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JEL : C78, F23, J51, D60.
Keywords: bargaining, MNE, labor unions, social welfare.

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Abstract: This paper investigates the bargaining process among a Multinational Enterprise (MNE) having plants in different countries and labor unions. Making use of a three-stage game where unions may choose between local/transnational negotiations’ structures, it derives the possible type of agreement arising as sub-game perfect equilibria. It is shown that, depending on the scope, the structure and the relative bargaining power, MNE and unions may find either common or conflict of interests toward company-wide agreements. Whenever conflict of interests are present, it is analyzed the role that welfare maximizing European Union institutions should play in solving them.

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1. Introduction

Bargaining in Multinational Enterprises (MNE) is a relevant subject in contemporary economics. It assumes particular importance within the context of a highly integrated economic area like the European Union (EU). In fact, the completion of the Single Market Program, the construction of the European Monetary Union (EMU), and further financial markets’ integration increased the opportunities for several European companies to undertake Foreign Direct Investments (FDI). As a result, a number of industries are characterized by the presence of firms organized as MNE, with productive units located most of the time in different EU’s Member States.¹

The international dimension of the MNE’ activities, as well as their practice of opting out from national/sector collective bargaining in favor of company-wide agreements (Eurofound, 2009), raised some issues connected to labor markets which attracted the attention of major actors as EU institutions and unions. A normative framework was needed in establishing the rights of workers in Community-scale undertakings and Community-scale groups of undertakings. For these purposes the European Commission (EC) in 1994² instituted the European Works Councils (EWC) (Directive 94/45/EC, recently revised in 2009 with the Directive 2009/38/EC), a voluntary instrument providing mainly information and consultation rights for MNE’ employees in relation to transnational issues.³ After the implementation of the EWC Directive, the EC proposed in the Social Agenda 2006-2010 the development of a non-compulsory EU framework for transnational bargaining. From the viewpoint of the EC, this normative background would offer the prospect to arrange transnational agreements at company level.

Workers’ representatives (labor unions) started exploiting the EWC’ potential in coordinating activities across different plants. These unions have the major aim of setting the context for negotiations within MNE. The result might be an effective coordination of the bargaining agenda and outcomes among cross-borders separate negotiations (European Commission, 2009). Given the predominant unions’ position in EWC, these bodies have in reality a bargaining role; and further developments in transnational labor unions’ practices may affect the whole bargaining process regarding company-level agreements. For example, the European Metalworking’s Federation (EMF), a cross border industry level federation, recently devised a procedure to receive the mandate in representing the overall workers’ side throughout company-wide transnational negotiations. This procedure, as Gennard (2009) reports, has been utilized until now with five MNE (Areva, Schneider, Daimler-Chrysler, John Deere and Arcelor-Mittal).

Consequently, a number of questions arise: Which bargaining agenda (wages as in the Right-to-Manage (RTM) model/wages and employment as in the Efficient Bargaining (EB) model) should the MNE and labor unions negotiate about? Might the bargaining agenda affect the labor unions’ decision respect to the centralized (transnational)/decentralized (local/national) negotiations’ structure? And should the EU institutions mediate if conflicts of interests arise among the bargaining parties, not reaching directly a voluntary agreement? If this is the case, at which way should they mediate? This work addresses precisely on these issues.

¹ For the purposes of this paper, it is not relevant the technical form which takes the FDI decision (green-field investments, transnational Mergers & Acquisitions, private equity funds, etc.), but the fact that the investing firm at the end controls plants sited in various countries.
² Subsequently, in March 2002 the European Council and Parliament adopted the Directive 2002/14/EC establishing a general framework for informing and consulting employees at national level. This directive applies also to firms employing at least 50 employees. The rational for this norm was that many MNEs production plants were not covered by the previous EWC Directive.
³ According to Article 5(1) of the Directive 94/45/EC (unchanged in the 2009 revision), an EWC may be established either by: 1) a central management initiative to start negotiations for an information and consultation procedure; or 2) at the written request of at least 100 employees or their representatives in at least two undertakings or establishments in at least two different Member States. But, as immediately recognized (Eurofound, 1999), the initiative was taken almost all of the time by the employees’ side.
There is a consistent literature paying attention to various effects and features of collective bargaining. Authors such as Davidson (1988), Horn and Wolinsky (1988), Petrakis and Vlassis (2000, 2004), and more recently Santoni (2009) investigate the outcomes of different bargaining structures (centralization/decentralization) in oligopoly industries. In these papers, bargaining among the parties occurs only over wages, while employment decisions are taken by firms. While Davidson (1988) considers simultaneous bargaining in a duopoly industry with a homogeneous final good, Horn and Wolinsky (1988) extend the analysis to the strategic implications arising from product differentiation and sequential bargaining. Petrakis and Vlassis (2000, 2004), allowing for asymmetries in firms’ productive efficiency and bargaining power, investigate the endogenous formation of bargaining institutions between firms and unions. Instead, Santoni (2009) analyzes how increasing international market integration will affect the choice related to decentralized/centralized negotiations at industry level. However, all these contributions focus on developments concerning bargaining structures in national industries, without taking into account that some actors, as MNE, may have an international dimension. Wage formation at company level in a context of international productive structure is explored by Borghijs and Du Caju (1999). Using a very simple framework (a single firm having two plants in different countries), they analyze the possibility of cross borders union cooperation opposed to plant specific wage settings. Under the assumption of monopoly unions paying some transaction costs to cooperate, these authors show that transnational wage coordination is not always advantageous for organized labor.

