- Monopoly

Why Monopolies Arise

- Monopoly
  - A firm that is the sole seller of a product without close substitutes
  - Has market power: price maker
    - The ability to influence the market price of the product it sells
  - Arise due to barriers to entry
    - Other firms cannot enter the market to compete with it

Barriers to Entry – 1

1. Monopoly resources
   - A single firm owns a key resource required for production.
     - Single water provider in town
     - DeBeers diamond company - owns most of the world's diamond mines
   - Relatively rare in practice

"Rather than a monopoly, we like to consider ourselves 'the only game in town.'"

Barriers to Entry – 2

2. Government regulation

- Government-created monopolies
- The government gives a single firm the exclusive right to produce the good.
  - Patents for new pharmaceutical drugs
  - Copyright laws
  - Lead to higher prices and higher profits (than under competition)
  - Also encourage some desirable behavior (provides incentives for creative activity)

Barriers to Entry – 3

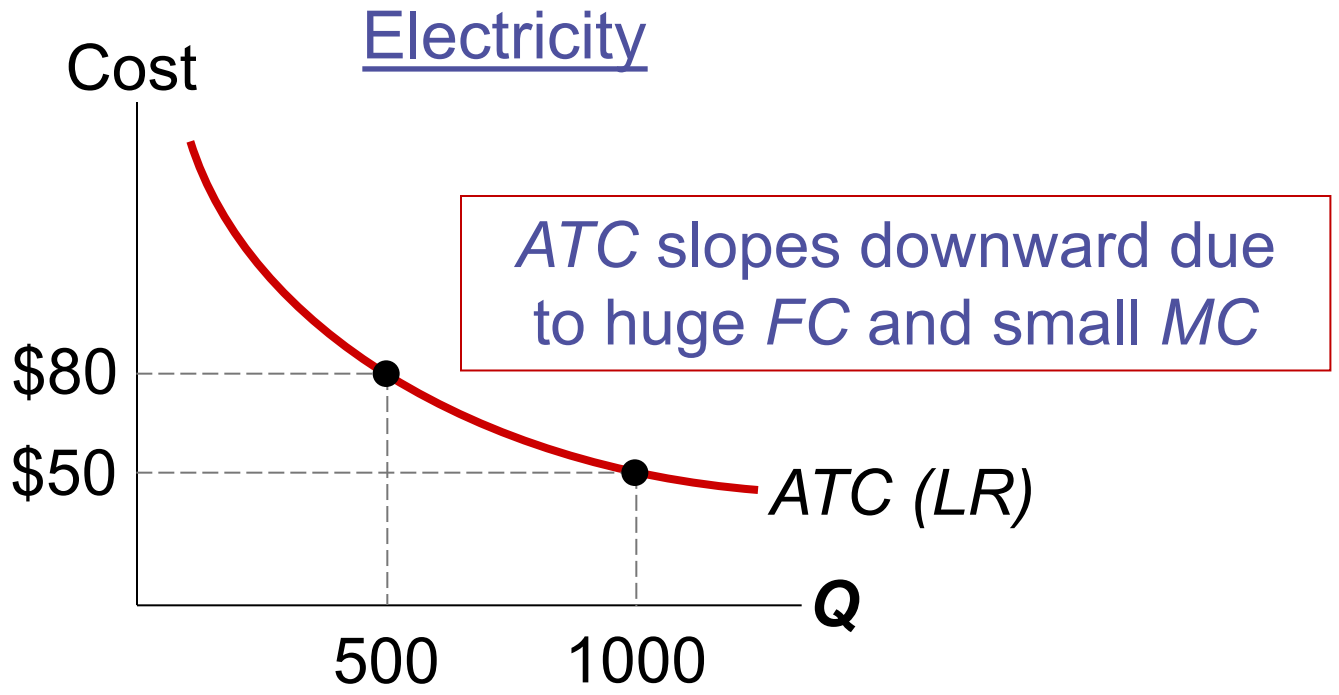
3. The production process: natural monopoly

- A single firm can produce the entire market ***Q*** at lower cost than could several firms
- Arises when there are economies of scale over the relevant range of output
- Distribution of water, electricity, etc.
- Club goods (excludable, not rival in consumption)

EXAMPLE 1: Natural Monopoly

You live in a small town where 1,000 homes need electricity.

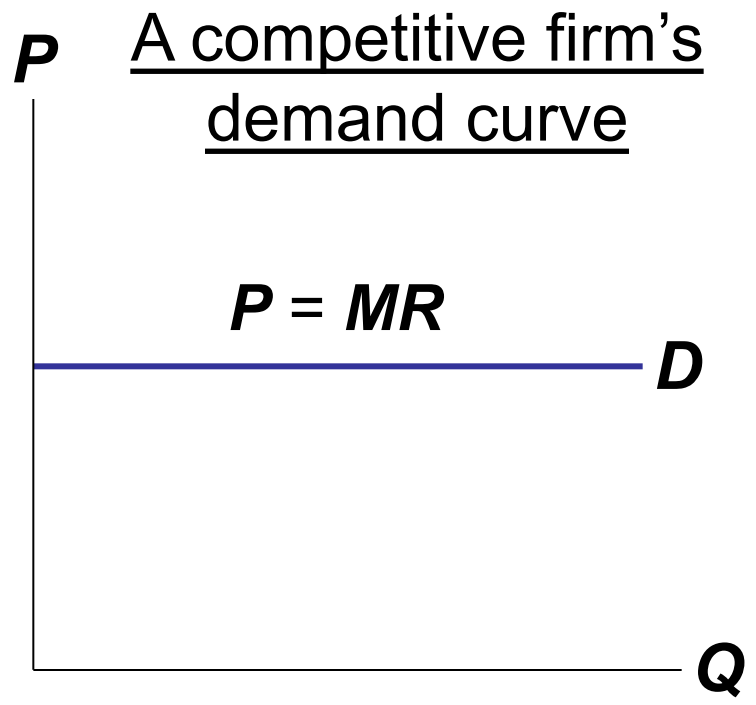
- ***ATC*** is lower if one firm services all 1,000 homes than if two firms each service 500 homes.

