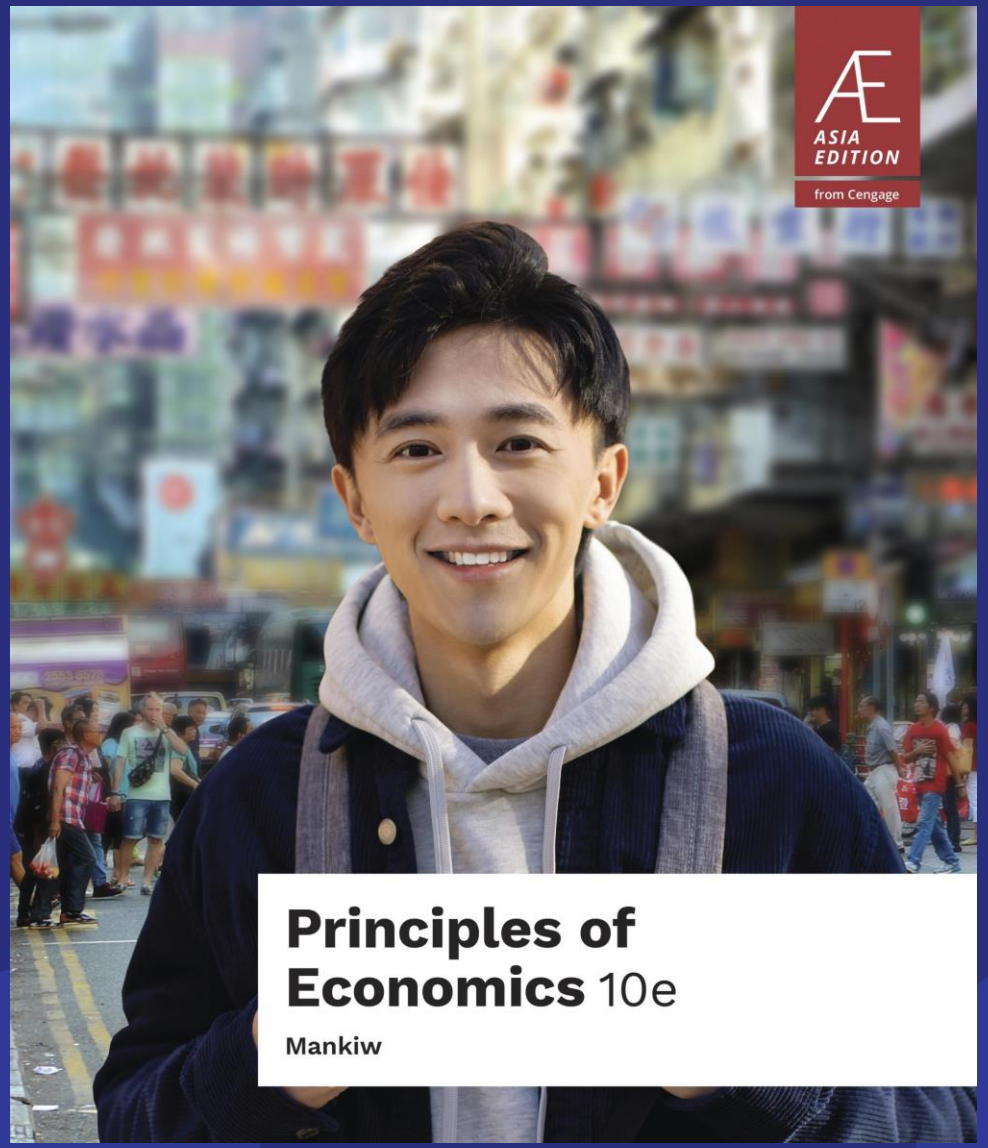


Principles of Economics, 10e

Chapter 16: Monopoly

Chapter Objectives (1 of 2)

By the end of this chapter, you should be able to:

- Explain the differences between a monopoly and a perfectly competitive firm.
- Describe the characteristics of a monopoly.
- Describe the barriers to entry that help create monopoly markets.
- Describe the characteristics of a natural monopoly.
- Explain why the monopolist's marginal revenue declines as the quantity produced increases.
- Describe the slope of the demand curve for a monopoly.

