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KINSHUK JERATH and Z. JOHN ZHANG*

In a store-within-a-store arrangement, retailers essentially rent out retail space to manufacturers and give them complete autonomy over retail decisions, such as pricing and in-store service. This intriguing retailing format appears in an increasing number of large department stores worldwide. The authors use a theoretical model to investigate the economic incentives a retailer faces when deciding on this arrangement. The retailer's trade-off is between channel efficiency and interbrand competition, moderated by returns to in-store service and increased store traffic. The retailer cannot credibly commit to the retail prices and service levels that the manufacturers effect in an integrated channel, so it decides instead to allow them to set up stores within its store. Thus, the stores-within-a-store phenomenon emerges when a powerful retailer, ironically, gives manufacturers autonomy in its retail space. An extension of the model to the case of competing retailers shows that the store-within-a-store arrangement can moderate interstore competition.

Keywords: distribution channels, contracting, retailing formats, power retailer, department stores

Store Within a Store

On a visit to any major department store, such as Macy's, Bloomingdale's, or Neiman Marcus, shoppers can observe vendor shops (typically for cosmetics, apparel, apparel accessories, electronics, and toys) that stand out from the rest of the department store. These vendor shops, also called boutiques or "stores within a store," have autonomy over a small part of the store, sell a particular brand exclusively, and are designed to reflect the image of that brand. For example, the cosmetics sections at almost all major department stores are populated with stores within a store representing several major brands, such as Chanel, Estée Lauder, Lancôme, MAC, Dior, and others (Anderson 2006).

The store-within-a-store arrangement is common in the apparel category. Almost all department store chains have stores within a store for formal and casual men's and women's apparel, apparel accessories, jewelry, and footwear. Bloomingdale's has stores within a store for several brands, such as Ralph Lauren, Calvin Klein, DKNY, and Kenneth Cole; Marshall Field's (now operating as Macy's) houses Louis Vuitton, Thomas Pink, BCBG, and Jil Sander (Anderson 2005); Neiman Marcus has Armani and Gucci; Nordstrom has Chanel, Chloe, and YSL (Glassman 2006); and so on. Stores within a store are also prevalent, albeit to a lesser extent, in categories such as furniture and home decor. Beyond retailers in the United States, this arrangement is widespread in Asia and Europe, where it is typically found in many more categories than in the United States (O'Connell and Dodes 2009).

The store-within-a-store arrangement is unique and intriguing because only in some specific categories do manufacturers gain almost complete autonomy over a part of the store owned by retailers (Binkly 2009; Cotton, Inc. 1998; Kirk 2003; O'Connell and Dodes 2009; Prior 2003). A store within a store operated by a manufacturer typically has the following characteristics: The inventory is owned by and the retail prices are decided by the manufacturer rather than the department store; the representatives providing in-store service are employed and trained by the manufacturers owning the brands rather than the department store, and the store offers expert service exclusively for the products offered by its brand. In short, activities such as pricing, stocking, and merchandising are handed over completely to

*Kinshuk Jerath is Assistant Professor of Marketing, Tepper School of Business, Carnegie Mellon University (e-mail: kinshuk@cmu.edu). Z. John Zhang is Professor of Marketing and Murrel J. Ades Professor, the Wharton School, University of Pennsylvania (e-mail: zjzhang@wharton.upenn.edu). The authors thank Erin Armendinger, Eric T. Bradlow, Jeonghye Choi, William Cody, Peter S. Fader, Stephen J. Hoch, Raghuram Iyengar, Sridhar K. Moorthy, and Serguei Netessine for several useful discussions; Erin Armendinger for arranging conversations with executives from Macy's, Inc.; Hao Zhao for arranging conversations with executives from Beijing Wangfujing Department Store (Group) Co., Ltd.; and the three anonymous *JMR* reviewers, whose comments helped improve this article immensely. Teck Ho served as associate editor for this article.

the parent brands.[1] In return, the retailer simply charges rent (typically a lease payment) for the in-store real estate and does not set its own margin above the manufacturers' prices. Furthermore, as the preceding examples show, in categories such as cosmetics and high-end apparel, colocated stores within a store for different brands in the same department store compete directly on price and in-store service. However, in other categories, such as middle- and low-end apparel, the arrangement is slightly different because some brands have stores within a store, and other brands sell in the usual manner, such that the retailer owns the inventory and determines the retail price. Finally, for categories such as kitchenware and housewares, we observe only a standard arrangement in which the retailer purchases the products from competing suppliers at a wholesale price and then sets the retail prices for all products (hereinafter, the retailer-resell arrangement). In this case, the retailer also appoints its own in-store service representatives for the category and chooses the level of in-store service to provide for each brand.

These observations naturally lead to several questions about the store-within-a-store phenomenon. Why does the retailer prefer to give complete autonomy over its in-store real estate, as well as merchandising and pricing decisions, to manufacturers for some categories but not for others? For which categories is this situation optimal? What category characteristics drive this decision? Furthermore, for which categories does the retailer prefer to have competing brands set up stores within a store, and for which categories does it prefer to have only one brand host a store within a store while other brands use the standard retailer-resell arrangement? How is the provision of in-store customer service related to these decisions? The introduction of products through stores within a store can help bring new consumers to the store, who also might purchase other products. In what manner does this store traffic effect come into play? Finally, how does competition among retailers affect their choice of using the store-within-a-store arrangement?

Apparently, the store-within-a-store phenomenon is not a random occurrence. Some discernable regularities regarding the phenomenon exist. The best way to determine such regularities is to analyze industry data. Unfortunately, such data are not available. The next best means to gain insights is to tap the knowledge of retailers and manufacturers that deal with stores within a store. We talked to practitioners in retail chains and cosmetics companies and other retailing experts with many years of experience in the retail sector. From these interviews, we gathered preliminary motivation for our formal analysis. Then, to investigate the store-within-a-store phenomenon rigorously, we developed a game theory model of retail management and channel design.

[1]Vendor managed inventory and category captainship are two related but different phenomena. Specifically, vendor managed inventory is a logistics-focused arrangement in which the vendor manages the inventory in the retail space. In stores within a store, the manufacturer is involved more holistically inside the store by setting prices, managing inventory, providing in-store service, designing the store within a store to reflect the brand image, and so on. Category captainship refers to the case in which one manufacturer manages the full category for the retailer; the retailer typically reserves the power to reject this plan. In stores within a store, one manufacturer manages only its own brand, and the retailer typically gives it autonomy in the retail store (after charging a fixed rent).

Before proceeding further, we note that our study does not model the store-within-a-store phenomenon in all its different manifestations. First, in the contract form that we study, the retailer charges periodic rent and grants autonomy to the manufacturers, which is fairly common but also subject to variations. For example, according to our conversations with practitioners, the retailer sometimes shares a percentage of the revenues that the manufacturer earns from the sales of the product and charges a smaller periodic rent to share risk (an aspect we do not model). Second, stores within a store are sometimes operated inside department stores by other retailers, such as Sephora's cosmetics stores in JCPenney and FAO Schwarz's toy stores in Saks Fifth Avenue, where they sell several different brands in that category. We only study the arrangement in which manufacturers operate stores within a store. Some of our insights might carry over to the retailer arrangement as well, but we do not model it explicitly and thus ignore additional factors such as cross-selling of brands, category-specific service with complementarities across brands, and retailing and service provision efficiencies by retailers specializing in the category. We leave the detailed study of other forms of the store-within-a-store arrangement to future work.

Prior research has devoted a lot of attention to channel structures and channel pricing strategies. In particular, our work is related to that of Choi (1991), McGuire and Staelin (1983), and Bernheim and Whinston (1985). Choi considers a two-manufacturer, one-retailer channel structure and compares the outcomes of different scenarios in which the manufacturers and the retailer make strategic pricing decisions in different orders. However, that study treats the channel structure as a given—the two manufacturers always sell through the retailer—and only varies the order of decisions. In our setting, we analyze different channel structures (including Choi's) and determine the channel structure the retailer prefers under different conditions. Both McGuire and Staelin and Bernheim and Whinston study the channel structure that emerges when manufacturers are the architects of the channel. The former authors study the case when two manufacturers sell differentiated products and unilaterally make decisions to integrate or separate vertically through independent retailers. The latter consider a situation in which two competing manufacturers delegate their marketing-mix decisions to a common agency and offer a "sell out" contract that incentivizes the common agency to achieve the monopoly outcome by making it the residual claimant of all profits. In contrast, we study the channel structure that emerges when the retailer is the architect of the channel.

Our work is also related to the literature on bilateral monopoly channels, for which the main question is that of channel coordination (Desai, Koenigsberg, and Purohit 2004; Jeuland and Shugan 1983; Moorthy 1988); duopoly channels with two manufacturers operating through exclusive retailers, for which the main question is that of strategic vertical separation or integration (Bonanno and Vickers 1988; Coughlan 1985; Coughlan and Wernerfelt 1989; McGuire and Staelin 1983); and the channel coordination problem in a one-manufacturer, two-retailer setting (Ingene and Parry 1995; Iyer 1998). We also model the impact of nonprice factors, such as service provision, on prices and channel arrangements. This is related to the work of Winter (1993), Iyer (1998), and Coughlan and Soberman (2005), who consider the impact of price and nonprice competition on vertical contracting and channel structure.

As this review makes evident, most of the existing literature assumes that the manufacturer is the channel architect. However, the retailing landscape has changed in the past two decades; the 2002 census (U.S. Census Bureau, http://www.census.gov/econ/census02/) reveals that retail chains with 100 or more stores accounted for only .06% of the total number of firms in the retail sector but for 43% of sales. These few chain stores account for a disproportionately high percentage of retail sales, and the retailer's power has increased significantly in the manufacturer–retailer relationship (Kadiyali, Chintagunta, and Vilcassim 2000). This phenomenon of increasing retailer power has motivated recent research (e.g., Bloom and Perry 2001; Dukes, Gal-Or, and Srinivasan 2006; Geylani, Dukes, and Srinivasan 2006; Iyer and Villas-Boas 2003; Raju and Zhang 2005). We take research on powerful retailers one step further to investigate what channel structures emerge when the retailer is the architect of the channel. Specifically, we address research questions in a setting in which the retailer owns the retail space and therefore can decide whether to allow the manufacturer to set up a store within a store: How does the channel configuration differ when the retailer is in the "driver's seat," and why? Do new channel structures emerge? How do nonprice variables, such as in-store service and store traffic effect, affect the channel arrangement? Our theoretical model provides answers to these important questions. Recent empirical work on manufacturer-managed retailing (Li, Chan, and Lewis 2009) also supports the results of our model.