There is a (limited) line of research analyzing the choice of the union-firm bargaining agenda complementing papers inspecting the implications of the bargaining structure. Bughin (1999) studies the strategic choice of the bargaining scope (RTM vs. EB model) in an incumbent union-firm pair as a mean to deter entry in oligopoly industries. This author shows that the bargaining parties may agree about the EB model, which emerges as equilibrium in Nash strategies. Instead, Pal (2005) focuses on the welfare aspects of the union-firm agenda’s choice. Considering two different payment schemes (fixed wages and piece rate), and without taking into account the entry deterrence mechanism, it turns out that a conflict of interest between the union and the firm over the bargaining agenda arises. He shows that the EB model does not always lead to the socially most desired outcome.5

The present paper, in studying the bargaining process within a MNE, builds a framework nesting various elements of the reviewed literature. Starting from the basic Borghijs and Du Caju’s (1999) set up, this work extends their analysis in several ways. First, it is relaxed the monopoly union assumption, providing a more general framework where the parties might endogenously select the bargaining agenda. Then, retaining the idea that coordination is costly for labor unions, it is investigated which bargaining structure (transnational-centralized/plant level-decentralized) will arise as equilibrium in negotiations within the MNE. The main results are the following. It comes out that relative parties’ bargaining positions, the choice of the agenda and the labor unions’ decision about the negotiations’ structure are all elements that will affect the final bargaining outcomes. The novelty is that the unions’ threat of cross borders coordination will explicitly produce, in a particular set of circumstances, a common interest among the parties toward a specific company-wide negotiation’s scheme. Besides, whenever conflict of interests between the MNE and labor unions are present, it is analyzed which role should play the EU institutions in resolving them, taking into account the objective of maximizing the social welfare of the whole economic area.

The remainder of the article is organized as follows. Section 2 describes the model and shows which kinds of agreement may potentially arise from the overall bargaining process between the MNE and labor unions. Section 3 extends the analysis to the EU institutions’ position in adjusting negotiations to ensure the most socially desired welfare level among achievable outcomes. Finally, section 4 draws some conclusions.

4 On sequential wage bargaining in oligopoly industries see also De Fraja (1993) and Banerji (2002).
5 Kraft (1998, 2001) analyzed the “codetermined bargaining” where the bargaining agenda is represented only by employment level, as for codetermined firms in Germany.
2. The model

This section develops a simple three-stage bargaining game model within a multi-unit firm, with plants located in different countries belonging to a full integrated product market.

There are two symmetric countries, A and B, and in each country a MNE has a plant. The MNE produces for the entire market a non-differentiated good having no close substitutes, such that there is not product market competition with other firms. Additionally, it is assumed that there are some large enough exogenous fix costs $G$, such that neither the monopolist will set up a new production facility, nor a potential entrant will enter into the industry. Production may be eventually exported across countries without extra costs. The two plants have the same technology; labor is the unique factor of production, with decreasing returns to scale. Labor supply is supposed to be sufficiently large to avoid corner solutions. In each plant a labor union operates, and workers are supposed to be fully unionized.

As shown in Figure 1, the game follows this timing. In the first stage, the bargaining scope is chosen. The firm and the unions may choose among the RTM or the EB model. Both parties’ point of view will be analyzed, deriving the unions and the MNE’s preferred bargaining agenda. In the second stage, rent-maximizing unions decide the bargaining structure. Unions may opt either to decentralize negotiations with local management at each productive unit; or to centralize them at transnational level with the MNE headquarter. In this case, unions incur in transaction costs to coordinate their activities. In the last stage, according to the selected bargaining agenda, wages are negotiated before the output decision in the RTM, or simultaneously with production levels in case of EB. The model is solved in the usual backward fashion.

The production function for each plant is

$$q_i = \sqrt{l_i}, \quad i = A, B$$  \hspace{1cm} (1)

while the linear (inverse) international product demand function is represented by

$$p = a - Q$$  \hspace{1cm} (2)

where $p$ is the common price for the good in both countries, and $Q = \sum q_i$ is total output. The MNE faces at each plant a labor union, which utility function is, given (1),

$$\Omega_i = (w_i - 1)q_i^2, \quad i = A, B$$  \hspace{1cm} (3)
where the reservation wage is supposed to be equal across countries and fixed, for analytical convenience, at the unity.