Chapter Objectives (2 of 2)

- Determine the monopolist's profit-maximizing price and quantity.
- Identify the area on a graph that represents a monopoly's profit or loss.
- Analyze the impact of regulation on monopolistic market structures.
- Explain why deadweight loss occurs in a monopoly market structure.
- Analyze the behavior and market effects of monopolies.
- Compare total surplus in a market under monopolistic conditions versus competitive conditions.
- Determine if a price scheme scenario is an example of price discrimination.

16-1

Why Monopolies Arise

Monopoly

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

*Words accompanied by an asterisk are key terms from the chapter.

Barriers to Entry

- Main sources of barriers to entry
  - Monopoly resources
  - Government regulation
  - The production process

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

Government-Created Monopolies

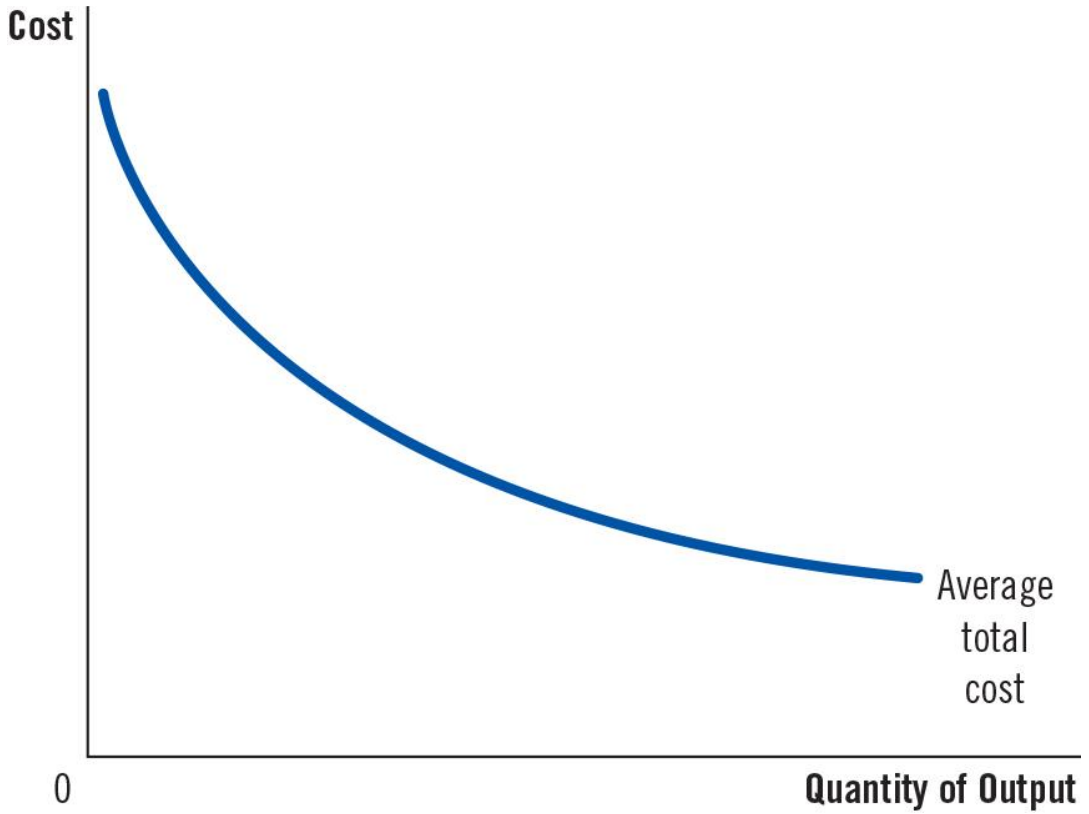
- Government gives a single firm the exclusive right to sell a good or service
- Patent and copyright laws
  - Lead to higher prices and higher profits
  - Encourage some desirable behavior (provides incentives for creative activity)
  - E.g. a pharmaceutical company develops a brand-name drug/innovator drug