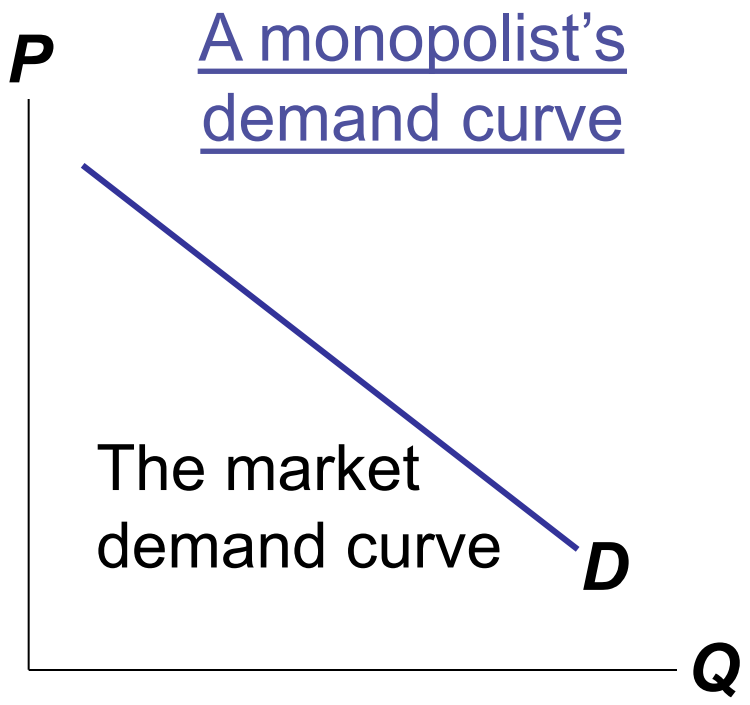


Monopoly versus Competition

- Competitive firm
  - Price taker
  - Small, one of many
  - Faces individual demand at ***P***: perfectly elastic demand
- Monopoly firm
  - Price maker, market power
  - Faces the entire market demand: downward sloping demand

Demand Curves: Competitive Firm vs. Monopoly





The firm can increase ***Q*** without lowering ***P***, so ***MR*** = ***P*** for the competitive firm.

To sell a larger ***Q***, the firm must reduce ***P***. Thus, ***MR*** ≠ ***P***.

Active Learning 1: JJ's Hairdo Revenue

Jayla and Jaden own the only hair salon in town, "JJ's hairdo."

The table shows the market demand for haircuts.

- Fill in the missing spaces of the table.
- What is the relation between ***P*** and ***AR***?
- Between ***P*** and ***MR***?

Q	***P***	***TR***	***AR***	***MR***
0	$60			
1	55			
2	50			
3	45			
4	40			
5	35			
6	30			
7	25			
8	20			
9	15			
10	10			

