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Can Margin Differences in Vertical Marketing Channels Lead to Contracts with Slotting Fees?

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In this paper, we show that slotting fees can be part of an equilibrium solution if per-unit downstream margin is smaller than the per-unit upstream margin. In recent literature, a similar margin-based argument is made by Klein and Wright (2007), whereas intense downstream retail competition coupled with high upstream margin causes upstream manufacturers to offer slotting fees for promotional shelf space. In this paper, we generalize this argument and show that it is possible to have the margin-based argument without any downstream retail competition and competition between products within a retail chain. Interestingly we show that slotting fees will be larger if the products sold by a retailer are complements rather than substitutes. Using a model of a channel bargaining game, we also provide the necessary and sufficient conditions for the existence of slotting fees and show that for contracts with slotting fees under full vertical coordination, upstream marginal cost functions need to be increasing. Broadly, our findings provide new insights into the strategic role of downstream product assortment on equilibrium-marketing-channel contracts with slotting fees.

Key words: marketing; channels of distribution; retailing and wholesaling; slotting fees; product assortment
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Introduction

Contracts based on a fixed-fee transfer and a unit wholesale price are widely used in marketing channels. Broadly known in academic literature as two-part tariff (TPT) contracts, their various forms are utilized in different marketing channels. In the franchising literature, the fixed fees are known as franchise fees, usually paid by downstream (e.g., retailers) to upstream channel members (e.g., manufacturers or suppliers); in supermarket settings these fees are known as slotting fees (or slotting allowance), and the directionality of the transfer payments reverses. Proliferation of such retail contracts with slotting fees in the 1990s led to increased scrutiny from policy makers due to antitrust concerns, as well as critical analysis from academic researchers in marketing and economics who sought to understand the key drivers of slotting fees.[1] Interestingly, the phenomenon of slotting fees is neither universal across all supermarkets nor common across all product categories within a supermarket. Given that slotting fees are observed across a variety of product categories within and among supermarkets, including both new and existing products, it is difficult to explain this practice as a fee to access scarce shelf space for new products only.[2] As a result, despite a large number of studies to explain slotting fees in marketing channels starting in the 1990s, the phenomenon continues to be a topic of interest among researchers in the marketing and economics literature.

Recently, Kuksov and Pazgal (2007) and Klein and Wright (2007) provided arguments for the existence of slotting fees based on retail competition intensity. Kuksov and Pazgal (2007) argue that in a market without information asymmetry, intensity of retail competition can be a key driver of slotting fees. They show that by compensating retailers for the cost of selling the product, slotting fees provide a way for manufacturers to increase retail coverage and (or) promote retail competition. Similarly, Klein and Wright (2007) argue that slotting fees can be used as a compensation mechanism by manufacturers for supplying promotional shelf space (via slotting fees) when intense interretailer price competition on a particular product makes compensation via a lower wholesale price a more costly way to generate equilibrium retailers' shelf-space rents. Compared with existing retail competition-based arguments for the existence of slotting fees, we show in this paper that it is possible under some conditions to have contracts with slotting fees without retail competition and product-level competition within a retail chain.

[1] For detailed reviews, see Federal Trade Commission (2001, 2003), Klein and Wright (2007), and Kuksov and Pazgal (2007).

[2] Slotting fees for existing products are also known as pay-to-stay fees (Federal Trade Commission 2001).

In terms of competition between products within a retail store, our model implies that the prevalence of slotting fee-type contracts will increase under conditions of both strong substitution and complementary product assortments. In fact, the magnitude of the slotting fee can be higher in the case of complementary product assortments. Within the broader product-assortment literature, existing studies in marketing have mainly focused on how product assortment affects store choice and consumers' shopping behavior (such as Briesch et al. 2009). Here we show how downstream product choice can also have implications for contract outcomes in a marketing-channel game.

Brief Literature Review

Within the literature, there are both anti- and procompetitive arguments for the existence of slotting fees. One strand of anticompetitive argument is based on retailers' ability to extract surplus via retail market power (such as Chu 1992); however, empirical data do not provide strong evidence that the existence of slotting fees is due to retail market power (Sudhir and Rao 2006; Federal Trade Commission 2001, 2003).

