



Chapter 11

Pricing with Market Power



Topics to be Discussed

- Capturing Consumer Surplus
- Price Discrimination
- Intertemporal Price Discrimination and Peak-Load Pricing
- The Two-Part Tariff
- Bundling
- Advertising



Introduction

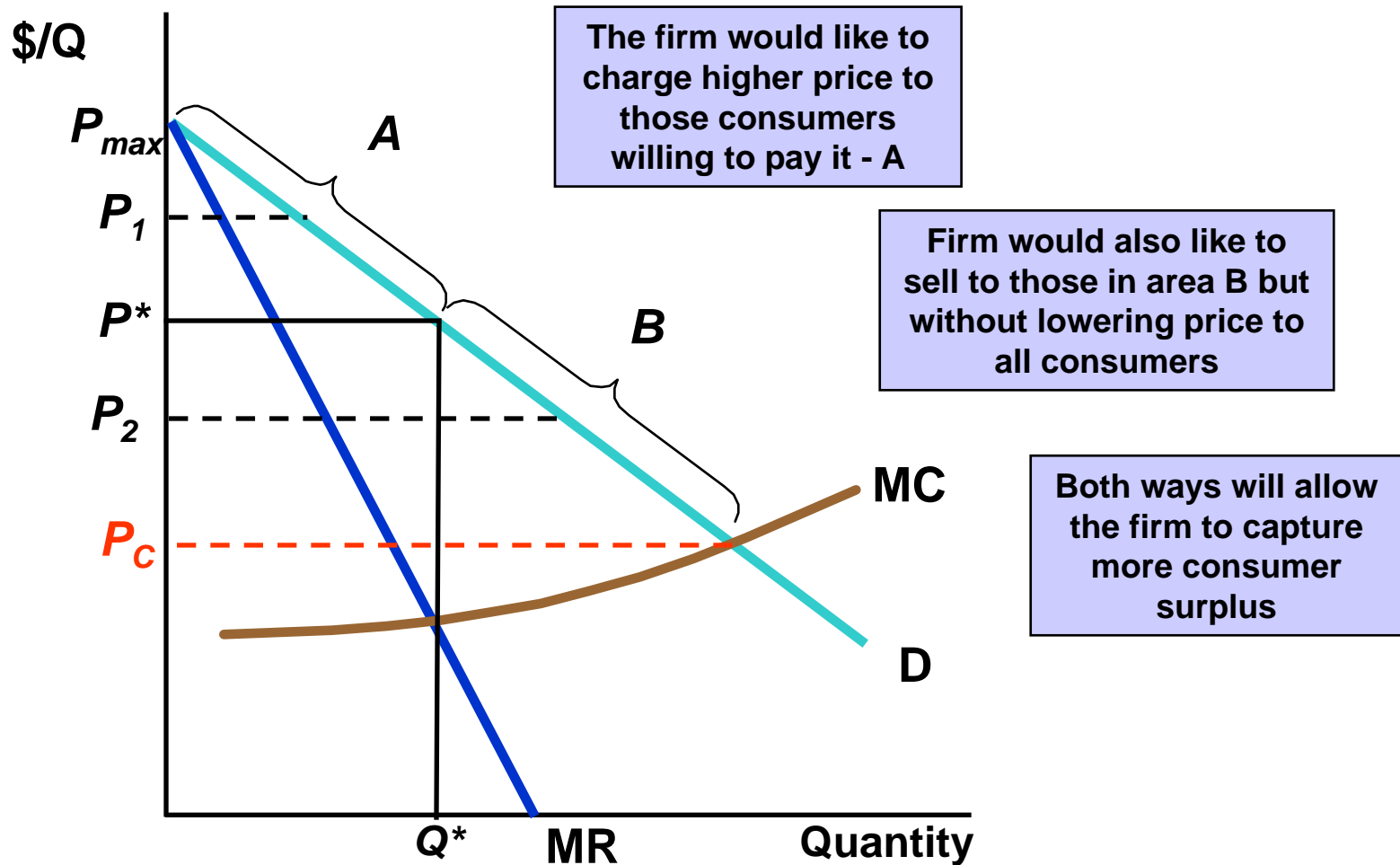
- Pricing without market power (perfect competition) is determined by market supply and demand
- The individual producer must be able to forecast the market and then concentrate on managing production (cost) to maximize profits
- Pricing with market power (imperfect competition) requires the individual producer to know much more about the characteristics of demand as well as manage production