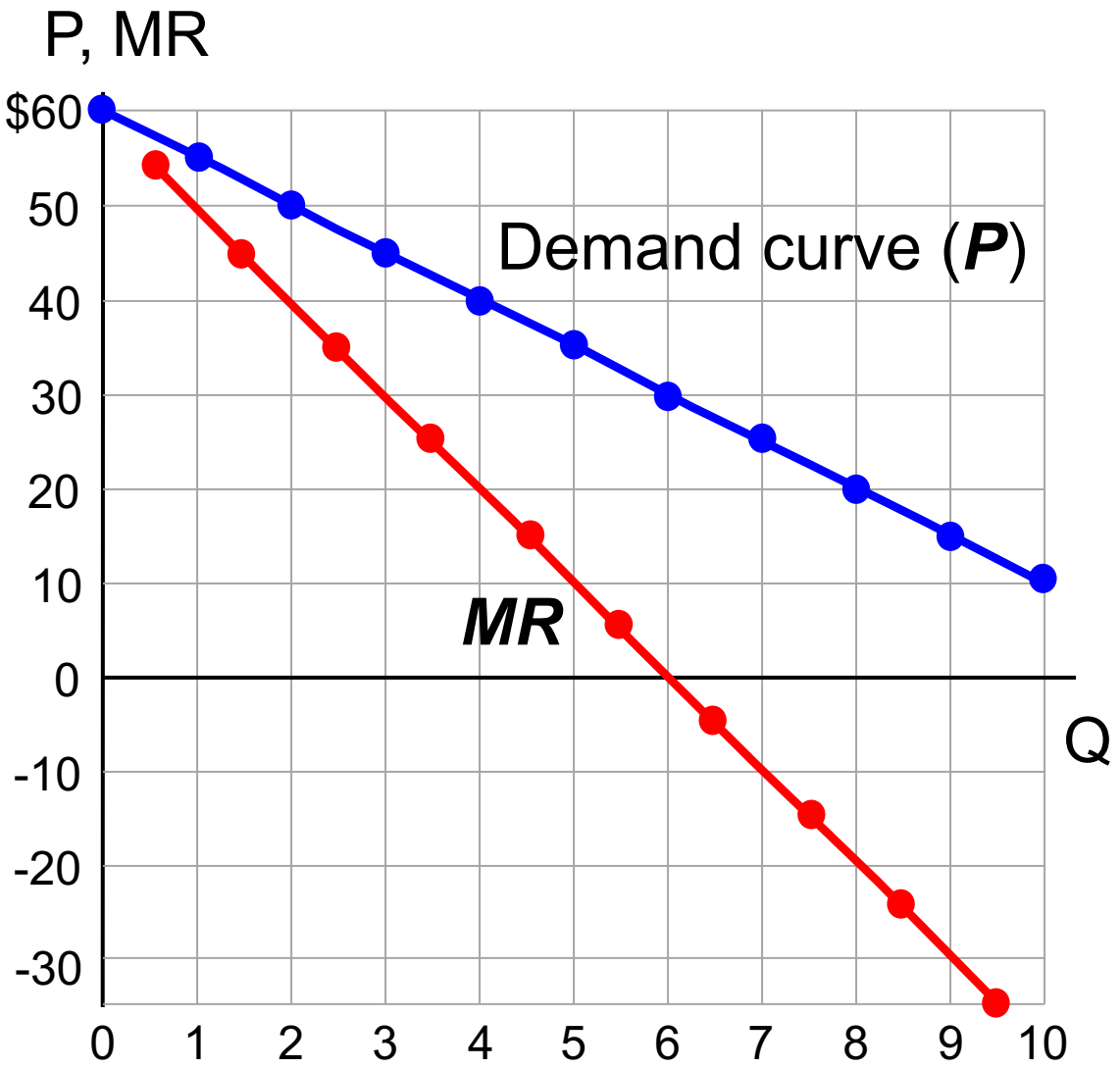
Active Learning 1: Answers

- ***P* = *AR***, same as for a competitive firm.
- ***MR*** < P, whereas ***MR* = *P*** for a competitive firm.

Q	*P*	*TR*	*AR*	*MR*
0	$60	$0	n/a	
1	55	55	55	55
2	50	100	50	45
3	45	135	45	35
4	40	160	40	25
5	35	175	35	15
6	30	180	30	5
7	25	175	25	-5
8	20	160	20	-15
9	15	135	15	-25
10	10	100	10	-35

EXAMPLE 2: JJ's MR and Demand Curves

Q	P	MR
0	$60	
1	55	55
2	50	45
3	45	35
4	40	25
5	35	15
6	30	5
7	25	-5
8	20	-15
9	15	-25
10	10	-35



A Monopoly's Revenue

- Increasing ***Q*** has two effects on revenue:
  - Output effect: higher output raises revenue
  - Price effect: lower price reduces revenue
- Marginal revenue, ***MR*** < ***P***
  - To sell a larger ***Q***, the monopolist must reduce the price on all the units it sells
  - Is negative if price effect > output effect
    - e.g., when JJ's increases ***Q*** from 6 to 7

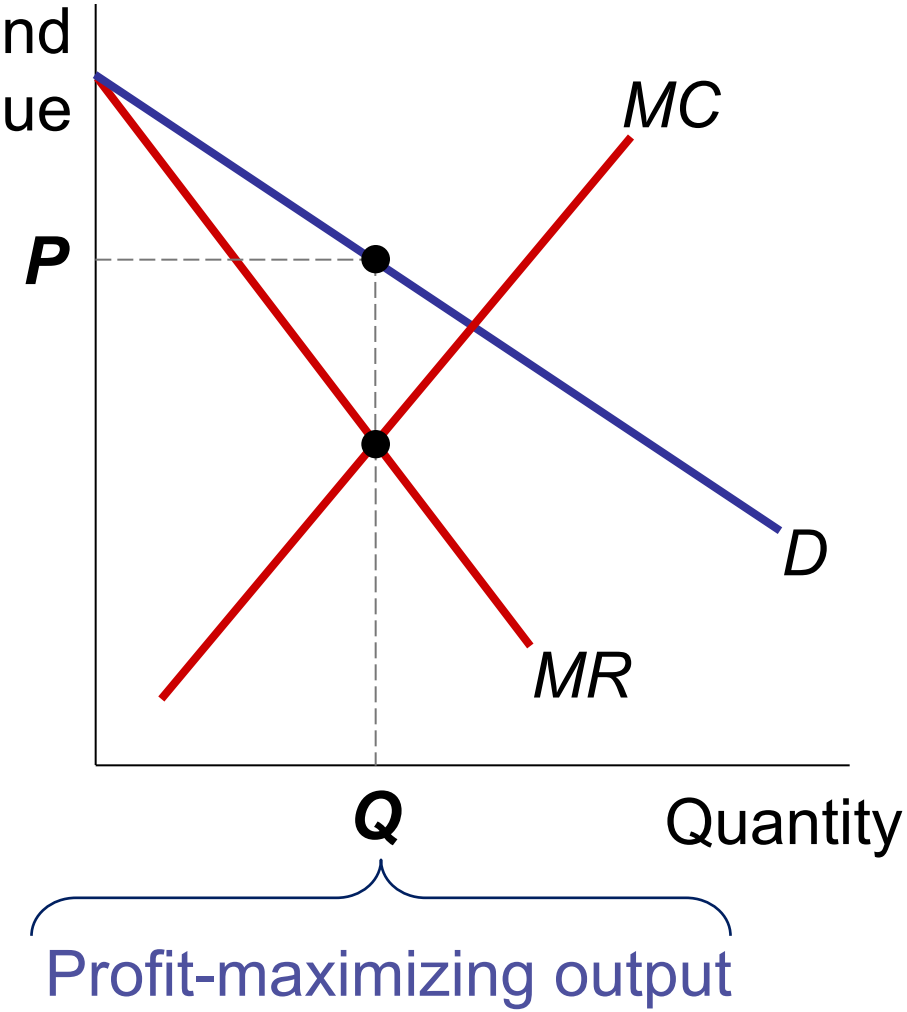
Monopoly Profit Maximization

- Produce ***Q*** where ***MR*** = ***MC***
  - Sets the highest price consumers are willing to pay for that quantity
  - Finds this price on the ***D*** curve
  - ***P*** > ***MR*** = ***MC***
  - If ***P*** > ***ATC***, the monopoly earns a profit

Profit-Maximization for a Monopoly

At this ***Q***, find ***P*** on the demand curve.

