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ON CREDIBLE DELEGATION BY OLIGOPOLISTS: A DISCUSSION OF DISTRIBUTION CHANNEL MANAGEMENT*

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Several papers in the recent marketing literature have suggested that delegation in distribution (e.g., the use of independent middlemen) helps manufacturers to precommit strategically to profit-enhancing competitive actions. Further, the literature suggests that the profitability of such actions depends on market structure. We challenge these conclusions here. This is done in two steps. First, we perform an analysis of the entire class of models which have been used in the literature. Using internally consistent assumptions about market structure and contracting, the only subgame perfect equilibrium is one in which all distribution channels have infinitely many levels of delegation. Obviously, this is not what we see in the real world. Next, we relax a key hidden assumption, namely that all intra-channel agreements are observable to competitors. Without this assumption, the usual results unravel. Unless channel members can offer credible guarantees that unobservable agreements do not exist, the strategic effects of delegation disappear. Since these guarantees are virtually impossible to maintain credibly, we would expect to reject the hypothesis in the earlier literature relating channel structure to competition in an empirical study controlling for observability. We conclude that mechanisms other than strategic ones must be responsible for the existence of delegated channels, and make some suggestions about promising avenues for future theory research in channel structure.
(MARKETING; DISTRIBUTION)

1. Introduction

Choosing an appropriate distribution channel structure is a problem of concern to marketing practitioners and academics alike. Some modelers have recently turned to game theory techniques to understand the effect of competition on channel choice. We contribute to this literature by synthesizing earlier approaches in a model with consistent assumptions about within- and between-channel competitive behavior. The synthesis is significant in that it overturns some results found in earlier work, and suggests new directions for further research.

One competitive model of channel choice is posited by McGuire and Staelin (1983), who focus on competition between two manufacturers of competitive products. They show that the relative profitability of using independent middlemen (i.e., delegation), rather than vertically integrating (i.e., centralizing) the channel, is a positive function of the degree of demand substitutability in the market. This paper has inspired many other pieces further examining the channel choices of multiple manufacturers, including Coughlan (1985), Moorthy (1986), and McGuire and Staelin (1986).

Another stream in the channels modeling literature in marketing, also involving the use of game theory, concentrates on single-manufacturer channel models of competition and cooperation. An early piece here is by Jeuland and Shugan (1983), who argue that *coordination* in a marketing channel is the optimal behavior. They further discuss many ways in which coordination can occur, only one of which is via contractual vertical integration. This paper, too, has been a foundation for several subsequent pieces, such as Shugan (1985), Moorthy (1987), and Jeuland and Shugan (1988).

Indeed, this growing body of literature is so well-established that it is entering the

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discussion in at least one textbook on channels (Stern and El-Ansary 1988). Despite this evidence of "maturation" in the area, we find two basic problems with the conceptualization of these models. As is frequently the case when a field of modeling advances, these problems lie in some implicit modeling assumptions: first, that intra-channel agreements are limited either in the form of transfer pricing used or the ability to reformulate the agreements; and second, that all intra-channel agreements are observable to competitors.

In particular, the channel choice literature with multiple-manufacturer competition restricts the contract between a manufacturer and his middleman to a constant per-unit fee. But the literature concentrating on within-channel competition and coordination has shown that more complex transfer pricing (a quantity discount in Jeuland and Shugan 1983, or a two-part tariff in Moorthy 1987) can increase channel profitability by causing each channel member to act to maximize total channel profits, rather than just his own profits. We seek to synthesize these two approaches by considering the robustness of their results to the simultaneous consideration of multi-manufacturer competition and more sophisticated within-channel transfer pricing policies.

We show that the relationship between optimal channel structure and product substitutability found in the multi-manufacturer modeling stream is not robust to the incorporation of two-part transfer pricing (a fixed fee plus a per-unit price) in the channel. In particular, the optimal fixed fee is not zero, so that two-part transfer prices are more profitable than one-part prices. Further, when two-part pricing is considered, the equilibrium relationship between channel structure and demand substitutability found in the earlier literature breaks down. Instead, we find that the equilibrium channel structure is *always* delegated, and that more vertical middleman levels always enhance profitability. This result holds independent of the demand relationship of the products (substitutes or complements), and even holds independent of market structure at the manufacturing and middleman levels (two versus many competitors). The result is valid under either price competition or quantity competition.[1] Further, it is not dependent on linear demand; all that is required is a unique optimum of the channel profit function.

This modeling result, however, appears to be a mathematical abstraction, since we never see distribution channels in the real world with infinite numbers of middleman levels! One could attempt to reconcile this equilibrium prediction with reality by contending that two-part transfer pricing schemes are difficult for practitioners to think of or to implement, and that the one-part schemes assumed in the earlier literature are therefore appropriate. But this contention, too, would contradict reality. Two-part pricing is a familiar fixture in contracts between manufacturers and their franchisees, for instance.[2] However, there is one further implicit assumption in all the prior modeling literature which turns out to be crucial: that all intra-channel agreements or contracts are observable to competitors. Specifically, no *sub rosa* renegotiation within a channel is permitted, and delegation is assumed to be credible. But this assumption is very restrictive. Firms clearly do not know everything going on in a competitor's channel, and further, channel members have a profit incentive to secretly renegotiate their price or quantity commitments.[3] Once

[1] The assumption of price competition implies that there are no capacity constraints facing the firm; clearly, this is not always an appropriate assumption. In the automobile and fashion apparel industries, for example, manufacturers must commit to a predetermined level of production, which is not instantaneously adjustable. In these cases, strategic competition may well be better represented by quantity choices than price choices.

[2] For example, as of 1980, Burger King charged a new franchisee a one-time fixed franchise fee of $40,000, and ongoing fees as a percentage of the franchisee's sales: 3.5% as royalty, 4% for the marketing fund, and (if the franchisor owned the land on which the franchise was built), 8.5% as rent. McDonald's had a similar arrangement in 1980, with a fixed fee of $12,500, a royalty of 3%, a marketing fee of 3%, and rent of 8.5% (Smith 1980).

[3] The notion that competing channels do not know all relevant information about each other is both intuitively

we relax the observability assumption, our unrealistic prediction of infinite channel length disappears. Now, regardless of the external structure of the channel, the unique equilibrium is characterized by prices and quantities equal to those in the integrated, or centralized, case. *Delegation thus has no impact on channel profits*. This result arises simply because of noncooperative behavior in the distribution channel context.

We view the incorporation of more general transfer pricing arrangements and observability (or the lack thereof) into the model structure as crucial. We see the contribution of this modeling as twofold. First, it improves upon existing channels models by accounting for additional profit incentives that can be expected to motivate competitive behavior. But second, and perhaps more important, incorporating this more complete array of incentives into the model shows that this paradigm alone does not suffice to explain distribution channel choice. While this seems a negative conclusion, our final goal is to indicate promising avenues for future research (both theoretical and empirical) in the channels structure area.

