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RESEARCH ARTICLE

The Economics of Bargaining between Manufacturers and Retailers: When Do Slotting Fees Arise?

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Abstract

This paper investigates when do slotting fees arise as outcomes of the bargaining process between manufacturers and retailers. An asymmetric Nash bargaining model is used to investigate the economics of slotting fees obtained from bilateral negotiations about two-part tariff contracts. The analysis applies to an arbitrary number of manufacturers and retailers, and holds under general technology and product differentiation conditions. We show how scale economies in retail revenue and complementarity contribute to the existence of slotting fees. Such results apply irrespective of the retailer bargaining power. They indicate that observed variations in the existence and magnitude of slotting fees across products and market conditions are driven by variations in complementarity and economies of scale in retail revenue.

Keywords: *Bargaining, Slotting fees, Two-part tariff, Vertical channel.*

Introduction

The last few decades have seen a rise in concentration and bargaining power of retailers around the world. This has been associated with an increase in up-front payments in the form of slotting fees charged by retailers to manufacturers to get access to shelf space [1-4].[1] The presence and magnitude of slotting fees vary depending on the products and market conditions [5]. Explaining the occurrence of slotting fees has been challenging. Slotting fees have been interpreted as payments for promotional use of retail shelf space [5] or for the scarcity of retail shelf space [6]. They have also been interpreted as instruments of rent extraction by powerful retailers. In this case, slotting fees would be associated with a high bargaining power of retailers. Yet, this interpretation is at odds with the fact that some large and powerful retailers (such as Wal-mart or Cosco) have never asked for slotting fees [7]. This creates a significant puzzle. Could slotting fees arise under conditions that are unrelated to the retailer bargaining power? If so, what are these conditions? And how do they relate to the promotional use of retail shelf space? The objective of this paper is to address this puzzle and to provide answers to these questions. Our analysis explores the determinants of slotting fees in the context of negotiations between manufacturers and retailers. To establish linkages between slotting fees and the promotional use of retail shelf space, we need to study possible interaction effects existing across products, retailers and manufacturers. Yet, previous research on this topic has been presented under rather restrictive conditions. For example, Kuksov and Pazgal [7] have focused on the case of at most two retailers and two manufacturers, each manufacturer producing a single product. And Marx and Shaffer [6] have analyzed the case of a single retailer and two manufacturers producing products that are unrelated on the demand side. Capturing the role of promotional use of retail space requires an analysis presented under broader conditions. This paper considers the case of a marketing channel involving multiple retailers and multiple manufacturers managing differentiated products under a general technology and general demand conditions. The determinants of quantities, prices and slotting fees are examined in the context of bilateral negotiations represented by an asymmetric Nash bargaining model. The analysis allows for differential bargaining power between agents.[2] It considers the case where each retailer is independent and acts as a monopoly on its final market. This is a reasonable assumption to the extent that high transportation costs prevent consumers from traveling from one store to another [8].[3]We focus our attention on two-part tariff contracts, which allow for slotting fees. In this context, we derive necessary conditions and sufficient conditions for the existence of slotting fees. The two sufficiency conditions for the occurrence of slotting fees are: economies of scale in retail revenue; and complementarity. Economies of scale in retail revenue can arise in the presence of fixed cost in retailing. In a way consistent with Kuksov and Pazgal [7], this means that retailing fixed costs contribute to the occurrence of slotting fees. Complementarity means that using retail shelf space to sell particular products induces additional sales of other products. This is consistent with Klein and Wright's argument that slotting fees are associated with the promotional use of retail shelf space. As noted by Klein and Wright [5], this can help explain both the growth and incidence across products of slotting fees in grocery retailing. Importantly, our sufficiency conditions for the existence of slotting fees do not depend on the relative bargaining power of the retailer. In contrast with Kuksov and Pazgal [7], this means that slotting fees can arise even if the retailer has little bargaining power, and that they can be absent under powerful retailers. Our analysis indicates that observed variations in the existence and magnitude of slotting fees are due to variations in economies of scale and complementarity across products and market conditions. The paper is organized as follows. The model is presented in section 2. The equilibrium solution to the bargaining game is presented in section 3. Section 4 analyzes the payment schemes, with a focus on the determinants of slotting fees. Finally, concluding remarks are presented in section 5.