Procompetitive arguments, on the other hand, can be classified into three groups: (1) scarce shelf space (e.g., Sullivan 1997, Marx and Shaffer 2010), (2) signalling (e.g., Lariviere and Padmanabhan 1997), and (3) retail competition (e.g., Kuksov and Pazgal 2007, Klein and Wright 2007). Of these three, retail competition-based arguments are the most recent, and our findings complement these retail competition-based arguments under a different set of assumptions on upstream costs and products sold by the downstream retailers. First, we assume upstream marginal cost specification to be nonlinear as opposed to constant marginal cost assumption as in Kuksov and Pazgal (2007). Second, we allow products sold by a retailer to be either complements or substitutes as opposed to only substitutes as in Kuksov and Pazgal (2007) and Klein and Wright (2007). Gabrielsen (2006) also relies on the assumption of nonlinear cost specification to generate slotting fees in a marketing-channel game.[3] In the present paper we further investigate this cost-based argument and show that, conditioned on bargaining power and product assortment decisions of the downstream channel member, a key driver of slotting fees is the upstream and downstream margin difference in the marketing channel. Arguments presented here were not considered in the empirical study of slotting fees in Sudhir and Rao (2006) nor in any other empirical studies.

The Model

In this section, we develop a model with a single retailer and two manufacturers (i, j). This is a two-stage game. In the first stage the retailer makes the product assortment decision, and in the second stage the retailer and the manufacturers bargain on the two-part tariff contracts. As anecdotal evidence suggests, we allow slotting fees to be negotiated as part of the bargaining process, although extent of the negotiations can vary (Federal Trade Commission 2003). Our second-stage bargaining setup is similar to that of O'Brien and Shaffer (2005) and Dukes et al. (2006) in that we assume that the retailer commits to simultaneous bilateral negotiation with both manufacturers. In negotiation between the retailer and manufacturer i, both agents assume that the negotiation with manufacturer j will be successful. Note that the TPT contract is based on a wholesale price and a fixed fee. So, in the case of a bargaining failure between the retailer and manufacturer i, retailer and manufacturer j should optimize profit based on the TPT contract. We allow for such optimization.[4]

We start building this model by defining some of the primitives. Let total transfer payment from the retailer to manufacturer i be T_i, where $T_i = F_i + w_i q_i$; F_i is the fixed-fee transfer, w_i is the wholesale price, and q_i is the amount transacted between manufacturer i and the retailer. In this case, a negative F_i implies slotting fee, whereas a positive value of F_i will be similar to the case of franchise fees.

Next we express retail profit as $\pi_R = (\sum_{k=i,j}(R_k - T_k))$ and the manufacturer's profit as $\pi_i = T_i - C_i(q_i)$, where C_i is the total production cost for manufacturer i. We solve the game using backward induction. So, we start with the second-stage decisions on fixed payments and wholesale prices. Solution to the second stage provides insights into profit-sharing rules in this game. The bilateral bargaining between the retailer and manufacturer i can be represented by the following asymmetric log-transformed Nash bargaining product:

$$\max\{\lambda_i \ln(\pi_R - \pi_R^j) + (1-\lambda_i)\ln(\pi_i - \pi_i^R)\}, \qquad (1)$$

where λ_i is the bargaining power of the retailer over manufacturer i, and the bargaining weights are normalized to 1 such that manufacturer i's bargaining power is $1 - \lambda_i$.[5] Here π_R^j and π_i^R represent the threat-point profits in this bargaining game. Thus, π_R^j

[3] The finding of the present paper is independent of the work of Gabrielsen (2006). We were not aware of his paper when we started to work on this research project. We would like to thank an anonymous reviewer for informing us of the existence of the paper by Gabrielsen (2006).

[4] A similar assumption on adjustment by the retailer is also made by Dukes et al. (2006), but under a wholesale price contract.

[5] Note that by "bargaining power," we refer to the bargaining "ability" of the players and not to their market powers. For interesting

is the profit made by the retailer when negotiation with manufacturer i fails; similarly, π_i^R is the profit made by manufacturer i when negotiation with the retailer fails. Conditioned on a TPT contract (F_i, w_i and F_j, w_j), we can state the threat-point profit of the retailer when negotiating with manufacturer i as $\pi_R^j = R^j - F_j - w_j\hat{q}_j$, where R^j is the threat-point revenue, and $\hat{q}_j$ is the amount to be transacted between manufacturer j and the retailer if bargaining between the retailer and manufacturer i fails. Without the loss of generality, we normalize the outside option of the manufacturer i, π_i^R, to be equal to 0.