The rest of this article is organized as follows: In the next section, we summarize the main points of our interviews with industry practitioners. We then develop and analyze our model and determine the conditions under which the retailer chooses the store-within-a-store arrangement. In the following section, we extend the basic model to consider the adverse effect of service from competing products on demand, the store traffic effect, and competition at the retail level. In the final section, we discuss the shortcomings of our analysis and suggest directions for future work.

INTERVIEWS WITH PRACTITIONERS

To benefit from the insights of practitioners, we contacted and interviewed executives of large retail corporations with extensive experience. We interviewed three retailing experts in the United States and three in China with experience with stores within a store and in the cosmetics and apparel categories (which most commonly use stores within a store).[2] From our conversations, the following salient facts about stores within a store emerged: First, in the United States, retailers choose stores within a store in the cosmetics and apparel categories, for which consumers perceive a difference among the various brands. In other categories, for which consumers perceive the various brands as close substitutes, stores within a store are rare. In China and other Asian countries, such as Hong Kong, Japan, Singapore, and South Korea, stores within a store appear across the board in more product categories.

Second, retailers usually have an upper hand in negotiations about stores within a store over manufacturers. This is because the retailers have a large clientele, and manufacturers want to tap into this consumer base, much of which they otherwise would not be able to access. We found from our conversations with Chinese retailing experts that most brands have stores within a store in department store chains to gain access to consumers visiting these stores, even though the brands clearly have (and use) other channels of distribution for their products.

Third, store-within-a-store contracts typically mandate that manufacturers manage all retailing decisions, and the retailers charge them periodic rent. The rent basically guarantees a minimum payment to the retailer. In addition, the retailer sometimes shares the risk with the manufacturer by charging a smaller periodic rent and sharing a percentage of the revenues the manufacturer earns from sales in the department store.

MODEL DEVELOPMENT

Our model consists of a single retailer ("she") selling differentiated products (different brands in the same category) from two competing manufacturers (both "he"). The manufacturers offer differentiated products that must be sold through the retailer, which owns access to the customer. In this setting, the retailer must decide the following: when she should lease her retail space to the competing manufacturers and delegate all merchandising and pricing decisions for their respective products to them; when she should let only one manufacturer set up a store within a store and buy at wholesale prices from the other manufacturer and then decide the retail price for this brand; and when she should opt for the retailer-resell arrangement for both brands and jointly set the prices and in-store service levels.

The demand curves for the two products are given by

$$q_1 = \frac{1}{1+\beta} - \frac{1}{1-\beta^2}p_1 + \frac{\beta}{1-\beta^2}p_2 + \theta s_1, \quad (1)$$

$$q_2 = \frac{1}{1+\beta} - \frac{1}{1-\beta^2}p_2 + \frac{\beta}{1-\beta^2}p_1 + \theta s_2,$$

where q_i is the quantity of product i, p_i is the retail price for product i, s_i is the in-store service level for product i, $\beta \in [0, 1)$ is the substitutability index, and $\theta \geq 0$ is a "returns to service" parameter.[3]

[2]In the United States, we interviewed Terry Lundgren, chief executive officer of Macy's, a leading department store chain with stores within a store in many outlets; Erin Armendinger, managing director of the Jay H. Baker Retailing Initiative at the Wharton School, who previously worked in the merchandising division at Tiffany & Co.; and William Cody, chief talent officer of Urban Outfitters, a large specialty retail chain that primarily sells apparel and apparel accessories. In China, we interviewed the vice president, Dong Jiasheng, and the deputy chief of retailing, Guo Zongliang, of Beijing Wangfujing Department Store (Group) Co., a leading Chinese department store chain, as well as Emma Walmsley, vice president of L'Oreal China.

[3]This demand specification corresponds to a quadratic utility function, $U(q_1, q_2) = (1 + \theta s_1 + \theta\beta s_2)q_1 + (1 + \theta s_2 + \theta\beta s_1)q_2 - ½(q_1^2 + q_2^2 + 2\beta q_1 q_2)$. This utility function implies that if $\theta > 0$, in-store service increases consumer utility. Service for one product also enhances the utility of the other product but is diminished by the substitutability index β. This is intuitive because the products are of the same category. The demand curves can also be obtained by starting from the inverse demand curves $p_i = 1 + \theta(s_i + \beta s_j) - q_i - \beta q_j$, where $i \in \{1, 2\}$ and $j = 3 - i$, as in Singh and Vives (1984). Generalizing this demand schedule while keeping it symmetric to $q_i = [A/(1 + \beta)] - [\gamma/(1 - \beta^2)]p_i + [\beta/(1 - \beta^2)]p_{3-i} + \theta s_i$, where $i \in \{1, 2\}$, $A > 0$, and $0 \leq \beta \leq \gamma$, does not change any insights from the model.

To understand this demand schedule, consider the substitutability between products: $\beta = 0$ implies fully differentiated products, and $\beta \to 1$ implies perfectly substitutable products. As substitutability β increases, the price sensitivity for a product, $1/(1 - \beta^2)$, increases (consistent with the intuition that consumers are more price sensitive for more substitutable products), and the size of the total potential market, $2/(1 + \beta)$, decreases (consistent with the intuition that more differentiated products reach a wider consumer base).

Now, consider in-store service for products. Providing a service level s for a product increases the base demand for that product by θs. The parameter $\theta \geq 0$ can be interpreted as a returns to service parameter, that is, the increase in the base demand for every unit of in-store service provided. Furthermore, we assume that providing service level s costs $s^2/2$. The marketing literature has previously assumed additively separable demand-enhancing effects of marketing effort and convex effort costs (e.g., Bhardwaj 2001; Lal 1990). For an alternative but equivalent formulation, see the Web Appendix (http://www.marketingpower.com/jmraug10).

Manufacturers can approach consumers only through the retailer's store. The retailer can choose among three channel arrangements:

1. The retailer buys products from both manufacturers at wholesale prices and then sells them at marked up retail prices. We abbreviate this arrangement as RR. Figure 1, Panel A, shows the schematic representation.
2. Both manufacturers set up stores within a store. We abbreviate this arrangement as SS. Figure 1, Panel B, shows the schematic representation.
3. One manufacturer sets up a store within a store, and the retailer buys the other's product at a wholesale price and sells it at a retail price. We abbreviate this arrangement as RS. Figure 1, Panel C, shows the schematic representation.

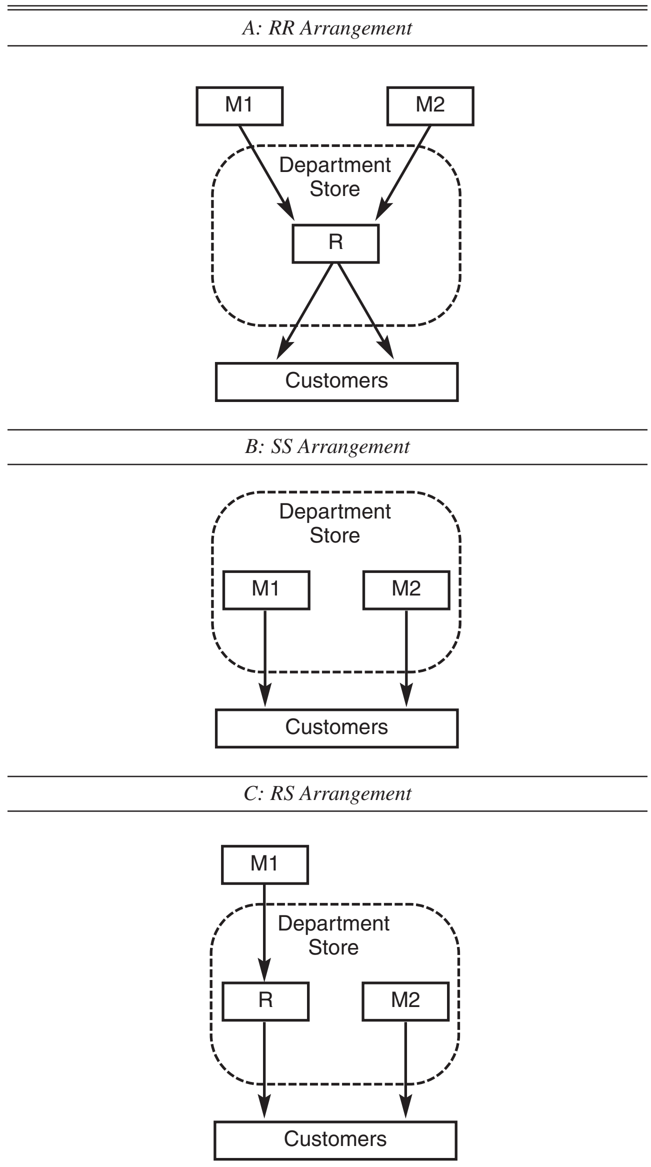
We now analyze these choices in detail for the retailer under different values of β and θ. We first analyze the basic model to obtain core insights and then enrich it further subsequently.

