

Monopoly Pricing

- Uniform pricing: charging the same price to every customer
- Competitive firms are *price takers*, suffer losses if they don't charge the one, uniform market price
- We've been thinking about the behavior of a monopolist charging a uniform price
- But, a monopolist is a *price maker*, free to set price, including non-uniformly
- Today: non-uniform pricing, especially price discrimination
- Price discrimination: different prices for different people
- Other non-uniform pricing schemes: two-part tariffs, bundling, tie-ins

Non-uniform Pricing

Price-discrimination earns a monopoly higher profits

- Non-discriminating firm faces tradeoff:
 - Charge high price for customers with high WTP
 - Charge low price and sell more units to more customers
 - Optimum typically involves compromise
- Price-discriminating firm avoids this tradeoff:
 - Charges higher price to those with high WTP *capturing their consumer surplus*
 - Charges lower price to those with less WTP generating *extra sales*

Example

- Movie theater, $MC = 0$: everyone fits, showing movie is costless, so $\pi = \text{revenue}$
- Potential audience: 10 college students WTP \$10, 20 senior citizens WTP \$5
- Uniform price = \$5 $\implies \pi = 5 \cdot 10 + 5 \cdot 20 = 50 + 100 = 150$
- Uniform price = \$10 $\implies \pi = 10 \cdot 10 + 10 \cdot 0 = 100 = 100$
- Price discriminate $\implies \pi = 10 \cdot 10 + 5 \cdot 20 = 100 + 100 = 200$

Non-uniform Pricing

Intuition: why non-uniform pricing works in general

- Firm faces a profit-maximization problem
- Uniform prices is one tool to solve the problem
- Non-uniform pricing allows other, multiple tools
- This can only help solve the problem, at worst the extra tools are useless and you can choose not to use them

Conditions for Price Discrimination

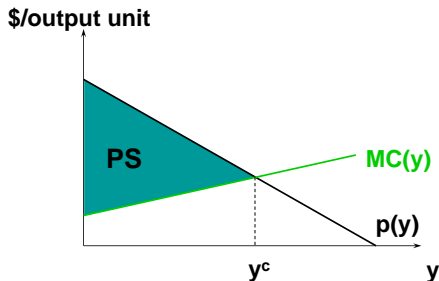
- Firm has market power
- Consumers have different demand elasticities, firm can identify them
- Firm can prevent/limit resales from low-paying to high-paying customers
 - Resales difficult for services, when transaction costs are high
 - E.g. show student ID when buying student software, mail in class schedule

Three Types of Price Discrimination

- **Perfect price discrimination** (first-degree): sell each unit for consumer's full reservation price; prices differ across buyers
- **Quantity discrimination** (second-degree): different price for larger quantities (bulk discounts); prices same for all buyers
- **Multimarket price discrimination** (third-degree): prices same within group, but different groups/markets are charged different prices

Perfect Price Discrimination

- All-knowing monopoly sells each unit at reservation price, height of demand curve
- Monopolist reaps all possible gains-from-trade, leaves buyers with zero surplus
- However, monopolist supplies efficient level of output, outcome is Pareto efficient



Quantity Discrimination

- Hard to determine individual reservation prices
- But easy to know that most customers are willing to pay more for first unit than second (demand slopes down)
- Firm varies prices with number of units purchased
- E.g. utility block pricing, bulk discounts

Multimarket Price Discrimination

- Firm only knows which group/market is likely to have higher reservation prices
- Different prices for different groups
- E.g. theater example, airline classes, software pricing, coupons

Multimarket Price Discrimination

How does the monopolist maximize profits across markets?

- Choosing price for each market \iff choosing quantity for each market
- $\pi(y_1, y_2) = p_1(y_1)y_1 + p_2(y_2)y_2 - c(y_1 + y_2)$
- Profit maximizing condition:

$$MR_1(y_1) = MR_2(y_2) = MC(y_1 + y_2)$$

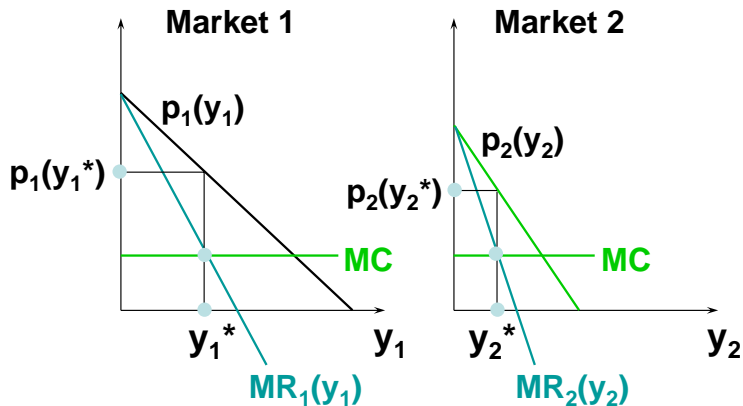
- Equate MR *across* markets to MC
- If one market generated more marginal revenue than the other, could increase profits by shifting production to that market

$$MR_1(y_1) = MR_2(y_2) = MC(y_1 + y_2)$$

- Demand differs across markets, so price will be different
- Where is price higher?
 - In the market with a higher markup
 - Markup = $\frac{1}{1+\frac{1}{\epsilon}}$
 - I.e. in market with less elastic demand

Multimarket Price Discrimination

$$MR_1(y_1) = MR_2(y_2) = MC(y_1 + y_2)$$



Multimarket Price Discrimination

Example: workout 25.5

Multimarket Price Discrimination

Welfare effects:

- Inefficient production & consumption
- Lower welfare than under PC or perfect price discrimination
- Welfare may be higher *or* lower than in single-price monopoly

Other Kinds of Non-uniform Pricing

- Two-part tariffs: lump-sum fee + constant price per unit
- Tie-in sales: can buy one product only if you buy another one as well
 - Requirement tie-in
 - Bundling (or package tie-in)
- Can think of these as a form of quantity (2nd degree) discrimination, where the average price per unit varies with the number of units purchased

Two-part Tariffs

- Lump-sum fee + per unit price
- E.g. telephone service (connection fee + per minute rate); club cover charges; NFL personal seat license
- Because of fixed fee, average price per unit is higher the fewer units you buy
- Uniform pricing: raise p above $MC \implies$ earn more per unit, but lower CS
- Two-part tariff (ideal): capture each customer's max potential CS by charging different lump-sum fees, then set $p = MC$
- Like with first degree PD, there is *no inefficiency*
- But monopolist reaps *all* gains-from-trade, so equity suffers

Tie-in Sales

- Requirement tie-in:
 - E.g. Printer + ink/toner cartridges, razors + blades
 - Helps firm identify heavy users, i.e. those with high WTP
- Bundling:
 - E.g. Software such as Microsoft Windows + Internet Explorer, internet & cable service, preseason & regular season tickets, service + parts
 - Allows firms that can't price discriminate to charge different people different prices
 - Profitability depends on tastes (negatively correlated demand for the two goods) and the ability to prevent resale