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MOBILITY BARRIER IN MANUFACTURING

Philip B. Nelson and John C. Hilke

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RETAIL FEATURING AS AN ENTRY OR MOBILITY BARRIER IN MANUFACTURING

by

Philip B. Nelson and John C. Hilke[1]

I. INTRODUCTION

Anyone who shops for groceries is aware that retailers from time to time offer reduced prices on particular items. Many of these price reductions involve featuring. Featuring is the practice of setting lower than normal margins on one or more brands in anticipation that customers drawn to the store to buy the featured items will also buy nonfeatured items, at normal or higher than normal markups.[2] Loss-leader sales, sales at prices less than cost, are the most extreme form of featuring. Previous discussions of featuring have argued that consumers are aware of the prices for only a

[2] In order to receive a competitive rate of return, losses or lower profits on feature items have to be made up by higher earnings on other store space. If buyers faced no costs in switching stores, efforts to make up for features by higher prices on other items would be frustrated, so a featuring strategy requires either switching costs (including information and transaction costs) sufficient to allow higher prices on other items or volume gains in conjunction with economies of scale sufficient to provide a competitive rate of return.

In either case, prices on nonfeatured items are higher than they would have been had there been some cheaper way to generate the store traffic. The increased-price case is self-explanatory. In the increased-volume case, if the higher volume could have been obtained at lower costs then the prices could have been lower on all the nonfeatured items and still have returned a competitive rate of return.

small subset of all the products that they buy at grocery stores.[3] As a

result, it is believed that consumers search for the best grocery store based

on a market basket that does not reflect all of their final purchases.[4]

Studies of food marketing[5] indicate that grocers feature the largest

selling brand in some product categories disproportionately more than other

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[3] For an early, but fairly complete, description of grocery store
operation that employs this view of featuring, see: Bob R. Holdren, The
Structure of a Retail Market and Market Behavior of Retail Units,
(Englewood Cliffs, NJ: Prentice-Hall, 1960). Interestingly, it appears that
retailers also use relatively small market index baskets when they compare
their prices to those of their competitors, which appears to happen
frequently. Out of the 10,000-13,000 items a typical full line grocery store
carries, they often focus on only 200-300 when they compare their prices to
their rivals. Connor et al., The Food Manufacturing Industries, (Lexington,
Mass.: Lexington Books, 1984), p. 295.

[4] While we motivate our model by using this conventional description
of the consumer behavior that underlies featuring, more sophisticated
behavior by consumers may actually underlie the observed behavior. For
example featuring may be signal (akin to advertising) of store quality. This
signal will be accurate if it is less costly for "quality" stores to employ
extensive featuring than others or if consumers can validate the quality of
the store over time so that the revenues generated by featuring are higher
for "quality" stores. Even if this alternative explanation for featuring is
correct, our modelling applies since the essential elements of featuring
behavior we assume are still present.
    For a discussion of models that might apply if featuring is used to
signal quality, see, Phillip Nelson, "Information and Consumer Behavior,"
Journal of Political Economy 78 (March/April 1970):311-329; Phillip Nelson,
"Information and Advertising," Journal of Political Economy 82 (July/August
1974):729-754; Phillip Nelson, "Advertising as Information Once More," in
David Tuerck (ed.), Issues in Advertising: The Economics of Persuasion
(Washington: American Enterprise Institute, 1978): R. Kihlstrom and M.
Riordon, "Advertising as a Signal," Journal of Political Economy 92
(1984):427-450; Paul Migrom and John Roberts, "Price and Advertising Signals
of Product Quality," working paper written May 1984, and Michael Spence,
"Job Market Signaling," Quarterly Journal of Economic 87 (August 1973): 355-
374.

[5] Earlier studies found that the largest volume items such as Maxwell
House coffee "are the items on which retailers are most concerned about
pricing competitively and on which they are most willing to shave margins."
(Bruce Marion, et. al., p. 295.) Robert Spohn and Robert Allen also find
coffee to be a good feature item for retailers. (Retailing, New York:
Prentice-Hall, 1977, p. 187.)

brands.[6]   In the case of the coffee industry, which will be the focus of much of our analysis, one industry expert summarized this phenomenon, as follows:

> A leading brand, especially in a large category, is utilized by the trade. The trade takes possession of that product and they then use it as a weapon. The larger the market share and the larger the category, the bigger the weapon that is for the trade.[7]

> Let me given you an example. In Philadelphia, it is pretty clearly shown in some of these documents that Maxwell House was receiving special treatment from the trade. The trade was low balling Maxwell House for their own purposes. This has been going on for years, well before Folger's was ever introduced. It was used as a loss-leading item to build traffic in the major chains in the Philadelphia area.[8]

Documents obtained from coffee manufacturers, principally General Foods, confirm this view.[9]

The primary objective of this paper is to explain how the use of featuring by retailers might affect competition between manufacturers of

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[6]   Grocery industry witnesses in the General Food's case confirmed that it is a "common practice" in the grocery business to sell a highly desirable item such as coffee at a reduced price to attract consumers:
". . . the assumption being that if a consumer walks into the store for the reason of buying that product at a very low price, she will buy the rest of the order there and then you will balance out and make money on the balance of the order. That is loss leader selling and it's a common practice in the industry" (Tr. 12, 187; see also Tr. 5753, 5818, 5938, and 6611).

[7] Gordon Wade, Tr. 4675.

[8] Gordon Wade, Tr. 4678.

[9]   See Complaint Counsel's Factual and Legal Argument, Proposed Order, and Findings of Fact, Vol. I-Proposed Findings of Fact, 11-1 through 11-118, F.T.C. Doc. 9085). For example, one of the documents describing Folger's entry into Philadelphia states:
"... retail prices on Maxwell House were consistently at parity or below Folger's retails even through Folger's had a lower net cost (wholesale price) than Maxwell House" (CX 706-J).

consumer products, such as coffee.[10] Both barriers to de novo entry and mobility barriers that limit the competitive effect that fringe brands have on dominant brands are considered. Examples from a recent attempted monopolization case[11] are footnoted to illustrate the type of factual situations that may be associated with featuring activity and the effects of this activity. We conclude that the disproportionate featuring of a leading brand by retailers can provide advantages to the leading brand that make it easier to perpetuate its dominant position. Moreover, such featuring may permit a dominant brand to obtain higher wholesale prices than would otherwise be the case. In effect, retailer featuring can be a form of entry or mobility barrier at the manufacturing level.[12] Our argument is that these effects

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[10] While the focus of this paper is on the special price treatment dominant brands get as a result of featuring, there may be nonprice advantages that work similarly. For example, retailers may use historical market share to allocate shelf space. For empirical work in this area see: Larry Hamm, "The Interactions of Food Manufacturer Advertising and Food Retailer Buying Practices: Some Implications for Food System Organization," in John Connor and Ronald W. Ward (eds.), Advertising and the Food System, Madison, Wisc., North Central Regional Research Project #117, 1983. For an independent treatment with similar findings, see Mark Albion, Advertising's Hidden Effects, Boston: Auburn House Publishing Company, 1983.