We discuss the ideas and results of the paper intuitively and generally in §2, and illustrate them with detailed examples in Appendix II. In §3, we allow many vertical levels, and in §4 we look at the assumption of contract observability. We close with suggestions for future research.

2. General Results

Suppose that you (firm 1) and another firm (firm 2) compete on price. For any price you set, there is a price $p_2(p_1)$ which maximizes the profits of firm 2. Similarly, for any p_2, you have a preferred $p_1(p_2)$. The price pair (p_1^c, p_2^c) satisfying both of these reaction functions simultaneously is the Nash equilibrium of the game.

Suppose now that you could commit to a price *before* firm 2 sets its price, instead of playing Nash. In this case, you would be able to induce firm 2 to set any p_2 that you desire simply by committing to the appropriate p_1; firm 2 still sets its price according to the response function $p_2(p_1)$. Naturally, you would pick some price $\tilde{p}_1$ which gives you the highest profits, and this point is generally not the Nash equilibrium. The point of this is that you can increase your profits by announcing to your competitor that you have hired an agent to play for you, that the agent is compensated such that he will select $\tilde{p}_1$, and that you are leaving town (and hence will not secretly renegotiate the contract).[4]

A. *Two Manufacturers and Many Retailers*

Let us assume for the moment that the market structure is a duopoly at the manufacturing level, but competitive and atomistic at the retail level. A duopoly might be sustainable at the manufacturing level because the incumbents have an enduring fixed cost advantage over potential entrants (including any retailers contemplating upstream integration) which effectively blockades entry. However, manufacturers can retail (i.e., centralize), albeit at a fixed cost disadvantage.

Now, let the manufacturers play a three-stage price game. In stage one, they decide whether or not to play through retail agents. Those who decentralize auction off retailing rights for a price including some fixed fee and some per-unit transfer price in the second stage.[5] In the third stage, all retail prices are set. Given the market structure, both cen-

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reasonable and commonly used by modelers; it is, for example, evident in Shugan and Jeuland's (1988) arguments about the durability of channel structures.

[4] In game theoretic terms, you get the ability to commit or become a Stackelberg leader by playing through an agent (see also Fershtman and Judd 1987).

[5] We are grateful to Abel Jeuland for pointing out that we need to assume that the contract includes quality specifications.

tralized and decentralized manufacturers extract all economic rents for their products; thus, delegation gives the manufacturer a cost-free way to commit and become a Stackelberg leader relative to manufacturers who do not delegate. From this, we arrive at:

LEMMA. *It is never a subgame perfect equilibrium for no firm to delegate.*

PROOF. See Appendix I.

But this is only part of the story. Suppose that firm 1 has delegated, and now consider the situation from the perspective of firm 2. If firm 2 does not delegate, we end up at a price pair $(\tilde{p}_1, \tilde{p}_2)$ characterizing the intersection of the reaction functions of agent 1 and firm 2. Can firm 2 do even better by also delegating? The answer is yes. Note that if firm 2 does not delegate, then delegation by firm 1 commits firm 1's retail agent to a reaction function $\tilde{p}_1(p_2)$. Firm 2's retail price choice is then essentially set, since a delegating firm 1 knows firm 2's best response and optimizes against it. But by also delegating, firm 2 can avoid this follower role and gets the ability to select a clever reaction function itself. Of course, firm 1 will take this into account when it decides how to compensate its agent. However, this merely increases the attractiveness of firm 2 delegating, because firm 2's lower flexibility allows firm 1 to commit to a mutually more beneficial reaction function. We formalize this argument as:

PROPOSITION 1. *Both firms delegate in the unique subgame perfect equilibrium.*

PROOF. See Appendix I.

Note that this result does *not* depend on linearity in the demand function. All it requires is concavity of the profit functions. As for the demand relationship of the products, the results go through exactly analogously for complements in demand as for substitutes. Further, all of the arguments also apply to quantity competition as well as price competition. The arguments for quantity competition between complements resemble those for price competition between substitutes, and those for quantity competition between substitutes resemble those for price competition between complements. With price competition, delegation always raises retail prices, and this raises channel profits for demand substitutes but decreases them for demand complements. With quantity competition, the opposite relationships pertain. Hence, this unique delegation equilibrium implies higher profits than centralization for either (a) price competition between substitutes, or (b) quantity competition between complements. But the delegation equilibrium generates *lower* profits than centralization for (a) price competition between complements, or (b) quantity competition between substitutes. These latter two cases thus exhibit Prisoner's Dilemma equilibrium characteristics.[6]

We illustrate these general results with a linear demand structure in Appendix II.

B. *Many Manufacturers and Two Retailers*

While the two-manufacturer, many-retailer situation is certainly found in various markets, other situations are characterized instead by few retailers and many manufacturers (e.g., Sears as a mass merchandise retailer is matched in today's market only by J. C. Penney and perhaps Montgomery Ward, and faces relatively competitive suppliers upstream). Casual observation has suggested that this important difference in "market power" of the manufacturers implies different equilibrium channels (e.g., Stern and El-Ansary 1988). We examine this question here by assuming that there are many manufacturers, but only two retailers. A duopoly at the retail level would be sustainable for the same kinds of reasons that a duopoly at the manufacturer level could persist: the two existing retailers have an enduring fixed cost advantage over any potential entrants (in-

[6] Bonanno and Vickers (1988), Lin (1988), and McGuire and Staelin (1986) prove Proposition 1 for price competition between demand substitutes. Also the results of Gal-Or (1987) depend on these mechanisms.

cluding manufacturers seeking to integrate downstream). In particular, just as we assumed above that retailers could not (e.g., due to fixed cost disadvantages) integrate upstream, in this model we assume symmetrically that manufacturers cannot integrate downstream.[7] In short, entry to the retail level is blockaded. On the other hand, retailers can manufacture, albeit at a fixed cost disadvantage.

The issue, then, in the previous model was whether or not the duopolistic manufacturers should centralize and perform the retailing function themselves, or delegate it to independent retailers. Here, we look at the symmetric problem: should the duopolistic retailers centralize the *manufacturing* function, or delegate it to independent manufacturers?

To maintain comparability with the model of the previous section, we assume the same arbitrary concave profit function as in the two-manufacturer, many-retailer situation. Now, however, since it is the retailer level which has "market power" due to its duopolistic nature, the retailers can auction off the right of access to the retail market to the manufacturers.[8] Given a competitive market for manufacturing services, the retailers can auction off these rights at a price (i.e., a fixed fee) equal to the expected equilibrium profits at the manufacturing level. As before, we assume that under delegation, the manufacturing level acts as a Stackelberg leader relative to the retail level, and sets constant (linear) transfer prices for the products.

