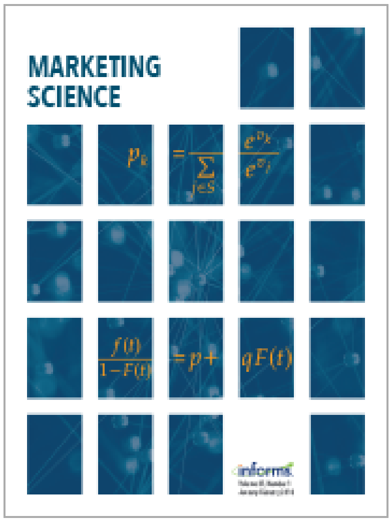

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Selling Your Product Through Competitors' Outlets: Channel Strategy When Consumers Comparison Shop

Sridhar Moorthy,[a] Yongmin Chen,[b] Shervin Shahrokhi Tehrani[a]

[a] Rotman School of Management, University of Toronto, Toronto, Ontario M5S 3E6, Canada; [b] Department of Economics, University of Colorado at Boulder, Boulder, Colorado 80309

Contact: moorthy@rotman.utoronto.ca (SM); yongmin.chen@colorado.edu (YC); s.shahrokhi13@rotman.utoronto.ca, http://orcid.org/0000-0001-5244-9705 (SST)

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Abstract. This paper develops a new rationale for decentralization in distribution channels: providing a one-stop comparison shopping experience for consumers. In our duopoly model, when consumers are knowledgeable about their brand preferences, each manufacturer would distribute through its own vertically integrated retail outlets only. When some consumers are unsure about their brand preferences, however, it may be optimal for one of the manufacturers to also distribute through its competitor's outlets. The resulting equilibrium has several interesting properties. First, only one of the manufacturers chooses to add competitor-outlet distribution, not both—even when the manufacturers are symmetric. Second, the manufacturer distributing through its competitor's outlets also distributes through its own outlets, i.e., its distribution strategy is a hybrid strategy, combining vertical integration and decentralization. Third, when the manufacturers' brands are asymmetric, it is the weaker brand that has a stronger incentive to pursue hybrid distribution. Fourth, the competitor's outlets in question welcome the new brand, even when no consumer would actually buy the new brand—a case of pure showrooming. These results highlight the linkages between distribution strategy, shopping efficiency, and retail formats. Shopping costs and consumers' uncertainty about their own brand preferences create a demand for multibrand retailing, and in pursuing this demand, manufacturers may eschew the efficiency advantages of vertical integration in favor of hybrid distribution. However, the fact that only one of the manufacturers chooses to do so suggests that this strategy also has weaknesses, which we discuss in the paper.

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Keywords: distribution channels • retailing • shopping behavior

1. Introduction

The channel strategy question, whether to go to market directly, through own outlets, or indirectly, through independent outlets, has played out in the marketing literature as largely a trade-off between two forces, one being double marginalization. Independent manufacturers and retailers optimize over parts of the value chain, not the whole value chain, leading to margin buildup, too-high retail prices, and too-low demand. Vertical integration can eliminate this externality by getting rid of one of the margins. However, there is a second force, going in the other direction, that argues for preserving the second margin. This is the strategic value of decentralization: independent middlemen can insulate manufacturers from direct competition at the retail level (McGuire and Staelin 1983, Coughlan 1985, Moorthy 1988, Choi 1991).

In this paper we highlight a third force, consumer shopping efficiency, that may also push a manufacturer toward decentralization. The connection between distribution strategy and shopping efficiency may not be immediately obvious. It arises because each is linked to retail format—whether retailers are single brand or multibrand.[1] Shopping efficiency and retail format are linked because consumers who are unsure about their brand preferences would like to resolve their uncertainty by visiting as few stores as possible, preferably one, where they can compare brands side by side. This creates a demand for multibrand stores. On the other hand, retail format and distribution strategy are linked because pure vertical integration implies single-brand retailing, while multibrand retailing requires at least some decentralization.

In our model there are two manufacturers selling one product each, potentially substitutable in demand. Absent consumer uncertainty about brand preferences, pure vertical integration would prevail: each manufacturer would distribute its product only through its

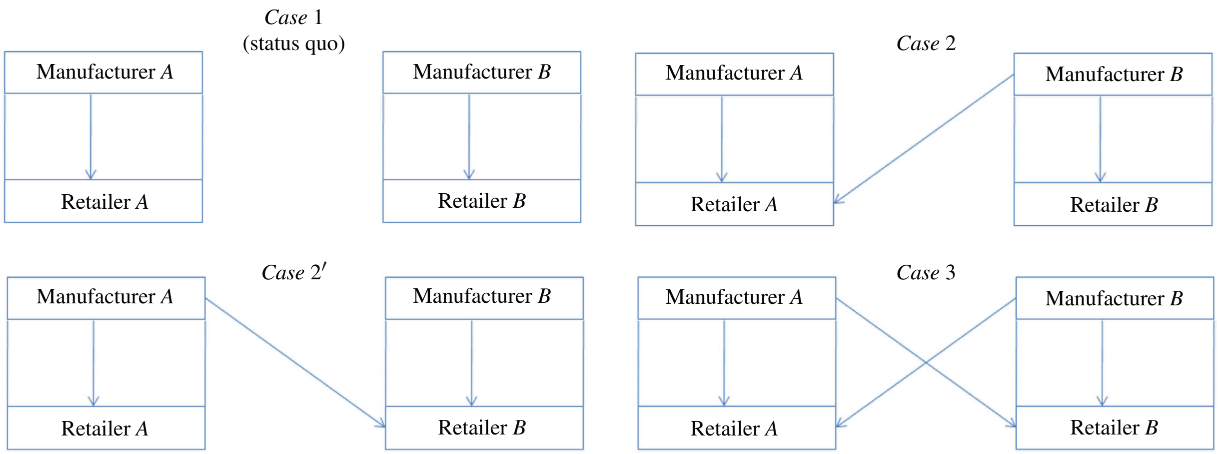


Figure 1. (Color online) Four Generic Distribution Structures

own retail outlets.[2] With consumer uncertainty about brand preferences, however, it may be optimal for one of the manufacturers to add distribution through its competitor's outlets. The resulting equilibrium has several interesting properties. First, only one of the manufacturers chooses to add competitor-outlet distribution, not both—even when the manufacturers are symmetric. Second, the manufacturer distributing through its competitor's outlets also distributes through its own outlets, i.e., its distribution strategy is a hybrid strategy combining vertical integration and decentralization (Case 2 in Figure 1 illustrates). Third, when the manufacturers' brands are asymmetric, it is the weaker brand that has a stronger incentive to pursue hybrid distribution. Fourth, the competitor's outlets in question welcome the new brand, even when no consumer would actually buy the new brand—a case of pure showrooming. Thus the paper provides a rationale for how a store may benefit from showrooming even when the product being showroomed has no sales.

These observations dovetail nicely with contemporary developments in retailing. Whereas 50 years ago retailers were backward integrating into manufacturing via private labels, now manufacturers are forward integrating into retailing via e-commerce. It is rare to see a manufacturer who does not sell its products directly to the public through its website. Indeed, several manufacturers, for example, Microsoft and Apple, operate not only online stores but also brick-and-mortar stores. Asymmetric hybrid distribution strategies of the sort studied in this paper seem to accompany these developments. Consider, for example, Microsoft's distribution strategy for its Surface-branded line of laptops/tablets. Microsoft's stores sell these products, of course, but these stores also sell competing products made by Asus, Dell, and Lenovo. However, these other manufacturers' online stores only sell their own brands—they do not sell Surface. The eReader market provides another example. Here Amazon and Barnes and Noble have backward integrated into manufacturing with their Kindle and Nook brands. However, while Amazon practices pure vertical integration, selling Kindle only through its own stores, Barnes and Noble has chosen to sell Nook through its own stores as well as through Amazon.com. Finally, in the world of media, where 20 years ago Chipty (2001) reported that integrated cable television operators tended to exclude rival program services, now Roos et al. (2015) find several examples of news websites "linking" and "excerpting" competitors' stories.

The one-stop comparison shopping motivation for decentralization is a key idea of this paper. It has the power to link distribution strategy to a retailing format, explain hybrid distribution strategies, and provide a new rationale for showrooming. To our knowledge, these ideas are new to the literature. In McGuire and Staelin (1983), Coughlan (1985), and Moorthy (1988), for instance, manufacturers' distribution options are limited to pure vertical integration or pure decentralization through third-party retailers. Furthermore, retailers are constrained to be single-brand retailers. Choi (1991) considers both single-brand and multi-brand retailing, but ends up arguing for single-brand retailing. Shopping considerations play no role in any of these papers. Consumers are represented in reduced form, as a demand function; they know what they want, where to buy it from, and what price to pay, all before leaving home.[3]

By contrast, in our model, consumers decide whether to shop, where to shop, and which brand to buy. And they search for prices. Their decisions depend on their shopping costs, brand preferences, and knowledge of brand preferences, and we model heterogeneity in all of these dimensions. The last of these is critical. What we are trying to capture is the reality that some consumers know, before they start shopping, which brand they prefer, while others discover their brand preferences during the shopping process. Modeling this difference allows us to bring out a central idea of this paper—that the one-stop comparison shopping benefit provided by multibrand retailers is useful to some consumers, but not to others.