Retailer-Resell Arrangement for Both Manufacturers

In the RR arrangement (denoted by the subscript r), the two manufacturers sell their products to the retailer at wholesale prices, which she then sells to the consumers at higher retail prices. The game proceeds in the following manner: In the first stage, the retailer offers the manufacturers take-it-or-leave-it contracts to enter into the RR arrangement. If the manufacturers accept these contracts, they pay the retailer slotting fees F_{1r} and F_{2r}. Whereas previous research has documented slotting fees in grocery retailing rather than department store retailing (Kuksov and Pazgal 2007; Shaffer 1991), in our model with a powerful retailer, it is reasonable to assume that such a fee could be imposed. Furthermore, assuming the retailer's ability to charge a slotting fee makes the RR arrangement more profitable and thus sets a higher bar against which to justify the alternative arrangements. In the second stage, both manufacturers simultaneously determine the wholesale prices w_{ir}, given F_{ir}. In the third stage, the retailer determines the retail prices p_{1r} and p_{2r} and the service levels s_{1r} and s_{2r}. This setup is consistent with the insights obtained from our conversations with industry experts. The expressions for the quantities sold and profits in terms of prices and service levels are as follows:

Figure 1

SCHEMATIC REPRESENTATIONS OF THE RR, SS, AND RS CHANNEL STRUCTURES



Notes: M1 and M2 denote the two manufacturers, and R denotes the retailer.

$$(2) \quad \begin{aligned} q_{1r} &= \frac{1}{1+\beta} - \frac{1}{1-\beta^2}p_{1r} + \frac{\beta}{1-\beta^2}p_{2r} + \theta s_{1r}, \\ q_{2r} &= \frac{1}{1+\beta} - \frac{1}{1-\beta^2}p_{2r} + \frac{\beta}{1-\beta^2}p_{1r} + \theta s_{2r}; \\ \pi_{M_1 r} &= w_{1r}q_{1r} - F_{1r}, \pi_{M_2 r} = w_{2r}q_{2r} - F_{2r}; \text{ and} \\ \pi_{Rr} &= (p_{1r} - w_{1r})q_{1r} + (p_{2r} - w_{2r})q_{2r} - \frac{s_{1r}^2}{2} - \frac{s_{2r}^2}{2} \\ &\quad + F_{1r} + F_{2r}. \end{aligned}$$

We assume that both manufacturers know the contract offered to the other manufacturer, and all agents can observe the actions of all other agents. As a simplifying assumption, the outside option of the manufacturers is zero. Therefore, the retailer can charge rent to the manufacturers (for retail space) to make their profits exactly zero, and they will accept these contracts. In other words, the retailer is simply extracting all profits from the manufacturers using the fixed rents. Note that our main assumption is that the outside option is an exogenously specified constant. Assuming the constant is zero or any other value does not in any way change the qualitative insights from the model, because it leaves intact the strategic implications of the different arrangements. We also assume that the retailer does not renege on its contract after the first stage of the game.

We solve for the subgame perfect equilibrium using backward induction. Table 1 shows the expressions for the equilibrium prices, service levels, and slotting fees. One main feature of this arrangement is the double markup on the product prices before consumers buy; the manufacturer sells to the retailer at a wholesale price, and the retailer then marks prices up further and sells to consumers. The other main feature, advantageous for the retailer, is that the manufacturers set the wholesale prices competitively, but the retailer subsequently sets the retail prices for both products jointly. As product substitutability β increases and competition between products intensifies, the wholesale prices decrease, but retail prices do not drop as fast, because they are being set jointly. In summary, the RR arrangement leads to high retail prices because of the double marginalization (which should reduce quantity sold), but it also has a competition cushioning effect at the retail level that prevents retail prices from plummeting when products are close substitutes.

To understand the optimal level of service, note that in equilibrium, the retailer determines the service level for both products on the basis of the net returns to service of each. A one-unit increase in the service level for product i increases demand by θ units and profit from sales for the retailer by $\theta(p_{ir} - w_{ir})$ units. The larger the retailer's margin, the higher is the level of service provision. For a fixed θ, as β increases, both w_{ir} and p_{ir} decrease, but the former declines faster, so the retailer's margin from each product increases. Therefore, we obtain the counterintuitive insight that as β increases, in-store service increases. In other words, in the RR arrangement, the retailer provides higher in-store service for categories in which interbrand substitutability is high rather than low.

For a fixed β, as θ increases, the in-store service provided increases because of two effects. The first effect is the direct effect. For a fixed margin, the return to service is higher, so more service is provided. The second effect is the indirect effect; the provision of in-store service boosts demand for the retailer, and a higher θ implies a higher boost in demand for every unit of service provided. With demand thus increased, the retailer can charge a higher retail price, which implies higher margins. (The wholesale prices charged by manufacturers also increase but at a slower rate because they are set competitively by two players.) Thus, as θ increases, the retailer provides more in-store service for both brands.

Store-Within-a-Store Arrangement for Both Manufacturers

In the SS arrangement (denoted by the subscript s), both manufacturers open stores within a store (and make pricing and service decisions) to represent their respective brands in the department store. The game proceeds in the following manner: In the first stage, the retailer offers the manufacturers take-it-or-leave-it contracts to open stores within a store. If the manufacturers accept their contracts, they pay the retailer fixed rents F_{1s} and F_{2s}. In the second stage, both manufacturers simultaneously determine retail prices p_{is} and in-store service levels s_{is} given F_{is} (a sunk cost at this point). This setup is consistent with the insights obtained from our conversations with industry experts.[4] The expressions for the quantities sold and profits in terms of prices and service levels are as follows:

Table 1
PRICES, SERVICE LEVELS, AND SLOTTING FEES IN THE RR ARRANGEMENT

Quantity	*Expression*
p_{1r}, p_{2r}	$\dfrac{6-5+\theta^4+\beta^3\theta^4-\beta(2-\theta^2)^2-\beta^2\theta^2(1+\theta^2)}{2[(2-\theta^2)(2-\theta^2-\beta)-\beta^2\theta^2(1-\beta\theta^2)]}$
w_{1r}, w_{2r}	$\dfrac{(1-\beta)[2-(1-\beta)\theta^2]}{2[2-\beta-\theta^2+\beta\theta^2(1-\beta)]}$
s_{1r}, s_{2r}	$\dfrac{\theta[2-(1+\beta^2)\theta^2]}{2[(2-\theta^2)(2-\theta^2-\beta)-\beta^2\theta^2(1-\beta\theta^2)]}$
F_{1r}, F_{2r}	$\dfrac{(1-\beta)[2-(1-\beta)\theta^2][2-(1+\beta^2)\theta^2]}{4(1+\beta)[2-\beta-\theta^2+\beta\theta^2(1-\beta)]^2[2-(1+\beta)\theta^2]}$

$$(3)\qquad \begin{aligned} q_{1s} &= \frac{1}{1+\beta} - \frac{1}{1-\beta^2}p_{1s} + \frac{\beta}{1-\beta^2}p_{2s} + \theta s_{1s},\\ q_{2s} &= \frac{1}{1+\beta} - \frac{1}{1-\beta^2}p_{2s} + \frac{\beta}{1-\beta^2}p_{1s} + \theta s_{2s};\\ \pi_{M_1s} &= p_{1s}q_{1s} - \frac{s_{1s}^2}{2} - F_{1s},\ \pi_{M_2s} = p_{2s}q_{2s} - \frac{s_{2s}^2}{2} - F_{2s};\text{ and}\\ \pi_{Rs} &= F_{1s} + F_{2s}. \end{aligned}$$

We again solve for the subgame perfect equilibrium for this game using backward induction. Table 2 shows the expressions for the equilibrium prices, service levels, and rents charged.

Consider the effect of substitutability. A main advantage of the SS arrangement is that it removes double marginalization from the channel because the manufacturers directly set the retail prices, which rids the channel of the double marginalization problem. However, the two manufacturers then must compete on price for consumers inside the retailer's store. When the substitutability parameter β is large, the intensity of competition is high, retail prices plummet, and profits in the channel decline.

[4]Our demand system is deterministic, so we do not model the risk-sharing aspect through shared revenues between the manufacturers and the retailer. In our model with deterministic demand, the retailer does not have an incentive to share revenue, because the manufacturer is providing in-store service, and reducing revenues per unit sold for the manufacturer will lower in-store service. Lower in-store service will reduce overall profits from the channel, and the retailer will only be able to extract a smaller periodic rent from the manufacturer.

Table 2
PRICES, SERVICE LEVELS, AND RENTS CHARGED IN THE SS ARRANGEMENT

Quantity	*Expression*
p_{1s}, p_{2s}	$\dfrac{1-\beta}{2-\beta-\theta^2\left(1-\beta^2\right)}$
s_{1s}, s_{2s}	$\dfrac{\theta(1-\beta)}{2-\beta-\theta^2\left(1-\beta^2\right)}$
F_{1s}, F_{2s}	$\dfrac{(1-\beta)\left[2-\left(1-\beta^2\right)\theta^2\right]}{2(1+\beta)\left[2-\beta-\theta^2\left(1-\beta^2\right)\right]^2}$

The manufacturers determine the in-store service level for their respective products, which they set on the basis of their net returns to service. A one-unit increase in the service level by manufacturer i increases demand by θ units and profit by θp_{is} units. For a fixed β, as θ increases, the optimal level of service increases, again because of both the direct effect (keeping price fixed, a higher θ induces more service provision) and the indirect effect (a higher θ implies a greater boost in demand through service provision, which allows for a higher price, which induces more service provision). However, for a fixed θ, as the value of β increases and prices decrease through increased competition, because the increase in profit from every unit of service provided is tied to the level of price, the level of service provided decreases. At the extreme, when products are perfect substitutes (β = 1), both manufacturers charge a retail price of zero (equal to marginal cost) and thus provide no service. Therefore, in the SS arrangement, higher in-store service occurs in categories in which the interbrand substitutability is low (in contrast to the RR arrangement, in which higher in-store service occurs in categories with high interbrand substitutability).

This discussion provides insight into how the SS arrangement can be a two-edged sword. The channel is free of double marginalization, and if products are sufficiently differentiated, prices, service levels, and channel profits are all high. As products become more substitutable, both prices and service levels decline and, therefore, so do channel profits.

