

**AN EXAMINATION OF VERTICAL TERRITORIAL AND VERTICAL
PRICE RESTRAINTS UNDER THE OUTLETS HYPOTHESIS**

by

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(ABSTRACT)

With the exception of a brief legislative stay of execution, resale price maintenance (RPM), has been illegal per se in the United States since a 1911 Supreme Court decision. The Court has however, afforded vertical territorial restraints the protection of the rule of reason. A growing body of economic literature has proposed numerous pro-competitive uses of RPM by manufacturers. In addition, the literature indicates that vertical territorial and vertical price restraints are both different means of achieving the same end i.e., both are economic tools employed by manufacturers to achieve efficiencies in their distribution system. Opponents of RPM counter this assertion by arguing that if both are identical economic phenomenon, then manufacturers have no need to employ RPM since they can use vertical market division in its place. In this paper I will show that under demand conditions characterized by the outlets hypothesis, RPM is Pareto-superior to

vertical market division. It is equally possible to imagine market conditions under which the opposite is true. Since the court room is an ill-suited home for such business decisions, the law should not continue to maintain its present artificial distinction between RPM and vertical market division. The economic consequences of both are essentially the same, hence, I advocate that RPM also be brought under the protection of the rule of reason.

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CHAPTER I

INTRODUCTION: THE THEORY

Economists generally embrace the belief that free markets, i.e., markets characterized by intense competition, best serve society in that its natural resources may be allocated efficiently, yielding the largest quantity and richest variety of goods and services possible. To attain this end, government interference with business behavior should be minimized, allowing businessmen to conduct their affairs in accordance with their best interest since these interests will normally coincide with those of consumers, of which society is ultimately composed. Hence, businesses, with as few exceptions as possible, should be allowed to enter and enforce mutually satisfactory contracts.

On the other hand, there also exists consensus that certain types of horizontal agreements, e.g., agreements among competitors to set prices or not to compete in certain markets, run counter to the public good and are illegal. These agreements should be the central targets for antitrust policy since they restrict output and raise prices, causing a distortion in the efficient allocation of society's resources.

By contrast, vertical market restraints or agreements are typically conducive to competition and allocative

efficiency. A restraint is considered vertical when a firm operating at one level of the industry, restricts intrabrand rivalry at some level further down the chain of distribution. The negotiation, execution, and enforcement of these contracts is an indispensable and integral part of the competitive process. By their very nature, all contracts limit the freedom of the parties involved. As such, disputes between parties naturally arise from vertical agreements. It is unfortunate, however, that many of these disputes find their way into antitrust litigation. Antitrust officials should only concern themselves with vertical contracts where there exists persuasive evidence that such contracts may reduce output, retard innovation, or otherwise interfere with economic efficiency. I will show in this paper that such will be the exception rather than the rule.

This paper will deal with vertical price and territorial restraints. The thesis is that the law cannot continue to maintain its present artificial distinction between resale price maintenance (RPM) and vertical market division (VMD). Since the economic consequences of both are essentially the same, so too should be their treatment under the law. Hence, I advocate that RPM be brought under the protection of the rule of reason.

Most of the defects found in the present vertical restraint law stem from an economically deficient opinion delivered in 1911, by Justice Hughes in *Dr. Miles*,¹ where he declared RPM illegal per se. We will deal with this case in more detail later. It suffices for now to note that by using questionable logic, Hughes came to believe that permitting a manufacturer to eliminate rivalry among his retailers was equivalent to allowing these same retailers to form a cartel. This unfortunate decision has fathered much perverse bench law over the years. A manufacturer would never voluntarily aid or abet his distributors or retailers in the formation of a cartel. The result would be a restriction of output and a consequent reduction in the manufacturer's profit. Such being the case, if a manufacturer chooses to impose a vertical restriction like RPM, it must be for reasons of distributive efficiency and this motive should be respected by law.

Judge Taft used similar logic in his *Addyston Pipe & Steel*² opinion. He reasoned that since a railroad could produce sleeping cars itself without competition from outside firms, nothing is lost to society (i.e., no output

¹*Dr. Miles Medical Co. vs. John D. Park & Sons Co.*, 220 U.S. 373 (1911).

²*U.S. v. Addyston Pipe & Steel Col*, 85 Fed. 271 (6th Cir. 1898).

restriction results), if the railroad guarantees the same freedom from competition to another firm. We must assume that the railroad made its production decision on the basis of relative cost. Since the decision to purchase the cars from another firm involves no restriction of output and is the most cost effective, a net benefit for the consumer results. This mode of analysis can be applied to all truly vertical restraints. Most economists believe that vertical restrictions increase rather than hinder interbrand rivalry. This being the case, RPM could not create market power. If the manufacturer had such power, he would use it directly to reap supra-competitive profits by raising his own price to the distributor and capturing the revenues commensurate with that higher price. Instead, he invokes a system of RPM, insisting on a higher retail price but permitting the retailer to keep the revenues derived from higher price while realizing that a smaller quantity of his product will be sold as the result of this decision.

Nor will the manufacturer impose such restrictions in order to give wholesalers or retailers the power to restrict output, since to do so would be to increase their profits at his expense. Plainly, manufacturers who wish to employ RPM and who search for distributors willing to enter such contracts must have some other end in view, the most obvious of which is the creation of distributive efficiency through

increased sales, service, and promotional efforts at the retail level. The manufacturer can induce this behavior by replacing intrabrand price competition among his retailers with more aggressive sales effort and superior sales facilities. This in turn will allow him to increase his market share by competing more effectively with rival manufacturers.

This method of distribution will be especially effective for technologically complex products for which informative displays, well stocked showrooms, and technically trained sales personnel help to instruct and assist the consumer in selecting the model or combination of components which will best suit his individual needs. Competently-staffed, well-equipped service facilities will further this end by stimulating sales and maintaining customer good will towards the manufacturer's products after sales are made. By setting the distributor's unit price above his normal costs of distribution, the manufacturer hopes to induce the retailer to incur the additional costs inherent in such a distribution system.

Vertical market restraints are preferably to the achievement of this end than direct payments. The latter would entail costly police efforts on the part of the manufacturer to ensure that the payments were not competed away in the form of lower prices. Resale price maintenance and vertical market division ensure that the retailer's incentives to provide the optimal selling effort are compatible with those of the

manufacturer while simultaneously eliminating the need for policing retailers since any price cutting will quickly be reported by rival outlets.

Such a distribution system may fail to achieve its desired goals, serving instead only to raise retail price, but government interference will not be necessary in such cases. Either the manufacturer will realize his mistake in time or more efficient rivals will take away his customers. The market will punish such failures more quickly and effectively than antitrust litigation.

It should also be remembered that agreements such as RPM are entered into voluntarily by both the manufacturer and distributor. Distributors in competitive markets are free to deal with other manufacturers if they do not believe such agreements to be in their best interests. Manufacturers can use RPM only if there are distributors willing to accept such agreements. On the other hand, distributors are not free to handle a manufacturer's product in any manner they see fit, nor should they be. The distribution system chosen by a manufacturer and distributor is a matter of mutual consent and should be executed under terms agreed upon by both.

There are a number of techniques other than RPM which a manufacturer might use to distribute his product. He might open retail outlets of his own. He might try vertical market division by signing sales territories or control dealer

location through franchise, which is the same economic phenomenon with less sharply defined territories. He could enter into detailed contractual agreements, specifically enumerating the distributive and promotional functions to be performed by the dealer. Each of these techniques will facilitate the provision of the necessary point-of-sales effort, but each in turn might have certain drawbacks in the eyes of a particular manufacturer. For example, vertical market division may be of little use to a manufacturer selling to numerous, centrally-located distributors and detailed contracts might prove too costly to monitor.

Since one technique might be more successful under certain circumstances than another and all have basically the same economic consequence, it is important that that the manufacturer be able to choose the most efficient since it is not only in his best interest but also in the interest of both the distributor and the ultimate consumer. The placement of RPM under the protection of the rule of reason would allow manufacturers the freedom to choose the optimal technique.

Since I have just stated that a scheme, such as RPM, is also in the best interest of the distributors or retailers involved, some might argue that there is no reason for the manufacturer to impose and enforce such systems. This of

course ignores the free-rider problem.³ Each distributor will realize that following such a scheme will be in his best interest only if all the other distributors carrying the manufacturer's product do so also. Otherwise, the consumer would gather all the information necessary to make an informed purchase decision from those supplying the point-of sale effort and then purchase from the lower cost, lower price distributors who do not supply these services. Thus, if a manufacturer wants the optimal amount of services offered in conjunction with the sale of his product, he must be able to shelter those distributors who follow his prescribed policies from the pricing pressures of those who do not.

Therefore, it is ultimately in the best interest of the consumer that manufacturers be allowed to set resale prices and refuse to deal with distributors who fail to comply even though price maybe elevated as a result. Price-cutting distributors achieve short run price reductions, but it is faulty economic reasoning to regard such behavior as competitive. Not only will it decrease the quality of the product being offered but in many circumstances it will decrease the quantity offered also. These same free-riders

³For a discussion of the free-rider problem, see Telser, (1960). Here Telser provides the services explanation, illustrating a legitimate, pro-competitive use of RPM by manufacturers.

will hinder the incentives necessary for manufacturers to successfully develop and market complex products, the end result being a reduction of both the quantity and quality of products which reach the ultimate consumer.

Having reviewed some of the ways in which vertical market restraints can be economically productive, let us now turn to some of the fundamental objections to RPM. Professor Bork⁴ dispenses with three hypothetical complaints most succinctly, the first of which is a more sophisticated restriction of the output argument put forth by J. R. Gold and B. S. Yamey. They assert that successful promotional efforts will shift the demand and marginal revenue curves upward and to the right while the added expense of these campaigns will shift the marginal cost of the firm upward and to the left, placing the new equilibrium above and to the left of the old. Hence, a possible result of such promotional effort is the restriction of output and a consequently higher price to consumers. Bork's response to their argument is two-fold. First, it is universally accepted and empirically true that the salient effect of advertising and promotion in general is increased sales and hence, output. Second, while it is theoretically possible that price might rise and physical output might

⁴Bork, Robert H., The Antitrust Paradox, 1978 Basic Books, Inc., New York, p. 291.

decrease, it is unlikely that economic output has decreased. If a manufacturer of stereo components were to offer a longer, more comprehensive warranty would it stand to reason that the price of his product has increased? True, he will charge more for his product to cover the added cost, but a new product is being offered which includes both the component and the warranty. To compare the two is to compare apples and oranges. The promotional efforts, improved information, etc., which result from RPM must be counted as economic output since consumers have shown themselves willing to pay for them even when lower priced, purely physical product alternatives exist elsewhere.

Another common objection to RPM is that it might really be a disguised horizontal restraint forced on the manufacturer by a retail cartel. This should only be of concern if it were a common problem or if antitrust officials had difficulty distinguishing one from the other. The latter is unlikely since the coerced manufacturers themselves would complain to the proper agencies. In addition, this method of cartelization would be ineffective. Unless a majority of the manufacturers could be induced to participate, the retailers could not restrict output.

RPM would be a poor instrument for cartelization in the case of product differentiation due to the dissimilarities

of different manufacturer's products. Further, antitrust officials would need only scrutinize those areas in which an industry wide pattern of restraints exists. The use of such methods would signal antitrust officials, narrowing the range of industries they need observe, while increasing the likelihood of detection. Finally, it is unlikely that a large number of retailers with differing goals and methods of distribution would organize, administer, and police such a cartel for long without defection or detection.

A similar complaint has been raised with respect to resale price maintenance where wholesale prices are not readily visible. RPM could be used to maintain a manufacturer cartel it is argued, because if a manufacturer's price cut cannot be passed on to the consumer, he has no incentive to cheat on the cartel agreement. If the price cut is being passed on, defections will be visible at the retail level. More careful analysis however, shows that incentives to cheat still exist. The price cut could be used by the retailer to provide greater service and promotional efforts, thereby increasing the sales and profits of both the manufacturer and the retailer. Hence, policing such agreements will actually be made more difficult since the evidence of cheating is now increased promotional effort, which is more difficult to detect than price cuts.

Furthermore, RPM will be an inefficient tool for the maintenance of a reseller cartel. Aside from the cost of running the cartel machinery and the problems inherent in price agreements involving outlets with differing efficiencies, different products, and constantly changing market conditions, we must assume that these artificial price agreements will also cause a loss of distributive efficiency where they differ from the pricing arrangements the distributors had initially decided upon.

Moreover, RPM is totally unnecessary for the purpose of cartel maintenance. Where the product is homogenous, retailers will immediately report price cuts in an effort to play one manufacturer off against another for the best price. Where the products were differentiated, the manufacturer would still compete for new or better outlets by lowering wholesale price, and this strategy would again incriminate guilty manufacturers through the resulting shifts in market shares.

Finally, just as with retail cartels, such manufacturer cartels would be easy for antitrust agencies to detect. Again, industry wide patterns of RPM would attract the attention of government officials. The normal cartel evidence will be present and attempts by manufacturers to stifle non-price competition would be an additional flag to authorities that the price restraints involved were not truly vertical.

In light of the fact that such methods are more costly, invite detection, and are unnecessary, it seems unlikely that RPM would be used as a means of forming and policing a horizontal cartel.

CHAPTER II
JUDICIAL POLICY: THE CASE LAW

Having briefly reviewed the theory concerning RPM and learned why economists favor allowing its use in certain circumstances, let us now quickly view the judicial analysis of vertical restraints. As we have already stated, RPM first found its way into Supreme Court litigation in the 1911 Dr. Miles case where Justice Hughes declared it illegal per se, (although he did not use this exact term). He states, "That these agreements restrain trade is obvious," but fails to provide any persuasive economic argument why this is true, relying instead on faulty economic reasoning and ancient English common law, which holds that, "a general restraint upon alienation is ordinarily invalid."

Justice Holmes, in his dissent, showed a surprising economic perception of the problem. He believed that, "... the most enlightened judicial policy is to let the people manage their own business in their own way, unless the grounds for interference is very clear." Stating further that, "... the point of most profitable returns marks the equilibrium of social desires and determines the fair price in the only sense in which I can find meaning in those words." This concisely summarizes the first page of this paper. It is a shame that such reasoning did not prevail.

For if it had, the courts would not now be forced to deal with a seventy-six year old precedent, that lacks a logical structure from which to work, as well as a reason why the economic consequences of RPM should be regarded as harmful.

A few years later in *U.S. v. Colgate & Co.* (1919),⁵ the Court seemed to back off a little from the harsh tack it had taken in *Dr. Miles*. It found that while Colgate had indeed announced, in advance, the resale prices it desired and had refused to continue to deal with those who did not comply, it had entered into no contracts or conspiracies which are necessary to establish a violation of the Sherman Act. The so called Colgate rule was of little practical use however since, in the opinion of the Court, Justice McReynolds enumerated a multitude of practices which could be construed as carrying out the purposes of a combination, including the distribution of letters or telegrams listing resale prices among the dealers. About all a manufacturer could legally do was publicly announce his resale prices in advance and refuse to deal indefinitely with any distributor who did not comply. To reinstate such a distributor would be construed by the courts as a tacit contract to maintain resale price and as such, a violation of the Sherman Act. Apparently still in a permissive mood, the Court in its 1926 General

⁵*U.S. v. Colgate & Co.*, 250 U.S. 300 (1919).

Electric⁶ decision, allowed manufacturers to impose RPM by entering into contracts designating its retailers as agents selling goods on consignment.

This "era of permissiveness" ended abruptly however, with the advent of *Parke, Davis*⁷ in 1960 which considerably narrowed the avenues open to manufacturers under the Colgate rule. That rule is now applicable only to manufacturers who sell directly to retailers. Any method of securing compliance with the announced resale price, including the threat of termination against wholesalers who sell to nonadhering retailers, would be construed as an agreement between the parties and would be an unlawful combination under the Sherman Act, Section I.

Nor did the limited freedoms won in *General Electric* have long to live. In *Simpson v. Union Oil Co.*⁸, (1964), the Court invalidated a consignment contract identical to the one upheld in *General Electric*. A conflict with the policy of stare decisis was no problem here, as the Court staunchly denied that it was departing from *General Electric*. Thus, price control accomplished through the use of agency contracts is

⁶U.S. v. *General Electric Co.*, 272 U.S. 476 (1926).

⁷U.S. v. *Parke, Davis & Co.*, 362 U.S. 29 (1960).

⁸*Simpson v. Union Oil Co.*, 377 U.S. 13 (1964).

deemed illegal by the Court, as are consignment contracts where the use of a comprehensive marketing plan is involved. Finally, the case law governing RPM culminates in a blatant disregard for consumer welfare and the historical intentions of the framers of the Sherman Act in the decisions rendered in *Kiefer-Stewart*⁹ and *Albrecht v. Herald Co.*,¹⁰ where the Court went so far as to declare a manufacturer's attempt to fix maximum resale prices illegal per se. That Seagram was attempting to enforce maximum resale prices in order to destroy a retail cartel among its distributors or the fact that in *Albrecht v. Herald Co.*, a newspaper publisher, was attempting to increase circulation in order to maximize its advertising revenues did not sway the Court. Instead, the Court announced in its *Kiefer-Stewart* decision that, "such agreements, no less than those to fix minimum prices, cripple the freedom of traders and thereby restrain their ability to sell in accordance with their own judgement."

This explanation, taken to its logical conclusion, suggests the invalidity of every business contract since each limits the ability of the parties involved to violate the terms of the agreement. Surely these cases are the low water

⁹*Kiefer-Stewart Co., v. Joseph E. Seagram & Sons, Inc.*, 340 U.S. 211 (1951).

¹⁰*Albrecht v. Herald Co.*, 390 U.S. 145 (1968).

mark of antitrust history. It has been over seventy years since *Dr. Miles* was decided and the Court has still not addressed the fundamental question of why RPM, in all its manifestations, should be considered illegal per se. But it is and if one follows the dubious logic laid down by Justice Hughes in *Dr. Miles*, so should be vertical market division. Hughes reasoned that since horizontal price fixing is illegal per se, then so too is vertical price fixing. Consequently, since horizontal market division is illegal per se, one would expect vertical market division to be illegal per se as well but such is not the case.

In 1963, the government sued White Motor Co.,¹¹ claiming that its distribution system, which included closed marketing territories and the designation of certain customers for direct sale by White itself, was in violation of Sherman Act, Section I. The Court, refused to declare vertical territorial arrangements illegal per se, claiming that not enough was known about the economic consequences of these business practices to justify such a classification. But the opinion seemed to suggest that these marketing techniques may only be available to small companies competing with aggressive giants.

¹¹White Motor Co., v. U.S., 372 U.S. 253 (1963).