In Section 2 we present our model and develop some preliminary results that facilitate our subsequent analysis. Particularly noteworthy is the simplicity of the equilibrium-price characterization. This is a consequence of our search model. Section 3 examines the baseline case where all consumers are assumed to be knowledgeable about their brand preferences. In this case, vertical integration is a dominant strategy for each manufacturer, neither manufacturer distributes through its competitor's outlets, and each retailer is single brand. We get into our model proper in Section 4. Here we analyze a symmetric version of the model, where each manufacturer has an equal number of loyal consumers. Despite the symmetry, any equilibrium involving hybrid distribution is asymmetric: only one of the manufacturers adopts hybrid distribution; the other sticks to pure vertical integration. The fact that both manufacturers do not adopt hybrid distribution underscores its limitations. One is cannibalization: the inefficient competitor channel may cannibalize the efficient own channel. The other drawback is what we call the "strengthening-the-competitor effect." While hybrid distribution increases the number of uncertain consumers shopping—which both manufacturers welcome—it also strengthens the competitor's brand at the expense of the manufacturer's own. Once a competitor has been strengthened this way, it does not pay for it to return the favor!

We extend the analysis to asymmetric manufacturers in Section 5. Here, one brand has more loyal consumers than the other. In this context we ask which manufacturer—the one with the stronger brand or the one with the weaker brand—has a stronger incentive to pursue hybrid distribution. Our first result is that even small asymmetries in brand strength have a big effect on uncertain consumers' shopping behavior. The stronger manufacturer's position improves, the weaker manufacturer's position deteriorates, and the number of uncertain consumers shopping increases relative to the symmetric case. Second, while both brands can pursue hybrid distribution in equilibrium—just not at the same time—the weaker brand has a stronger incentive. This is because, of the three effects described above, two of them favor the weaker brand going through the stronger brand's store.

In Section 6 we discuss the robustness of our results to alternative assumptions. We note that our search model for prices leads to monopoly retail prices in equilibrium. Other ways of competing—such as with advertised retail prices—will lead to different prices. However, this will not necessarily change our main results because those results do not depend on the absolute level of prices, and their dependence even on relative prices is only marginal. Rather, the main driving force is uncertain consumers' preference for one-stop shopping at a multibrand store. We also discuss what happens when the manufacturers' retailing operations have independent strengths and weaknesses other than their store brands. For example, one manufacturer's stores might provide a better shopping experience in the sense of Iyer and Kuksov (2012), or one manufacturer's stores might carry more product categories than the other (compare, for example, Macy's stores with Levi's stores). When such exogenous retail-level asymmetries are overlaid on the store-brand asymmetry, it is no longer the case that the weaker brand necessarily has a stronger case to pursue hybrid distribution. In fact, it could be the other way around.

2. Model

Two manufacturers, A and B, with brands A and B, competing in the same product category, have to decide whether to add distribution through their competitor's stores. The status quo is that each manufacturer is vertically integrated, distributing through its own stores only (Case 1 in Figure 1). The decision to add a competitor channel would represent a hybrid distribution strategy: the manufacturer would be vertically integrated through its own stores and decentralized through its competitor's stores. Table 1 summarizes each firm's strategic options and Figure 1 illustrates the resulting channel structures.[4] In the status quo, all retail outlets are single-brand outlets; in all other channel structures, there are multibrand outlets, either one (Cases 2 and 2′) or two (Case 3).[5]

To focus on the demand-side considerations driving distribution strategy, we simplify the supply side. All costs, manufacturing and retailing, are assumed away. In addition, adding an additional distribution channel is assumed to not involve additional costs.[6] Issues such as retailing expertise are also suppressed. The firms interact as follows. They choose distribution strategy first, then wholesale price (if necessary), and finally, retail price(s) for the brand(s) they carry in their

Table 1. Distribution Strategies

	Firm B's distribution strategy	
	Via own stores only	Via own and competitor's stores
Firm A's distribution strategy		
Via own stores only	Case 1 (status quo)	Case 2
Via own and competitor's stores	Case 2′	Case 3

stores. We apply the usual subgame-perfect criterion for equilibrium: for every channel structure and wholesale price(s) (when chosen), retail prices must be in equilibrium; for every channel structure, wholesale price(s) (when chosen) must be in equilibrium anticipating the equilibrium retail prices to follow; finally, the channel structure must be in equilibrium anticipating the equilibrium wholesale (when chosen) and retail prices to follow (McGuire and Staelin 1983, Moorthy 1988). Besides these standard requirements, we impose two additional conditions dictated by our unique setting. First, we require that competitor-outlet distribution not make the competitor worse off. This simply recognizes that distributing through the competitor's stores requires the competitor's cooperation; a competitor would never allow another brand into its stores if its profit declined as a result. Second, we require that any equilibrium involving hybrid strategies must make the manufacturer(s) pursuing such a strategy strictly better off than the status quo. This simply recognizes that complexity has its costs—even though we do not model it explicitly. In the real world, it would be hard to justify adding an additional distribution channel without showing a profit improvement.

On the demand side, we have a unit mass of consumers, each of whom demands $D(p)$ units of one product (either brand A or brand B); $D(\cdot)$ satisfies standard properties: $D(p) > 0$, $D'(p) < 0$ for $p < \bar{v} < \infty$; $D(p) \equiv 0$ for $p \geq \bar{v}$. Consumers differ in their brand preferences: a fraction α will consider brand A only, a fraction β will consider brand B only, and a fraction $\gamma = 1 - \alpha - \beta$ will consider both, being indifferent between the two. Consumers in the first (respectively, second) group will buy brand A (respectively, B) as long as its price does not exceed $\bar{v}$, whereas consumers in the third group will buy whichever brand is cheaper. This way of representing consumers' brand preferences has a long history in marketing (Narasimhan 1988, Simester 1997, Lal and Villas-Boas 1996, and Chen et al. 2001). In this literature, the first group would be called brand-A loyalists, the second group would be called brand-B loyalists, and the third group would be called switchers.

We will examine two variants of this model: one with symmetric brands, $\alpha = \beta = (1-\gamma)/2 \in (0, 1/2)$, in Section 4, and the other with asymmetric brands, $0 < \alpha < \beta < 1 - \gamma \in (0,1)$, in Section 5. To facilitate the comparison between the two, we will fix γ, and work with α' and β', the fractions of A- and B-loyals *within* the population of loyalists, i.e.,

$$\alpha' = \alpha/(1-\gamma), \quad \beta' = \beta/(1-\gamma), \quad \alpha' + \beta' = 1.$$

In the symmetric model, $\alpha' = \beta' = 1/2$; in the asymmetric model, $0 < \alpha' < 1/2 < \beta' < 1$.

Up to now our demand side has been more or less standard. Now we come to the novelties. We assume that shopping is costly: it takes a cost $t > 0$ to visit a store.[7] One store visit costs t, two store visits cost $2t$, and so on. Furthermore, consumers differ in these costs: t has a distribution function $H(\cdot)$ on $[0, \theta]$, $\theta > 0$, with $H(0) = 0$, $H(\theta) = 1$, and $H'(0) = 0$. This model of shopping costs may be seen as a reduced form of the well-known Hotelling model—instead of distinguishing between consumers' geographical locations x (typically assumed to be distributed uniformly on $[0,1]$) and unit transportation costs c (typically assumed to be the same across consumers), we are simply amalgamating the two into $t = cx$. However, there are some key differences. In the standard Hotelling model, transportation costs simply represent the costs of procuring a product with known characteristics. The procurement angle applies here, too, but our shopping costs do double duty, serving as search costs as well, as discussed below.

All consumers know the distribution structure of the market, i.e., they know whether they are in Case 1, 2, 2′, or 3. However, they need to search, by visiting stores, to find out the retail prices. In addition, some of them need to visit stores to learn their brand preferences—whether they are brand-A loyalists, brand-B loyalists, or switchers. Denote by λ the fraction of consumers who need to learn their brand preferences by visiting stores; we will refer to them as "uncertain consumers." The remaining fraction, $1 - \lambda$, know their brand preferences even before they begin shopping, i.e., these people do not need to visit a store to find out whether they are brand-A loyalists, brand-B loyalists, or switchers. We call them knowledgeable consumers. Other than this difference, knowledgeable and uncertain consumers are alike; in both groups, fractions α and β of them are brand-A and brand-B loyalists, respectively, and the remaining are switchers. In particular, retailers cannot tell them apart; so they cannot price discriminate between knowledgeable and uncertain consumers.

The brand-preference learning process for uncertain consumers is conceptualized as follows. First, we assume that examining both brands is necessary to discover brand preferences. Second, we assume that all uncertain consumers who begin the brand-preference learning process complete it, regardless of the prices they find along the way. Implicit in the first assumption is the idea that brands are uncorrelated: learning about one does not provide information about the other.[8] The second assumption decouples the brand-preference learning process from the price learning process. It amounts to saying that knowing whether one is a brand-A loyalist, brand-B loyalist, or a switcher, is sufficiently important to these uncertain shoppers that they will want to resolve their uncertainty completely, by visiting two stores if necessary, even if the first brand searched is available at an attractive price.[9]

The price learning process is a sequential search process with a costly initial visit and costly recall (Baye et al. 2006, Janssen and Parakhonyak 2014). Consumers' search strategy—which store to visit first, and what to do next—is based on their knowledge of what brand(s) are sold in each store and their expectations of the retail prices, which, in the case of stores carrying decentralized brands, requires conjectures about wholesale prices. In equilibrium, expected prices match actual prices.