[11] Federal Trade Commission Docket. 9085. The Commission decided for the respondents on April 6, 1984.

[12] This paper can be seen as discussing one aspect of the larger topic of how the setting of retail margins and product differentiation of manufacturers' brands interact. See in particular, Robert Steiner's, "Judging the Welfare Performance of Manufacturers' Advertising," Journal of Advertising, Vol. 10, No. 3, 1981, pp. 3-13; "Vertical Restraints and Economic Efficiency," FTC Working Paper #66 (June 1982). Also see Paul Farris, and Mark Albion, "The Impact of Advertising on the Price of Consumer Products," Journal of Marketing, Vol. 44 (Summer 1980), pp. 17-35; M. Chevalier, "Retail Promotions as a Function of Trade Promotions: A Descriptive Analysis," Sloan Management Review, Vol. 18 (Fall 1976): pp. 19-32; Michael Lynch "The 'Steiner Effect': A Prediction From A Monopolistically Competitive Model Inconsistent With Any Combination of Pure Monopoly or Competition," FTC Working Paper #141, August 1986, and John M. Connor, Richard T. Rogers, Bruce W. Marion and Willard Mueller, The Food Manufacturing Industries, Lexington, Mass., Lexington Books, 1985.

may accompany retail featuring activity, not that they necessarily accompany it.[13]

Section II of the paper discusses the retailer's incentives to feature products. Section III explains why a dominant brand may be a superior featuring item. Section IV indicates how featuring may discourage entry at the manufacturing level and protect the leading brand's position in the face of entry. Section V reports our conclusions.

II. THE RETAILER'S CONSIDERATIONS

In order to determine whether featuring is a profitable strategy, the retailer must first identify the best candidates for featuring and then compare profits with and without featuring these items.[14] In considering

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[13] A number of circumstances may disrupt the relationships we describe. For example, over the long run, consumers may develop a wider and wider market basket on which they comparison shop. As this market basket becomes more inclusive, the number of potential feature items will expand. Ultimately, the consumer's market basket will approximate their real pattern of purchases and featuring would be useless. Expanding the price comparison market basket would also provide greater opportunities for interproduct competition to be feature items. Alternatively, it might be that several minor brands could be featured simultaneously to get the same store-draw effect. In this case, the clustering of minor brands would be a substitute for the leading brand as a feature item.

[14] Here we assume that the retailer's decision to feature items is determined by exogenous characteristics of the market and the product. However, manufacturers may be able to employ strategies which encourage the featuring of their brand or the product class. This view is to some extent reflected in General Foods documents. For example, a General Foods' strategy document states: "Ground coffee has had a history of wide consumer appeal and a large consumption base. This favorable position in the grocery market place has led to the use, by retail grocers, of coffee as a trade building item. The inclinations of the trade to feature coffee have been supported by coffee roasters who have developed a structure of trade dealing designed to maximize coffee featuring." (CX 205). Not only can manufacturers affect retailer behavior, but underlying consumer behavior may be altered as well. Roughly 50 percent of all coffee purchases are made on deals (coupons, store specials, specials packs, etc.). (CX 200-B). To some extent, this is due to the fact that consumers, from experience, have learned to look for deals. Undoubtedly, manufacturers' historical behavior

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the profitability of featuring an item, both the change in volume on the featured item and the purchases of other goods due to incremental store traffic are relevant.[15]

A simple model which formally incorporates the behavioral assumptions underlying featuring is contained in Appendix A. The model illustrates the basic arguments and demonstrates that one can formalize the relationship we describe and obtain an equilibrium.

As the model suggests, featuring is profitable because stores would lose sales if they didn't feature. This does not mean that retailers who feature earn profits, since competing retailers force profits to zero. Moreover, absent competition a retailer would find that it is profitable not to feature the product.

For subsequent analysis, the principle characteristic of featuring that is important to recognize is that the featured item will have a lower markup than it would have if it did not have "drawing" power.[16] As the model

has encouraged consumers to incur the costs of search. However, underlying differences in demographics and cost structures may limit the effectiveness of manufacturers' efforts in this area.

[15] The store-traffic effects can be considered in terms of price effects that are akin to cross-elasticities. They differ from standard cross-elasticities, since they measure complementarily with respect to a particular shopping trip, while normal cross-elasticities usually are based on purchases across different stores for a longer period of time.

[16] As noted above, the model also implies that the price of the feature good will be lower when the retailer earns higher profits on the nonfeatured item. This means that the price will be lower the more inelastic demand is for the nonfeatured item, once the person is in a retail establishment. In addition, the model shows that a retail monopolist would gain from stopping featuring. In accord with this latter prediction, General Foods documents suggest that the featuring of coffee increases as the retail grocery trade becomes more competitive. For example, one document states that there is a "growing tendency of the grocery trade to price ground coffee at or below wholesale cost levels. The intensely competitive retail food business, with (the) dramatic growth of discounters, has created a

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suggests, this result depends on the reliance consumers place on a relatively unique subset of products when selecting the store at which they will shop.

III. FEATURING ADVANTAGES OF THE LEADING BRAND

Our analysis of the model discussed in the preceding section raises the question: What attributes of a brand will make it a good item to feature? Several brand attributes appear likely to lead to differences in the effectiveness of different brands as featuring items. The brand characteristics that are identified and explained in this section include: past purchases, brand availability, and past market share.

Past Purchases

Consumers have more information about brands that they have purchased in the past than they have about brands which they have never or seldom tried.[17] In particular, consumers are probably most aware of the price levels and price changes for goods that they have purchased frequently in the past.[18] In addition, they are likely to know more about the quality

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situation where the trade tends to price coffee at "dead-net" cost levels (wholesale price less promotional allowances)" (CX 10-H).

[17] Different "rules of thumb" may be optimal for different consumers. For example, it may be optimal for high income consumers to adopt a rule of thumb that entails less search than that of low income consumers. The value of time for high income consumers is presumably higher, hence they should search less for a given expect saving, assuming other things are equal. Also, training that highlights the benefits of search or increases the productivity of search time may vary across consumers. This may explain the fact, noted earlier, that the treatment of coffee as a feature item varies geographically. All that is important for our study is that a significant number of consumers search for stores in the way we describe.

