

14.01 Principles of Microeconomics, Fall 2007

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Lecture 25

Pricing with Market Power

Outline

1. Chap 11: *Third Degree Price Discrimination*
2. Chap 11: *Peak-Load Pricing*
3. Chap 11: *Two-Part Tariff*

1 Third Degree Price Discrimination

Third degree price discrimination is the practice of dividing consumers into two or more groups with separate demand curves and charging different prices to each group (see Figure 1). Now maximize the profit:

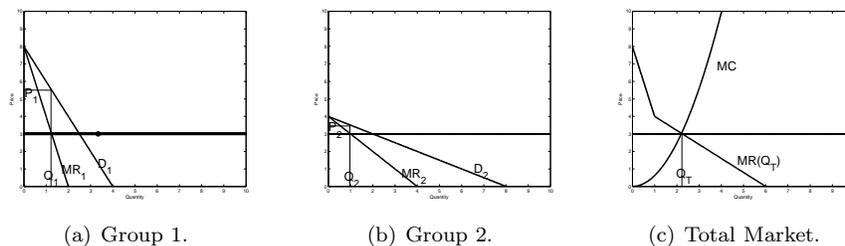


Figure 1: Third Degree Price Discrimination.

$$\pi(Q_1, Q_2) = P_1(Q_1)Q_1 + P_2(Q_2)Q_2 - C(Q_1 + Q_2);$$

first order conditions

$$\frac{\partial \pi}{\partial Q_1} = 0$$

and

$$\frac{\partial \pi}{\partial Q_2} = 0$$

give

$$MR_1(Q_1) = MC(Q_1 + Q_2),$$

and

$$MR_2(Q_2) = MC(Q_1 + Q_2);$$

finally,

$$MR_1(Q_1) = MR_2(Q_2) = MC(Q_1 + Q_2).$$

Because

$$MR_1 = P_1 \left(1 - \frac{1}{|E_1|}\right),$$

and

$$MR_2 = P_2 \left(1 - \frac{1}{|E_2|}\right),$$

we have

$$\frac{P_1}{P_2} = \frac{1 - 1/|E_1|}{1 - 1/|E_2|};$$

since

$$|E_1| < |E_2|,$$

$$P_1 > P_2.$$

Sometimes a small group might not be served (see Figure 2). The producer only

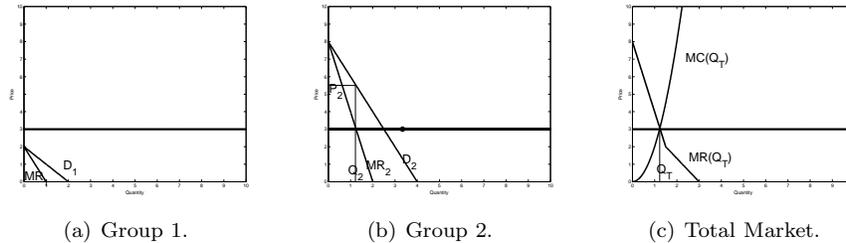


Figure 2: Third Degree Price Discrimination with a Small Group.

serves the second group, because the willingness to pay of the first group is too low.

2 Peak-Load Pricing

Producers charge higher prices during peak periods when capacity constraints cause higher MC .

Example (Movie Ticket). Movie ticket is more expensive in the evenings.

Example (Electricity). Price is higher during summer afternoons.

For each time period,

$$MC = MR$$

(see Figure 3).

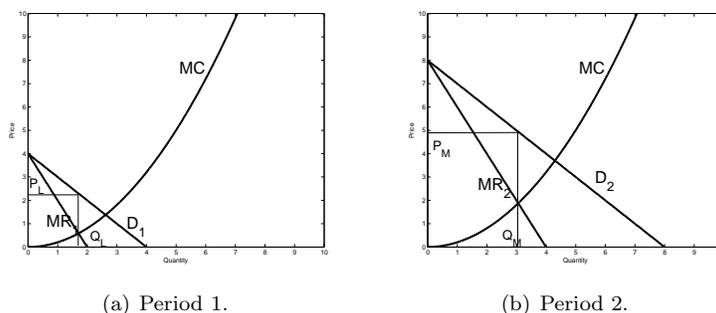


Figure 3: Peak-Load Pricing.

3 Two-Part Tariff

The consumers are charged both an entry (T) and usage (P) fee, that is to say, a fee is charged upfront for right to use/buy the product, and an additional fee is charged for each unit that the consumer wishes to consume. Assume that the firm knows consumer's demand and sets same price for each unit purchased.

Example (Telephone Service, Amusement Park.).

When there is only one consumer. If the firm sets usage fee

$$P = MC,$$

consumer consumes Q^* units (see Figure 4), and the firm can set entry fee

$$T = A,$$

and extract all the consumer surplus.

- If setting

$$P_1 > MC,$$

total revenue is

$$R_1 = A_1 + P_1 \times Q_1,$$

and cost is

$$C_1 = MC \times Q_1,$$

then the profit is

$$\pi_1 = A - B_1.$$

- If setting

$$P_2 < MC,$$

total revenue is

$$R_2 = A_2 + P_2 \times Q_2,$$

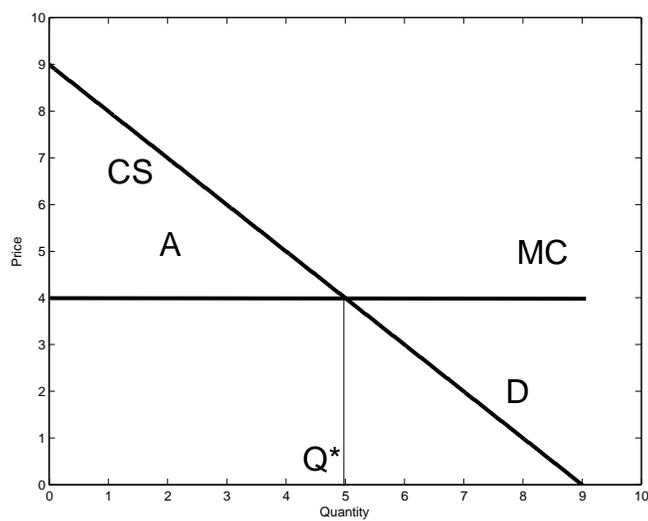
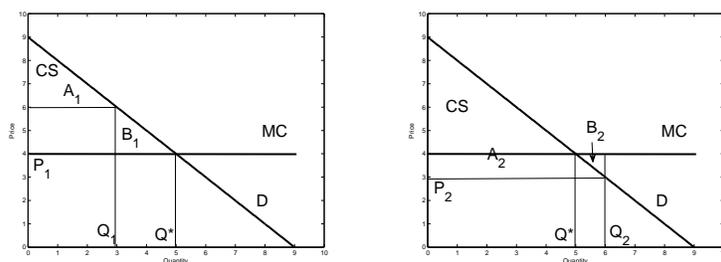


Figure 4: Entry Fee of One Consumer.



(a) Price Higher than Marginal Cost. (b) Price Lower than Marginal Cost.

Figure 5: Two-Part Tariff.

and cost is

$$C_2 = MC \times Q_2,$$

then the profit is

$$\pi_2 = A - B_2.$$

Either B_1 or B_2 is positive, so the best unit price that maximized the producer surplus is exactly MC .