Note that the individual rationality axiom of this bargaining game implies that for the upstream channel player i, $\pi_i > 0$.[6] Using individual rationality of the upstream channel player, we can define the lower bound of F_i as $F_i > C_i - w_i q_i$. This condition implies that F_i can be negative if $(C_i/q_i) < w_i$. In other words, for there to be a slotting fee, the wholesale price needs to be larger than average cost of production. This is the necessary condition for the existence of a slotting fee in the channel bargaining game.

Similarly, using the individual rationality axiom of the downstream channel member ($\pi_R - \pi_R^j > 0$), the upper bound for the fixed-fee transfer can be defined as $F_i < \sum_{k=i,j}(R_k - w_k q_k) - (R^j - w_j\hat{q}_j)$. This implies that the sufficient condition for the existence of a slotting fee is $\sum_{k=i,j}(R_k - w_k q_k) < (R^j - w_j\hat{q}_j)$. This further implies that if in bargaining with one of the manufacturers the threat-point surplus of the retailer is more than the surplus generated when both products are sold by the retailer, then the manufacturers will compensate the retailer for selling both products through the use of slotting fees. Note that the necessary and sufficient conditions are generic and do not rely on the level of the bargaining powers. This implies that it is possible to have contracts with slotting fees irrespective of the level of bargaining power of the channel players.

Next we derive the equilibrium conditions in this bargaining game. Using Equation (1), the first-order condition with respect to fixed-fee transfer F_i can be expressed as[7]

$$\pi_R = \lambda_i \Pi + (1-\lambda_i)\pi_R^j, \tag{2}$$

$$\pi_i = (1-\lambda_i)\Pi - (1-\lambda_i)\pi_R^j. \tag{3}$$

Here $\Pi = \pi_R + \pi_i$ is the total profit generated from the transaction between manufacturer i and the retailer. Note that when the retailer has all the bargaining power ($\lambda_i = 1$), the retailer extracts all the channel profit, and manufacturer i ends up with zero profit. On the other hand, if manufacturer i has all the bargaining power ($\lambda_i = 0$), then the retailer ends up with only the threat-point profit, and manufacturer i extracts the residual channel profit. Note also that both the retailer's and manufacturer i's profits are the weighted average of the total channel and the threat-point profits. As a result, when the retailer has all the bargaining power, the retailer will focus on product selection such that total channel profit is maximized. On the other hand, when the manufacturers have all the bargaining power, the retailer will focus on product selection such that the threat-point profit is maximized. In the bargaining process threat points are nontrivial: channel players can in fact use threat points strategically to influence negotiated channel outcomes and thereby the extent of the slotting fee.

Next we derive the condition of equilibrium wholesale price. In the bilateral bargaining process conditioned on bargaining power, the retailer's and manufacturer i's profits are positively correlated, with only total channel profit (Π) and the threat-point profit π_R^j exogenous to this negotiation process. So, the retailer and manufacturer i should set wholesale price such that total profit Π is maximized. In other words, wholesale price should be set such that in equilibrium the channel achieves full vertical coordination and total channel profit is optimized. This can be achieved if in equilibrium wholesale price is set equal to equilibrium marginal cost of production: $w_i^* = \partial C_i/\partial q_i$.[8]

In the case of TPT contracts, the contract specifies only the wholesale price and the transfer payment. Thus, in the case of a bargaining failure between the retailer and manufacturer i, the retailer has the incentive to adjust quantity from manufacturer j. We allow for this adjustment in the contract, such that in the case of bargaining failure between manufacturer i and the retailer, the retailer adjusts the amount ordered from manufacturer j: $\hat{q}_j \in \arg\max_{q_j} R^j - w_j^* q_j$, where R^j is the threat-point revenue of the retailer in the case of bargaining failure with manufacturer i.[9]

Next we derive the equilibrium condition for the existence of a slotting fee-type TPT contract. Using Equation (2), we can write F_i as

$$F_i = [(1-\lambda_i)/\lambda_i](\pi_R - \pi_R^j) - [w_i^* q_i^* - C_i]. \tag{4}$$

Here q_i^* is the equilibrium demand. Note that $[(1-\lambda_i)/\lambda_i](\pi_R - \pi_R^j) > 0$ because individual rationality

discussions on some of these sources of bargaining power and how the Nash bargaining parameters can be interpreted, see Iyer and Villas-Boas (2003) and Kuksov and Pazgal (2007).

