Chapter 18: Vertical Price Restraints

Learning Objectives

Students should learn to:

1. Explain why firms integrate, why firms contract, and why firms choose to buy and sell on the "open" market.
2. Explain why some industries are characterized by more formal vertical arrangements than others.
3. Give examples of cases where vertical arrangements lead to increases in efficiency.
4. Solve simple linear inverse demand bilateral monopoly problems where the manufacturer and the retailer are both monopolies. The student will be able to compare this solution to the one where there is a single integrated monopoly firm.
5. Give several examples of situations with moral hazard.
6. Find the optimal maximum retail price that should be set under a resale price agreement between a monopoly manufacturer and a monopoly retailer.
7. Analyze simple models where the quantity demanded depends on both price and the accompanying level of service.
8. Explain the concept of free riding and apply this to the issue of retail service. The student will also be able to give other examples of free riding.
9. Explain the idea of a positive externality and apply this to advertising and product promotion.
10. Explain why free riding is a problem in some markets and not others.
11. Analyze a model with uncertain demand (high and low), a two-step decision problem involving production and then sales, and alternative market structures. The student will be able to show the differences in the optimal strategy for an integrated manufacturer and a competitive retailer.
12. Design an optimal resale price agreement for a monopoly firm selling to a competitive retail sector with uncertain demand.
13. Give a brief history of resale price maintenance (PRM) agreements in the United States.

Suggested Lecture Outline:

Spend two fifty-minute long lectures on this chapter

Lecture 1:

1. Examples of vertical price restraints
2. Brand and retail (intra-brand) competition
3. Review of double marginalization and integration as a solution
4. Royalties as a solution to double marginalization
5. Moral hazard when costs are not known
6. Resale price maintenance (maximum price) as a response to double marginalization

Lecture 2:

1. Importance of service to the level of retail sales
2. Simple model where sales depend on price and level of service
3. Resale price maintenance and variable demand
4. Empirical evidence on resale price maintenance including the *Kahn v. State Oil* and *Creative Leather Products vs. PSKS* cases.

Suggestions for the Instructor:

1. It may be helpful to assign an integrated firm problem or a successive monopoly problem the week before starting this chapter. If the students are familiar with the analytics of solving these problems, they may be better prepared to understand the arguments about double marginalization and reasons for integration.
2. In discussing the problems of a royalty on profit, the issue of asymmetric information can be stressed. A difficulty with any payment based on profits is the lack of information to the collecting party. Besides fixed costs, the retailer may have other variable inputs, information about which the manufacturer is unaware. This might also be a good place to introduce the principal agent problem discussed later in the chapter. Students may well be familiar with moral hazard from the insurance literature. If not, discuss the problem when individuals are allowed to insure their house for more than it is worth.
3. Stress that resale price maintenance in the face of double marginalization is the specification of an upper bound of price so the retail firm will not restrict sales too much. This differs from the case where the agreement is to ensure good service or the proper image for the product.
4. Point out that with a bilateral monopoly the manufacturer will seldom be able to obtain all of the profits of an integrated firm, but that the two monopolies will probably bargain over the profits.
5. Some other examples to consider where retail service may be important are: jewelry, computers and other high-priced consumer electronics, running shoes, sports and exercise equipment, high quality men's suits, sewing machines, automobile insurance, investment services (but this may be declining), living room furniture, etc. In each case one can discuss when the service seems to be provided and when it doesn't. For example, one may buy a high-priced 35 mm camera from a camera shop but a small disposable camera from a discount store.
6. In presenting the sales-service model point out that you are only considering two levels of service but in reality there are probably many levels possible.
7. The concept of free riding is important in this chapter and should be carefully explained. Some examples include the standard public good ones such as parks and roads (not toll roads), public schools, and flood control levees.

Solutions to End of the Chapter Problems:

Problem 1

(a) Since demand is given by $Q = 30 – p$, inverse demand is given by $p = 30 – Q$.