Capturing Consumer Surplus

- All pricing strategies we will examine are means of capturing consumer surplus and transferring it to the producer
- Profit maximizing point of P^* and Q^*
 - But some consumers will pay more than P^* for a good
 - Raising price will lose some consumers, leading to smaller profits
 - Lowering price will gain some consumers, but lower profits

Capturing Consumer Surplus





Capturing Consumer Surplus

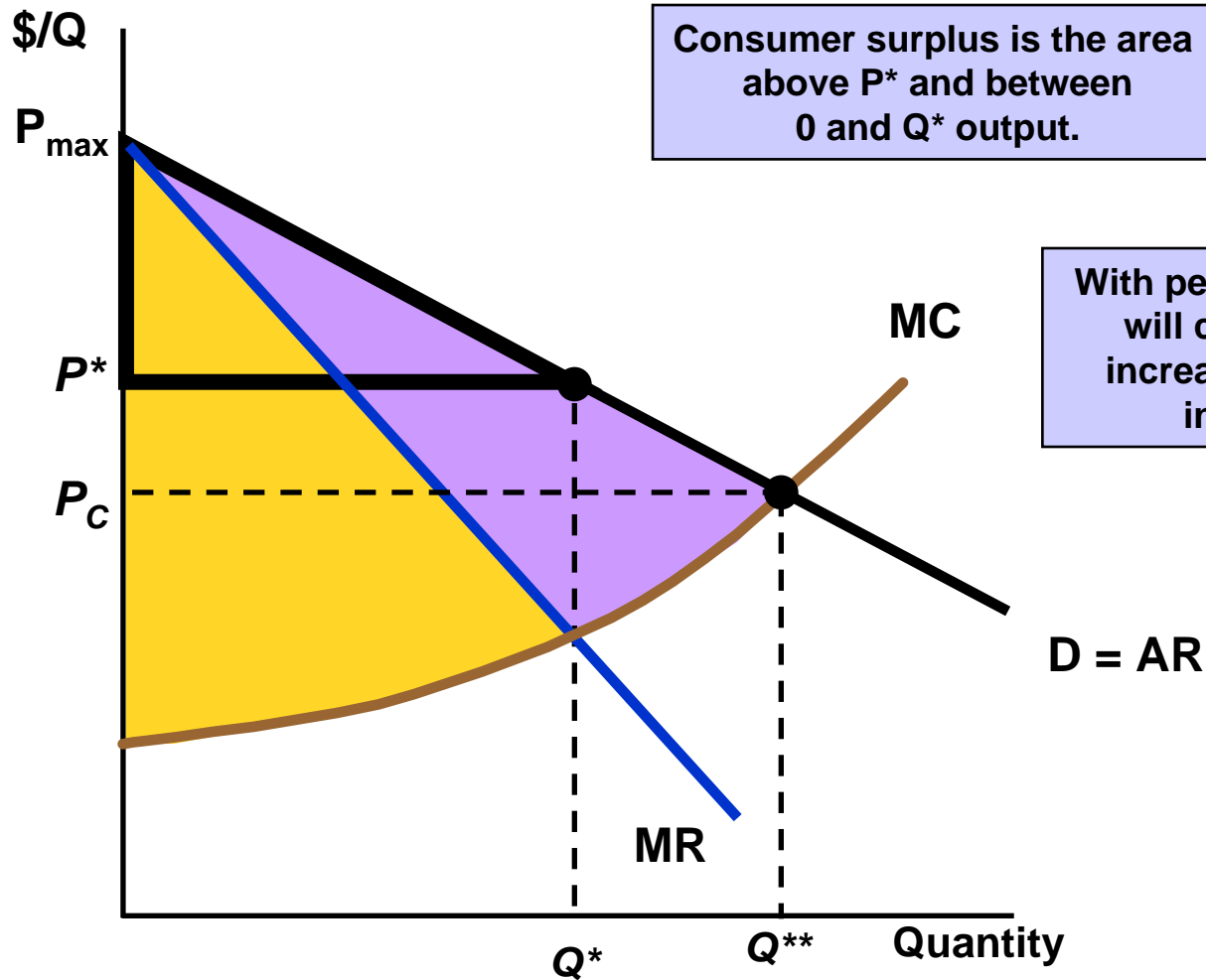
- **Price discrimination** is the practice of charging different prices to different consumers for similar goods
 - Must be able to identify the different consumers and get them to pay different prices
- Other techniques that expand the range of a firm's market to get at more consumer surplus
 - Tariffs and bundling



