Market Share Discounts

David E. Mills[1]
Department of Economics
P.O. Box 400182
University of Virginia
Charlottesville, VA 22904-4182
434.924.3061 (phone)
434.924.7659 (fax)
mills@virginia.edu

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Abstract

Market share discounts occur in the distribution sector when a manufacturer offers lower prices to retailers whose sales of the manufacturer's brand exceed a given share of the retailers' sales of all brands of the good in question. In some instances, a multi-level schedule of increasing discounts is offered for increasing market share thresholds. When the manufacturer has significant market power, market share discounts invite antitrust scrutiny out of concern that they may foreclose the manufacturer's competitors. However, market share discounts may increase the efficiency of distribution and improve market performance. This paper uses a model of a vertical structure with a vertically differentiated brand to show that by inducing retailers to provide brand-specific merchandising services, market share discounts improve the performance of the vertical structure as a whole. The implication for economic policy is that market share discounts often do not warrant antitrust intervention even when they involve an exercise of market power.

I. Introduction

The terms of sale between manufacturers and their distributors often involve more than linear prices. Manufacturers frequently pay rebates, slotting fees, and promotional allowances to distributors or retailers. These payments may be conditioned on some aspect of retailer performance. When the manufacturer or retailer has significant market power, the terms of sale can invite antitrust scrutiny. The antitrust issues raised by payments from manufacturers to retailers are the same as those associated with non-price vertical restraints. There is, on one hand, concern that an arrangement might facilitate collusion by horizontal rivals upstream or downstream, or might foreclose competitors or entrants at either level. On the other hand, an arrangement might increase the efficiency of distribution and improve market performance.[2]

One practice that has drawn antitrust scrutiny in recent years, and that illustrates the tension between anticompetitive and procompetitive effects, is manufacturers paying slotting fees or allowances to retailers. These are fixed payments that are made when retailers stock a new product. In some cases, slotting allowances have morphed into "pay-to-stay fees" as manufacturers make ongoing payments.

The effect of slotting fees on competition is in dispute. Some argue that slotting allowances injure competition by facilitating tacit collusion among retailers to raise prices (G. Shaffer), or by foreclosing the manufacturer's small rivals by raising the cost of getting their goods into distribution (P. N. Bloom, G. T. Gundlach, and J. P. Cannon). Others maintain that slotting payments are an efficient mechanism for sharing risks inherent in the introduction of new products (K. Kelly), and for rationing scarce retail shelf space to new products (M.W. Sullivan). After conducting a "Workshop on Slotting Allowances and Other Marketing Practices in the Grocery Industry" in 2001, the Federal Trade Commission staff concluded that slotting allowances "need to be judged on a case-

[2] L.G. Telser first introduced the idea that contractual arrangements between a manufacturer and its retailers could remedy problems that prevent the efficient distribution of goods. His analysis involved pre-sale services that retailers provide to help consumers make well-informed decisions. These services are valuable to the manufacturer because they increase the demand for its goods. However, providing these services entails costs for the retailers that must be shifted upstream to the manufacturer. Telser demonstrated that the manufacturer could overcome free riding by retailers and induce valuable pre-sale services by means of vertical restraints. B. Klein and K.M. Murphy showed that vertical restraints can be imposed to make retailers comply generally with incomplete performance contracts to secure promotional services.

by-case basis, with attention both to likely competitive harms and to likely procompetitive benefits" (Federal Trade Commission, 2001, p. 7).

Other manufacturer pricing practices that come under the slotting fee rubric offer retailers off-invoice discounts and rebates in exchange for specific merchandising or promotional services that boost sales of the manufacturer's products. Examples of such services are prominently displaying the manufacturer's brands in the retailer's stores, participating in the manufacturer's promotional programs, or featuring the manufacturer's brands in sales calls. These programs also invite antitrust scrutiny.

Several prominent antitrust cases have been brought against leading-brand manufacturers who offer discounts to retailers in exchange for promotional services. The central issue in these cases is whether the manufacturer's performance-based discounts are exclusionary or beneficial to competition.

With a market share of nearly 90 percent, McCormick & Company is the leading supplier of spices and seasonings in the U.S. Several years ago, the Federal Trade Commission charged McCormick with unlawful price discrimination under the Robinson-Patman Act.[3] Among the practices challenged was McCormick's requirement that retail stores allot McCormick a large fraction of their shelf space devoted to spices in order to qualify for certain discounts. The Commission concluded that McCormick's pricing practices, in conjunction with its dominant market share, injured secondary-line (e.g., retail) competition (Federal Trade Commission, 2000). McCormick settled the case via a consent agreement and revised its pricing practices accordingly.

With a market share of approximately 50 percent, Philip Morris Inc. is the leading manufacturer of cigarettes in the U.S. In 1999, the company's major competitors filed lawsuits alleging that Philip Morris' "Retail Leaders" merchandising program foreclosed the firms' products from retail distribution. The disputed component of "Retail Leaders" was a system of discounts for devoting prescribed amounts of shelf and signage space to Philip Morris' cigarette brands, primarily Marlboro, the leading national brand. The trial court granted summary judgement to Philip Morris, reasoning that the company lacked

[3] United States of America, before Federal Trade Commission, In the Matter of McCormick & Company, Inc., Docket No. C-3939.

the market power necessary to injure competition, and that its merchandising program did not foreclose the company's rivals.[4]

3M makes Scotch brand tape and accounts for about 90 percent of transparent tape sales in the U.S. LePage's Inc., a manufacturer of private label tape and 3M's main competitor, brought a lawsuit against 3M claiming that 3M's pricing practices were exclusionary.[5] The most controversial feature of 3M's pricing was that its rebates to retailers were "bundled." The rebate a retailer received for each 3M product it sold was linked to how many of 3M products the firm carried, and its sales performance for all of the products.[6] The trial court concluded that 3M's rebates were an abuse of the firm's market power and tended to foreclose rivals who sold a less diverse group of products.[7]

The economic effects of performance-based pricing depend on both the details of those practices and the market context in which they arise. This paper examines a specific manufacturer pricing practice that has received scant attention in the economics literature. "Market share discounts" are discounts that a manufacturer offers its distributors or retailers if their sales of the manufacturer's brand comprise a sufficiently high percentage of their total sales of a given class of goods. Retailers who meet the designated market share threshold qualify for the discount, and others do not. The manufacturer may designate multiple thresholds that enable retailers to qualify for successively deeper discounts.

For example, pharmaceutical manufacturers offer discounts on certain prescription drugs to hospitals and managed care organizations that have the ability to influence the prescribing pattern of physicians (K.G. Elzinga and D.E. Mills). In some cases these discounts depend on a specific drug's fraction of the customer's total usage of

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[4] On appeal, the court's summary judgment decision was upheld. *R.J. Reynolds Tobacco Co. v. Philip Morris Inc.* 67 Fed. Appx. 810 (4th Cir. 2003). In an empirical investigation of Philip Morris' merchandising program during the late 1990s, P. Bronsteen, K. G. Elzinga, and D. E. Mills report that merchandising payments to cigarette retailers did not increase retail cigarette prices.

[5] *LePage's Inc. v. 3M*

[6] The antitrust implications of multiproduct sellers' use of "bundled discounts" are examined in P. Greenlee, D. Reitman, and D. S. Sibley, and in B. Nalebuff.