Bargaining Model

Consider a set $I = \{1, 2, \dots, n\}$ of n retailers that buy goods from a set $J = \{1, 2, \dots, m\}$ of m manufacturers. All negotiations are bilateral and simultaneous. They are represented by an asymmetric Nash bargaining game, which allows for different bargaining power across agents [9]. We assume that any retailer keeps the right to order any desired quantity. The quantity of the products purchased by the i-th retailer from the j-th manufacturer is given by the vector $q_{ij} \geq 0$, $i \in I$ and $j \in J$. Denote by $q_i = \{q_{ij}: j \in J\}$ the vector of all quantities bought (and sold in the i-th final market) by the i-th retailer, and by $q_j = \{q_{ij}: i \in I\}$ the vector of all quantities produced by the j-th manufacturer. This allows product differentiation both across manufacturers and across retailers. Also, we let $q = \{q_{ij}: i \in I, j \in J\}$.The i-th retailer pays the amount T_{ij} to the j-th manufacturer. Our analysis focuses on the case of two-part tariff contracts, where $T_{ij} = F_{ij} + w_{ij} \cdot q_{ij}$, w_{ij} being the vector of wholesale prices for q_{ij} sold to the i-th retailer by the j-th manufacturer, and F_{ij} being the fixed payment made by the i-th retailer to the j-th manufacturer, $i \in I$, $j \in J$.[4] It means that contracts between the i-th retailer and the j-th manufacturer involve choosing the prices w_{ij} and the fixed payment F_{ij}, $i \in I$, $j \in J$. Slotting fees correspond to $F_{ij} < 0$.The i-th retailer faces the following price-dependent demands for products q_{ij} :$p_{ij} = P_{ij}(q_i)$; $i \in I$; $j \in J$:

The profit made by the i-th retailer is then given by:

$$\pi_i = R_i(q_i) - \sum_{j \in J} (F_{ij} + w_{ij} \cdot q_{ij}), \tag{1}$$

where $R_i(q_i) = \sum_{j \in J} P_{ij}(q_i) \cdot q_{ij} - c_i(q_i)$ denotes the i-th retailer's revenue, $c_i(q_i)$ being the i-th retailer's cost of selling q_i, $i \in I$.The profit made by the j-th manufacturer is:

$$\pi_j = \sum_{i \in I} (F_{ij} + w_{ij} \cdot q_{ij}) - C_j(q_j), \tag{2}$$

where $C_j(q_j)$ is the cost of production for the j-th manufacturer, $j \in J$. Throughout the paper, we make the following assumptions:

A1:The manufacturer cost functions satisfy $C_j(q_j) = C_j^f + C_j^v(q_j)$, where $C_j^f \geq 0$ denotes fixed cost and $C_j^v(q_j) \geq 0$ is the variable manufacturing cost function assumed to be differentiable and convex in q_j, $j \in J$.

A2: The retail cost functions satisfy $c_i(q_i) = c_i^f + c_i^v(q_i)$, where $c_i^f \geq 0$ denotes fixed cost, $c_i^v(q_i) \geq 0$ is the variable retailing cost function, and $[\sum_{j \in J} P_{ij}(q_i) \cdot q_{ij} - c_i^v(q_i)]$ is assumed to be differentiable andconcave in q_i, $i \in I$.

