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Paper

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COSTS OF NEGOTIATIONS AND THE STRUCTURE
OF BARGAINING - A NOTE

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'I would like to thank Herber Watther for helpful discussion.
Of course I am responsible for all remaining errors.
Abstract

According to Horn and Wolinsky's model on the patterns of unionization the workers' and the firm's interests with respect to the scope of unionization are always opposed to each other. Of course, transaction costs of bargaining can establish a region in which an encompassing union is more profitable for both parties. This note demonstrates that due to externalities of negotiations the range of this possibility is much larger than the difference of expected transaction costs.

I. Introduction

Wage bargaining under unionization is observed to be performed under a variety of patterns of unionization. Economic explanations of the scope of the union have primarily been dealing with legal-institutional constraints on the one hand, and with strategic reasons on the other hand. An important contribution putting down the pattern of unionization to technological characteristics of production has been presented by Horn and Wolinsky (1988). They show that if workers are close substitutes in production, then the equilibrium form of unionization is an encompassing union, whereas if workers are complements, two separate unions will emerge. The intuition behind this result is that a union representing all workers within a firm negotiates for the whole product of labor, whereas a union representing only a part of workers negotiates for the group's marginal product. If workers are substitutes in production, the average product exceeds the marginal product of labor and workers do better by joining a single union. If, however, the marginal product exceeds the average product of labor, two separate unions can push through higher wages for workers.

According to Horn and Wolinsky's view the interests of workers and employers with respect to the structure of unionization are always opposed to each other: if an encompassing union is favorable for one party, separate unionization will be preferred by the other one.

Obviously it is easy to imagine that transaction costs of
negotiations could affect this result. As costs of negotiations neither are to be treated as being part of the "pie" to be shared nor as part of the disagreement point, but simply as lump-sum expenditures involved in the process of negotiations, each party has to bear them by itself if it decides to enter negotiations at all. Now, if an encompassing union is formed, negotiations take place only once (and not twice as with two separate unions). Consequently, both workers and the firm can economize on bargaining costs. They will agree on the optimal structure of unionization when transaction costs are substantial and when the difference between the marginal product and the average product of labor is not too pronounced.

This paper shows that the region in which firms and workers will agree on the scope of unionization might be much larger than expected by simply comparing the agents' costs of negotiations in the two regimes of unionization. Accordingly, if costs of bargaining are substantial, we should often expect to observe the formation of an encompassing union even if workers are complements in production.

Bargaining costs can be thought of as consisting of two main components: First, direct costs of bargaining cover opportunity costs of time foregone by negotiating as well as direct costs of bargaining inclusive the disutility of the process of negotiations itself. If bargaining happens to take place within a short period, the second component of costs will be more important. It refers to the costs of gathering information about the pie and other party's possibilities if no settlement can be found. Hicks has explicitly stressed the importance of costs of negotiations in his "Theory of Wages" (Hicks 1966, p.144 ff.) by pointing out that parties first have to become informed about the other party's possibilities of making concessions.

Costs of getting information prior to meeting at the negotiation table are explicitly to be distinguished from learning the relevant information during the process of bargaining. This
latter aspect has extensively been analyzed by the literature on signaling, which is arguing that an agent can identify himself as a "strong" party by proposing offers and counteroffers which he could not afford to make if he were in a weak position. (Fudenberg and Tirle 1983, Sobel and Takahashi 1983).

The paper proceeds as follows: Section II considers wage formation with an encompassing union, in section III two separate unions are assumed to exist. Finally, a comparison is made in section IV.

II. Encompassing union wage bargaining

In what follows the most simple version of Horn and Wolinsky's (1988) model of the bargaining process is used. Neglecting the parties' costs of negotiations, they assume that output is $x$ if one worker is employed and $x+y$ if two homogeneous workers produce at the same time. The disagreement point of both the workers and the firm in case of no production is set equal to zero for simplicity. If workers join together in an encompassing union to bargain for wages, they will get half of the surplus, i.e. $2w=(x+y)/2$. This result is derived as a perfect equilibrium in Rubinstein's (1982) noncooperative bargaining model of alternating offers and counteroffers if wage bargaining is supposed to take place within a short period of time, so that the parties' discount factor $\delta$ ($\delta<1$) approaches one. Thus if workers agree on sharing the wage sum negotiated equally, each one gets $w=1/4(x+y)$.