[6] For further details on axioms of the Nash bargaining solution, see Iyer and Villas-Boas (2003).

[7] Note that the second-order condition of maximization is satisfied, because Equation (1) is concave in F_i.

[8] A more formal proof is available in Appendix A.

[9] Note that the results presented here will still hold if we assume no demand adjustment in the case of bargaining failure.

axiom $(\pi_R - \pi_R^j) > 0$. So, a TPT contract will be of the slotting-fee type if $[w_i^* q_i^* - C_i] > [(1-\lambda_i)/\lambda_i](\pi_R - \pi_R^j)$ and $w_i^* q_i^* > C_i$. The conditions imply that we will need the equilibrium wholesale price of manufacturer i (i.e., w_i^*) to be greater than the average cost of production for there to be slotting fees.

Equation (4) provides perspective on how the directionality of the transfer payment will be affected by the threat points and the nature of upstream cost functions. To simplify the exposition, we assume that $\lambda_i = \lambda$ in the rest of the analysis. Next, by rearranging Equation (4), we can provide the following condition for the existence of slotting fees.

Proposition 1. *A fixed-fee payment F_i will be of the slotting-fee type if and only if the ratio of downstream and upstream margin (τ_i) is*

$$\tau_i = \frac{\tau_R^i/\lambda}{\tau_M^i/(1-\lambda)} = \frac{[(R-R^j) + w_j^*(\hat{q}_j - q_j^*) - w_i^* q_i^*]/\lambda q_i^*}{[w_i^* q_i^* - C_i]/[(1-\lambda) q_i^*]} < 1. \quad (5)$$

Proof. Using Equation (4), the condition for slotting fees can be stated as $F_i = (1-\lambda)[(R-R^j) + w_j^*(\hat{q}_j - q_j^*) - w_i^* q_i^*] - \lambda(w_i^* q_i^* - C_i) < 0$ and $R = \sum_{k=i,j} R_k$. By manipulating the term, we get Equation (5), whereby $\tau_R^i = [(R-R^j) + w_j^*(\hat{q}_j - q_j^*) - w_i^* q_i^*]/q_i^*$ and $\tau_M^i = w_i^* q_i^* - (C_i/q_i^*)$. □

Note that the denominator τ_M^i is the per-unit margin generated upstream. As a downstream monopolist, the retailer internalizes all the cross-price effects from the sales of both products. For this reason, we can decompose the numerator into two components such that $\tau_R^i = \tau_R^{ii} + \tau_R^{ij} = (p_i^* - w_i^*)/q_i^* + ((p_j^* - w_j^*)q_j^* + \pi(\hat{p}_j - w_j^*)\hat{q}_j)/q_i^*$. Here τ_R^i is the total per-unit margin generated from the sale of i. This can be decomposed into two components: τ_R^{ii} is the per-unit downstream margin generated from the sale of i (i.e., the own margin effect of i on τ_R^i), and the second component τ_R^{ij} is the downstream margin contribution on sale of i from the sale of j (i.e., the cross-margin effect of j on τ_R^i). As a result, Proposition 1 states that if the downstream weighted margin is less than the weighted margin in the upstream, where weights are the inverse of respective channel members' bargaining power, then we will observe slotting fee-type TPT contracts. In this case, it is the per-unit margin difference that drives the extent of slotting fees. This condition provides an intuitive argument for the existence of slotting fees. Here slotting fee conditioned on bargaining power is a way for manufacturers to compensate the retailer for having lower margins. Note that this condition (Equation (5)) is generic and does not rely on specific technology, demand specifications, or product assortment choice of the channel players.

In terms of bargaining power, ceteris paribus, as the bargaining power of the retailer increases $\lambda \to 1$, τ_i will decrease. On the other hand, an increase in manufacturer i's bargaining power will lead to increase in τ_i, and as a result there will be less propensity toward a slotting fee-type contract. Next we examine the impact of the first-stage decision of product choice on upstream and downstream margin differences. For analytical tractability, we expand our model using linear demand and quadratic cost specifications.[10]

Product Choice and Slotting Fee

Following Singh and Vives (1984) and Martin (1999), we use a quadratic utility-based demand specification for the consumers shopping at the retailer for products i and j of the form $p_i = \alpha - (q_i + \beta q_j)$.[11] Here β is the product choice parameter such that $-1 < \beta < 1$. If $\beta = 0$, the two products are independent in demand; if $\beta > 0$, the two products are substitutes; and if $\beta \simeq 1$, we have maximum substitution effect. Similarly, if $\beta < 0$, the products are complements, and we have maximum complementary effect when $\beta \simeq -1$. In general, a retail product assortment contains a mix of substitute (such as two brands of butter), complementary (such as bread and butter), and neutral products (such as bread and automotive tires).