Note that A1 allows for the presence of fixed cost in manufacturing. When $C_i^f > 0$, this permits the existence of scale economies among manufacturing firms. Similarly, A2 allows for the presence of fixed cost in retailing. When $c_i^f > 0$, this permits the existence of scale economies in retailing. We will show below how scale effects play an important role in the determination of slotting fees.Finally, from (1) and (2), aggregate profit is given by:

$$\Pi(q) = \sum_{i \in I} R_i(q_i) - \sum_{j \in J} C_j(q_j). \tag{3}$$

Bargaining Equilibrium

We want to analyze the quantity and payment decisions made by retailers and manufacturers. Assume that the negotiations between the i-th retailer and the j-th manufacturer involve bilateral bargaining represented by the following asymmetric Nash bargaining game:

$$\text{Max } \{\lambda_i^j \cdot \ln(\pi_i - \pi_i^j) + \lambda_j^i \cdot \ln(\pi_j - \pi_j^i)\} \tag{4}$$

where π_i^j is the threat-point for the i-th agent when bargaining with the j-th agent, $\lambda_i^j > 0$ is the bargaining weight for the i-th agent when bargaining with the j-th agent, and the bargaining weights are normalized such that $\lambda_i^j + \lambda_j^i = 1$, $i \in I$, $j \in J$. The threat-points π_i^j and π_j^i represent profits obtained when negotiations fail between agents i and j (see below). Note the generality of the approach: it allows for an arbitrary number of manufacturers, an arbitrary number of retailers, a general technology, an arbitrary number of goods, and arbitrary possibilities of substitution among products within a retail chain.The Nash bargaining problem in (4) implies choosing q_{ij} to maximize the joint profit $(\pi_i + \pi_j)$. But this is equivalent to maximizing aggregate profit $\Pi(q)$ in (3) with respect to q_{ij}. Since this applies to all $i \in I$ and $j \in J$, it means that the optimal quantities in (4) satisfy $q^* \in \text{argmax}_{q\geq 0} \{\Pi(q)\}$, i.e. that the bargaining outcome leads to monopoly outputs.[5] In addition, under assumptions A1 and A2, and in the presence in the marketing channel of optimal transfers F_{ij} in (4), note that $q^* \in \text{argmax}_{q\geq 0} \{\Pi(q)\}$ is consistent with $q_i^* \in \text{argmax}_{q_i\geq 0} \{R_i(q_i) - \sum_{j\in J} (F_{ij} + w_{ij} \cdot q_{ij})\}$ and $q_j^* \in \text{argmax}_{q_j\geq 0} \{\sum_{i\in I} (F_{ij} + w_{ij} \cdot q_{ij}) - C_j(q_j)\}$ when $w_{ij} = \partial R_i(q_i^*)/\partial q_{ij}$, $i \in I$, $j \in J$. On that basis, our analysis below relies on contracts where prices satisfy $w_{ij} = \partial R_i(q_i^*)/\partial q_{ij} > 0$, $i \in I$, $j \in J$.Next, we investigate the profit sharing rule under the Nash bargaining solution in (4). Using the definitions of π_i and π_j given in (1) and (2), note that the objective function in (4) is differentiable and strictly concave in F_{ij}. For retailer i and manufacturer j, the associated first-order condition for a maximum with respect to F_{ij} is

$$\lambda_i^j/(\pi_i - \pi_i^j) = \lambda_j^i/(\pi_j - \pi_j^i). \tag{5}$$

Rewriting (5) and using the normalization rule $\lambda_i^j + \lambda_j^i = 1$ give the following results

$$\pi_i = \pi_i^j + \lambda_i^j \cdot [\Pi_{ij} - \pi_i^j - \pi_j^i],\ i \in I, \tag{6}$$

and

$$\pi_j = \pi_j^i + \lambda_j^i \cdot [\Pi_{ij} - \pi_i^j - \pi_j^i],\ j \in J, \tag{7}$$