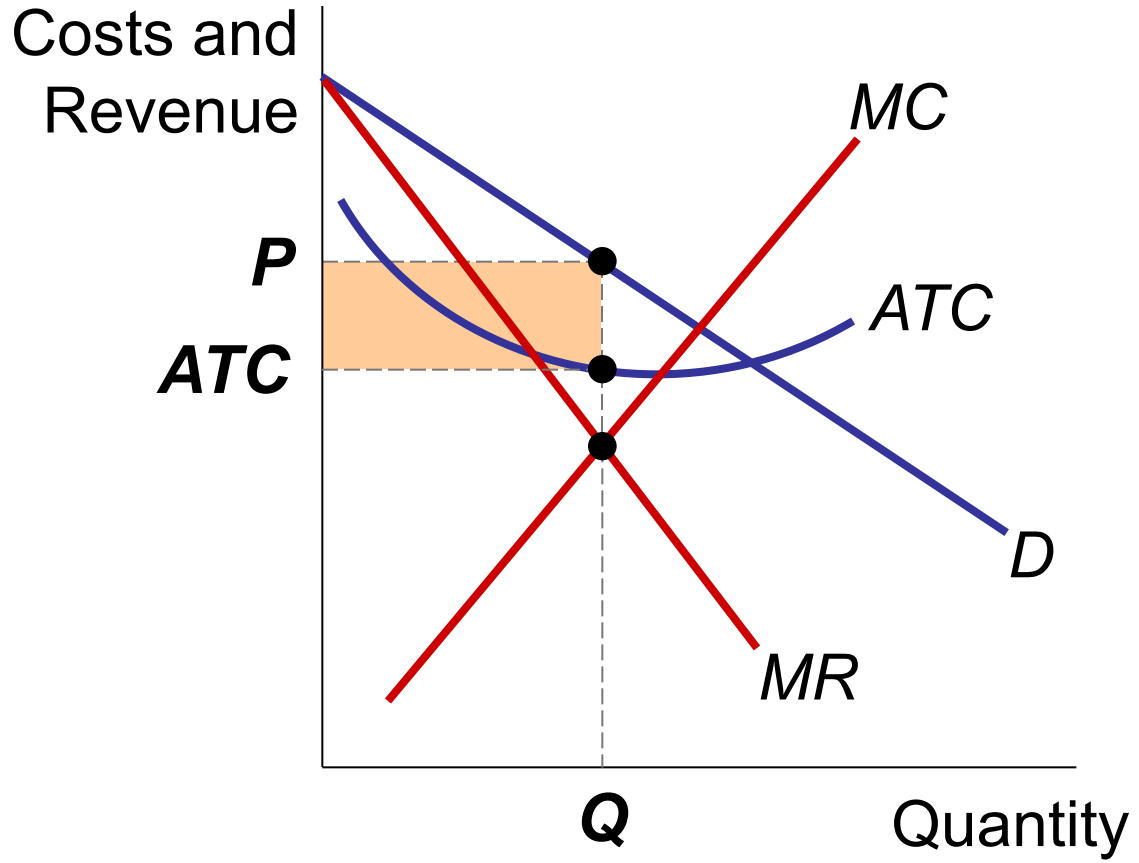
The profit-maximizing ***Q*** is where ***MR = MC***.



The Monopoly's Profit

As with a competitive firm, the monopolist's profit equals

$$(P - ATC) \times Q$$



A Monopoly Does Not Have a S Curve

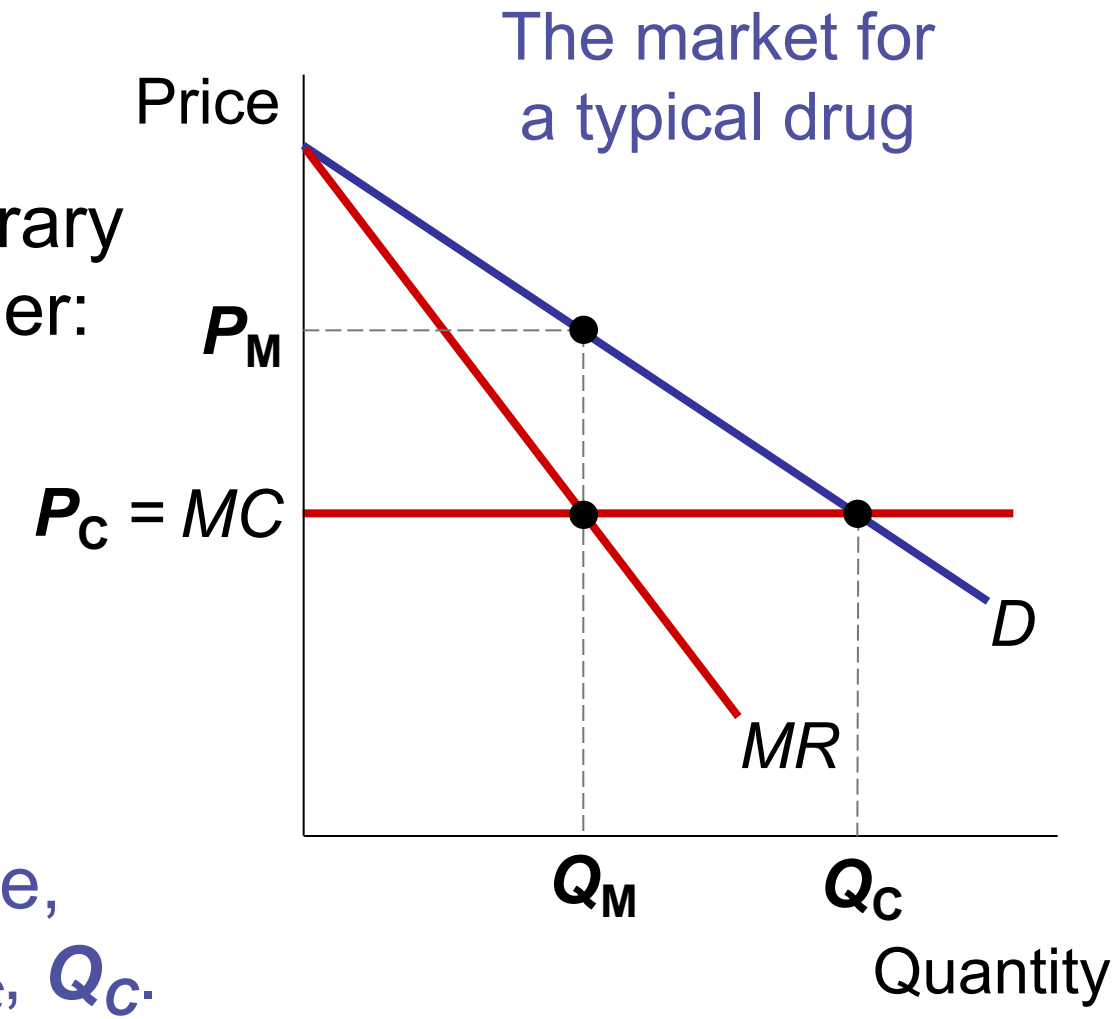
- A competitive firm takes ***P*** as given
  - Has a supply curve that shows how its ***Q*** depends on ***P***
- A monopoly firm is a "price-maker"
  - ***Q*** does not depend on ***P***
  - ***Q*** and ***P*** are jointly determined by ***MC***, ***MR***, and the demand curve
  - Hence, no supply curve for monopoly.