In the Schwinn case,¹² the district court found that retail prices had not been set except where valid under Fair Trade laws but it was clear that RPM was still considered per se illegal. The government also claimed that Schwinn's method of market division was illegal. Schwinn employed three principle methods of distribution: (1) sales directly to distributors; (2) sales to retailers by means of consignment or agency contracts with distributors; and (3) sales directly to retailers with a commission paid to the distributor taking the order. In all three cases, wholesalers were assigned exclusive marketing territories and directed to sell to authorized Schwinn retailers only. The legality of these marketing techniques turned upon who held title to the goods at the time of sale. Hence, if the manufacturer retains ownership of the merchandise, selling through agency or consignment contracts, the marketing techniques will be judged under the rule of reason. If the manufacturer sells the goods to his distributors, any territorial restriction is illegal per se. Again it was hinted that vertical market restrictions would be considered legal only in the case of a small firm competing with a giant.

No economic distinction was made between the methods of distribution, nor could there be since who holds title at the

¹²U.S. v. Arnold, Schwinn & Co., 388 U.S. 365 (1967).

time of sale is of little significance. The result is the same. The manufacturer's product is sold to the retailer at the desired price. Once again an unreasonable distinction is explained away by the ancient rule against restraints on alienation.

Fortunately, this precedent was soon overruled in the advent of the GTE-Sylvania case.¹³ Sylvania, in an attempt to halt the slide in its market position, instituted a franchise system which specified the location from which its retailers would sell. This form of VMD differs from those outlawed in Schwinn only in the sharpness with which the sales territories are defined. This marketing technique functions on the principle that firms will voluntarily limit their sales territories to those customers with whom it is economically feasible to deal. In Schwinn, sales territories were defined and retailers agreed not to compete for customers outside their territorial boundaries, while cost as a function of distance served the same end for Sylvania. While both accomplish the same goals using basically the same technique, the former practice was held illegal in most circumstances while the latter had always been allowed.

Such blatant inconsistency in the law was in obvious need of correction. To outlaw Sylvania's method of VMD would not

¹³Continental T.V. Inc., v. GTE-Sylvania, Inc., 433 U.S. 36 (1977).

only destroy many valuable distribution systems but would also create numerous disputes for which the litigation process is entirely unsuited. Instead, displaying an economic sophistication previously unheard of in modern antitrust litigation, the Court brought VMD under the protection of the rule of reason, stating, in effect, that Schwinn's per se rule was not justified under the demanding standards of Northern Pacific Railroad Co.¹⁴ Furthermore, the Court recognized business efficiency in its decision, mentioning that such marketing policies, "induce competent and aggressive retailers to make the kind of investment in capital and labor that is often required in the distribution of products unknown to the consumer." The Court also distinguished between intrabrand and interbrand competition, realizing that diminishing the former could increase the latter in the long run by, "... allowing the manufacturer to increase certain efficiencies in the distribution of his products."

Many proponents of RPM viewed the Sylvania decision as the light at the end of the tunnel but in view of the Court's decision in Monsanto Co. v. Spray-Rite Service Corp.¹⁵, that

¹⁴Northern Pacific Railway Co., v. U.S., 356 U.S. 1 (1958).

¹⁵Monsanto Co., v. Spray-Rite Corp., 104 S. Ct. 1464, (1984).

ligh now shines considerably dimmer. Monsanto, an agricultural herbicide manufacturer, in an attempt to increase its market share, instituted a new marketing policy, part of which required, as a criterion for distributor retention, the employment of trained sales personnel to implement Monsanto's new customer education programs. When its market share continued to drop, Monsanto countered by introducing a new herbicide, cutting its own prices to distributors and requesting that distributors lower their margins also. Monsanto also implemented a program which provided cash bonuses to distributors involved in its technical schools and product demonstrations or to those who gave technical presentations to farmers in an attempt to sell Monsanto's herbicides.

The program apparently worked since Monsanto's market share rose from 15% to 28% over the next four years while that of its major competitor, Giegy, fell from 70% to 55%. Problems arose, however, when in 1968, Monsanto refused to renew its distribution agreement with Spray-Rite, one of Monsanto's largest distributors and a known discounter, because of Spray-Rite's failure to hire trained salesmen and promote sales to dealers adequately. Spray-Rite brought suit in Federal District Court under Section 1 of the Sherman Act, alleging that Monsanto and some of its distributors conspired to fix resale prices and that Monsanto had terminated Spray-Rite's

distributorship pursuant to this conspiracy. The jury was instructed that Monsanto's behavior was unlawful per se if such conduct was designed to enforce a price-fixing conspiracy. The jury found Monsanto guilty and awarded Spray-Rite \$3.5 million which was tripled to \$10.5 million under Section 4 of the Clayton Act. The Court of Appeals affirmed, holding that the fact that Monsanto had terminated Spray-Rite after receiving numerous complaints about its price-cutting from other distributors was in its self sufficient evidence for a jury to find that a conspiracy had existed.

In hearing the case, which was decided on March 20, 1984, the Supreme Court declined an invitation from the Solicitor General and the Assistant Attorney General to reconsider the per se doctrine in price fixing cases and held that a conspiracy under Section I of the Sherman Act could not be inferred from the existence of numerous complaints by distributors. In the opinion, Justice Powell stated that Section I requires a contract, combination, or conspiracy in order to establish a violation. Independent action is not proscribed. Combined action to fix prices is per se illegal while combined action on non-price restrictions must be considered under the rule of reason. The standard of evidence applied by the Court of Appeals which permitted an agreement to be assumed from the existence of complaints voiced by

distributors, "could deter or penalize perfectly legitimate conduct", (104 S. Ct. 1470).

The proper standard, Justice Powell declared is that, "There must be evidence that tends to exclude the possibility that the manufacturer and non-terminated distributors were acting independently," (p. 1471). The Court concluded that there was sufficient evidence for the jury in this case to reasonably have concluded that Monsanto and some of its distributors were engaged in a price-fixing scheme and on those grounds, affirmed the judgement below.

This was an excellent opportunity for the Court to use the analysis it developed in *Sylvania* to reexamine the validity of a per se doctrine with respect to RPM. Rex E. Lee, the Solicitor General of the United States and Dr. William F. Baxter, an Assistant Attorney General from the Justice Department's Antitrust Division filed a brief for the United States as amicus curia¹⁶, recommending that the Court reexamine the legal status of RPM and place it under the protection of the rule of reason. The majority of the economic literature on the subject has advocated this for years. Yet the brief rated only a footnote stating that "... in this case we have no occasion to consider the merits of this (the brief's) argument ... neither party before this

¹⁶Monsanto Co., v. Spray-Rite Corp., No. 82-914, Brief for the U.S. as Amicus Curiae.

Court presses the argument advanced by the amici. We therefore decline to reach the question, and we decide the case in the context in which it was decided below and argued here," (104 S. Ct. 1469). Hence, the Court refuses to reexamine RPM unless it is argued before the Court that the rule of reason should apply and it is extremely unlikely that anyone will base their defense on the slight hope that the Court will overturn a seventy-six year old precedent, especially when the price of failure could be in the neighborhood of ten and a half million dollars.

Instead the Court chose to take this case in order to clarify confusion among the several Courts of Appeals. That such confusion exists suggests the practical difficulties inherent in attempts to distinguish between price and non-price vertical restrictions. Both are intentionally designed to affect price.

When the Court overruled *Schwinn*, Justice Stewart asserted that "Although *Schwinn* is supported by the principle of stare decisis, we are convinced that the need for clarification of the law in this area justifies reconsideration." It is obvious that similar confusion exists in the area of RPM and that it too needs clarification.

One look at Monsanto's record shows that it was attempting to achieve precisely the type of efficiencies identified in *Sylvania* as likely to increase competition enough at the inter-

brand level to outweigh the possible anticompetitive effects at the intrabrand level. That Monsanto used RPM to, "... compete more effectively against rival manufacturers," is obvious from its increased market share. That it used resale price, "...restrictions in order to induce competent and aggressive retailers to make the kind of investment in capital and labor that is often required in the distribution of products unknown to the consumer," is also obvious. Monsanto had just introduced a new corn herbicide and was attempting to induce its distributors to employ trained sales personnel to educate the farmer on the technical advantages of their product.¹⁷

Finally, the Court's own rationale in *Sylvania* states that per se rules of illegality are only proper in the context of behavior that is "manifestly anticompetitive." This is itself compels the conclusion that RPM should be placed under the scrutiny of the rule of reason. For surely with all the favorable literature and the numerous procompetitive effects suggested in it, the Court cannot possibly still believe that manufacturer instituted systems of RPM are equivalent to a retail cartel. For now, the best we can do is hope that some future litigant will be bold enough to argue that the rule of

¹⁷These quotes are taken from the *Sylvania* decision
 Sopra¹².

reason should apply to vertical price fixing and that the Court will be rational enough to apply its own Sylvania analysis to that case.

Chapter III

THE LITERATURE SURVEY

Marvel and McCafferty's "The Political Economy of RPM," provides an excellent starting point for the literature survey because their article uses the development of the statutory law as a basis from which to analyze the evolution of political attitudes towards RPM. Most economists believe that RPM is used by manufacturers as a distributional-efficiency-enhancing device. Yet Becker (1983), among others, argue that the political process will tend towards efficiency. This article resolves the apparent conflict in economic thought by providing an explanation of the changing political attitude toward RPM from permissiveness to per se illegality. The model shows that the prices chosen by manufacturers under a system of universal RPM will be close to those chosen where RPM is everywhere illegal. The result stems from the manufacturer's willingness to finance dealer services through a lowered wholesale price. When jurisdictions are mixed (i.e., when RPM is legal in some states and illegal in others), manufacturers are forced to choose a compromise wholesale price. This higher compromise wholesale price will cause the RPM price to exceed its free trade counterpart. More importantly, this price difference

will increase as the number of jurisdictions permitting RPM declines. This explains the snowballing of opposition to RPM once certain states began to outlaw it either judicially or legislatively.

Beginning with California in 1933, a number of states legalized RPM through the passage of fair trade laws, thereby permitting RPM for a limited range of intrastate transactions. In 1937, Congress passed the Miller-Tydings Act as an amendment to the Sherman Act (15 U.S.C Section 1), affording states the option of legalizing RPM within their borders. Within a year, 44 of the 48 states had chosen to legalize RPM. RPM was made effective by the passage of the McGuire Act in 1952, which authorized states to enforce non-signer clauses. These clauses forced all distributors to adhere to the manufacturer list price regardless of whether they purchased the product directly from the manufacturer or from an alternate source. While the use of RPM spread rapidly with the advent of Miller-Tydings, the turn back to free trade proceeded slowly in the beginning, spurred by judicial decisions which held the practice unconstitutional. However, as the number of free trade jurisdictions increased, the process accelerated as states began to outlaw RPM legislatively. Finally, Congress revoked the states authority to legalize RPM with the passage of the Consumer

Goods Pricing Act of 1975 which once again made Dr. Miles the controlling precedent.

A number of studies on the price effects of RPM were compiled. The limited price information available shows a pattern of substantial price increases apparently due to RPM when compared to neighboring free trade jurisdictions. The only contrary evidence emerges from studies which analyze the price effects of the introduction of RPM for a particular jurisdiction. These studies suggest that RPM caused prices to fall at the smaller, non-chain retail outlets.

The authors develop a model of RPM in a mixed jurisdictional setting which explains the curious legal treatment of RPM in the U.S. In this model, the manufacturer distributes his good through a retail sector characterized by monopolistic competition. In certain retail markets RPM is legal, while in others it is not. It is assumed that there will be no arbitrage between consumers but that the possibility of transshipments among dealers as well as legal liability under the Robinson-Patman Act is sufficient to prevent the manufacturer from engaging in price discrimination at the wholesale level. The manufacturer will treat the characteristics of retail distribution in each market as fixed but he is able to control the set of retailers choosing to carry his product through his choice of retail

and wholesale price. The set of distributors is indexed by s , a measure of the level of services provided by the retailer, where s is chosen from a uniform distribution along a non-negative real line. Retailers choosing to carry the good face a product-specific distribution cost

$$C = as + cx, \quad a, c > 0,$$

where a is the per unit cost of service provision, c is the marginal distribution cost, and x is the number of units sold.

Due to the absence of property rights over the services they provide, it is assumed that discounters will set $s = 0$ and drive the service-providing, higher cost retailers from the free trade markets. Thus, the zero profit, free trade retail market equilibrium, where $s = 0$, yields a retail price of

$$P_r = P_w + c, \tag{1}$$

where P_r is retail price and P_w is wholesale price. In a fair trade (RPM) market however, the manufacturer can control retail and wholesale price, creating a large enough margin through retail price in excess of $P_w + c$ to allow service-providing retailers to carry the product. The maximum level of services s^* , will depend on the wholesale price, P_w , the retail price chosen by the manufacturer, P^* , and the retail demand at P^* . For RPM to be effective,

consumers must prefer to purchase from retailers providing s^* . Hence, retail competition insures that all retailers will provide s^* in the fair trade markets.

Market demand is a function of P_r and the aggregate level of services offered, which is proportional to s . Hence, demand per store is:

$$x^D = g(P_r, s), \quad g_1 < 0, \quad g_2 > 0 \quad (2)$$

The authors assume that market demand is uniformly distributed across retailers. Because s will always equal zero in free trade markets and s^* in fair trade markets, $g(P_r, s)$ also describes sales per store. Profit per store is given by

$$\Pi^R = (P_r - P_w - c)g(P^*, s^*) - as^* \quad (3)$$

The service index s^* is defined by the equilibrium zero profit condition to be

$$s^* = \frac{1}{a}(P^* - P_w - c)g(P^*, s). \quad (4)$$

The authors then differentiate s^* with respect to P^* and P_w . Through a series of substitutions involving the price and service elasticities of demand, they obtain

$$\frac{\partial s^*}{\partial P^*} = \frac{-s^*}{1-\eta_2} \left(\frac{1}{(P^* - P_w - c)} + \frac{\eta_1}{P^*} \right), \text{ and} \quad (5)$$

$$\frac{\partial s^*}{\partial P_w} = \frac{-s^*}{(1-\eta_2)(P^* - P_w - c)}, \quad (6)$$

where $\eta_1 = P_r/g \cdot \partial g/\partial P_r$ and $\eta_2 = \frac{s}{g} \frac{\partial g}{\partial s}$.

Now consider the manufacturer's pricing decisions. He must set P_w for all markets and choose P^* for the fair trade markets. Because all markets operate under identical demand conditions, they are assumed to be of equal size. Let ϕ denote the percentage of markets permitting RPM and $1 - \phi$ the percentage of free trade markets. If the manufacturer faces a constant cost of production θ , then his average profit per retailer will be

$$\Pi^M = (P_w - \theta) [\phi g(P_r^*, s^*(P_r^*, P_w)) + (1 - \phi)g(P_w + c, 0)]. \quad (7)$$

To maximize (7), profit is differentiated with respect to P^* and P_w . The derivatives are then algebraically manipulated so that the first order conditions may also be expressed in terms of the price and service elasticities η_1 and η_2 , yielding

$$\begin{aligned} \frac{\partial \Pi^M}{\partial P_w} = & \phi g(P^*, s^*) \left[1 - \frac{\eta_2 (P_w - \theta)}{(1 - \eta_2) (P^* - P_w - c)} \right] \\ & + (1 - \phi) g(P_w + c, 0) \left[1 + \eta_1 \frac{(P_w - \theta)}{(P_w + c)} \right] = 0, \end{aligned} \quad (8)$$

$$\frac{\partial \Pi^M}{\partial P_r^*} \Rightarrow P^* = \frac{\eta_1}{\eta_1 + \eta_2} (P_w + c) \quad (9)$$

where $0 < \eta_2 < 1$ and $\eta_1 < -1$. Thus, (9) indicates that the RPM price is simply a markup over the free trade price $P_w + c$.

The markup factor $\frac{\eta_1}{\eta_1 + \eta_2}$ must be greater than one to ensure profit maximization.

This markup will be greatest for products for which sales are quite responsive to dealer services while price sensitivity is relatively slight.¹⁸ This coincides with our intuition of the conditions under which RPM will be most effective; i.e., that the demand lost due to the RPM price increase will be slight relative to the demand increase which results from the provision of those services. Thus, the model indicates that for manufacturers selling in both RPM and free trade markets at a common wholesale price, P^* will exceed $P_w + c$ by an amount that is larger, the greater is the responsiveness of demand to services and the less price elastic is demand.

Equation (8) can be simplified by approximating $g(P_w + c, 0)$ with a first order Taylor series expansion around $g(P^*, s^*)$. Once again, the resulting equation is rearranged, using η_1 and η_2 to obtain

$$g(P_w + c, 0) = g(P_r^*, s^*) \left[\frac{P_r^* (1 - \eta_1 - \eta_2) + \eta_1 (P_w + c)}{P_r^*} \right] \quad (10)$$

¹⁸As $\eta_2 \Rightarrow 1$ and $\eta_1 \Rightarrow -1$, the market up term $\frac{\eta_1}{\eta_1 + \eta_2} \Rightarrow \infty$ given that $|\eta_1| > \eta_2$.

By substituting (9) and (10) into (8), the authors obtain (11) which expresses $P_w + c$, the free trade retail price, as a markup over the sum of the marginal distribution and production costs of the product:

$$P_w + c = \left(\frac{1}{1 + \eta_1} \right) \left[\eta_1 + \frac{\phi \eta_2}{1 - (1 - \phi) \eta_2} \right] (c + \theta). \quad (11)$$

In order to obtain P^* , the RPM retail price, equation (11) need only be multiplied by the markup factor in (9) which yields

$$P^* = \frac{\eta_1}{(\eta_1 + \eta_2)(1 + \eta_1)} \left[\eta_1 + \frac{\phi \eta_2}{1 - (1 - \phi) \eta_2} \right] (c + \theta). \quad (12)$$

The authors next examine the polar cases of universal free trade ($\phi = 0$) and universal RPM ($\phi = 1$). The universal free trade price P_r^O is obtained by solving (11) for $\phi = 0$,

$$P_r^O = P_w + c = \frac{\eta_1}{1 + \eta_1} (c + \theta). \quad (13)$$

Where RPM is everywhere legal, $P_w + c$ is given by

$$P_w + c = \frac{\eta_1 + \eta_2}{1 + \eta_1} (c + \theta) \quad (14)$$

Multiplying (14) by the markup term in (9) yields the optimal retail price under universal RPM,

$$P_r^* = \frac{\eta_1}{1 + \eta_1} (c + \theta) \quad (15)$$

A comparison of (13) and (15) shows that the retail price under universal RPM is exactly the same as the retail price under universal free trade. The only restrictions necessary for this outcome are that RPM service provision causes iso-elastic shifts in demand and that the marginal distribution cost c , be identical for service providing as well as discount dealers. The latter restriction is satisfied by C , the additive total product distribution cost the retailer faces. If the service level did affect the marginal selling cost it could be charged for directly but, as will be incurred by the retailer whether or not he makes the sale.

Thus, when $\phi = 1$, the manufacturer can charge all retailers a lower wholesale price which offsets the higher retail margins needed for the provision of RPM services. It is the mixed jurisdictional setting and the compromise wholesale price such a setting requires which produces the disparity between fair and free trade prices. Consequently, the cross-jurisdictional price comparisons, from which the policy decisions of Congress were derived in the repeal of the Miller-Tydings Act, have little basis for evaluating the price effects of RPM.