We assume that each time bargaining takes place, the firm and the union have to make lump-sum expenses $c^f$ and $c^l$, respectively. In general, the bargaining costs of both parties will depend on the size of the union. However, for simplicity we assume $c^f$ and $c^l$ to be given exogenously independently of the structure of unionization, reflecting the basic insight that the technology of bargaining will exhibit increasing economies of scale. The main reason for decreasing average costs of bargaining per
worker is due to typical free-rider problems: even if the relevant information has already been acquired by one of the separate unions or by the firm, this party would have no incentive to tell it truthfully to the party still uninformed. Rathermore, it would bias information available in order to increase its own share of the pie.

As \(c_f\) and \(c_l\) are sunk costs arising independently of the outcome of bargaining, they can neither be treated to be part of the pie nor to be part of the disagreement point. Therefore, each party has to bear it by itself. With an encompassing union wages net of transaction costs are given by

\[
w^e = \frac{1}{4}(x + y) - \frac{c_l}{2},
\]

because \(c_l\) is shared by workers. Net profits are found to be

\[
\pi^e = \frac{1}{2}(x + y) - c_f
\]

as the firm has to bargaining only once.

III. Separate union wage bargainings

If workers bargaining for wages separately, the firm has the authority to stop cooperation with one of them if no agreement can be found and to continue production with the other one (See Sutton 1986, p.715). Therefore, the firm's disagreement point is shifted upwards. If again the time period for negotiations is assumed to be small, \(\delta = 1\) so that the discount factor can be neglected. In this case worker A's wage is approximately given by \(w_A = \frac{1}{2}(x+y-W_B-(x-x/2))\), where \((x+y-W_B)\) is the firm's profit if both A and B are at work. \((x-x/2)\) refers to the firm's disagreement point as it can credibly threaten to fire worker A and carry on working with B at \(w_B = x/2\), B's share of the product that he can bargain for if he is the only one to be employed. Workers being identical, each one of them faces the risk of being fired when entering into negotiations with his
employer. As a consequence, \( w^A = w^B \) must hold in equilibrium. Taking account of transaction costs of negotiations, wages with separate unions are given by

\[
w^s = \frac{(x + 2y)}{6} - c^f.
\]

The firm having to bargaining twice in this case, net profit is

\[
\pi^s = \frac{(2x + y)}{3} - 2c^f.
\]

**IV. Comparision**

If transaction costs are negligible, Horn and Wolinsky's main result can be derived straightforward, according to which workers will join an encompassing union if they are substitutes in production, i.e. \( y < x \) holds. For \( y > x \), two separate unions will be formed. The firm's interest is exactly opposed to that of workers: If \( y < x \) profits are higher if workers are organized in separate unions. For \( y > x \) the employer always prefers bargaining with an encompassing union.

Taking transaction costs into consideration, workers will form an encompassing union if \( w^e > w^s \) or if

\[
(1) \quad y < x + 6c^f.
\]

The firm, on the other hand, would be better off facing an encompassing union if \( \pi^e > \pi^s \), implying

\[
(2) \quad y > x - 6c^f.
\]

Although the difference in transaction costs only amounts to \( c^f/2 \) for each individual worker and to \( c^f \) for the firm, the weight of transaction costs in conditions (1) and (2) is given by the factor 6 and is therefore much more pronounced. Multiplication of bargaining costs arises as the difference of wages in the two regimes of unionization are only a small part of the whole
product of labor, whereas bargaining costs are a lump-sum expenditure to be made at each negotiation separately. In other words, the workers' marginal contribution of bargaining by forming separate unions is only a small percentage of the wage received with an encompassing union (if $y > x$ is satisfied), yet marginal costs of bargaining separately are given by $c^l/2$. A similar reasoning holds for the profits of the firm. The shaded area of fig.1 shows the region where both parties prefer to have an encompassing union for the whole workforce of the firm.

One might argue, that the region for $y: x < y < x-6c^f$ is of no relevance in this context since it is workers and not the firm who decide on the structure of unionization. Nevertheless, the existence of this region could affect the firm's incentive to make strategic moves in order to prevent workers from joining together in an encompassing union. However, this possibility has not been dealt with in this paper.
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