CASE STUDY

CASE STUDY: Monopoly vs. Generic Drugs

Patents on new drugs give a temporary monopoly to the seller: P_M, Q_M.

When the patent expires, the market becomes competitive, generics appear: P_C, Q_C.



The Welfare Cost of Monopolies

- Competitive market equilibrium:
  - At ***P*** = ***MC*** and maximizes total surplus
- Monopoly equilibrium: at ***P*** > ***MR*** = ***MC***
  - The value to buyers of an additional unit (***P***) exceeds the cost of the resources needed to produce that unit (***MC***)
  - The monopoly ***Q*** is too low – could increase total surplus with a larger Q.
  - Monopoly results in a deadweight loss

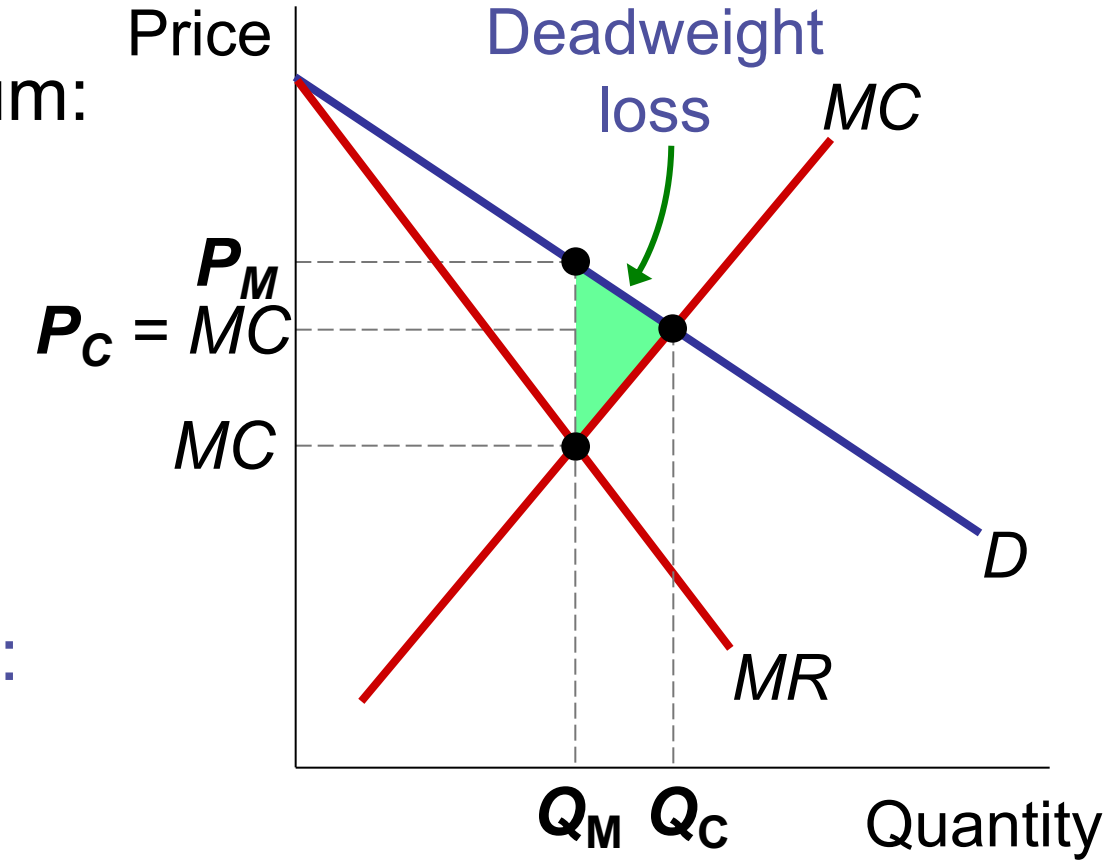
The Deadweight Loss of Monopoly

Competitive equilibrium:

- quantity = Q_C
- $P_C = MC$
- total surplus is maximized

Monopoly equilibrium:

- quantity = Q_M
- $P_M > MC$
- deadweight loss



The Monopoly's Profit: A Social Cost?

