

## Price Discrimination

Price discrimination occurs when a firm takes advantage of its market power to sell the same product in two different markets at two different prices. A monopolist can make more profits by price discriminating than by charging the same price in both markets.

For example, discounts for students or seniors. The discounts are not just to be nice, but to increase profits by charging everyone what they are willing to pay.

For example, selling at different locations, such as the “dumping” of foreign steel in the US market.

Example: market 1 is the (lower demand) US market, and market 2 is the Japanese market.

$$TC = 3000 + 20x = 3000 + 20(x_1 + x_2).$$

Demand functions for the two markets are

$$x_1 = 80 - p_{x1}$$

$$x_2 = 120 - p_{x2}.$$

To find the total and marginal revenue functions, we solve for the inverse demand:

$$p_{x1} = 80 - x_1$$

$$TR_1 = (80 - x_1)x_1$$

$$MR_1 = 80 - 2x_1$$

$$p_{x2} = 120 - x_2$$

$$TR_2 = (120 - x_2)x_2$$

$$MR_2 = 120 - 2x_2$$

To maximize profits overall, find the price and quantity that maximizes profits in each market separately.

$$MR_1 = 80 - 2x_1 = 20 = MC$$

$$MR_2 = 120 - 2x_2 = 20 = MC$$

Solving for  $x_1$  and  $x_2$  and plugging into the inverse demand functions to find the prices, we have

$$x_1 = 30, \quad p_{x1} = 50$$

$$x_2 = 50, \quad p_{x2} = 70$$

$$\pi = 1500 + 3500 - 3000 - 20(80) = 400.$$

At a total quantity of 80, we have  $ATC(80) = 4600/80 = 57.5$ . Notice that the monopolist is selling in the US market “below cost.”

Dumping is a problem when a firm prices low today in order to drive the competition out of business and raise prices in the future. The monopolist in this example is not dumping. There are no competitors, and there is no intention of raising the price later. The US market simply benefits from price discrimination.

What would be evidence of (predatory) dumping? Pricing below *marginal* cost.

If the monopolist had to charge the same price to everyone, we first find the worldwide demand function

$$x = (80 - p_x) + (120 - p_x) = 200 - 2p_x.$$

Now solve for the inverse demand function, the total revenue function, and the marginal revenue function.

$$p_x = \frac{200 - x}{2}$$
$$TR = \frac{200x - x^2}{2}$$
$$MR = 100 - x$$

Setting marginal revenue equal to marginal cost, we have

$$100 - x = 20, \text{ so}$$

$$x = 80, p_x = 60,$$

$$\pi = 4800 - 3000 - 80(20) = 200.$$

We see that profits are higher under price discrimination. If price discrimination is disallowed, the monopolist will choose a price between the monopoly prices for the two markets.

Price discrimination is widespread, whenever a firm enjoys a degree of monopoly power (including monopolistic competition). Firms have marketing departments whose job is to find clever ways of breaking a market into segments, so that different prices can be charged to each segment.

Subtle forms of price discrimination include:

1. Coupons
2. Trade ins: luggage, cars
3. Infrequent big sales: carpet, tires
4. Airlines and Saturday night stayovers
5. College financial aid
6. Tie in sales: IBM computer rentals and punch cards
7. Quantity discounts