As long as the appropriate monopoly price is not altered by the imposition of RPM, the manufacturer will offset the increased margins with a reduction in wholesale price. It is his inability to discriminate between free and fair trade

jurisdictions when setting P_w that causes the difference in observed retail prices. This inability to discriminate shifts a portion of the costs of the services from manufacturers who are willing to pay for them to consumers who might be less willing to do so. Since the available data all involve cross-jurisdictional price comparisons, the authors next examine how prices vary with ϕ , the fraction of jurisdictions permitting RPM. Assuming the elasticities η_1 and η_2 are constant in the neighborhood of a particular ϕ , this can be done by differentiating (12) with respect to ϕ

$$\frac{\partial P_r^*}{\partial \phi} = \underbrace{\left(\frac{\eta_1}{\eta_1 + \eta_2}\right)}_{(+)} \underbrace{\frac{\eta_2(1-\eta_2)}{[1-(1-\phi)\eta_2]^2}}_{(+)} \underbrace{\left(\frac{c+\theta}{1+\eta_1}\right)}_{(-)} < 0. \quad (16)$$

From (16) we see that the wholesale price falls as the fraction of RPM jurisdictions increases. A glance of equations (9) and (13) should satisfy the reader that both RPM and free trade prices will also fall as ϕ increases, leaving only those jurisdictions which shift from free trade to RPM with a price increase.

Why then did political support for RPM erode over time? The authors posit that policy makers simply did not observe the true costs of RPM. By repealing fair trade laws, policy makers could avoid the higher retail price which results from RPM in a mixed setting by taking advantage of the lower, compromise wholesale price. In addition, they would allow

their retailers to free-ride on the services of neighboring fair trade states, thereby attracting out of state business.

From the frame work of the preceding model, the authors derive a simple model of choice for jurisdictions considering whether or not to adopt RPM. From a consumer viewpoint, the price differential observed between their fair trade and a neighboring free trade jurisdiction would constitute the real cost of the RPM induced services they receive. Hence, by defining the cost of services to be $\Gamma = P_R^* - P_R^O$, the authors derive

$$\frac{\partial \Gamma}{\partial \phi} = \frac{-n_2^2(1-n_2)(c+\theta)}{(1+n_1)(n_1+n_2)[1-(1-\phi)n_2]^2} < 0. \quad (17)$$

Thus, the marginal cost of RPM induced services will fall as the percentage of fair trade jurisdictions rises. On the otherhand, the benefits consumers obtain from the RPM induces services will be independent of ϕ . These services will be provided in the fair trade jurisdiction regardless of the status of neighboring jurisdictions.

Figure (1) depicts the marginal cost versus the marginal benefit of adopting RPM as functions of ϕ , where Γ defines the cost and benefits are defined as the value consumers place on the services provided under RPM. For $\phi < \phi^*$, the stable

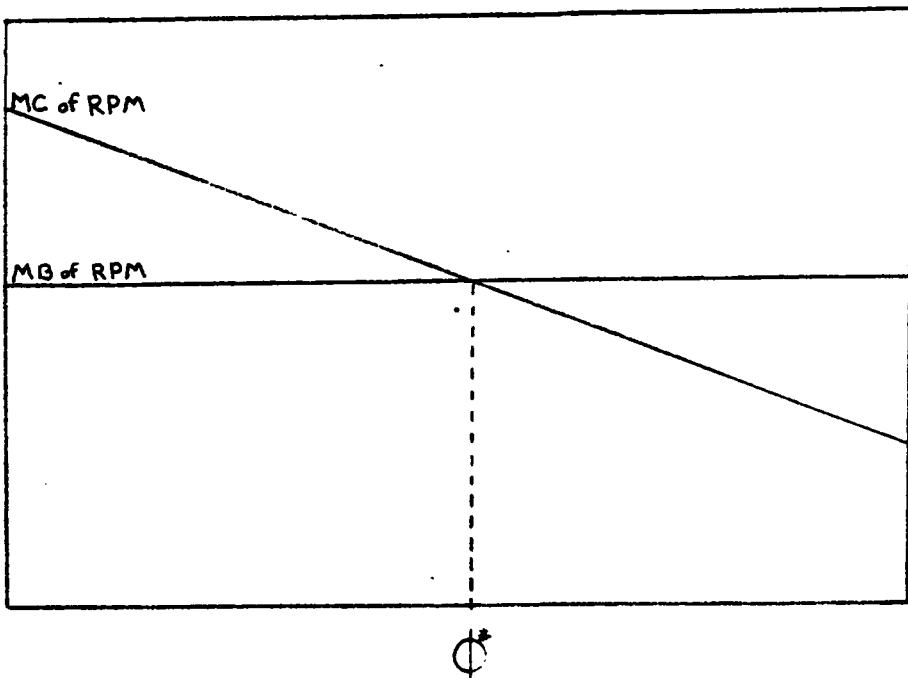


Figure 1

equilibrium will be one of universal free trade. For $\phi > \phi^*$, the stable equilibrium will be one of universal fair trade.

This simple choice model can be used to explain the rapid rise and decline of support for RPM. Most of the state RPM laws were enacted in a relatively short period of time in the mid-1930's. During this period ϕ jumped from approximately zero to very close to one. By adopting RPM, the states made an efficiency enhancing move since the benefits of doing so outweighed the costs. However, as a greater number of state courts struck down fair trade laws, ϕ fell lower and lower. This in turn, prompted state legislatures to repeal their fair trade laws until ϕ fell below ϕ^* and the cross-jurisdictional price differences were so great that Congress finally repealed the Miller-Tydings Act in 1975.

To summarize, manufacturers using RPM in a mixed jurisdictional setting are forced to use a compromise wholesale price in both jurisdictions. This compromise wholesale price shifts some of the cost of the RPM induced services from the manufacturer to the consumers. These costs in turn, will increase as the percentage of jurisdictions permitting RPM declines. Were it not for the short time interval in which a large number of state legislatures introduced fair trade bills, RPM would probably never have been widely adopted. But as the number of state court decisions holding RPM unconstitutional increased, legislatures observed larger and larger

price differentials between jurisdictions and were induced to repeal the fair trade laws.

Next, I would like to examine Gould and Preston (1965), in which the authors put forth outlets hypothesis which, in addition to the services explanation, provides yet another procompetitive use of RPM by manufacturers.

They propose that under certain market conditions, retail demand might be a function of both the product's price and the number of retailers distributing the product, (i.e, availability). Under such conditions a monopolist might, by RPM, seek to provide himself with the optimal retail market structure through which to maximize profits. He does this by increasing final demand and hence the average revenue curve through an increase in the availability of his product in the retail market.

The monopolist sells his product to numerous, competitive, single product retailers which operate under identical demand and cost conditions. The model further assumes that the manufacturer is fully successful in maintaining RPM and that the retailer believes that additional expenditures on his part will never increase the demand he faces. In other words, retailers will neither secretly cut price nor fritter away the margins created by RPM through non-price competition.

Integral to the model is the relation between the retail margin and the size of the firm, illustrated in Figure 2.

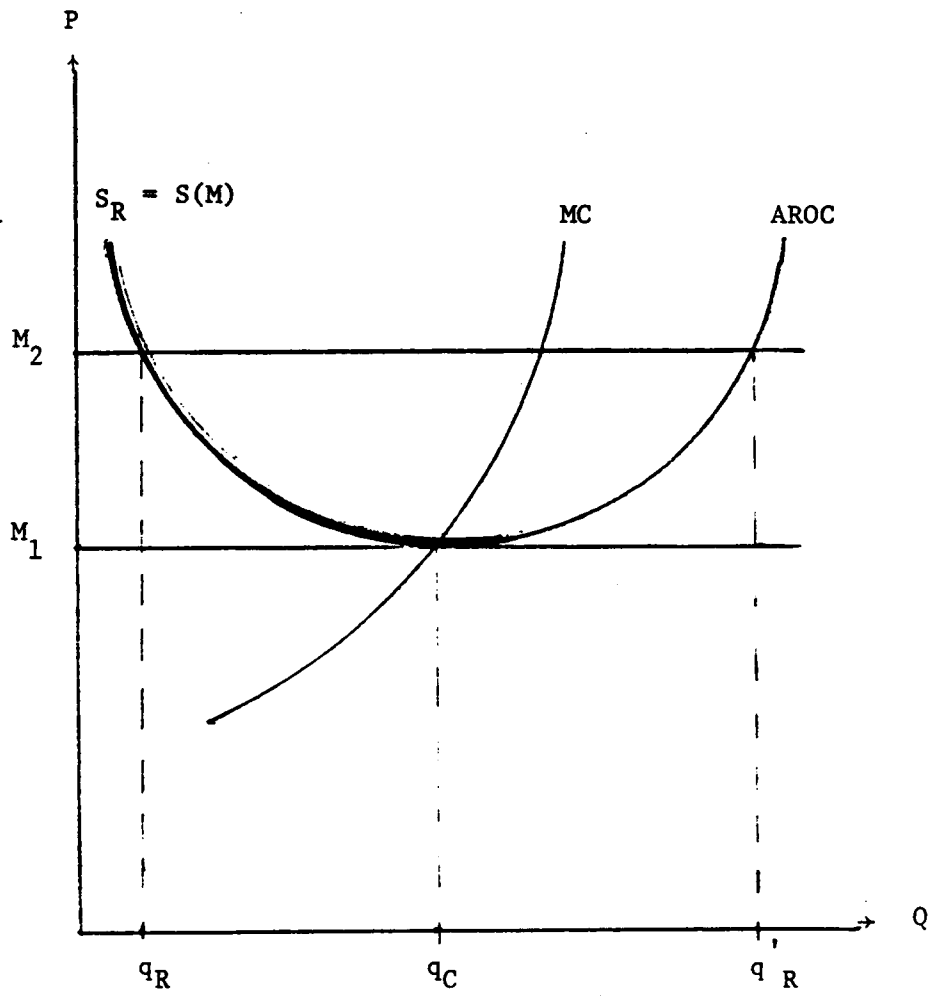


Figure 2

Under the above assumptions, the manufacturer can control the size of the retail outlet and hence, given price and quantity, the number of outlets.

In this model, average retail cost (ARC) equals wholesale price plus average retail operating cost (AROC). Since retail price equals wholesale price plus the unit margin (M_1), long run competitive equilibrium with free entry/exit implies that the unit margin will equal AROC.

Without RPM, the manufacturer has no control over firm size. Entry will force the margin down to minimum average retail operating cost and each retailer will sell q_c . Through RPM, the manufacturer can raise the margin to M_2 , causing each retailer to sell q_R , (at q'_R , $MR < MC$). Hence, by setting a particular margin through RPM, the manufacturer can choose any retail firm size defined by the falling portion of the AROC line ($S_R = S(m)$). The authors begin their analysis with the case of perfect competition in manufacturing with no RPM. Hence, the horizontal line S_c is the manufacturer's supply curve while S is the market supply curve.

Figure 3 illustrates their hypothesis that final aggregate demand is a function of both price and the number of retail outlets. Each successively higher demand curve is associated with an equal increment increase in the number of firms, (i.e.,

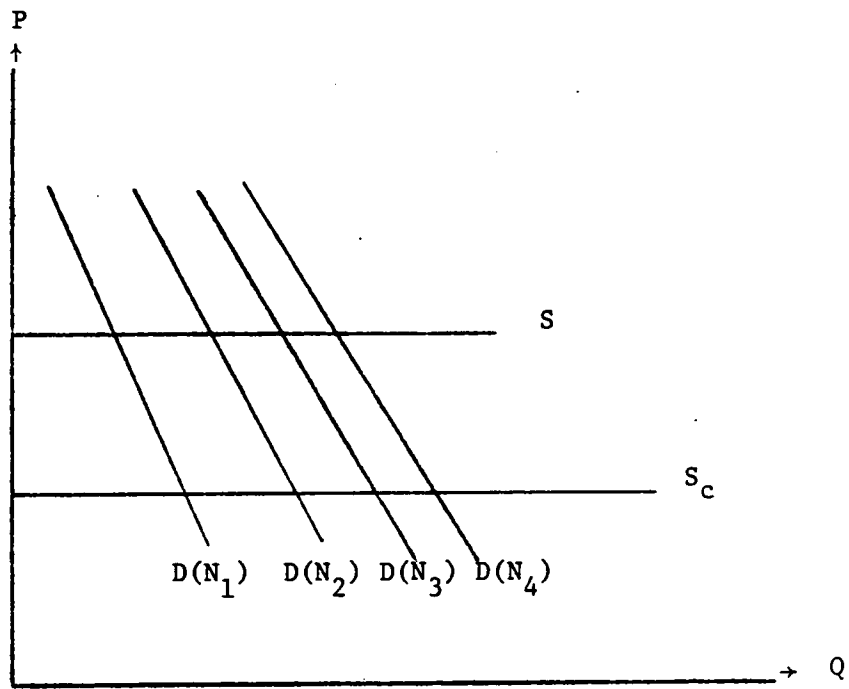


Figure 3

$N_2 - N_1 = N_3 - N_2 = N_4 - N_3$). The closer proximity of the progressive curves captures the assumption of the diminishing effect of increasing the number of outlets on final demand.

In Figure 4, DS, is the locus of points where the quantity supplied is equal to the demand generated by the N retailers, given market price. Again, the concavity of DS implies the diminishing effectiveness on demand of increasing N . Without RPM, the equilibrium size of the retail unit is determined by minimum AROC ($=M_1$) and is therefore unique. Thus, there exists a determinant relationship between Q and N . Average retail operating cost determines equilibrium quantity.

This relationship is illustrated by MN, the locus of points that gives the number of retailers which can exist in long run competitive equilibrium for any Q . Hence, full equilibrium will require both that demand equal supply and that the number of retailers be in equilibrium. Thus, (N^*, Q^*) given by the intersection of DS with MN gives us the long the run competitive equilibrium, under perfect competition and constant industry costs.

The next case examined is one where the manufacturer is a monopolist who does not practice RPM. The relation between quantity sold and the number of retailer outlets, (MN), remains unchanged. A DS curve can be similarly derived for the monopolist. With no RPM, the competitive retail margin ($M_1 = \min \text{AROC}$) can be subtracted from the linear market

demand curves to arrive at the monopolist's average revenue functions for each N . From these we can arrive at the profit maximizing quantities for each N and plot DS_m . Again, full equilibrium is given by the intersection of DS_m and MN , where the monopolist maximizes profit at Q_m^* and the number of retailers is in long run competitive equilibrium.

The shape and position of DS_m depend on the nature of the monopolist's average revenue and marginal cost functions. If demand were not a function of the number of retailers and marginal costs are constant, then monopoly output will be exactly half of the competitive output, (with linear demand

$\frac{\partial MC}{\partial Q} = 0$, and MR bisects AR). Under the outlets hypotheses however, the steeper is the marginal cost curve, the steeper will be DS_m and the steeper is the MN curve, the greater will be the monopoly contraction of output relative to Q^* .

The equilibrium for a monopolist manufacturer using RPM will be similar to that shown in Figure 4 except that now the monopolist can choose the margin he desires. Figure 5 illustrates the DS and MN curves for three such margins where M_0 is the competitive margin and M_1 and M_2 are successively higher margins. Again, given the particular M_1 , the intersection of the D_1S and M_1N curves represent the long run competitive equilibrium where manufacturers are maximizing profits for a given margin, and the number of retailers is in

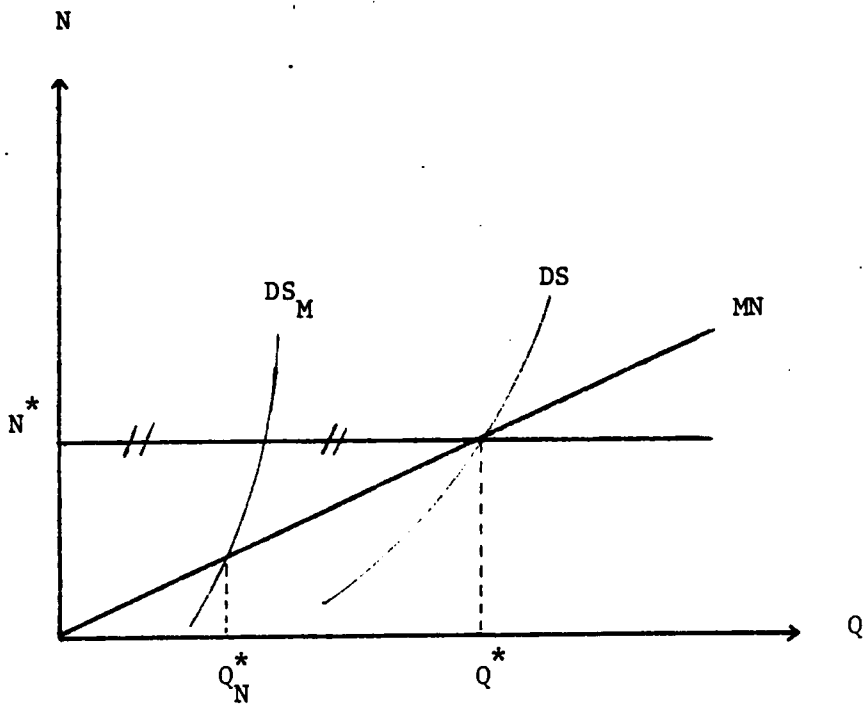


Figure 4

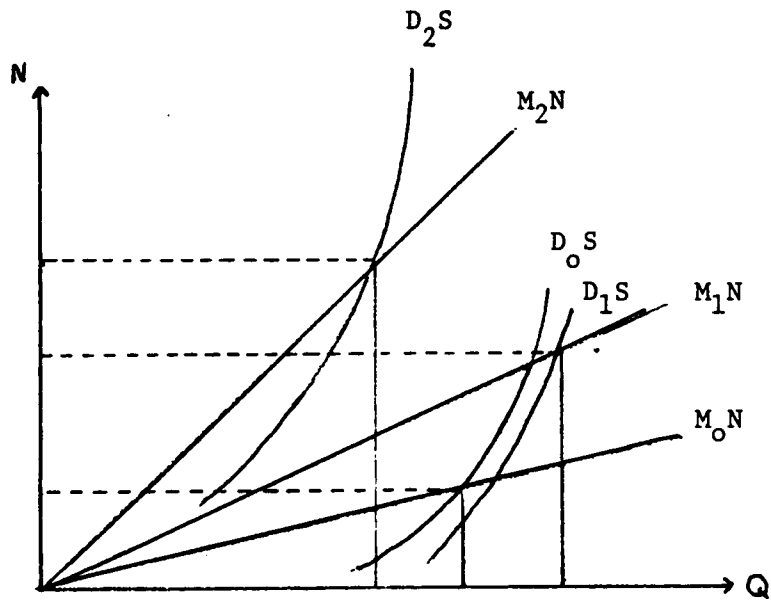


Figure 5

equilibrium. The manufacturer's problem now is to choose that margin which maximizes his profits.

