionale di Scienze Economiche e Commerciali* (forthcoming).

Williamson, O. E. (1968): "Wage rates as a barrier to entry: The Pennington case in perspective", *Quarterly Journal of Economics* 82, pp. 85-116.

Resumen

Este trabajo investiga el papel que juegan los salarios mínimos en sectores industriales donde las empresas tienen poder de mercado. Empleandose un modelo sencillo de Sindicatos Monopolistas y competencia a la Cournot, se argumenta que, durante las negociaciones salariales, las empresas con tecnologías superiores tienen incentivos estratégicos a fijar un salario mínimo suficientemente alto de modo que aumente los costes de los rivales más ineficientes. Como consecuencia, si los acuerdos sectoriales sobre salarios mínimos se extienden obligatoriamente a todas las empresas, el salario mínimo negociado redistribuye cuota de mercado a favor de las empresas más eficientes (así como ganancias salariales para los trabajadores tanto de remuneración alta como baja) y, por lo tanto, puede afectar negativamente al nivel de empleo sectorial.

Palabras clave: Sindicatos monopolistas, Oligopolio, Salario mínimo

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