Natural Monopolies

- **Natural monopoly***
  - A type of monopoly that arises because a single firm can supply a good or service to an entire market at a *lower cost* than could two or more firms
  - There are economies of scale over the relevant range of output
    - Distribution of water, electricity, etc.
    - Club goods (excludable, not rival in consumption)
      - E.g., There is a large fixed cost of building the bridge but a negligible marginal cost of additional users

Figure 1 Economies of Scale as a Cause of Monopoly

- When a firm's average-total-cost curve continually declines, the firm has what is called a natural monopoly.
- In this case, when production is divided among more firms, each firm produces less, and average total cost rises.
- As a result, a single firm can produce any given amount at the lowest cost.



16-2

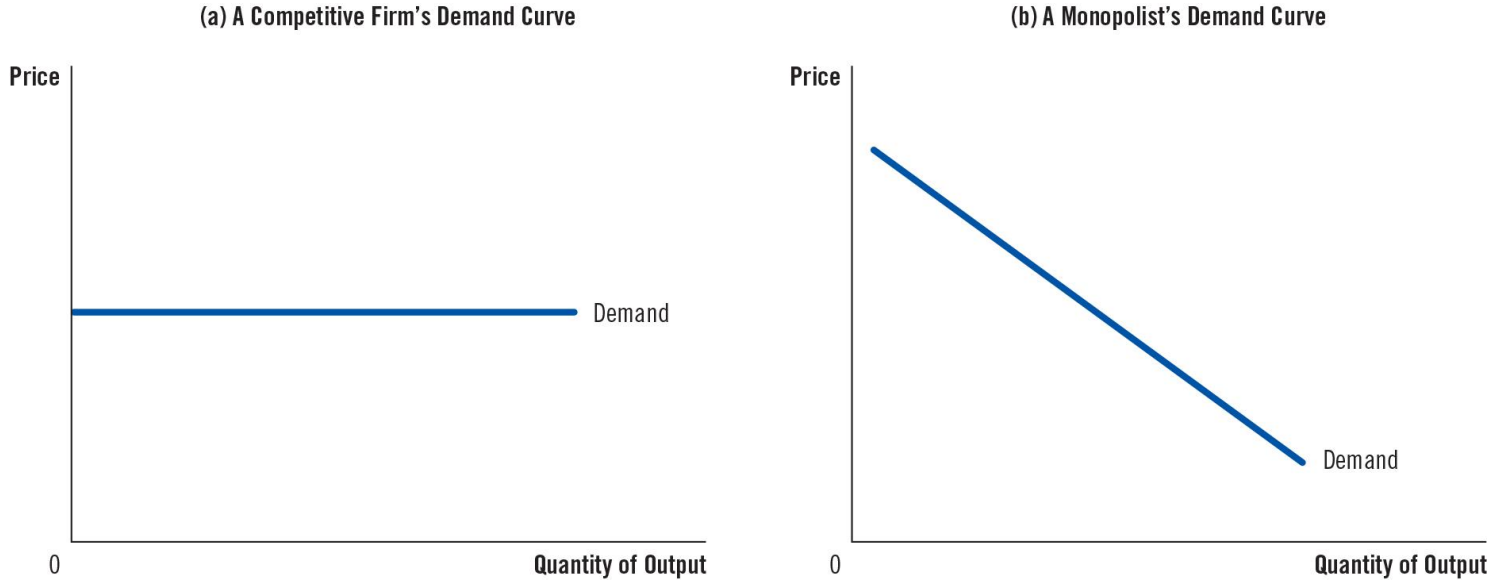
How Monopolies Make Production and Pricing Decisions

Monopoly versus Competition

- Monopoly
  - Sole producer
  - Price maker, market power
  - Faces the entire market demand: Downward sloping demand
- Competitive firm
  - Small, one of many
  - Price taker
  - Faces individual demand at P: Perfectly elastic demand

Figure 2 Demand Curves for Competitive and Monopoly Firms

As a price taker, a competitive firm faces a horizontal demand curve, as in panel (a). It can sell all it wants at the going price. But a monopoly is the sole producer in its market, so it faces the downward-sloping market demand curve, as in panel (b). If it wants to sell more output, it has to accept a lower price.