where $\Pi_{ij} = \pi_i + \pi_j$ is the joint profit of the i-th retailer and the j-th manufacturer. Under bilateral bargaining represented by the asymmetric Nash bargaining game (4), this shows that retailer i and manufacturer j's profits are equal to their threat-point profit plus a weighted share of the joint bargaining gain $(\Pi_{ij} - \pi_i^j - \pi_j^i)$. Thus, each agent's profit depends on both the level of threat-point profits (π_i^j, π_j^i) and on the value of the bargaining parameter $\lambda_i^j = 1 - \lambda_j^i$.The threat point profits reflect available outside options in the case of negotiation failure. And the bargaining parameters λ's represent relative bargaining skills. This indicates that agents with high threat points and good negotiating skills will obtain a larger portion of the bargaining gain. Alternatively, agents with low threat-points and low bargaining skills will receive a smaller portion of the bargaining gain. Under bilateral bargaining, we consider the case where bargaining failure between the i-th retailer and the j-th manufacturer corresponds to $q_{ij} = 0$ and $F_{ij} = 0$, while prices $\{w_{ij} = \partial R_i(q_i^*)/\partial q_{ij},\ i \in I,\ j \in J\}$ and other fixed payments $\{F_{sk}: s \in I\backslash i,\ k \in J\backslash j\}$ remain constant. Such a bargaining failure allows for possible adjustments in the quantities $\{q_{sk} : s \in I\backslash i,\ k \in J\backslash j\}$. Under contract failure, we assume that each retailer makes decisions that remain consistent with their own interest and chooses the quantities to order from manufacturers that maximize their own profit.[6]

Implications

First, consider the determination of threat-points under bilateral bargaining. In the presence of bargaining failure between the i-th retailer and the j-th manufacturer, the quantity decisions q_s made by other retailers $(s \neq i)$ satisfy $q_s^* \in \text{argmax}_{q_s\geq 0} \{R_s(q_s) - \sum_{j\in J} (F_{sj} + w_{sj} \cdot q_{sj})\}$ for $s \in I\backslash i$. Since $w_{sj} = \partial R_s(q_s^*)/\partial q_{sj}$ remains constant, it follows that other retailers (besides the i-th one) are unaffected by an (i; j)-th bargaining failure. Yet, an (i, j)-th bargaining failure will affect the i-th retailer's decisions, which are $q_i^{-j} \in \text{argmax}_{q_i\geq 0} \{R_i(q_i) - \sum_{k\in J\backslash j} (F_{ik} + w_{ik} \cdot q_{ik}): q_{ij} = 0\}$. In general $q_{ik}^{-j} \neq q_{ik}^*$, implying quantity adjustments for q_{ik}, $k \in J\backslash j$. Under the (i, j)-th bargaining failure, the threat-point profit for the i-th retailer is thus defined as:

$$\pi_i^j = R_i^{-j} - \sum_{k\in J\backslash j} (F_{ik} + w_{ik} \cdot q_{ik}^{-j}) \tag{8}$$

where $R_i^{-j} = R_i(q_i^{-j})$, $i \in I$.Next, consider the implications of an (i, j)-th bargaining failure for manufacturers. As just discussed, under bilateral bargaining, the quantity decisions involving other retailers $(s \neq i)$ remain unaffected. This implies that $q_{sj} = q_{sj}^*$ for $s \in I\backslash i$ and $j \in J$ with or without bargaining failure. Thus, the only implication of an (i, j)-th bargaining failure for the j-th manufacturer is that it now produces $q_{ij} = 0$. In this context, the threat-point profit for the j-th manufacturer is:

$$\pi_j^i = \sum_{s\in I\backslash i} (F_{sj} + w_{sj} \cdot q_{sj}^*) - C_j^{-I} \tag{9}$$

where $C_j^{-i} = C_j(q_j^{-i})$ and $q_j^{-i} = \{q_{sj}: q_{sj} = q_{sj}^*,\ s \in I/i;\ q_{ij} = 0\}$, $j \in J$.Under two-part tariff contracts, the payment made by the i-th retailer to the j-th manufacturer is: $F_{ij} + w_{ij} \cdot q_{ij}^*$, $i \in I$, $j \in J$. Under asymmetric Nash bargaining, the characterization of this optimal payment is presented next. Proposition 1: Assuming that $q_{ij}^* \neq 0$, the payment made by the i-th retailer to the j-th manufacturer is:

$$F_{ij} + w_{ij} \cdot q_{ij} = (1 - \lambda_i^j) \cdot (R_i^* - R_i^{-j}) + \lambda_i^j \cdot (C_j^* - C_j^{-i}) + (1 - \lambda_i^j) \cdot \sum_{k\in J\setminus j} w_{ik} \cdot [q_{ik}^{-j} - q_{ik}^*] \quad (10)$$

where $R_i^* = R_i(q_i^*)$ and $C_j^* = C_j(q_j^*)$.Proof: From equation (6), we have$(1 - \lambda_i^j) \cdot [\pi_i - \pi_i^j] = \lambda_i^j \cdot [\pi_j - \pi_j^i]$. At the optimum, using equations (1) and (8), and equations (2) and (9), we obtain

$$\pi_i^* - \pi_i^j = R_i^* - R_i^{-j} - F_{ij} - w_{ij} \cdot q_{ij}^* - \sum_{k\in J\setminus j} w_{ik} \cdot [q_{ik}^* - q_{ik}^{-j}] \quad (11)$$

$$\pi_j^* - \pi_j^i = F_{ij} + w_{ij} \cdot q_{ij}^* - C_j^* + C_j^{-I} \quad (12)$$

where π_k^* is the optimal profit for the k-th agent, $k \in I \cup J$. Combining these equations gives the desired result. Equation (10) illustrates the complexity of the determinants of payments ($F_{ij} + w_{ij} \cdot q_{ij}^*$). In general, such payments depend on the cost and revenue structure and on the distribution of bargaining power. Indeed, the first term in (10) involves a weighted change in the i-th retailer's revenue associated with negotiation failure with the j-th manufacturer. The second terms in (10) measures the effect of a negotiation failure with the i-th retailer on the j-th manufacturer's cost. Finally, the third term in (10) captures the effects of bargaining failure on quantity decisions. We now explore the determinants of the fixed payments F_{ij}. When positive, these payments involve retailers paying manufacturers a fixed amount of money. And when negative, they are fixed payments from manufacturers to retailers. As such, $F_{ij} < 0$ represents slotting fees. As noted in the introduction, such slotting fees have become more commonly used. This raises the issue: what are the determinants of slotting fees? And when are they likely to arise?Proposition 2: Assuming that $q_{ij}^* \neq 0$, the payment made by the i-th retailer to the j-th manufacturer satisfies

$$C_j^* - C_j^{-i} < F_{ij} + w_{ij} \cdot q_{ij}^* < R_i^* - R_i^{-j} - \sum_{k\in J\setminus j} w_{ik} \cdot [q_{ik}^* - q_{ik}^{-j}]. \quad (13)$$

Proof: The proof follows directly from equations (11) and (12), along with the Nash bargaining inequalities $\pi_i^* > \pi_i^j$ and $\pi_j^* > \pi_j^i$.Equation (13) establishes bounds on the payment made by the i-th retailer to the j-th manufacturer, $F_{ij} + w_{ij} \cdot q_{ij}^*$. The lower bound is: $C_j^* - C_j^{-i}$. And the upper bound is: $R_i^* - R_i^{-j} - \sum_{k\in J\setminus j} w_{ik} \cdot [q_{ik}^* - q_{ik}^{-j}]$. These bounds provide useful information on the existence of a slotting fee, where $F_{ij} < 0$. Indeed, the lower bound in (13) implies that F_{ij} can be negative only if $C_j^* - C_j^{-i} - w_{ij} \cdot q_{ij}^* < 0$. It means that a necessary condition for the existence of a slotting fee, $F_{ij} < 0$, is:

$$C_j^* - C_j^{-i} < w_{ij} \cdot q_{ij}^* \quad (14)$$

The Kuhn-Tucker conditions associated with $q^* \in \operatorname{argmax}_{q\geq 0} \{\Pi(q)\}$ imply $[\partial R_i(q_i^*)/\partial q_{ij} - \partial C_j(q_j^*)/\partial q_{ij}] \cdot q_{ij}^* = 0$. Given $w_{ij} = \partial R_i(q_i^*)/\partial q_{ij}$, it follows that condition (14) can be alternatively written as: $C_j^* - C_j^{-i} < [\partial C_j(q_j^*)/\partial q_{ij}] \cdot q_{ij}^*$. When $q_{ij}^* \neq 0$, this is satisfied when the j-th manufacturing firm produces q_{ij} under decreasing returns to scale (where average cost is less than marginal cost), $j \in J$. This is an important result: slotting fees cannot arise in situations where manufacturing firms are "small" and produce under increasing returns to scale. Next, we want to know the more specific conditions under which slotting fees would arise. To examine this issue, consider the upper bound given by the second inequality in (13). It implies that F_{ij} is always negative when $R_i^* - R_i^{-j} - w_{ij} \cdot q_{ij}^* - \sum_{k\in J\setminus j} w_{ik} \cdot [q_{ik}^* - q_{ik}^{-j}] < 0$. It means that a sufficient condition for the existence of a slotting fee, $F_{ij} < 0$, is:

$$R_i^* - R_i^{-j} - w_{ij} \cdot q_{ij}^* < \sum_{k\in J\setminus j} w_{ik} \cdot [q_{ik}^* - q_{ik}^{-j}]. \quad (15)$$

Under what scenario would this condition be satisfied? For $q_{ij} > 0$, consider the incremental average revenue $AR_i(t, q_{ij}) = [R_i(t \cdot q_{ij}, \cdot) - R_i^j]/t$, where the scalar $t > 0$ represents a proportional change in q_{ij}. Given $w_{ij} = \partial R_i(q_i)/\partial q_{ij}$, the incremental average revenue is increasing (decreasing) in t if $w_{ij} \cdot q_{ij} - [R_i(q_i) - R_i^j] > 0$ (< 0). Define economies of scale in retail revenue with respect to q_{ij} as any situation where the incremental average revenue $AR_i(t, q_{ij})$ is increasing in t. When $q_{ij}^* > 0$, it follows that $[R_i^* - R_i^j] - w_{ij} \cdot q_{ij}^* < 0$ under economies of scale in retail revenue with respect to q_{ij}.Next, consider a reduction from $q_{ij}^* > 0$ to 0. Define q_{ij} as being a complement to $\{q_{ik}: k \in J\setminus j\}$ if $\sum_{k\in J\setminus j} w_{ik} \cdot [q_{ik}^* - q_{ik}^{-j}] > 0$, i.e. if setting $q_{ij} = 0$ tends to decrease the sale of other products sold by the i-th retailer. Combining these results with the sufficiency condition (15) gives our main result.Proposition 3: Given $q_{ij}^* \neq 0$, sufficient conditions to observe a slotting fee, $F_{ij} < 0$, between the i-th retailerand the j-th manufacturer are:

- There are economies of scale in retail revenue with respect to q_{ij}, and
- Goods q_{ij} and $\{q_{ik}: k \in J\setminus j\}$ are complements.

Proposition 3 presents two sufficient conditions that guarantee the existence of a slotting fee between the i-th retailer and the j-th manufacturer: $F_{ij} < 0$. It identifies economic situations where slotting fees would arise. Condition (i) reflects economies of scale in retail revenue with respect to q_{ij}. It is satisfied when a proportional increase in q_{ij} generates an increase in incremental average revenue AR_i. From A2, this would happen in situations where there are fixed costs in retailing. This is consistent with Kuksov and Pazgal's finding that retailing fixed costs contribute to the existence of slotting fees [7]

