CHAPTER 12
Pricing

CHAPTER OUTLINE

12.1 Why and How Firms Price Discriminate
   Why Price Discrimination Pays
   Who Can Price Discriminate
   Preventing Resales
   Not All Price Differences Are Price Discrimination
   Types of Price Discrimination
12.2 Perfect Price Discrimination
   How a Firm Perfectly Price Discriminates
   Perfect Price Discrimination Is Efficient But Hurts Consumers
   Transaction Costs and Perfect Price Discrimination
12.3 Quantity Discrimination
12.4 Multimarket Price Discrimination
   Multimarket Price Discrimination with Two Groups
   Identifying Groups
   Welfare Effects of Multimarket Price Discrimination
12.5 Two-Part Tariff
   A Two-Part Tariff with Identical Consumers
   A Two-part Tariff with Non-Identical Consumers
12.6 Tie-In Sales
   Requirement Tie-in Sales
   Bundling

TEACHING TIPS

Chapter 12 continues the presentation of oligopoly models, but switches emphasis to price-setting behavior. Output and price in the Bertrand model are compared to the Cournot model. Central to the Bertrand model is the importance of product differentiation. Students should not have trouble seeing that when consumers view products as identical, the Bertrand model is implausible. What should be emphasized, however, is that it is not whether the products are meaningfully different or not; what matters is if consumers believe that there is a meaningful difference between products. You might want to discuss the role of advertising in this process. For example, beer makers spend enormous sums of money on advertising in an attempt to convince consumers that their product has a unique taste. The uniqueness is largely a perceived one, however, as most consumers cannot identify “their” brand in taste tests. If you have time, a fun classroom experiment is to demonstrate this result using soda. You will need to poll the class to see if they prefer diet or regular soda as a group. Then buy three or four types of cola and have students try to identify their brand (which they pre-identify by writing it on a 3 x 5 card) using unmarked cups. Students have great confidence in their abilities to identify brands, but are not usually very successful.

The remainder of the chapter is dedicated to various forms of price discrimination. Even if you only have time to give the Cournot and Bertrand models a brief treatment, the material on price discrimination is worth covering in detail for several reasons. First, students generally find the topic quite interesting, as they are aware of some types of price discrimination, but haven’t thought about them much (e.g., movie ticket prices), and are completely unaware of other types (such as dry cleaning prices). Also, price discrimination is an effective way to emphasize the importance of market power—for example, by comparing a monopolist charging a single price to the same firm practicing a perfect price discrimination. Finally, it is a good topic for generating class discussion. If you challenge the class to come up with illustrations of price discrimination, they sometimes will raise new and interesting examples. When discussing the conditions nec-
essay to price discriminate, you might emphasize the ability to prevent resales. Finally, be sure that the class understands that price differences that result from cost differences are not price discrimination.

Section 12.5 on two-part tariffs and Section 12.6 on tie-in and bundled sales are topics where the class should be able to take the lead in providing examples. Although they are often simply another tool for firms to extract consumer surplus, two-part tariffs and tie-ins do not seem to provoke the same reaction as price discrimination. This may be the case due to the pro-efficiency effects of many bundled products (such as tires and cars). The internet browser offered by Microsoft as part of the Windows package has evoked strong debate over what constitutes a separate but bundled commodity, and what should be considered an integral part of the original commodity. As an exercise, you might ask the class to draw up a set of guidelines that regulators should follow when deciding if a product bundle increases efficiency, or is a source of monopoly rents.

**ADDITIONAL APPLICATIONS**

**Gasoline**

Because only firms with market power can price discriminate, price discrimination is not observed in competitive markets. It may be possible, however, to price discriminate in monopolistically competitive markets. If retail gasoline stations are monopolistically competitive rather than purely competitive, they may be able to price discriminate. Borenstein (1991) finds that they do discriminate. The difference between the price and marginal cost is greater for unleaded than leaded gasoline.

The residual demand elasticity that a station faces depends on the market elasticity of demand for gasoline and the willingness of consumers to switch stations. If a gas station raises its prices, some customers may buy less gasoline, while others may switch to another dealer. Those customers who cut their purchases are treating the gas station like a monopoly. The customers that switch dealers view the various dealers as substitutes for each other. Gas stations have markups that range from 5% to 10% above marginal cost, which implies that they face elasticities of –10 to –20. These elasticities are much greater than the price elasticity of demand for gasoline, which is less than –2. Thus, the residual elasticity facing a station appears to be primarily determined by the willingness of customers to switch dealers.