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

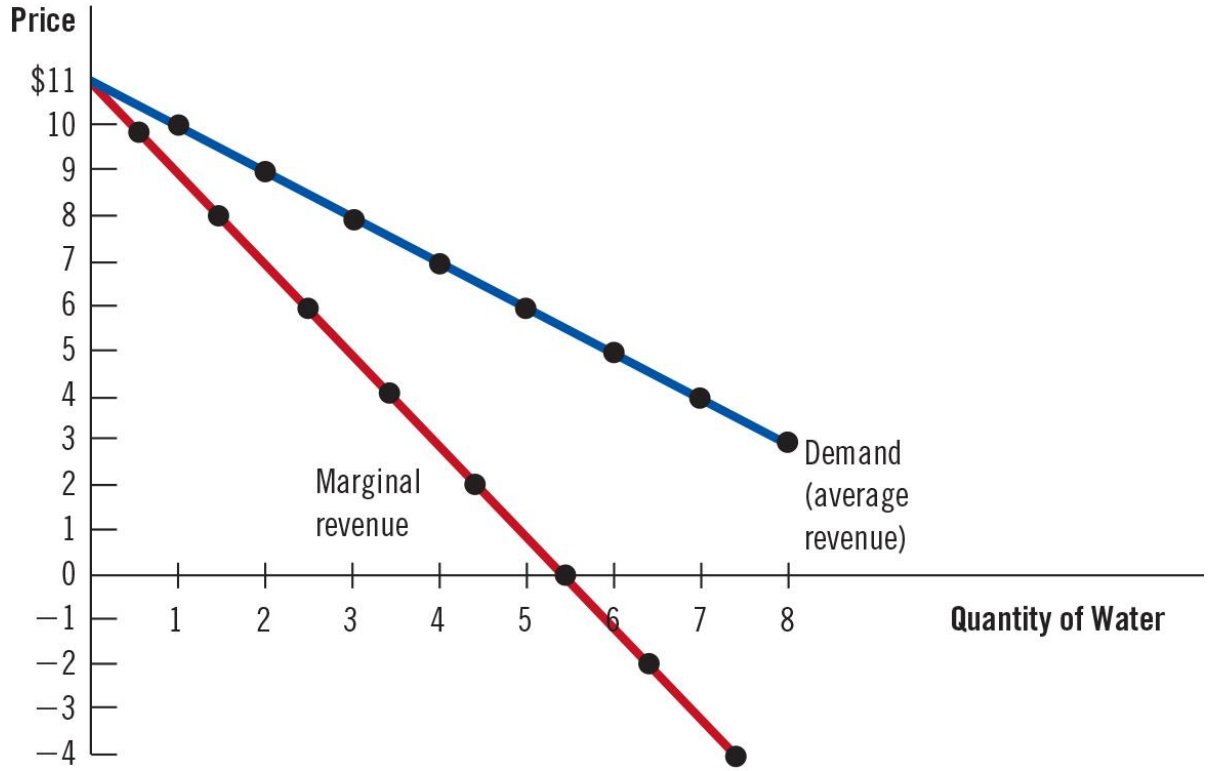
Q	P	TR	AR	MR
0	$60	$0	n/a	
1	55	55	55	55
2	50	100	50	45
3	45	135	45	35
4	40	160	40	25
5	35	175	35	15
6	30	180	30	5
7	25	175	25	−5
8	20	160	20	−15
9	15	135	15	−25
10	10	100	10	−35

A Monopoly's Revenue

- Increasing quantity has two effects on revenue
  - Output effect: Higher output increases revenue
  - Price effect: Lower price decreases revenue
- Marginal revenue < Price
  - To sell a larger Q, the monopolist must reduce the price on all the units it sells
  - Is negative if price effect > output effect

Figure 3 Demand and Marginal-Revenue Curves for a Monopoly

- The demand curve shows how the quantity sold affects the price.
- The marginal-revenue curve shows how the firm's revenue changes when the quantity increases by 1 unit.
- Because the price on all units sold must fall if the monopoly increases production, marginal revenue is less than the price.