- Monopoly profit is not in itself necessarily a problem for society
  - Greater producer surplus for monopoly
  - Smaller consumer surplus
  - Transfer of surplus from consumers to monopoly
- The inefficiency:
  - Monopoly produces ***Q*** < efficient quantity
  - Deadweight loss

Price Discrimination

- Price discrimination (price customization):
  - Sell the same good at different prices to different customers
  - A firm can increase profit by charging a higher price to buyers with higher willingness to pay
  - Requires the ability to separate customers according to their willingness to pay
  - Can raise economic welfare

Active Learning 2: At the Movies

You are the manager of the only movie theater in town. The price you charge is $18 per ticket, and you sell ***Q*** = 1,000 movie tickets each week. Assume that you incur only a fixed cost of $10,000 in a week.

A. How much profit is the movie theater making?

B. If you are dropping the price to $5, you will be able to sell ***Q*** = 2,500 movie tickets. Calculate the profit.

C. Suggest a way you can price discriminate when selling movie tickets. Calculate the profit if you price discriminate, with P_1 = $18 and P_2 = $5.

Active Learning 2: Answers

A. Single price monopoly P = \$18, Q = 1,000, TC = \$10,000
   - Total revenue $TR = P \times Q$ = \$18,000
   - Profit = $TR - TC$ = \$8,000

B. Single price monopoly P = \$5, Q = 2,500, TC = \$10,000
   - Total revenue $TR = P \times Q$ = \$12,500
   - Profit = $TR - TC$ = \$2,500

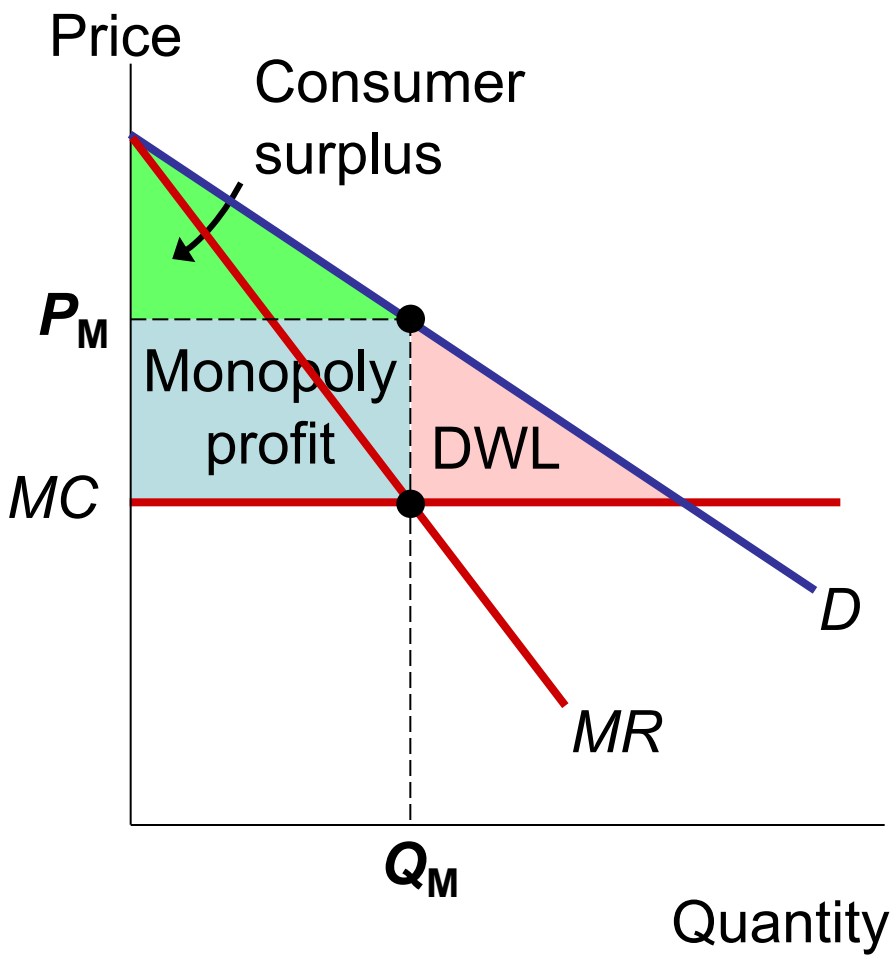
C. Price discrimination: P_1 = \$18 and P_2 = \$5.
   - Sell Q = 1,000 at P_1, so TR_1 = \$18,000
   - Sell Q = (2,500 – 1,000) at P_2, so TR_2 = \$7,500
   - Profit = $TR_1 + TR_2 - TC$ = \$15,500