[18] Others have noted that a familiarity with the product's regular price is important for use of a good as a loss leader (James et al., p. 286).
Trade witnesses testified that coffee was a good featuring item because consumers purchase it frequently (80 percent of U.S. households buy coffee

of frequently purchased brands.[19] As a result, we expect consumers will be better positioned to recognize that a frequently purchased brand is being featured, and thus more likely to respond favorably.[20]

This explanation only requires that consumers are more aware of the prices of dominant brands than other brands. It does not assume that the dominant brand is higher quality. Its historical dominance may be a result of any number of factors including mergers, first mover position, or luck in an essentially stochastic process of picking successful advertising themes.

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at least one time per quarter (CX 200-B)), and are therefore aware of the price they pay for it, so that a price change on coffee is more salient than a price change on other products. (Tr. 2027, 6758, 6882, 11855, and 12187). Don James, Bruce Walker, Michael Etzel, Retailing Today, New York Harcourt Brace Jovanovich, 1975, p. 286. See also: David Rachman, Retail Strategy and Structure: A Management Approach, Englewood Cliffs: Prentice Hall, 1969, p. 243 and Robert Spohn and Robert Allen, pp. 186-187.

A similar advantage flowing from previous share dominance may have existed in the airline industry, where current consumers' reservations and purchases were observed to be disproportionately linked to prior market share. See G. Douglas and J. Miller, Economic Regulation of Domestic Air Transport: Theory and Policy, Brookings Institution (1974), pp. 47-49.

[19] Consumers' confidence about the quality (mean attributes) and uniformity of quality (variance) can reasonably be expected to increase with use. Especially for "experience goods," consumers have a better notion of the quality of goods that they have tried than of other goods and, if consumers' memories fade or they become uncertain about whether the quality of a brand has changed over time, consumers will have a stronger, and perhaps more accurate, view about the quality of a brand they have tried more recently. Phillip Nelson, "Information Consumer Behavior," Journal of Political Economy, Vol. 78. No. 2 (March/April 1970):311-29, introduces this term. He distinguishes "experience goods" from "search goods." The important attributes of the former cannot be determined prior to purchase, while the attributes of the latter can.

[20] We assume that featuring several smaller brands is not a perfect substitute for featuring the leading brand. This might stem from fixed costs of featuring a brand or differences in the effectiveness in drawing customers to the store.

Brand Availability

The leading brand, like most established brands, will usually have a well-established distribution system. It will be available in most, if not all, stores. Recent entrants, specialty products, and chain-owned brands will not be so widely available.

The advantage of purchasing a widely distributed brand at a lower price in any particular store is clear to consumers. Consumers find it more difficult to meaningfully compare prices across different brands, since quality may vary. Because leading brands are available in most stores, it is easier for consumers to use such brands to contrast stores' pricing policies. In effect, consumers have more information with which to evaluate a leading-brand feature than a feature on a brand that is available in fewer outlets. As a result, consumers may be more sensitive to changes in the dominant brand's price.

Initial Market Share and Inventory Costs[21]

To hold a feature, the retailer must invest in an inventory of the product that is to be featured.[22] If the feature fails to attract buyers, the retailer may be left with a large inventory of the item. This outcome is less costly when the product can be inventoried for future sale or returned to the manufacturer. In either case, the likelihood of spoilage is an

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[21] Increased inventory costs will make featuring a less attractive strategy. In the text, the focus is on how these costs may vary across brands. Other factors may discourage featuring more generally. For example, a rise in the real interest rate will make it more costly to hold inventories and thus discourage featuring.

[22] This ignores features that result because of the accidental purchase of too many items, which leads to a price cut to clear out the excess inventory.

important product characteristic. If the product is unlikely to spoil, or will only spoil after it has been inventoried for a considerable period, featuring the item will be more attractive in this respect.

Potential inventory costs are also a function of how long the inventory might be expected to last after an unsuccessful feature under normal pricing conditions. To the extent that a brand is expected to have substantial future sales at nonfeature prices, the reduction of the inventory to the appropriate level will be quicker and inventory costs will be reduced. While spoilage rates might not vary across brands, the rate at which a given amount of inventory might be expected to adjust is likely to vary. Major brands, with their higher historical sales volumes, will be viewed as better (less risky) feature items by the retailer.

IV. RETAIL FEATURING BEHAVIOR AND BARRIERS AT THE MANUFACTURING LEVEL

Model of Brand Insulation

Up to this point, the discussion has focused on how and why featuring occurs in the retail trade, plus the characteristics of the brands that are featured. In this section, we turn to the manufacturing level and examine the impact retail featuring may have on competition among manufacturers. In particular, we focus on the extent to which this retail practice may raise a barrier to effective entry into coffee manufacturing. For this analysis, we will assume that "effective entry" is impossible (barriers to entry are present) whenever established firms can charge a price greater than their costs without encountering entry by rivals that eliminates this price

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premium.[23] When only a subset of established firms can raise their prices above their costs without encountering entry or expansion by rivals that frustrates their price increase, we will use the term "mobility barrier."[24] In either case, the presence of a barrier, by itself, need not indicate that there is a reason for policy concern, since the established firms' advantage may be due to superior efficiency. However, there may be reason for concern in certain circumstances: Mergers or collusive agreements between established

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[23] While we employ the definition provided in the text, we believe our analysis is also compatible with Stigler's definition of barriers to entry as "a cost of producing (at some or every output) which must be borne by a firm which seeks to enter an industry but is not borne by firms already in the industry." George Stigler, The Organization of Industry (Homewood, Illinois: Richard Irwin, 1968): 67-70. In the case of coffee, the cost asymmetries between incumbents and entrants or fringe competitors may be due to differential entry costs attributable to changes in market environments over time. For a theoretical model of such cost advantages, see R. Schmalensee, "Product Differentiation Advantages of Pioneering Brands," American Economic Review 72 (June 1982): 349-65 and the articles cited there. In addition, for an analysis of how a first mover advantage can either deter entry (if the price advantage of the initial entrant is large) or leads to a lasting market share advantage despite entry, see: Cecelia Conrad, "The Advantage of Being First and Competition Between Firms,"International Journal of Industrial Organization 1 (1983): 353-364. And, for a discussion of how first movers may fail to earn profits because of costs incurred in their efforts to be first, see: A. Glazer, "The Advantages of Being First," American Economic Review, 75 (March 1985): 473-480.