For the purpose of comparison, we will assume that upstream cost structures do not depend on the nature of downstream product choice, there are no capacity constraints, and, prior to negotiation (i.e., the first stage), the retailer can choose the variety/assortment they want. In the current setup, the manufacturers can produce either two substitute or two complementary products, and the product assortment decision is made by the retailer.[12] We assume a quadratic total cost function such that $C_i = q_i + 2q_i^2$. We normalize fixed cost of production at zero. Next we explore the directionality of transfer payments conditioned on types of products.

Proposition 2. *There can be slotting fees with and without product-level competition.*

[10] Here we should note that although the analysis presented in the next section provides interesting insights, these results are based on derived constructs rather than the primitives of the model.

[11] The utility of consumer i is of the form $U_i = m + \alpha(q_i + q_j) - 0.5(\delta q_i^2 + 2\beta q_i q_j + \delta q_j^2)$, and m represents utility from "all other products." Here, without the loss of generality, we assume $\alpha = 15$ and $\delta = 1$. For the utility function to be well behaved and strictly concave, $|\beta| < 1$ (Singh and Vives 1984).

[12] The implication here is that manufacturer i can supply a substitute/complementary product to the retailer using the same cost function.

Proof. The transfer payment between the retailer and manufacturer i can be specified as $F_i = 49[(\beta^2-1)\cdot(\lambda-1)-2\lambda]/(3+\beta)^2$. Note that denominator $(3+\beta)^2$ is always positive because $|\beta| < 1$. So the sign of transfer payment F_i depends on the numerator such that if $\beta^2 < (3\lambda-1)/(\lambda-1)$, then fixed-fee transfer will be in the form of slotting allowance, implying that product assortment can be either substitutes or complements. □

Note that the fixed-fee transfer is a linear function of bargaining power. Given product choice parameter β, as bargaining power increases, fixed-fee transfer will become increasingly of the slotting-fee type. And when the retailer has all the bargaining power, then the slotting fee can be expressed as $F_i = -98/(3+\beta)^2$. In this model, once $\lambda > 1/3$, fixed-fee transfer will always be of the slotting-fee type. Also note that when $0 < \lambda < 1$, then as $|\beta|$ increasing to 1 will lead to a decrease in F_i. So, conditional on bargaining power, the magnitude of the slotting fee can increase under both substitute and complementary product assortments. Next we show that, all else remaining the same, slotting allowance will generally be larger under complementary assortments than under substitute assortments.

Proposition 3. *Conditioned on bargaining power, for products with equal strength of substitution or complementarity, slotting allowance will be larger under complementarity.*

Proof. The sign of β does not affect the numerator of slotting fee $F_i = 49[(\beta^2-1)(\lambda-1)-2\lambda]/(3+\beta)^2$. So for any given absolute value of β, the denominator will be smaller if products are complements than if they are substitutes. This implies that slotting fee will be larger if the products are complements ($\beta < 0$) than if they are substitutes ($\beta > 0$). □

In terms of upstream channel profits, for a given bargaining power of the retailer, manufacturers will always benefit from a choice of complementary products by the retailer (as manufacturer i's profit can be stated as $\pi_i = [49(\beta^2-3)(\lambda-1)]/(3+\beta)^2)$ because of elimination of competition on the retail shelf space. On the other hand, retail profit can be expressed as $\pi_R = 98[\beta^2(1-\lambda)+\beta+3\lambda]/(3+\beta)^2$. In the case of a retailer, product complementarity will lead to increased profit only if bargaining power is high enough. This implies that when the bargaining power of the retailer is high, the choice of complementary products by the retailer will be beneficial to both channel players. Such an outcome will not only benefit the channel members, it will also increase consumer surplus due to positive demand externalities.[13]

[13] Further intuition using upstream and downstream margin difference is provided in Appendix B.