The analysis again assumes the form of a three-stage game. In stage one, the retailers decide whether or not to delegate the manufacturing function. If they delegate, they auction off retail rights and agree on transfer prices with their respective manufacturers in stage two. In stage three, retail prices or quantities are chosen.

To examine the equilibrium of this game, first note that in either price or quantity competition, equilibrium prices, quantities, and profits are exactly the same as in the model with two manufacturers and many retailers. This is because we have assumed the same cost structure, demand structure, and pattern of Stackelberg leadership as in the above model. The only difference is that now, all channel profits accrue to the retail level, rather than to the manufacturing level. It is therefore easy to see that all the results in the above section pertain here as well, in particular:

— delegation permits a retailer to act as a Stackelberg leader relative to its competitor;

— profits are higher under delegation than centralization for price competition with substitutes or quantity competition with complements;

— profits are lower under delegation than centralization for price competition with complements or quantity competition with substitutes;

— delegation by both retailers is the unique perfect equilibrium of the three-stage game, in either price or quantity competition.

C. *Two Manufacturers and Two Retailers*

Finally, let us consider a market with two manufacturers, two retailers, and blockaded entry at *both* levels. No sales can take place without retailers as agents, and no product

[7] This phenomenon of entry barriers caused by cost advantages was observed, for instance, in the semiconductor industry in Europe in the 1960's. American firms seeking to enter the European market did not have the requisite know-how to compete in the European market, and few Europeans had both the know-how to do business in Europe *and* that to market semiconductor chips and capital equipment. One of these, a man named Helmut Seier, carried an exclusive line of semiconductor capital equipment; if an American producer tried to enter the market, but a competitor had previously entered and gotten Seier to carry its line, the new entrant was virtually barred from entering, because of lack of supply of qualified independent middlemen to handle its products.

[8] This means that any manufacturer which does not "win the auction" in effect has no access to the retail market, and therefore does not produce. A duopoly is thus preserved at the retail level, because of our assumption of blockaded entry to the retail level. This is a completely symmetric assumption to that in the two-manufacturer, many-retailer case above: there, the model structure implies that any independent retailer that does not "win the auction" and acquire a manufacturer's product to sell in effect is not in the market either.

is available to sell without manufacturers as the suppliers; hence, channels are either delegated or nonexistent. Clearly, since delegation produces positive channel profits, it is the unique equilibrium. The only unresolved issue is the nature of fixed fees and transfer prices.

Given the symmetric bargaining positions of manufacturers and retailers, the size of the fixed fee (which determines the split of total channel profits) is not uniquely defined in equilibrium. However, given any fixed fee and per-unit transfer price, there is an incentive for the manufacturer and retailer to renegotiate the contract until the per-unit transfer price is set to maximize total channel profits. To see this, suppose some fixed fee f_i is negotiated which allocates some positive profits to each channel member. Suppose the payoff resulting from this f_i and the associated transfer price w_i is $\$X$ for the retailer and $\$Y$ for the manufacturer.[9] Then the retailer has an incentive to offer the manufacturer $\$Y$ plus epsilon for the right to all channel profits, and the manufacturer has an incentive to offer the retailer $\$X$ plus epsilon for the same right. Whatever the outcome of this negotiation, the channel then proceeds to make its pricing decisions to maximize total channel profit, as in the above cases. This cannot decrease (and in all nontrivial cases, will increase) the total channel profit pie, because it causes the channel to price in a coordinated way (cf. Jeuland and Shugan 1983). While the ability to renegotiate may result in the existence of multiple profit-splitting schemes (i.e., multiple f_i) in equilibrium, *the uniqueness of delegation as an equilibrium channel structure is preserved*. This holds true whether products are substitutes or complements and whether competition is price-based or quantity-based; all it requires is concavity of the channel profit functions.

We thus conclude that in each of these cases the delegation equilibrium is a function neither of the number of competitors at either the manufacturing or retailing level, nor of the products' degree of substitutability or complementarity in demand. Instead, it arises because delegation gives a manufacturer the ability to become a Stackelberg leader.

3. Many Vertical Channel Levels

We have seen that delegating is the unique equilibrium, with a manufacturer and a retailer in each channel. Is it even better to allow more channel levels? To examine the issue, consider again the reason for delegating in our model. For simplicity, consider the two-manufacturer, many-retailer case (although the argument would go through symmetrically in the two-retailer, many-manufacturer case as well).

Delegating makes the manufacturer a Stackelberg leader relative to the retail level in our model (comparing centralization with one-level delegation). We have shown above that this is valuable because it commits the manufacturer to a reaction function which is profitable to him. Now, consider a delegated channel (where each product is sold from the manufacturer through a retailer to the final market). Then, given this delegated channel, each manufacturer has an incentive to "subdelegate" by setting up another intermediary level, since that makes the manufacturer a Stackelberg leader relative to the existing channel levels. This advantage of delegation logically continues *ad infinitum*, so that each manufacturer has a profit incentive to add layer upon layer of vertical middlemen to his channel. So we have:

PROPOSITION 2. *Delegation ad infinitum is the unique subgame perfect equilibrium.*

PROOF. See Appendix I.

This is, of course, an unrealistic prediction: with a seemingly internally consistent set of assumptions, the competitive channel model predicts a channel structure which is

[9] $\$X$ and $\$Y$ might be the outcomes derived, for instance, from a maximization problem such as in McGuire and Staelin (1983).

never observed in the real world. However, it turns out that a restrictive, and quite unrealistic, assumption implicit in this and previous channels models is critical to the result: that of observability of channel pricing arrangements. We develop this notion further below.

4. Unobservable Agreements

For the purposes of illustration, let us again consider price competition between two manufacturers who market substitutes through independent retailers. As before, the logic of the following argument is valid for all the other market and demand structures considered above.

Suppose now that after announcing the transfer price leading to the decentralized equilibrium (p_1^d, p_2^d), manufacturer 1 offers retailer 1 a new, secret agreement superseding the original one. According to the secret agreement, retailer 1 gets a net profit of $\epsilon > 0$ if he charges p_1^*, which maximizes the profits to channel 1 given p_2^d, and a lower profit if he charges any other price.[10] In this case, the members of channel 1 do much better and the members of channel 2 do much worse. The important point here is that in no real world situation can manufacturer 1 make a *credible* commitment not to do just this. It is in his interest to make this agreement and he can always present another agreement first which the "cheating" one then supersedes. Now, note that $p_1^* = p_1(p_2^d)$, where $p_1(\cdot)$ is the reaction function of manufacturer 1. Since manufacturer 2 has similar incentives, this ability for opportunistic behavior will force the noncooperative firms back to the original reaction functions and the original equilibrium. Intuitively, the possibility of intrachannel collusion causes the contracting stage and the retail pricing stage of the game to collapse to one, so the original reaction functions remain valid (see Katz 1988 for a similar argument). So we have:

PROPOSITION 3. *With unobservable agreements, all subgame perfect equilibrium outcomes are identical to the centralized Nash equilibrium outcome.*

PROOF. See Appendix I.