[24] For theoretical and empirical discussions of the phenomenon of strategic groups within industries, see M. Porter, Competitive Strategy (1980) (especially ch. 7); R. Caves and M. Porter, "From Entry Barriers to Mobility Barriers," Quarterly Journal of Economics 91 (1977): 241; Newman, "Strategic Groups and the Structure Performance Relationship," Review of Economics & Statistics 60 (1978): 417; M. Porter, "The Structure Within Industries and Companies' Performance," Review of Economics & Statistics 61 (1979): 214. Intra-industry grouping is also compatiable with the literature on limit pricing. As long as the firm prices at the limit price or below, no entry will occur and supracompetitive profits may be obtained. Erosion only occurs if the limit price falls for some exogenous reason or the firm seeks a price higher than the limit price, anticipating enough delays in entry to make the shortrun profit-maximizing strategy attractive. See P. Pashigian, "Limit Price and the Market Share of the Leading Firm," Journal Industrial Economics 16 (1968): 165 and D. Gaskins, "Dynamic Limit Pricing: Optimal Pricing Under Threat of Entry," Journal of Economic Theory 3 (1971): 306.

firms could allow the established firms to raise prices above the level that is present when they compete. And established firms (especially a dominant firm) might find it profitable to dissipate resources to protect their strategic advantage.

To illustrate our argument, we will use a simple dynamic game between two firms. The model employs equations (1) through (6), using the definitions of the variables given in the footnote.[25]

(1a) $Q = a - bP_i$ where $P_i \leq P_j$ Demand of customers located in set Q
(1b) $Q_1 = c - dP_1$ Demand of customers located at Q_1.
(1c) $Q_2 = e - fP_2$ Demand of customers located at Q_2.

(2) $Q_1 = c - dP_1 + S_1 Q$ Demand Faced by Firm producing to satisfy type Q_1 customers.

(3) $Q_2 = e - fP_2 + S_2 Q$ Demand Faced by Firm Producing to satisfy type Q_2 customers.

(4) $S_i = 0$ if $P_i > P_j$ (Market division rule)

    $S_i = 1$ if $P_i < P_j$

    $S_i = .5$ if $P_i = P_j$

(5) $W_i + M = P_i$ (Wholesale-Markup, retail-price identity).

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[25]   Variable   Definition

    Q_1, Q_2, Q Quantity of goods sold to three different types of consumers.

    W_i, P_i Wholesale and retail prices of good of type i.

    M   Retailer markup.

    a,b,c,d,e,f,V   Constant coefficients.

    S_j Firm j's market share.

    $\overline{S}_j$ The bar over a letter indicates that the variable is lagged one period. Thus, S_j represents firm j's market share last period.

    K   Constant cost of production.

(6) $M = V$ if $\overline{S_i} = 0$ (Retailer markup rule)

     $M = 0$ otherwise.

One way to visualize this game is to imagine there are three types of customers distributed along a line Q_1 to Q_2. Two sets of these customers are heavily concentrated around two separate points (Q_1 and Q_2), while a third set (Q) includes customers that are fairly evenly distributed between the two extremes.[26] The demand curves for the three sectors are given by equations 1a, 1b, and 1c. Given this demand structure and constant costs, firms will locate at either Q_1 or Q_2.[27] The demand curves faced by firms producing at Q_1 and Q_2 are given by equations (2) and (3) respectively. Basically, this model assumes that consumers in sets Q_1 or Q_2 will not purchase from a supplier who does not locate in their market niche, while

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[26] Models of featuring probably should recognize the presence of different types of consumers since empirical evidence suggests that there is a limited pool of consumers who respond to features. Indeed, as GF documents suggest, consumers who respond to one type of feature (low shelf price) may not respond to another type of feature (consumer coupon) or at least will not respond to the same extent. (CX 205)

[27] Producing at a point in Q does not advantage a producer in supplying customers in Q because they view all products as homogeneous. Because the manufacturing costs are the same, manufacturers will produce at Q_1 or Q_2 to take advantage of the fact that the customers do not view these products as homogeneous.

consumers in set Q view Q, Q_1, and Q_2 as homogeneous.[28] Moreover, Q_1

and Q_2 consumers view products produced in their niche as homogeneous.

As a result, as indicated in equation (4), a competitor located at one of the

two extremes (Q_1 or Q_2) will get all of the type Q customers if he prices

below his rival, none of the type Q customers if he prices above his rival,

and will split the type Q customers if he charges the same price as his rival.

Equations (5) and (6) provide the link between the manufacturing and

retail levels of the industry. Equation (5) is an accounting identity that

requires the retail shelf price of firm i (P_i) to equal the sum of its

wholesale price (W_i) and the retailer margin (M). And equation (6) indicates

that retailers will set their margin at V for goods that had no sales to type

Q consumers last period and at 0, if the manufacturer had sales to type Q

consumers last period.[29] Thus, equation (6) captures the retailers'

asymmetrical treatment of brands that attract particular classes of customers

to their stores.

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[28] The model could be modified so that a firm locating at Q_1 could get
a small portion of the sales at Q_2 (and vice versa), but this would simply
complicate the model without producing significantly different results.
However, as the portion of Q_2 consumers which Q_1 producers can tap rises,
the "niches" disappear and the structure that supports the mobility barrier
would disappear.
   The insulation of Q_1 and Q_2 with simultaneously open competition for
Q, allows our model indicates that geographic markets may differ with
respect to the extent that competition for type Q customers is important.
GF documents suggest that this type of geographic variation in the nature of
competition may be present: "Usually the more feature intensive markets
have more vulnerable share points." (CX640-I). In our model, the size of Q
relative to Q_1 and Q_2 indicates the amount of business done on feautre.

[29] If one thought that the value of a good as an item to feature fell
as its share of sales to type Q consumers fell, then one might add a third
category to equation (11) that reflected this. For example, M_i might equal
.5V if S_i = .5. However, this would simply give the established firm an
additional reason for deterring entry and make entry less attractive for the
potential entrant.

The game begins with the entry of firm 1.[30] We assume that this firm has a constant cost K for supplying a unit of the good and that it supplies a product which consumers in niche Q_1 prefer. We also assume that this firm can not profitably enter the niche characterized by type Q_2 customers.[31] And, it is assumed that the positive amounts of Q and Q_1 will be sold at prices considered by firm 1.[32] As a result, when firm 1 enters it does so by producing good 1 and by serving type Q and Q_1 consumers.[33] The retail and wholesale prices of the firm, its pricing, output, and its profits are depicted in Figure 1. The wholesale level demand faced by the entrant during its entry (line CD) is derived from consumer demand at the retail level (equation (2) and shown as line AB). The derived wholesale demand curve

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[30] Firm 1's early entry may be due to historical accident or entrepreneurial foresight. Here we assume no added costs are incurred in order to get this jump on the competition. However, the "first mover" may expend resources in order to accelerate entry or because the "first mover" must incur costs that followers do not incur. For example, the first frozen orange juice producer might have to convince consumers that the product can be a good substitute for freshly squeezed orange juice, while later entrants may "free ride" on this information generation effort by the pioneer.