Store-Within-a-Store Arrangement for One Manufacturer and Retailer-Resell Arrangement for the Other

The retailer may have different arrangements with two brands. This RS arrangement is common in toys and apparel categories, in which one brand often opens a store within a store, but the retailer sells other brands in a standard manner. We denote this arrangement with the subscript o (*one* manufacturer sets up a store within a store). The game proceeds in the following manner: In the first stage, the retailer offers take-it-or-leave-it contracts to the manufacturers. We assume without any loss of generality that the retailer offers an RR arrangement to the first manufacturer and an SS arrangement to the second manufacturer. If the manufacturers accept the offers, the first manufacturer pays a slotting fee F_{1o}, and the second manufacturer pays a rent F_{2o}. In the second stage, the first manufacturer decides the wholesale price w_{1o}. In the third stage, the retailer decides the retail price p_{1o} and the service level s_{1o}, and the second manufacturer simultaneously decides the retail price p_{2o} and the service level s_{2o}. The expressions for the quantities sold and profits in terms of prices and service levels are as follows:

$$(4)\qquad q_{1o} = \frac{1}{1+\beta} - \frac{1}{1-\beta^2}p_{1o} + \frac{\beta}{1-\beta^2}p_{2o} + \theta s_{1o},$$

$$q_{2o} = \frac{1}{1+\beta} - \frac{1}{1-\beta^2}p_{2o} + \frac{\beta}{1-\beta^2}p_{1o} + \theta s_{2o};$$

$$\pi_{M_1o} = w_{1o}q_{1o} - F_{1o},\ \pi_{M_2o} = p_{2o}q_{2o} - \frac{s_{2o}^2}{2} - F_{2o};\ \text{and}$$

$$\pi_{Ro} = \left(p_{1o} - w_{1o}\right)q_{1o} - \frac{s_{1o}^2}{2} + F_{1o} + F_{2o}.$$

Again, we solve for the subgame perfect equilibrium using backward induction. Table 3 shows the expressions for the equilibrium retail and wholesale prices, service levels, and rents.

The RS arrangement has double marginalization in one channel but efficiency in the other channel. Retail prices are set competitively, so they cannot be sustained at the high levels of the RR arrangement. At the same time, they do not fall as fast with increasing product substitutability as in the SS arrangement, because the price of one product (set by the retailer) is high as a result of double markups, and because prices are strategic complements, the price of the other product (set directly by the manufacturer) rises. In summary, the RS arrangement is a compromise between the RR and the SS arrangement.

The two players set the service levels according to their net returns to service. For the product sold by the retailer, the returns to service are $\theta(p_{1o} - w_{1o})$, and for the product sold through the store within a store, the returns are θp_{2o}. For a fixed β, the optimal level of in-store service provided in equilibrium increases with θ for both products; both the direct and indirect effects of returns to service are at play. For a fixed θ, the provision of service falls for both products as β increases because of increased competition in retail prices and the resulting reduced margins. However, this decrease in service levels is slower than the decrease in the SS arrangement for the reasons we explained previously. A notable insight from this model is that for the RS arrangement, the level of service provided for the store-within-a-store product is higher than that for the retailer-resell product for all values of β and θ. This is because the manufacturer's margin for the store-within-a-store product is higher than the retailer's margin for the retailer-resell product.

Optimal Choice for the Retailer

For different values of the parameters β and θ, the retailer has a preference for one of the three arrangements, according to her profits from each arrangement. We summarize this analysis in P_1.

P_1: If the returns to service are small (θ is small), the retailer prefers the SS arrangement for categories with low interbrand substitutability (small values of β), the RS arrangement for categories with medium interbrand substitutability (medium values of β), and the RR arrangement for categories with high interbrand substitutability (large values of β). If the returns to service are large (θ is large), the retailer

Table 3

PRICES, SERVICE LEVELS, AND RENTS CHARGED/SLOTTING FEES IN THE RS ARRANGEMENT

Quantity	*Expression*
p_{1o}	$\dfrac{\{(1-\beta)[6-5\theta^2+\theta^4+\beta^4\theta^4+\beta^2(-2+5\theta^2-2\theta^4)]\}}{2[\beta(-2+\theta^2)+(-2+\theta^2)^2-\beta^3(1-\theta^2)+\beta^4\theta^2(1-\theta^2)+\beta^2(-2+5\theta^2-2\theta^4)]}$
p_{2o}	$\dfrac{\{(1-\beta)[4+\beta-2\theta^2-\beta\theta^2+\beta^3\theta^2+2\beta^2(-1+\theta^2)]\}}{2(2-\beta-\theta^2+\beta^2\theta^2)[2-\theta^2+\beta^2(-1+\theta^2)]}$
w_{1o}	$\dfrac{(1-\beta)(2+\beta-\theta^2+\beta^2\theta^2)}{4-2\theta^2+2\beta^2(-1+\theta^2)}$
s_{1o}	$\dfrac{\theta(1-\beta)}{4-2\beta-2\theta^2+2\beta^2\theta^2}$
s_{2o}	$\dfrac{\{(1-\beta)\theta[4+\beta-2\theta^2-\beta\theta^2+\beta^3\theta^2+2\beta^2(-1+\theta^2)]\}}{2(2-\beta-\theta^2+\beta^2\theta^2)[2-\theta^2+\beta^2(-1+\theta^2)]}$
F_{1o}	$\dfrac{[(1-\beta)(2+\beta-\theta^2+\beta^2\theta^2)]}{4(1+\beta)(2-\beta-\theta^2+\beta^2\theta^2)[2-\theta^2+\beta^2(-1+\theta^2)]}$
F_{2o}	$\dfrac{\{(1-\beta)[2+(-1+\beta^2)\theta^2][4+\beta-2\theta^2-\beta\theta^2+\beta^3\theta^2+2\beta^2(-1+\theta^2)]^2\}}{8(1+\beta)[\beta(-2+\theta^2)+(-2+\theta^2)^2-\beta^3(-1+\theta^2)+\beta^4\theta^2(-1+\theta^2)+\beta^2(-2+5\theta^2-2\theta^4)]^2}$

prefers the SS arrangement for categories with low interbrand substitutability (small values of β) and the RR arrangement for categories with medium and high interbrand substitutability (medium and large values of β) and never prefers the RS arrangement. (For a proof, see the Appendix.)

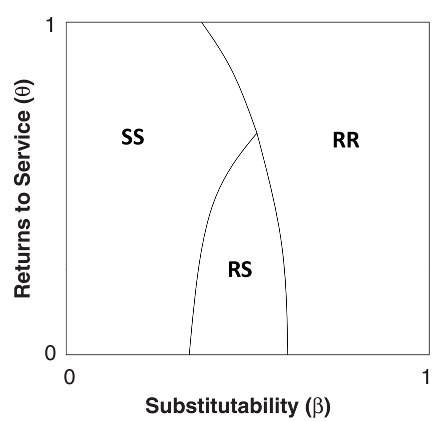
Figure 2 shows the optimal choice of the retailer.[5] Intuitively, because the retailer is in the position of extracting channel profit, she wants to select the channel structure that maximizes channel profit. Both channel inefficiency and price competition can dissipate channel profit, and the retailer needs to strike a balance between removing channel inefficiency by encouraging price competition and moderating price competition by introducing double marginalization. Therefore, both θ and β are mediating factors in the retailer's decision.

At a sufficiently low θ, when β is low, products are highly differentiated, and price competition is not excessive. Thus, the retailer prefers the SS arrangement to take advantage of channel efficiency by removing double marginalization. When β is high, retail price competition is intense and the retailer chooses RR to use channel markups to raise the retail prices to increase her own profitability, even if at the expense of introducing inefficiency. When β is at a medium value, the retailer finds it optimal to choose the RS arrangement, a compromise solution. This arrangement does not remove price competition at the retail level, but it raises prices in one channel (resell) as a result of double marginalization. Because retail prices are strategic complements, the price in the other channel (store within a store) also rises. Thus, this arrangement saves one channel from inefficiencies from double marginalization and uses the other channel to stem the decrease in retail prices.

Furthermore, as we increase β for a fixed θ, the effects of service provision also drive the retailer toward choosing SS, RS, and RR arrangements, in that order. When β is small,

Figure 2

OPTIMAL ARRANGEMENT FOR THE RETAILER AS SUBSTITUTABILITY (β) AND RETURNS TO SERVICE (θ) VARY ACROSS CATEGORIES



[5]By definition, β ∈ [0, 1). In Figure 2, we only consider θ ∈ [0, 1) because, for β ∈ [0, 1), equilibria exist for all arrangements only if θ ∈ [0, 1).

service provision and the corresponding increase in profits is the highest in the SS arrangement because the manufacturers in the SS arrangement choose the service levels according to the retail prices they charge. If the retailer is making this decision (for both channels in the RR arrangement and one channel in the RS arrangement), she chooses service levels on the basis of her margins, which are smaller in this region. However, as β increases, the service provided increases only in the RR arrangement. In turn, this higher service provision boosts the retailer's profits, so that her preference for the RR arrangement increases with increasing β. As previously, the RS arrangement is a compromise between SS and RR—service provision is high in the store-within-a-store channel but low in the retailer-resell channel and decreases with increasing β in both—and is preferred for medium values of β.

After we understand the effect of interbrand substitutability on the retailer's choice of SS and RR, it is fairly easy to understand the demand-enhancing effect of service (θ) on the channel arrangement. For very low and very high values of β, the SS and RR arrangements, respectively, are optimal for all values of θ because, when substitutability (and, therefore, intensity of competition) is low, the efficiency from SS is very large, whereas when substitutability is high, the competition-cushioning effect in RR is very large. It is only when substitutability is at a medium level that the interplay among channel efficiency, cushioning competition, and returns to service becomes intricate. This is the region (the region in the middle of Figure 2) on which we focus.