2.1 Last stage: Output and wage outcomes under decentralized RTM

A first possibility is that the bargaining between unions and the MNE will take place at a decentralized (plant) level, on the basis of a RTM scheme.

If the bargaining occurs under the RTM, the MNE and the unions negotiate over wage levels. This implies that, when productive (and therefore employment) levels are determined, the MNE will reside on its labor demand curve because these are adjusted after that wages are bargained. The MNE maximizes its profits deciding the total quantity for the integrated market, and the allocation between the two plants is chosen according to respective costs.6

From (1) it is obtained that, given wages, total and marginal costs at each plant are respectively

\[ TC_i = w_i q_i^2 \; ; \; MC_i = 2w_i q_i \; ; \]

from which it is obtained the global marginal cost for the MNE as a whole

\[ MC = \frac{2w_i w_j}{w_i + w_j} Q \]

while total and marginal revenue are

\[ TR = (a - Q)Q \; ; \; MR = a - 2Q . \]

Standard optimization techniques7 yield to the following productive allocation in each plant

\[ q_i(w_i, w_j) = \frac{aw_j}{2(w_i w_j + w_i + w_j)}, \; i, j = A, B \; ; \; i \neq j \]  

and, therefore, the following labor demands are obtained

\[ l_j(w_i, w_j) = \left( \frac{aw_j}{2(w_i w_j + w_i + w_j)} \right)^2 \]

with \( \partial q_i / \partial w_i < 0 \), \( \partial l_i / \partial w_i < 0 \), \( \partial q_i / \partial w_j > 0 \) and \( \partial l_i / \partial w_j > 0 \), that is, each plant’s output and employment is negatively dependent on its wage level and positively related to the wage rate at the other plant. This means that workers in each plant compete in the labor market against workers at the other plant. Note that \( q_i / q_j = w_j / w_i \); the necessary condition of equalization of the marginal costs of production across plants is satisfied; hence, total production cost is minimized, and consequently profits are maximized.

Negotiation is modelled with the generalized Nash bargaining solution. Under decentralized RTM, the wage rate at each plant is determined by the following Nash Product

\[ \text{Notice that this framework is equivalent to the case of two identical downstream firms colluding in the product market.} \]

\[ \text{See Borghijs and Du Caju (1999) for details.} \]
\[ NP_i = (\Pi_{i})^\alpha (\Omega_{i})^{1-\alpha} \]  
\[ \text{where } \Pi_{i} = pq_{i} - w_{i}q_{i}^2 \text{ are the profits generated at the plant } i, \text{ and } \alpha \in (0;1) \text{ is the exogenous relative bargaining power of the MNE, which is assumed to be symmetric across plants.} \]

Given the optimal productive allocation in (4), the maximization problem represented by equation (5) becomes

\[ w_i = \arg \max_{w_i} \left\{ NP_i = \left[ \frac{a^2 w_j}{4(w_j + w_{j} + w_{j})} \right]^{\alpha} \left[ \frac{(w_i - 1)a^2 w_j^2}{4(w_j + w_{j} + w_{j})^2} \right]^{1-\alpha} \right\} \]  
\[ \text{Solving the F.O.C. for } w_i, \text{ the bargaining unit } i \text{'s reaction function is obtained} \]

\[ w_i = \frac{(3 - 2\alpha)w_j + 2 - \alpha}{w_j + 1}, \quad i, j = A, B; i \neq j \]

with \( \partial w_i / \partial w_j > 0 \) and \( \partial w_i / \partial \alpha < 0 \), as expected: an increase in the bargained wage at the other plant rises the negotiated wage rate at its own plant because of complementarities; and a higher bargaining power of the MNE reduces the equilibrium wage rate, because a lower share of the MNE rents are captured by labor unions. Putting each of the two plant/union reaction functions into the other and solving the resultant non-linear system, the equilibrium wage under decentralized RTM is derived

\[ w_{DRTM} = 1 + \left[ \sqrt[3]{3(1 - \alpha) + \alpha^2} - \alpha \right] \]  

where the term in the brackets represents the rent over the reservation wage. Replacing (7) into (4), it is obtained

\[ q_{DRTM} = \frac{a}{2[\sqrt[3]{3(1 - \alpha) + \alpha^2} + 3 - \alpha]} \]  