This means that, while delegation may be desirable to guarantee Stackelberg leadership, the end result for equilibrium pricing or quantity-setting is the same as in the centralized case. There are no strategic reasons for delegation to be more profitable than centralization; further, the unrealistic benefits of infinite channel length collapse without observability.

5. Discussion

We have used a two-step approach to re-analyze the problem of optimal distribution channel choice in a multiproduct market. First, using internally consistent modeling assumptions about the types of transfer prices possible, we find that delegation *ad infinitum* is the unique equilibrium. Second, once we remove the hidden (and unrealistic) assumption that channel pricing agreements are observable, we open the model to collusion between a manufacturer and his retailer, and this does *not* preserve the delegation equilibrium. If it is possible to "cheat," for instance through unobservable agreements, then even under delegation, the equilibrium price or quantity solution will degenerate to the centralized level. So with an internally consistent modeling structure, and under the most

[10] For example, this secret offer may entail a transfer price of zero and a fixed fee equal to total profits minus ϵ. See also Shugan and Jeuland (1988).

general demand and market structures, we avoid the unrealistic prediction of infinite channel length.[11] Contrary to results in the existing literature, factors such as demand substitutability or number of competitors appear to have no strategic bearing on decisions about vertical integration.

The empirical testing of this theory would require identifying industries with differing degrees of observability of competitive channels' transfer pricing arrangements. One might use as a proxy for observability the use of exclusive intermediaries in one region of the country versus in many regions. We would expect a multi-distributor manufacturer (but with territorial exclusivity) to have more observable transfer pricing arrangements than a single-distributor manufacturer, for two reasons. First, it is harder to "cut a deal" with many separate intermediaries than with just one, and the chances of such an under-the-table arrangement becoming public are greater with more parties involved. Second, antitrust laws force a manufacturer to offer comparable terms to all intermediaries, so "cheating" with individual distributors could pose legal costs for a manufacturer. Then, given this proxy, our theory would predict a higher likelihood of centralized-channel pricing levels in the single-distributor markets than in multi-distributor markets.

Note that the theory does not necessarily imply that we would observe shorter channel *lengths* in single-distributor markets—only that we would observe the *prices* corresponding to shorter channel lengths. Clearly, such a test would require controlling for such obvious factors as fixed costs of identifying and certifying intermediaries; competitive structure (are products substitutes or complements?); and competitive asymmetries in product lines, market knowledge, and the like. An integrated approach to theory testing, such as that used by Anderson (1985), may best control for other factors while testing this prediction.

What do these findings suggest for future research on optimal channel choice? First, further generalizations of our modeling structure are possible, but may not produce useful managerial guidelines for channel structure. For instance, if we allow nonlinear (rather than constant, and hence linear) transfer prices, many things can happen. In particular, if a channel transfer price is allowed to depend on both the volume and the transfer pricing scheme of the other channel or on the volume of the other channel, then pricing schemes can be developed which produce *any* outcome, including the collusive one, as long as profits to both channels are nonnegative (Katz 1988; Fershtman, Judd and Kalai 1987). Why then do we not see such arrangements? One compelling reason is that they are hard to verify legally, and thus cannot be binding. More importantly, this highlights the importance (and restrictiveness) of the assumption of observability for stability of channel transfer pricing.

Given the problems of making delegation credible, the choice of a channel structure may depend more importantly on the extent to which channel-specific investments enhance profitability, and the concomitant threat of free-riding by some channel members on others (Williamson 1985; Grossman and Hart 1986). These within-channel factors can both inhibit the willingness of potential channel partners to build a profitable relationship, and cement an already-existing relationship—despite any external moves by competitors. Some empirically-based work using transactions-cost theory to explain channel relationships indicates that this is a useful direction to pursue in future theory work (Anderson 1985; Anderson and Coughlan 1987). One step in this direction is that taken by Wernerfelt (1988).

[11] There are other factors that can restrict the optimal channel length to a finite number of middlemen, for example, a fixed cost of finding these middlemen. We are indebted to a reviewer for pointing this out. However, the existence of fixed costs does not vitiate our observability result: that unobservable channel pricing arrangements give manufacturers an incentive to price as in the Nash centralized equilibrium.

Further, these channel-specific factors highlight the dynamic nature of channel relationships. The static approach taken here and in the modeling literature to date is not sufficient to incorporate the ability of channel members to invest in the channel over time, or the ability of competitors to punish each other for noncooperative behavior. We suspect that these factors are important to consider in future channels modeling research.[12]

[12] We would like to thank Abel Jeuland, Sridhar Moorthy, Richard Staelin, and the participants of the Marketing Workshop at the University of Rochester for discussions helping to clarify the paper.

Appendix I. Proofs

For simplicity of exposition, we will look at price competition between substitutes. Generalization to other cases will be obvious from the proofs and the example in Appendix II. We write channel profits as two C^2 functions: $\Pi_1(p_1, p_2)$ and $\Pi_2(p_1, p_2)$. We further use the notation $\partial\Pi_i/\partial p_j \equiv \Pi_i^j$ and $\partial^2\Pi_i/\partial p_i \partial p_j \equiv \Pi_i^{ij}$, $i, j = 1, 2$. The usual conditions are imposed in the relevant range of prices: $\Pi_i^j > 0$, $\Pi_i^{ii} < 0$, and $\Pi_i^{ij} > 0$ for $i \neq j$.