[7] In *LePage's Inc. v. 3M*, 324 F.3d 141 (3d Cir. 2002), the (*en banc*) Third Circuit Court of Appeals held that 3M's bundled rebates and exclusive dealing requirements were acts of illegal monopolization under Section 2 of the Sherman Act. The U.S. Supreme Court refused to overturn the decision, *cert. denied, 124 S. Ct. 2932 (2004)*.

drugs in the relevant therapeutic class.[8] Philip Morris's pricing of cigarettes to its wholesale distributors features discounts that depend on "what proportion of sales involve the company's brands."[9]

Like other kinds of performance-based discounts, market share discounts have encountered antitrust scrutiny. Market share discounts were the focus of the complaint a group of recreational boat builders lodged against Brunswick Corporation, the leading manufacturer of inboard and stern-drive marine engines. During the period of the dispute, Brunswick's share of sales of inboard and stern-drive marine engines in the U.S. varied from 50 to 75 percent. Brunswick's pricing involved a list price with discounts offered depending on how many Brunswick engines a builder bought. A builder of any size who committed (for one year) to purchase 60 percent of its marine engines from Brunswick qualified for a one percent discount. The discount increased to two percent for commitments to achieve 70 percent and to three percent for commitments to achieve 80 percent.

The boat manufacturers complained that Brunswick's pricing was a device used to foreclose competitors, monopolize sales of marine engines, and raise prices. Brunswick countered that its market share discounts were incentives to spur builders' efforts to build, promote, and sell recreational boats powered by Brunswick engines. A trial court ruled that Brunswick's pricing amounted to *de facto* exclusive dealing, and foreclosed rival suppliers of marine engines from the market. On appeal, that ruling was reversed on grounds that market conditions were not conducive to foreclosure.[10]

This paper investigates the effects of market share discounts in the distribution sector using a model of a vertical structure that admits plausible opportunities both to exclude rivals and to increase the efficiency of distribution by inducing downstream

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[8] Retail drug stores challenged these discounts in *Brand Name Prescription Drugs Antitrust Litigation*, MDL No. 997, U.S.D.C. for N.D. of IL, Eastern Div.

[9] N. Buckley, "Wholesalers Sue Philip Morris," Financial Times, viewed at FT.com on July 6, 2003. This practice was challenged in a Robinson-Patman/Sherman Act lawsuit brought by several wholesalers, but was dismissed on Philip Morris' motion for summary judgement because the company's market share discounts were functionally available to all distributors. *Smith Wholesale Company, Inc., et al. v. Philip Morris USA INC., U.S. district Court for the Eastern District of Tennessee, No. 2:03 –CV – 221.*

[10] *Concord Boat Corp. v. Brunswick Corp.* 207 F. 3d 1039 (8th Cir. 2000). A similar result occurred in *American Tara Corporation v. International Paper Company,* No. 79C1470, 1981 WL 375752 (N.D. Ill. July 30, 1981). International Paper offered its customers a 2.5 percent rebate on purchases of carbonizing tissue if customers purchased at least 25 percent of their tissue requirements from International Paper. Larger rebates were offered for even greater percentages.

services.[11] The model involves the manufacturer of a vertically differentiated product. The manufacturer has market power to the extent that some consumers prefer the manufacturer's brand to others. Two versions of the model are examined. In the first version, the manufacturer distributes its brand through perfectly competitive retailers; in the second version, the retailers have market power. In both versions of the model, the manufacturer's pricing features market share discounts that serve to induce unspecified and hard-to-monitor *merchandising* activity on the part of retailers. Merchandising is valuable to the manufacturer where it provides information about the firm's brand to a subset of consumers for whom that information is valuable. Unlike quantity discounts, market share discounts are as accessible to small retailers as to large retailers. The analysis shows that while market share discounts boost sales of the manufacturer's brand, rival brands are not excluded from the market. Further, prohibiting the manufacturer's use of market share discounts would diminish market performance.

II. Distribution by Competitive Retailers

A. Homogeneous Goods

Consider a homogeneous consumer good produced by perfectly competitive manufacturers and sold to consumers through a common network of perfectly competitive retailers. Assume that the cost of producing each unit of the good is constant and equal for all manufacturers. To simplify matters, let this cost be zero. Assume further that retailer's variable cost of handling and reselling a unit of the good is constant and zero.[12]

A representative consumer's utility is $\theta - p_0$, where θ is a consumer-specific taste parameter and p_0 is the retailer's price. Assume that consumers comprise a continuum with values of θ uniformly distributed on $[0, 1]$. Consumers buy a single unit of the good if the retailer's price is less than the consumer's reservation price θ. Otherwise, the

[11] The analysis that follows applies to some intermediate product markets as well. The sale of inboard and stern-drive marine engines to recreational boat manufacturers is an example.

[12] Given that manufacturer's costs are constant and equal, there is no loss of generality from the assumption that those costs are zero. The same holds for retailers. The value of prices and quantities in all of the equilibria described in the paper would be only superficially different if these assumptions were relaxed.

consumer buys nothing and receives zero utility. Normalizing the number of consumers to one, these assumptions imply that the inverse demand for the good is

$$r_0(q) = 1 - q \tag{1}$$

where q is the total number of units sold.

Suppose retailers cannot observe consumers' taste parameters and cannot price discriminate among consumers. Each retailer sets a single price for the good, and consumers, who observe every retailer's price, shop for the good at the retailer with the lowest price. If two or more retailers have the lowest price, consumers choose among these retailers at random.

In equilibrium, with competition among manufacturers and retailers, all manufacturers sell the good for a wholesale price of zero and all retailers resell it for a retail price of zero. At this retail price, equation (1) indicates that one unit of the good is sold. No firm in the distribution chain makes a profit, and consumers' surplus is maximized.

B. A Differentiated Brand

Now suppose there is a single manufacturer M whose brand is differentiated from others in ways that some, but not all, consumers value. Let M's cost of differentiating its brand be fixed. This cost must be incurred regardless of how many retailers carry the firm's brand and regardless of how much is sold. Assume that consumers are not aware of the difference between M's brand and other brands at the outset, and do not become aware unless retailers *merchandise* the brand to inform consumers of brand M's special characteristics.[13] Retail merchandising involves in-store activities that convey potentially useful information to consumers. Exposure to the retailer's merchandising has no effect on some consumers, but it increases other consumers' reservation prices for brand M.

Let the number of consumers who are susceptible to retailer merchandising be ϕ, where $0 < \phi < 1$. The remaining $1 - \phi$ consumers are not susceptible. Both groups of consumers have values of θ uniformly distributed on $[0, 1]$. Let the reservation price for

[13] This assumes that firm M has no way to inform consumers without invoking retail merchandising. In the alternative, we might assume that whatever measures firm M could use to inform consumers directly are more costly than invoking retail merchandising as in the equilibrium described here.

brand M for susceptible consumers who encounter merchandising increase from θ to $\beta\theta$, where $\beta > 1$.