First-Degree Price Discrimination

- First Degree Price Discrimination
 - Charge a separate price to each customer: the maximum or reservation price they are willing to pay
- If the firm can price discriminate perfectly, each consumer is charged exactly what they are willing to pay
 - MR curve is no longer part of output decision
 - Incremental revenue is exactly the price at which each unit is sold – the demand curve
 - *Additional profit from producing and selling an incremental unit is now the difference between demand and marginal cost*

Perfect First-Degree Price Discrimination





First-Degree Price Discrimination

- In practice, perfect price discrimination is almost never possible
 1. Impractical to charge every customer a different price (unless very few customers)
 2. Firms usually do not know reservation price of each customer
- Firms can discriminate imperfectly
 - Can charge a few different prices based on some estimates of reservation prices



First-Degree Price Discrimination

- Examples of imperfect price discrimination where the seller has the ability to segregate the market to some extent and charge different prices for the same product:
 - e.g.) Car salesperson (15% profit margin)



Second-Degree Price Discrimination

- Practice of charging different prices per unit for different quantities of the same good or service
- Quantity discounts are an example of second-degree price discrimination
 - Ex: Buying in bulk at Sam's Club
 - Ex: Buy 2 get 1 free. $P=\$80$, $ATC=\$30$
 - If buy 1, profit = \$50. If buy 2, profit = $160 - 90 = \$70$
- Block pricing – the practice of charging different prices for different quantities of “blocks” of a good
 - Ex: electric power companies charge different prices for a consumer purchasing a set block of electricity



Third-Degree Price Discrimination

- Practice of dividing consumers into two or more groups with separate demand curves and charging different prices to each group
 1. Divides the market into two groups
 2. Each group has its own demand function
- Most common type of price discrimination
 - Examples: airlines, premium vs. non-premium liquor, discounts to students and senior citizens, frozen vs. canned vegetables



Creating Consumer Groups

- If third-degree price discrimination is feasible, how can the firm decide what to charge each group of consumers?
 1. Total output should be divided between groups so that MR for each group is equal
 2. Total output is chosen so that MR for each group of consumers is equal to the MC of production



Third-Degree Price Discrimination

- First group of consumers:
 - $MR_1 = MC$
- Can do the same thing for the second group of consumers
- Second group of customers:
 - $MR_2 = MC$
- Combining these conclusions gives
 - $MR_1 = MR_2 = MC$