We are now ready to lay down some notation and define the key parameters. Let

$$y(p) = \int_p^{\bar{v}} D(x)\,dx$$

denote a consumer's surplus after buying a brand priced at p (t, the shopping cost does not figure in this calculation because it is sunk at this point). With price expectation p^e, therefore, a consumer will go shopping if and only if her shopping cost does not exceed $y(p^e)$. Note that $y'(p) = -D(p) < 0$.

Consider first a decentralized bilateral monopoly. Given a fixed endowment of consumers and a wholesale price w, such a retailer would choose retail price $p(w)$ to solve

$$\max_p (p-w)D(p), \tag{1}$$

and the manufacturer, anticipating the retailer's pricing decision, would choose w to solve

$$\max_w wD(p(w)). \tag{2}$$

Assume these maximization problems are well behaved and yield unique solutions, $p(w) \le \bar{v}$ for $w \le \bar{v}$, and $w_d \in (0, \bar{v})$. Define

$$p_m = p(0), \qquad p_d = p(w_d), \qquad t(w) = y(p(w)), \tag{3}$$

$$t_m = y(p_m), \qquad t_d = y(p_d), \qquad t_i = t_m - t_d, \tag{4}$$

$$H_m = H(t_m), \qquad H_d = H(t_d), \qquad H_i = H(t_i), \tag{5}$$

$$\pi_m = p_m D(p_m), \quad \pi_w(p) = (p-w)D(p), \qquad \delta_d = \frac{w_d D(p_d)}{\pi_m}. \tag{6}$$

Absent shopping considerations, a vertically integrated firm would maximize $pD(p)$, the "channel profit function," which would result in p_m as the optimal retail price, and π_m as its profit. In a decentralized bilateral monopoly, by contrast, the manufacturer's optimal wholesale price would be w_d, the retailer's optimal retail price would be p_d, and their respective profits would be $w_d D(p_d)$ and $\pi_{w_d}(p_d)$. Thus δ_d, the fraction of vertically integrated profit a decentralized manufacturer realizes, is a measure of the double-marginalization distortion built into D.[10]

Backing up to the shopping decision, t_m (respectively, t_d) is simply the shopping cost at which a consumer expecting p_m (respectively, p_d) is just indifferent between shopping and not shopping. We will assume $\theta > t_m$, so that, even in a vertically integrated channel, not all consumers would shop. Then our assumptions imply $0 < t_d < t_m < \theta$. Finally, the H function converts marginal shopping costs into fractions shopping.

We begin our analysis with a series of lemmas that play an important role in the sequel. The first of these says that in a decentralized bilateral monopoly, given our regularity conditions, as the double-marginalization distortion approaches zero, retail price and consumer surplus approach their vertically integrated counterparts.

Lemma 1. $(\delta_d \to 1) \Leftrightarrow (p_d \to p_m) \Leftrightarrow (t_d \to t_m)$.

The next two lemmas describe equilibrium retail and wholesale prices (where applicable).

Lemma 2. *In all distribution structures, equilibrium retail prices are p_m for vertically integrated products and $p(w)$ for decentralized products with wholesale price w.*

Lemma 2 is essentially a restatement of Diamond's (1971) paradox, adapted to our context. The price equilibrium is unique and it involves monopoly pricing. The fact that the retailers are competing for switchers, and in some channel configurations for brand-loyalists as well, and the fact that some consumers are searching for price only and others are searching for price and brand preferences, makes no difference. The only additional wrinkle is "category management" considerations within a multibrand store—how to optimally price the vertically integrated product vis-à-vis the decentralized product. This decision bears on whether switchers will be induced to buy the store brand or the competitor's brand. The answer from Lemma 2 is resoundingly clear: steer switchers to your own brand.[11] The reason is, on the vertically integrated product, the retailer gets all of a maximized channel profit; on the decentralized product, it gets only the retail share of a smaller channel profit.

Lemma 3. *In all distribution structures with hybrid distribution strategies, the equilibrium wholesale price through the competitor channel will be w_d.*

This lemma simply reflects the fact that consumers' shopping decisions are based on *expected* retail prices, hence *expected* wholesale prices. Since actual wholesale prices are not observed, the only wholesale price that satisfies rational expectations is the monopoly wholesale price w_d. Putting Lemmas 2 and 3 together, equilibrium retail prices of vertically integrated and decentralized products will be p_m and p_d, respectively.

3. The Benchmark Case: $\lambda = 0$

It is useful to begin with an analysis of what would happen in our model if all consumers were knowledgeable about their brand preferences before shopping.

Consider Case 1 first. By Lemma 2, all products are priced at p_m. Since t_m is the consumer surplus corresponding to this price, all consumers with shopping costs $t \le t_m$ will shop. Among those shopping, brand-A loyalists will go straight to store A and buy their favorite brand there, brand-B loyalists will go straight to store B and buy their favorite brand there, and switchers will divide themselves evenly between the two stores. Suppose manufacturer B considers deviating to Case 2. Its wholesale price in the hybrid strategy will be $w_d > 0$, and by Lemma 2, retail prices at store A will be p_m for brand A and $p_d > p_m$ for brand B. Nobody will buy brand B at store A. So consumers will behave exactly as in Case 1: brand-A loyalists will continue to buy brand A at store A, brand-B loyalists will continue to buy brand B at store B, and switchers will continue to divide themselves evenly between the two stores. There will be no change in the number of shoppers, and manufacturer B will make exactly the same profit as in Case 1. Similar arguments apply for deviation to Case 2′, and to Case 3 (from Case 2 or Case 2′). Note that whether brands are symmetric or asymmetric has no bearing on these conclusions.

In other words, in none of the channel structures does a manufacturer pursuing hybrid distribution benefit from such a strategy. Status quo, therefore, is the unique equilibrium.

Proposition 1. *When all consumers are knowledgeable, status quo is the unique equilibrium.*

The message from Proposition 1 is that it is impossible to improve on pure vertical integration in our model when consumers are already knowledgeable about their brand preferences before shopping. Since these consumers can one-stop shop even at a single-brand store, they have no use for a multibrand store. The presence of uncertain consumers is therefore necessary to motivate multibrand stores and hybrid distribution strategies.

4. Distribution Strategy When Brands Are Symmetric

Our analysis of equilibrium distribution strategies with uncertain consumers is split into parts. In this section, we will examine the case of symmetric brands: $\alpha = \beta = (1-\gamma)/2$. In Section 5, we will examine the case of asymmetric brands: $\alpha \ne \beta$. This separation is necessary because uncertain consumer behavior differs fundamentally between the two cases; the case $\beta = \alpha + \epsilon$ is not the same as $\alpha = \beta$, no matter how small ϵ is.

In what follows, we will analyze the three generic distribution structures in turn and then ask which of them prevails in equilibrium.

Case 1: Each Manufacturer Sells Only Through Its Own Outlets

Knowledgeable consumers visit only one store and the marginal knowledgeable shopper has a shopping cost t_m, as discussed in Section 3. Uncertain consumers need two store visits to figure out their brand preferences. Since both stores are single-brand stores, and the brands are symmetric, it is immaterial which store they visit first. At the conclusion of the second store visit, they may discover either that they are done with shopping (because they are *that* store brand's loyalists or switchers) or that a third store visit is required (because they are the other store brand's loyalists). Therefore, for an uncertain consumer with shopping cost t, the expected surplus from shopping is

$$\frac{1+\gamma}{2}(y(p_m)-2t)+\frac{1-\gamma}{2}(y(p_m)-3t) = t_m - \frac{5-\gamma}{2}t.$$

The marginal uncertain consumer indifferent between shopping and not shopping is therefore[12]

$$t_u^1 = \frac{2}{5-\gamma}t_m. \tag{7}$$

Note that $t_u^1 < t_m$: fewer uncertain consumers are willing to shop than knowledgeable consumers. This makes sense because the shopping process is more arduous for the former. Let H_m denote $H(t_m)$ and H_u^1 denote $H(t_u^1)$; these are the proportions of knowledgeable and uncertain consumers who shop. Case 1 profit for each manufacturer is therefore

$$\pi_j^{1*} = (1/2)[(1-\lambda)H_m + \lambda H_u^1]\pi_m, \quad j = A, B. \tag{8}$$

Case 2 (2′): Manufacturer B (A) Sells Through Own and A's (B's) Outlets; Manufacturer A (B) Sells Only Through Its Outlets

Since Cases 2 and 2′ are mirror images of each other, we will only examine Case 2. As already discussed in Section 3, for knowledgeable consumers, nothing changes from Case 1 to Case 2. Uncertain consumers, however, behave differently. They first have to decide which store to visit, the multibrand store A or the single-brand store B. If the former, their brand-preference learning is over; however, depending on what is learned, a second store visit may still be called for. If they discover themselves to be brand-A loyalists or switchers, then the shopping process is definitely over. On the other hand, if they discover themselves to be brand-B loyalists, then they have to decide whether to buy brand B at store A or at store B, which depends on the price difference $p_d - p_m$ and their shopping cost (low shopping cost consumers may go to store B while high shopping cost consumers stay in store A). By contrast, if the first visit is to store B, then a visit to store A is required just to complete the brand preference learning process, after which the shopping process is the same as above. *From this, it is immediate that visiting store A first dominates visiting store B first for all uncertain consumers*.