To see how prices and quantities are determined in this environment, we begin with the consumer's choice of where to shop. Consumers must choose a retailer before they become aware, if ever, that firm M's product is differentiated. This means consumers will shop for the good at the retailer with the lowest price of the undifferentiated good, since they do not know that M's brand is differentiated. As before, if two or more retailers have the lowest price for the undifferentiated good, consumers choose retailers at random. Competition among manufacturers of the undifferentiated brands drives their wholesale price to zero, and competition among retailers to attract consumers drives the retail price of the those brands to zero as well.

If a retailer does not merchandise brand M, then consumers do not distinguish it from other brands. In this instance, the only way the retailer could sell any units of brand M would be to charge the same price as the other brands. However, if the retailer merchandises brand M, then positive brand M sales become possible at a premium price.

The random process that assigns susceptible and non-susceptible consumers to retailers, when every retailer's price of the undifferentiated brands is zero, generally does not assign the same number of consumers to every retailer. But we assume that each retailer is assigned the same fraction of both kinds of consumers in the market.

Consider a retailer that serves some fraction h of both susceptible and non-susceptible consumers. The cost to the retailer of merchandising the premium brand is $h\tau$, an amount that is in proportion to the retailer's "size" h. Merchandising induces the retailer's susceptible consumers to increase their reservation prices for brand M. Whether merchandising increases the firms' joint profits depends on the parameters ϕ, β, and τ. To exclude cases where the merchandising option does not increase the firms' joint profits, assume that:

$$\tau < \phi(\beta - 1)/4 \qquad (A1)$$

The retailer's brand M unit sales q_M depend on the retail price of that brand p_M, as detailed below. To attract consumers, the retailer's price for units of the undifferentiated brands must be $p_0 = 0$. This price for the undifferentiated brands means that consumers

who do not buy a unit of brand M buy a unit of an undifferentiated brand. Thus, unit sales of the undifferentiated brands are $q_0 = h - q_M$.

Were it not for the brand M option, the inverse demand for undifferentiated brands on the part of the retailer's ϕh susceptible consumers would be

$$r_0(q_0) = 1 - q_0/\phi h, \text{ for } 0 < q_0 < \phi h \tag{2}$$

Similarly, were it not for the undifferentiated brand option, the inverse demand for brand M on the part of these same susceptible consumers would be

$$r_M(q_M) = \beta - \beta q_M/\phi h, \text{ for } 0 < q_M < \phi h \tag{3}$$

To derive the retailer's actual demand for M's brand from expressions (2) and (3), we must solve

$$r_M(q_M) - p_M = r_0(q_M) \tag{4}$$

to identify how many susceptible consumers choose brand M over an undifferentiated brand as a function of p_M. Substituting equation (2) for r_0 and equation (3) for r_M into equation (4), and inverting, yields:

$$f(p_M) = \phi h[1 - p_M/(\beta - 1)], \text{ for } 0 < p_M < \beta - 1 \tag{5}$$
$$= 0, \text{ for } p_M \geq \beta - 1$$

This expression for the retailer's demand for brand M, together with the fact that $q_0 = h - q_M$, indicates that a small change in p_M only shifts sales between brand M and the undifferentiated brands. The retailer's total sales are unaffected by the change in p_M.

C. Performance-Based Discounts

The retailer in question is in a strategically weak position in its contractual relationship with firm M because the retail sector is competitive and firm M has market power. Suppose the game that depicts the contractual relationship between the firms is the following. First, firm M names the terms under which the retailer may purchase its brand. Next, after those terms are set, the retailer chooses whether to carry brand M and incur the cost of merchandising it. If the retailer decides to carry the brand, it chooses how many units to purchase and sets its retail price accordingly. The level of joint profits achieved in this game, and their division between the firms, depends on the terms the manufacturer offers the retailer.

The manufacturer can maximize joint profits and capture all of them by offering the retailer terms that incorporate a performance-based discount. To see this, notice that joint profits would be maximized if the retailer's price and unit sales were

$$p_M = (\beta - 1)/2 \text{ and } q_M = \phi h/2 \quad (6)$$

If this retail price could be imposed on the retailer, the manufacturer would extract all of these profits by setting its wholesale price at:

$$w_M = (\beta - 1)/2 - 2\tau/\phi \quad (7)$$

This wholesale price would permit the retailer to break even after it spends $h\tau$ merchandising the brand if the firm sets its retail price at the level in equation (6).

Firm *M* can use a market share discount to induce the retailer to charge the target retail price. Define $\hat{w}_M$ to be some wholesale price so high that the retailer could not recoup its merchandising investment $h\tau$ by charging any retail price. This wholesale price is greater than the wholesale price in equation (7) since the latter price would allow the retailer to break even.

Now suppose firm *M* offers the retailer the option of purchasing brand *M* unconditionally for the wholesale price $\hat{w}_M$ or for the discounted wholesale price in equation (7) if the retailer's unit sales of brand *M* are a fraction of at least $\phi/2$ of its total sales of the good. (To insure compliance, the discount could be offered in the form of a rebate, payable after unit sales are observed.) The retailer's best response to this offer would be to incur the cost of merchandising and set its retail price at the level in equation (6).[14] This response meets the manufacturer's market share requirement since the retailer sells $\phi h/2$ units of brand *M* and *h* units of the good in total. The retailer's profits from this transaction are zero and firm *M*'s profits are the maximum available:

$$\pi_M = \phi h(\beta - 1)/4 - h\tau \quad (8)$$

If firm *M* implements the optimal market share discount, the retailer sells $q_M = \phi h/2$ units of the firm's brand. These sales are to that half of the retailer's susceptible consumers who have the highest values of θ. The remaining susceptible consumers, and all the retailer's consumers who are not susceptible to merchandising, purchase an undifferentiated brand. Although the retailer's brand *M* unit sales are fewer

[14] We assume throughout the analysis that a retailer chooses to merchandise and sell brand *M* as long as this is *no less profitable* than only selling undifferentiated brands.

than the efficient number $q_M = \phi h$, the units that are sold are distributed efficiently among the firm's consumers. No reallocation of those goods among the retailer's consumers could increase total welfare.[15]

Offering the retailer a market share discount is not the only way firm *M* could attain the result just described. The manufacturer instead could offer the same discount on the condition that the retailer charge a retail price of no more than $p_M = (\beta - 1)/2$. This "maximum" resale price maintenance (RPM) requirement[16] would induce the same response by the retailer as the market share requirement. The same holds for a minimum purchase requirement of $q_M = \phi h/2$ units of brand *M* in order to qualify for the discount.

Although firm *M* could offer separate terms to every retailer, this is not necessary for the firm to maximize its profits. Firm *M* could reach this goal by offering the same contractual terms to all of its retail distributors. This is because the firm's optimal wholesale and retail prices, and its optimal market share, are independent of retailers' size *h,* which is the only characteristic that distinguishes the retailers. Regardless whether firm *M*'s contractual terms have a market share requirement or a maximum RPM requirement, every retailer would be induced by a wholesale price discount to merchandise and sell brand *M* so that firm *M*'s profits are maximized. In the case of a minimum purchase requirement, however, no single offer to all retailers would maximize firm *M*'s profits. This is because the optimal minimum purchase requirement is different for retailers of different size *h.*

D. Heterogeneous Retailers

The fact that market share discounts and maximum RPM are equally effective instruments for firm *M* in the previous analysis is due to the assumption that all retailers are equally skilled at merchandising the differentiated brand. Suppose instead that firm

[15] The exercise of market power does not always lead to an efficient distribution of the goods actually purchased. For instance, third degree price discrimination denies goods to some consumers whose willingness to pay is greater than the willingness to pay of other consumers who buy the product at a low price.

