Chapter 9
Pricing Policy

CHAPTER SUMMARY

The simplest way to set price is through uniform pricing. At the profit-maximizing uniform price, the incremental margin percentage equals the reciprocal of the absolute value of the price elasticity of demand. The most profitable pricing policy is complete price discrimination, where each unit is priced at the benefit that the unit provides to its buyer. To implement this policy, however, the seller must know each potential buyer's individual demand curve and be able to set different prices for every unit of the product.

The next most profitable pricing policy is direct segment discrimination. For this policy, the seller must be able to directly identify the various segments. The third most profitable policy is indirect segment discrimination. This involves structuring a set of choices around some variable to which the various segments are differentially sensitive. Uniform pricing is the least profitable way to set a price.

A commonly used basis for direct segment discrimination is location. This exploits a difference between free on board and cost including freight prices. A commonly used method of indirect segment discrimination is bundling. Sellers may apply either pure or mixed bundling.

KEY CONCEPTS

uniform pricing
price discrimination
complete price discrimination
segment
indirect segment discrimination
direct segment discrimination
free on board (FOB)
delivered pricing
cost including freight (CF)
bundling
cannibalization

GENERAL CHAPTER OBJECTIVES

1. Analyze uniform pricing and understand its limitations relative to price discrimination.
2. Understand that cost-plus pricing fails to maximize profit.
3. Analyze complete price discrimination and its informational requirements.
4. Analyze direct segment discrimination and its implementation and informational requirements.
5. Explain how location can be used as a basis for direct segment discrimination.
6. Analyze indirect segment discrimination and its implementation and informational requirements.
7. Explain how bundling serves to effect indirect segment discrimination.
8. Explain how the discriminating variable should be set.
9. Appreciate the hierarchy of pricing policies in terms of profitability and information requirement: (i) complete price discrimination; (ii) direct segment discrimination; (iii) indirect segment discrimination; and (iv) uniform pricing.

NOTES

1. **Uniform pricing**.
   (a) Uniform pricing: a pricing policy where a seller charges the same price for every unit of the product.
   (b) **Profit maximizing price** (**incremental margin percentage rule)**: a price where the incremental margin percentage (i.e., price less marginal cost divided by the price) is equal to the *reciprocal* of the absolute value of the price elasticity of demand. This is the rule of marginal revenue equals the marginal cost.
      i. Price elasticity may very along a demand curve, marginal cost changes with scale of production. The above procedure typically involves a series of trials and errors with different prices.
      ii. Intuitive factors that underlie price elasticity: direct and indirect substitutes, buyers' prior commitments, search cost.
   (c) **Price adjustments following changes in demand and cost**.
      i. To maximize profits, a seller should consider both demand and costs.
      ii. A seller should adjust its price to changes in either the price elasticity or the marginal cost.
      iii. It must consider the effect of the price change on the quantity demanded.
      iv. If demand is *more* elastic (price elasticity will be a larger negative number), the seller should aim for a lower incremental margin percentage, and not necessarily a lower price, and likewise,

v. If demand is *less* elastic, the seller should aim for a higher incremental margin percentage, and not necessarily a higher price.
vi. A seller should not necessarily adjust the price by the same amount as a change in marginal cost.

(d) Special notes.
i. Only the incremental margin percentage (i.e., price less marginal cost divided by the price) is relevant to pricing.
(1). Contribution margin percentage (i.e., price less average variable cost divided by the price) is not relevant to pricing.
(2). Variable costs may increase or decrease with the scale of production, and hence, marginal cost will not be the same as average variable cost.
ii. Setting price by simply marking up average cost will not maximize profit. Problems of cost plus pricing:
(1). In businesses with economies of scale, average cost depends on scale, but scale depends on price. It is a circular exercise.
(2). Cost plus pricing gives no guidance as to the markup on average cost.

(e) **Limitations** of uniform pricing (incremental margin percentage rule).
i. The inframarginal buyers do not pay as much as they will be willing to pay. A seller could increase its profit by taking some of the buyer surplus.
ii. Economically inefficient quantity of sales. By providing the product to everyone whose marginal benefit exceeds marginal cost, the seller could earn more profit.

2. **Price discrimination**. Pricing policy where a seller sets different incremental margins on *various units* of the same or similar product.
(a) To earn a higher incremental margin from buyers with higher benefit, and a smaller margin from buyers with lower benefit.