Straightforward substitutions lead to the following expressions for MNE profits, total union utility and global social welfare, defined as the sum of consumers’ surplus, profits and union utilities in the two countries

\[ \Pi_{DRTM} = \sum_{i} \Pi_{i,DRTM} = \frac{a^2}{2[\sqrt[3]{3(1 - \alpha) + \alpha^2} + 3 - \alpha]} \]  
\[ \Omega_{DRTM} = \sum_{i} \Omega_{i,DRTM} = \frac{a^2(a - \sqrt[3]{3(1 - \alpha) + \alpha^2})}{2[\sqrt[3]{3(1 - \alpha) + \alpha^2} + 3 - \alpha]^2}; SW_{DRTM} = \frac{a^2(2\sqrt[3]{3(1 - \alpha) + \alpha^2} + 7 - 2\alpha)}{2[\sqrt[3]{3(1 - \alpha) + \alpha^2} + 3 - \alpha]^2} \]

2.2 Last stage: Output and wage outcomes under decentralized EB

Let consider the case that the agenda selected for negotiations within the MNE is the EB model, and unions decided for a decentralized bargaining structure. Wages and output (and consequently employment) are simultaneously negotiated by the unions and the management at each unit, and the
parties will be located in equilibrium somewhere on the locus of their contract curve instead of residing on the firm unit’s labor demand. Under decentralized EB, the wage and the production levels at each plant are obtained solving this maximization problem

$$\max NP_i(w_i, q_i) = (\Pi_i)^a (\Omega_i)^{1-a}.$$  \hfill (9)

F.O.C.s lead to the following expressions

$$w_i = (1 - \alpha) \frac{p}{q_i} + \alpha; \quad w_j = \frac{p}{q_i} - \frac{\alpha(a - q_j)}{2q_i} \quad i, j = A, B \quad i \neq j$$

representing the rent sharing and the contract curves, respectively. Combining these equations and solving for $q_j$, it is obtained that

$$q_i = \frac{(a - q_j)}{4}, \quad i, j = A, B \quad i \neq j$$

Output at each plant is independent from the bargained wage, due to the assumption of rent-maximizing unions (that is, the contract curve is vertical), but the optimal level is affected by the productive decisions taken at the other plant. The quantity in equilibrium at each bargaining unit is therefore given by

$$q_{DEB} = \frac{a}{5}. \hfill (10)$$

Substitution of (10) into the rent sharing curve allows evaluating the bargained wage in equilibrium

$$w_{DEB} = 1 + [2(1 - \alpha)]$$

with the term in brackets representing the rent over the reservation wage. Direct comparison of (8) with (10), and of (7) with (11) shows that: 1) production (and hence employment) under EB is higher with respect RTM; and 2) unless the unions have no bargaining power, the negotiated wage rate under decentralized EB is higher than the wage under decentralized RTM.

Making use of (10) and (11), MNE profits, global union utility and social welfare for the whole economy under decentralized EB will be as follows

$$\Pi_{DEB} = \sum_i \Pi_i, DEB = \frac{4a^2\alpha}{25}; \quad \Omega_{DEB} = \sum_i \Omega_i, DEB = \frac{4a^2(1-\alpha)}{25}; \quad SW_{DEB} = \frac{6a^2}{25}.$$

2.3 Last stage: Output and wage outcomes under centralized (transnational) RTM

Suppose now that negotiations occur under the RTM scheme, but unions decide to centralized the bargaining at transnational level. Labor unions in this case act as a unique body in order to negotiate with the MNE a common wage, $w_c$. Nevertheless, transnational bargaining may be reasonably supposed to be costly for unions: definition and coordination of the optimal strategies, and the sharing of information, will imply some positive transaction costs ($\tau > 0$) that may compensate gains from centralization (Borghije and Du Caju, 1999).
The profit maximization problem of the MNE is equivalent to the case of decentralized bargaining but, since a common wage is now paid across plants, global marginal cost will be different. From the individual plants’ marginal costs can be derived that the total marginal cost for the MNE is

\[ MC = w_c Q \]

while total and marginal revenue expressions are the same of decentralized bargaining. Solving the standard optimization problem, it is obtained that production at each plant will be

\[ q_i(w_c) = \frac{a}{2(2 + w_c)}, \quad i = A, B; \quad (12) \]

implying the labor demand

\[ l_i(w_c) = \left( \frac{a}{2(2 + w_c)} \right)^2 \]

with \( \partial q_i/\partial w_c < 0 \) and \( \partial l_i/\partial w_c < 0 \): contrary to the decentralized scenario, each plant’s output and employment depend negatively on the common wage rate. It follows that workers’ competition in the labor market disappears.