And condition (ii) states that goods q_{ij} and $\{q_{ik}: k \in J\backslash j\}$ are complements. It means that setting $q_{ij} = 0$ tends to decrease the demand for other products sold by the j-th retailer. Alternatively, complementarity means that using retail shelf space to sell particular products induces additional sales of other products. This supports Klein and Wright's argument that slotting fees are associated with the promotional use of retail shelf space. As noted by Klein and Wright [5], this can explain both the growth and incidence of slotting fees in grocery retailing. Importantly, our sufficiency conditions for the existence of slotting fees do not depend on the relative bargaining power of the retailer. How does Proposition 3 relate to previous research on slotting fees? As noted above, our analysis agrees with Kuksov and Pazgal [7]: fixed costs in retailing contribute the occurrence of slotting fees. But it differs from Kuksov and Pazgal [7] in two significant ways. First, Kuksov and Pazgal [7] argued that slotting fees do not arise under a monopoly retailer. This difference is due in part to their assumption that bargaining failure leads to zero profit. This assumption does not seem reasonable when there is more than one retailer and more than one manufacturer. Indeed, under bilateral bargaining, a negotiation failure between a retailer and a manufacturer typically leaves these agents with profit opportunities dealing with other agents. This stresses the importance of analyzing the determinants of slotting fees allowing with multiple manufacturers and multiple retailers.Second, Kuksov and Pazgal [7] argued that retail bargaining power has a positive effect on the incidence and magnitude of slotting fees. This is not consistent with Proposition 3, which shows that slotting fees can arise irrespective of the bargaining power of retailers. Our analysis makes it clear that a high bargaining power of the retailers is not required to see the emergence of slotting fees.Finally, as noted above, our analysis is consistent with Klein and Wright's argument that slotting fees are associated with the promotional use of retail shelf space. Following Klein and Wright [5], this can explain the existence and growth of slotting fees in grocery retailing both over time and across product lines. In this context, Proposition 3 provides useful information on the economic conditions under which slotting fees can arise. It indicates that observed variations in the existence and magnitude of slotting fees across products and market conditions are driven by variations in complementarity and economies of scale in retail revenue [10-20].

Concluding Remarks

This paper has developed a general bargaining model of a marketing channel where bilateral negotiations take place between retailers and manufacturers. We used an asymmetric Nash bargaining game to represent the outcome of negotiations over the terms of two-part tariff contracts. This provides a basis to explore the determinants of slotting fees paid by manufacturers to retailers. Our analysis captures the role of relative bargaining power between manufacturers and retailers. Our key result is the identification of conditions where slotting fees can arise irrespective of relative bargaining power. In particular, we derive a necessary condition and a sufficient condition for the existence of slotting fees. We show how economies of scale in retail revenue and complementarity contribute to the existence of slotting fees. Importantly, these conditions do not depend on the relative bargaining power of retailers. This indicates that observed variations in the existence and magnitude of slotting fees are due to variations in economies of scale and complementarity across products and market conditions. Economies of scale in retailing arise in the presence of fixed retailing cost. And complementarity arises when using retail shelf space to sell particular products stimulates the sale of other products. This is consistent with Klein and Wright [5] who argued that slotting fees are associated with the promotional use of retail shelf space. By showing how slotting fees can arise even when the retailer bargaining power is relatively low, our analysis provides useful insights that can help improve our understanding of the nature and motivations of strategic management observed in vertical marketing channels.

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Remark Footnotes

[1] Implications of the rising power of retailers for strategic product positing in vertical channels have also been explored in previous literature (e.g., Avenel and Caprice, 2006; O'Brien and Shaffer, 1992, 1997; Scott-Morton and Zettelmeyer, 2004).

[2] Other papers investigating the role of bargaining power in vertical channels include Shaffer (2001), Iyer and Vilas Boas (2003), Draganska et al. (2010), Inderts and Wey (2011), and Micklos-Thal et al. (2011).

[3] This assumption has also been made in recent literature exploring the effects of increasing retailer power (e.g., Inderst and Wey, 2003, 2007; Inderst and Shaffer, 2007).

[4] In our notation, $w_{ij} \cdot q_{ij}$ denotes the inner product of the two vectors w_{ij} and q_{ij}, with $w_{ij} \cdot q_{ij}$ being the total variable payment made by the i-th retailer to the j-th manufacturer.

[5] By maximizing aggregate profit, note that this eliminates any double marginalization problems.

[6] Note that the bargaining equilibrium could be alternatively presented in the context of sequential bargaining (e.g., as done in Marx and Shaffer (2010)).