Buyers of leaded gasoline are likely to differ from purchasers of unleaded. In the earlier 1980s, many cars still burned leaded gasoline. At that time, consumers who purchased unleaded were wealthier and more likely to use credit cards for their purchase, which made them less willing to switch stations. Since 1986, however, many stations have stopped carrying leaded gasoline, increasing the average distance between sellers. As a result, it became more costly for a purchaser of leaded gas (but not unleaded) to switch dealers, and the dealers’ market power over buyers of leaded gas increased relative to their power over buyers of unleaded. These factors explain why the markup of price over marginal cost for regular unleaded increased relative to leaded until 1986 and then decreased thereafter.

1. Do you think that the new “pay at the pump” technology employed by some companies is an effort to save on labor costs or decrease demand elasticity?
2. What would you predict about the elasticity of demand for diesel fuel for automobiles? Why?

**Ethnic Pricing on Airlines**

“Ethnic pricing” is a form of price discrimination that has long been practiced in both developing countries and Europe. Under ethnic pricing, individuals of some nationalities are able to purchase airline tickets at a substantially lower cost than others. Remarkably, this includes individuals that are married to one

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another. Brendan McInerney and his Japanese wife wanted to fly from Frankfurt, Germany, to Osaka, Japan, for Christmas in 1997. Although they were both able to buy tickets in the same level of seating on the same Lufthansa flight, Mr. McInerney was initially charged 2,700 marks, compared to the 1,700 marks charged to his wife. The sole reason for the price difference was their ethnicity. She is Japanese; he is not. Although illegal in Germany, the practice appears to be fairly commonplace there. Airline industry experts note that the agencies that receive the complaints have no police power to stop them. McInerney eventually received the same fare as his wife after complaining. “In America, this is called racial discrimination,” he protested.

The policy was apparently designed to allow guest workers (a generic term for an individual not working in his or her home country) the opportunity to visit relatives back home. The fares were only available on request through specified travel agencies that had made special deals with the air carriers. Some examples appear below.

<table>
<thead>
<tr>
<th>Airline</th>
<th>Route</th>
<th>Normal Price</th>
<th>“Ethnic Price”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lufthansa</td>
<td>Frankfurt–Tokyo</td>
<td>$1,524</td>
<td>$960</td>
</tr>
<tr>
<td>Lufthansa</td>
<td>Frankfurt–Seoul</td>
<td>$1,524</td>
<td>$903</td>
</tr>
<tr>
<td>British Airways</td>
<td>Istanbul–London</td>
<td>$385</td>
<td>$199</td>
</tr>
</tbody>
</table>

Lufthansa officials did not deny that such pricing occurs, but claimed that they resorted to it only to match the prices of other airlines that were doing the same thing. The British Airways special was called the “Ho Ho Ho Special” for British citizens in Turkey. With a British passport, the airfare was reduced 48%. U.S. air carriers also practiced ethnic pricing until 1988, when official U.S. Department of Transportation policy finally banned it.

1. Should it still be considered price discrimination if the tickets based on ethnicity are cheaper and not more expensive?
2. How is this practice different from senior citizen discounts in the United States?

 **DISCUSSION QUESTIONS**

1. Can you predict whether an oligopoly will set price or quantity? How? Give some examples where you can clearly predict and where you cannot.
2. Give some examples of markets where products differ physically, but consumers treat the products as nearly perfect substitutes.
3. Give some examples of where products do not differ physically, but consumers treat the products as imperfect substitutes.
4. Why might an individual be strongly opposed to racial or gender-based discrimination, but not opposed to the type of price discrimination discussed in this chapter?
5. Should the government permit price discrimination? Under what circumstances?
6. U.S. firms may discriminate against consumers, but not other firms. Can you think of a justification for treating these two types of buyers differently?
7. Many economists argue that laws prohibiting price discrimination were designed to protect small businesses from paying higher prices than large businesses. Why might the government want to protect this group? Should this law be changed?
8. Should the U.S. government enforce export restrictions on software by anyone other than the manufacturer? [Such restrictions would allow U.S. firms to charge higher prices than in the domestic market by preventing resales.]
9. Does the sale of personal seat licenses (“pasts”) wherein fans pay large up-front fees for the right to purchase season tickets constitute price discrimination?
ADDITIONAL QUESTIONS AND MATH PROBLEMS

1. True or false, explain your answer. “In a three-firm oligopoly, where firms produce virtually identical products, advertising is a waste of money.”