Third-Degree Price Discrimination

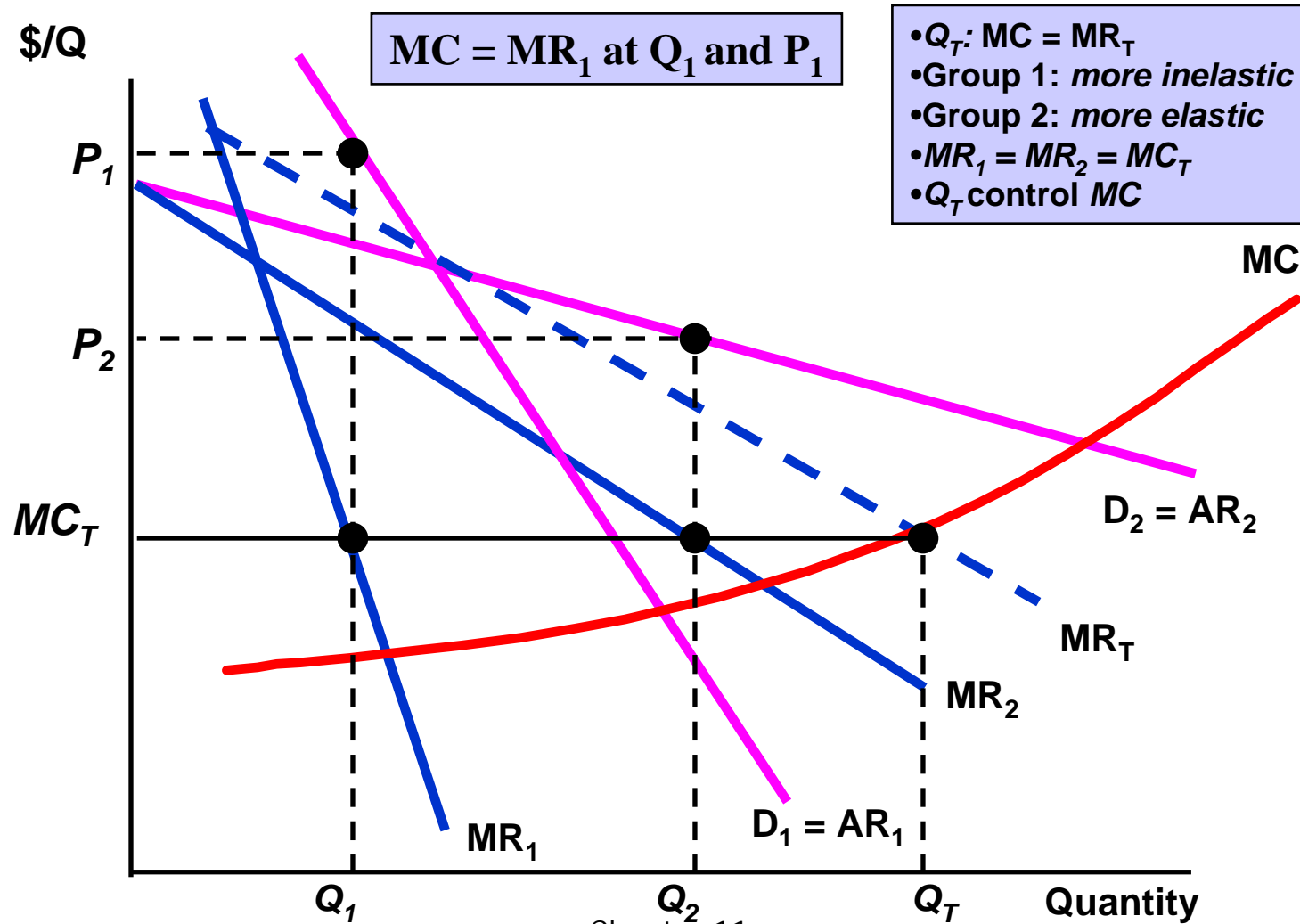
- Determining relative prices
 - Thinking of relative prices that should be charged to each group of consumers and relating them to price elasticities of demand may be easier

Recall: $MR = P \left(1 + 1/E_d \right)$

Then: $MR_1 = P_1 \left(1 + 1/E_1 \right) = MR_2 = P_2 \left(1 + 1/E_2 \right)$

E_1 and E_2 elasticities of demand for each group

Third-Degree Price Discrimination





Third-Degree Price Discrimination

- Determining relative prices
 - Equating MR_1 and MR_2 gives the following relationship that must hold for prices
 - The higher price will be charged to consumer with the lower demand elasticity

$$\frac{P_1}{P_2} = \frac{(1 + 1/E_2)}{(1 + 1/E_1)}$$



Third-Degree Price Discrimination

- Example

- $E_1 = -2$ and $E_2 = -4$

- P_1 should be 1.5 times as high as P_2

$$\frac{P_1}{P_2} = \frac{(1 - 1/4)}{(1 - 1/2)} = \frac{3/4}{1/2} = 1.5$$



The Economics of Coupons and Rebates

- About 20 – 30% of consumers use coupons or rebates
- Firms can get those with higher elasticities of demand to purchase the good who would not normally buy it
- Table 11.1 shows how elasticities of demand vary for coupon/rebate users and non-users