Increasing θ increases the level of service provided in all three channel arrangements at different rates. As we discussed previously, the provision of in-store services boosts demand for the retailer. As a result, the retailer has an incentive to induce a high level of service provision through her choice of the channel arrangement, all else being equal, and internalize the benefits of high service effectiveness. The retailer has more tolerance for double marginalization and chooses RR rather than RS and SS at a higher θ, as the right-hand boundary of the region illustrates (between RS and RR and between SS and RR in Figure 2). Furthermore, because of the demand-boosting effect, service provisions increase retail prices, all else being equal. Therefore, the retailer has more incentive at a higher θ to favor channel efficiency by choosing SS rather than choosing RS to moderate price competition, as long as SS does not lead to excessive price competition. As θ increases, the RS region progressively tapers off, as the left-hand boundary of this region illustrates (between SS and RS in Figure 2).

From the analysis of this simple model, we show that the store-within-a-store arrangement, at the most basic level, gives the retailer the flexibility to maximize channel efficiency and, thus, the rent she can charge for access to consumers. The store-within-a-store arrangement is a powerful retailer's way to achieve channel efficiency. Such an arrangement is most profitable for the retailer when it allows the manufacturers of products that are not close substitutes to open stores within a store.

EXTENSIONS OF THE BASIC MODEL

The basic model highlights product substitutability and returns to service as key drivers of the retailer's decision to set up stores within a store. However, it does not capture other prominent effects associated with this phenomenon. We extend the basic model to assess the impact of three such effects.

Adverse Effect of a Competitor's In-Store Service

When two competitors provide in-store service to induce consumers to buy their respective brands, it is possible that service provision by one brand partly mitigates the gains from service provision by the other brand. To incorporate this effect, we introduce the parameter $\psi \in [0, 1)$ and modify the demand system in the following manner, while keeping everything else the same:

$$q_1 = \frac{1}{1+\beta} - \frac{1}{1-\beta^2}p_1 + \frac{\beta}{1-\beta^2}p_2 + \theta(s_1 - \psi s_2), \tag{5}$$
$$q_2 = \frac{1}{1+\beta} - \frac{1}{1-\beta^2}p_2 + \frac{\beta}{1-\beta^2}p_1 + \theta(s_2 - \psi s_1).$$

As the value of ψ increases, the adverse effect of the competitor's in-store service on own demand increases.[6] Note that if $\psi = 0$, the demand schedules are the same as in the basic model without this effect.

By solving for the subgame perfect equilibrium, we obtained the expressions shown in Table W1 in the Web Appendix (http://www.marketingpower.com/jmraug10). The effect of ψ on the region where the retailer prefers SS appears in Figure 3. When θ is large, the effect of ψ on the choice of channel arrangement is quite dramatic. As ψ increases, the retailer prefers the RR arrangement in a larger region, even for small β. Furthermore, the retailer prefers the RS arrangement over the SS arrangement for a larger region.

To understand the reasoning, note that in the SS arrangement, both manufacturers set service levels competitively. Because there is a negative effect of the competitor's service, part of the service provision effort of both manufacturers is simply wasted from the retailer's perspective. However, neither manufacturer can afford to reduce his service level, because the competing manufacturer will not do so, and his profitability will decline (because of the lower service level he provides for his own product and the negative effect of the higher service level provided by the competing manufacturer). Thus, in equilibrium, both manufacturers provide high levels of costly in-store service but do not benefit from part of it because it does not induce higher demand. This effect reduces the channel profits from the SS arrangement.

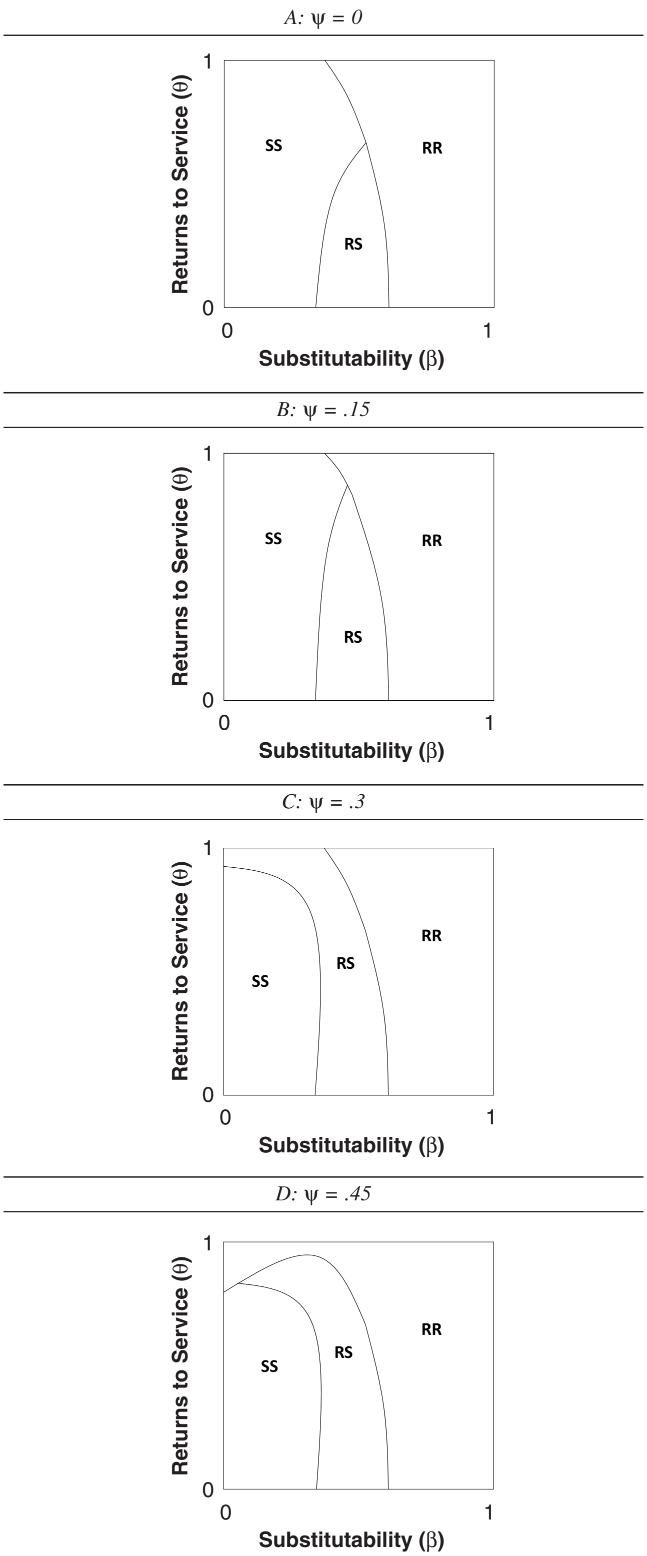
However, in the RR arrangement, the retailer sets the service levels jointly for both products. Thus, the retailer incorporates the negative effect of service into her decisions (i.e., this negative externality is internalized) and reduces

[6]This demand specification corresponds to the quadratic utility function $U(q_1, q_2) = [1 + \theta(1 - \psi\beta)s_1 + \theta(\beta - \psi)s_2]q_1 + [1 + \theta(1 - \psi\beta)s_2 + \theta(\beta - \psi)s_1]q_2 - ½(q_1^2 + q_2^2 + 2\beta q_1 q_2)$. This utility function implies that in-store service affects consumer utility only if $\theta > 0$; service for the manufacturer's own product can only increase consumer utility (because $\psi, \beta \in [0, 1)$, such that $1 - \psi\beta > 0$); and if the adverse effect of a competitor's service is large enough (i.e., if $\psi > \beta$), the competitor's in-store service has an overall negative effect on the utility of the own product. We impose 1 as an upper bound on ψ to rule out cases in which providing in-store service decreases overall category demand in equilibrium. The net effect of in-store service on consumer utility will be negative if $(1 - \psi\beta)s_i + (\beta - \psi)s_j < 0 \Rightarrow \psi > [(s_i + \beta s_j)/(s_j + \beta s_i)]$. Because firms are symmetric, the equilibrium will be symmetric, $s_i = s_j$, in equilibrium. The net effect of in-store service on consumer utility will be negative if $\psi > 1$, which we exclude.

the service provision for both products simultaneously. This reduced investment in service provision increases overall channel profits from the RR arrangement and the retailer's preference for it. As ψ increases, the advantage offered by the RR arrangement increases, and the retailer prefers it for a larger region of the parameter space. In the RS arrangement, the service levels are set competitively by the retailer and one manufacturer, and neither player can afford to reduce its service level unilaterally. However, as we noted previously, the service level of the retailer is not as high as the service levels in the SS arrangement, which implies (1) a smaller investment in service costs by the retailer for the RR product and, therefore, less wastage and (2) a smaller negative effect on the service being provided by the manufacturer for the SS product. As a consequence, the retailer prefers the RS arrangement over the SS arrangement for a larger region.

Figure 3

EFFECT OF THE ADVERSE EFFECT OF A COMPETITOR'S IN-STORE SERVICE ON DEMAND (Ψ) ON THE RETAILER'S CHOICE OF CHANNEL ARRANGEMENT



> P_2: As the adverse effect on demand from in-store service by competing products increases, the retailer is less likely to implement the store-within-a-store arrangement.

The proof of P_2 comes from comparing the profit functions of the various arrangements. We are likely to observe some variations in the incidence of stores within a store across different product categories, for which the adverse effects of competitors' in-store service differ. For example, casual observations suggest that stores within a store are less common for men's accessories than women's cosmetics, and our conversations with retailing experts suggest that the negative effect of competitors' service on others' demand is more pronounced in the former category than in the latter (where purchasing is typically less restrained).

Store Traffic Effect

The introduction of new products through stores within a store can bring new consumers to the store who want to purchase the focal product and also purchase other products, which provides added incentive to the retailer to choose stores within a store. To understand the impact of such a store traffic effect, we model it with a larger intercept of the demand function for the store-within-a-store arrangement.[7] Specifically, if manufacturer i's brand is sold through a store within a store, we assume that the demand for the product is as follows:[8]

$$q_i = \frac{1+T}{1+\beta} - \frac{1}{1-\beta^2} p_i + \frac{\beta}{1-\beta^2} p_{3-i} + \theta s_i. \tag{6}$$

For a retailer-resell arrangement, we always use T = 0. For a store-within-a-store arrangement, we use the preceding demand function. If T = 0, we obtain the original demand system in Equation 1, and as the value of T increases, the magnitude of the store traffic effect increases.