[16] Antitrust is more permissive toward *maximum* resale price maintenance, where a manufacturer imposes a retail price ceiling, than toward *minimum* resale price maintenance, where the firm imposes a retail price floor. See *State Oil Co. v. Kahn,* 118 S. Ct. 275, 282 (1997).

M distributes its product through a network of *heterogeneous* retailers – some who have more skill in merchandising the brand than others.

Suppose there are two types of retailers. Let the number of consumers who are susceptible to the merchandising effort of any retailer be ϕ_1. In addition, suppose there are $\phi_2 - \phi_1$ consumers who are susceptible to merchandising by type-2 retailers but not type-1. The remaining $1 - \phi_2$ consumers are not susceptible to any retailers' merchandising. Retailers' types are uncorrelated with their sizes *h*. Retailers know their own type, but firm *M* cannot distinguish retailers of one type from the other when contracting with them. A type-1 retailer of size *h* can spend $h\tau_1$ to merchandise brand *M* and induce a preference for brand *M* in $\phi_1 h$ of its consumers. A type-2 retailer can do the same, but it also can spend $h\tau_2$ to merchandise brand *M* and induce a preference for brand *M* in $\phi_2 h$ of its consumers, where

$$\phi_2 > \phi_1 > 0 \qquad (A2)$$

$$\tau_1/\phi_1 < \tau_2/\phi_2 \qquad (A3)$$

$$\tau_1 < \phi_1(\beta - 1)/4 \qquad (A4)$$

$$(\tau_2 - \tau_1) < (\phi_2 - \phi_1)(\beta - 1)/4 \qquad (A5)$$

$$(\tau_2 - \tau_1) > (\phi_1/\phi_2)(\phi_2 - \phi_1)(\beta - 1)/4 \qquad (A6)$$

Assumptions *(A2)* and *(A3)* indicate that "type-2" merchandising activity is both more costly and more effective than "type-1," but that costs increase more than in proportion to the effectiveness of merchandising in inducing a preference for brand *M*. Loosely, this means that while better performance costs more, there are diminishing returns to investing in merchandising services. Assumptions *(A4)* and *(A5)* restrict the analysis to parameter values where type-1 merchandising increases joint profits and type-2 merchandising increases joint profits even more. Assumption *(A6)* is an incentive compatibility constraint that makes it possible for firm *M* to separate retailers by type using second-degree price discrimination. The consequence of dropping this assumption will be explored momentarily.

Under these conditions, firm *M* can maximize and extract all of the profits in the market by offering retailers a menu of *escalating* market share discounts. Retailers may qualify for successively larger discounts by achieving successively larger brand *M* market

shares.[17] Specifically, suppose firm *M* offers retailers the following menu of pricing options, where $\hat{w}_M$ is now a wholesale price so high that *no* retailer could recoup its merchandising investment by charging any retail price.

Option 0: pay $\hat{w}_M$ with no strings attached.

Option 1: pay $w_1 = (\beta - 1)/2 - 2\tau_1/\phi_1$ if the retailer's brand M share of sales is at least $\phi_1/2$.

Option 2: pay $w_2 = (\beta - 1)/2 - 2\tau_2/\phi_2$ if the retailer's brand M share of sales is at least $\phi_2/2$.

Assumption *(A3)* implies that $w_2 < w_1$. Reaching the lower market-share threshold $\phi_1/2$ earns the retailer a wholesale price discount of $\hat{w}_M - w_1$, while reaching the higher market-share threshold $\phi_2/2$ earns a greater discount of $\hat{w}_M - w_2$.

As seen in the following proposition, firm *M* can exploit the heterogeneous merchandising abilities of its retailers, induce efficient merchandising, and extract all of the available profit in the market by using multi-level market share discounts.

Proposition 1: Assume there are two retailer types distinguished by their merchandising ability as in assumptions (A2) – (A6), where retailers' sizes h and types are uncorrelated. Firm M can maximize and capture all of the profits in the market by offering retailers Options 0 – 2. Faced with this offer, a type-1 retailer of size h chooses Option 1, spends $h\tau_1$ merchandising brand M, and achieves a brand M market share of $\phi_1/2$. A type-2 retailer of size h chooses Option 2, spends $h\tau_2$ merchandising brand M, and achieves a brand M market share of $\phi_2/2$. Every retailer sets its retail price of brand M at $p_M = (\beta - 1)/2$. A type-i retailer of size h sells $q_M = h\phi_i/2$ units of brand M and $q_0 = h - h\phi_i/2$ units of the undifferentiated brands.

The outcome depicted in this proposition resembles the previous outcome with homogeneous retailers in several ways. As before, firm *M* maximizes and extracts

[17] We assume that a type-2 retailer chooses type-2 merchandising as long as this is *no less profitable* than choosing type-1 merchandising.

maximum profits and every retailer sells brand *M* to only half of its susceptible consumers - those with the highest values of θ. The remaining brand-*M*-preferring consumers and all of the consumers who are immune to merchandising buy undifferentiated brands. Just as with homogeneous retailers, no reallocation of the goods sold could increase total welfare.

If assumption *(A6)* does not hold, and all else remains the same, firm *M* cannot use a market share discount to maximize and extract the entire joint profits that are latent in this set-up. This is because *Options 0 – 2* would invite type-2 retailers to choose *Option 1* instead of *Option 2.* Depending on particulars, such as the proportion of retailers that are type-1, the manufacturer's most profitable strategy may be to offer terms that induce merchandising by all retailers. But these terms would not allow the manufacturer to maximize or fully extract profits from type-2 retailers. The other possible outcome would be for the manufacturer to offer terms that forfeit distribution by type-1 retailers and only induce merchandising by type-2 retailers. These terms would allow the manufacturer to maximize and extract profits from type-2 retailers.[18]

Since *Options 0 – 2* do not depend on retailers' sizes *h*, the manufacturer could attain the outcome in *Proposition 1* throughout the market by offering this menu of pricing options to all of its retail distributors. The retail price of brand *M* with this outcome is the same for all retailers and depends on the value of β, which reflects the effectiveness of merchandising, and on retailers' costs of merchandising τ_1 and τ_2. Retailers' unit sales of brand *M* depend on their size *h* and on the values of ϕ_1 and ϕ_2, which reflect their merchandising skills. Firm *M*'s profits depend on the values of all of these parameters.

Unlike the homogeneous retailer case, firm *M* could not replicate the *Proposition 1* outcome with heterogeneous retailers by using maximum RPM in the place of market share discounts. With market share discounts, firm *M* induces a different but efficient response from of retailers by offering pricing options that separate retailers by type. A maximum RPM requirement cannot embrace options tailored to specific types because the target retail price in equation (6) is the same for all retailers. Making both discounts

[18] The issues firm *M* faces in this situation are much like those in J. Tirole's analysis of a monopolist designing a fully nonlinear tariff to maximally exploit heterogeneous buyers.

contingent on the same performance would not allow the manufacturer to separate retailers by types. This would prevent the manufacturer from creating and extracting as much profit with maximum RPM as with market share discounts.