2. When the product is not differentiated, are consumers better off if firms use the Bertrand model or the Cournot model to set strategy? Why? Does your answer change if products are differentiated?

3. “All you can eat” buffets are an example of which pricing strategy discussed in this chapter? What about hotels that have a “kids eat free in the hotel restaurant” policy?

4. A monopolist sells in two states and practices price discrimination by charging separate prices in each state. The monopolist produces at constant marginal cost $MC = 10$. Demand in market 1 is $Q_1 = 50 - p_1$. Market 2 demand is $Q_2 = 90 - 1.5p_2$. What price will be charged in each market? Suppose a third party enters the market, not as a producer, but as a reseller, capable of reselling by transporting the goods from market to market at a cost of $4$ per unit. How does this affect the monopolist?

5. Suppose a monopolist’s costs are described by the function $C = 200 + 2Q^2$, and it faces a demand curve of $Q = 240 - p$. If it cannot price discriminate, what are the profit-maximizing price and quantity? What are profits? If the monopolist uses block pricing by setting an intermediate price, but cannot charge more than two different prices in total, what would be the best prices to choose? How does the use of an intermediate price change profits and consumer surplus compared to the single price result?

6. Suppose that instead of block pricing in problem #5, the firm is able to practice perfect price discrimination. What are the values of output, profit, and consumer surplus?

7. True or false, explain your answer. If all consumers have identical tastes and preferences, perfect price discrimination is impossible.

ANSWERS TO ADDITIONAL QUESTIONS AND MATH PROBLEMS

1. The answer depends on whether or not the products are viewed as identical by the consumers or not. In many cases, such as in the domestic beer industry, despite the fact that products are nearly identical, firms spend large amounts on advertising to create the illusion of differentiation among consumers, which leads to brand loyalty. Thus, even though most consumers cannot identify their own brand in taste tests, they are loyal to that brand because of the image created by the advertising.

2. With undifferentiated products, consumers are better off if firms use the Bertrand model because it leads to marginal cost pricing, whereas the Cournot model leads to above-marginal cost pricing. When products are differentiated, it is unclear without additional information which model leads to lower prices.

3. “All you can eat” buffets are examples of product bundling. Consumers cannot purchase the items individually, nor can they choose to not purchase certain items in the line. Most consumers end up paying for menu selections that they do not select. “Kids eat free” plans are an example of a product tie-in because the children cannot eat free unless they are accompanied by a paying adult. The only way to get the low (free) price for children is to purchase a more expensive adult meal.

4. To get the profit-maximizing output and price levels, set marginal cost equal to marginal revenue in each market and solve.
\[ MR_1 = 50 - 2Q_1 = 10 = MC \]
\[ Q_1^* = 20 \]
\[ p_1^* = 30 \]
\[ MR_2 = 60 - 1.33Q_2 = 10 = MC \]
\[ Q_2^* = 37.5 \]
\[ p_2^* = 35 \]

Because the reseller can transport goods from Market 1 to Market 2 for $4 per unit, the reseller could under price the monopolist in Market 2 by $1. This forces the monopolist to reduce the market price to $34 per unit. Output increases to 39 units, and revenue increases to $1326 from $1312.50, but because of the additional output, costs increase by $15, and profits fall by $1.50.

5. The standard monopoly solution is \( Q^* = 40, p^* = $200 \), which generates profits of $8,000. If an intermediate price can be chosen, the maximum consumer surplus can be captured by choosing a price halfway between the maximum price of $240 and the monopoly price of $200. The monopolist sells 20 units for $220 and 20 units for $200. Profits are increased by $400.

6. With perfect price discrimination, the monopolist sets \( MC = p \) to determine the best output level. Costs are $4,808. Revenue is the entire area under the demand curve from \( Q = 0 \) to 48, or $10,368 (area \( abcd \) in Figure 12.1). Profits are $5,560, and consumer surplus is zero.

\[ 4Q = 240 - Q \]
\[ Q^* = 48 \]
\[ R = (192 \times 48) + (24 \times 48) = 10,368 \]

Figure 12.1
7. False. Even though all consumers have identical tastes and preferences, each consumer still possesses a downward sloping individual demand curve, which makes the market demand curve slope downward as well. The monopolist is unable to discriminate based on differences across individuals, but could still discriminate based on willingness to pay for additional units.