3. **Complete price discrimination**: the pricing policy where a seller prices *each unit* of output at the buyer's benefit and sells a quantity where the marginal benefit equals the marginal cost.
(a) All the buyer surplus is extracted. Every buyer is charged the maximum she is willing for pay for each unit.
(b) Economically efficient quantity: all the opportunity for additional profit through changes in sales is exploited.
(c) Extracts a **higher price** for units that would be sold under uniform pricing and extends **sales** by selling additional units that would not be sold.

(d) Requires information about each potential buyer's entire individual demand curve.

4. **Direct segment discrimination**: The pricing policy where a seller charges a different incremental margin to *each identifiable segment* (with uniform pricing within each segment). A segment is a significant group of buyers within a larger market.
   (a) **Profit maximizing price**: set prices so that the incremental margin percentage of *each segment* equals the reciprocal of the absolute value of that segment's price elasticity of demand; i.e., applies the rule for uniform pricing to determine the profit maximizing prices for each segment.
   (b) When marginal cost is increasing, any change in price for one segment that affects sales will affect (a) marginal cost, and (b) the incremental margin percentage for the other segment. Accordingly, the seller must conduct the trial and errors search for the prices to both segments at the same time.
   (c) A seller can discriminate on the basis of a **buyer's location**.
      i. Free on board (FOB) price is a price that does not include delivery.
         (1). FOB pricing ignores the differences between the price elasticities of demand in various markets.
         (2). The differences among prices at various locations equal the differences in costs of delivery.
      ii. Delivered pricing is the pricing policy where the seller's price includes delivery. A cost including freight (CF) price is one that includes delivery.
         (1). The seller can implement direct segment discrimination, aim for different incremental margin percentages in each market, and obtain higher profit.
         (2). The differences among prices at various locations are the result of the different incremental margin percentages and the different marginal costs of supplying the various markets, and may be larger or smaller than the costs of delivery.
   (d) Requirements.
      i. Must directly identify the members of each segment. The identifiable buyer characteristic must be fixed.
      ii. Must prevent buyers from reselling the product among themselves.
         (1). Generally, resale of services is more difficult than resale of goods, hence there is more price discrimination in services than goods.

(2). Sellers can limit resale of goods by restricting warranty service to the location of purchase.

(e) **Limitations.** For each segment, same limitations as uniform pricing.

5. **Indirect segment discrimination**: Pricing policy where a seller (who cannot directly identify the customer segments) *structures a choice* for buyers so as to earn different incremental margins from *each segment*.
   (a) **Profit maximizing price**.
      i. There is no simple rule to find the profit maximizing prices.
      ii. Buyers *might substitute* among the various choices. Accordingly, the seller must analyze how changes in the price of one product affect the demand for other choices, and set the prices of all products at the same time. The seller must not price any product in isolation.
   (b) Requirements.
      i. Buyers must be differentially sensitive to some variable that the seller can control. The seller then uses this variable to structure a set of choices that will discriminate among the segments.
      ii. Buyers must not be able to circumvent the *differentiating variable*. The seller must strictly enforce all conditions of sale to prevent switching.
      iii. **Cannibalization** occurs when the sales of one product reduce the demand for another with a higher incremental margin.
         (1). Mitigate cannibalization by degrading the quality of the low margin product.
   (c) Less profitable than direct price discrimination.
      i. Products provide less benefit than those with direct discrimination.
      ii. Involves relatively higher costs.
      iii. Leakage: indirect discrimination relies on various segments to voluntarily identify themselves through the structured choice. But consumers in one segment may buy the item aimed at another segment.

6. **Profit ranking**.