Of course it is possible that firm *M* could reach its goal with other kinds of performance-based discounts. For instance, the firm could require retailers to perform specific merchandising activities at their own expense in order to qualify for the discounted prices w_1 and w_2. However, constructing and enforcing such requirements could be problematic. To construct effective merchandising requirements, firm *M* would have to specify in detail what kind of activities retailers must perform to qualify for each of the discounted prices. And since retailers would have a strong incentive to shirk, firm *M* would also have to monitor retailers' performance to assure compliance. This kind of monitoring could be costly. In the extreme, it could cost more than it is worth to the manufacturer.

Monitoring retailers' market shares arguably is less onerous than monitoring their multifaceted and idiosyncratic merchandising activities, and may be less costly. For instance, firm *M* could audit retailers' in-house accounts or, in many cases, use scanner data to monitor market shares. It would not be necessary for the manufacturer to keep a close eye on how retailers attain the required market shares.

Although firm *M's* market share discounts increase the firm's unit sales and profits, these discounts do not require exclusivity. It is not in firm *M's* interest to foreclose the undifferentiated brands from distribution since joint profits are maximized when half of the consumers who prefer brand *M* purchase undifferentiated brands. Firm *M* can not extract as much profit from the market with exclusive distribution, which antitrust would likely preclude in any case, than with those discounts in *Proposition 1.*

All of this suggests that an antitrust prohibition of market share discounts in a setting with heterogeneous distributors could impair market performance. If firm *M* were constrained to offer all retailers the same wholesale price, with no strings attached, that price would be positive (that is, above the manufacturer's cost) and would bring on a retail price greater than in *Proposition 1.* Some consumers would be worse off, and joint profits would be uniformly less than in *Proposition 1.*[19]

[19] Some retailers, however, could retain part of those profits.

From an antitrust perspective, a compelling feature of market share discounts is that the criterion for getting discounts is independent of the retailer's size. With a quantity discount, the criterion for qualifying would be purchasing more than a specified quantity of the brand *M*.[20] If retailers are not all the same size, as is true generally, using quantity thresholds to trigger discounts could not achieve a result as efficient as in *Proposition 1*. Quantity discounts could only achieve efficient merchandising if quantity thresholds were made retailer-specific.

Also since it is the retailer's brand *M* market share rather than its volume of brand *M* unit sales that triggers the discount, a market share discount does not favor large retailers over small. Market share discounts would be accessible even to the smallest retailers. This feature lines up with the goal of the Robinson Patman Act that a manufacturer's pricing policies should not put small retailers at a disadvantage in their competition with large retailers.

This model and the result in *Proposition 1* may be generalized to three or more retailer types. However, as the number of types increases, incentive compatibility constraints, like assumption (A6), proliferate rapidly. This makes an equilibrium that separates all the retailer types less plausible as the number of types increases.[21]

While this model permits retailers that serve different numbers of consumers, the assumption that each retailer draws consumers from the same pool means that each retailer has the same fraction of susceptible consumers. This is a strong assumption. If this assumption were dropped, the manufacturer would have to negotiate contractual terms with each retailer separately to replicate the outcome achieved in this section by offering the same contractual terms to all. The most compelling explanations for retailers having heterogeneous consumer populations (i.e., consumers have preferences for

[20] There are many explanations for quantity discounts. One explanation is that there are economies of scale in transactions between buyers and sellers. J.K. Galbraith interpreted quantity discounts in terms of the countervailing power of large buyers who are able to obtain lower prices from sellers. E. Maskin and J. Riley showed that an incompletely informed monopolist might use nonlinear tariffs that incorporate quantity discounts. C.M. Snyder showed that tacit collusion among sellers generates lower prices for large buyers when the timing of buyers' purchases is endogenous. R.K. Tyagi demonstrated that a similar result holds with tacit collusion among buyers of different sizes. M.L. Katz showed that large buyers who credibly threaten to integrate backwards might obtain lower prices from sellers. The antitrust implications of quantity discounts are explored in P. Greenlee and D. Reitman, and in B.H. Kobayashi.

[21] None of the specific examples of manufacturers using market share discounts mentioned in section I involve more than three price levels for different market share ranges.

specific retailers) involve elements of retailer market power. The next section takes up the case where firm *M* distributes its brand via retailers with market power.

III. Distribution by Retailers with Market Power

Until now, the only firm in the distribution chain with market power has been the manufacturer of differentiated brand *M*. The retailers that distribute the manufacturer's brand were assumed to be serving the same market. This section investigates distribution chains where retailers have significant market power in their "local" markets. The market power attributed to retailers is due to locational considerations and the influence they have over their customers' purchasing decisions. In the case of grocery stores and mass merchandisers, it is also due to consumers shopping for bundles of goods instead of single items in order to conserve shopping costs. Shopping for bundles reduces consumers' in-store demand elasticities for specific items because, having come to the store, consumers are reluctant to incur the further cost of going elsewhere to find a lower price.[22]

Suppose firm *M* distributes its brand through several or many retailers who are monopolists in their local markets. As before, competition among manufacturers of undifferentiated brands drives the wholesale price of those brands to zero. However, the retail price of those brands p_0 will no longer be zero but positive since retailers have market power.

A. Deriving Demands

Consider a representative retailer that is a monopolist in a market of size h. For simplicity, we retain many of the features of the competitive retailer model. For instance, the retailer's consumers have utility functions just like those in the competitive retailer case. Of the retailer's h consumers, suppose ϕh are susceptible to the firm's merchandising activity on behalf of brand *M,* where $0 < \phi < 1$. The cost of merchandising brand *M* is $h\tau$, and its effect is to increase susceptible consumers' reservation prices by the factor $\beta > 1$. Merchandising has no effect on non-susceptible

[22] Christopher Bliss (1988) identifies this "captive buyer" (p. 383) effect as a contributing factor to retailers' market power in the sale of specific goods.

consumers. Assume *(A1)* holds so that merchandising increases the joint profits available in the market.

The retailer's brand M unit sales q_M and its unit sales of the undifferentiated brands q_0 depend on the firm's retail prices p_M and p_0. Demand functions are derived as follows, beginning with the retailer's susceptible consumers. Were it not for the brand M option, the inverse demand for undifferentiated brands on the part of the retailer's ϕh susceptible consumers would be equation (2). Similarly, were it not for the undifferentiated brand option, the inverse demand for brand M on the part of those consumers would be equation (3).

To derive the susceptible consumer's actual demands for brand M and the undifferentiated brands, consider several possibilities. First, if $p_M < \beta$ and $p_0 \geq p_M/\beta$, then the undifferentiated brands are priced so high in relation to brand M that no consumer would buy any brand but M. On the other hand, if $p_M \geq \beta$ and $p_0 < 1$, then consumers would only buy the undifferentiated brands. If both of the retailer's prices were prohibitively high, $p_M \geq \beta$ and $p_0 \geq 1$, then no consumer would purchase any brand. The relevant case, as established below in *Lemma 1,* involves retail prices with

$$p_M < \beta \text{ and } p_0 < p_M/\beta \tag{9}$$

which generate positive sales of both brands.

