

MICROECONOMICS AND POLICY ANALYSIS - U8213

Professor Rajeev H. Dehejia

Class Notes - Spring 2001

Monopoly & Price Discrimination

Monday, March 5

Reading: PR chapter 10, 14.3-14.4

Monopoly: Sellers have market power. Price is a function of quantity.

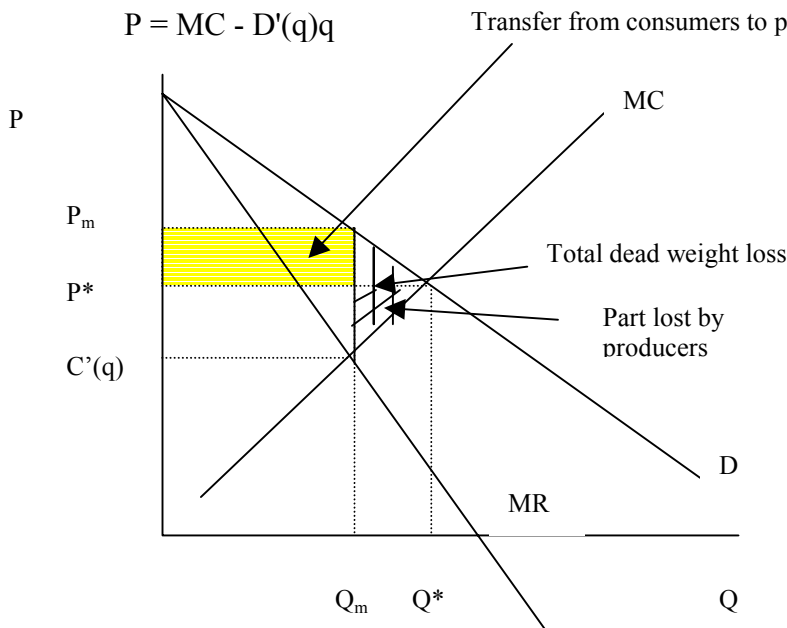
$$\Pi = pq - C(q)$$

$$\Pi = D(q)q - C(q)$$

$$\text{Max}_q \Pi = \frac{\delta \Pi}{\delta q} = R'(q) - C'(q) = 0$$

$$\frac{\delta \Pi}{\delta q} = D'(q)q + \underbrace{D(q)}_P - C'(q) = 0$$

$$P = MC - D'(q)q$$



As quantity increases price decreases on all previous units.

$$P = aq + b \text{ (original demand)}$$

$$\begin{aligned} R(q) &= pq \\ &= (-aq + b)q \\ &= -aq^2 + bq \end{aligned}$$

$$R'(q) = -2aq + b$$

There is a deadweight loss due to the monopoly form a reduction in quantity with respect to Q^* .

A monopolist can choose either quantity or price, but not both. Price will be a function of quantity.

Monopolists charge at a price greater than marginal cost. How much higher?

$$P = MC - D'(q)q$$

$$\frac{P - MC}{P} = \frac{-D'(q)q}{P} = \frac{-\delta P}{\delta Q} * \frac{Q}{P} = \frac{-1}{E_D}$$

Mark-up is a function of the elasticity of demand.

If demand is inelastic then the mark-up is high.

If demand is elastic then the mark-up is low.

The elasticity of demand is a large determinant of market power.

Price Discrimination:

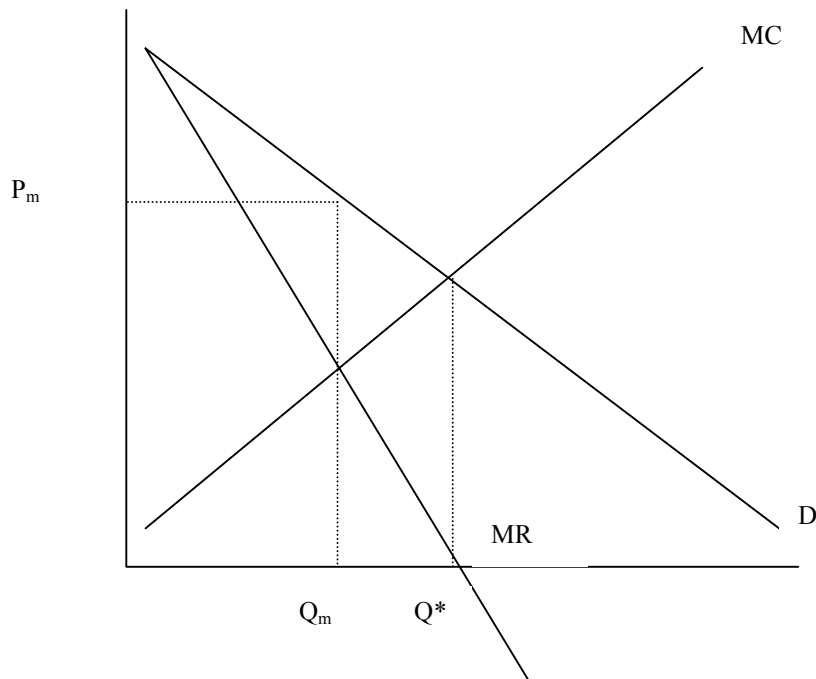
The law of one price is an outcome of competitive pressures. The deviations from the law of one price usually are the result of market power.

Intertemporal Market Power

Ex: Price of roses on Valentine's Day

Three Types of Price Discrimination:

A) Perfect (1st Degree) Price Discrimination:



If the monopolist can charge different prices to different people then they will charge everyone their reservation price. In other words, the monopolist would charge everyone their maximum price. This eliminates consumer surplus, but there is no dead weight loss either. Producers are

willing to sell up to Q^* . But, in reality, it is hard to determine individuals' reservation prices and thus to implement 1st degree price discrimination..

B) **2nd-Degree Price Discrimination:** Based on the price elasticity of demand. The monopolist would charge different consumers different prices based on the quantity purchased. In other words, they deduce willingness to pay from quantity purchased. Example: quantity discounts, whole sale discounts. We might expect that if you are buying a large quantity you are much more sensitive to the price of the good, willing to search more for the best deal.

C) **3rd-Degree Price Discrimination:** Uses external, observable characteristics to divide customers into separate categories of individuals with different willingness to pay. Take one market and break it up into submarkets. Ex: Airplane Tickets - High-ticket price for last minute tickets. Want to make sure that markets are segregated so that individuals from different categories can't impersonate other persons.

$$\Pi = (P_1Q_1 + P_2Q_2) - C(Q_1 + Q_2)$$

$$\frac{\delta \Pi}{\delta q_1} = MR_1 = MC \qquad \frac{\delta \Pi}{\delta q_2} = MR_2 = MC$$

$$P = MC - D'(q)q$$

$$D'(q)q + \underbrace{D(q)}_P = MC$$

$$P(D'(q)q + 1) = MC$$

$$P(1 + 1/E_d) = MC$$

$$\frac{P_1(1 + 1/E_{d1})}{P_2(1 + 1/E_{d2})} = \frac{MC}{MC} = \frac{P_2}{P_1} = \frac{(1 + 1/E_{d1})}{(1 + 1/E_{d2})}$$

Remember E_d is negative in this definition (not the absolute value as we sometimes use). So E_{d2} going down (less elastic) means it becomes a smaller negative number, so $1/E_{d2}$ becomes a larger negative number, so the whole denominator becomes small, and the whole ratio becomes bigger. In other words as E_{d2} goes down (demand 2 becomes less elastic relative to E_{d1}), P_2 will increase relative to P_1 . Makes sense. If demand isn't too responsive to price, cutting back on quantity a bit will lead to a relatively big price increase, which benefits the monopolist.

Conclusion:

To maximize profits monopolies mark up the price of a good and decrease the quantity provided. Monopolists will price discriminate if possible which will decrease the deadweight loss from the decreased quantity of a monopolist. With perfect price discrimination the same quantity will be sold as in the competitive market (not common).

How do you get people to reveal their reservation price? Firms try to find ways of getting people to pay different prices for the same good.

- Priceline.com
- Coupons, Rebates