The MNE now faces a unique workers’ representative body, which utility function is represented by

\[ \Omega = (w_c - \tau - 1)(\sum q_i^2), \quad i = A, B \quad (13) \]

where \( \sum q_i^2 \) is total MNE’ employment. The wage rate negotiated is derived from maximization of the following Nash Product

\[ NP = (\Pi)^\alpha (\Omega)^{1-\alpha} \quad (14) \]

where \( \Pi \) are the global profits of the MNE. Given the assumption of symmetric MNE’ relative bargaining power across plants, these are simply the sum of the profits obtained at each unit \((\sum \Pi_i)\). Making use of (12), the maximization problem in (14) becomes

\[ w_c = \arg \max_{w_c} \left\{ NP = \left[ \frac{a^2}{2(2 + w_c)} \right]^\alpha \left[ \frac{(w_c - \tau - 1)a^2}{2(2 + w_c)^2} \right]^{1-\alpha} \right\} \quad (15) \]

which solution is given by

\[ w_{CRTM} = 1 + [3(1 - \alpha) + (2 - \alpha)\tau] \quad (16) \]

with \( \partial w_{CRTM}/\partial \tau > 0 \) for \( \alpha \in (0;1) \), and \( \partial w_{CRTM}/\partial \alpha < 0 \) for \( \tau > 0 \). The wage rate obtained with a centralized bargaining structure can be easily checked to be always higher than the negotiated wage under decentralized RTM. This is so because, if a plant level union asks for high wages when

\[ \text{See Borghijs and Du Caju (1999) for analytical details.} \]
negotiations are decentralized, a reduction in cost competitiveness with respect to the plant located in the other country will follow. The labor union will consider this effect on competitiveness only when establishing its own wage, without taking into account the positive spillovers on the competitive position of the other plant, implying a moderation in wage claims. On the contrary, in case of transnational bargaining, labor unions will be concerned about the cross price effects of high wage demands on labor demand at each plant, internalizing the positive spillovers. As a consequence, labor unions are able to increase wage demands compared to decentralized bargaining. Substitution of (16) into (12) yields

\[ q_{CRTM} = \frac{a}{2(3 + \tau)(2 - \alpha)} \]

the quantity produced at each plant. Further substitutions lead to these expressions for the MNE profits, union utility and social welfare under transnational coordinated RTM wage bargaining

\[ \Pi_{CRTM} = \frac{a^2}{2(2 - \alpha)(3 + \tau)}; \quad \Omega_{CRTM} = \frac{a^2(1 - \alpha)}{(2 - \alpha)^2(3 + \tau)}; \quad SW_{CRTM} = \frac{a^2[2(5 - 3\alpha) + (3 - 2\alpha)\tau]}{2[(2 - \alpha)(3 + \tau)]^2}. \]

2.4 Last stage: Output and wage outcomes under centralized (transnational) EB

Finally, consider the case of unions’ transnational coordination within an EB scheme. Labor unions bargain with the MNE as (or by the mean of) a single workers’ representative body, and the result of the negotiation will determine concurrently the wage paid \((w)\) and production levels for the firm as a whole.

Under centralized EB, the maximization problem is

\[ \text{max } NP(w, q_i, q_j) = (\Pi)^a(\Omega)^{1-a} \quad (18) \]

with \(\Pi\) and \(\Omega\) defined as in (14). Taking the symmetric solution in F.O.C.s \((q_i = q_j)\), the following expressions are obtained

\[ w = (1 - \alpha)\frac{p}{q_i} + \alpha (1 + \tau); \quad w = \frac{p}{q_i} - \frac{\alpha a}{2} \]

describing correspondingly the rent sharing and the contract curves. The solutions of the system composed by the above equations give the equilibrium values of output and wage under centralized EB

\[ q_{CEB} = \frac{a}{2(3 + \tau)} \quad (19) \]
\[ w_{CEB} = 1 + [3(1 - \alpha) + (2 - \alpha)\tau] \quad (20) \]

As expected, \(q_{CEB} > q_{CRTM}\). Like in the RTM, the wage level in the relevant parameters’ range is always higher than the decentralized one: by the means of coordination, labor unions negotiate as a single entity, passing from bilateral monopoly relations in the labor market with local branches to a single supplier relation with central management.
Notice that $w_{CEB} = w_{CRTM}$: with centralization, rent-maximizing unions get the same wage rate irrespective of the model chosen in the bargaining agenda. Making use of (19) and (20), MNE profits, union utility and social welfare under transnational coordinated EB will be as follows

$$\Pi_{CEB} = \frac{a^2 \alpha}{2(3 + \tau)}; \quad \Omega_{CEB} = \frac{a^2 (1 - \alpha)}{2(3 + \tau)}; \quad SW_{CEB} = \frac{a^2 [4(3 + \tau) + 1]}{8(3 + \tau)^2}.$$

2.5 Second stage: centralized vs. decentralized bargaining

In the second stage of the game, labor unions operating within the MNE select the bargaining structure between decentralization and transnational coordination. The unions’ choice between decentralization and centralization will depend on the global utility that will be attained under the different bargaining models. Unions’ utility in turn depends on both the relative bargaining power of the parties, $\alpha$, and the transaction costs sustained in coordinating their activities, $\tau$. Transnational coordination turns out to be advantageous for labor unions whenever $\Omega_{CRTM} \geq \Omega_{DRTM} = \sum_{i} \Omega_{i, CRTM}$ under RTM and $\Omega_{CEB} \geq \Omega_{DEB} = \sum_{i} \Omega_{i, DEB}$ in case of the EB model. From direct payoffs’ comparison, the following proposition may be established.