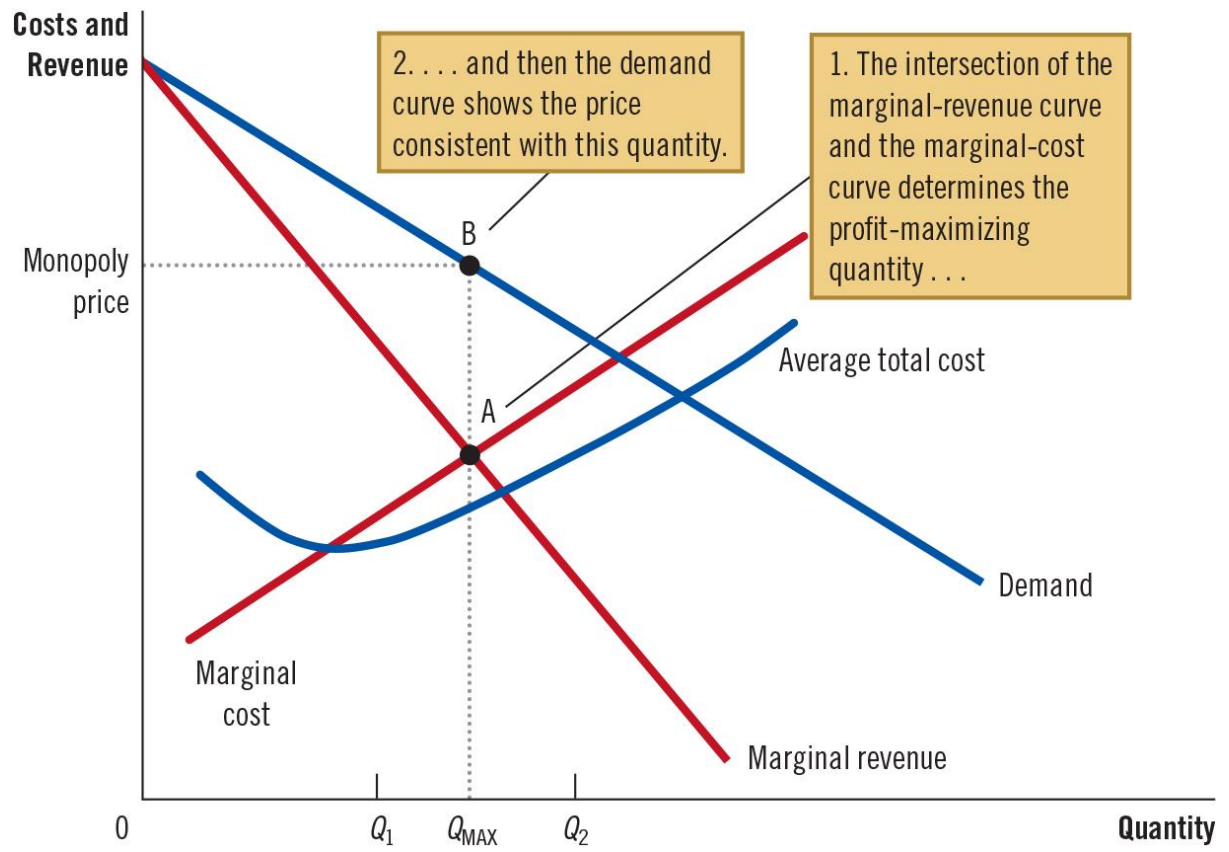


Profit Maximization

- Profit-maximizing quantity of output is where *MR = MC*
  - If *MR > MC*: Increase production
  - If *MC > MR*: Produce less
- Maximize profit
  - Produce quantity where *MR = MC*
  - Price is found on the demand curve

Figure 4 Profit Maximization for a Monopoly

- A monopoly maximizes profit by choosing the quantity at which marginal revenue equals marginal cost (point A).
- It then uses the demand curve to find the price that will induce consumers to buy that quantity (point B).