Policy		Profitability	Information requirement
Complete price discrimination		Highest	Lowest
Direct segment discrimination	Seller discriminates directly on the buyer's attributes. Seller can identify each buyer	(Exception: when all buyers within the same segment are identical. In such a case, profit equals that with	

	segment and prevent one segment from buying the product targeted at another segment.	complete price discrimination.)	
Indirect segment discrimination	Uses product attributes to discriminate indirectly among various buyer segments		
Uniform pricing		Lowest	Highest

7. **Bundling**.
   (a) **Bundling**: one method of **indirect segment discrimination** that deliberately restricts buyer choices. This is the combination of two or more products into one package with a single price.
      i. **Pure** bundling: the pricing policy where the seller offers the products only as a bundle.
      ii. **Mixed** bundling: the seller offers the products as a bundle and also separately.
   (b) There is no simple general rule to set the prices.
   (c) Bundling is more profitable where:
      i. The benefits of the segments from the products are negatively correlated, i.e., a product that is extremely beneficial to one segment provides relatively little benefit to another (the benefit from the bundle will be relatively less disparate across the segments than the benefits from the separate products); and
      ii. The marginal cost of the product is *low* (relatively little economic inefficiency will accrue from providing the bundle to all buyers).
   (d) When marginal cost is *substantial*, mixed bundling should be considered. By structuring a choice among the bundle and the separate products, various segments will identity themselves by their product choice. The economic inefficiency of providing a product for which the marginal cost is less than the buyer's benefit can be avoided.

ANSWERS TO PROGRESS CHECKS

9A. The profit-maximizing price is 63,000 yen.

9B. The market buyer surplus is the area *agc*.

9C. Area *adb* = 31.25 million yen. Area *bec* = 31.25 million yen.

9D. See Figure 9D on page 541 of the text.

9E. The Japanese CF price = 50,000 yen = $500. The difference with the American price = $150.

9F. No, the two segments will not be differentially sensitive.

9G. Price the bundle at $22 and the educational channel at $19.

9H. The maximum price of the large bottle = $3.74.

ANSWERS TO REVIEW QUESTIONS

1. Not necessarily. It should set a higher incremental margin on private-label cola.
2. The profit-maximizing uniform price = $2.50.
3. No. It should reduce price by an amount less than $10 that depends on the price elasticity of demand.
4. [omitted].
5. Equal.
6. The price in Germany = $3.30; the price in South Africa = $1.80.
7. For publications, it would be easier to discriminate against newspapers because they have time value and are priced low relative to transportation cost.
8. The demand is relatively more price elastic in Singapore, so Microsoft should price with a lower incremental margin in Singapore.
9. [omitted].
10. This is an example of mixed bundling. Those who already subscribe to the print edition have relatively lower willingness to pay (more inelastic demand) for the online edition.

11. Indirect segment discrimination among segments with different sensitivity to quantity of service.

12. Those who are renting at the expense of others are less sensitive to the price of gasoline sold by Hertz and more sensitive to the inconvenience of filling up at a gas station. They are more likely to buy gasoline from Hertz.

13. The Economist comment points to segments with negatively correlated preferences. This is a condition under which bundling is especially profitable.

14. Consumers with small appetites prefer a la carte to buffets; big eaters prefer the buffets. The result is indirect segment discrimination.

15. (a) and (b).

WORKED ANSWER TO SAMPLE DISCUSSION QUESTION

Magazines are distributed through both newsstands and subscriptions. They derive revenue from both selling the publication and advertising. Many also publish their content through the World Wide Web.

a. The larger a title's circulation, the more its publisher can charge for advertising. How should a publisher take account of this factor in setting the cover price of a magazine?
b. From the reader's standpoint, what are the differences between buying at a newsstand and through subscription? How should a publisher price subscriptions relative to newsstand sales?
c. The Web edition is particularly beneficial to business executives who travel frequently and subscribers in locations that are poorly served by mail delivery from the magazine printers. Should a magazine provide the Web edition free to subscribers or levy an additional charge for it?

Answer

(a) The publisher should consider marginal revenue in two forms -- magazine sales and advertising. In setting the cover price, the publisher should balance the marginal revenue from both sales and advertising with the marginal cost of producing and delivering the publication.

(b) For the reader, subscription is more convenient as it includes delivery. On the other hand, a subscription locks in the reader so that he cannot pick and choose according to the content of particular issues. These two factors have conflicting effects on the reader’s willingness to pay for subscriptions vis-à-vis newsstand purchases.

(c) There appear to be several segments in the demand for the Web edition:

(i) business executives who travel frequently; (ii) subscribers in locations that are poorly served by mail delivery from the magazine printers; and (iii) non-business subscribers in locations well-served by mail delivery. The magazine can directly identify segment (ii) and offer them the Web edition at no charge. However, the magazine cannot directly identify segment (i). It can indirectly discriminate by levying a charge for the Web edition.