It should be noted here that the outlets hypothesis does not necessarily imply that RPM will be profitable for a monopolist manufacturer. It could be the case that the competitive margin is the most profitable. There are, however, a number of implications which can be drawn from the model.

One would expect RPM to be profitable where the quantity demanded is very positively correlated with the number of retailers. That is, N should be responsive to increases in the margin, which is the cost of securing more outlets. This implies that small increases in M should lead to large decreases in the equilibrium size of the retail outlet. This result requires economies of scale in retailing, i.e., the AROC curve must slope gently at outputs before the point of minimum average cost. The model also predicts that RPM should result in an increased number of smaller outlets. This is due to the increase in M and the argument illustrated by Figure 2.

It has often been argued that RPM will increase retail price and decrease the quantity offered to the final consumer. Figure 6 illustrates conditions under which this contention is not true. The reader should interpret Figure 6 in relation to Figure 5, where D_o , AR_o , and MR_o are the demand, average, and marginal revenue curves consistent with

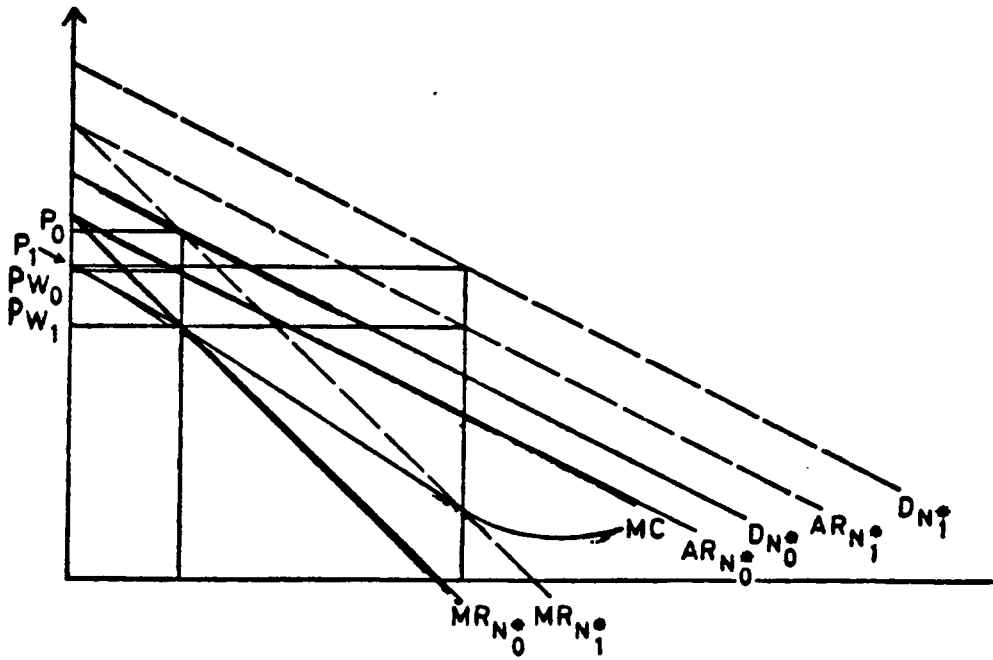


Figure 6

the competitive margin M_0 . Through RPM, the manufacturer can raise the margin to M_1 and now faces D_1 , AR_1 , and MR_1 . It can be seen from Figure 6 that not only is $P_w^0 > P_w^1$ and $P_R^0 > P_R^1$ but also that monopoly profits and output are greater under the RPM case. The reader should bear in mind that this result requires economies of scale and that η_1 , the price elasticity of demand at Q_1^* , is greater than η_0 .

This will not always be the case but it is possible under the outlets hypothesis to increase demand, through increased availability, by increasing the number of retailers handling the product. Such a policy, under proper demand and cost conditions, would be Pareto optimal.

William Holihan (1979), offers an interesting analysis of RPM using the load factor concept previously employed in transportation analysis. In his paper, he analyzes the services explanation assuming that customers seek to minimize search time plus money price, where search time is a function of total information provided by the dealers. It is measured in units of hours of expert advice available and as such, is a measure of market capacity to provide information.

Aggregate demand is a function of money price and the value of search time:

$$Q = Q(P + vt(H)), \quad (18)$$

where P is the money price, H is the market capacity of expert hours, $t(H)$ is search time as a function of total information, v is consumer's value of time per unit, and $P + vt(H)$ is the full price to consumers.

Competitive equilibrium implies zero dealer profits with identical levels of average cost. Hence, each dealer is a money price, information, and load factor (Q/H), taker. Cost per unit sold is a function of both information cost per unit and production costs. Average costs will be a decreasing function of the load factor, Q/H .

Dealer average cost for firm i is:

$$AC_i = AC(q_i/h_i) \quad (19)$$

where q_i is the quantity sold by firm i , h_i is i 's information capacity, and q_i/h_i is the load factor of dealer i .

Industry average cost is:

$$AC = AC(Q/H), \quad (20)$$

where $Q = \sum q_i$ and $H = \sum h_i$.

Since entry will force all firms to the same average cost, $AC(q_i/h_i) = AC(Q/H)$ in competitive equilibrium. Holahan characterizes an equilibrium with no barriers to entry, where prices will induce entry and/or compel existing firms to increase h_i until profits are driven to zero. In figure 7-a, dealer average cost is depicted as a decreasing function of load factor. The figure illustrates the

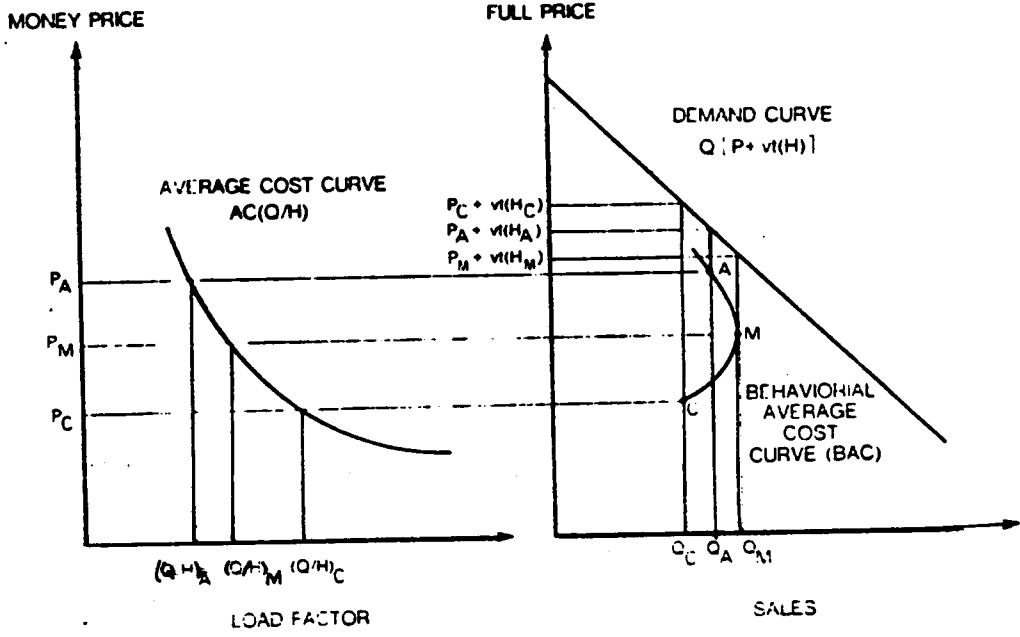


Figure 7-a

Figure 7-b

assumption that the marginal decrease in AC caused by an increase Q/H , falls to zero as the load factor tends toward capacity, (i.e., the market for information becomes saturated).

To relate dealer average customer cost, which is defined in terms of dollars, with consumer demand, which is defined as dollars plus the value of search time, Holahan creates the behavioral average cost curve, (BAC) which is illustrated in figure 7-b. To derive the BAC curve, one chooses a price floor, P_A . As dealers enter in response to the positive profits available at P_A , their load factor will fall and average cost will rise. The process will continue until equilibrium is reached where $AC_i = P_A$. Other points on the BAC curve can be derived in the same manner.

Note that this analysis assumes each dealer to be a load factor taker and that the free entry equilibrium is char-

acterized by $\frac{\partial(Q/H)}{\partial H} < 0$. Since firms face perfectly

elastic demand at A, they now take both price and search time as given. Consumer demand at the full price $P_A + vt(H_A)$ equals industry supply at the money price, P_A . Because each dealer is small relative to the industry and is a load factor taker, marginal cost is equal to average cost. In equilibrium, $P_A = AC(Q_A/H_A)$, hence production is technically efficient since price equals marginal cost.

In order to compare non-RPM and RPM equilibria, the author employs comparative statics to determine the interaction of demand and cross-elasticities in the establishment of minimum average cost. Minimum average cost is located where $dAC/dP = 0$ and $d^2AC/dP^2 > 0$. These conditions are satisfied when

$$1/Q (dQ/dP) = 1/H (dH/dP) \quad (21)$$

and

$$1/Q (d^2Q/dP^2) < 1/H (d^2H/dP^2). \quad (22)$$

Equations (21) and (22) imply that the point of minimum average cost occurs where, for a small price increase, the percentage change in sales equals the percentage change in expert hours and that the rate of change in sales is greater than the rate of change in expert hours. Equation (21) implies only that dQ/dP and dH/dP are the same sign, hence two cases must be analyzed:

Case I: dQ/dP and dH/dP are both positive where average costs are minimized. This corresponds to the backward bending BAC curve figure 7-b.

Case II: Here both dQ/dP and dH/dP are negative where costs are minimized. This corresponds to figure 8-b where the BAC curve is everywhere negatively sloped.

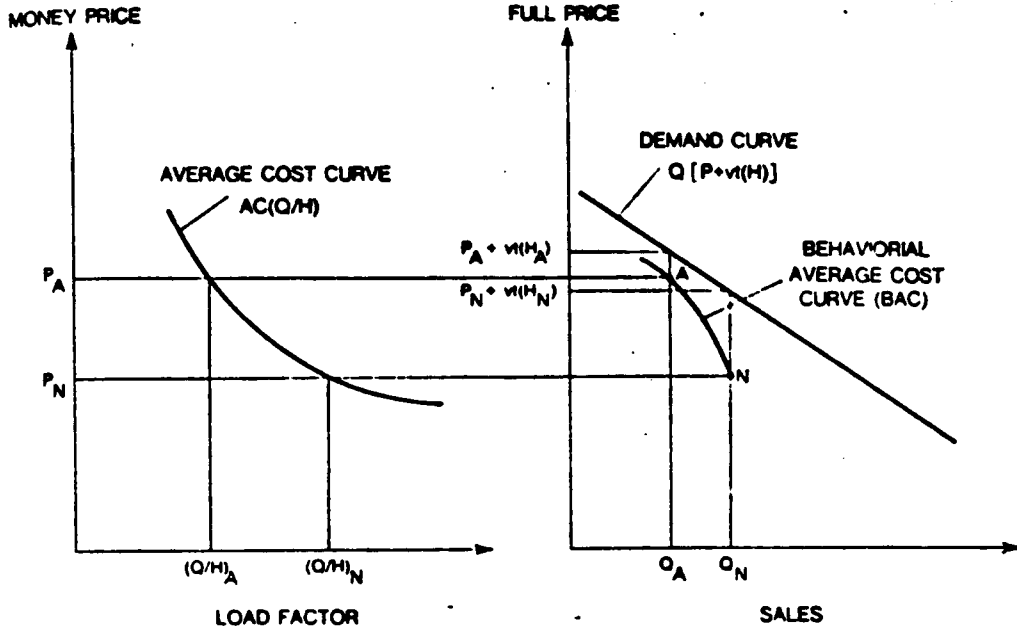


Figure 8-a

Figure 8-b

Both are possible. Which case occurs depends upon the price elasticity of demand. Noting that dealers will either enter or exit in response to a price increase, Holahan derives

$$\frac{dH}{dP} \Big|_{P-AC=0} = \frac{(1-\gamma\beta)}{\frac{d(AC)}{d(Q/H)} \cdot \frac{\partial(Q/H)}{\partial H}} \quad (23)$$

Since the denominator of (23) is positive, dealers will enter, or increase H if $1-\gamma\beta > 0$ and exit, or decrease H if $1-\gamma\beta < 0$, in response to the price increase. Here γ is the elasticity of AC w.r.t. load factor and β is the price elasticity of demand. Thus if $\gamma\beta > 1$, an increase in the price floor will cause a decrease in sales and dealers will exit as average cost rises. If $\gamma\beta < 1$, and increase in the price floor will cause an increase in H .

The manufacturer wishes to maximize sales through choice of retail price. In other words, he must find the lowest possible zero-dealer-profit full price on the BAC which induces dealers to seek the maximum quantity demanded. This corresponds to (P_M, Q_M) for Case I, (see figure 7-b) and (P_N, Q_N) for Case II, (see figure 8-b). For $\gamma\beta < 1$ (Case I), the manufacturer must employ RPM to achieve (P_M, Q_M) . Otherwise, dealers will lower money price. This will increase their demand and hence q_i/h_i which in turn lowers the average cost they face until (P_C, Q_C) , the point of minimum average cost is reached.

This non-RPM equilibrium yields a lower money price, less information, greater search time, lower total sale, and a higher full price. It can be seen from figure 8-b that the points of zero-profit sales maximum and minimum-average-cost competitive equilibrium coincide. Hence, while a RPM price floor of P_M will be necessary and sufficient for sales maximization for Case I, where $\gamma\beta < 1$, such a price floor would reduce sales and manufacturer profits in Case II.

Where does all this lead to? Price theory predicts that a competitive manufacturer faces a very elastic demand curve, (i.e., $|\beta| \gg 1$). Therefore, γ must be very small if $\gamma\beta < 1$ for the competitive manufacturer. But small γ implies that information is inexpensive for dealers to provide, which means they have little incentive to underprovide it.

On the other hand, the monopolist manufacturer will set price where demand is price elastic and RPM will be advantageous if $\gamma\beta < 1$, which is much more likely than under manufacturer competition. Therefore, the model implies that the use of RPM is a sufficient but not necessary condition for monopoly power, while competitive manufacturers would be unlikely to maintain prices.

Marvel and McCafferty offer us yet another reason manufacturers might wish to employ RPM. In their paper, "RPM

and Quality Certification," they present a model, intended to compliment Telser's service - free-rider explanation, which is based on the manufacturer's desire to obtain quality certification of its products.

Quality certification will occur where consumers regard certain dealers as possessing superior abilities to certify the quality of branded products. Such certification will be valuable to manufacturers but will be subject to free-riding when the product is branded since customers are free to purchase the brand from a discounter after ascertaining its quality or stylishness through a reputable dealer.

The services - free-rider argument works well for the case where tangible services, provided by dealers, increase demand for the manufacturer's product but will not be provided in the absence of RPM due to free-riding by discounters. Because these services must be tailored to the customer's needs, they cannot be provided efficiently by manufacturers.

Unfortunately, much of the antitrust school of thought has come to believe that in the numerous cases where such services do not exist, RPM is anticompetitive. This article proposes an explanation of the use of RPM for the broad range of products where tangible dealer services are absent. Under this hypothesis, retailers serve as agents for their customers, selecting from the available range of

products those which they feel will appeal to their clientele.

If a retailer has built a reputation for carrying only high quality products, then any product he stocks will be backed by that reputation. Since sales and hence profits accounted for by any one product are a small percentage of the manufacturer's total business, consumers can be fairly sure that no quality retailer will risk damaging his reputation by stocking inferior products.

In an analogous manner, dealers will certify style. If consumers value the style information provided for them, these resource expenditures will be profitable to dealers. Manufacturers will benefit from style certification since it will increase the demand for their apparel items.

However, if the item is branded and branding implies quality standardization to consumers, then the free-rider problem will still plague the distribution system. Without RPM, exclusive retailers will be unable to capture the returns necessary to cover the increased expense of hiring knowledgeable buyers. Hence, even though there are no tangible services present, RPM helps to ensure that a manufacturer's product is distributed by retailers whose reputation provides valuable information about product characteristics to consumers.

The lack of tangible services implies that reliance on retailer quality certification will decline as the brand becomes better known. This, in turn, indicates that RPM may be particularly effective as a competitive technique for entry. Another important difference which should be noted here is that the services, (non-price competition), argument implies competitive returns, while quality certification leaves open the possibility that some retailers will earn supra-competitive returns.

Their model begins in the retail sector with the manufacturer's differentiated product being distributed under competition. Since sales of any one product are small relative to the total sales of the retailer, the characteristics of the retail outlets are fixed and will not respond to the actions of manufacturers. Retailers provide two services; they make good available to consumers and they certify the quality or stylishness of the goods they offer for sale.

Manufacturers consider the quality distribution of retailers as given and uniform over $[0,1]$ and normalize the quality level of their product. Retailers make an independent quality assessment. Hence, $q \in [0,1]$ is the set of all retailers willing to stock the manufacturer's product for sufficient compensation. Here, q is indicative of the manufacturer's assessment of the retailer's quality level.

The manufacturer's problem then is that without certification, consumers might underestimate the quality of his product. For new or little known brands, dealer certification is more efficient because the reputation effects of advertising are small.¹⁹ Dealers will not provide this certification unless manufacturers can guarantee compensation for the costly quality assurance services they provide. RPM can be used to avert this potential market failure by guaranteeing sufficient gross margins to quality dealers.

Maintaining a quality reputation is not costless. Higher quality outlets are assumed to face higher distribution costs relative to the lower quality distributors. Hence, the product specific distribution cost is broken down into two parts:

1. Quality level maintenance costs, aq , where q denotes the retailer's quality level or reputation and
2. $c(x)$, product specific variable distribution cost as a function of unit sales, x .

Therefore, all retailers face a common cost of sale function of the form

$$C = aq + c(x); \quad a > 0, c' > 0, c'' > 0 \quad (24)$$

¹⁹See Nelson, P., "Advertising as Information," Journal of Political Economy, (July/August) 1974, p. 729.

Product specific costs arise from the retailers need to monitor the quality level of each product he stocks in order to be sure that it is consistent with his reputation. Product sale costs are assumed separable.

Retailers are assumed to be price takers who cannot sell their quality certification services to manufacturers or consumers. Hence, they buy at the price P_w set by the manufacturer and sell at the retail price P_r , set by the market.