LEMMA 1. *It is never a subgame perfect equilibrium for no firm to delegate.*

PROOF. From the first-order conditions ($\Pi_i^i = 0$, $i = 1, 2$) and the implicit function theorem, we see that the reaction functions $p_i(p_j)$, $i, j = 1, 2, j \neq i$, have finite and positive slopes in $p_1 - p_2$ space. Now consider a locus of points of equal profit for firm i, or an *iso-profit curve*: $\Pi_i(p_1, p_2) = k$. For $k = \Pi_i^c$, we have the iso-profit curves for each firm passing through the centralized equilibrium, (p_1^c, p_2^c). Let us now consider firm 2. The slope of its iso-profit curve in $p_1 - p_2$ space can be derived as: $dp_2/dp_1 = -\Pi_2^1/\Pi_2^2$. But at the centralized equilibrium, $\Pi_2^2 = 0$, so that firm 2's iso-profit curve has infinite slope (i.e., a vertical tangent) there. By an analogous argument, firm 1's iso-profit curve has zero slope in $p_1 - p_2$ space at the centralized equilibrium. So we have strictly positive and finite slopes for the reaction functions, but zero and infinite slopes for the iso-profit curves of firms 1 and 2, respectively, at the centralized equilibrium. Now because $\Pi_i^j > 0$, one way in which firm 2 can increase its profits is by itself picking some price $\tilde{p}_2$ that induces firm 1 to set a price on its reaction function, $p_1(\tilde{p}_2)$, which is greater than p_1^c. Since the iso-profit curve Π_2^c is C^2, there indeed exists a $\tilde{p}_2$ such that $\Pi_2(p_1(\tilde{p}_2), \tilde{p}_2) > \Pi_2(p_1^c, p_2^c)$. By becoming a Stackelberg leader, firm 2 can pick that point on $p_1(p_2)$. *Q.E.D.*

PROPOSITION 1. *Both firms delegate in the unique subgame perfect equilibrium.*

PROOF. By Lemma 1, we only need to worry about what a firm should do given that its opponent delegates. We thus assume that firm 1 has delegated. Obviously, agent 1's reaction curve depends on whether firm 2 delegates or not. Denote by $A_1^d(p_2)$ agent 1's reaction curve if firm 2 delegates, and denote by $A_1^c(p_2)$ agent 1's reaction curve if firm 2 centralizes. If $A_1^d(p_2) \geq A_1^c(p_2)$, then from the argument in Lemma 1, firm 2 can do better by clever delegation against $A_1^d(\cdot)$ than by accepting the follower point on $A_1^c(\cdot)$. We therefore set out to prove that $A_1^d(p_2) \geq A_1^c(p_2)$. To this end, note that a cleverly chosen $A_2(p_1)$ has the property that $A_2(p_1) > p_2(p_1)$, because in a price game, firms have a profit incentive to commit to higher prices. So the optimal $A_1^d(p_2)$ is designed to maximize firm 1's profits against higher prices than is $A_1^c(p_2)$. Therefore, firm 1 will construct these transfer pricing contracts such that $A_1^d(p_2) > A_1^c(p_2)$. *Q.E.D.*

PROPOSITION 2. *Delegation ad infinitum is the unique subgame perfect equilibrium.*

PROOF. By repeated, sequential application of Lemma 1 and Proposition 1. *Q.E.D.*

PROPOSITION 3. *With unobservable agreements, all subgame perfect outcomes are identical to the centralized Nash equilibrium outcome.*

PROOF. Consider the decentralized equilibrium and suppose that a manufacturer can offer his distributor a second unobserved contract, superseding the first one. As long as all other contracts are unchanged, and all other players act as if the second contract does not exist, then our manufacturer and distributor can improve their joint payoff by a contract consisting of a lump sum and a transfer price equal to marginal cost. In effect, they can secretly revert back to the reaction function of the nondelegating manufacturer. The symmetry of the game guarantees that each manufacturer-distributor pair has this incentive to rewrite contracts under the table. The only equilibrium outcomes are therefore those of the original game between the nondelegating manufacturers. *Q.E.D.*

Appendix II. An Example with Two Manufacturers and Many Retailers

We here look at two manufacturers, each of whom could retail at a fixed cost $R \geq 0$, and many potential retailers, none of whom can manufacture but all of whom can retail at a fixed cost of zero. To make the results more transparent, we look at the game as played in three stages. First, the manufacturers decide whether to retail (i.e. to centralize) or not. Secondly, those who do not retail auction off retailing rights for fixed fees f_i and associated transfer prices w_i ($i = 1, 2$). Thirdly, there is retail competition in either prices or quantities.

We borrow the following linear demand curve from Deneckere (1983):

$$p_i = A - Bq_i + Eq_j, \quad i, j = 1, 2; \quad i \neq j; \quad E \in (-B, B) \tag{1}$$

where p_i is the price of firm i's product, and q_i is its volume. If the products are demand complements, E is positive, whereas E is negative if they are substitutes. We can invert (1) to get

$$q_i = [A(B+E) - Bp_i - Ep_j](B^2 - E^2)^{-1}, \quad i, j = 1, 2; \quad i \neq j. \tag{2}$$

Although (1) and (2) kink where $p_j = 0$ and $q_j = 0$, these kinks preserve concavity of the profit functions. Note that (2) is a generalized version of the demand function used in McGuire and Staelin (1983). We further assume that production and marketing have a fixed cost of F and a (constant) variable cost of V. Without loss of generality, we set V equal to zero. Note that the fixed cost F will not affect any marginal decisions or optimal pricing or quantity decisions in the model.

(a) *Price Competition*

Assume first that the firms compete on price. If the two manufacturers collude and act like a monopoly, the joint-profit-maximizing retail price is $p_i^m = A/2$. In the event that neither firm delegates, the industry acts as an ordinary Bertrand duopoly. Each firm then chooses price to maximize profits:

$$\Pi_i^b = p_i[A(B+E) - Bp_i - Ep_j](B^2 - E^2)^{-1} - F - R, \quad i = 1, 2, \quad j \neq i.$$

By straightforward calculation, we then find the equilibrium price and profits as:

$$p_i^b = A(B+E)(2B+E)^{-1}, \qquad i = 1, 2,$$

$$\Pi_i^b = A^2B(B+E)(2B+E)^{-2}(B-E)^{-1} - F - R, \qquad i = 1, 2.$$

These shall be important benchmarks. We call this game the *pure centralized* case.

We next assume that only firm 1 delegates, while firm 2 centralizes. In this case, retailer 1 and manufacturer 2 set their retail prices after firm 1 has announced w_1; and firm 1 of course takes this into account when calculating the optimal w_1. We will call this the *mixed* case in what follows. Retailer 1 thus chooses the retail price for product 1 to maximize:

$$\tilde{\Pi}_1^R = (\tilde{p}_1 - \tilde{w}_1)[A(B+E) - B\tilde{p}_1 - E\tilde{p}_2](B^2 - E^2)^{-1} - F - f_1,$$

where f_1 is the fixed fee which manufacturer 1 charges retailer 1 for the right to retail product 1. Manufacturer 2 sets his retail price to maximize:

$$\tilde{\Pi}_2 = \tilde{p}_2[A(B+E) - B\tilde{p}_2 - E\tilde{p}_1](B^2 - E^2)^{-1} - F - R.$$

Manufacturer 1, meanwhile, sets the transfer price $\tilde{w}_1$ in full knowledge of the reaction functions for both $\tilde{p}_1$ and $\tilde{p}_2$. Since competition among potential retailers will drive f_1 up until manufacturer 1 gets all of his retailer's economic rents, he picks $\tilde{w}_1$ to maximize not just manufacturer-level profits, but *total channel profits* for product 1:

$$\tilde{\Pi}_1 = (\tilde{p}_1)[A(B+E) - B\tilde{p}_1 - E\tilde{p}_2](B^2 - E^2)^{-1} - F,$$

where he substitutes $\tilde{p}_1$ and $\tilde{p}_2$'s reaction functions for $\tilde{p}_1$ and $\tilde{p}_2$ in the maximization.