The structure of the game for each arrangement is the same, and we solve for the subgame perfect equilibrium of each game using backward induction. The analytical expressions for the different quantities in this case are in the Web Appendix in Table W2 (http://www.marketingpower.com/jmraug10).

[7]We thank an anonymous reviewer for suggesting this analysis.

[8]It corresponds to the utility function $U(q_1, q_2) = (1 + Z_1T + \theta s_1 + \theta\beta s_2)q_1 + (1 + Z_2T + \theta s_2 + \theta\beta s_1)q_2 - ½(q_1^2 + q_2^2 + 2\beta q_1q_2)$, where $Z_i = 1$ if manufacturer i's brand is sold through a store within a store; otherwise, it is 0. Using a demand function of the form $q_i = [1/(1 + \beta)] + T - [1/(1 - \beta^2)]p_i + [\beta/(1 - \beta^2)]p_{3-i} + \theta s_i$ for a brand sold through a store within a store gives qualitatively the same results.

Figure 4 shows that as the store traffic effect (T) increases, the RS arrangement is preferred over the RR arrangement (this trend is weak), but the SS arrangement is preferred increasingly over the RS and RR arrangements (this trend is strong). Intuitively, because the store-within-a-store arrangement increases traffic in the store, the retailer makes more profit, and the stronger the store traffic effect, the higher is that profit. A larger demand intercept also implies that higher prices can be charged. In the SS arrangement, the store traffic effect is present for both products, so that as its magnitude increases, SS is preferred over the other two arrangements for a greater region of the parameter space. Furthermore, as the store traffic effect increases, the RS arrangement is preferred over the RR arrangement for a larger region of the parameter space, but because the benefit accrues only from one product in RS, the trend is positive but weak.

P_3: In product categories associated with a significant store traffic effect, the retailer is more likely to choose the store-within-a-store arrangement.

Competition at the Retail Level

Thus far, we have considered the case when there is one retailer and two manufacturers that sell their products through this common retailer. Our stores-within-a-store problem is motivated by examples of vendor boutiques in large department stores, such as Macy's. These stores are often found in large malls, which may include more than one department store offering similar products. This location introduces competition between retail stores and therefore adds an extra degree of competition among products, which might influence the decision to open stores within a store. In this section, we extend our analysis to this scenario to assess the implications of retailer competition on the store-within-a-store arrangement.

Consider the scenario in which two competing manufacturers sell their respective brands through two competing retailers; both retailers can stock both brands. Let p_{ij}, q_{ij}, and s_{ij}, $i, j \in \{1, 2\}$, denote the price, quantity, and service level, respectively, of the jth brand at the ith store. We assume the following demand curves:[9]

$$q_{ij} = A_0 + A_1 p_{ij} + A_2 p_{i,3-j} + A_3 p_{3-i,j} + A_4 p_{3-i,3-j} + \theta s_{ij}, \tag{7}$$

where

$$A_0 = \frac{1}{1+\beta+\chi-\beta\chi},$$

$$A_1 = \frac{1-\chi^2+2\beta\chi^2+2\beta^3(-1+\chi)\chi^2-\beta^2(1-2\chi+\chi^2+2\chi^3)}{(-1+\beta^2)(-1+\chi^2)[-1+\chi^2-4\beta\chi^2+\beta^2(1-4\chi+3\chi^2)]},$$

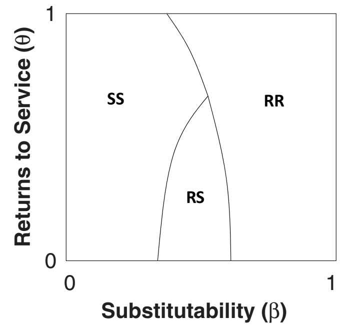
$$A_2 = \frac{\beta[-1+\chi+\chi^2+\chi^3-2\beta\chi^3+\beta^2(1-3\chi+\chi^2+\chi^3)]}{(-1+\beta^2)(-1+\chi^2)[-1+\chi^2-4\beta\chi^2+\beta^2(1-4\chi+3\chi^2)]},$$

[9]This demand specification corresponds to the quadratic utility function $U(q_{11}, q_{12}, q_{21}, q_{22}) = (1 + \theta S_{11})q_{11} + (1 + \theta S_{12})q_{12} + (1 + \theta S_{21})q_{21} + (1 + \theta S_{22})q_{22} - ½(q_{11}^2 + q_{12}^2 + q_{21}^2 + q_{22}^2 + 2\beta(1-\chi)q_{11}q_{12} + 2\beta(1-\chi)q_{21}q_{22} + 2(1-\beta)\chi q_{11}q_{21} + 2(1-\beta)\chi q_{12}q_{22} + 2\beta\chi q_{11}q_{22} + 2\beta\chi q_{12}q_{21})$, where $S_{ij} = s_{ij} + \beta(1-\chi)s_{i,3-j} + (1-\beta)\chi s_{3-i,j} + \beta\chi s_{3-i,3-j}$. This utility function implies that if $\theta > 0$, in-store service increases consumer utility. Furthermore, we can see from S_{ij} that service for one product in one store enhances the utility from the other product in that store and the utility from purchasing products from the other store but is diminished by the multiplicative factors that are functions of interbrand and interstore substitutability.

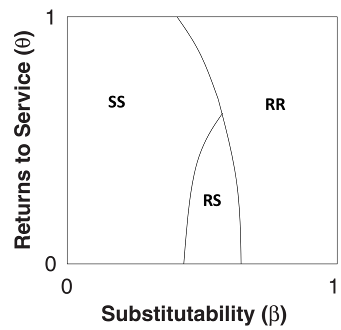
Figure 4

EFFECT OF THE STORE TRAFFIC EFFECT (T) ON THE RETAILER'S CHOICE OF CHANNEL ARRANGEMENT

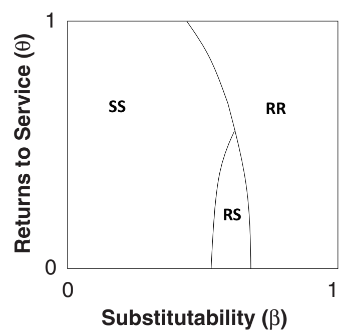
A: T = 0



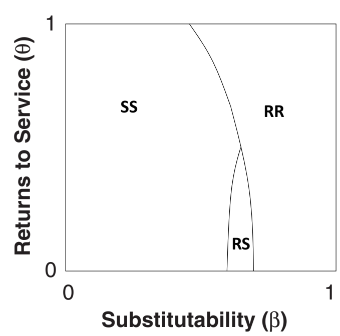
B: T = .05



C: T = .1



D: T = .15



$$A_3 = \frac{\chi\left[-1+\beta+\beta^3(-1+\chi)^2+\chi^2-3\beta\chi^2+\beta^2\left(1+\chi^2\right)\right]}{\left(-1+\beta^2\right)\left(-1+\chi^2\right)\left[-1+\chi^2-4\beta\chi^2+\beta^2\left(1-4\chi+3\chi^2\right)\right]},$$

and

$$A_4 = \frac{\beta\chi\left[-1+\beta^2(-1+\chi)^2+2\chi+\chi^2-2\beta\left(-1+\chi+\chi^2\right)\right]}{\left(1-\beta^2\right)\left(-1+\chi^2\right)\left[-1+\chi^2-4\beta\chi^2+\beta^2\left(1-4\chi+3\chi^2\right)\right]}.$$

In this demand schedule, $\beta \in [0, 1)$ measures the substitutability between brands; $\chi \in [0, 1)$ measures the substitutability between competing stores, which captures the intensity of interstore competition; and θ is the returns to service parameter. A large value of χ corresponds to a high intensity of interstore competition. Note that when $\chi = 0$, the stores are not in competition, and we get the original demand system in Equation 1 and the original utility function for each store. Similarly, when $\beta = 0$, only the interstore competition effect is present. Lee and Staelin (1997), Trivedi (1998), Lal and Villas-Boas (1998), Kim and Staelin (1999), and Dukes, Gal-Or, and Srinivasan (2006) also use a two-manufacturer, two-retailer setup, but they use different demand specifications and contract forms and focus on different research questions.

The game with competing retailers is significantly more complicated than the game with one retailer. In Stage 1, both retailers simultaneously make take-it-or-leave-it offers to both manufacturers, which gives rise to 16 possible combinations, or Cases I–XVI in Table 4, Panel A. The rows show the offers by retailer 1 (R_1), and the columns show the offers by retailer 2 (R_2). For each retailer, S in position i denotes an offer for a store within a store to manufacturer i, and R denotes an offer for a retailer-resell arrangement. For example, Case VII is the case "SR, RS," which means that retailer 1 offers a store within a store to manufacturer 1 and a retailer-resell arrangement to manufacturer 2, whereas retailer 2 offers a retailer-resell arrangement to manufacturer 1 and a store within a store to manufacturer 2. Each offer is accompanied by the rent the retailer will charge the manufacturer if he accepts the retailer's offer. We denote the rent that retailer i demands from manufacturer j as F_{ij}.

In Stage 2, the two manufacturers simultaneously decide whether to accept each retailer's offer, which again gives rise to 16 possibilities, as we show in Table 4, Panel B. For each manufacturer, N in position i denotes a rejection of retailer i's offer, and Y denotes acceptance of the offer. For example, Case iii is "NY, YY," which means that manufacturer 1 rejects retailer 1's offer but accepts retailer 2's offer, and manufacturer 2 accepts both offers. We assume that the outside option for a manufacturer that does not sell through either retailer is zero, so a manufacturer following the NN strategy will earn zero profits from the market, which is weakly dominated. Therefore, we are left with 9 cases. Taking Stages 1 and 2 together, we have $16 \times 9 = 144$ channel arrangements to consider.