Retailer sales of a product will be determined by the familiar first order condition.

$$P_r - P_w = c'(x); \quad (25)$$

which implies a retailer supply function for each product of,

$$x = f(P_r - P_w); \quad f' = \frac{1}{c} > 0.$$

Since each retailer has a product specific fixed cost associated with his quality level, a retailer of quality level q will only stock a manufacturer's product if its sales are sufficient to cover aq . The highest quality retailer willing to stock the manufacturer's product will be the one earning zero profits on that product. Let q^* denote this quality level. Zero profits imply

$$(P_r - P_w)f(P_r - P_w) - \{aq^* + c[f(P_r - P_w)]\} = 0 \quad (26)$$

therefore,

$$q^* = \{(P_r - P_w) f(P_r - P_w) - c[f(P_r - P_w)]\} a^{-1}, \text{ and} \quad (27)$$

$$\frac{dq^*}{d(P_r - P_w)} = \frac{f(P_r - P_w)}{a} > 0.$$

A manufacturer can increase q^* by increasing the gross margin $(P_r - P_w)$ he provides the retailer. He can also refuse to deal with low quality retailers and will choose to do so if this policy makes higher quality rivals more willing to carry his product. If we denote this minimum dealer quality level $q_{min} \geq 0$ and the availability of the good is $q^*(P_r - P_w) - q_{min}$, the market supply of the good will be the number of retailers stocking the good times the quantity they stock:

$$X^S = (q^*(P_r - P_w) - q_{min}) f(P_r - P_w) \quad (28)$$

The market demand for the good is a function of P_r , the good's availability, and the consumer's perception of the good's quality. Product quality will be at least as high as the highest quality dealer stocking the product. If we assume the consumer knows q^* , market demand is given by:

$$X^d = g\{P_r, q^*, \max [(q^* - q_{min}), 0]\} \quad (29)$$

where $g_1 < 0$, $g_2, g_3 > 0$.

The manufacturer will set P_w and q^* leaving market forces to determine the equilibrium quantity demanded.

The equilibrium is given by

$$g\{P_r, q^*, \max[(q^* - q_{\min}), 0]\} - (q^* (P_r - P_w) - q_{\min})f(P_r - P_w) = 0 \quad (30)$$

$$\text{s.t. } q^* - q_{\min} > 0$$

Equation (30) gives the equilibrium retail price as an implicit function of P_w and q_{\min} . With the help of certain assumptions and the differentiation of (30) the authors posit that

$$\partial P_r / \partial P_w < 1 \quad (31)$$

that is, the equilibrium margin falls when P_w increases, causing the previously highest quality dealers to drop the product which implies X^d will fall because $g_3 > 0$. The market equilibrium of the retail sector is characterized by a manufacturer's demand curve of the form,

$$X = X(P_w, q_{\min}).$$

(-) (?)

Given this demand function and no RPM, the manufacturer maximizes profit through choice of P_w and q_{\min} , s.t. $q_{\min} \geq 0$.

Assuming a constant cost of production, θ , profits are given by

$$\Pi^M = (P_w - \theta)X(P_w, q_{\min}). \quad (32)$$

The Kuhn Tucker conditions are given by

$$X(P_w, q_{\min}) + (P_w - \theta) \frac{\partial X}{\partial P_w} = 0, \quad (33)$$

$$[(P_w - \theta) \frac{\partial X}{\partial q_{\min}}] q_{\min} = 0.$$

Let P_w^e and q_{\min}^e denote the solutions of (33). The first condition guarantees that $P_w > \theta$. To interpret the second condition it must be remembered that manufacturers will set a q_{\min} only if it increases demand by making the higher quality rivals more willing to stock the manufacturer's product. This will not be the case if $\frac{\partial X}{\partial q_{\min}}$ is everywhere negative. When

this is true, the second condition implies that we set $q_{\min} = 0$. If $\frac{\partial X}{\partial q_{\min}} > 0$ for some $q_{\min} \in [0, 1]$, the value of q_{\min} is increased until $\frac{\partial X}{\partial q_{\min}} = 0$.

In order to analyze the effects of RPM, the authors examine conditions under which the firm can improve its profitability by setting a RPM price level above the equilibrium retail price (P_r^e) corresponding to P_w^e and q_{\min}^e . In particular, conditions for which

$$\frac{\partial \Pi^M(P_w, q_{\min}, \bar{P}_r)}{\partial P_r} \Bigg|_{\substack{P_w = P_w^e \\ q_{\min} = q_{\min}^e \\ \bar{P}_r = P_r^e}} > 0. \quad (34)$$

To characterize how the market functions at $P_r = \bar{P}_r > P_r^e$, the authors assume that demand is uniformly distributed across retailers, which implies that actual sales at each retailer are

$$x = \frac{g(\bar{P}_r, q^*, q^* - q_{\min})}{q^* - q_{\min}} \leq f(P_r - P_w) \quad (35)$$

Since retail price has risen, each outlet will sell less than before, but there will be more outlets carrying the product. Hence, RPM affects retailers directly through P_r and indirectly through q^* by altering availability and perceived quality. Thus, the higher price gives us a new q^* and we must replace (27) with

$$q^* = \{(\bar{P}_r - P_w)x(\bar{P}_r, q^*, q^* - q_{\min}) - c[x(\bar{P}_r, q^*, q^* - q_{\min})]\}a^{-1}. \quad (36)$$

The manufacturer's profits are given by

$$\Pi^M = X(\bar{P}_r, P_w, q_{\min})(P_w - \theta). \quad (37)$$

Manufacturers will choose to institute RPM if the increase in \bar{P}_r above P_r^e leads to higher sales. This will be true if the increase in demand due to the entry of higher quality retailers is greater than the decrease in demand caused through the direct price effects of raising P_r . Therefore, RPM will be advantageous as long as $dx^d/d\bar{P}_r > 0$.

As we have already noted, (33) implies two distinct cases:

$$\text{CASE I: } \frac{\partial X}{\partial q_{\min}} = 0, \quad (38)$$

with $q_{\min}^e > 0$. In this case, RPM will always be advantageous to the manufacturer. While the net effect of refusals to deal may increase demand through the increase in q^* , refusals to deal decrease demand by decreasing availability. By instituting RPM, a manufacturer can raise q^* without sacrificing outlets for his product, the best of both worlds. Thus, firms that refuse to deal will always find RPM beneficial (where $g_3 > 0$).

$$\text{CASE II: } \frac{\partial X}{\partial q_{\min}} < 0 \quad (39)$$

with $q_{\min}^e = 0$. In case II, manufacturers will never refuse to deal but whether or not they adopt RPM will depend on the net effect of the gain in demand from the attraction of higher quality retailers vs. the loss in demand from the higher retail price.

The reader must bear in mind that neither of these solutions represent a complete equilibrium. In both cases, retailers with quality levels $q \in [0, 1)$ will earn supracompetitive returns which might invite entry. If the resale price maintained products are a small percentage of the retailers total sales or if choices of q^* and q_{\min} vary greatly among manufacturers, the rents earned by retailers on fair trade products will be small and therefore unlikely to attract much

entry. On the other hand, if RPM is widespread and choices of q^* are similar among manufacturers, entry by retailers with $q < q^*$ is likely to occur.

For Case I with no RPM, one would expect the entry of retailers with quality level q_{min} to occur until the higher quality retailers were driven from the market. The result will be a uniform retailer quality level of q_{min} , not the level the manufacturers would have preferred.

If the assumption that demand is uniformly distributed among dealers is relaxed and we impose RPM, the resulting equilibrium will be more stable. If the consumer must travel to the quality retailer in order to obtain product certification, he will purchase from that store since prices are equal and additional travel expenses must be incurred in order to purchase from a lower quality dealer.

The model has several implications. One is that RPM will be most effective for goods which are not purchased routinely or goods for which quality information is subject to rapid change. Another is that retailers will not advertise the availability of such goods unless distribution is strictly limited. Finally, where RPM is illegal, low quality entry will force high quality retailers and the information they provide from the market only if the market is large enough to support the free-riding retailers. Hence the disparity between fair and free trade jurisdictions will be greatest

when comparing urban versus the smaller rural markets. Marvel and McCafferty conclude their paper by providing empirical evidence in support of this last point.

Having produced a procompetitive RPM explanation of their own, in their next paper, Marvel and McCafferty (1985), the authors explore the welfare implications of a number of RPM arguments. They begin by analyzing the anticompetitive uses of RPM by manufacturer cartels. It has been proposed that such cartels would employ a system of RPM to reduce the manufacturer's incentive to secretly lower price to its distributors in order to increase the demand for its products at the expense of cartel members. Under RPM, manufacturers could at best increase demand through the attraction of new outlets or by favorable handling of their goods because dealers were prevented from reducing the final price to consumers. Hence, a manufacturer cartel might use RPM to reduce member's incentive to cheat but would attempt to keep dealer margins as low as possible.

B. S. Yamey proposed that RPM could be used by cartels to induce distributors to deny their services to entering rivals.²⁰ Wholesalers who stuck to the specific price would

²⁰Yamey, B. S., The Economics of Resale Price Maintenance, pp. 34-35 and p. 368, (1954).

be given rebates at the end of the contract period. This seems a most plausible explanation for the use of RPM by the sugar trust.²¹ There exists evidence that the wholesalers did indeed refuse to deal with new entrants, forcing them to distribute directly through retailers. If the intent was anticompetitive, the attempt to force higher distribution costs on potential rivals failed. The new entrants could match the margins set by the incumbent manufacturers and entry was successful.

The authors argue that even if a manufacturer cartel exists which decreases welfare, it is the cartel which should be attacked, not RPM. While RPM might delay the erosion of monopoly profits it does not deter entry. Its employment could be useful to antitrust authorities and perhaps should be added to the list of cartel inducing factors such as limited numbers, homogeneous products, etc.

They argue further, that dealer cartel theories cannot explain manufacturer's apparent penchant for RPM and that the pattern of support for RPM emerging from a FTC survey also indicates a stronger support of RPM by manufacturers than dealers. Hence, all dealer cartel theories should establish some direct benefit to the manufacturer and no such theory

²¹Richard Zerbe, "The American Sugar Refinery Company, 1887-1914: The story of a Monopoly", Journal of Law and Economics, Vol. 12, p. 339 (1969).

should imply monopoly rents conferred to dealers through RPM margins. This would be highly improbable given the ease of entry, the large numbers of retailers, and the diversity in strength of their organizations. In summary then, the welfare effects of cartels will not be altered by a ban on RPM. Manufacturer cartels will attempt to hold margins to the competitive minimum and hence will not prevent entry while dealer cartels are unlikely to exist.

It has often been asserted that the welfare effects of RPM were positively correlated with its effect on output. In other words, if RPM increased output, then welfare increased and visa versa. Marvel and McCafferty assert that RPM induced services are analogous to price discrimination. Additional customers are attracted due to the services while other customers, who do not value the services at the new price, are lost. Hence, the welfare effect is ambiguous.

This problem is inherent in the manufacturer's choice of the optimal level of services. Because a profit maximizing manufacturer focuses on the marginal customer while allocative efficiency deals with the infra-marginal customer, the manufacturer may choose an excessive level of services from society's standpoint.

Their argument goes something like this: If the increased revenues from RPM induced services are greater than their costs, manufacturers will provide the services and

customers, attracted because they value these services, are better off. Yet some infra-marginal customers who place zero value on the services are still willing to buy the product at the higher price and hence are worse off due to their loss of consumer surplus.

The argument is illustrated in Figure 9. A, who was an infra-marginal customer is now the marginal customer A'. He places zero value on the services provided and has lost consumer surplus equal to the increase in cost due to the provision of services. Thus, even though output may have increased, welfare could have decreased if the total consumer surplus lost by customers represented by A' is greater than the surplus gained by new customers.

Marvel and McCafferty end their paper with a discussion of loss leader selling by retailers as an explanation of why some manufacturers would desire RPM. This argument is a subcategory of Gould and Preston's outlet hypothesis.

Some retailers, especially new entrants, might display name brand products and sell at marginal cost, ignoring the fixed cost of shelf space in order to attract customers. This will lead to the same unstable distribution system which exists for retail markets characterized by decreasing average costs which are everywhere greater than marginal cost. The competition for more customers by loss leaders will force returns below the opportunity cost of shelf space for dealers

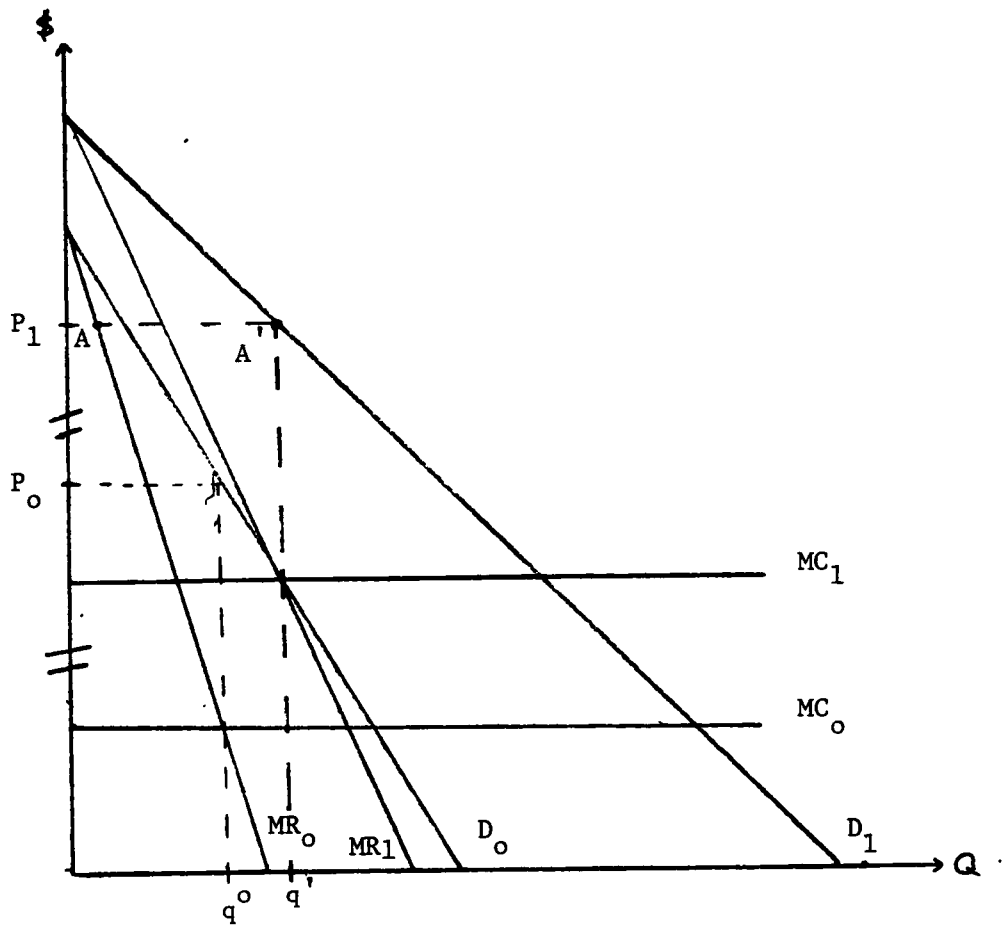


Figure 9

not using loss leader tactics and hence, these dealers will drop the product. Thus, even though demand may increase for the loss leaders, the net effect of the decrease in availability will be a decrease in sales of the manufacturer's product.

The welfare analysis is identical to that of the services case. The characteristic common to most theories of a manufacturer's use of RPM is the need to create a property right which allows dealers to cover the cost of their fixed investment. Without that property right dealers will sell at the marginal cost of distribution without covering the fixed investment that manufacturer find desirable. Since it is the dealer's property right, one might expect them to pressure manufacturers to institute RPM. It is possible that such pressure could result in excessive margins, not absorbed by the manufacturer through wholesale price. In this case the occurring welfare loss would be difficult to cope with through antitrust policy. Another related problem is that RPM may extend the life of distribution systems in the face of newer, more efficient rivals since the new rivals may need to grow to some threshold size in order to induce the manufacturer to abandon his existing distribution system. Indeed, this may have been the goal of the druggists supporting fair trade laws. Even with these welfare reducing consequences in mind,

the authors conclude that where RPM is adopted willingly by manufacturers, it will be efficiency enhancing.

Mathewson and Winter (1983), have also produced a paper analyzing the welfare effects of RPM, where they examine both the incentives for and the welfare effects of RPM. Since they so thoroughly demonstrate the manufacturer's incentives to use RPM to internalize the externalities affecting the price and information decisions of the retailer in Mathewson and Winter (1984), this survey will concentrate on their discussion of the welfare effects of RPM.

The model is a simple one which makes use of Gould and Preston's "outlets hypothesis" where n is the number of informing stores, $M(n)$ is the number of visitors per store and $\epsilon = \partial \log[nM(n)] / \partial \log(n)$ is the density elasticity of potential demand, $0 < \epsilon < 1$. Retailers either provide a discrete amount of information at cost I or provide no information at all. Consumers, on the other hand, either have prohibitive search-costs or zero search-costs. The proportion of consumers with prohibitively high search-costs is λ . The average informed consumer has demand $d(P)$, $d' < 0$. Informing retailers will charge a monopoly price P_m to λ percent of the consumers they inform. The remaining stores charge P_w .

The zero profit condition for the retail equilibrium determines n :

$$\lambda M(n) d(P_m) (P_m - P_w) - I = 0. \quad (40)$$

The monopolistic manufacturer maximizes profits through choice of P_w :

$$\Pi^M(P_w) = nM(n) [\lambda d(P_m) + (1-\lambda)d(P_w)] (P_w - \theta) \quad (41)$$

where θ is his constant per unit cost of production.

After showing that the manufacturer can reach the joint-profit equilibrium through the use of RPM and P_w , the authors next turn their attention to the impact of RPM-administered pricing on welfare. In particular, under what conditions will a RPM-administered price be Pareto-improving?

Their (1984) article shows that the optimal retail price of informing stores decreases under RPM, while manufacturer profits increase. Hence, shareholders will always benefit from RPM, while high search-cost consumers will benefit if RPM increases point-of-sale information, (PSI). Low search-cost consumers however, face a higher price and will only benefit from RPM if the increase in welfare due to the increase in PSI outweighs their decrease in welfare due to the administered price increase. Therefore, an increase in the welfare of low search-cost consumers implies that RPM is Pareto-improving and information increasing.

In order to examine the conditions under which RPM is Pareto-improving, Mathewson and Winter evaluate RPM under the following iso-elastic forms:

$$d(P) = P^{-\alpha}, \quad nM(n) = n^\epsilon, \quad \text{where } \alpha > 0 \text{ and } 0 < \epsilon < 1.$$

Calculations²² of the equilibrium values of administered price, information, profits, and surplus reveal that for a sufficiently small (λ/ϵ) the welfare of low search-cost consumers increases under RPM and hence, RPM is Pareto-improving. Intuitively, we know that when λ is small, the information free-rider problem is large, and that both manufacturers and consumers will benefit from its elimination. When ϵ is large, many consumers will visit the informing stores and again, both consumers and manufacturers will benefit from the additional information supplied under RPM.

The authors next consider the weaker, welfare question, i.e., even if some low search-cost consumers do not benefit from increased information, will there be a net increase in total surplus as a result of RPM. Their calculations demonstrate that, in any equilibrium involving less than the joint-profit-maximizing amount of information, total surplus will increase with the imposition of RPM. This is because the marginal social value of product information exceeds its private value by the resultant increase in consumer surplus. Thus, whenever it is the manufacturer's best interest to increase PSI by implementing RPM, it will be socially optimal

²²These calculations are contained in an appendix available upon request from the authors.

to do so. The welfare implications of RPM are illustrated in figure 10.