[31] This assumption might also be justified as a static characterization of a dynamic change in the market. At the time Firm 1 enters, there is only a niche Q_1. Then the market evolves so that niche Q_2 arises. The potential entrant is assumed to discover this niche before the established firm does. However, at some point the established firm may enter this niche, driving price down to costs.

[32] Given the nature of the demand curves, there may be solutions other than the one we focus on here. In particular, Q consumers may be sufficiently few in number or price sensitive that the firm may chose to supply only type Q_1 consumers. This would occur when the monopoly profits earned from serving only the Q_1 market exceed those that result when price is lowered to the price at which type Q consumers will purchase the good. As a result, we assume equilibrium prices such that they are less than a/b, c/d and f/e.

[33] The production of a good that only satisfies Type Q consumers is not advantageous unless it can be produced at lower cost, since these consumers view all brands of the good as homogeneous.

FIGURE 1
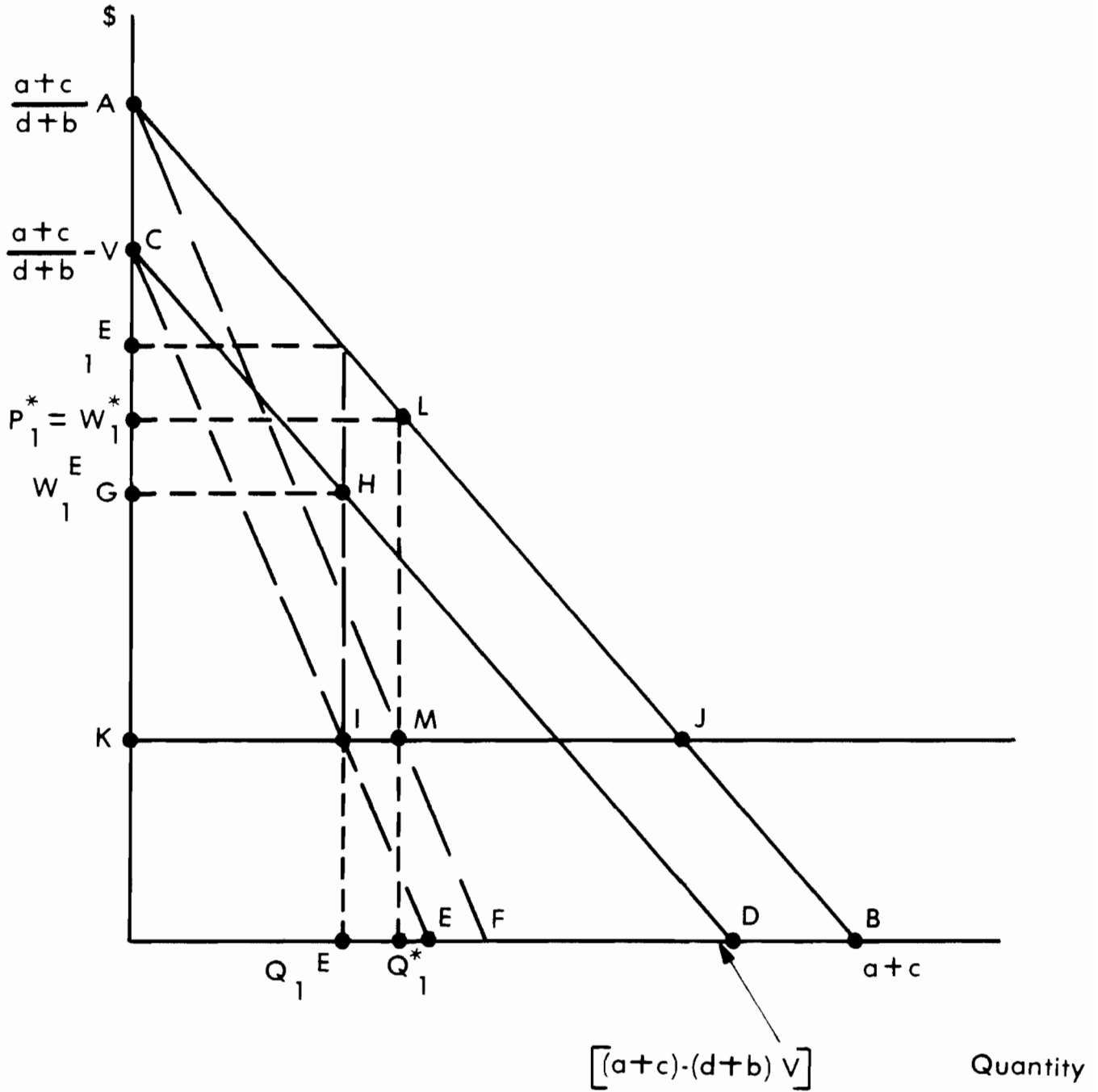
for the manufacturer during entry reflects a shift down of the retail demand curve by the retailer markup of V, since the entrant's historical share (S_j) is zero. Given this derived demand curve, the first entrant calculates its marginal revenue curve (CE) and maximizes its own profits at Q_1^E by setting W_1^E so that marginal revenues equal marginal costs (line KJ).[34] Profits equal to GHIK are earned by the first entrant during the entry period.

During the second period, retailers start featuring firm 1's product, since $\bar{S}_i$ is greater than zero. As a result of the retailer markup rule (6), the retail margin is cut to zero. This shifts the derived wholesale demand curve upward to AB (which in this example is the same as the retail demand curve). Faced with this new demand curve, firm 1 constructs its marginal revenue curve (AF) and sets W_1 at W_1^* so that marginal revenues equal marginal costs and Q_1^* is sold at retail price $P_1^* = W_1^*$.[35] Profits of KW_1^*LM are earned by firm 1.

After firm 1 is established, a potential entrant appears. This entrant has a large number of choices: it can enter niche Q_1, enter niche Q_2, or enter both Q_1 and Q_2. It can also choose to serve only the niche or niches

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[34] During this entry period,

$$W_1^E = \frac{c+a}{2(b+d)} + \frac{(K-V)}{2};$$

$$P_1^E = \frac{c+a}{2(b+d)} + \frac{K-V}{2} + V; \text{ and } Q_1^E = \frac{(c+a)-[(V+K)(d+b)]}{2}.$$

[35] At this equilibrium, $P_1^* = W_1^* = \frac{(c+a)+K(d+b)}{2(d+b)}$ and

$$Q_1^* = \frac{(c-a) - K(d+b)}{2}.$$

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it enters or to serve type Q customers as well.[36] For simplicity, we will

assume that entry into Q_1 by firm 2 is not feasible, since this will not alter

the principal findings.[37] We will also assume that production costs (K) are

the same for the entrant as they are for the incumbent and that they are

less than e/f so that it is clearly profitable to serve type Q_2 customers.