Uncertain consumers' expected surplus from shopping is therefore

$$\frac{1+\gamma}{2}(y(p_m)-t)+\frac{1-\gamma}{2}(\max\{y(p_m)-2t, y(p_d)-t\}). \quad (9)$$

Setting this equal to zero and solving for t yields the marginal uncertain shopper in Case 2

$$t_u^2 = \max\left\{\frac{2t_m}{3-\gamma}, \frac{1+\gamma}{2}t_m + \frac{1-\gamma}{2}t_d\right\}. \quad (10)$$

Now,

$$\frac{2t_m}{3-\gamma} \le \frac{1+\gamma}{2}t_m + \frac{1-\gamma}{2}t_d \iff \frac{t_d}{t_m} \ge \frac{1-\gamma}{3-\gamma}. \quad (11)$$

Therefore,

$$t_u^2 = \begin{cases} \dfrac{1+\gamma}{2}t_m + \dfrac{1-\gamma}{2}t_d & \text{if } \dfrac{t_d}{t_m} \ge \dfrac{1-\gamma}{3-\gamma} \\ \dfrac{2t_m}{3-\gamma} & \text{if } \dfrac{t_d}{t_m} < \dfrac{1-\gamma}{3-\gamma}. \end{cases} \quad (12)$$

So, depending on whether $t_d/t_m \ge (1-\gamma)/(3-\gamma)$ or not, uncertain consumers' shopping behavior looks like Figure 2(a) or 2(b). In either case, all uncertain shoppers visit store A first, and if they discover themselves to be brand-A loyalists or switchers, then they buy brand A and they are done. It is the shopping behavior of uncertain shoppers who discover themselves to be brand-B loyalists that distinguishes the two figures. When $t_d/t_m \ge (1-\gamma)/(3-\gamma)$, some of these consumers—those with $t < t_i$—choose to buy brand B at store B, while others—those with $t \ge t_i$—choose to buy brand B at store A itself. On the other hand, when $t_d/t_m < (1-\gamma)/(3-\gamma)$, then all of these shoppers choose to buy brand B at store B—a case of "pure showrooming": store A carries brand B but does not sell any of it! Why would store A carry a brand on which it has no sales? This is related to the broader question of whether manufacturer A benefits from having brand B in its stores.

Should Manufacturer A Accept Brand B Into Its Stores?

With respect to knowledgeable consumers, it is obvious that it makes no difference; nothing changes for these consumers between Cases 1 and 2. So it comes down to uncertain consumers. Lemma 4 is key.

Lemma 4. $t_u^2 > t_u^1$.

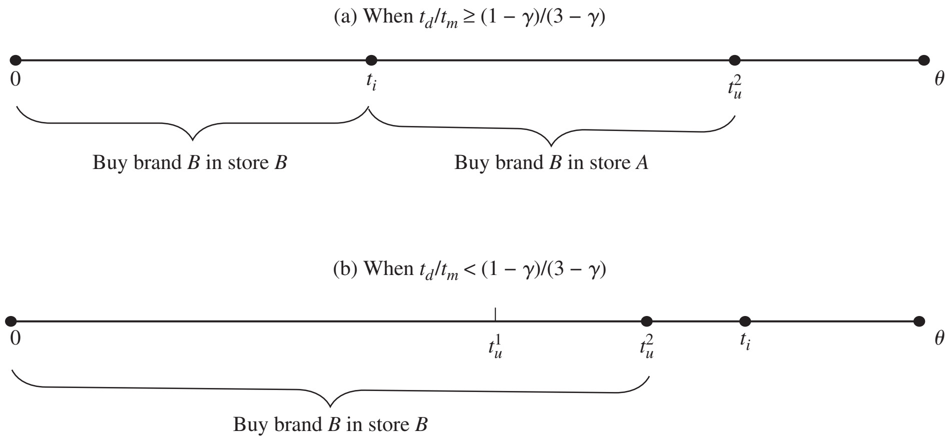
More uncertain consumers shop in Case 2 than in Case 1, because in Case 2 there is a multibrand store, whereas in Case 1 both stores are single-brand stores. Having a multibrand store allows uncertain consumers to figure out their brand preferences in one store visit instead of two. Greater shopping efficiency translates to more shopping. For manufacturer A, the owner of the only multibrand store in Case 2, this provides a direct benefit in terms of more brand-A loyalist sales. Yet there is an additional knock-on benefit. Brand A now captures all uncertain switchers versus only half of them in Case 1. *Together, these two benefits are enough to justify accepting brand B into its stores even if consumers do not actually buy brand B there (as in Figure 2(b))*. To the extent there are sales of brand B in store A, as in Figure 2(a), that is just additional gravy. In other words, it makes sense for manufacturer A to carry brand B in its stores.

Lemma 5. *Each manufacturer would be willing to accept the competitor's brand into its stores. The hybrid strategies in Cases 2 and 2′ are therefore feasible deviations from Case 1.*

Lemma 5 speaks to how two lay intuitions about competition and showrooming may go astray. One is the common idea that more competition cannot be a good thing for the store's own brand. This intuition is based on the assumption that switchers will move to the competitor's brand when given the opportunity to do so. As our analysis reveals, however, it does not necessarily have to happen this way; it is the store that manages the competition between the store brand and the competitor's brand—via retail pricing. Those prices can be set to deliver switchers to the store brand (Lemma 2). And it makes sense to do so because on the store brand the retailer captures all of the vertically integrated channel profit stream, whereas on the competitor's brand it captures only a fraction of the smaller decentralized channel profit stream.

The second intuition that Lemma 5 casts doubt on is the idea that showrooming cannot be a good thing for the stores subject to it. Yes, it is correct to say that if consumers use a store only as a showroom and buy *nothing* from it—in the short-term or in the long-term—then it is not a good thing for the store. Yet that is not what is happening in our model. It is the prospect of using a multibrand store as a one-stop showroom that induces all uncertain consumers to stop there first, and encourages more of them to shop. A larger proportion of these consumers—$(1+\gamma)/2$—end up buying the store brand than the competitor's brand. Even those who end up buying the competitor's brand bring revenue to the store, either directly, via the profit stream $(p_d - w_d)D(p_d)$ (as in Figure 2(a)) or, indirectly, by boosting the number of uncertain consumers who shop (as in Figure 2(b)). In the latter case, the mere presence of the competitor's brand boosts the number of uncertain consumers shopping at the store from $t_u^1/2$ to t_u^2.

Figure 2. Shopping Behavior of Uncertain Brand-B Loyalists After Visiting Store A in Case 2



Will Manufacturer B Go Through Brand A's Stores?

Using (11), manufacturer B's profits in Case 2 is,

$$\begin{aligned}\pi_B^{2*} &= \left[\frac{1-\lambda}{2}H_m + \frac{\lambda}{2}(1-\gamma)\min\{H_i, H_u^2\}\right]\pi_m \\ &\quad + \frac{\lambda}{2}(1-\gamma)[\max\{0, H_u^2 - H_i\}]w_d D(p_d) \\ &= \left[\frac{1-\lambda}{2}H_m + \frac{\lambda}{2}(1-\gamma)\right. \\ &\quad \left.\cdot(\min\{H_i, H_u^2\} + \delta_d \max\{0, H_u^2 - H_i\})\right]\pi_m. \end{aligned} \quad (13)$$

[13]

By contrast, manufacturer B's profits in Case 1 is

$$\pi_B^{1*} = \left[\frac{1-\lambda}{2}H_m + \frac{\lambda}{2}H_u^1\right]\pi_m.$$

Therefore,

$$\begin{aligned}\pi_B^{2*} - \pi_B^{1*} &= \frac{\lambda}{2}H_u^1 \\ &\quad \cdot \left[(1-\gamma)\left(\frac{\min\{H_i, H_u^2\}}{H_u^1} + \delta_d \frac{\max\{0, H_u^2 - H_i\}}{H_u^1}\right) - 1\right]\pi_m,\end{aligned}$$

and, given $\lambda > 0$,

$$\pi_B^{2*} > \pi_B^{1*} \iff 1-\gamma > \frac{H_u^1}{\min\{H_u^2, \delta_d H_u^2 + (1-\delta_d)H_i\}}. \quad (14)$$

As $\gamma \to 1$, the left-hand side of the inequality approaches zero and the right-hand side approaches $H(\frac{1}{2}t_m)/[\delta_d H(t_m) + (1-\delta_d)H(t_i)] > H(\frac{1}{2}t_m)/H(t_m) > 0$.[14] Therefore, the inequality can never be satisfied as $\gamma \to 1$. In other words, as brand loyalty vanishes, neither manufacturer has an incentive to deviate unilaterally from pure vertical integration to hybrid distribution—even though doing so would increase the number of uncertain consumers shopping.[15] The reason is, such a move strengthens the competitor's stores and brand at the expense of the manufacturer's own stores and brand. *All* uncertain consumers stop at the competitor's store first, which results in all uncertain switchers being lost to the competitor.