Profit of the Volvo dealer is given by

$$\pi^D(p,w) = pQ - wQ = (30 - Q)Q - wQ$$

Maximization with respect to Q will give

$$\frac{\partial \pi^D}{\partial Q} = 30 - 2Q - w = 0 \Rightarrow Q = \frac{30 - w}{2} = 15 - \frac{w}{2} \Rightarrow p = 15 + \frac{w}{2}, Q = 15 - \frac{w}{2}$$

$$\Rightarrow \pi^D = \left(15 + \frac{w}{2}\right)\left(15 - \frac{w}{2}\right) - w\left(15 - \frac{w}{2}\right) = \frac{w^2}{4} - 15w + 225$$

(b) Since the quantity sold is the quantity purchased, we can simply invert the equation for Q derived in part (a) to get a demand for cars as a function of Q. This will give $w = 30 – 2Q$

Revenue and Marginal Revenue of the Volvo manufacturer are given by

$$R^M = 30Q - 2Q^2 \Rightarrow MR^M = 30 - 4Q$$

Equate marginal revenue with marginal cost, equal to 5 (remember units are measured in units of thousands of dollars) to obtain optimal level of Q. Find $Q = 6.25$ and $w = 17.5$ and $\pi^M = 78.13$.

Based on $Q = 6.25$, the retail price. $p = 30 – Q = 23.75$ $\pi^D = 39.06$

Problem 2

Now compute the integrated firm's profit using marginal production cost as the cost of the car.

$$\pi^I = (30 - Q)Q - 5Q \Rightarrow \frac{\partial \pi^I}{\partial Q} = 30 - 2Q - 5 = 0$$

$$\Rightarrow Q = 12.5, p = 17.5, \pi^I = 156.25 > \pi^M + \pi^D = 117.19$$

Observe that double marginalization leads to a higher price and lower quantity.

Problem 3

(a) The retailers are competitive, so they will sell until price equals marginal cost, where their marginal cost is the wholesale price, w. Therefore, ABC's wholesale demand is $w = 50 – Q$

Equate ABC's marginal revenue with its marginal cost to obtain $Q = 20$ and $w = 30$.

Since the retainers are competitive, the retail price will also be 30.

(b) CS = ($50 – $30) x (20/2) = 200

(c) ABC's profit = ($50 – $30)20 = 400

Problem 4

(a) With an RPM agreement, the monopolist can choose the price as if it were a fully integrated seller. Equate marginal revenue with marginal cost to obtain $Q = 40$, $p = 50$

(b) CS = ($90 - $40) x (40/2) = 800

Problem 5

$\pi^I = (50 - w)\frac{40}{n} - 400 = 0 \Rightarrow w = 50 - 10n$ where n is the number of competitive retailers, $n \leq 5$.

Problem 6

A significant number of the resale price maintenance cases that have been the subject of antitrust policy involve the pricing of such simple consumer products as Russell Stover candy, Levi's jeans, Arrow shirts, and Colgate toiletries. Who has the incentive for resale price maintenance for these products? Explain why.

The manufacturer would like to see these products priced above marginal cost. All of these products are "name" brands with significant product differentiation and advertising by the manufacturer. Although the manufacturers do not have a monopoly on candy, jeans, or shirts, they do have a monopoly on candy, jeans and shirts with their own name. Thus they would like to see the quantity restricted and the price kept high. If competitive retailers drive the retail price too low, the "brand" name image of the product may suffer and the manufacturer may have problems maintaining a high wholesale price. For example, Levi Strauss claimed that it lost market share to Calvin Klein and other high-priced brands when it abandoned retail price maintenance in the late 1970s and early 1980s and retailers used Levi's as a "loss leader" or sale product.

The retailers in these cases may also prefer RPM to the extent that it discourages them from engaging in Bertrand price competition with each other. Since these products have the potential for monopoly profits, the retailers would just as soon not get in price competition. The use of a resale price agreement may implicitly allow the formation of a retail cartel.

Problem 7

In the antitrust case Albrecht v. Herald Co., the successive monopoly problem was created by the publisher granting an exclusive territory to the distributor. Could the problem have been solved by opening up home delivery to competition among several distributors?

The question here is who has the problem. The Herald Co. is happy giving the exclusive territory as long as Albrecht cannot charge a high price and create a double marginalization problem. As long as the competitive carriers are able to distribute the paper as cheaply and with the same service as the monopoly carrier, Herald Co. will have the same sales with competition as with the monopoly distributor at the same posted (and sale) price. Herald Co. will also not have a problem with the competitive carriers wanting to raise prices. If the monopoly distributor can deliver the paper cheaper (economies of scale and scope), competitive firms may not choose to enter the market if the cost of delivering the paper in outlying areas is not high enough to cover their higher costs. Thus, Herald Co. may need to use a large distributor to keep the cost of production plus delivery below the price printed on the paper.