Thus, firm 2's choice boils down to either entering Q_2 alone or entering Q_2

and trying to serve type Q customers as well.

As in most oligopoly games, the strategy chosen by the entrant will

depend on the response it expects from the incumbent and the response of

the established firm will depend on the exit rules and how the entrant is

expected to react short of forced exit. However, for the incumbent to allow

entry, if it can profitably follow a strategy that bars entry, it must earn

higher profits under the post-entry cooperative solution than it earns from

feasible noncooperative strategies.[38] Thus, if there is a noncooperative

strategy that could be followed by the incumbent which bars entry into at

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[36] As was pointed out above, entry into niche Q is clearly inferior to entry into either niche Q_1 or niche Q_2 since type Q consumers view the products as homogeneous.

[37] Entry into Q_1 alone might be discouraged if there are economies of scale and the demand around Q_1 is too small to support more than one firm. Even if entry into Q_1 is not barred, the general result will hold: the first firm in the market will serve type Q consumers, since others see that they may not recoup the losses they will incur during the entry period. Specifically, the entrant who will be forced to incur losses of $\underline{V(c-dK+a-bK)}$
$$2$$
if the incumbent sets its wholesale price equal to its costs, since the entrant's wholesale price must be V less than the incument's wholesale price to have the same retail price. This also assumes they split the market evenly when their retail prices are the same.

[38] The attractiveness of such a strategy depends in part on the queue of entrants. Numerous equally "qualified" entrants with stochastic probabilities of entering despite the logic of the situation could undermine the profitability of an incumbent's strategy.

least part of the market (niche Q), but allows the established firm to earn profits, "effective entry" is not possible and the presence of "barriers to entry" has been established.[39]

To see that there are noncooperative strategies open to firm 1 which allow it to earn a profit, while firm 2 is forced to earn losses if it choses to serve type Q customers as well as type Q_2 customers, consider what will happen to firm 2 if firm 1 lowers its wholesale price (W_1) to its costs when firm 2 initiates its entry attempt. During the entry period, firm 2's profits will be equal to $-V[(e-fK)+ ((a-bK)/2)]$ if firm 1 sets $W_1=K$.[40] We know firm 2's profits are negative because $-V$ is negative and the term in the brackets must be positive because it reflects positive sales levels required by the assumed market demand curves.

In the second period, firm 2's profits rise to zero if the firms follow the same strategies because it will be true that $P_1=P_2=W_1=W_2=K$. However, positive profits in the second period are needed to encourage entry in the first period because sufficient profits must be generated to offset the losses incurred during the entry period. Indeed, the present value of the profit stream must be increased by size of the entrant's first period loss for it to break even. As a result, the incumbent can charge prices just below $K+V$ and earn a sizeable profit, while the entrant experiences a loss during the entry period that it will not recoup later, when competition forces prices to equal costs. When the model is relaxed to admit other strategies, such as

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[39] There may be a cooperative solution that offers higher profits, but this solution (which may entail entry) does not indicate "effective entry," since by definition it allows positive monopoly profits.

[40] This loss is particularly unattractive to an entrant who is considering entry into supplying only Q_2 customers, since this strategy will allow a first period profit at a wholesale price of $[(e/2f)+((K-V)/2)]$.

the use of "fighting brands," that will complicate the entrant's attempt to build its share to the level needed to be a good featuring item, entrants may perceive profitable entry to be even more unlikely.[41]

The asymmetry that insulates firm 1 applies equally to the situation where firm 2 is already supplying product to type Q_2 consumers, as it does to the situation where firm 2 is a potential entrant. In both cases, firm 2 cannot compete on an equal footing, since (for an equal price charged to consumers) firm 1 earns more during the entry period, due to the smaller retailer markup. Or viewed slightly differently, if the dominant firm can make do with a competitive rate of return for some period of time, prices realized by competitors may be insufficient for them to stay in business in the long run. As suggested above, this sort of demand asymmetry is appropriately termed a mobility barrier.[42]

Our model captures most of the benefits to manufacturers whose products are featured. In addition, it shows how established or dominant firms can be advantaged when the selection of the featured good is based on

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[41] Evidence from the General Foods coffee case indicates that General Foods monitored its rivals' prices and matched or beat their offers even when this required pricing below variable cost, including prices below the cost of unroasted coffee beans. Evidence of below cost sales is reviewed in Complaint Counsels Findings of Fact (op. cit.) Section III, pp. 9-30 and Complaint Counsels Reply Findings, Section V, pp. 67-112.

[42] As noted above, the entrant may find it profitable to supply Q_2 customers even though it finds it unprofitable to supply Q and Q_2 customers simultaneously because it can set a higher price if it isn't competing with firm 1 for type Q customers.

historical market shares.[43] The key asymmetries that produce the observed results are: (1) that the incumbent has a first mover advantage that allows it, unlike future entrants who already find niche Q occupied, to earn a positive profit during its entry of niche Q and (2) that the established incumbent has a one period pricing advantage due to the use of its product as a feature item.

Welfare Implication of Featuring Advantage

What are the welfare implications of this featuring advantage? Unfortunately, no simple answer can be provided. While there appears to be some reason for concern, the problem is complicated by countervailing forces that make a definitive answer elusive.

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[43] General Foods appears to have operated its ground coffee business with this relationship in mind during the 1970s. Both pricing policy documents and statistical studies conducted by the firm indicate that RMH (Regular Maxwell House, GF's primary brand) could obtain comparable shelf prices with other brands despite offering lower discounts off list price in areas in which its past market shares were large relative to other brands. The statistical studies found correlations of .7 to .9 between profits and share dominance. That these higher profits were not attributable to efficiencies of General Foods' operations, is shown by similarly high correlations between the price General Foods received and the degree of share dominance and between prices and profits. Documents and statements concerning the share, price, and profit relationship are contained in Complaint Counsels Finding of Fact, previously cited, in section XI, findings 11-1 through 11-292, pp. 199-262.