By contrast, as $\gamma \to 0$, the left-hand side of (14) approaches 1. This seems to favor a deviation to hybrid distribution, but a conclusive verdict depends on the size of the right-hand side. If $t_d/t_m < (1-\gamma)/(3-\gamma)$, then the right-hand side is H_u^1/H_u^2, which is less than 1 per Lemma 4. For $t_d/t_m \geq (1-\gamma)/(3-\gamma)$, the right-hand side is $H_u^1/(\delta_d H_u^2 + (1-\delta_d)H_i)$, which is not obviously less than 1 because t_i may not be greater than t_u^1. For $t_d/t_m \leq (3-\gamma)/(5-\gamma)$, however, $t_i \geq t_u^1$ and $H_u^1/(\delta_d H_u^2 + (1-\delta_d)H_i) < 1$. Therefore, for $t_d/t_m \leq (3-\gamma)/(5-\gamma)$, as $\gamma \to 0$, manufacturer B will deviate to Case 2 from Case 1. Finally, if $t_d/t_m > (3-\gamma)/(5-\gamma)$ and $\delta_d \approx 1$, then the right-hand side approximates $H_u^1/H_m < 1$ and manufacturer B will deviate to Case 2 as $\gamma \to 0$.[16] Therefore, we get the following:

Proposition 2. *In the symmetric model, a manufacturer will deviate from the status quo to hybrid distribution if and only if $\lambda > 0$ and (14) is satisfied. His preference for hybrid distribution increases in λ and δ_d, but decreases in γ. In particular, if $\lambda > 0$ and*

(a) *γ is large enough, then each manufacturer will prefer the status quo;*

(b) *γ is small enough, and either $t_d/t_m \leq (3-\gamma)/(5-\gamma)$ or $\delta_d \approx 1$, then each manufacturer will prefer to deviate to hybrid distribution.*

How does augmenting own outlets with competitor outlets help a manufacturer such as B? All of the value-add comes from expanding the market of uncertain shoppers. However, this is not an unalloyed blessing. Inequality (14) captures, and Figure 2(a) and 2(b) illustrate, the central trade-offs. On the positive side, any increase in uncertain shoppers represents an increase in brand-B sales (via brand-B loyalists). Besides, when $t_d/t_m < (1-\gamma)/(3-\gamma)$, each of these new consumers brings the entire vertically integrated profit stream with her. On the negative side, there are two effects. One is a possible reduction in the number of consumers buying brand B at store B. This happens when $t_i < t_u^1$ in Figure 2(a), i.e., when $t_d/t_m > (3-\gamma)/(5-\gamma)$. This is a *cannibalization effect*: hybrid distribution causes the inefficient competitor-channel to cannibalize the efficient own-channel. The cannibalization effect is less damaging as $\delta_d \to 1$, i.e., as the efficiency of the competitor channel improves. The second negative effect of hybrid distribution is the loss of uncertain switchers to brand A: in Case 1, brand B was getting half of them; in Case 2 it is getting none. We call this the *strengthening-the-competitor effect*.[17] Note that the improvement in competitor fortunes is not the main concern here—B does not necessarily begrudge A's good fortune. Rather, what is concerning about this effect is that some of these customers *used to be B's customers* in Case 1. Both negative effects become larger, and the positive effect becomes smaller, as γ increases. Therefore, for large γ, deviating to hybrid distribution is not profit increasing. On the other hand, a small γ increases the positive effect, while reducing the negative effects—especially when coupled with δ_d close to one—thereby improving the case for hybrid distribution. While the number of uncertain consumers, λ, does not figure in (14), it obviously plays a crucial role in justifying a deviation to hybrid distribution. In fact, both $\lambda > 0$ and $\gamma < 1$ are necessary to justify such a deviation.

Note that under the conditions of Proposition 2(b) not only does manufacturer B prefer Case 2, so does manufacturer A. In fact, Case 2 would not have been feasible without manufacturer A's acquiescence. It is not hard to see where the win-win comes from: both manufacturers benefit when more uncertain consumers shop.[18] Roos et al. (2015, p. 1) provide empirical support for the win-win in their study of several celebrity news sites. They conclude that the "linking" and "excerpting" of competitors' news stories "are beneficial to both the linking and linked sites, as well as consumers."

Case 3: Both Manufacturers Sell Through Own and Competitor Outlets

When a hybrid channel structure such as Case 2 or Case 2′ beats pure vertical integration, one might be tempted to conclude that the symmetric channel structure—both firms pursuing hybrid distribution (Case 3)—would be the natural outcome of the game. However, this conclusion would be wrong. Case 3 cannot be an equilibrium distribution structure. The argument is as follows. First, Cases 2, 2′, and 3 are all equivalent from knowledgeable consumers' point of view. Second, all these cases result in the same number of uncertain shoppers: $t_u^3 = t_u^2 = t_u^{2'}$. Third, the dividing line, t_i, between loyalists who shop for their favorite brand at the own store versus at the competitor's store, is also the same. What is different about Case 3 is uncertain shoppers' first-visit behavior. In Case 3 these consumers divide themselves *evenly* between the two multibrand stores whereas in Cases 2 and 2′ they all go to the sole multibrand store. This results in each brand getting half of all uncertain switchers in Case 3, versus all going to brand A in Case 2 and all going to brand B in Case 2′. Deviating from Case 2 (respectively, Case 2′) to Case 3 is therefore unprofitable for manufacturer A (respectively, B).

Proposition 3. *Case 3 cannot be an equilibrium channel structure, i.e., neither manufacturer would adopt a hybrid distribution strategy when its competitor already does so.*

Proposition 3 offers a novel intuition for marketing. We noted earlier that competitor-outlet distribution in Cases 2 and 2′ is driven by a "win-win": both manufacturers have a common interest in providing a one-stop comparison shopping experience for uncertain consumers. Proposition 3 says that there are limits to how far the win-win can go. The reason is, when a firm pursues a hybrid distribution strategy, it is simultaneously strengthening its competitor's retail outlets and brand, while weakening its own.[19] *While it may pay one firm to do so, it does not pay both firms to do so.* For example, in going from Case 1 to Case 2, manufacturer B is increasing the fraction of uncertain consumers who buy brand A (from $(1/2)H_u^1$ to $((1+\gamma)/2)H_u^2$). A move by manufacturer A to Case 3 would amount to "returning B's favor." Not only does manufacturer A have no incentive to do so, the preceding argument shows that it actually has a disincentive. The bottom line is, having two multibrand outlets operating simultaneously does not increase the number of uncertain consumers shopping, but it does nullify the competitive advantage a firm gets by operating the only multibrand store in town. A symmetric model does not necessarily lead to symmetric distribution strategies in equilibrium!

Putting Propositions 2 and 3 together, the following proposition summarizes the equilibria in the symmetric model.

Proposition 4. *In the symmetric model, the equilibrium channel structure is either Case* 1*, or both Cases* 2 *and* 2′*, as per the conditions of Proposition* 2*.*

5. Distribution Strategy When Brands Are Asymmetric

The symmetric model is instructive in laying bare the fundamental incentives driving decisions to distribute through competitor outlets, but its very symmetry obviates answering some interesting managerial questions. For instance, it cannot answer a basic question: Are some firms more likely to pursue competitor-outlet distribution than others? In this section, we explore this issue. One manufacturer's brand, say B, will be assumed to be stronger than the other; it will have more loyal consumers: $\beta > \alpha > 0$. This requires $\gamma < 1$. To facilitate comparison with the symmetric model, we will fix γ and change β' from $\beta' = 1/2$ to $1/2 < \beta' < 1$; correspondingly, $\alpha' = 1 - \beta'$ will change from $1/2$ to $0 < \alpha' < 1/2$. Now Cases 2 and 2′ will not be mirror images of each other. To distinguish between the two it will be useful to normalize the discussion in terms of whether the stronger brand (denoted by "S") or the weaker brand (denoted by "W") pursues competitor-outlet distribution. Some additional notation will come in handy. Firm-specific quantities will have the subscript S or W to identify the firm in question (corresponding quantities in the symmetric model will continue to use subscripts A and B). For quantities common to both firms, the superscript "a" will identify the asymmetric case; for instance, the marginal uncertain consumer in Case 2, denoted by t_u^2 in the symmetric model, will be denoted by t_u^{2a} in the asymmetric model.

Much of the previous analysis goes through unchanged. Retail prices continue to be p_m and p_d for the vertically integrated and decentralized products, respectively, and the wholesale price for the latter is still w_d. The shopping behavior of knowledgeable consumers does not change. In fact, the only thing that changes is the behavior of uncertain consumers, mainly in Case 1. Yet these changes do differentially affect the incentives to pursue hybrid distribution for manufacturers S and W.

Case 1: Each Manufacturer Sells Only Through Its Own Retail Outlets

With symmetric brands, uncertain consumers were indifferent between going to retailer A or to retailer B first; with $\beta' > \alpha' > 0$, *it is optimal for them to go to retailer W first* because there is a higher probability that they will end up as brand-S loyalists than as brand-W loyalists.[20] After the second store visit, to store S, consumers who discover themselves to be brand-S loyalists or switchers will stay put; only those who discover themselves to be brand-W loyalists will return to store W. Uncertain consumer shopping thus becomes more efficient; expected consumer surplus from shopping goes up

$$\begin{aligned}&(\beta'(1-\gamma)+\gamma)(y(p_m)-2t)+(\alpha'(1-\gamma))(y(p_m)-3t)\\&\quad = t_m-(\alpha'(1-\gamma)+2)t,\end{aligned}$$

which implies

$$t_u^{1a}=\frac{t_m}{\alpha'(1-\gamma)+2}>\frac{t_m}{(1/2)(1-\gamma)+2}=t_u^1.$$

As $\beta' \to 1/2$, $t_u^{1a} \to 2t_m/(5-\gamma) = t_u^1$; there is continuity between the symmetric and asymmetric models with respect to the number of uncertain consumers shopping. However, the same cannot be said for the share of uncertain switchers each brand gets. In the symmetric model, each brand received an equal share of those switchers; in the asymmetric model, brand S captures *all* uncertain switchers—and this is true even if the asymmetry is arbitrarily small.