**Proposition 1:** Centralized bargaining Pareto-dominates the decentralized bargaining for labor unions if:

1) $\tau \leq \tau^*_RTM = \frac{3(4 - 3\alpha) - \alpha^2 (1 - \alpha)}{(2 - \alpha)^2 [\sqrt{3(1 - \alpha)} + \alpha^2]}$ under RTM and;

2) $\tau \leq \tau^*_EB = 1/8$ under EB model.

Proposition 1 shows that unions operating within a MNE might find profitable to centralize negotiations by coordinating their activities only if transaction costs are lower than a certain threshold value which differs according to bargaining agenda chosen. In particular, under the RTM, the threshold value $\tau^*_RTM$ depends on the bargaining power of the parties, with $\partial \tau^*_RTM / \partial \alpha > 0$ (Figure 2): an increase in the relative strength of the MNE, and therefore deterioration in unions’ bargaining position, makes the threshold for coordination higher. It follows that transnational coordination will be potentially more likely to occur when labor unions are weak, while strong labor unions will prefer, unless transaction costs are relatively low, a separate bargaining with local management.
Instead, if negotiations will take place under the EB model, coordination costs are independent from the parties’ relative bargaining power. The decision about the bargaining structure with the MNE is based exclusively on the size of transaction costs: transnational bargaining might arise both with weak and strong labor unions. However, note that $\tau_{EB}^* < \tau_{RTM}^* \forall \alpha \in (0;1)$: independently of the labor union strength, the conditions under which centralized coordination may occur under the EB model are more restrictive than those under the RTM.

2.6 First stage: the bargaining agenda selection

Finally, in the first stage of the game, the bargaining agenda is chosen. The following analysis will consider the two parties’ positions.

First, consider the unions’ viewpoint. Comparing $\Omega_{CEB}$ with $\Omega_{CRTM}$, and $\Omega_{DEB}$ with $\Omega_{DRTM}$, it can be easily shown that unions will always prefer the EB model, which Pareto-dominates the RTM for both bargaining structures. Therefore, assuming that labor unions might have the decision right over the bargaining agenda with MNE, the choice will clearly be for the EB model, and the relative size of the coordination costs will determine if negotiations end at centralized or decentralized level (Figure 3, panel A).

More interesting is the MNE perspective. In fact, the MNE, in establishing its most preferred agenda, has to take into account the fact that unions might subsequently have the possibility of coordinating their activities. In other words, the “threat” of transnational bargaining by unions will affect the MNE’s choice over the agenda. The analysis below shows how this occurs.

The MNE gets its highest profits’ level under decentralized RTM. Therefore, for $\tau \geq \tau_{RTM}^*$, the most preferred agenda by the MNE is a RTM type of bargaining. Nevertheless, in case of a RTM agenda for negotiations, for $\tau < \tau_{RTM}^*$ labor unions find more profitable to coordinate across plants their activities, switching towards a transnational bargaining structure. Indeed, if centralized coordination by labor unions will take place, the MNE will not reach anymore its first best, $\Pi_{DRTM}^*$. Put differently, the relevant MNE’ profit function as regards the bargaining agenda, subject to the labor unions’ bargaining structure constraint, is discontinuous at $\tau_{RTM}^*$. What is the MNE position when unions’ coordination costs are lower than $\tau_{RTM}^*$?

The MNE, in choosing its agenda for $\tau < \tau_{RTM}^*$, evaluates the profits that will be obtained under the centralized RTM bargaining structure, $\Pi_{CRTM}^*$, and the profits that will be gained by changing the agenda towards the EB model conditional upon the bargaining structure chosen by labor unions,
namely $\Pi_{DEB}$ and $\Pi_{CEB}$. Straight payoffs’ comparison shows that, for $\tau < \tau^{**}$, profits with a centralized RTM are higher than those obtained under the EB model, independently of the centralized/decentralized negotiations’ structure selected by labor unions.$^{10}$ Instead, for $\tau \geq \tau^{**}$, it is obtained that $\Pi_{CEB} \leq \Pi_{CRTM} \leq \Pi_{DEB}$. As a consequence, for $\tau < \tau_{RTM}^{*}$ and $\tau < \tau^{**}$, the MNE still prefers a RTM type of bargaining, while for $\tau < \tau_{RTM}^{*}$ and $\tau \geq \tau^{**}$ the MNE will change its preference regarding the agenda over the EB model (Figure 3, panel B). In both cases, a second best outcome is reached.