With this market structure, the optimal transfer price is:

$$\tilde{w}_1 = A(B+E)(2B-E)E^2B^{-2}(2B^2 - E^2)^{-1}/4 > 0,$$

while the equilibrium retail prices and profits are:

$$\tilde{p}_1 = A(B+E)(2B-E)(2B^2 - E^2)^{-1}/2,$$

$$\tilde{\Pi}_1 = A^2(B+E)(2B-E)^2B^{-1}(2B^2 - E^2)^{-1}(B-E)^{-1}/8 - F,$$

$$\tilde{p}_2 = A(B+E)(8B^3 - 4BE^2 - E^3)B^{-1}(2B^2 - E^2)^{-1}(2B+E)^{-1}/4,$$

$$\tilde{\Pi}_2 = A^2(B+E)(8B^3 - 4BE^2 - E^3)^2B^{-1}(2B^2 - E^2)^{-2}(2B+E)^{-2}(B-E)^{-1}/16 - F - R.$$

Because of appropriate setting of the fixed fee f_1, retailer 1's economic profits are zero, even for $R \geq 0$.

Finally, if both firms delegate, each retailer picks his retail price p_i^d to maximize:

$$\Pi_i^{Rd} = (p_i^d - w_i^d)[A(B+E) - Bp_i^d - Ep_j^d](B^2 - E^2)^{-1} - F - f_i, \quad i = 1, 2, \quad j \neq i.$$

The first-order conditions define the retailers' reaction functions, which the manufacturers take into account when setting transfer prices, w_1^d and w_2^d. As with the delegating manufacturer in the mixed case, each manufacturer can set f_i to extract his retailer's economic profits, so that he wishes to set the transfer price w_i^d to maximize not just his own profits, but total channel profits:

$$\Pi_i^d = p_i^d[A(B+E) - Bp_i^d - Ep_j^d](B^2 - E^2)^{-1} - F, \qquad i = 1, 2, \qquad j \neq i,$$

where he substitutes p_i^d and p_j^d's reaction functions for p_i^d and p_j^d in the maximization.

Here, we find equilibrium values of transfer prices, retail prices, and profits to be:

$$w_i = AE^2(B+E)(2B-E)(8B^4 - 4B^2E^2 + BE^3)^{-1} > 0, \qquad i = 1, 2,$$

$$p_i^d = 2AB(B+E)(2B-E)(8B^3 - 4BE^2 + E^3)^{-1}, \qquad i = 1, 2,$$

$$\Pi_i^d = 2A^2B(B+E)(2B-E)^2(2B^2-E^2)(B-E)^{-1}(8B^3 - 4BE^2 + E^3)^{-2} - F, \qquad i = 1, 2,$$

and again, the economic profits of each retailer are zero. We call this the *pure delegated* case. Note that the transfer price is higher for substitutes than in the mixed case.

Comparing the equilibria across the pure channel structures, we obtain the following result:

Result 1. Under price competition with a competitive retail level and a duopolistic manufacturing level, manufacturers prefer (on a profit basis) the pure delegated structure to the pure centralized structure for substitutes but not for complements.

PROOF. If the products are substitutes ($E < 0$), algebraic comparison of the equilibrium values of p_i^m, p_i^d, and p_i^b yields $p_i^b < p_i^d < p_i^m$. If the products are complements ($E > 0$), then we have $p_i^d > p_i^b > p_i^m$. Because the manufacturer's objective function in all cases is to maximize total channel profits (since, in the delegated case, the manufacturer extracts the retailer's profits from him), proximity of the delegated or centralized (Bertrand) price to the monopoly price is all that is necessary to insure the superior channel profitability of one structure or the other. The proposition follows immediately. *Q.E.D.*

To understand this result, it is helpful to look at Figure 1. Under price competition, delegation permits the manufacturers to play as Stackelberg leaders relative to the retail level of *both* firms and to commit to higher retail prices. This implies directly that the retail-price reaction functions of the retailers in the delegated case are shifted outward relative to those of the centralized (Bertrand) manufacturers, for either substitutes or complements in demand. Under either complementarity or substitutability, the manufacturers would like to use a channel structure causing their prices to approach the monopoly level; but note that the monopoly price is *higher* than the Bertrand price for substitutes, but *lower* than the Bertrand price for complements. Thus, committing to a higher retail price through delegation *helps* for substitutes, but *hurts* for complements.

But comparing the pure centralized and pure delegated cases is not enough to establish the unique perfect equilibrium. To do this, we need to compare channel profits in the mixed case to those in the two pure cases. The following result emerges:

Result 2. Delegation by both manufacturers is the unique perfect equilibrium of the three-stage game under Bertrand competition, with a duopolistic manufacturer level and a competitive retailer level.

PROOF. Comparison of the equilibrium profits in the pure centralized, mixed, and pure delegated cases yields the following inequalities: $\Pi_i^b < \tilde{\Pi}^1$, $\tilde{\Pi}^2 < \Pi_i^d$. That is, either manufacturer in the pure centralized case could make more profits by delegating (and hence inaugurating the mixed case); but this would make the other manufacturer the centralized manufacturer in the mixed case. The second inequality guarantees that the centralized manufacturer in the mixed case would also be better off delegating the retailing function, thus instituting the pure delegated case. Understanding these inequalities, both manufacturers will decide to delegate. Further, given that both manufacturers have decided to delegate, neither has a profit incentive to unilaterally (or even collusively) centralize. The proposition follows. *Q.E.D.*

These two results are also found in McGuire and Staelin (1986).

(b) *Quantity Competition*

While quantity competition at first sight may seem to be an unreasonable assumption, it is in fact a very good description of many industries where capacity decisions are made with long time horizons, such as the auto industry (Kreps and Scheinkman 1983) or fashion retailing.[13] Since our results for this case are quite different, it is important to analyze it separately.

[13] In one women's specialty retail shop in Evanston, the authors discovered that stock for the upcoming season must be ordered several months in advance (from two months for domestically-made clothing to six or seven months for imported clothing). Once ordered, it is virtually impossible to re-order in time to get another shipment during the relevant season. Hence in essence, this specialty store retailer commits to a quantity several months in advance of the fashion season. This behavior is common to the entire industry, given the timing of fashion showings and the lead times for manufacture of goods.

