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Labor union bargaining and firm organizational structure

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HIGHLIGHTS

- Vertical integration is not profitable when labor is unionized.
- This result holds for a generalized Nash Bargaining.
- When separated, input price bargaining proceeds prior to wage bargaining.
- Downstream firm manipulates negotiated input price to gain wage concessions.

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ABSTRACT

Bargaining sequences, though vital to the real-world business strategies, are often treated as exogenously given. We examine bargaining sequences in the setting where a downstream firm makes a merger decision with an upstream partner and faces a negotiation with a union. When the downstream firm's power in the wage bargaining is weak, separation results and the input price bargaining proceeds prior to the wage bargaining. When the downstream firm's power in both negotiations is relatively equal, firms opt for separation and both negotiations keep on simultaneously. When the downstream firm's power in the wage negotiation is strong, the firms merge.

1. Introduction

In a successive monopoly setting where the upstream supplier charges a price above its marginal cost to the downstream firm and the downstream firm likewise charges a price above its marginal cost to its end consumers, it is well established that both vertically linked firms have an incentive to merge (Spengler, 1950; Tirole, 1988). The intuition of the integration incentive rests with added gains from eliminating double marginalization — a problem which arises because when the two firms are separated, the downstream firm fails to take into account the positive externalities that it could exert on the upstream supplier under vertical integration. A large number of studies have examined this basic theoretical exposition with numerous variations of the successive non-competitive industries. For instance, Greenhut and Ohta (1979), Waterson (1982), and Lin (1988) considered the case of Cournot competition with homogenous products in the downstream market. Hart et al. (1990), in contrast, weighed up the Bertrand competition with differentiated products. However, the existing literature typically either rules out an involvement of outside parties or, when it does not rule it out, it considers the bargaining sequences as exogenously given. Doing so implicitly leaves out the strategic uses of bargaining sequences even though prioritizing bargaining sessions is part and parcel of strategic business practices.[3]

The strategic uses of bargaining sequences where a buyer procures complementary inputs from various sellers are ubiquitous in real life.

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[3] Although the literature on vertical integration typically assumes away the endogeneity of bargaining sequences, the issues of endogenous bargaining institutions have been extensively examined in the bargaining literature such as Fershtman (1990), Inderst (2000), and In and Serrano (2003), among many others.

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For instance, manufacturers of automotives and electronics typically negotiate with labor unions and suppliers of parts and components separately for in-house assembly lines. Hotel developers deal with the owners of land plots before kicking off their operations. Software companies like Microsoft, Oracle and Google venture to acquire stakes in high-technology start-ups to stay ahead of their competitors. Naturally, when businesses pertain to bilateral arrangements with various sellers of complementary inputs, sequencing of negotiations offers the strategic impetus for a buyer to achieve the maximum concessions.

This paper is motivated by this often overlooked aspect of multi-party negotiations. When the procurement of inputs involves many parties, the order of bargaining negotiations may matter to vertical merger decisions and may offer the strategic impetus for a firm to enhance concessions from the outside party. Intuitively, when the production of final outputs requires inputs from the other supplier, vertical merger between the upstream and downstream firms may be undesirable because the additional benefits accrued from eliminating the double-marginalization problem are eventually extracted by the third party. By deliberately committing to paying a higher price to the upstream supplier through outsourcing of intermediate inputs, the downstream firm can effectively lower a concession taken by the third party. When the bargaining position of the downstream firm with the outside party is sufficiently weak so that separation is optimal, the order of bargaining sessions can be manipulated to boost surpluses negotiated with the outside party.

We examine the strategic uses of bargaining sequences by introducing downstream unionization into the standard successive monopoly setting and demonstrate the interplay among firm bargaining power, vertical integration decisions, and the order of bargaining sessions, using the generalized Nash bargaining approach.[4] The sub-game perfect Nash equilibrium reveals that the downstream firm will never enter the wage bargaining prior to the inter-firm bargaining as the joint profits can always be augmented by vertical integration. More specifically, if bargaining power of the downstream firm in the wage negotiation is sufficiently strong, vertical integration (in-house production of intermediate inputs) results. If the downstream firm has somewhat identical bargaining power in both sessions, vertical separation (outsourcing of intermediate inputs) is optimal, and both negotiation sessions are undertaken simultaneously. If the bargaining power of the downstream firm in the wage negotiation is weak relative to that in the inter-firm negotiation, the downstream and upstream firms will be vertically separated, and the inter-firm bargaining will be concluded prior to the wage bargaining.