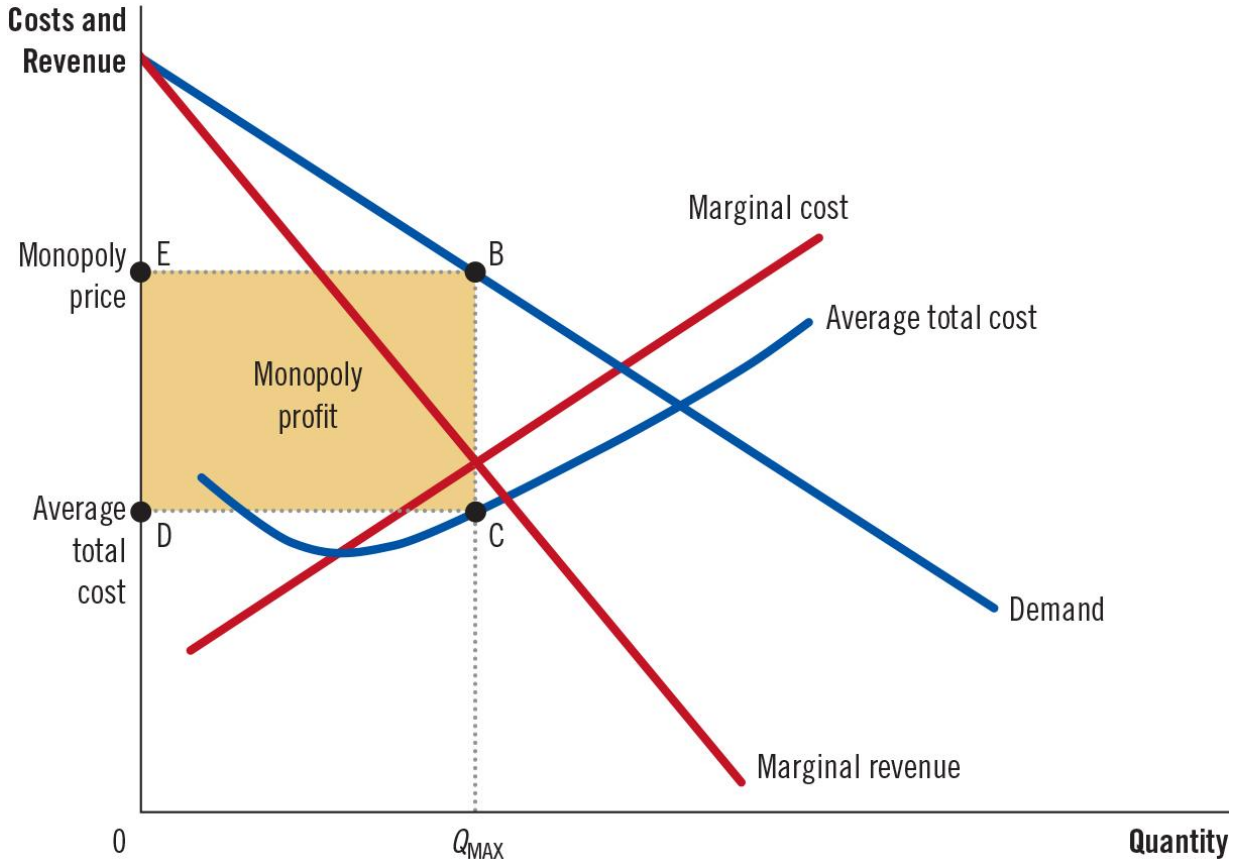


The Monopolist's Profit

- In competitive markets, price equals marginal cost
- In monopolized markets, price exceeds marginal cost
  - For a competitive firm: $P = MR = MC$
  - For a monopoly firm: $P > MR = MC$
- If P > ATC, the monopoly earns a profit
  - Profit = (P – ATC) × Q

Figure 5 The Monopolist's Profit

- The area of the box BCDE equals the profit of the monopoly firm.
- The height of the box (BC) is price minus average total cost, which equals profit per unit sold.
- The width of the box (DC) is the number of units sold.