Price Elasticities of Demand: Users vs. Nonusers of Coupons

<i>Product</i>	<i>Price Elasticity</i>	
	<i>Nonusers</i>	<i>Users</i>
Toilet tissue	-0.60	-0.66
Stuffing/dressing	-0.71	-0.96
Shampoo	-0.84	-1.04
Cooking/salad oil	-1.22	-1.32
Dry mix dinners	-0.88	-1.09
Cake mix	-0.21	-0.43
Cat food	-0.49	-1.13
Frozen entrees	-0.60	-0.95
Gelatin	-0.97	-1.25
Spaghetti sauce	-1.65	-1.81
Creme rinse/conditioner	-0.82	-1.12
Soups	-1.05	-1.22
Hot dogs	-0.59	-0.77



Airline Fares

- Differences in elasticities imply that some customers will pay a higher fare than others
- Business travelers have few choices and their demand is less elastic
- Casual travelers and families are more price-sensitive and will therefore be choosier



Airline Fares

- There are multiple fares for every route flown by airlines
- They separate the market by setting various restrictions on the tickets
 - Must stay over a Saturday night
 - 21-day advance, 14-day advance
 - Basic restrictions – can change ticket to only certain days
 - Most expensive: no restrictions – first class



Other Types of Price Discrimination

- Intertemporal Price Discrimination
 - Practice of separating consumers with different demand functions into different groups by charging different prices at different points in time
 - Initial release of a product, the demand is inelastic
 - Hard back vs. paperback book
 - New release movie
 - Technology



Other Types of Price Discrimination

- Peak-Load Pricing
 - Practice of charging higher prices during peak periods when capacity constraints cause marginal costs to be higher
- Demand for some products may peak at particular times
 - Early birds, happy hour, weekday special
 - Electricity - late summer afternoons



Peak-Load Pricing

- Objective is to increase efficiency by charging customers close to marginal cost
 - Increased MR and MC would indicate a higher price
 - Total surplus is higher because charging close to MC
 - Can measure efficiency gain from peak-load pricing



How to Price a Best-Selling Novel

- Company must divide consumers into two groups:
 - Those willing to buy the more expensive hardback
 - Those willing to wait for the paperback
- Have to be strategic about when to release paperback after hardback
 - Publishers typically wait 12 to 18 months