From this it is obvious that manufacturer S is better off than manufacturer W

$$\begin{aligned}\pi_S^{1*}&=\left[(1-\lambda)\left(\beta'(1-\gamma)+\frac{\gamma}{2}\right)H_m+\lambda(\beta'(1-\gamma)+\gamma)H_u^{1a}\right]\pi_m\\&>\left[(1-\lambda)\left(\alpha'(1-\gamma)+\frac{\gamma}{2}\right)H_m+\lambda\alpha'(1-\gamma)H_u^{1a}\right]\pi_m\\&=\pi_W^{1*}.\end{aligned}$$

Note that $\lim_{\beta'\downarrow 1/2}\pi_S^{1*} = \pi_B^{1*} + (\lambda\gamma/2)(H_u^1)\pi_m > \pi_A^{1*} - (\lambda\gamma/2)(H_u^1)\pi_m = \lim_{\beta'\downarrow 1/2}\pi_W^{1*}$.

Case 2: S Sells Through Own and W's Retail Outlets; W Sells Only Through Its Own Outlets

This case remains substantially the same as in the symmetric model. Uncertain consumers still want to visit the multibrand store first and Figure 2(a) and 2(b) still describe what happens next (replacing store A with store W and brand B with brand S). The marginal uncertain shopper is given by

$$t_u^{2a}=\begin{cases}(\alpha'(1-\gamma)+\gamma)t_m+\beta'(1-\gamma)t_d\\ \quad\text{if } t_d/t_m\ge\beta'(1-\gamma)/(1+\beta'(1-\gamma)),\\ t_m/(1+\beta'(1-\gamma))\\ \quad\text{if } t_d/t_m<\beta'(1-\gamma)/(1+\beta'(1-\gamma)),\end{cases}\tag{15}$$

and $t_u^{1a} < t_u^{2a}$.[21] Finally, store W continues to welcome brand S unconditionally.

Using (15), manufacturer S's profit in Case 2 is

$$\begin{aligned}\pi_S^{2*}=\Bigg[&(1-\lambda)\left(\beta'(1-\gamma)+\frac{\gamma}{2}\right)H_m+\lambda\beta'(1-\gamma)\\&\cdot(\min\{H_i,H_u^{2a}\}+\delta_d\max\{0,H_u^{2a}-H_i\})\Bigg]\pi_m.\end{aligned}$$

Therefore,

$$\begin{aligned}&\pi_S^{2*}-\pi_S^{1*}\\&\quad=\lambda(\beta'(1-\gamma)+\gamma)H_u^{1a}\left[\frac{\beta'(1-\gamma)}{\beta'(1-\gamma)+\gamma}\right.\\&\qquad\left.\cdot\left(\frac{\min\{H_i,H_u^{2a}\}}{H_u^{1a}}+\delta_d\frac{\max\{0,H_u^{2a}-H_i\}}{H_u^{1a}}\right)-1\right]\pi_m,\end{aligned}$$

and, given $\lambda > 0$,

$$\begin{aligned}&\pi_S^{2*}>\pi_S^{1*}\\&\Leftrightarrow\ \frac{\beta'(1-\gamma)}{\beta'(1-\gamma)+\gamma}>\frac{H_u^{1a}}{\min\{H_u^{2a},\delta_dH_u^{2a}+(1-\delta_d)H_i\}}.\end{aligned}\tag{16}$$

This looks much the same as in the symmetric model, except the left-hand side of the inequality is smaller. *Therefore, ceteris paribus, it is harder for manufacturer S to justify deviating to hybrid distribution than it is for either manufacturer to do so in the symmetric model*. This is to be expected. When brands are asymmetric, uncertain consumers' shopping in Case 1 are already more efficient. Therefore, a multibrand store in Case 2 can only increase the number of uncertain shoppers by so much. Moreover, manufacturer S's position in Case 1 is already quite strong, as it captures all uncertain switchers. Moving to Case 2 only weakens manufacturer S's relative position. In other words, the strengthening-the-competitor drawback of hybrid distribution looms larger. Finally, the cannibalization effect is also more likely; the t_d/t_m-threshold that sets off cannibalization is lower: $(1+\alpha'(1-\gamma))/(2+\alpha'(1-\gamma)) < (3-\gamma)/(5-\gamma)$.

Case 2′: *W* Sells Through Own and *S*'s Retail Outlets; *S* Sells Only Through Its Own Outlets

Now uncertain consumers want to visit store S first as it is the multibrand store. Figure 2(a) and 2(b) continue to describe what happens next if we replace brand B with brand W and brand A with brand S. Analogous to Case 2, the marginal uncertain shopper is given by

$$t_u^{2'a} = \begin{cases} (\beta'(1-\gamma)+\gamma)t_m + \alpha'(1-\gamma)t_d \\ \quad \text{if } t_d/t_m \geq \alpha'(1-\gamma)/(1+\alpha'(1-\gamma)), \\ t_m/(1+\alpha'(1-\gamma)) \\ \quad \text{if } t_d/t_m < \alpha'(1-\gamma)/(1+\alpha'(1-\gamma)). \end{cases} \tag{17}$$

Note that

$$(\beta'(1-\gamma)+\gamma)t_m+\alpha'(1-\gamma)t_d > (\alpha'(1-\gamma)+\gamma)t_m+\beta'(1-\gamma)t_d,$$
$$\frac{t_m}{1+\alpha'(1-\gamma)} > \frac{t_m}{1+\beta'(1-\gamma)}, \text{ and } \frac{\alpha'(1-\gamma)}{1+\alpha'(1-\gamma)} < \frac{\beta'(1-\gamma)}{1+\beta'(1-\gamma)}.$$

Hence $t_u^{2'a} > t_u^{2a}$. The uncertain consumer market expands even more when the weaker brand goes through the stronger brand's store. The reasons are twofold. First, in the Figure 2(b) scenario, uncertain consumer shopping is more efficient—there is a smaller probability that a second store visit will be required. Second, in the Figure 2(a) scenario, where the marginal uncertain consumer is staying at the first store visited, the probability of buying at p_m instead of p_d is higher. Manufacturer W's profit in Case 2′ is

$$\pi_W^{2'*} = \left[(1-\lambda)\left(\alpha'(1-\gamma)+\frac{\gamma}{2}\right)H_m + \lambda\alpha'(1-\gamma) \cdot (\min\{H_i, H_u^{2'a}\} + \delta_d \max\{0, H_u^{2'a}-H_i\})\right]\pi_m,$$

and

$$\pi_W^{2'*} - \pi_W^{1*} = \lambda\alpha'(1-\gamma)H_u^{1a} \cdot \left[\left(\frac{\min\{H_i, H_u^{2'a}\}}{H_u^{1a}} + \delta_d \frac{\max\{0, H_u^{2'a}-H_i\}}{H_u^{1a}}\right) - 1\right]\pi_m.$$

Therefore, given $\lambda > 0$,

$$\pi_W^{2'*} > \pi_W^{1*} \iff 1 > \frac{H_u^{1a}}{\min\{H_u^{2'a}, \delta_d H_u^{2'a} + (1-\delta_d)H_i\}}. \tag{18}$$

For $t_d/t_m \leq (1+\alpha'(1-\gamma))/(2+\alpha'(1-\gamma))$ or $\delta_d \approx 1$, the inequality is satisfied—regardless of γ. In Case 2, by contrast, we needed the auxiliary condition $\gamma \to 0$ to justify hybrid distribution under the same circumstances. The size of the switcher segment does not play as big a role in the weaker brand's justification of hybrid distribution because uncertain switchers are lost either way; neither in Case 1 nor in Case 2′ can the weaker brand obtain these consumers. (By contrast, in going from Case 1 to Case 2, the stronger brand was losing all of the uncertain switchers.) Absent a strengthening-the-competitor loss, one of the downsides of hybrid distribution is eliminated. A cannibalization effect can still occur when $t_d/t_m > (1+\alpha' \cdot (1-\gamma))/(2+\alpha'(1-\gamma))$ in Figure 2(a). Then $t_i < t_u^{1a}$ and some efficient vertically integrated revenue (from brand-W loyalists) is replaced by inefficient decentralized revenue. When $\delta_d \approx 1$, however, this effect is also nullified, and only the expansion of the uncertain consumer market remains. Then the case for hybrid distribution by the weaker brand becomes unassailable.

Is the Stronger or the Weaker Brand More Likely to Deviate to Hybrid Distribution?

Comparing (16) and (18), the left-hand side of (18) is bigger and the right-hand side is smaller. Therefore, the following proposition is immediate.