Profit-Maximizing Rules for a Monopoly Firm

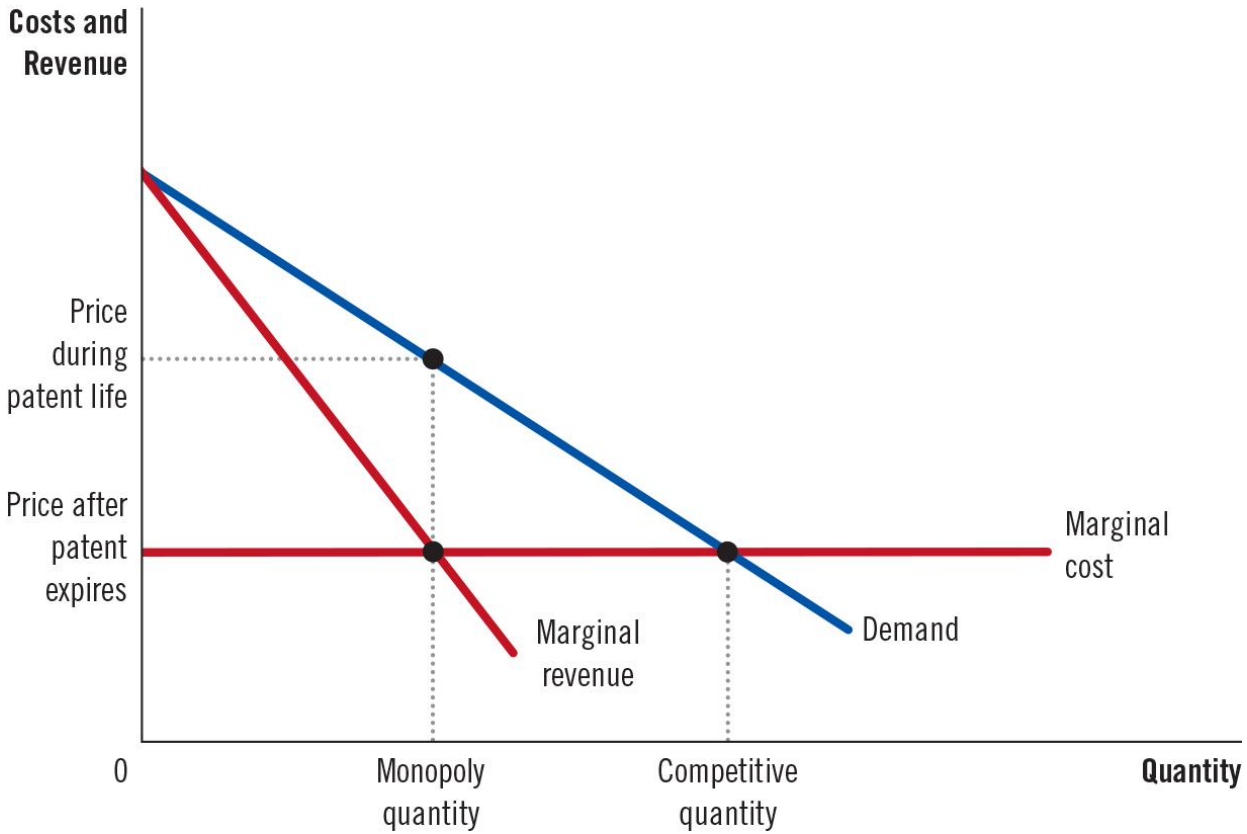
1. Derive the MR curve from the demand curve
2. Find Q at which $MR = MC$
3. On the demand curve, find P at which consumers will buy Q
4. If $P > ATC$, the monopoly earns a profit

A Monopoly Does Not Have a Supply Curve

- A competitive firm takes *P* as given
  - Has a supply curve that shows how its Q depends on *P*
  - *Firm's supply decisions can be analyzed without knowing the demand*
- 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, it doesn't make sense to talk about a monopoly's supply curve

Figure 6 The Market for Drugs

- When a patent gives a firm a monopoly over the sale of a drug, the firm charges the monopoly price, which is well above the marginal cost.
- When the patent on a drug expires and new firms enter, the market becomes competitive, and the price falls to marginal cost.