Finally, the authors examine those situations where a RPM price floor is the optimal price restraint. This price floor must be set somewhere between P_m and P_w to be binding. At a price floor P^* defined by

$$(P^* - P_w)d(P^*) = \lambda(P_m - P_w)d(P_m), \quad (42)$$

no store would have incentive to raise its price. Now informing stores retain all their customers and make profits identical to the pre-RPM equilibrium. No entry occurs, the level of product information remains unchanged, and discount stores exit.

If the manufacturer sets $P > P^*$, entry occurs and information increases. Thus joint-profit-maximization can be achieved with a price floor, if and only if retailers provide less than the optimal amount of PSI. When this is the case, a RPM price floor is a perfect substitute for administered price and any RPM equilibrium that is Pareto-improving can be reached through a RPM price floor.

The implications of this article can be summarized as follows: If RPM increases the welfare of low search-cost consumers, it is Pareto-improving. When RPM is Pareto-improving, a price floor is a sufficient restraint. If RPM is Pareto-improving, it increases information. If information increases, then so does total surplus and hence, welfare.

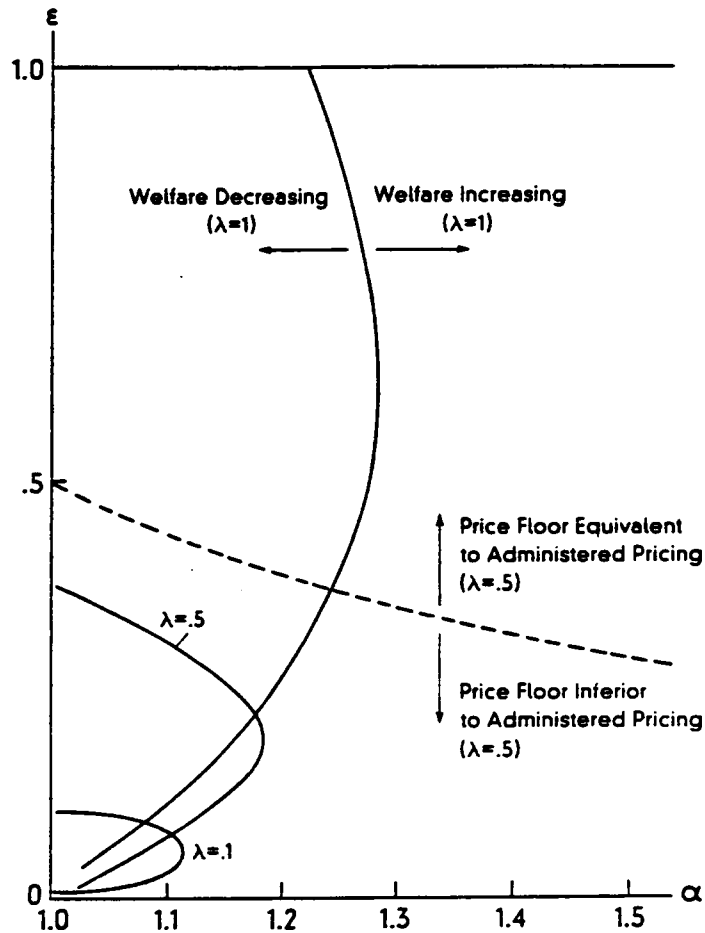


Figure 10

22. Figure 10 is partitioned into regions where administered price is either welfare increasing or decreasing. This is accomplished by calculating λ for various ϵ and α such that, $\hat{W}(\alpha, \epsilon, \lambda) = W(\alpha, \epsilon, \lambda)$. The dashed line partitions the figure into regions, for $\alpha = .5$, where PSI either increases or decreases with the introduction of the RPM-administered price. It can be seen from the figure that when elasticity (α) exceeds 1.3, RPM is always welfare improving.

This survey will conclude with another article by Mathewson and Winter (1984), which analyzes a theoretical basis for vertical restraints in a setting where imperfectly competitive retailers must inform consumers and where the manufacturer has some market power. In particular, the authors identify three externalities which cause the failure of uniform price contracts to assimilate the incentives of dealers with the goal of maximizing joint manufacturer-retailer profits. They then identify several combinations of vertical restraints which under certain market conditions, will neutralize these externalities, thereby achieving the joint-profit equilibrium.

In order for the model to function properly, a number of assumptions must be made:

1. Consumers are distributed throughout the market with a uniform distribution v along a line of infinite length.
2. All consumers face a travel cost, t , per unit distance per unit quantity purchased.
3. The variable cost of retailers is P_w , the wholesale price. Each incur a fixed cost F .
4. Before making a purchase, the consumer must be informed of the product.
5. Product information can only be provided locally by retailers.

6. Consumers cannot be misinformed about product characteristics.

7. Advertising is disseminated with a constant density over the retailer's chosen market area, R_i .

8. The total cost of advertising at a density A over an interval ds is bAd_s , where b is the unit cost of advertising.

9. For a given advertising density A , at a particular location, the proportion of consumers informed at that location is a function of $h(A)$, where $h' > 0$ and $h'' < 0$. Thus, the number of consumers informed at each location is $vh(A)$.

10. A proportion of advertising by a particular retailer will reach consumers outside his market area.

11. Once informed, consumers have perfect information about the prices and location of all dealers.

12. The average demand per informed consumer is $f(P_r + ts)$ where P_r is the retail price and s is the distance the consumer must travel to the outlet.

13. Consumers buy from the outlet with the lowest delivered price, $(P_r + ts)$.

14. The retail market is characterized by monopolistic competition.

15. Retailers are supplied by a monopolist with a constant cost of production who maximizes profit per unit distance. Manufacturers incur no transportation costs.

16. The manufacturer can neither advertise directly nor costlessly monitor the retailers' levels of advertising.

17. Vertical integration is costly.

The authors start with the non-integrated retail equilibrium for a given P_w set by the manufacturer. The equilibrium is defined so that for a given density of equally spaced firms, each firm's profit maximizing price and advertising level yields zero profits. Two possible conjectural variations are considered:

18a. Loschian Conjecturers ($\lambda=1$): Each retailer assumes that neighboring firms will match exactly any price change he makes.

18b. Nash conjectures ($\lambda=0$): Each retailer assumes it's neighbors price to be invariant to it's price changes. All of the results derived from Nash equilibriums apply to any conjectural variation less than one, (non-Loschian Conjectures).

Assume that the manufacturer sets wholesale price at P_w and $\alpha = 0$. From the assumptions we know that retail demand will be the number of informed consumers times the average demand per informed consumer. Hence a retailer with price P_i , advertising density A_i , and market radius R_i faces demand

$$q(P_r^i, A_i, R_i) = 2vh(A_i) \int_0^{R_i} \frac{1}{1+ts} ds \quad (43)$$

Considering first the Loschian equilibrium, retail profits are given by

$$\Pi^R(P_r^i, A_i, R_i) = 2[vh(A_i)(P_r^i - P_w) \int_0^{R_i} f(P_r^i + ts) ds - R_i b A_i] - F \quad (44)$$

Note that under the Loschian equilibrium, $P_r^i = P_r$, $A_i = A$,

and $R_i = R$. This is due to the zero conjectural variation assumption. Retailers will maximize profits over retail price and advertising density subject to the zero profit constraint. The first order conditions are :

$$\frac{1}{2} \frac{\partial \Pi^R}{\partial P_r^i} = vh(A) [(P_r - P_w) \int_0^R f'(P_r + ts) ds + \int_0^R f(P_r + ts) ds] = 0 \quad (45)$$

$$\frac{1}{2} \frac{\partial \Pi^R}{\partial A_i} = h'(A) (P_r - P_w) \int_0^R f(P_r + ts) ds - Rb = 0 \quad (46)$$

$$2[vh(A)(P_r - P_w) \int_0^R f(P_r + ts) ds - RbA] - F = 0 \quad (47)$$

Equations (45) and (46) can be solved implicitly for the retailer's optimal values of retail price and advertising density. It will be shown later that these do not coincide with the vertically integrated manufacturer's optimal values.

Under Nash conjectures, the market size R_i will vary with retail price. The boundary will be defined as the point at which the consumer will be indifferent between buying from

firm i at P_r and its neighbor at P . If X is the distance from i to its neighbor, then on the boundary

$$(P_r + tR_i) = P + t(X - R_i) \quad (48)$$

or

$$R_i = (P - P_r) / 2t + \frac{X}{2} \quad (49)$$

To determine the Nash equilibrium, (49) must be substituted into (44). The advertising and zero profit conditions (46) and (47), will remain unchanged, but (45) is replaced by

$$\frac{1}{2} \frac{\partial \Pi_r^R}{\partial P_r^i} = vh(A) \{ (P_r - P_w) [\int_0^R f'(P_r + ts) ds - \frac{f(P_r + tR)}{2t}] + \int_0^R f(P_r + ts) ds \} + \frac{bA}{2t} = 0 \quad (50)$$

When $0 < \alpha < 1$, some of the advertising of each retailer spills over into other markets. Whatever the price conjectures, retailers will not receive the full benefit of their advertising expenditures but will benefit from the spill overs of other retailers. Retailer profit is now

$$2[vh(\alpha A + (1-\alpha)A_i)(P_r - P_w) \int_0^R f(P_r + ts) ds - RbA_i] - F$$

The zero profit condition is unaffected and since advertising

causes iso-elastic shifts in demand, $\frac{\partial \Pi}{\partial P_r^1}$ will remain

unchanged as well. The new equilibrium advertising condition is

$$vh'(A)(1-\alpha)(P-P_w) \int_0^R f(P+ts)ds - Rb = 0 \quad (51)$$

Thus, the Loschian equilibrium with advertising spill over is characterized by equations (45), (51), and (47) while the Nash equilibrium with spillovers is characterized by equations (50), (51), and (47).

Now, having implicitly defined the retailer's optimal values of retail price and advertising density, the authors wish to compare them with their joint-maximization counterparts. They do this by examining the retail market equilibrium of a vertically integrated manufacturer along with the equilibrium preferred by a non-integrated manufacturer. Since the authors show the equilibriums to be identical, we shall omit their discussion of the non-integrated manufacturer's profit function from this paper and concentrate on the vertically integrated firm's profit per unit distance:

$$\Pi(P,R,A) = [vh(A)(P - \theta) \int_0^R f(P + ts)ds - F]/R - bA \quad (52)$$

The first order conditions below implicitly define the joint profit maximization values of retail price, market radius, and advertising density, (P^*, R^*, A^*) which the authors use as a

retailers set a price which is too high relative to (P^*, R^*, A^*) and under both conjectures retail advertising is insufficient.

This follows from the pertinent first order conditions. If we compare equations (45) and (53) we see that they are identical with the exception of the gross margin terms. This implies that $P_L - \theta = P^* - P_w$ hence, $P_L > P^*$ since $P_w > \theta$ and therefore (53) evaluated at (P_L, R_L, A_L) is negative. If we compare (46) for $\alpha=0$ or (51) for $\alpha>0$ with equation (55) and use the same logic, it is easy to show that $A_L, A_N < A^*$.

The source of these discrepancies can be traced to three externalities:

1. There exists a vertical externality due to $(P_w - \theta)$ acting as a wedge between the retailer's decision and the joint maximum. In deciding on P_r^i and A_i the retailer fails to take account of the additional profits flowing to the manufacturer through $(P_w - \theta)$ and hence set P_r^i too high and A_i too low.

2. There exists a horizontal externality due to advertising spillovers where $\alpha > 0$. Advertising spillovers do not affect the integrated manufacturer's choice of A^* but will cause retailers to set A_L and A_N too low since they will not receive the entire benefit of their advertising efforts.

3. For Nash retailers there exists a horizontal externality which offsets the vertical pricing externality in

bench mark from which to analyze a manufacturer's use of vertical restraints.

$$R \frac{\partial \Pi}{\partial P} = vh(A) [(P - \theta) \int_0^R f'(P+ts) ds + \int_0^R f(P+ts) ds] = 0 \quad (53)$$

$$R^2 \frac{\partial \Pi}{\partial R} = vh(A) (P - \theta) [Rf(P + tR) - \int_0^R f(P+ts) ds + F] = 0 \quad (54)$$

$$R \frac{\partial \Pi}{\partial A} = vh'(A) (P - \theta) \int_0^R f(P + ts) ds - Rb = 0 \quad (55)$$

Without vertical restraints such as RPM, quantity forcing (QF), franchise fees (FF), and closed territory distribution (CTD), the only instrument left to the non-integrated manufacturer with which to achieve (P^*, R^*, A^*) is P_w , the wholesale price. Due to the externalities we spoke of earlier, P_w is not sufficient to achieve (P^*, R^*, A^*) . Hence, some vertical restraints will be necessary in order to achieve the joint-profit maximum of the integrated manufacturer. The authors are interested in the least number of restraints necessary to obtain (P^*, R^*, A^*) in each of the four retail market equilibriums and define these as minimum sufficient sets of restraints. Let (P_L, R_L, A_L) denote the Loschian equilibrium solutions and (P_N, R_N, A_N) denote the Nash solutions.

PROPOSITION I: At (P_L, R_L, A_L) , $\Pi_P < 0$ and $\Pi_A > 0$; at (P_N, R_N, A_N) , $\Pi_A > 0$. That is, under Loschian conjectures

(1) above. In raising P_N , Nash retailers lose demand through their positive cross-elasticity of demand with neighboring firms. This reduces their incentive to raise retail price above P^* . Which effect dominates remains uncertain.

Vertical integration and direct manufacturer advertising are ruled out by the assumptions. It has been shown that (P^*, R^*, A^*) cannot be achieved through uniform pricing contracts. Hence, vertical restraints must be used to alter the incentives of retailers in order to induce them to choose the proper levels of P_r and A . Mathewson and Winter suggest a number of propositions which identify the minimally sufficient sets of vertical restraints necessary in each of the four retail equilibriums already discussed.

PROPOSITION II: In the Loschian market where $\alpha=0$, wholesale price and a franchise fee make up the set of minimally sufficient vertical restraints. By setting $P_w = \theta$, the vertical externality is internalized and all rents can be collected through the incentive-neutral franchise fee.

PROPOSITION III: When conjectures are Loschian and $\alpha=0$, quantity forcing is a sufficient restraint.

By setting minimum quantity in accordance with (P^*, R^*, A^*) the manufacturer leaves the retailer no choice but it choose the optimal levels of retail price and advertising. The zero profit condition will be satisfied by the appropriate choice of P_w .

PROPOSITION IV: When conjectures are non-Loschian and $\alpha = 0$, either franchise fees with closed territory distribution or forcing with closed territory distribution constitute the minimally sufficient sets of restraints.

CTD defines R_i and creates a Loschian retail market since in a CTD market, $\frac{\partial R}{\partial P} = 0$. It follows then from propositions II and III that either FF or QF will achieve the joint profit maximum.

PROPOSITION V: For non-Loschian conjectures where $\alpha = 0$, RPM with either FF or forcing will constitute a set of minimally sufficient vertical restraints.

By setting the RPM price level at P^* , the manufacturer can achieve the optimal price. He can then set $P_w = \theta$ to neutralize the vertical externality and collect rents through a franchise fee which achieves the zero profit market radius. With no vertical advertising externality, retailers will voluntarily choose A^* . Equivalently, RPM could be combined

with forcing. The retailer has only one tool now with which to achieve minimum quantity and hence, is forced to choose A^* . Wholesale price ($P_w > \theta$) has now become an incentive neutral tool through which the manufacturer can set R^* and collect rents.

When conjectures are Loschian and $\alpha > 0$, setting $P_w = \theta$ will not counteract the horizontal advertising externality resulting from spillover. Manufacturers could create a retail margin by setting $P_w < \theta$ but this in turn would lead to $P_r < P^*$. The manufacturer can deal with both externalities by setting a price floor P^* through RPM and setting $P_w < \theta$ to increase advertising to A^* . Rents could then be collected through franchise fees. A simpler alternative would be to use forcing to achieve A^* and RPM to achieve P^* . Hence,

PROPOSITION VI: With Loschian conjectures where $\alpha > 0$, RPM combined with either franchise fees or forcing constitutes a minimally sufficient set of restraints.

The restraints given in proposition VI are also sufficient in the case of non-Loschian conjectures where $\alpha > 0$. Clearly, RPM will counteract the horizontal externality introduced by non-Loschian conjectures while forcing or franchise fees will be sufficient to deal with the horizontal advertising externality.

Hence, Mathewson and Winter define the externalities existing between retailers and manufacturers which cause the failure of uniform price contracts to assimilate the incentives of the retailers with those of the manufacturer so that the joint-profit-maximum can be achieved. In addition, the authors have proposed the minimum combination of vertical restraints necessary to deal with the externalities present in the four retail equilibriums they examine. They have also shown that two such combinations, RPM and franchise fees along with CTD and franchise fees are perfect substitutes if one assumes that a manufacturer can arbitrarily assign any size market territory he desires to the retailers distributing his product. In the next chapter, I will show that if one relaxes this assumption, a shift from closed territory distribution to RPM can be Pareto-superior when the demand the manufacturer faces is characterized by the outlets hypothesis.

CHAPTER IV

AN EXAMINATION OF VERTICAL TERRITORIAL RESTRAINTS vs. VERTICAL PRICE RESTRAINTS UNDER THE OUTLETS HYPOTHESIS

Part I: Introduction

Marvel and McCafferty (1984) have shown that even if manufacturers are allowed to refuse to deal with some discounters, such a freedom would not obviate their desire to impose resale price maintenance. Furthermore, Mathewson and Winter (1984), have shown that in addition to the horizontal price and information externalities which exist between dealers, there also exist vertical externalities that the manufacturer can resolve through the use of vertical restraints. In this model, I will show that under demand conditions characterized by the outlets hypothesis, RPM can be Pareto-superior to territorial restraints. This idea is both straightforward and intuitively appealing. Under the outlets hypothesis, the greater the number of retailers distributing the manufacturer's product, the greater is its availability, and hence, the greater is the manufacturer's final demand.

In order to protect dealer property rights to the information they provide and to assimilate their incentives with those of the manufacturer so that the joint-profit-maximum can be achieved, the manufacturer could assign an

exclusive territory to each dealer. To be effective, this territory must be large enough to discourage retailers from attempting to increase their market radius through a reduction in price. Providing each dealer with such a "geographical buffer" could severely limit the number of dealers the manufacturer can employ in his distribution system. Given the market conditions the manufacturer faces, if the optimal number of dealers is greater than the number of dealers he can support under a system of exclusive territories, a move to RPM with the resultant increase in dealerships, will increase the manufacturer's sales. For some consumers, travel costs will decrease as market information and the good's availability increase with the number of dealers. Hence, consumers as a whole, will also be made better off by the switch from exclusive territories to RPM. Retailers will make zero profits under either regime and as such, will be indifferent between the two.

In order to construct the model, certain assumptions must first be made. These assumptions are standard in that all can be found elsewhere in the literature. The manufacturer will possess some market power and will distribute a product which is subject to rapid technological change through a retail sector which is large enough to support both informing retailers and discounters. The retail sector is further characterized by free entry and monopolistic competition.