Where retail prices satisfy inequalities (9), the quantities demanded by discriminating consumers are found by simultaneously solving:

$$r_M(q_M) - p_M = r_0(q_M) - p_0, \text{ and} \tag{10a}$$

$$r_0(q_M + q_0) - p_0 = 0 \tag{10b}$$

Equation (10a) identifies the margin between choosing brand M and choosing an undifferentiated brand. Equation (10b) identifies the margin between choosing an undifferentiated brand and choosing not to purchase the good. Susceptible consumers with the highest values of θ will buy brand M. Those with lower values of θ will either buy an undifferentiated brand or nothing. Substituting equations (2) and (3) into equations (10a) and (10b), and solving, gives the susceptible consumers' demand functions for prices that satisfy inequalities (9):

$$f_M(p_M, p_0) = \phi h[1 - (p_M - p_0)/(\beta - 1)], \text{ and} \tag{11}$$

$$g_0(p_M, p_0) = \phi h[(p_M - p_0)/(\beta - 1) - p_0], \tag{12}$$

With prices in the indicated range, the retailer's non-susceptible consumers would not buy units of brand *M.* This means equation (11) is the retailer's *total* demand for brand *M.* The inverse demand for undifferentiated brands on the part of non-susceptible consumers is:

$$\acute{r}_0(q_0) = 1 - q_0/[(1-\phi)h], \text{ for } 0 < q_0 < (1-\phi)h \qquad (13)$$

Inverting this equation and combining it with equation (12) gives the retailer's *total* demand for undifferentiated brands:

$$f_0(p_M, p_0) = h[1 - p_0 - \phi + \phi(p_M - p_0)/(\beta - 1)] \qquad (14)$$

for prices that satisfy inequalities (9).

B. A Bargaining Equilibrium

The contractual relationship between firm *M* and the retailer in question is much different here than before where retailers had no market power. The retailer is likely to have a greater voice in determining the terms of sale in the present instance than in a competitive retail market. Firm *M* and the retailer comprise a bilateral monopoly in the retailer's local market. Given the double marginalization problem inherent in this situation, and the firms' strong incentives to negotiate a work around, suppose the firms come to terms via a standard bargaining game with alternating offers.[23]

Assume that both firms have complete information about the parameters $h, \tau, \phi,$ and β. To begin, firm *M* proposes a set of contractual terms (q_M, F) to the retailer, where q_M is the number of units of the brand sold and *F* is the retailer's total payment to *M.* These terms would determine the size and the division of the firms' joint profits. The retailer immediately agrees to accept those terms or else refuses and, at time *2*, counteroffers another set of terms. Firm *M*, in turn, either agrees immediately to accept the retailer's offered terms or else refuses and counteroffers at time *3*, and so on. If an agreement is reached at time *t*, then each firm's profit is discounted by the factor $\delta^t < 1$. For sufficiently "quick" responses, $\delta \rightarrow 1$ and the perfect equilibrium of this game has *M*

[23] If the firms fail to negotiate their way out of this problem, other measures might be used to capture some or most of the profit that would be lost to double marginalization. See D. Mills (1995). The insight that firms might attain the vertically integrated solution in this set up appears in G.F. Matthewson, and R.A. Winter (1987), J. Tirole (1988), B.D. Bernheim and M.D. Whinston (1998), and elsewhere. This assumption is common in a bilateral bargaining framework.

and the retailer immediately agreeing to terms that equally divide the maximum gains from trade between the firms.[24]

The maximum gains from trade in this local market are achieved by setting the retail prices p_M and p_0 at values that maximize the firms' joint profits. The following *lemma* shows that in the joint profit-maximizing outcome, the retailer merchandises brand *M* and sells both goods.

Lemma 1: The joint profit maximizing prices must satisfy inequalities (9).

Where the retailer merchandises brand *M*, the firms' joint profits are:

$$p_M f_M(p_M, p_0) + p_0 f_0(p_M, p_0) - h\tau$$

The prices that maximize this expression are:

$$p_M = \beta/2 \text{ and } p_0 = 1/2, \tag{15}$$

and the numbers of units sold are

$$q_M = \phi h/2 \text{ and } q_0 = (1 - \phi)h/2 \tag{16}$$

The maximized joint profits with these prices are

$$\pi^*_{M+R} = (h/4)(1-\phi+\beta\phi) - h\tau \tag{17}$$

In the event an agreement between *M* and the retailer were not reached, the retailer would not carry premium brand *M*; it would only sell the undifferentiated brands. The retailer's demand function would be

$$\hat{f}_0(p_0) = h(1 - p_0), \text{ for } 0 < p_0 < 1 \tag{18}$$

and its profit-maximizing price would be $p_0 = 1/2$. Charging this price, the retailer's "disagreement" payoff in the game is $h/4$. Firm *M*'s "disagreement" payoff is *0*. Therefore, using equations (17) and (18), the maximum gains from trade for the two firms are

$$\pi^*_{M+R} - h/4 = \phi h(\beta - 1)/4 - h\tau \tag{19}$$

Assumption (A1) implies that these gains from trade are positive.

The perfect equilibrium of the alternating-offer bargaining game between firm *M* and the retailer involves the retailer carrying and merchandising brand *M* and achieving the maximum gains from trade (19). The bargain struck between the firms divides these

[24] A full discussion of equilibria in bargaining games with alternating offers and complete information is found in J. Sutton or in M.J. Osborne and A. Rubinstein. The seminal paper in this vein is A. Rubinstein.

gains equally so that firm *M's* profit is $\phi h(\beta - 1)/8 - h\tau/2$ and the retailer's is $h/4 + \phi h(\beta - 1)/8 - h\tau/2$. The equilibrium contract is depicted in:

> *Proposition 2: Suppose the manufacturer sells its brand in a market with a single retailer of size h whose merchandising costs and effectiveness are given by values of τ, ϕ, and β that satisfy assumption (A1). With complete information and Nash bargaining, the equilibrium contract between the firms has the terms:*
>
> $$q_M = \phi h/2 \text{ and } F = \phi h(\beta - 1)/8 - h\tau/2$$
>
> *Retail prices and unit sales in this equilibrium are those in equations (15) and (16), and joint profits are maximized. Firm M's profits are F and the retailer's are $h/4 + F$.*

Proposition 2 indicates that the equilibrium contract between the firms extracts and divides all of the profit that is latent in their vertical structure (assuming that retailers cannot price discriminate among consumers). The effective wholesale price implicit in this contract is $2F/\phi h$ per unit of brand *M* purchased, or

$$w_M = (\beta - 1)/4 - \tau/\phi \qquad (20)$$

C. *De Facto* Market Share Discounts

Continuing in this vein with other retailers in different local markets, firm *M* negotiates a separate contract like the one in *Proposition 2* with every retailer. The terms of those contracts vary among the retailers depending on firm-specific values of the parameters h, τ, ϕ, and β.