Proposition 5. *Whenever the stronger brand is willing to deviate from the status quo to hybrid distribution, so will the weaker brand.*

The implication of Proposition 5 is that the weaker brand has a stronger case for hybrid distribution than the stronger brand. To understand why, recall that a move to hybrid distribution has advantages and disadvantages for the manufacturer doing so. The advantage is the creation of a multibrand store, which makes shopping more efficient for uncertain consumers, encouraging more of them to shop, netting additional brand loyalists in the process. The disadvantages have to do with possible "strengthening-the-competitor" and "cannibalization" effects. The competitor is strengthened when uncertain switchers who were hitherto patronizing the manufacturer in question (at its own store) now switch to the competitor at its (the competitor's) store. Cannibalization happens when uncertain brand loyalists who were hitherto buying the manufacturer's brand in its own store, generating vertically integrated profit streams, now buy it at the competitor's store, which nets only a part of an inefficient decentralized revenue stream.

Simply put, the advantages are bigger, and the disadvantages are either the same or smaller, when it is the weaker brand that initiates the move. On the positive side, a multibrand store at the stronger brand's location is a more powerful magnet for inducing uncertain consumers to shop. On the negative side, first, there is effectively no strengthening-the-competitor effect when the weaker brand deviates to hybrid distribution, whereas it is at its highest when the stronger brand deviates to hybrid distribution. Second, the cannibalization effect is essentially a wash no matter who initiates hybrid distribution: in both cases the t_d/t_m-threshold is the same.

Case 3: Both Manufacturers Sell Through Own and Competitor Outlets

Case 3 in the asymmetric model replicates Case 2′. All uncertain shoppers stop at the stronger brand's multibrand store first, and all uncertain switchers buy brand S. Brand W's store is multibrand in name only; nobody buys brand S in W's store. In fact, nobody uses W's store even as a showroom for brand S—the only uncertain consumers visiting W's store are brand-W loyalists. Manufacturer S is indifferent between Case 3 and Case 2′, so Case 3 cannot arise in equilibrium.

6. Robustness

The models examined so far succeed in demonstrating three things. First, a hybrid distribution strategy of distributing through competitor's outlets while maintaining own outlets can be justified on the basis of providing for the different shopping needs of two types of consumers—those who know what they want even before they begin shopping and those that rely on the shopping process to inform themselves about brand preferences. Second, while it may pay one manufacturer to practice hybrid distribution for this reason, it does not pay for the other to follow suit—even in a perfectly symmetric model. Third, a manufacturer with a weaker brand has more to gain from pursuing hybrid distribution than a manufacturer with a stronger brand. In this section we discuss how robust these findings are to alternative specifications of our model.

Price Equilibrium

One thing that made our model tractable was the simple characterization of equilibrium retail and wholesale prices that it enabled (Lemmas 2 and 3). Specifically, by assuming that consumers had to search for prices sequentially, retail prices turned out to be monopoly prices (Stahl 1996). In fact, given $H'(0) = 0$, this was the only equilibrium possible. While assuming $H'(0) > 0$ would allow other retail price equilibria to emerge, monopoly prices will continue to be one equilibrium. Moreover, any of the other equilibria—as long as prices stay above marginal costs—will not change our conclusions. This is because our arguments about the value of hybrid distribution do not depend on the absolute value of retail prices, and to the extent they depend on relative retail prices, they do so only minimally, namely, that decentralized prices are higher than vertically integrated prices. For instance, it was this difference that allowed us to assert that a switcher would favor the store's own brand over the competitor's brand when a store carries both.

Decentralized product prices being higher than vertically integrated product prices is a robust consequence of double marginalization in a decentralized channel.[22] Any model of retail price competition will deliver that feature. And as long as it does, our arguments will go through. For instance, if we replace our search model for prices with advertised retail prices, the resulting equilibrium will be a mixed-strategy equilibrium as in Lal and Villas-Boas (1996). However, it will still be the case that the distribution of prices of the vertically integrated product is first-order stochastically dominated by the distribution of prices of the decentralized product, and the advantages and disadvantages of hybrid distribution will remain.

Other Sources of Retailer Differences

In the real world, store-brand differences are not the only differences that differentiate retailers. For instance, some retailers carry a small number of categories (e.g., Barnes and Noble) while others carry many categories (e.g., Amazon.com). Some retailers are known for their retailing expertise (e.g., Macy's) while others are known for their manufacturing expertise (e.g., Levi.com). Consumer choices about where to shop are guided by these differences as well as the store-brand differences we have chosen to focus on. What impact would these other differences have on our results?

It is instructive to ask this question in the context of our symmetric model because in that model the store brands are symmetric. Suppose retailer A is a stronger retailer than retailer B. Then even in Case 1, consumers will not be indifferent between the two stores. Specifically, knowledgeable switchers will gravitate toward store A, and even brand-B loyalists might do the same if the model allowed for a trade-off between retailer preferences and product-brand preferences. Furthermore, uncertain consumers will want to finish their brand-preference-learning at A's store. Together, all these effects will give A an advantage over B even in Case 1. This will make it more likely that brand B would want to deviate to hybrid distribution rather than brand A. Instead of Cases 2 and 2′ being equally likely, now Case 2 is more likely.

Now consider a situation where the brands are not symmetric. If the stronger retailer also possesses the stronger store brand, our prediction in Proposition 5 will be reinforced. On the other hand, if the stronger retailer possesses the weaker product brand, our prediction in Proposition 5 might be reversed—for no fault of the proposition. An example of the former situation is our eReader example from Section 1. Here Amazon's Kindle is not only the stronger product brand, Amazon is also the stronger retailer. So it is not surprising to see that Nook is sold at Barnes and Noble as well as at Amazon, but Kindle is only sold at Amazon. An example of the latter situation occurs in the jeans category where Levi's brand of jeans are sold at Levi.com as well as at Macy's, but Alfani, Macy's house brand, is sold only at Macy's. Here it is the stronger brand that is doing hybrid distribution, not the weaker brand—the opposite of what our theory predicts. Yet it is easy to rationalize why this is so: Macy's is a much stronger retailer than Levi's.

Factors other than store brand that make one retailer a more attractive shopping destination than the other introduce independent motivations for pursuing competitor-outlet distribution that operate on top of our motivation. They may reinforce our motivation, or they may fight it; but they do not negate it. As long as $\lambda > 0$, there will be consumers who prefer one-stop comparison shopping, and there will be demand for a multibrand store. As long as this demand exists, a manufacturer will need to consider hybrid distribution in the way our theory suggests.

7. Conclusion

In this paper we have examined a special form of decentralization, distribution through competitors' outlets, and argued that it should be seen not as a decentralization strategy, but rather as a strategy to change the retailing format—from single-brand retailing to multibrand retailing. Multibrand retailing facilitates one-stop comparison shopping, which benefits consumers uncertain about their brand preferences, encouraging more of them to shop. This is beneficial not only to the manufacturer seeking such distribution but also to the store receiving the new brand—even if it ends up not selling any of it. By supplementing own-outlet distribution with competitor-outlet distribution—what we have called hybrid distribution—a manufacturer can combine the efficiency advantages of own-outlet distribution with the one-stop comparison shopping advantages of competitor-outlet distribution, targeting each to a different type of consumer—those who know their brand preferences versus those who do not know their brand preferences.

However, despite its appeal, hybrid distribution is not a panacea. In fact, in our model only one of the manufacturers chooses to do so in equilibrium. The reason is, hybrid distribution, while providing one-stop comparison shopping opportunities to uncertain consumers, also strengthens the competitor's outlets, which has the effect of driving switchers to the competitor's brand. From the competitor's point of view, therefore, reciprocating hybrid distribution would amount to nullifying its competitive advantage.

What sort of manufacturer is likely to pursue hybrid distribution? Within the parameters of our model, a manufacturer with a weaker brand has a stronger case for doing so than a manufacturer with a stronger brand. Of course, as we discussed in Section 6, this conclusion needs to be tempered by the limitations of our model in which store patronage is solely a function of the number, and strengths, of the brand(s) it carries in a given category. A more general model in which store choice is also a function of other attributes, such as the number of product categories carried or quality of service provided, could overturn these prescriptions. Nevertheless, a central message of this paper is likely to endure. A manufacturer with a strong brand can leverage its strength into retailing by opening stores, which have the potential of turning into one-stop comparison shopping destinations when competing brands distribute through them, making them stronger still.

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Appendix

Proof of Lemma 1

$\delta_d = w_d D(p_d)/p_m D(p_m)$ and $w_d D(p_d) \le p_d D(p_d) \le p_m D(p_m)$. Therefore, if $\delta_d \to 1$, $w_d D(p_d) \to p_m D(p_m)$ and hence $p_d D(p_d) \to p_m D(p_m)$. Since $pD(p)$ has a unique maximizer in p_m, the lemma follows. □

Proof of Lemma 2

Consider Case 1 first. If all consumers are knowledgeable, this is a straightforward sequential price-search model, with only switchers searching. Clearly, both manufacturers charging p_m, consumers expecting that, and consumers with $t \le t_m$ shopping one store and no further, is an equilibrium. With uncertain consumers in the mix, the argument is slightly more complicated. These consumers make two store visits just to discover their brand preferences. This presents an opportunity for either manufacturer to show a price lower than p_m to switchers who visit its store first in the hope of luring some of them back after their second store visit. However, because $H'(0) = 0 = H(0)$, the gain in revenue from additional switchers is exactly balanced by the loss in revenue from the lower price;[23] then, considering the loss in revenue from knowledgeable consumers, uncertain loyalists, and uncertain switchers whose second store visit is to "this" store, lowering price below p_m is strictly worse. Is there another equilibrium? Since $H'(0) = 0 = H(0)$, Proposition 4.4(a) of Stahl (1996) assures that there is not. The basic argument is that any candidate equilibrium with prices below the monopoly price is susceptible to revenue-increasing price increases.