These findings reveal a remarkable feature arising from the model. Specifically, if labor unions may credibly threaten of centralizing the structure of negotiations under the RTM, the MNE is better off by shifting its agenda, for some configurations of the parameters ($\alpha, \tau$), from a RTM to an EB model, which in turn is the labor unions’ most preferred agenda. In other terms, the “coordination threat” will produce an area of common interests for the MNE and the labor unions, where both parties may take advantage by reaching an agreement with regard to the agenda over the EB model. Still, even if an area of common interest arises, the conflict of interests for the two parties upon the bargaining agenda exists for several other parameters’ combinations. A possible way to resolve this conflict is that the agenda itself becomes subject of negotiations between the MNE and the unions. But, at least in relation to the EU experience, institutions may play a fundamental role in establishing a normative framework which might regulate the conflict, taking in consideration the effects on the global welfare. The latter issue will be investigated in the next section.

3. Social welfare and the role of EU institutions

Let consider now the welfare implications of the bargaining within the MNE from the viewpoint of the relevant EU institutions. It is assumed that the EU social planner is utilitarian: its objective function is to maximize the global social welfare. As earlier said, this is given by the sum of consumers’ surplus, profits and union utilities in the whole economically integrated area. Nevertheless, in maximizing social welfare, the EU institutions should take into account the possible results which may arise from the bargaining process.

Consider first the social welfare maximization unconstrained to labor unions’ bargaining structure decision. From payoffs’ comparison, it can easily be shown that, for $0 < \alpha \leq \alpha^{*} \approx 0.0614$, $SW_{DEB} \geq SW_{DRTM}$, while for $\alpha > \alpha^{*}$ it is obtained $SW_{DEB} < SW_{DRTM}$. Both outcomes under the decentralized bargaining structure are higher than those under centralization. Notice that, for $0 < \alpha \leq \alpha^{*}$, decentralized EB yields the first best payoff for labor unions, unless $\tau < \tau_{EB}^{*}$: in such a case, unions reach a second best outcome. Instead, for $\alpha > \alpha^{*}$, decentralized RTM leads to the first best outcome for the MNE. If the EU institutions have the power to establish mandatory negotiations at decentralized level, the socially desirable agenda will depend on the relative bargaining power of the parties, with the EB model assuring a higher welfare level in presence of very strong labor unions. Therefore, the social planner might find advantageous to implement a normative framework assigning the decision rights over the agenda to labor unions when these are in a very strong bargaining position, and to the MNE in the other case.

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$^{9}$ The analytical expression is $\tau^{**} = \frac{24\alpha^{2} - 48\alpha + 25}{8\alpha(2 - \alpha)}$.

$^{10}$ In fact, for $\alpha \rightarrow 1$, $\tau^{**} \rightarrow \tau_{EB}^{*} = 1/8$, the threshold for coordination costs to switch towards transnational EB for labor unions. It follows that in the area circumscribed by $\tau < \tau_{RTM}^{*}$ and $\tau < \tau^{**}$, $\Pi_{CRTM} > \Pi_{DEB} > \Pi_{CEB}$ if $\tau > \tau_{EB}^{*}$, while $\Pi_{CRTM} > \Pi_{CEB} > \Pi_{DEB}$ if $\tau \leq \tau_{EB}^{*}$.
Figure 4: Agenda and structure of the bargaining with the social planner’s intervention.

However, thinking about mandatory decentralized negotiations may reasonably be seen as a too much restrictive legal framework, and it is outside the intention of the EU institutions, as underlined in the introduction. In maximizing the social welfare, a softer intervention could be in assigning the decision rights as regards the selection of the agenda to one of the two bargaining parties, according to the potential negotiations’ equilibria. This policy may be implemented when the conflict of interest between the MNE and the labor unions is present. In other terms, depending on the configurations of the parameters \((\alpha, \tau)\), the social planner may give the right of being first mover to the party that will ensure the most desirable social outcome along with the effects of the bargaining process. This kind of policy will generate six qualitatively different regions, as depicted in Figure 4. In region I, delimited by \((\tau^{*}, \tau_{RTM})\), the EU institutions will find beneficial enabling the MNE of being the first mover. In this parameters’ range, the MNE will select the RTM as bargaining agenda, and transaction cost levels are such that unions will not coordinate their activities across plants. As regards social welfare, a first best outcome will be attained.