The cost of vertical integration is prohibitive. Identical consumers are uniformly distributed along a circle and, over some range of output, the provision of point-of-sale information will increase final demand for the manufacturer's product.

Part II of this paper will discuss the nature of consumer demand while Part III will analyze the retail market equilibrium in the absence of any vertical restraints, illustrating Telser's free rider problem. Part IV, while ignoring both horizontal externalities, will show that the vertical externalities discussed in Mathewson and Winter (1984) are present in the model also. Part V will compare vertical territorial restraints with vertical price restraints and Part VI will summarize and discuss the policy alternatives implicit in the model.

Part II: Consumer Demand

In order to better discuss the various components of consumer demand, it will be helpful to first provide a few more details about the hypothetical manufacturer and the product he distributes. The manufacturer incurs a constant cost of production, θ and sells to retailers at wholesale price P_w . He incurs no transportation costs in distributing the product to outlets. This product is subject to rapid

technological change and is not a nationally known brand. Rather than advertise directly, the manufacturer has chosen to rely on information contained in the packaging of his product and more importantly, on point-of-sale information (PSI), provided by and at a cost borne exclusively by retailers. The manufacturer cannot monitor without cost the retailers' level of PSI.

Product information is the key to understanding consumer behavior as modeled here; without information no sales can be made. Some consumers will need to be made aware of the existence of the manufacturer's brand while others might need "expert" advice pertaining to product characteristics in order to choose that brand of the product they most desire. Once informed of the product's existence, consumers have access at zero cost to information on the prices and locations of all retail outlets carrying the manufacturer's brand and cannot be misinformed about product characteristics by retailers. These consumers will shop with a distinct product in mind and will search sequentially among retailers seeking the specific brand of the product which best suits their particular needs. Each consumer will incur a positive travel cost during the shopping process. Since they must visit a retailer in order to acquire product information, their search costs $h(t)$, will be a function of t , the

distance travelled by the consumer from his point of departure until the purchase is made, where $h'(t) > 0$, $h''(t) = 0$, for all $t > 0$.

Retail demand for the manufacturer's product will be a decreasing function of the full price consumers face when making a purchase of this type. The "full price" will be composed of two component costs incurred by the consumer who makes a purchase: i.e., the retail price P_r , charged by the distributor and the travel costs $h(t)$, incurred by the consumer while shopping. Consumers possess a demand function of the form:

$$x = f(P_r + h(t)) \leq 0 \quad \text{if } P_r + h(t) \leq Y,$$

where $f'(P_r + h(t)) < 0$.

That is, all consumers have an identical reservation price Y , with respect to the manufacturer's product. If there were too few retailers in the manufacturer's market circle then it could be the case for some consumers that $P_r + h(t) > Y$. These consumers would not be induced to shop for the product. As the number of retail outlets grows, the smaller is the average distance a consumer must travel to reach a retailer, ceteris paribus. Hence the greater will be his demand, since $f'(P_r + h(t)) < 0$. If a consumer can locate a brand of that product which suits his needs and which can be

purchased for less than his reservation price, then he will make a purchase.

Therefore, the consumer of this model faces a three stage shopping process. First, he must choose between shopping for one of the lesser known brands or purchasing a nationally known brand from a discounter. If he chooses to shop he must next choose between the lesser known brands available in the market. Finally when he has chosen one of the lesser known brands, he must decide whether or not to purchase it from the retailer who informed him or from a discounter who sells the product for less.

His first decision will be based on three factors: The consumer's estimate of the price of the nationally unknown brand $E[P_N] \leq Y$. His estimate of the magnitude of the price deviation between P_N and the lesser known brands and his estimate of the search costs he will incur should he choose to shop for one of the lesser known brands.

If the retail market is dominated by discounters who supply little or no product information, it could be that $E[P_r+h(t)] \geq E[P_N]$. When such is the case, the consumer will not search for a lesser known brand. Instead, he will purchase a nationally advertised brand from a discounter at a price P_N which reflects the brand capital that manufacturer has accumulated.

However, in a retail market characterized by numerous informing retailers, a consumer would expect his search costs to be greatly reduced. The greater density of informing retailers and the resulting increase in aggregate product information they provide would lead to consumer expectations of the form $E[P_r + h(t)] < E[P_N]$. In this case the consumer will be induced to shop, basing his second decision on dealer information or reputation rather than manufacturer brand name.

Having shopped and obtained the information necessary to choose a specific brand of the good, the consumer's final decision will be whether to purchase the good from i , the dealer who informed him, at a money price $P_i \leq Y$, or to purchase the branded product from discounter j , at a lower money price P_j . The consumer will consider all travel costs previously incurred to be sunk with respect to this last decision. Assuming that the consumer can obtain the price and locations of the other dealers distributing this particular brand at zero cost (perhaps through a series of phone calls), the consumer will behave in accordance with the following decision rules: Rule 1: If $P_i \leq P_j + h(t_j)$, where P_i is the informing retailer's money price, P_j is the neighboring discounter's money price, and t_j is the distance from i to the discounter j , then the consumer will purchase the product from the informing retailer.

Rule 2: If $P_i > P_j + h(t_j)$, then the consumer will purchase from the discounter, j .

Perhaps a brief example would be helpful at this point. Consider a consumer who has decided to purchase a personal computer. He might desire the computer for any number of reasons. Perhaps for something as simple as allowing his children to play video games. Maybe he needs it to keep track of his business' inventory or to use as a word processor. Whatever his reason, he knows that for $\$Y$ he can purchase an IBM PC. He knows that IBM makes quality machines and that the PC will suit his needs. He also knows that there are a number of other personal computers on the market, Wang, Tandy, Apple, etc., whose prices reflect the fact that these companies have accumulated less brand capital than IBM. This is a one-time purchase, so the consumer does not wish to spend the time necessary to become well versed with the relative merits of each computer. However, he believes that by visiting a number of informing retailers, he can find one of the lesser-known brands which will suit his specific needs at a money price low enough to justify his search costs, (i.e., $Y - P_i > h(t)$). But once he has acquired the necessary product information from an informing retailer and chosen a particular brand, he will disregard all of his prior search costs. Instead, he will look in the Yellow Pages and call the other dealers in the area who carry this brand in

order to determine the location of the lowest full price dealer. Now he must decide if the price difference will justify the additional trip to the discounter. If $P_i - P_j > h(t_j)$, the consumer will purchase his personal computer from the discounter. The informing retailer will have made his expenditure on information provision regardless of whether or not he makes the sale and Telser's free rider problem will plague the manufacturer's distribution system. Let us turn now to Section III where the problem can be observed more formally.

Part III: The Model

Let $0 \leq \lambda \leq 1$ represent the fraction of consumers who, once informed of the product by i , choose to purchase that product from a discounter. Informing retailers will have a profit function of the form,

$$\Pi_i^R(P_i, I_i) = 2\gamma(I_i)(P_i - P_w) \int_0^R f(P_i + h(t)) dt - aI_i \quad (56)$$

This profit function applies only to the manufacturer's product and does not represent the retailer's total business profit. I_i represent the level of PSI provided by retailer i and a is the per unit cost of information provision. The

fraction of potential consumers who choose the manufacturer's product (given $P_i \leq Y$), is $\gamma(I_i)$, where:

- i.) $0 < \gamma(I) < 1$, for all $I \geq 0$.
- ii.) $\gamma'(I) \leq 0$, $\gamma''(I) < 0$, for all $I \geq 0$.
- iii.) $\gamma(0) = \alpha$; where $0 < \alpha < \gamma(I)$, for all $I > 0$.²⁴

Note that the dealer will spend aI dollars on PSI whether or not he sells any of the product. Here lies the root of the free-rider problem. The fixed cost component aI , makes it difficult for informing retailers to handle such products profitably. The manufacturer will desire information provision from his retailers because it will increase his sales. However, since the product is branded, once the consumer has obtained the product information, he will purchase the good from a discounter if it costs him less to do so.

Discounters will provide no information. Instead, they will free-ride on the PSI supplied by the informing retailers, capturing λ percent of the consumers with their lower money price P_j .

²⁴ α pertains to the non-informing equilibrium (where $\lambda = 1$), dominated by discounters (for whom $I = 0$), which will be discussed later. $\gamma(0) = \alpha$ is the fraction of customers visiting a discount store, who choose to buy the manufacturer's product on the basis of information obtained from the physical appearance and/or packaging of the product.

The manufacturer's profit will be the markup term $(P_w - \theta)$ times the final demand he faces for his product. The final demand to the manufacturer is the aggregate demand generated by the retailers through their various pricing and PSI decisions.

This situation however, does not represent the long-run market equilibrium. In Marvel and McCafferty (1986), the authors assert that in such a mixed market, (i.e., one which contains both informing retailers and discounters) the discounters will under-price the informing retailers and eventually dominate the market²⁵. Note that among the assumptions specified in the introduction were free entry and a retail market large enough to support discounters.

Consider the evolution of a hypothetical retail market under these assumptions. The manufacturer will introduce his new (branded) product to a number of retailers. Initially, these retailers will be isolated from horizontal informational externalities by their fewness. Hence, they face a profit function of:

$$\Pi^R(P_R, I) = 2\gamma(I)(P_R - P_w) \int_0^R f(P_R + h(t)) dt - aI.$$

²⁵Marvel and McCafferty make this assertion on p. 1080 and provide supporting empirical evidence on pp. 1092-93 and again in Marvel and McCafferty (1984), pp. 357-358.

These retailers will maximize $\Pi^R(\cdot)$ according to:

$$\frac{\partial \Pi^R}{\partial \bar{P}_r} = 2\gamma(\bar{I}) \{ (\bar{P}_r - P_w) [f(\bar{P}_r + h(\bar{R})) \frac{\partial R}{\partial \bar{P}_r} + \int_0^R f'(\bar{P}_r + h(t)) dt] + \int_0^R f(\bar{P}_r + h(t)) dt \} = 0. \quad (57)$$

$$\frac{\partial \Pi^R}{\partial I} = 2\gamma'(\bar{I}) (\bar{P}_r - P_w) \int_0^R f(\bar{P}_r + h(t)) dt - a = 0. \quad (58)$$

$$2\gamma(\bar{I}) (\bar{P}_r - P_w) \int_0^R f(\bar{P}_r + h(t)) dt - a\bar{I} = 0. \quad (59)$$

Let $(\bar{P}_r, \bar{I}, \bar{R})$ denote the solution to this system of equations.

Thus, in the temporary absence of discounters, all retailers provide \bar{I} . As this retail market evolves, discounters will be lured by the positive profits they can earn if they set $P_j < P_r$ and $I = 0$. Wishing to minimize t_j , they will locate themselves adjacent to informing retailers such that $P_i > P_j + h(t_j)$ for any $P_j < P_i$. Since the product is branded, consumers informed by retailer i will purchase the product from a discounter. In order to recapture their market for the good, informing retailers will be forced to cut retail price. In the absence of some form of margin protection imposed by the manufacturer, retailers will no longer compete through PSI. Price competition at the retail level will force retail price to

the zero profit level P_r^0 which prevails when $I = 0$. Retail profits in equilibrium will be

$$\Pi^R(P_r^0) = 2 \alpha (P_r^0 - P_w) \int_0^R f(P_r^0 + h(t)) dt \quad (60)$$

and the manufacturer's equilibrium profit is

$$\Pi^M(P_w) = 2n\alpha(P_w - \theta) \int_0^R f(P_r^0 + h(t)) dt, \quad (61)$$

where n is now the number of retailers which exist in the market in long-run equilibrium. The only information available in this equilibrium is that provided by the manufacturer in the packaging of the product. Hence, Telser's free-rider problem results in the sub-optimal provision of information, decreased sales, and increased consumer search costs.

Part IV:

In Mathewson and Winter (1984), the authors identify four externalities which lead to the failure of uniform-price contracts to coordinate the incentives of the retailers with the objective of achieving the joint-manufacturer-retailer profit maximum. They define Telser's free-rider problem as a horizontal informational externality and retail conjectures of the form $\partial R / \partial P < 0$ as a horizontal pecuniary externality. These two horizontal externalities are cited repeatedly in the literature as the motives behind the manufacturer's

desire to impose vertical restraints upon retailers. I now wish to duplicate Mathewson and Winter's major contribution to the literature i.e., that even in the absence of the two horizontal externalities, there exist vertical price and informational externalities which would cause uniform price contracts to result in an inefficient retail market equilibrium.

If one assumes for the moment that both λ and $\partial R/\partial P$ equal zero, then both horizontal externalities disappear from the model and the incentive distortions caused by the vertical externalities become apparent. In the absence of the horizontal externalities, all retailers possess the profit function described in equation (56). Differentiation of profit w.r.t. retail price now yields,

(62)

$$\frac{\partial \Pi^R}{\partial P_r} = 2\gamma(\hat{I}) [(\hat{P}_r - P_w) \int_0^R f'(\hat{P}_r + h(t)) dt + \int_0^R f(\hat{P}_r + h(t)) dt] = 0.$$

The information and zero profit conditions remain identical equations (58) and (59) respectively. Let $(\hat{P}, \hat{I}, \hat{R})$ denote the solutions to equations (62), (58), and (59). The manufacturer's aggregate profits will now be:

$$\Pi^M(P_w) = 2\hat{n}\gamma(\hat{I})(P_w - \theta) \int_0^R f(P_r + h(t)) dt, \quad (63)$$

where \hat{n} is the number of retailers which exist in the zero profit equilibrium described by (62), (58), and (59). The manufacturer will choose wholesale price to maximize profits according to:

$$\frac{\partial \Pi^M}{\partial P_w} = 2\hat{n}\gamma(\hat{I}) \left[(\hat{P}_w - \theta) \int_0^R \left\{ \frac{\partial f}{\partial \hat{P}_r} \cdot \frac{\partial \hat{P}_r}{\partial P_w} \right\} dt + \int_0^R f(P_r + h(t)) dt \right] = 0 \quad (64)$$

Let \hat{P}_w denote the solution to (64).

How does this equilibrium compare with that of a hypothetical vertically integrated manufacturer? Do the same vertical price and informational externalities found in Mathewson and Winter (1984) exist in this model also? The vertically integrated manufacturer's profit function will be given by:

$$\Pi^M(P_r, I, R) = \left(\frac{C}{2R}\right) [2\gamma(I)(P_r - \theta) \int_0^R f(P_r + h(t)) dt - aI] \quad (65)$$

Given that the manufacturer has a retail market circle of circumference C and retailers have a market radius R , the vertically integrated manufacturer will have $n = C/2R$ equidistant retailers serving his market. Let (P^*, I^*, R^*) denote the first best equilibrium for the vertically integrated manufacturer. These levels will establish the standard with which to analyze the use of vertical restraints by the non-integrated manufacturer. The "first best" target

variables can be found in the solution of the appropriate first order conditions below:

$$2R/C \frac{\partial \Pi^M}{\partial P_r^*} = 2 \gamma(I^*) [(P_r^* - \theta) \int_0^R f'(P_r^* + h(t)) dt + \int_0^R f(P_r^* + h(t)) dt] = 0 \quad (66)$$

$$2R/C \frac{\partial \Pi^M}{\partial I} = 2 \gamma'(I^*) (P_r^* - \theta) \int_0^R f(P_r^* + h(t)) dt - a = 0 \quad (67)$$

$$2R^2/C \frac{\partial \Pi^M}{\partial R} = 2 \gamma(I^*) (P_r^* - \theta) [R^* f(P_r^* + h(R^*)) - \int_0^R f(P_r^* + h(t)) dt] + a I^* = 0 \quad (68)$$

It can be seen from the relative pairs of first order conditions that wholesale price alone will not allow the non-integrated manufacturer to achieve the joint-profit-maximum, (P^*, I^*, R^*) .

Let us first examine the conditions on point-of-sale information. It can be seen from equations (58) and (67) that Π_I^R and Π_I^M are identical with the exception of the markup terms. Thus, since $P_w > \theta$ for every retailer, if $(\hat{P}_r, \hat{I}, \hat{R})$ is substituted into equation (67), $\partial \Pi^M / \partial I$ will be greater than zero. Therefore, in the non-integrated retail market equilibrium, dealers provide too little information, ceteris paribus.

Similarly, since $f' < 0$ and $P_w > \theta$, if $(\hat{P}, \hat{I}, \hat{R})$ were substituted into equation (66), $\partial \Pi^M / \partial P_r < 0$. Therefore, in the non-integrated retail market equilibrium, retailers set price which is too high, ceteris paribus. As Mathewson and Winter previously asserted²⁶, the source of these externalities is purely vertical. When choosing P_r and I , retailers fail to consider the additional profits which would flow to the manufacturer through $(P_w - \theta)$ if they were to lower retail price or increase PSI. The retailer's incentive to under-provide PSI is compounded by the free rider problem. Again, the retailer fails to consider additional profits which accrue to the manufacturer as a result of an increase in PSI.

The reader should pause for a moment and review what has been accomplished up to this point. It has not been shown that the provision of information by retailers will increase demand. Here as in most of the literature on RPM, this has been assumed. It will be left to empirical economists to determine whether or not this theory is correct. The reader should also note that I bears a very general interpretation in this model. I could be thought of as style or quality information provided by retailers, elaborate retail displays,

²⁶Mathewson and Winter, (1984), p. 32.

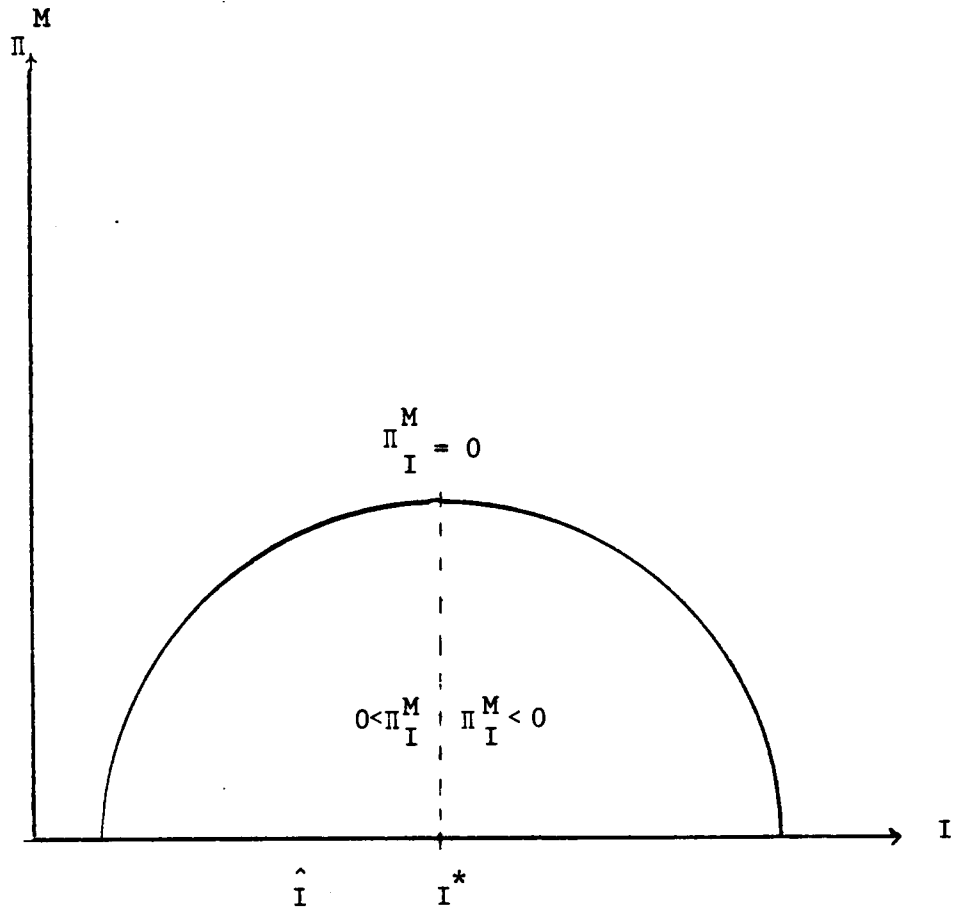


Figure 11

salespersons who are better able to provide product information to consumers, product brochures, etc.