A good summary of the view of General Foods' management, at the time is the following statement which is taken from a planning document that reviewed the "lessons learned" from the initial parts of Folger's entry effort:

> "Provided RMH can sustain clear cut marketplace
> leadership, MHD can accrue the financial benefits
> of dominance in subsequent years. In the Ground
> coffee area, marketplace leadership is defined as
> enjoying a 3:1 overall share advantage to signifi-
> cant competition and at least a 2:1 advantage over
> the same competition on the key pack size." (CX 640-I)

A complete answer to the welfare effects of the featuring behavior we model confronts a number of serious complications. Besides the standard difficulties inherent in most welfare analysis, this particular analysis is complicated by the fact that it must recognize the repercussions which the featuring of one product has on the pricing of other grocery products. In addition, the presence of featuring is indicative of the fact that consumers have limited information, which adds to the complexity of the analysis. Nonetheless, some insights into the welfare implications of featuring behavior can be obtained.

In our model, the incumbent's wholesale price exceeds its costs. Moreover, prices may remain above costs since the manufacturer is insulated from competition. As a result, it is clear that rents are flowing to the incumbent manufacturer. Moreover, given the price-cost relationship, it is likely that incumbents could supply more to the market at lower prices and still earn a profit, suggesting that too little output is being supplied.

At first we thought one could argue that the rents flowing to incumbent manufacturers are necessary payments to elicit the information consumers get about relative overall retailer prices through the featuring behavior. We also thought that it might be a necessary payment by the retailers for the unique traffic building qualities of the leading brand. However, as our model indicates, the consumer information and the drawing power associated with the dominant brand may be a function of its historical market position, rather than due to inherent and costly product attributes or

manufacturer services.[44]   As a result, the rents do not appear to be necessary to assure the continued supply of the product, only the speed with which it is first introduced.

To the extent featuring insulates incumbents and allows them to raise prices above their costs, it appears to work similarly to a perpetual patent (a perpetual reward to the first-mover).   However, this is not entirely the case.   While the incumbent's wholesale price increases, it is not clear how the retail price is affected, since it also depends on the retailer markup. Moreover, consumers may shift their consumption of other products because their choice of store (due at least in part to featuring behavior) will affect the relative prices of other goods they consider buying.

Particularly given these complexities, it seems sensible to take featuring as a given, and ask whether its presence can lead to unnecessary social losses.   This turns out to be a somewhat simpler question.   It is fairly clear that the private nature of the first-mover rents will encourage firms to expend real resources to enhance or protect them.   In particular, as the game described in this section suggests, incumbents may find it profitable to use a variety of costly strategies, such as the introduction of fighting brands or elaborate price discrimination devices, to deter entry.

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[44] If the featuring advantages associated with historic share advantage do not peak at some share level less than 100 percent, the industry may tend toward a natural monopoly.   The problem then is that competitive pressures on the dominant firm or monopolist may be slight.   Without this pressure, the dominant firm would be expected to exercise market power.

If there are limits to the featuring advantage, then several manufacturing firms may be relatively equal participants in featuring and create effective limitations on each others' market power.   At the same time, if there are efficiencies in price searching for consumers that are created by featuring, they would be preserved.   Conversely, if featuring itself represents some sort of pricing illusion among consumers, then natural or external limits on featuring might be applauded.

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In summary, a manufacturer, whose brand is treated as a featuring device because of its dominance, may be insulated from competition by entry and mobility barriers. These barriers may be worth cultivating and preserving, even at substantial cost in advertising and other promotional expenses.[45]

V. CONCLUSIONS

We have sketched a potential relationship between retailer featuring activity and barriers to entry at the manufacturing level. Specifically, it appears that the featuring of leading brands can allow those brands to charge prices above their costs without eliciting entry that forces lower prices. While we have not proved that such a connection exists in general, we believe there is substantial evidence that this type of relationship is present in the case of Maxwell House coffee in the Eastern U.S.

The welfare effects of the barriers to entry and above-cost pricing we describe are less clear. To some extent, there appears to be a tension between manufacturing efficiency and information efficiency which severely complicates welfare analysis. However, it is clear that the private rents that flow to first-movers in situations like the one we model will encourage first-movers (or potential first-movers) to expend valuable resources in ways that, while privately rewarding, may not be socially valuable.

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[45] Mark Albion's previously cited examination of the effects of advertising by dominant brands states: "In conclusion, there may be more inertia in the structure of the manufacturing stage of the market when the retail stage is included in the ultimate chain of effects than when the market is analyzed only in terms of the competitive structure of the manufacturers (Advertising's Hidden Effects, p. 26).

APPENDIX A

A Simple Equilibrium Model of Retailer Featuring Behavior

Assume that two retailers are playing a dynamic game in which each sets next period's prices for two goods that he sells with the belief that his competitor will maintain current-period prices.[46] Good F is the product we anticipate will be featured. While it is treated here as a single commodity, it may also be thought of as a composite good, that is, the market basket of all the goods which consumers use in selecting stores.[47] Good N represents the good(s) which will not be featured.

The key rules for the game are given by the following three equations:[48]

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[46] Lynch (1986) has also formalized this retail profit maximization strategy. Using static profit maximizing calculus, Lynch reaches conclusions that parallel those for the dynamic game theoretic approach used here. Briefly, Lynch shows that, if consumers select stores in part on the basis of partial price information and retailers maximize profits, the retailers will establish lower margins on those items that are important in forming the consumers expectation about the general price level. In Lynch's model, retailers maximize the following equation:

$$\text{Max} = S_i N \left[(P_A - M_A) \cdot Q_A + (P_a - M_a) \cdot Q_a\right] - F_i.$$

Here, N is the maximum number of customers in the store's area, S_i is the share achieved, P_A and P_a are the prices the retailer charges for a product in the price information set or outside of the price information set, respectively, M_A and M_a are the manufacturer's charges to the retailer and Q_A and Q_a are quantities. F_i is the store's fixed costs.

[47] As may be inferred from the fact that there is a single market basket for consumers, the consumers are identical in this model. This removes the possibility that price discrimination is driving the results.

[48]

Variable	Definition
Q_{ij}	Quantity of good i sold by firm j, where i=F or N and j=1 or 2.
P_{ij}	Price of good i sold by firm j, where i=F or N and j=1 or 2.

(7) $Q_{F1} = 0$; $Q_{N1} = 0$ and $Q_{i2} = a_i\text{-}b_iP_{i2}$ (if $P_{F1} > P_{F2}$)

(8) $Q_{F2} = 0$; $Q_{N2} = 0$ and $Q_{i1} = a_i\text{-}b_iP_{i1}$ (if $P_{F2} > P_{F1}$)

(9) $Q_{ij} = (a_i\text{-}b_iP_{ij})S_j$ (if $P_{F1} = P_{F2}$).

By making sales of good N contingent on the price of good F, we capture
the essence of the idea of the featuring.