The Two-Part Tariff

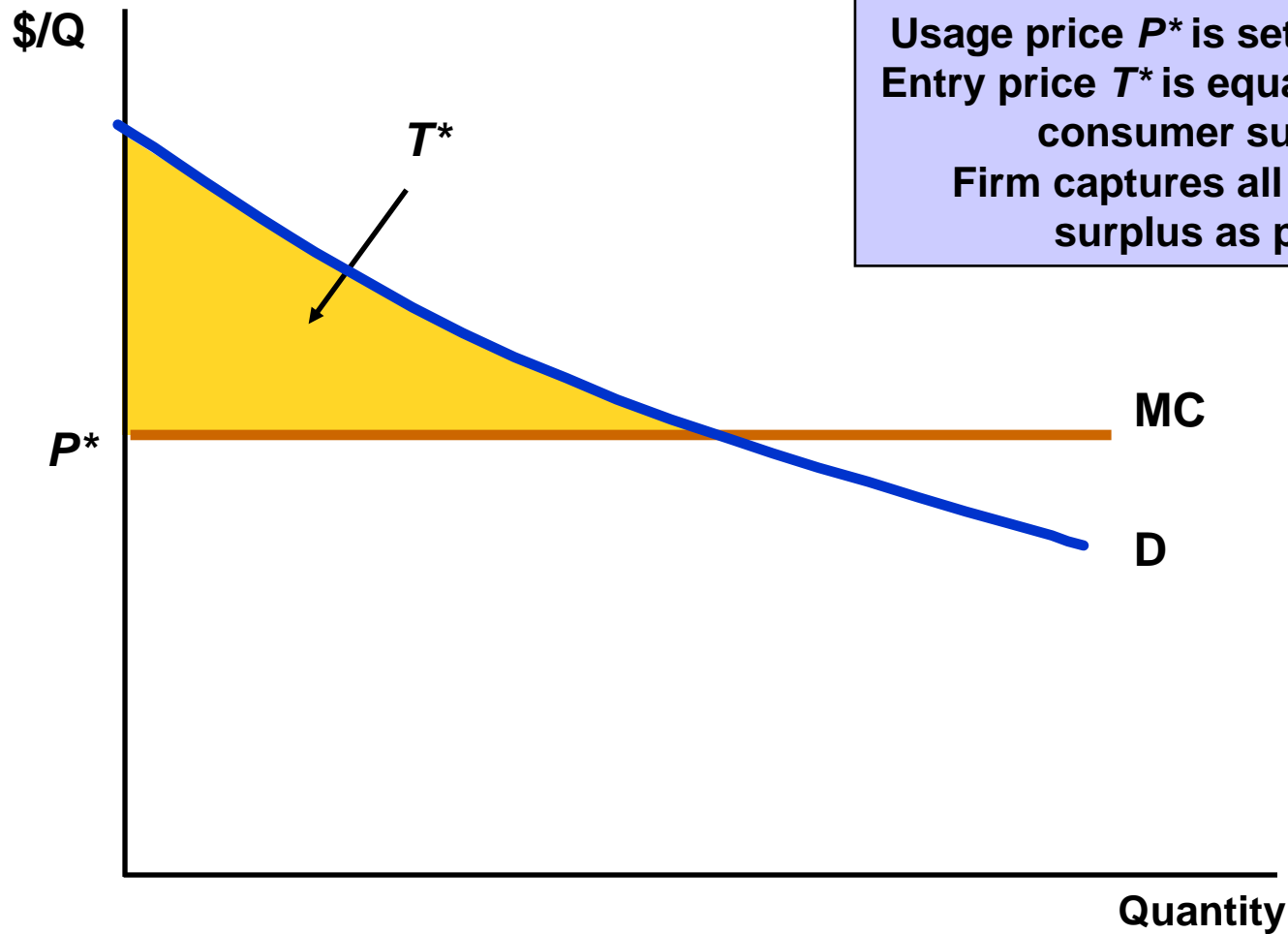
- Form of pricing in which consumers are charged both an entry and usage fee
 - Ex: amusement park, pay per view, telephone service
- A fee is charged upfront for right to use/buy the product
- An additional fee is charged for each unit the consumer wishes to consume
 - Pay a fee to play golf and then pay another fee for each game you play



The Two-Part Tariff

- Pricing decision is setting the entry fee (T) and the usage fee (P)
- Choosing the trade-off between free-entry and high-use prices or high-entry and zero-use prices
- Single Consumer
 - Assume firm knows consumer demand
 - Firm wants to capture as much consumer surplus as possible

Two-Part Tariff with a Single Consumer



Usage price P^* is set equal to MC.
Entry price T^* is equal to the entire
consumer surplus.
Firm captures all consumer
surplus as profit.