Our results are consistent with some recent empirical studies that examine the interplay between labor union bargaining and (international) outsourcing decision. Using German linked employer–employee data and industry level international outsourcing data, Braun and Scheffel (2007) showed that outsourcing, or vertical separation in our context, deteriorated the bargaining position of the labor union. Bas and Carluccio (2010), using French data from firm-level survey of manufacturing firms with foreign presence, showed that when firms import intermediate inputs from countries with strong union, they would be more likely to outsource the production of intermediate inputs to external suppliers. The argument used to explain their empirical result is consistent with our theoretical prediction. Outsourcing would limit the amount of revenues available for extraction by the labor union. Implicitly, this empirical result would only prevail if the downstream firm is able to endogenize the bargaining sequence. By committing to costly outsourcing, the firm can credibly limit the amount of revenues available for extraction by the labor union.

A salient feature of our theoretical setting is that our crux variables – bargaining power of two monopolists in the successive monopoly structure – are allowed to be unequal. Although bargaining power in principle stems from market power, and in this regard two monopolists are conventionally assumed to stand on equal footing, it appears in the literature that many other factors that are exogenous to a firm, in addition to market power, also influence bargaining power in price and wage negotiations such as law and regulations, the extent of unionization, business relationships, among other structural factors (see, for instance, Lindblom, 1948; Mishel, 1986; Cho and Chu, 1994). Therefore, to us, it is interesting to investigate how distribution of bargaining power shapes a firm's decision on organizational structures and bargaining sequences involving input supplier and labor union.

To our knowledge, this paper is one of the very first attempts to investigate the implications of bargaining sequences and power on vertical integration under the successive bilateral monopoly structure. It should be highlighted that the notion of bargaining sequences in the present paper departs from the literature on pattern bargaining, such as Horn and Wolinsky (1988a), Dobson (1994), Noe and Wang (2000), Marshall and Merlo (2004), Marx and Shaffer (2007), Raskovich (2007), Krasteva and Yildirim (2012), and Stenbacka and Tombak (2012) among others, in at least two key respects. First, in this strand of literature, a failure to agree with one party does not automatically imply that bargaining with the other party is no longer feasible; this is not the case in this paper.[5] In our context, should the downstream firm fail to reach an agreement with the union (or the upstream firm), the negotiation of the other party discontinues since the final output production cannot proceed with just one input. Another significant difference is that our setting also allows for the potential merger between two players, e.g. downstream and upstream firms, while the literature on pattern bargaining, with the exception of Stenbacka and Tombak (2012), treats both players as separate entities and leaves out the possibilities that the players integrate and make decisions jointly. To us, relaxing these assumptions may provide interesting insights into the implications of bargaining sequences as a strategic tool on merger decisions.

It is worth noting that Stenbacka and Tombak (2012) also investigate the implication of bargaining sequences on make or buy decision. To the best of our knowledge, their paper is the closest to ours. In their setup, a downstream firm must decide on the proportion of intermediate inputs to outsource. Thus, for instance, the firm can decide whether: 1) to do partial outsourcing, i.e. to buy some part of the required intermediate inputs from an external supplier and produce the remaining part internally, 2) to do full outsourcing, or 3) to do full in-house production. They evaluate which of these three organizational modes is optimal for a given bargaining sequence. Our paper in contrast takes the analysis one step further to analyze the optimal bargaining sequence. We are able to characterize under what conditions the sequential bargaining is better than the simultaneous bargaining.

Another strand of literature investigates the equilibrium pattern of unionization and, as does this paper, sheds light on bargaining sequences. In these studies, a firm bargains with two distinct groups of workers which can choose to form a single joint union or opt for negotiations with a firm separately. For instance, Horn and Wolinsky (1988b) show that when two types of labor are close substitutes, the equilibrium form of unionization is a single union, and a firm negotiates with both groups simultaneously. When two types are

[4] It is worth mentioning that, albeit using an entirely different modeling environment, our paper is similar in spirit to Perotti and Spier (1993), who show that debt can be used to effectively extract wage concessions from a union. By carrying more debt, a firm can reduce its employees' demands by creating fear that a higher wage will make it difficult for the firm to service the debt and thus bring it closer to bankruptcy. Both our paper and theirs thus discuss a commitment tool that can be credibly used by a firm to gain concessions from the union.

[5] For instance, in Marx and Shaffer (2007) the efficient solution could call for the firm (i.e., the buyer) to buy from either one of two sellers, but it does not mean that when the buyer fails to negotiate with one seller, its negotiation with the other seller will no longer be feasible.