Before we proceed to Stages 3 and 4, we note that the final channel arrangement is the result of the offers made by the retailers and the subsequent decisions by the manufacturers. For example, if the retailers make offers "SR, RS" and manufacturers make decisions "NY, YY," the channel configuration is ϕR, RS because R_1 does not sell M_1's brand but sells M_2's brand in the retailer-resell arrangement, and R_2 sells M_1's brand in the retailer-resell arrangement and M_2's brand in the store-within-a-store arrangement. In this arrangement, only three products are sold, whereas our preceding demand system is for four products. (In other cases, such as SR, RS in Stage 1 followed by NY, YN in Stage 2, only two products are sold.) To analyze these cases, we derive demand functions for three (or two) products from first principles by appropriately adjusting the utility function.

In Stage 3, the manufacturers determine the wholesale prices if any retailer-resell arrangement emerges after Stage 2. In Stage 4, the retail prices and service levels are set.

We solve this four-stage game by backward induction. The subgames in Stage 4, followed by Stage 3, can be solved analytically. As we mentioned previously, we analytically solve 144 subgames, one for each channel arrangement. We then solve Stage 2 and Stage 1, in that order, numerically.[10] For length considerations, we relegate the details of this analysis to the Web Appendix (http://www.marketingpower.com/jmraug10). Here, we discuss the results and main insights that emerge from the analysis.

In Figure 5, we present the results of the analysis for β between .05 and .9, χ between .05 and .7, and three values of θ—0 (low value), .15 (medium value), and .3 (high value). These are allowable values of β, χ, and θ, for which all quantities are positive and the second-order conditions hold. In the SS, SS region, both retailers have stores within a store for both brands, and in the RR, RR region, both retailers have a retailer-resell arrangement for both brands. In the SR, SR and SR, RS regions, both retailers have mixed arrangements. However, for SR, SR, one manufacturer has stores within a store at both retailers, and the other manufacturer has retailer-resell arrangements at both retailers, while for SR, RS, each manufacturer has a store within a store and a retailer-resell arrangement at each retailer. These arrangements appear in Figure 6. The other possible channel arrangements do not occur as pure strategy equilibrium arrangements.

In this model with competing retailers, two new forces emerge (compared with the one-retailer model) that can influence the channel arrangement. First, the manufacturers

Table 4
STRATEGIC FORM GAMES

A: For Retailers in Stage 1				
	R_2			
R_1	SS	SR	RS	RR
SS	I	II	III	IV
SR	V	VI	VII	VII
RS	IX	X	XI	XII
RR	XIII	XIV	XV	XVI

B: For the Manufacturers in Stage 2				
	M_2			
M_1	NN	NY	YN	YY
NN	—	—	—	—
NY	—	i	ii	iii
YN	—	iv	v	vi
YY	—	vii	viii	ix

[10]We only consider pure strategy equilibria in Stages 2 and 1 and do not consider mixed-strategy equilibrium channel arrangements.

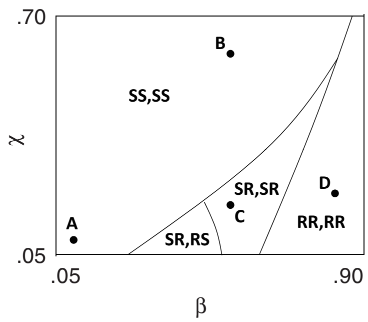
are no longer dependent solely on one retailer to sell their products. This situation acts to their advantage because, in Stage 1, the retailers cannot charge them monopsony-level rents to make their profit equal to zero (the outside profit), because in Stage 2, both manufacturers can choose to reject one offer and sell only through the other retailer. The retailers will take this into account when making their offers in Stage 1.

Second, the two retailers are in competition with each other at the retail level; that is, in addition to interbrand competition, there is interstore competition when setting retail prices and service levels in Stage 4. The choice of the channel arrangement influences whether interbrand or interstore competition is reduced or intensified. With the RR, RR arrangement, interbrand competition declines (because one retailer decides the prices and service levels of both brands in her store), but interstore competition increases (because

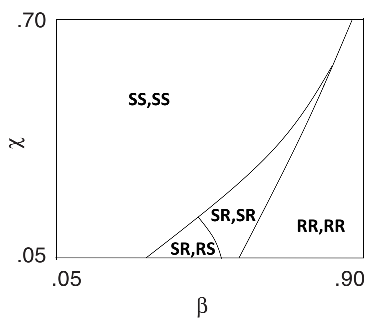
Figure 5

EQUILIBRIUM CHANNEL ARRANGEMENTS AS PRODUCT SUBSTITUTABILITY (β) AND STORE SUBSTITUTABILITY (χ) VARY FOR DIFFERENT LEVELS OF RETURNS TO SERVICE (θ)

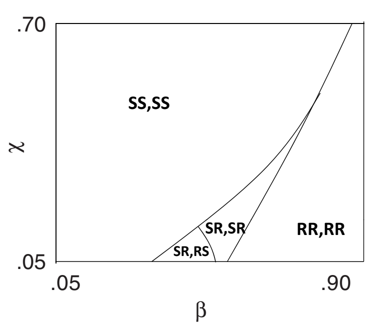
A: θ = 0 (Low)



B: θ = .15 (Medium)



C: θ = .3 (High)

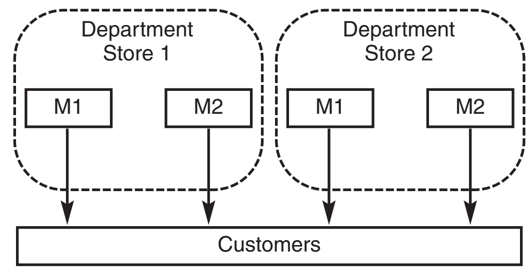


Notes: The points marked A, B, C, and D in Panel A correspond to the games in Table W7, Panels A–D, respectively.

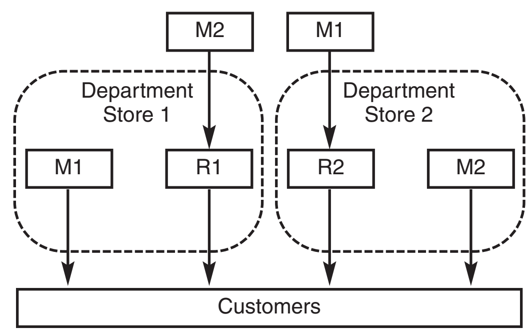
Figure 6

SCHEMATIC REPRESENTATIONS OF THE "SS, SS," "SR, RS," "SR, SR," AND "RR, RR" CHANNEL ARRANGEMENTS

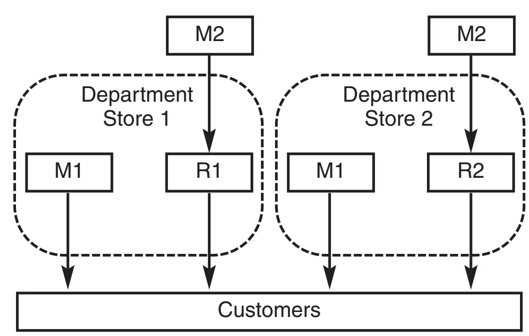
A: SS, SS



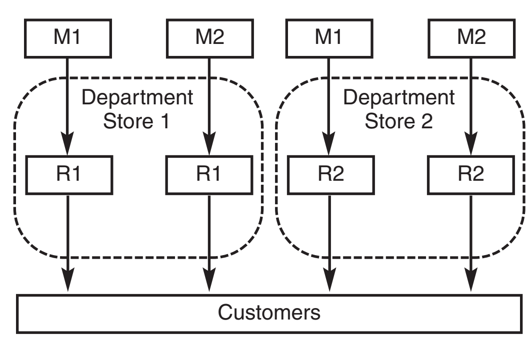
B: SR, RS



C: SR, SR



D: RR, RR



the two retailers set their prices and service levels to compete for consumers). In the SS, SS arrangement, interstore competition declines (because one manufacturer sets the prices and service levels of his brand in both stores to maximize his joint profit), but interbrand competition intensifies (because the manufacturers set their prices and service levels to compete for consumers in a given store).

In Figure 5, Panel A, when interbrand competition is low to start (β is small), the SS, SS arrangement is preferable for all values of interstore competition (χ) because when competition between brands is low, the stores-within-a-store arrangement offers efficiency gains (as in the one-retailer case) and helps reduce interstore competition. The game described in Table W7, Panel A, in the Web Appendix (http://www.marketingpower.com/jmraug10) provides an example of this case (which corresponds to point A in Figure 5, Panel A).

When interbrand competition is high (β is large), if interstore competition is low (χ is small), the RR, RR arrangement is preferable because it moderates interbrand competition (as in the one-retailer case). The game described in Table W7, Panel D, in the Web Appendix (http://www.marketingpower.com/jmraug10) is an example that corresponds to point D in Figure 5, Panel A. However, if interbrand competition is high (β is large) and interstore competition is also high (χ is large), the SS, SS arrangement is preferable. This seemingly counterintuitive result occurs because of a classic prisoner's-dilemma situation; if both retailers have retailer-resell arrangements and interstore competition is high, they both make higher profits, but each retailer has an incentive to deviate unilaterally to the store-within-a-store arrangement. This deviation leads to lower prices, which increases sales and profits for this retailer, and the nondeviating retailer suffers. In equilibrium, both retailers choose the stores-within-a-store arrangement, even though they make smaller profits. The game described in Table W7, Panel B, in the Web Appendix (corresponding to point B in Figure 5, Panel A) is an example of this case.

As in the one-retailer case, the mixed arrangements (SR, SR and SR, RS) are compromises for medium values of the parameter β (when χ is not too large). The store-within-a-store arrangements bring efficiency into the channel, and retailer-resell arrangements support higher retail prices through double marginalization. The game in Table W7, Panel C, in the Web Appendix (corresponding to point C in Figure 5, Panel A) is an example of the SR, SR case.