Concluding Remarks

In this paper, we show that it is possible to have slotting fee-type contracts without interretail and intraretail competition. The findings of this paper complement the findings of Kuksov and Pazgal (2007). In their model, in equilibrium they obtain marketing-channel contracts with slotting fees in a market with downstream retail competition and upstream constant marginal cost specification. In this paper, we show that in equilibrium it is possible to have slotting fees under increasing marginal cost specification and without downstream retail competition.

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Appendix A. Equilibrium Wholesale Price

Proposition A1. *Under a bilateral Nash bargaining game with asymmetric bargaining power, the optimum choice of quantity is $q_i^* \in \arg\max_{q_i \ge 0} \Pi(\sum_i q_i)$, where $\Pi(\sum_i q_i)$ is the aggregate profit that can be generated through the negotiation between the retailer and manufacturer i. This implies that in a two-part tariff contract, wholesale price should be $w_i^* = \partial R(\sum_i q_i)/\partial q_i \forall i$.*

Proof. In the case of a TPT contract, the total transfer payment is $T_i = F_i + w_i q_i$. Noting that

$$q_i^* \in \arg\max_{q_i \ge 0}\left\{\Pi\left(\sum_i q_i\right)\right\} = \arg\max_{q_i\ge 0}\{\pi_R + \pi_i\},$$

the associated Kuhn–Tucker conditions are $[\partial R(\sum_i q_i^*)/\partial q_i] \le [\partial C_i(q_i^*)/\partial q_i]$ and $[\{\partial R(\sum_i q_i^*)/\partial q_i\} - \{\partial C_i(q_i^*)/\partial q_i\}]q_i^* = 0$. It follows that the equilibrium wholesale price $w_i^* = \partial R(\sum_i q_i^*)/\partial q_i$ is consistent with profit-maximizing quantity decisions for the retailer as well as the manufacturer i. This implies in equilibrium wholesale price will be equal to marginal cost production. □

Appendix B. Upstream and Downstream Margin Difference

To provide further insights into relationships between margin difference and slotting fees, here we decompose the margins following Proposition 1.

Upstream margin $\tau_M^i = 14/(3+\beta)$. The upstream margin is larger if products are complements than substitutes because $\partial\tau_M^i/\partial\beta < 0$. Intuitively, when products are complements, positive demand externality increases sales of both products, and as a result, in equilibrium, the difference between marginal and average cost increases due to increasing marginal cost specification.

Downstream margin $\tau_R^i = 7(1-\beta^2)/(3+\beta)$. The downstream margin decreases as $|\beta| \to 1$. So, the choice of a strong substitute or complementary product assortment will lead to lower downstream margin. To gain further insights, we can decompose this margin into two components: own margin effect, $\tau_R^{ii} = 7(1+\beta)/(3+\beta)$, and cross-margin effect, $\tau_R^{ij} = -7\beta(1+\beta)/(3+\beta)$. In terms of own margin effect, $\partial\tau_R^{ii}/\partial\beta > 0$ for

$-0.99 < \beta < 0.99$, implying that own margin τ_R^{ii} increases if the retailer moves from a complementary to substitute product assortment. Intuitively, when products are complements, the optimum channel pricing of i's product will be such that it is closer to its wholesale price to take advantage of the positive demand externality between the two products. On the other hand, the equilibrium retail price will diverge from the wholesale price when products are substitutes leading to increase in own margin effect. The sign of the cross-margin effect τ_R^{ij} depends on the nature of the products, being negative (positive) for substitutes (complements). Intuitively, when the products are substitutes (complements), the increase in sales of j negatively (positively) impacts the downstream cross margin due to negative (positive) externality. Interestingly, the cross-margin effect is concave but positive when products are complements, and close to zero when products are strong complements. This is because when products are strong complements, own margin effect is small, and as a result, spillover effect from one product to the other through cross-margin effect will be small. Overall, per-unit downstream margin τ_R^i is concave and positive.

Finally, the condition derived in Proposition 1 can be stated as $\tau_i = ((1-\lambda)(1-\beta^2))/2\lambda$. This implies that for a given value of bargaining power λ, increase in absolute value of β will lead to $\tau_i \to 0$. So, both strong substitutability/complementarity between products will lead to an increased level of slotting fees. In the online appendix (available at https://www.dropbox.com/s/pmzcx2a2y1o0rj7/Web%20Appendix.pdf), we provide the plots of the margins and profits for further insights.

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