Conversely, in regions II and III, the social planner is better off assigning the decision right over the agenda to labor unions, which will choose the EB model. Concerning coordination costs, these are still relatively high to make transnational bargaining profitable: a decentralized structure of negotiations will take place. In fact, in the part of region II delimited by dashed lines and in region III, although coordination costs are such that under RTM a centralized structure of bargaining may take place, unions get (as shown also in figure 3, panel A) a higher utility by a decentralized structure with an EB model. If employment enters into the bargaining agenda with the MNE, in these parameters’ regions the gains in occupation levels for unions are such to overcome the loss in utility due to the lower wage level under decentralization. With higher production levels, the price of the good will decrease and consumer’s surplus increases. The improvement in union rents and consumer’s surplus under decentralized EB with respect to centralized RTM are such to induce the social planner in giving the right of being first mover in the game to unions. However, the two regions differ in the social welfare ranking: while a first best is obtained in region II (bounded by \((\alpha^{*}, \tau_{EB}^{*})\)), the EU institutions in region III will get a second best result. This is so because, for \(\alpha > \alpha^{*}\), as earlier said, the social planner’s first best is attained under a decentralized RTM. But, if the decision right over the agenda is given to the MNE (which will select the RTM), for \(\tau < \tau_{RTM}^{*}\) labor unions will choose a centralized bargaining structure. Therefore, in region III, \(SW_{DRTM}\) is not
achievable, and it can be shown that the other social welfare levels are ranked as follows: \( SW_{DEB} > SW_{EB} > SW_{CRTM} \).

Region IV is characterized by the MNE and the labor unions’ *common interests* over the agenda. In this area, the two bargaining parties will autonomously agree towards the EB model through the mechanism described in the previous paragraph. Therefore, no intervention is required by the EU institutions. From the social welfare point of view, a *second best* outcome is obtained.

Finally, regions V and VI are exemplified by the fact that the bargaining process ends with a transnational structure. Transaction cost levels are adequately low for labor unions to coordinate their activities across plants regardless of the bargaining agenda. Nevertheless, the social planner’s position differs in these two areas. In region V, delimited by \((\tau_{EB}^*, \tau^{***})\), the social planner is better off in assigning to labor unions the decision right over the agenda, which are there in a relatively strong bargaining position. Conversely, in region VI, a higher social welfare is reached giving to the MNE, which has a high bargaining power here, the right of being first mover in negotiations. However, a *third best* outcome is achieved in both regions.

The above analysis shows that the EU institutions, in order to ensure the *achievable* socially desired welfare level, should not take a clear-cut position in determining to which party must be assigned, at the beginning of the game, the advantage of being first mover. Policy makers, in pursuing the objective of maximizing social welfare for the entire economic area, should accurately take into account that the relative bargaining power of the parties and transaction cost levels affect the overall development of the negotiation process between the MNE and the labor unions.

4. Conclusions

This paper has developed a three-stage game for investigating the company level bargaining process among a firm with production facilities in different countries (a MNE) and unionized workforce. The MNE and the labor unions have to choose about the bargaining scope (RTM vs. EB model). Unions decide the bargaining structure (transnational/separate). In this framework, the main point of the paper is the following. With labor unions paying transaction costs to coordinate their activities at transnational level, in some specific cases (depending on the relative bargaining power), a decentralized EB model explicitly emerges as the endogenous, commonly agreed, company-wide negotiations’ scheme. This result comes out from the fact that sufficiently high transaction costs do not make a coordinate bargaining advantageous for unions; at the same time, the “wage coordination threat” under the RTM will force the MNE in introducing employment in the bargaining agenda.

Although an area of common interest arise in equilibrium for the bargaining parties, conflict of interests upon the agenda and the structure of company negotiations exists for several other parameters’ combinations of the model. In such cases, it was investigated the potential role that EU institutions, as exogenous actor, may have in regulating the conflict. Assuming a social planner maximizing the welfare level for the entire area, the effects of two different policies were analyzed. It was shown that, if the EU institutions may establish a mandatory decentralized structure, the socially most desired agenda will depend on the relative parties’ bargaining power: very strong labor unions assure a higher welfare level under the EB model; sufficiently high MNE’ bargaining strength ensures the first best outcome for the area under RTM. Instead, under the alternative policy of assigning the decision rights as regards the agenda’s selection to one of the two bargaining parties, it was shown that the EU institutions should not sustain a specific line. In fact, according to relative bargaining power and transaction cost levels, the achievable most desired social outcome is

\[ \tau^{***} = \frac{13\alpha^2 - 28\alpha + 12}{4(1 - \alpha)^2}. \]
reached by designating the advantage of being first mover in some cases to unionized workers, in other circumstances to the MNE.

However, one should be cautious about the policy insights obtained from the model. This work obviously represents only a starting point. The results rest on the very simplifying assumption that the MNE is in a monopoly position in the product market. A much more realistic framework would be an oligopoly market structure allowing for the analysis of how firms’ strategic interactions will affect the unions-MNE bargaining process. Additionally, differences in labor unions’ transaction costs across companies may influence each other possible final negotiations’ scheme: therefore, what may be true for a MNE, it might not necessary holds for another one. These represent all further extensions to make the model more appropriate for deriving policy implications.

References