Perfect Price Discrimination

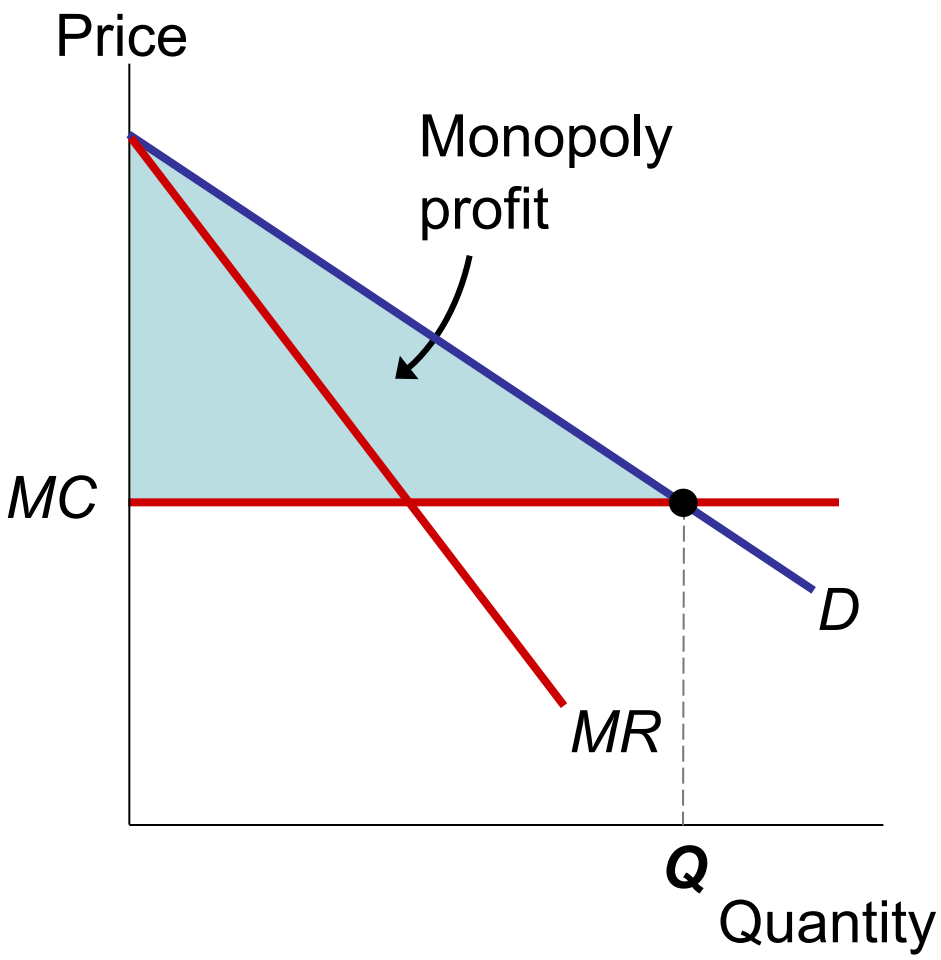
- Perfect price discrimination
  - Charge each customer a different price
    - Exactly his or her willingness to pay
  - Monopoly firm gets the entire surplus (Profit)
  - No deadweight loss

Welfare with and without Price Discrimination

Single price monopoly



Perfect price discrimination



Price Discrimination in the Real World

- Perfect price discrimination
  - Not possible in the real world
    - No firm knows every buyer's ***WTP***
    - Buyers do not reveal it to sellers
- Price discrimination
  - Firms divide customers into groups based on some observable trait that is likely related to willingness to pay (***WTP***), such as age

EXAMPLE 3: Price discrimination – 1

A. Movie tickets
   - Discounts for seniors, students, and people who can attend during weekday afternoons.
   - Lower ***WTP*** than people who pay full price on Friday night

B. Airline prices
   - Discounts for Saturday-night stayovers: business travelers (higher ***WTP***) vs. more price-sensitive leisure travelers

"Would it bother you to hear how little I paid for this flight?"

EXAMPLE 3: Price discrimination – 2

C. Discount opportunities
  - Discount coupons; online savings on special days
  - Separate customers: willingness to spend the time to seek discounts

D. Financial aid based on family income
  - Students from wealthy families: higher willingness to pay
  - Charge high tuition and selectively offer financial aid

EXAMPLE 3: Price discrimination – 3

E. Quantity discounts

- A buyer's WTP often declines with additional units, so firms charge less per unit for large quantities than small ones.
- Example: A movie theater charges $7 for a small popcorn and $9 for a large one that's twice as big

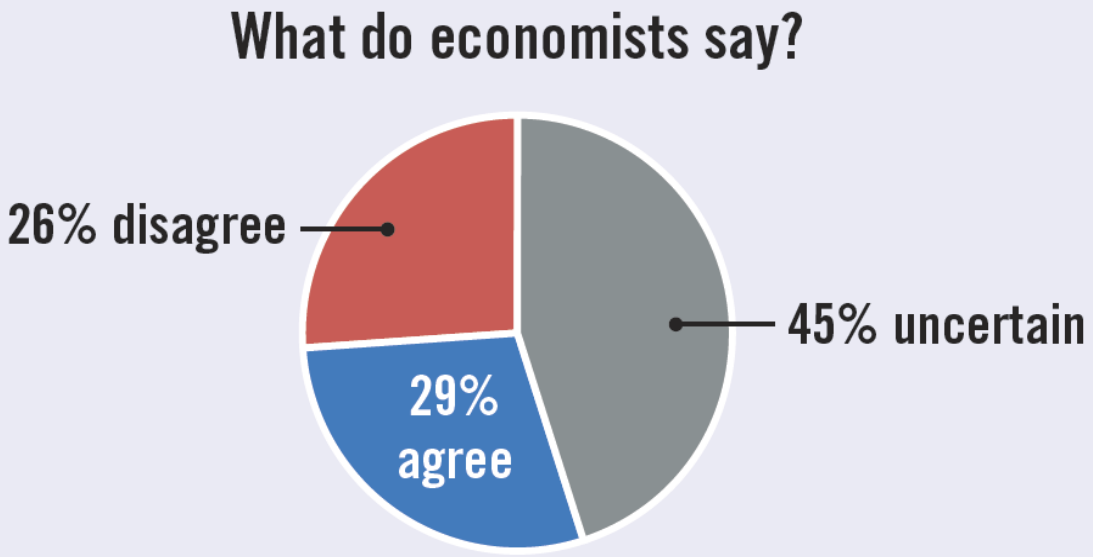
Public Policy Toward Monopolies – 1

1. Increasing competition with antitrust laws
   - Sherman Antitrust Act, 1890
   - Clayton Antitrust Act, 1914
   - Prevent mergers
   - Break up companies
   - Prevent companies from coordinating their activities to make markets less competitive

Ask the Experts

Mergers and Competition

"If regulators had not approved mergers in the past decade between major networked airlines, travelers would be better off today."