The Two-Part Tariff

- Rule of Thumb
 - Similar demand: Choose P close to MC and high T
 - Dissimilar demand: Choose high P and low T
 - Ex: Disneyland in California and Disney world in Florida have a strategy of high entry fee and charge nothing for ride



Cellular Rate Plans

- In most areas in US, consumers can choose cellular providers: Verizon, Cingular, AT&T and Sprint
- Market power exists because consumers face **switching costs**
 - When they sign up with a firm, they must sign a contract with high costs to break
- Plans often exist of monthly cost plus fee extra minutes
- Companies can combine third-degree price discrimination with two-part tariff



Bundling

- Bundling is packaging two or more products to gain a pricing advantage
- Conditions necessary for bundling
 - Heterogeneous customers
 - Price discrimination is not possible
 - Demands must be negatively correlated



Bundling

	Gone with the Wind	Getting Gertie's Garter
Theater A	\$12,000	\$3,000
Theater B	\$10,000	\$4,000

- Renting the movies separately would result in each theater paying the lowest reservation price for each movie:
 - Maximum price Wind = \$10,000
 - Maximum price Gertie = \$3,000
- Total Revenue = \$26,000



Bundling

- If the movies are bundled:
 - Theater A will pay \$15,000 for both
 - Theater B will pay \$14,000 for both
- If each were charged the lower of the two prices, total revenue will be \$28,000
- The movie company will gain more revenue (\$2000) by bundling the movie



Relative Valuations

- More profitable to bundle because relative valuation of two films are reversed
- Demands are negatively correlated
 - A pays more for Wind (\$12,000) than B (\$10,000)
 - B pays more for Gertie (\$4,000) than A (\$3,000)



Relative Valuations

- If the demands were positively correlated (Theater A would pay more for both films as shown) bundling would not result in an increase in revenue

	Gone with the Wind	Getting Gertie's Garter
Theater A	\$12,000	\$4,000
Theater B	\$10,000	\$3,000



Bundling

- If the movies are bundled:
 - Theater A will pay \$16,000 for both
 - Theater B will pay \$13,000 for both
- If each were charged the lower of the two prices, total revenue will be \$26,000, the same as by selling the films separately



Mixed Bundling

- Practice of selling two or more goods both as a package and individually
- This differs from **pure bundling** when products are sold only as a package
- Mixed bundling is good strategy when
 - Demands are somewhat negatively correlated
 - Marginal production costs are significant

Mixed Bundling – Example

- We can see the effects under different scenarios in the table:(at mixed, $p=\$89$, $\$100$)

Ind.	Good 1 AC=20	Good 2 AC=30	Profit No bu.	Profit Pure	Profit Mixed
A	10	90	0+10	50	0+59
B	<u>50</u>	50	30+10	50	50
C	60	<u>40</u>	30+10	50	50
D	90	10	30+0	50	69+0
Total			\$120	\$200	\$229



Bundling in Practice

- Car purchasing
 - Bundles of options such as electric locks with air conditioning
- Vacation Travel
 - Bundling hotel with air fare
- Cable television
 - Premium channels bundled together

A Restaurant's Pricing Problem

<i>Individual Item</i>	<i>Price</i>	<i>Meal (Includes Soda and Fries)</i>	<i>Unbundled Price</i>	<i>Price of Bundle</i>	<i>Savings</i>
Grilled Chicken	\$3.29	Grilled Chicken	\$6.43	\$4.78	\$1.65
Filet-O-Fish	\$1.99	Filet-O-Fish	\$5.13	\$4.28	\$0.85
Cheeseburger	\$0.89	Two Cheeseburgers	\$4.92	\$4.18	\$0.74
McDouble w/Cheese	\$1.89	McDouble w/Cheese	\$5.03	\$3.68	\$1.35
Big Mac	\$2.45	Big Mac	\$5.59	\$4.28	\$1.31
Quarter Pounder w/Cheese	\$2.45	Quarter Pounder w/Cheese	\$5.59	\$4.38	\$1.21
Crispy Chicken	\$2.89	Crispy Chicken	\$6.03	\$4.68	\$1.35
6-piece Chicken McNuggets	\$1.99	6-piece Chicken McNuggets	\$5.13	\$4.28	\$0.85
Large French Fries	\$1.65				
Large Soda	\$1.49				



Tying

- The practice of requiring a customer to purchase one good in order to purchase another
 - Xerox machines and the paper
 - IBM mainframe and computer cards
- Allows firm to meter demand and practice price discrimination more effectively