The model does imply, however, that absent some form of retail margin protection, there will be a market failure in the provision of PSI. This market failure is readily apparent when one compares equation (61), for which $\lambda = 1$, with equation (63), for which $\lambda = 0$.

As λ tends toward one, I tends to zero. Consumer travel costs will increase as the number of informing retailers falls. $\gamma(I)$ will tend towards α causing a decrease in manufacturer profits. This extreme welfare loss scenario is due to the free-rider externality which exists between dealers. But even in the absence of both horizontal externalities, the manufacturer would still have vertical externalities to overcome. Since it was assumed that the cost of vertical integration is prohibitive, the manufacturer will wish to impose some form of vertical restraints on the retailers distributing his product. Mathewson and Winter (1984) have shown that for two such vertical restraints, closed territory distribution, (CTD) and RPM, when either is combined with franchise fees, both are "minimally sufficient substitute instrument sets" capable of achieving the "first best" target variables. They interpret this result as support for the position that the Supreme Court should treat vertical price and territorial restraints equally under the

law. I support their position but now wish to go a step further and show that if one relaxes their implicit assumption that the manufacturer can arbitrarily impose any size market territory he desires upon retailers, a shift from closed territory distribution to RPM can be Pareto-superior.

Part V:

This result is derived from the retail demand function. Each retailer considers $\partial R/\partial P$ to be negative. Given the price they choose, $f(P_r+h(R)) < f(P_r+h(t))$ for all consumers for whom $t < R$. Therefore, as one moves closer to the retailer, consumer demand for the good increases. The horizontal pecuniary externality exists because retailers realize that if they lower retail price, all consumers who previously resided within their boundary will demand greater quantities of the good and some consumers who previously would have purchased from a neighboring retailer will now purchase the good from them. The manufacturer, on the other hand, realizes that if he can add another retailer to his market circle, each retailer's market radius, (and hence, demand) will decrease but the average demand each retailer faces will increase. This is because some consumers will face lower travel costs and hence demand more of the manufacturer's product. Therefore, total demand for the

manufacturer's product will increase with the number of retailers in the market. Equation (68) implies that the vertically integrated manufacturer will continue to add retailers to his market circle until the increase in revenue from the addition of the last retailer is equal to the cost of that retailer. Unlike his vertically integrated counterpart, the non-integrated manufacturer coexists with his retail outlets in a principle-agent setting. In order to maximize his profits, the manufacturer must create efficient contracts with his retailers which eliminate all four externalities, thereby allowing him to collect rents through some incentive-neutral device.

It can be shown that RPM and franchise fees will create an efficient contract which allows the manufacturer to achieve the social optimum, (P^*, I^*, R^*) . Under RPM the manufacturer will distribute his product through $n^* = \frac{C}{2R^*}$ outlets positioned an equal distance from each other around the market circle. The vertical externalities will be eliminated by setting wholesale price equal to θ and rents will be collected through an incentive-neutral, lump-sum franchise fee, F . To eliminate the horizontal externalities dealers face, the manufacturer will set a price floor P^* so that $\partial R / \partial P = 0$ for all $P \leq P^*$. Since no retailer can set price below P^* , no retailer can increase his market radius at

the expense of neighboring retailers. Retail profits under RPM and franchise fees are:

$$\Pi^R(P_r, I) = 2\gamma(I)(P_r - \theta) \int_0^R f(P_r + h(t)) dt - aI - F. \quad (69)$$

In the absence of the price floor P^* , retailers would maximize equation (69) through the choice of $(\tilde{P}, \tilde{I}, \tilde{R})$ which satisfy:

$$\begin{aligned} \frac{\partial \Pi^R}{\partial P_r} = 2\gamma(\tilde{I}) [(\tilde{P}_r - \theta) (f(\tilde{P}_r + h(\tilde{R})) \frac{\partial R}{\partial \tilde{P}_r} + \int_0^R f'(\tilde{P}_r + h(t)) dt) \\ + \int_0^R f(\tilde{P}_r + h(t)) dt] = 0 \end{aligned} \quad (70)$$

$$\frac{\partial \Pi^R}{\partial \tilde{I}} = 2\gamma'(\tilde{I})(\tilde{P}_r - \theta) \int_0^R f(\tilde{P}_r + h(t)) dt - a = 0 \quad (71)$$

Equation (70) is identical to (66), the vertically integrated manufacturer's condition on price, with the exception of the term $f(\tilde{P}_r + h(\tilde{R})) \frac{\partial R}{\partial \tilde{P}_r} < 0$. Thus, with no

price floor, retailers would choose to lower price and increase their market radius until they reach \tilde{P} and \tilde{R} . If one substitutes (P^*, I^*, R^*) into equation (70), $\frac{\partial \Pi^R}{\partial P_r} \Big|_{\substack{P = P^* \\ I = I^* \\ R = R^*}}$

$$= (\tilde{P}_r - \theta) f(\tilde{P}_r + h(\tilde{R})) \frac{\partial R}{\partial P} < 0,$$

which implies that $P^* > \tilde{P}$. Because no retailer can price below P^* under RPM, retailers are induced to behave as though

$\partial R/\partial P = 0$ and the extra negative term falls out of equation (70) leaving it identical to (66). The reader will note that equation (71) is identical to (67) and the zero-profit retail equilibrium will be guaranteed through the optimal choice of F . Thus, through RPM and franchise fees, retailers can be induced to choose P^* and I^* and the joint-profit-maximum (P^*, I^*, R^*) can be achieved.

Under a system of CTD and franchise fees however, the manufacturer cannot control retail price directly. An examination of equation (70) shows that retailers will behave as though $\partial R/\partial P < 0$ unless assigned a market radius no smaller than \tilde{R} . Given \tilde{R} , no retailer could increase his profits by lowering price. This is because \tilde{R} results from the retailers optimal pricing decision $\tilde{P} < P^*$. Hence, if each retailer is assigned a market radius \tilde{R} , retailers will behave as though $\partial R/\partial P = 0$ and the horizontal externalities can be eliminated under CTD. The vertical externalities can be eliminated by selling $P_w = \theta$ and rents will once again be collected through franchise fees. But can the manufacturer achieve (P^*, I^*, R^*) , given that he faces the constraint $R \geq \tilde{R}$?

The manufacturer must now $\max \Pi^M(P, I, R)$ subject to $R \geq \tilde{R}$. Hence his first order conditions w.r.t. P_r and I will be identical to equations (66) and (67) respectively. The first order condition on R however is now:

$$\frac{2R^2}{C} \frac{\partial \Pi^M}{\partial R} = 2\gamma(I')(P'_r - \theta) [R' f(P'_r + h(R')) - \int_0^R f(P'_r + h(t)) dt] + aI' + \frac{2\mu R^2}{C} = 0 \quad (72)$$

Let (P', I', R') denote the solution to (66), (67), and (72). If one substitutes (P^*, I^*, R^*) into (72) it can be

shown that $\frac{\partial \Pi^M}{\partial R} \Big|_{\substack{P = P^* \\ I = I^* \\ R = R^*}} = 2\mu R^2 / C \geq 0$. Therefore,

$R^* < R' = \bar{R}$ and the manufacturer, because of the territorial restraint he faces, cannot achieve the social optimum under CTD. Hence, under demand conditions characterized by the outlets hypothesis, a shift from CTD to RPM will be Pareto-superior.

Part VI:

The divergence of (P', I', R') from (P^*, I^*, R^*) results from a conflict in the manufacturer's decision problem. He would like to distribute his product through n^* equidistant retail outlets but, without control over retail price, he knows that his retailers will behave as though $\partial R / \partial P < 0$ under such an arrangement. Consider the retail market illustrated by Figure 12. Assume that the manufacturer has switched from a system of RPM to closed territories. Initially, both

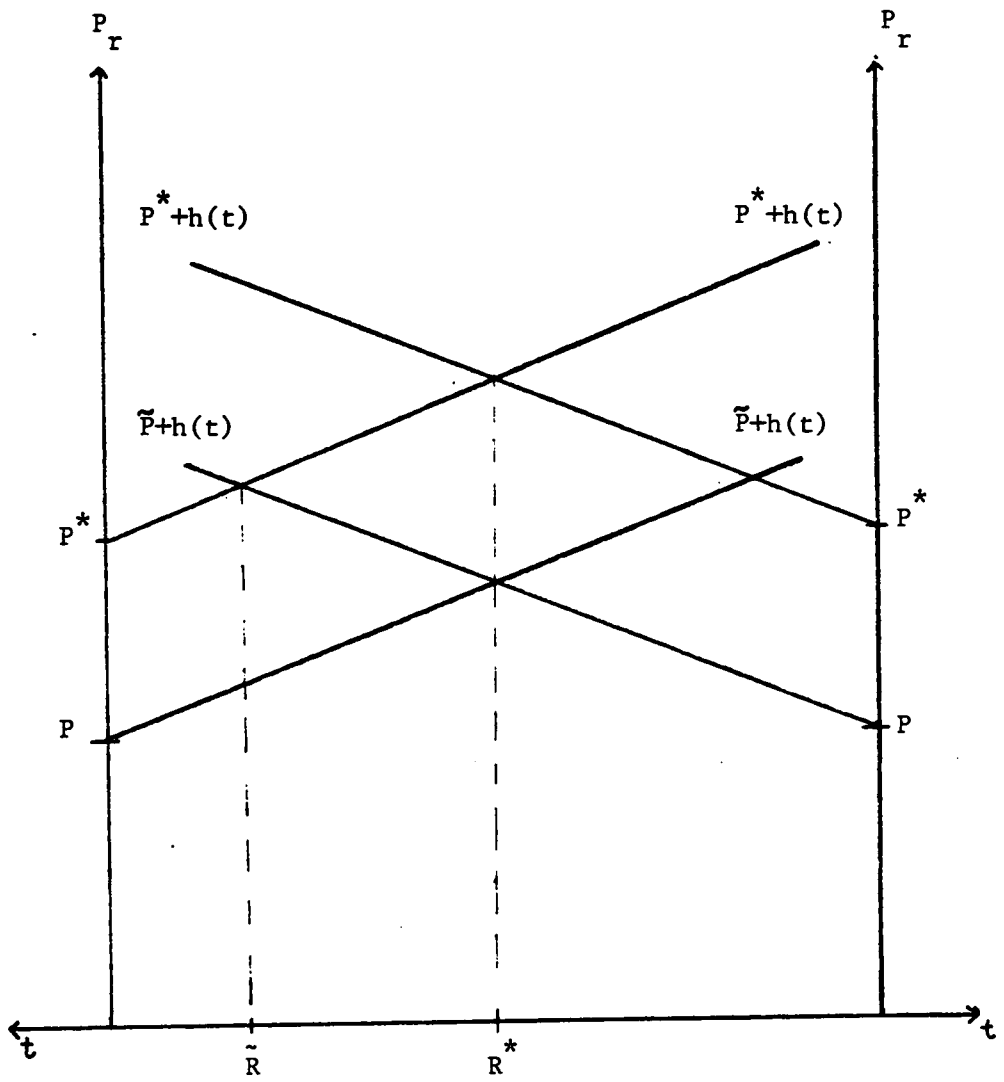


Figure 12

retailers charge P^* and supply I^* and each has an assigned retail market radius R^* . This CTD equilibrium will be unstable. Retailer (1) knows that he can maximize profits by charging \tilde{P} and supplying \tilde{I} and hence would do so, increasing his market radius to \tilde{R} at retailer (0)'s expense. Retailer (0) in turn, would lower price to \tilde{P} and the long-run equilibrium under CTD would be $(\tilde{P}, \tilde{I}, R^*)$. By assigning each retailer a market radius no smaller than \tilde{R} under CTD, the manufacturer can induce each retailer to behave as though $R/P = 0$, because each retailer now knows that he cannot increase his profits by lowering price. Therefore, when final demand is responsive to the number of retailers in the market, the new freedom to assign territories, afforded to manufacturers in the Courts' Sylvania decision, will not preclude the manufacturer's desire to impose RPM.

The results of this model differ from those of Mathewson and Winter (1984) because I have relaxed their implicit assumption that exclusive territories will function perfectly. Of course, in reality RPM will not work perfectly either, but cheating on price will be much easier to detect than cheating on territory and informing retailers will have a strong incentive to report discounters to the manufacturer. The increased probability of detection under RPM, combined with the threat of refusals to deal and the

possibility of liability for damages resulting from breach of contract suits instituted by the manufacturer will provide potential discounters with significant incentives to maintain resale price. Thus, I assert that RPM will be less costly to enforce and have a greater rate of success than exclusive territories in actual practice.

Chapter V

SUMMARY, CONCLUSIONS, AND POLICY IMPLICATIONS

There exists substantial support in the literature for the position that both vertical territorial and vertical price restraints provide manufacturer's with different means to attain the same end; i.e., to protect dealer property rights with respect to the provision of point-of-sale information. Vertical territorial restraints were brought under the protection of the "rule of reason" by the Sylvania decision in 1977, while RPM remains illegal per se. Many scholars in the field believe that RPM should also be brought under the protection of the rule of reason. Critics respond to this assertion by claiming that since vertical territorial restraints are already available to manufacturers who wish to employ them, changing the legal status of RPM would be redundant. It is my belief however, that under certain market conditions, RPM might be the better tool, (and visa versa). If such is the case, why then should not manufacturers have both alternative made available to them? The firm, after all, is indisputably a more efficient home for such business decisions than the court room.

In Marvel and McCafferty (1985), the authors conclude that when RPM is used to promote dealer service provision, it will enhance welfare, where it is used to protect a manufacturer cartel, it is the cartel itself which should be attacked and finally, that the static efficiency losses associated with dealer cartels are likely to be very small. Marvel and McCafferty (1986) and Mathewson and Winter (1984) indicate that RPM need not raise retail price since manufacturers are willing to finance dealer service provision through reduced wholesale price. The former article also implies that the cross-jurisdictional price comparisons, cited by legislatures as the primary reason for outlawing RPM, were not a reliable basis from which to derive policy. The result that the price dispersion between fair and free trade states will increase as more states outlaw RPM combined with each state's incentive to take advantage of lower compromise wholesale price which results from RPM in a mixed jurisdictional setting, would seem to imply that any policy decision regarding the legal status of RPM must be reached at the federal level.

Marvel and McCafferty's quality certification paper extends the services argument to include dealer reputation in the point-of-sale information which retailers provide. This is an important addition to the literature since significant opposition exists for the use of RPM for the numerous

products for which no tangible presale dealer services are furnished. Their loss-leader explanation adds yet another plausible reason for a manufacturer's desire to impose RPM upon his retailers. Their analysis also implies that RPM will be most useful for new, branded products and for those products which are not regularly purchased by consumers. The model further demonstrates that manufacturers will wish to employ RPM even when they are permitted to choose the set of stores distributing their product through refusals to deal. Thus, if one allows for the interpretation that exclusive territories are a strong form of refusals to deal, the new freedom granted manufacturers in the Sylvania decision with respect to vertical territorial restraints, is insufficient to obviate their desire to impose RPM.

Mathewson and Winter (1983) use an imperfect informational setting to evaluate RPM under a specific, iso-elastic functional form in order to simulate conditions under which RPM will be welfare improving. In this paper, the authors show that price floors reduce the average retail price charged. In addition, either price floors or administered prices can be Pareto-improving and will more likely be welfare improving. In Mathewson and Winter (1984) the authors identify the incentive distortions which exist between a manufacturer and his retailers in a principle-agent setting and define the minimum combination of

vertical restraints necessary to resolve the sequential monopoly problem in the four retail equilibriums they examine. The model also provides a comprehensive policy guide with regard to vertical restraints in general.

Finally, I extend Mathewson and Winter's (1984) model, which makes use of Gould and Preston's outlets hypothesis, by relaxing their assumption that exclusive territories function perfectly regardless of the size of the territory assigned. I have attempted to create a composite model which illustrates the salient implications found in the literature and have shown that when the manufacturer's final demand is responsive to the product's availability in the retail market, RPM will be Pareto-superior to exclusive territories. It is conceivable that in certain cases, the reverse may be true. Consider the *Monsanto v. Spray-Rite* case discussed earlier. If Monsanto distributes its product predominantly through small farm towns surrounded by vast tracts of agricultural land, retailers might be induced to promote Monsanto's herbicides more aggressively through a system of exclusive dealerships rather than RPM. Insulated from horizontal pricing pressures by the large distance between rural towns and being the only supplier in their town to carry the product, if a retailer could convince the area's farmers that Monsanto's herbicides were truly superior to those sold by neighboring retailers, he would not only

capture their market for the herbicides but also capture the market for other farm supplies as well. Having been induced to patronize the Monsanto dealer for herbicides, farmers will be reluctant to incur the costs of an additional trip necessary to purchase the rest of their supplies from another retailer. The point is that either RPM or exclusive territories could create the most efficient distribution system under different market conditions. The manufacturer should be allowed to choose the method of distribution he feels will be most effective, free from judicial or legislative interference.

Thus, if these models form a representative survey of the literature, a policy guide derived from them would seem to indicate that the present treatment of vertical restraints in general and RPM in particular under current antitrust law is much too severe. While not unanimous, the consensus of most economists seems to be that dealer cartels are extremely unlikely and manufacturer cartels, where they exist, should be attacked directly, not through restrictions on vertical restraints. It appears that in most cases where manufactures desire such restraints, they will be efficiency enhancing. This is not an unreasonable assertion since the manufacturer's interests are normally consonant with those of the consumer. However, when considering such cases, one could do well to bear in mind Marvel and McCafferty's point that, in

the services case, increases in output due to RPM do not necessarily imply an increase in welfare. This is due to the possible effects on the infra-marginal consumer who does not value the services.

Between them, these theories cover many of the situations in which RPM has been employed. However, the body of theory still seems to be at a loss to explain certain uses of RPM, i.e., jewelry and books. This indicates a possible direction future theoretical exploration. A more definite policy guide for lawmakers must wait for greater empirical evidence regarding the hypothetical explanations of RPM, as well as its welfare effects, to be developed.

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