Suppose firm *M* distributes its brand in *T* markets, indexed $i = 1, 2, \ldots T$, where each market is served by a single retailer whose (exogenous) merchandising costs and proficiencies are set in the values τ_i, and ϕ_i. Assume that firms' sizes are uncorrelated with their merchandising parameter values. When retailer i of size h_i spends $h_i\tau_i$ merchandising, this induces a preference for brand *M* in each of the firm's $\phi_i h_i$ susceptible consumers by increasing those consumers' randomly distributed taste parameters from θ to $\beta\theta$ where $\beta > 1$. Assume that :

$$\phi_1 > 0, \text{ and } \phi_i > \phi_{i-1}, \text{ for } i = 2, \ldots T \qquad (A7)$$

$$\tau_1 > 0, \text{ and } \tau_i / \phi_i < \tau_{i-1} / \phi_{i-1}, \text{ for } i = 2, \ldots T \qquad (A8)$$

$$\tau_i < \phi_i(\beta - 1)/4, \text{ for } i = 1, 2, \ldots T \qquad (A9)$$

Assumption *(A7)* orders retailers by their merchandising effectiveness. Higher indexed retailers are able to induce a preference for brand *A* in a greater fraction of their consumers. Assumption *(A8)* indicates that, among the retailers, the cost of merchandising increases more than in proportion to its effectiveness in inducing that preference. Assumption *(A9)* restricts the analysis to parameter values where every retailer's merchandising increases joint profits.

Extending *Proposition 2* and equation (20) to the case at hand means that firm *M* negotiates a contract with each retailer. While the terms of these contracts could be implemented in various ways, the effective wholesale prices latent in these contracts are:

$$w_i = (\beta - 1)/4 - \tau_i/\phi_i, \text{ for } i = 1, 2, \ldots T \qquad (21)$$

In equilibrium, retailer *i* spends $h_i \tau_i$ merchandising, sells $\phi_i h_i /2$ units of brand *M,* and sells $(1 - \phi_i)h_i /2$ units of the undifferentiated brands. Brand *M'* s share of the firm's unit sales is ϕ_i.

Equation (21) shows that the contracts firm *M* works out with its retailers with market power are similar to firm *M's* pricing to competitive retailers in several respects. First, the terms of these contracts are unrelated to a retailer's size. In addition, firm *M* offers lower prices to retailers whose merchandising performance is better as measured by the retailer's brand *M* market share. Just as firm *M* offers competitive retailers a menu of market share discounts, the firm's pricing to retailers with market power *implicitly* incorporates market share discounts. These discounts serve two intertwined purposes: to *induce* merchandising by retailers, and to *divide* the value added by merchandising between the manufacturer and the retailers.[25] Finally, firm *M* does not use market share discounts to achieve exclusivity. This is because joint profits in every market are maximized without foreclosing the undifferentiated brands.

[25] While this model uses Nash bargaining to explain the utility of market share discounts, bargaining models have also been use to explain quantity discounts. T. Chipty, and C.M. Snyder show that scale economies lead to lower prices for large buyers in vertical structures similar to those examined here. R.P. McAfee and M. Schwartz, and H. Horn and A. Wolinsky show that quantity discounts arise in multilateral bargaining between an upstream monopolist and competing downstream customers.

Retailers with market power have brand *M* market shares that are twice as large as competitive retailers of any size conditioned on merchandising skill. Also, retailers with market power create an additional distortion that does not occur with competitive retailers. With competitive retailers, the only source of inefficiency in equilibrium with market share discounts is that half of the consumers who prefer brand *M* buy an undifferentiated brand when aggregate benefits would be greater if all of them bought brand *M*. This distortion reappears when retailers have market power, but another distortion arises. Since retailers with market power set $p_0 > 0$, some consumers do not buy any brand of the good even though aggregate benefits would be greater if they did.[26]

Even so, if antitrust prohibited pricing that incorporates market share discounts in the situation described here, and forced firm *M* to sell its brand to retailers in every local market for the same price, the outcome depicted in *Proposition 2* would be unattainable and market performance would deteriorate.

IV. Market share discounts and exclusive dealing

The Brunswick court's decision compared market share discounts with exclusive dealing arrangements. There is a longstanding debate over the competitive effects of exclusive dealing requirements. While early antitrust case law generally condemned exclusive dealing contracts, there was not a carefully posed economic theory of "how such contracts could be both profitable and pernicious" (E.B. Rasmusen, J.M. Ramseyer, and J.S. Wiley, Jr., p.1137). In reaction to the case law, influential Chicago school authors (e.g., R.H. Bork and R.A. Posner) argued that manufacturers would only impose exclusive dealing requirements in circumstances that assure an improvement in market performance. Their argument was that exclusivity could not be imposed on dealers except on terms that compensate them for profits forgone when they accept the exclusivity requirement. Thus constrained, manufacturers would not impose exclusivity unless those requirements are profitable because they have efficiency effects. The most plausible efficiency effects that have been suggested involve stimulating downstream selling effort.

[26] The distribution of goods produced is efficient as previously with competitive retailers. No reallocation of the goods among consumers could increase welfare in any market.

By giving the dealer a greater stake in the fortunes of the manufacturer, an exclusivity arrangement focuses the dealer's selling effort on the manufacturer's goods. This incentive is widely acknowledged. F.M. Scherer wrote that "for manufacturers, exclusive dealing arrangements are often appealing, because they ensure that their products will be merchandised with maximum energy and enthusiasm" (p. 586).[27] The staff of the Federal Trade Commission recognized that exclusive dealing contracts "may lead retailers to become usefully committed to making a particular product a success in the marketplace, and they may not be harmful to competition as long as other retailers remain available for other manufacturers to use in reaching the market" (2001, p. 6).

In addition to these loyalty-based benefits, H. Marvel argued that a manufacturer might require exclusivity to protect its investment in its dealers. Having devoted unrecoverable resources to making its dealers more productive selling agents, a seller imposes exclusive dealing to keep those dealers from using their increased productivity in the service of competing sellers. Without exclusive dealing, the manufacturer would be less inclined to make those investments and distribution would be less efficient.

Qualifications to these procompetitive arguments arose as several influential articles identified market conditions where a *dominant* seller might profitably use exclusive dealing contracts to foreclose rivals and harm consumers. Among these, P. Aghion and P. Bolton showed that long-term requirements contracts between an incumbent seller and its dealers might diminish market performance by limiting or preventing subsequent entry by rival sellers. Rasmusen, Ramseyer, and Wiley demonstrated that a dominant firm might use exclusive dealing to exploit a coordination problem among dealers and deprive smaller rivals or entrants of economies of scale necessary to survive in the market. B.D. Bernheim and M.D. Whinston showed that exclusive dealing contracts might prevent the most efficient configuration of vertical relationships among suppliers and dealers by serving "as a device for extracting rents from markets other than the ones in which they are employed" (p. 67). A common thread in these articles is that, by imposing exclusivity, a dominant seller raises its rivals' costs by denying them sufficient sales to reach the minimum efficient size.

[27] H. Hovenkamp (1998) explains that a firm "selling under an exclusive dealing contract can expect a measure of dealer loyalty that would not obtain under any arrangement permitting the dealer to carry two or more brands . . ." (p. 124-5).

The various theories of exclusive dealing arrangements, and their disparate implications for market performance, provide the economic basis for applying a rule of reason analysis to exclusive dealing, as courts have done since the U.S. Supreme Court's 1977 *Sylvania* decision.[28] Emphasizing the similarity of market share discounts and exclusive dealing, W.K. Tom, D.A. Balto and N.W. Averitt argue that the same principles applied in a rule of reason analysis of exclusive dealing should be used to assess the competitive effects of market share discounts. They reason that when market share discounts lead to near-exclusivity, they can harm competition just as much as exclusive dealing requirements.