In this model, the competing retailers will continue to cut price on
good F until the losses they incur on good F just offset the profits they
earn on good N.[49] The profits earned by the firm on good N will equal the
firm's share of the profits that would be earned by a monopolist that sets
the price of good N so that marginal revenue from good N equals its

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C_i	Cost of supplying one unit of good i, which is assumed to be constant across firms.
a_i, b_i	Intercept and Slope coefficient for product i's demand curve.
$\Pi_j, \Pi_{Nj}, \Pi_{Fj}$	Total profits of firm j, profits of firm j on good N, profits of firm j on good F.
S_j	Firm j's share of market when the competing retailers' prices of good F are the same.

[49] In equilibrium, $\Pi_j = 0$ and $\Pi_{Nj} = -\Pi_{Fj}$.

marginal cost, C_N.[50] That is, once a consumer is in the store, the store can price good N like a monopolist.

Using the demand curve for F when $P_{F1}=P_{F2}$, as will have to be true in a competitive equilibrium, one can obtain the quadratic relationship between P_{Fj} and Π_{Fj} given by equation (11).

(11) $-(b_F P_{Fj}{}^2 + (C_F b_F + a_F)P_{Fj} - a_F C_F)S_j = \Pi_{Fj}$.

Figure 2 depicts this relationship. In a competitive equilibrium, $-\Pi_{Fj} = \Pi_{Nj}$, since firms earn zero profits. Figure 2 includes a specific Π_N to show the prices P_F where Π_F will equal $-\Pi_N$.[51] In this diagram, point E represents a potential equilibrium.[52] At E, the price P_F will be below C_F

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[50] If the two retailers were to merge, they would not have any incentive to compete with each other through the use of featuring. They would maximize profits by setting price so that marginal revenue equals marginal cost for each good. This leads to an equilibrium with the following properties:

$$\Pi_j = \left(\frac{a^2{}_F + 2a_F b_F c_F - c_F{}^2 - 2b_F c_F{}^2}{4b_F} \right) + \left(\frac{a_N{}^2 - 2a_N b_N c_N - c_N{}^2 - 2b_N c_N{}^2}{4b_N} \right)$$
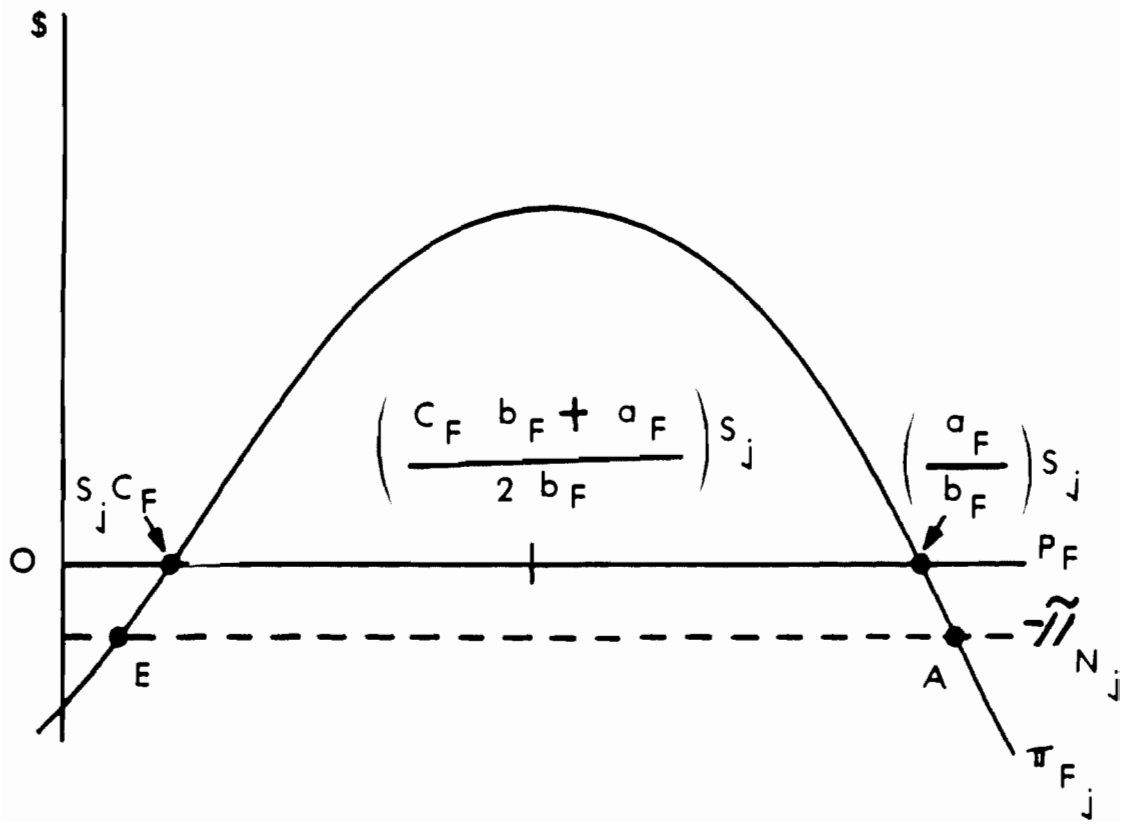
$$P_{ij} = \frac{a_i - c_i}{2b_i}$$

$$Q_{ij} = \frac{q_i + c_i}{2}$$

[51] Since a store sets the price of type N goods as if it were a monopolists, the pricing of N and F goods is independent and Π_n is given once the demand for N goods is given.

[52] While zero profits are also earned at point A, point A is not an equilibrium, since profits can be increased by lowering P_F.

FIGURE 2

and, if Π_N is large enough (so that $- \Pi_N$ is lower than is shown in the diagram), P_F may have a zero or negative price.[53]

The existence of an equilibrium in this model requires that a firm not be able to gain by capturing the entire market for N through an additional cut in P_F (which is the relationship pictured in Figure 2), and that both firms break even. The ability of both firms to break even depends on how the firms share the shoppers in the market. As long as customers move to stores so that the losses on F are allocated in proportion to the profits on N, point E will be an equilibrium. The functional form used in this example assures that this is the case, so E is a stable equilibrium.

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[53] If the model is adjusted so that the sales of good N are not dependent on the price of good F, one obtains a Bertrand game. For simple Bertrand games, price equals marginal costs in the equilibrium. Thus, the behavioral assumption that the price of good F effects the price of good N is key to the findings reported here. Martin Shubik, <u>Strategy and Market Structure: Competition, Oligopoly, and the Theory of Games</u>, John Wiley, New York, 1959.