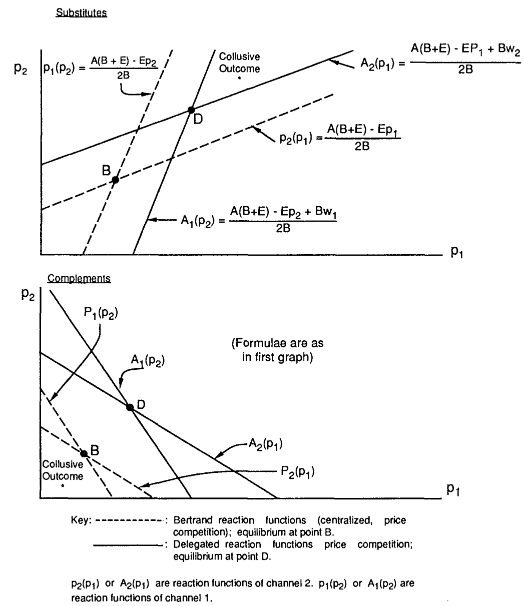

FIGURE 1. Reaction Functions with Price Competition.

If the two manufacturers both centralize and collude, the monopoly quantity for each of the two products (set by maximizing the joint profit function) is $q_i^m = A(B - E)^{-1}/2$. If instead they centralize but act non-cooperatively, each sets quantity in a Cournot game to maximize:

$$\Pi_i^c = q_i^c(A - Bq_i^c + Eq_j^c) - F - R, \qquad i = 1, 2, \qquad j \neq i.$$

The equilibrium quantity and profits are then:

$$q_i^c = A(2B - E)^{-1}, \qquad i = 1, 2,$$

$$\Pi_i^c = A^2B(2B - E)^{-2} - R, \qquad i = 1, 2.$$

In the mixed case, if firm 1 delegates (is the Stackelberg leader), while firm 2 centralizes, retailer 1 sets his quantity, $\tilde{q}_1$, to maximize:

$$\tilde{\Pi}_1^R = \tilde{q}_1(A - B\tilde{q}_1 + E\tilde{q}_2 - \tilde{w}_1) - F - f_i,$$

where again, f_i is the fixed fee paid by the retailer to manufacturer 1 for the right to retail product 1. Manufacturer 2 sets his quantity, $\tilde{q}_2$, to maximize his profits:

$$\tilde{\Pi}_2 = \tilde{q}_2(A - B\tilde{q}_2 + E\tilde{q}_1) - F - R.$$

Reaction functions are as usual derived from the first-order conditions of these two maximizations. They express $\tilde{q}_1$ and $\tilde{q}_2$ as functions of the transfer price $\tilde{w}_1$ and fixed parameters of the problem. Manufacturer 1 sets the transfer price $\tilde{w}_1$, knowing the form of these reaction functions; his ability to extract retailer 1's profits by setting f_1 permits him to pick $\tilde{w}_1$ to maximize not just manufacturer-level profits but total channel profits:

$$\tilde{\Pi}_1 = \tilde{q}_1(A - B\tilde{q}_1 + E\tilde{q}_2) - F,$$

where $\tilde{q}_1$ and $\tilde{q}_2$ are replaced by the reaction functions of retailer 1 and manufacturer 2.

The optimal transfer price under a mixed channel structure and Cournot competition is then:

$$\tilde{w}_1 = -E^2A(2B - E)B^{-1}(2B^2 - E^2)^{-1}/4.$$

The optimal quantities and profits for the two products are:

$$\tilde{q}_1 = A(2B + E)(2B^2 - E^2)^{-1}/2,$$

$$\tilde{\Pi}_1 = A^2(2B + E)^2B^{-1}(2B^2 - E^2)^{-1}/8 - F,$$

$$\tilde{q}_2 = A(4B^2 + 2BE - E^2)B^{-1}(2B^2 - E^2)^{-1}/4,$$

$$\tilde{\Pi}_2 = A^2(4B^2 + 2BE - E^2)^2B^{-1}(2B^2 - E^2)^{-2}/16 - F - R,$$

while retailer 1's profits are zero.

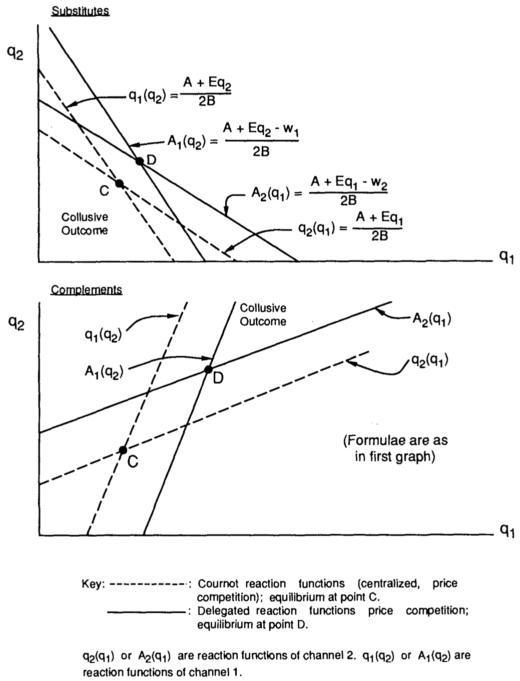

FIGURE 2. Reaction Functions with Quantity Competition.

In the pure delegated case with Cournot competition, retailers pick quantity to maximize retail-level profits:

$$\Pi_i^{Rd} = q_i^d(A - Bq_i^d + Eq_j^d - w_i^d) - F - f_i, \qquad i = 1, 2, \qquad j \neq i.$$

Each manufacturer takes into account both of the retailers' reaction functions when setting the transfer price w_i^d. Further, since f_i is set so that the manufacturer extracts all retail profits, the manufacturer sets w_i^d to maximize total channel profits:

$$\Pi_i^d = q_i^d(A - Bq_i^d + Eq_j^d) - F, \qquad i = 1, 2, \qquad j \neq i,$$

where the retailers' reaction functions for q_i^d and q_j^d are substituted into the manufacturer's profit function.

With this channel structure, equilibrium transfer prices, quantities, and profits are:

$$w_i^d = -AE^2(2B + E)(8B^3 - 4BE^2 - E^3)^{-1} < 0, \qquad i = 1, 2,^{14}$$

$$q_i^d = 2AB(2B + E)(8B^3 - 4BE^2 - E^3)^{-1}, \qquad i = 1, 2,$$

$$\Pi_i^d = 2A^2B(4B^3 + 2B^2E - 2BE^2 - E^3)(4B^2 - 2BE - E^2)^{-1}(8B^3 - 4BE^2 - E^3)^{-1} - F, \qquad i = 1, 2.$$

Again, note that retail-level profits are zero, since each manufacturer extracts his retailer's profits through the fixed fee f_i.