Source: IGM Economic Experts Panel, August 28, 2013, July 20, 2021.

Public Policy Toward Monopolies – 2

2. Regulation

- Set the monopolists' price (common in case of natural monopolies)… but where?
- If P is set at MC, but ***MC*** < ***ATC*** at all ***Q***
  - Marginal-cost pricing would result in losses (and exits in the LR)
  - Regulator might subsidize the monopolist or set ***P*** = ***ATC*** for zero economic profit
  - Problem: no incentive to reduce costs

Public Policy Toward Monopolies – 3

3. Public ownership: a government unit can run the monopoly itself
   - If it does a bad job, losers are the customers and taxpayers
   - Public ownership is usually less efficient since there is no profit incentive to minimize costs

Public Policy Toward Monopolies – 4

4. Above all, do no harm

- Some economists argue that the government should be careful not to make matters worse when dealing with monopoly pricing
- Determining the proper role of the government in the economy requires judgments about politics as well as economics

The Prevalence of Monopolies

- Pure monopoly – rare in the real world
- Many firms have market power, due to:
  - Selling a unique variety of a product
  - Having a large market share and few significant competitors
- In many such cases, most of the results from this chapter apply, including:
  - Markup of price over marginal cost
  - Deadweight loss

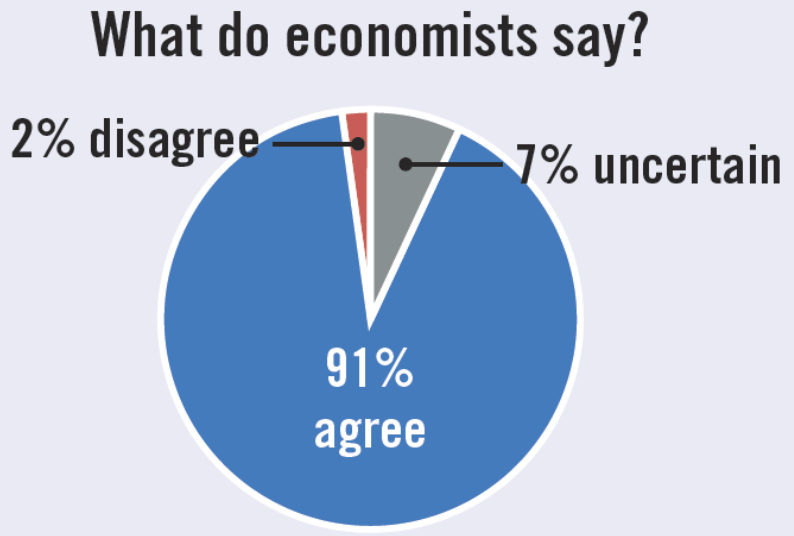
Competition versus Monopoly

	Competition	Monopoly
Similarities		
Goal of firms	Maximize profits	Maximize profits
Rule for maximizing	MR = MC	MR = MC
Can earn economic profits in SR?	Yes	Yes
Differences		
Number of firms	Many	One
Marginal revenue	MR = P	MR < P
Price	P = MC	P > MC
Produces welfare-maximizing level of output?	Yes	No
Entry in the LR?	Yes	No
Can earn economic profits in LR?	No	Yes
Price discrimination possible?	No	Yes

Ask the Experts

Mergers and Competition

"Americans pay too much for broadband, cable television, and telecommunications services, in part because of a lack of adequate competition."



Source: IGM Economic Experts Panel, August 28, 2013, July 20, 2021.

THINK-PAIR-SHARE

A consumer advocate is discussing the airline industry on the news. He says, “There are so many rates offered by airlines that it is technically possible for a 747 to be carrying a full load of passengers where no two of them paid the same price for their tickets. This is clearly unfair and inefficient.” He continues, “In addition, the profits of the airlines have doubled in the last few years since they began this practice, and these additional profits are clearly a social burden. We need legislation that requires airlines to charge all passengers on an airplane the same price for their travel.”

THINK-PAIR-SHARE

A. List some of the ways airlines divide their customers according to their willingness to pay.

B. Is it necessarily inefficient for airlines to charge different prices to different customers? Why or why not?

C. Is the increase in profits generated by this type of price discrimination a social cost? Explain.

CHAPTER IN A NUTSHELL

- Monopoly: the sole seller in its market.
- Monopoly arises when:
  - A single firm owns a key resource
  - The government gives a firm the exclusive right to produce a good
  - A single firm can supply the entire market at a lower cost than many firms could.
- Monopoly faces a downward-sloping demand curve for its product: MR < P

CHAPTER IN A NUTSHELL

- Monopoly maximizes profit
  - Produce Q where MR = MC, but Q is not efficient
  - For this Q, the price is on the demand curve.
  - So, P > MR = MC
  - Causes deadweight loss
- Price discrimination: charge different prices for the same good based on a buyer's willingness to pay.
  - Can raise economic welfare by getting the good to some consumers who would otherwise not buy it.

CHAPTER IN A NUTSHELL

- Perfect price discrimination
  - No deadweight loss
  - The entire surplus in the market goes to the monopoly producer.
- Policymakers can:
  - Use the antitrust laws to try to make the industry more competitive.
  - Regulate the prices that the monopoly charges.
  - Turn the monopolist into a government-run enterprise.
  - Do nothing at all.