In Case 2, both brands are sold in store A, and brand B is sold in store B. Within store A, given a wholesale price $w > 0$ for brand B, retailer A's profit function per unit of store traffic is

$$\begin{cases} (\alpha+\gamma)\pi(p_A)+\beta\pi_w(p_B) & \text{if } p_A \le p_B, \\ \alpha\pi(p_A)+(\beta+\gamma)\pi_w(p_B) & \text{if } p_A > p_B. \end{cases} \tag{A.1}$$

Since $\pi(\cdot)$ is maximized by p_m and $\pi_w(\cdot)$ by $p(w)$, and $p_m < p(w)$ for $w > 0$, only the first case of (A.1) obtains: all switchers in store A buy brand A. Hence, retailer A charging p_m and $p(w)$ for brands A and B, retailer B charging p_m for brand B, and consumers expecting those prices is a retail price equilibrium, for essentially the same reasons as in Case 1. The key difference is that in Case 2 all uncertain consumers visit store A first. This presents an opportunity for store A to lower brand-B's price below $p(w)$ to induce more brand-B loyalists to purchase brand B in store A. However, the revenue gains from this maneuver are exactly balanced by the revenue losses, for the reason explicated in endnote 23. The argument for uniqueness also replicates. Finally, Case 3 follows analogously. □

Proof of Lemma 4

It is straightforward that $t_u^1 = 2t_m/(5-\gamma) < 2t_m/(3-\gamma) = t_u^2$ when $t_d/t_m < (1-\gamma)/(3-\gamma)$. When $t_d/t_m \ge (1-\gamma)/(3-\gamma)$, then $t_u^2 = t_m(1+\gamma)/2 + t_d(1-\gamma)/2$. Then $t_u^2 - t_u^1 = (1/2)[t_m(1+4\gamma-\gamma^2)/(5-\gamma) + t_d(1-\gamma)]$. The numerator of the first term is positive for $\gamma \in [0,1]$, which finishes the proof. □

Endnotes

[1] When we say "single-brand" and "multibrand" retailing, we mean single-brand and multiple-brand retailing *within a category*. A single-brand retailer in our terminology may carry several brands across categories. For example, Aldi is a retailer with (generally) one brand in each category—its private label. However, that brand happens to be called Crofton in kitchenware and Sea Queen in frozen shrimp.

[2] In other words, the model has been designed to suppress the traditional strategic motivation for decentralization—the second force discussed in the opening paragraph.

[3] Some recent work deviates from this stark paradigm. Gu and Liu (2013) examine how shopping behavior within a store affects retailers' shelf layouts, and Iyer and Kuksov (2012) study the optimum retail investment in shopping experiences—things like music, lighting, and ambience. By contrast, the focus of our inquiry is *manufacturers*' distribution strategies, and we consider consumers' shopping behavior both within and across stores; our shopping experiences—one-stop versus multistop shopping—are the endogenous result of manufacturers' distribution decisions, not retailers' manufacturer-independent decisions.

[4] One can imagine an additional strategic option: closing one's own outlets and distributing through the competitor's outlets exclusively. However, as we note in endnote 13, such a strategy is dominated by the hybrid strategy.

[5] Multibrand retailing is necessarily two-brand retailing in our two-manufacturer model. However, our arguments extend easily to $n > 2$ manufacturers.

[6] We will insist, however, that a more complex distribution system justify its complexity. More on this in Section 2.

[7] We do not take a position on whether the stores are online or offline. That is, we are assuming that even online shopping is costly—if not in distance traveled, then at least in time. In online shopping, "visiting stores" should be interpreted as "visiting retailer websites."

[8] In an earlier version of this paper, we assumed otherwise—that examining one brand was enough to learn about the other. The advantage of this formulation is that it makes the price-learning process identical between knowledgeable and uncertain consumers. However, the main results do not change qualitatively.

[9] An integrated model of brand-preference learning and price learning would allow the two searches to be aborted midway based on whatever is learned up to that point (Wolinsky 1986, Anderson and Renault 1999). For instance, after examining a brand in a store, a consumer may discover that (a) she has a high reservation price for it, and (b) it is priced low. She may then be tempted to take the "bird in hand" and forgo the opportunity to learn about her reservation price for the other brand or its price. To assess the costs and benefits of doing so, the consumer must have priors on her reservation price for the other brand. Our maintained assumption amounts to saying that those priors are sufficiently optimistic that complete learning of brand preferences is always warranted.

[10] If two-part tariffs were practicable—they generally are not (Iyer and Villas-Boas 2003)—then even a bilateral monopoly would operate efficiently (Moorthy 1987), and there would be no point in treating pure vertical integration as the status quo. A single multibrand store would be optimal—even in the absence of uncertain consumers; see Proposition 1.

[11] This pricing strategy is often referred to as "shielding" the private-label brand (Quelch and Harding 1996, p. 100).

[12] Throughout the paper, superscripts refer to the cases, small letter subscripts identify consumer type (e.g., uncertain consumers), and capital-letter subscripts identify the firms.

[13] This expression makes clear why going through competitors' outlets exclusively, without own outlets, is dominated by the hybrid strategy. The first term becomes $(1-\gamma)\delta_d H_d \pi_m/2$, the second term disappears, and the third term becomes $(\lambda/2)(1-\gamma)\delta_d H_u^2 \pi_m$. Figure 2(b) disappears and in Figure 2(a) all brand-B loyalists buy brand B at store A. Finally, the number of uncertain consumers shopping is smaller whenever $t_d/t_m < (1-\gamma)/(3-\gamma)$.

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[14] To see this, note first that as $\gamma \to 1$, $t_u^1 \to \frac{1}{2}t_m$ and $t_u^2 \to \frac{1}{2}(1+\gamma)t_m + \frac{1}{2}(1-\gamma)t_d$ (because the upper condition governs in (12)). Second, as $\gamma \to 1$, $(\frac{1}{2}(1+\gamma))t_m + (\frac{1}{2}(1-\gamma))t_d \to t_m$.

[15] This may explain the growing success of nearly-100% private-label grocery stores such as Aldi and Trader Joe's. Their success coincides with the decreasing brand loyalty of consumers in the low-involvement categories grocery stores typically carry.

[16] To see this, note that for $\delta_d \approx 1$, $t_d \approx t_m$ (per Lemma 1), hence $t_u^2 = \frac{1}{2}t_m(1+\gamma) + \frac{1}{2}t_d(1-\gamma) \approx t_m$, $t_i \approx 0$, and $H_u^1/(\delta_d H_u^2 + (1-\delta_d)H_i) \approx H_u^1/H_m < 1$.

[17] Examples of both effects are seen in the results reported by Athey and Mobius (2012) based on their study of browsing behavior on the news aggregator site Google News.

[18] This argument also shows that if two-part tariffs were practicable, then the optimal channel structure would degenerate to a *single* multibrand store, either A or B; both manufacturers would willingly abandon their own stores in favor of going through their competitor's store. The reason is, two-part tariffs enable $w = 0$ in the competitor channel, which results in $p_d = p_m$, $t_d = t_m$, and $t_u^2 = t_m$—making the uncertain shopper market the largest it can be. Moreover, half of the uncertain switchers buy the competitor's brand in the multibrand store. Each manufacturer gets half of the channel profits, just as in

Case 1, but the channel profits are larger with the expansion of the uncertain consumer market.

[19] As Manjoo (2015) notes, "The modern Microsoft breaks all these rules: its Surface devices compete with PCs made by other Windows hardware makers. Its non-Windows applications, like the iOS version of Office, *improve* the Apple devices that compete with Microsoft and its Windows hardware makers." (Emphasis added.)

[20] In previous versions of this paper we assumed that a single store visit was enough to learn brand preferences. Then, in Case 1 of the asymmetric model, it was optimal to visit the stronger store first. However, despite this difference, the subsequent results remained substantially the same.

[21] To see this, note that $t_m/(1+\beta'(1-\gamma)) > t_m/(2+\alpha'(1-\gamma)) = t_u^{1a}$ always. For $t_d/t_m < \beta'(1-\gamma)/(1+\beta'(1-\gamma))$, therefore, the statement is true. For $t_d/t_m \geq \beta'(1-\gamma)/(1+\beta'(1-\gamma))$, also, since $t_u^{2a} = (\alpha'(1-\gamma)+\gamma)t_m + \beta'(1-\gamma)t_d \geq t_m/(1+\beta'(1-\gamma))$, the statement is true.

[22] Of course, double marginalization could be eliminated with two-part tariffs (Moorthy 1987). However, that would make the case for competitor-outlet distribution overwhelming. As we noted in endnote 18 it would then be a dominant strategy for both manufacturers to distribute through a single multibrand store.

[23] If p is the lower price shown to these switchers, the fraction lured back is some portion of $\lambda\gamma H(p_m - p)$, yielding additional revenues proportional to $pD(p)H(p_m - p)$. The derivative of this with respect to p at p_m is exactly zero.

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