Then comparing the pure centralized and pure delegated equilibria in the Cournot case, we have the following:

Result 3. Under quantity competition with a competitive retail level and a duopolistic manufacturing level, manufacturers prefer (on a profit basis) the pure delegated structure to the pure centralized structure for complements but not for substitutes.

PROOF. For substitutable products ($E < 0$), comparison of the equilibria shows that $q_i^m < q_i^c < q_i^d$, while for complementary products ($E > 0$), $q_i^m > q_i^d > q_i^c$. Because channel profit is being maximized by both manufacturers, the equilibrium quantity closest to the monopoly quantity indicates the most profitable pure channel structure; the result follows. *Q.E.D.*

Figure 2 shows this result graphically. Since the equilibrium transfer prices (w_i^d) are negative in the Cournot case, delegation causes *higher quantities* to be set than in the centralized case. In this sense, delegation permits

[14] Our result, that sales are rewarded under Cournot competition (via a negative w) and penalized under Bertrand competition (via a positive w), parallels the finding of Fershtman and Judd (1987), who reward their duopolists in terms of a linear combination between sales and profits.

the manufacturers to act as Stackelberg leaders relative to the retail level, and to commit to higher quantities. The reaction functions in the delegated case are thus shifted out relative to those in the centralized case, for either substitutes or complements in demand. This helps profitability in the case of complements, since it moves quantities closer to the monopoly level, but hurts profitability in the case of substitutes.

To establish the unique perfect channel equilibrium, as in the case of Bertrand competition, we must compare profits in the two "pure" channel structures to those in the mixed case. This produces the following result:

Result 4. Delegation by both manufacturers is the unique perfect equilibrium of the three-stage game under Cournot competition, with a duopolistic manufacturer level and a competitive retailer level.

PROOF. Comparing equilibrium profits in the pure centralized, mixed, and pure delegated cases, we find: $\Pi_i^c < \tilde{\Pi}^1, \tilde{\Pi}^2 < \Pi_i^d$. In other words, either centralized manufacturer could improve his profit position by delegating, while the centralized manufacturer in the mixed case can do better by delegating as well. Further, neither manufacturer in a pure decentralized channel structure has a unilateral incentive to centralize. *Q.E.D.*

References

ANDERSON, E., "The Salesperson as Outside Agent or Employee: A Transaction Cost Analysis," *Marketing Sci.*, 4 (1985), 234–254.

——— AND A. COUGHLAN, "International Market Entry and Expansion via Independent or Integrated Channels of Distribution," *J. Marketing*, 51 (1987), 71–82.

BONANNO, GIACOMO AND JOHN VICKERS, "Vertical Separation," *J. Industrial Economics*, 36 (1988), 257–265.

COUGHLAN, A. T., "Competition and Cooperation in Marketing Channel Choice: Theory and Application," *Marketing Sci.*, 4 (1985), 110–129.

DENECKERE, R., "Duopoly Supergames with Product Differentiation," *Economics Letters*, 11 (1983), 37–42.

FERSHTMAN, C. AND K. L. JUDD, "Equilibrium Incentives in Oligopoly," *Amer. Economic Rev.*, 77 (1987), 927–940.

———, ——— AND E. KALAI, "Cooperation Through Delegation," Discussion Paper No. 731, Center for Mathematical Studies in Economics and Management Science, Northwestern University, 1987.

GAL-OR, E., "Excessive Retailing at the Bertrand Equilibria," Working Paper, University of Pittsburgh, 1987.

GROSSMAN, S. AND O. HART, "The Costs and Benefits of Ownership," *J. of Political Economy*, 94 (1986), 691–719.

JEULAND, A. AND S. SHUGAN, "Managing Channel Profits," *Marketing Sci.*, 2 (1983), 239–272.

——— AND ———, "Rejoinder to: Managing Channel Profits: Comment," *Marketing Sci.*, 7 (1988), 103–106.

KATZ, M., "Game-Playing Agents: Contracts as Precommitments," Working Paper, University of California at Berkeley, 1988.

KREPS, D. M. AND J. A. SCHEINKMAN, "Quantity Precommitment and Bertrand Competition Yield Cournot Outcomes," *Bell J. Economics*, 14 (1983), 326–337.

LIN, Y. J., "Oligopoly and Vertical Integration: Note," *Amer. Economic Rev.*, 78 (1988), 251–254.

MCGUIRE, T. AND R. STAELIN, "An Industry Equilibrium Analysis of Downstream Vertical Integration," *Marketing Sci.*, 2 (1983), 161–192.

——— AND ———, "Channel Efficiency, Incentive Compatibility, Transfer Pricing, and Market Structure: An Equilibrium Analysis of Channel Relationships," in *Research in Marketing*, 8 (1986), JAI Press Inc., 181–223.

MOORTHY, K. SRIDHAR, "Managing Channel Profits: Comment," *Marketing Sci.*, 6 (1987), 375–379.

———, "On Vertical Integration in Channels," Working Paper Series G, 7, Yale University, 1986.

SHUGAN, S., "Implicit Understandings in Channels of Distribution," *Management Sci.*, 31 (1985), 435–460.

——— AND A. JEULAND, "Competitive Pricing Behavior in Distribution Systems," in T. Devinney (Ed.), *Issues in Pricing: Theory and Research*, Lexington Books, Lexington, MA, 1988, 219–237.

SMITH, L., "Burger King Puts Down Its Dukes," *Fortune* (June 16, 1980), 90–97.

STERN, L. AND A. I. EL-ANSARY, *Marketing Channels* (Third Edition), Prentice-Hall, Englewood Cliffs, NJ, 1988.

WERNERFELT, B., "Long Term Relationships or Integration in Channels of Distribution," Working Paper, J. L. Kellogg Graduate School of Management, Northwestern University, 1988.

WILLIAMSON, O., *The Economic Institutions of Capitalism*, The Free Press, New York, 1985.

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[Footnotes]

[6] **Vertical Separation**
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[9] **An Industry Equilibrium Analysis of Downstream Vertical Integration**
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References

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Abel P. Jeuland; Steven M. Shugan
Marketing Science, Vol. 7, No. 1. (Winter, 1988), pp. 103-106.
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Marketing Science, Vol. 2, No. 2. (Spring, 1983), pp. 161-191.
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http://links.jstor.org/sici?sici=0732-2399%28198321%292%3A2%3C161%3AAIEAOD%3E2.0.CO%3B2-L

Managing Channel Profits: Comment
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Marketing Science, Vol. 6, No. 4. (Autumn, 1987), pp. 375-379.
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http://links.jstor.org/sici?sici=0732-2399%28198723%296%3A4%3C375%3AMCPC%3E2.0.CO%3B2-F