The question in the case of mixed arrangements is as follows: When is SR, SR the equilibrium arrangement, and when is SR, RS the equilibrium arrangement? In SR, RS, the two manufacturers decide the wholesale prices to charge the two retailers in competition with each other (Stage 3), while in SR, SR, one manufacturer decides the wholesale prices charged to the two retailers. Interbrand competition is moderated in Stage 3 of the SR, SR game but not in SR, RS, and therefore channel profits are higher in SR, SR. This effect is weak for small β and stronger for larger β (for any given value of χ). In SR, SR, one manufacturer (M_1 in Figure 6, Panel C) has the more efficient stores-within-a-store arrangement at both retailers, while the other manufacturer (M_2 in Figure 6, Panel C) has the less efficient retailer-resell arrangements at both retailers. Thus, although in SR, SR interbrand competition is moderated in Stage 3, the two manufacturers benefit disproportionately from it (M_2 makes a smaller profit than M_1).

The interplay among these forces causes retailers, which extract part of the manufacturers' profits through the rents they charge, to choose SR, SR when β is large because moderating interbrand competition in Stage 3 has a significant benefit, but they choose SR, RS when β is small because moderating interbrand competition in Stage 3 is less beneficial. The manufacturer that has retailer-resell arrangements with both retailers can make more profit with SR, RS (part of which the retailers then extract), even if channel profit is overall lower.

Finally, for a fixed level of interstore substitutability (χ), as the returns to service (θ) increase, the mixed arrangements are less common. This result is qualitatively the same as the result in the one-retailer model and driven by the same force; demand at the retailers increases as the returns to service increase. Increased base demand leads to increased tolerance of double marginalization, which increases preference for the pure retailer-resell arrangements, as well as higher prices, which moderate price competition and increase the preference for the more efficient stores-within-a-store arrangements.

In summary, the efficiency effect of stores within a store is a robust phenomenon even in the case of competitive retailers. Our findings suggest that stores within a store can help reduce interstore competition, to the benefit of competing retailers, when interbrand substitutability is small. However, when interbrand substitutability and interstore substitutability are both large, the stores-within-a-store arrangement can lead to a prisoner's dilemma, such that both retailers are in this arrangement but are also worse off because of it. In a market environment in which interbrand substitutability is larger, a stores-within-a-store arrangement may be a sign that retailers are caught in a prisoner's dilemma and would be better off without such a practice. However, in a market environment in which interbrand substitutability is smaller, the stores-within-a-store arrangement can benefit competing retailers by moderating interstore competition.

P_4: Channel arrangements can mediate both interbrand and interstore competition. Specifically, the store-within-a-store arrangement can moderate interstore competition.

CONCLUSIONS AND DISCUSSION

Stores within a store are a curious phenomenon observed worldwide in the retailing industry. Many stores have autonomous stores, but many others do not. When stores have stores within them, they reserve the arrangement for a few selected product categories. Our objective herein has been to investigate the economic incentives facing a retailer that makes those decisions. The simple model we developed helps us generate several insights into the phenomenon.

First, the presence of a manufacturer's store within a retailer's store could suggest the weakness of the retailer or the dominance of the manufacturer because the manufacturer has autonomy in the space owned by the retailer. However, our analysis shows that the SS arrangement can be a sign of the retailer's strength. In our model, the channel structure is familiar, with two manufacturers selling through a common retailer. The economic forces at work in the channel are also familiar: double marginalization and interbrand competition. However, when the retailer is in the driver's seat, stores within a store emerge as an equilibrium phenomenon. Furthermore, in some conditions, the retailer will prefer that competing brands set up stores within a store, whereas in other conditions, the retailer will prefer that just one brand use this arrangement.

Second, in our model, the retailer could avoid the SS arrangement altogether if it could credibly commit to the retail prices and the service levels the manufacturers would have effected under the SS arrangement. However, any such commitments would not be credible to the manufacturers. From this perspective, the SS arrangement is a commitment device on the part of the retailer that gives the retailer the necessary structural flexibility to manage channel efficiency and interbrand competition to its own benefit. This and the previous insight together imply, rather ironically, that we should expect to see the SS arrangement in the stores of power retailers, as is commonly the case.

Third, when the retailer takes the lead to shape the channel structure, different channel structures emerge. That is, the retailer does not always allow all manufacturers to integrate forward; it may choose to allow only one of them to do so.

Fourth, our analysis shows that several factors could motivate a retailer to favor the stores-within-a-store arrangement in a product category, including substitutability between competing products, effectiveness and costs of in-store services, the store traffic effect, and the intensity of competition at the retail level. As a testable implication, our model suggests that in categories in which different brands are not very substitutable, the costs of in-store service are high, and the traffic effect of the product category is pronounced, the stores-within-a-store arrangement is more likely to be observed.

These testable implications are consistent with casual observations from the retailing industry. A rigorous empirical test could be conducted by analyzing data from department stores and other one-stop shops with store-loyal consumers. Because in these markets retailers "own" this specific set of consumers, it would ensure consistency with the assumption of an exogenous outside option for manufacturers (i.e., manufacturers find it difficult to approach the group of store-loyal consumers through channels other than these retailers). We could test our implications by regressing, using a simple logit model, store-within-a-store likelihood in different markets with different levels of the independent variables while controlling for consumer demographics. The values of the independent variables (e.g., interbrand substitutability, returns to and cost of service, store traffic effect) could be determined through consumer surveys. Furthermore, our model suggests that prices in the store-within-a-store arrangement will be lower than in the retailer-resell arrangement. This implication could be tested by analyzing price data at department stores that sell the same product assortment (again controlling for consumer demographics) but through different arrangements. Some department store chains have rolled out stores within a store only in a fraction of their stores, and this phenomenon could be leveraged to obtain data to test the aforementioned implications.

Li, Chan, and Lewis (2009) conduct an empirical analysis of the store-within-a-store arrangement (they call it manufacturer-managed retailing) at a Chinese retailer and report results that are remarkably consistent with several of our theoretical predictions. They find that switching to the store-within-a-store arrangement from a retailer-resell arrangement leads to lower retail prices, higher sales, and higher service provision by each manufacturer's store within a store and thus higher profits for the retailer.

Finally, our analysis shows that the stores-within-a-store arrangement can be optimal in the case of competing retailers and can moderate interstore competition when interbrand substitutability is small. In summary, stores within a store are more likely to be found in markets in which interstore competition is high, and in these markets, they are more likely to be found in categories in which interbrand competition is low.

Our framework has several limitations that further research can address. First, our conversations with retailing experts suggest that retailers also use stores within a store to decrease consumer perceptions of the substitutability of competing brands in a category to cushion competition. In our model, we treat substitutability as an exogenous parameter, but the aforementioned effect would imply that a retailer might opt for this arrangement for more product categories. Second, we analyzed symmetric brands, for which an exclusive store-within-a-store arrangement (i.e., one brand opens a store within a store, and the other brand is not sold by the retailer) does not occur as an equilibrium arrangement. When brands are asymmetric (e.g., one is a niche brand with a smaller price sensitivity than the other), an exclusive store-within-a-store arrangement for the niche brand might be profitable for the retailer under some conditions. Third, we assume in the basic model that in setting the rent, the manufacturer pays the retailer to open the store within a store and has no bargaining power. Incorporating manufacturer bargaining power into the model (e.g., as in Iyer and Villas-Boas 2003) will lead to different results for the parameter ranges under which different channel arrangements are preferred but should leave the strategic implications qualitatively untouched. Fourth, our conversations with practitioners and other retail experts indicate that the predictions from our model conform with their intuitions. As suitable data become available, a more rigorous empirical test could enhance our understanding of this intriguing retailing format.

Finally, this article is the first attempt to study stores within a store, and our proposed method is but one plausible way to model this channel arrangement. In practice, there could be other manifestations of this phenomenon that our model does not capture. For example, General Nutrition Centers (GNC) runs stores within a store at Rite-Aid Pharmacy stores, for which it receives fees from Rite-Aid for store openings (GNC 2008), though Rite-Aid purchases products at wholesale prices from GNC and GNC does not perform any retail functions inside Rite-Aid stores. Another related practice is stores within a store managed by other retailers that serve a full category. For example, Sephora runs the cosmetics department in JCPenney and sells several cosmetics brands. The incentives driving this arrangement could be very different from the incentives driving manufacturer-run stores within a store and might depend on the efficacy of cross-selling brands, category-level service with complementarities across brands, and retailing and service provision efficiencies by retailers specializing in the category. Exploring these and other scenarios is a fascinating direction for extending our research.

APPENDIX: PROOF OF P1

To consider the retailer's choice of arrangement, consider the profits the retailer makes from each of the arrangements in equilibrium. As we show in the main text, the retailer's profit in the RR arrangement is given by

$$\pi_{Rr} = (p_{1r} - w_{1r})q_{1r} + (p_{2r} - w_{2r})q_{2r} - \frac{s_{1r}^2}{2} - \frac{s_{2r}^2}{2} + F_{1r} + F_{2r},$$

where the equilibrium values of p_{ir}, q_{ir}, w_{ir}, s_{ir}, and F_{ir}, $i \in \{1, 2\}$, are as given in the main text. The retailer's profit in the SS arrangement is given by

$$\pi_{Rs} = F_{1s} + F_{2s},$$

where the equilibrium values of F_{is}, $i \in \{1, 2\}$, are as given in the main text. The retailer's profit in the RS arrangement is given by

$$\pi_{Ro} = (p_{1o} - w_{1o})q_{1o} - \frac{s_{1o}^2}{2} + F_{1o} + F_{2o},$$

where the equilibrium values of p_{1o}, q_{1o}, w_{1o}, s_{1o}, and F_{io}, $i \in \{1, 2\}$, are as given in the main text.

To determine the retailer's equilibrium choice of arrangement at each point in the $\beta - \theta$ plane, we simply compare her equilibrium profits from the different arrangements at each point in the plane; her choice is the one that yields the highest profit at that point. Figure 2 shows this choice at each point in the $\beta - \theta$ plane.

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