The analysis in this paper identifies significant procompetitive effects of market share discounts. It suggests that market share discounts may be procompetitive even when, indeed *because*, they increase the market share of the manufacturer who employs them. This holds even where the manufacturer's market share is large. This conclusion does not oppose the prudent advice of applying a rule of reason analysis to a dominant firm's implementation of market share discounts.[29] But it cautions against drawing too strong an inference from the likely result that market share discounts increase the dominant firm's sales. The analysis shows that notwithstanding the fact that market share discounts boost the dominant firm's market share, rival manufacturers are not excluded and banning those discounts could diminish market performance.

These conclusions about the welfare effects of dominant firms using market share discounts have an important qualification. This qualification stems from the assumption maintained throughout the analysis that production of the good lacks significant scale economies. Suppose, contrary to previous assumption, that there are such scale economies in the production of undifferentiated brands. This would mean that these firms could not survive by producing small quantities. If the minimum efficient size of those firms is large enough compared to the size of the market, then those firms might be foreclosed where a dominant firm increases its sales via market share discounts. In such an instance, the dominant firm might use (less than one-hundred-percent) market share

[28] In this decision, the Court endorsed a rule of reason approach to determining the legality of non-price vertical restraints, such as exclusive dealing.

[29] One consideration in a rule of reason analysis of market share discounts would be whether a manufacturer's contracts are short term or terminable at will, as opposed to long term where the potential for foreclosure is greater.

discounts to monopolize the market because rivals would be deprived of sufficient sales to remain viable (M.D.Whinston). For the results presented here to apply to a dominant firm, it is important that the firm's rivals can remain in the market.

V. Conclusion

This paper has examined the competitive effects of a vertically differentiated product manufacturer implementing market share discounts in sales to its distributors. Its central argument is that market share discounts are not mainly an exclusionary device, but rather a device for inducing merchandising or promotional activity that helps consumers make well-informed decisions and augments market performance. While market share discounts may increase sales of the manufacturer's brand, and decrease sales of alternative brands, the discounts do not foreclose rival brands from distribution. Except for the "minimum efficient size" reservation mentioned in the previous section, this conclusion even applies to a dominant firm. Prohibiting sellers of leading brands from using share discounts would likely impair market performance.

In Robinson-Patman parlance, market share discounts are "functional discounts" that are extended to distributors in exchange for jointly profitable promotional services that are valuable to the manufacturer. Market share discounts are distinguished from more widely used quantity discounts in that they are triggered by market-share rather than quantity benchmarks. Unlike quantity discounts, market share discounts are as available to small retailers as large.

Appendix

Proof of Proposition 1:

First consider a typical type-1 retailer of size h faced with *Options 0 – 2*. If the retailer chose not to carry brand *M,* it would earn zero profits selling undifferentiated brands. The retailer would not pay $\hat{w}_M$ for brand *M* since this price is too high for the firm to recover its cost of merchandising $h\tau_1$. Nor would the retailer spend $h\tau_1$ merchandising the brand and then set its retail price low enough to sell $h\phi_2/2$ units of the brand to qualify for the wholesale price w_2. To see this, note that the retailer's demand for brand *M* is equation (5), where ϕ is replaced by ϕ_1. To qualify for the wholesale price w_2, the firm must set its retail price p_M such that

$$f(p_M) = \phi_1 h\,[1 - p_M/(\beta - 1) = \phi_2 h/2, \text{ or}$$

$$p_M = (1 - \phi_2/2\phi_1)(\beta - 1).$$

Assumptions *(A1)* and *(A5)* jointly imply that selling brand *M* for this retail price, after purchasing it from the manufacturer for w_2 and merchandising, would produce negative profits. On the other hand, if the retailer spends $h\tau_1$ merchandising the brand and then sets its retail price to sell $h\phi_1/2$ units of the brand to qualify for the wholesale price w_1, the firm would charge a retail price of $p_M = (\beta - 1)/2$ and earn zero profits. Since this is no less profit than the firm would earn if it refused to carry brand *M,* the retailer's best response is to spend $h\tau_1$ merchandising and charge a retail price of $p_M = (\beta - 1)/2$. Unit sales at this price are $h\phi_1/2$.

A type-2 retailer of size h facing *Options 0 – 2* has two choices not open to a type-2 retailer. The firm can spend $h\tau_2$ merchandising brand *M* and then qualify for either discount. The retailer's best response to these options would be the same as a type-1 retailer unless it could at least break even with one of these type-2 merchandising choices. It would not be profitable for the retailer will not spend $h\tau_2$ merchandising and then set its retail price only as low as necessary to sell $h\phi_1/2$ units of the brand to qualify for the wholesale price w_1. To see this, note that after merchandising the retailer's demand for brand *M* is equation (5), where ϕ is replaced by ϕ_2. To qualify for the wholesale price w_1, the firm must set its retail price p_M such that

$$f(p_M) = \phi_2 h\,[1 - p_M/(\beta - 1) = \phi_1 h/2, \text{ or}$$

$$p_M = (1 - \phi_1/2\phi_2)(\beta - 1).$$

Assumption *(A6)* implies that selling brand *M* for this retail price, after purchasing it from the manufacturer for w_1 and spending $h\tau_2$ merchandising, would produce negative profits. The only remaining response to consider is for the retailer to spend $h\tau_2$ merchandising the brand and then set its retail price to sell $h\phi_2/2$ units of the brand to qualify for the wholesale price w_2. To do this, the firm would charge a retail price of $p_M = (\beta - 1)/2$ and earn zero profits. Since this is no less profit than the firm's best type-1 merchandising response, the retailer's best response is to spend $h\tau_2$ merchandising and charge a retail price of $p_M = (\beta - 1)/2$. Unit sales at this price are $h\phi_2/2$.

With these best responses to *Options 0 - 2,* firm *M*'s profits from sales to a typical type-i retailer are $\phi_i h(\beta - 1)/4 - h\tau_i$. Based on equation (8), these are the maximum profits available.

Proof of Lemma 1:

With prices that satisfy $0 < p_M < \beta$ and $0 < p_0 < p_M/\beta$, the retailer would sell brand *M* as well as undifferentiated brands. The firms' maximum joint profit would be:

$$\pi^*_{M+R} = (h/4)(1 - \phi + \beta\phi) - h\tau,$$

which is positive because of assumption *(A1)*. Consider other possibilities with non-negative prices. If $p_M \geq \beta$ and $p_0 \geq 1$, there would be no sales and profits would be zero at best (and would be negative with merchandising). If $p_M \geq \beta$ and $p_0 < 1$, the retailer would only sell undifferentiated brands and its profit would be $h/4$, which is less than π^*_{M+R} by assumption *(A1)*. Finally, if $p_M < \beta$ and $p_0 \geq p_M/\beta$, the retailer would only sell brand *M* and maximum joint profits would be $\phi h\beta/4 - h\tau$. The assumption that $\phi < 1$ means this expression is less than π^*_{M+R}.

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