16-3

The Welfare Cost of Monopolies

The Deadweight Loss

- The socially efficient quantity is found where the demand curve and the marginal-cost curve intersect
- The monopolist chooses to produce and sell the quantity of output at which *MR = MC*
  - *Produces less than the socially efficient quantity of output*
  - Charges *P > MR = MC*
- Deadweight loss
  - Triangle between the demand curve and *MC* curve

Figure 7 The Efficient Level of Output

- Social planners maximize total surplus in the market by choosing the level of output where the demand curve and marginal-cost curve intersect.
- Below this level, the value of the good to the marginal buyer (as reflected in the demand curve) exceeds the marginal cost of making the good.
- Above this level, the value to the marginal buyer is less than marginal cost.

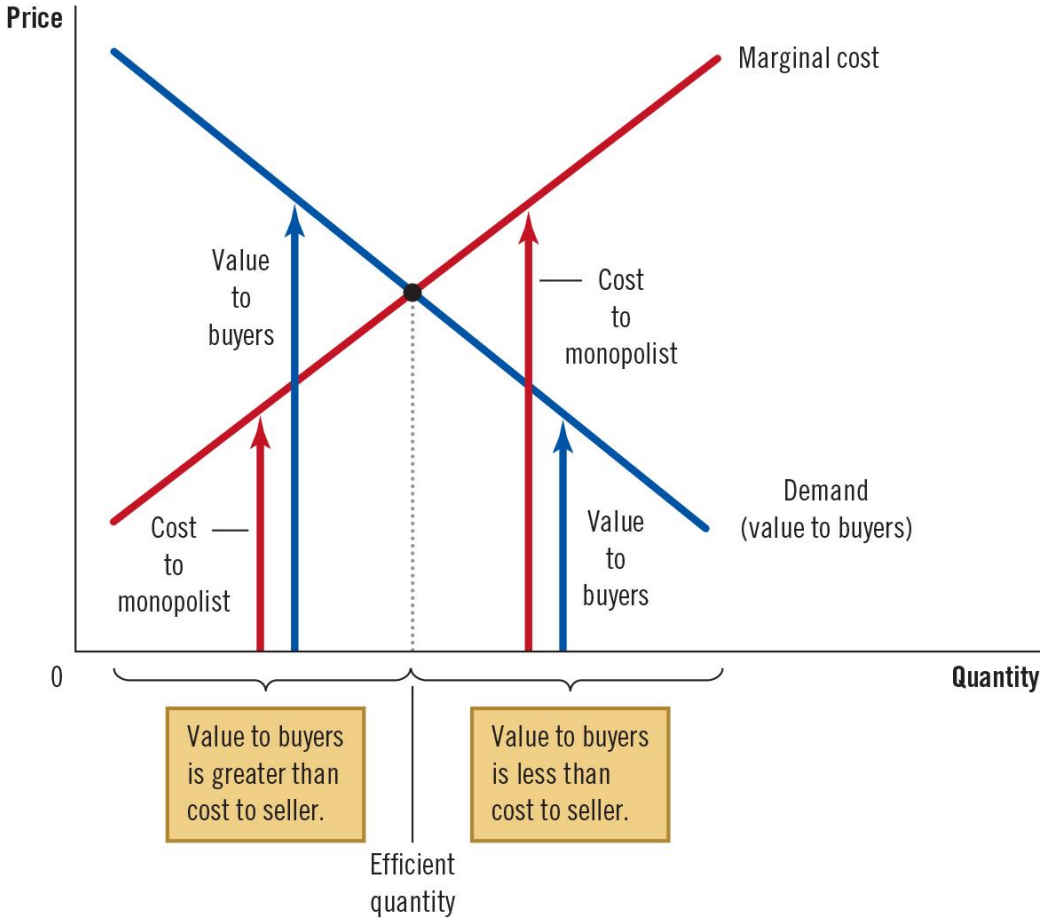
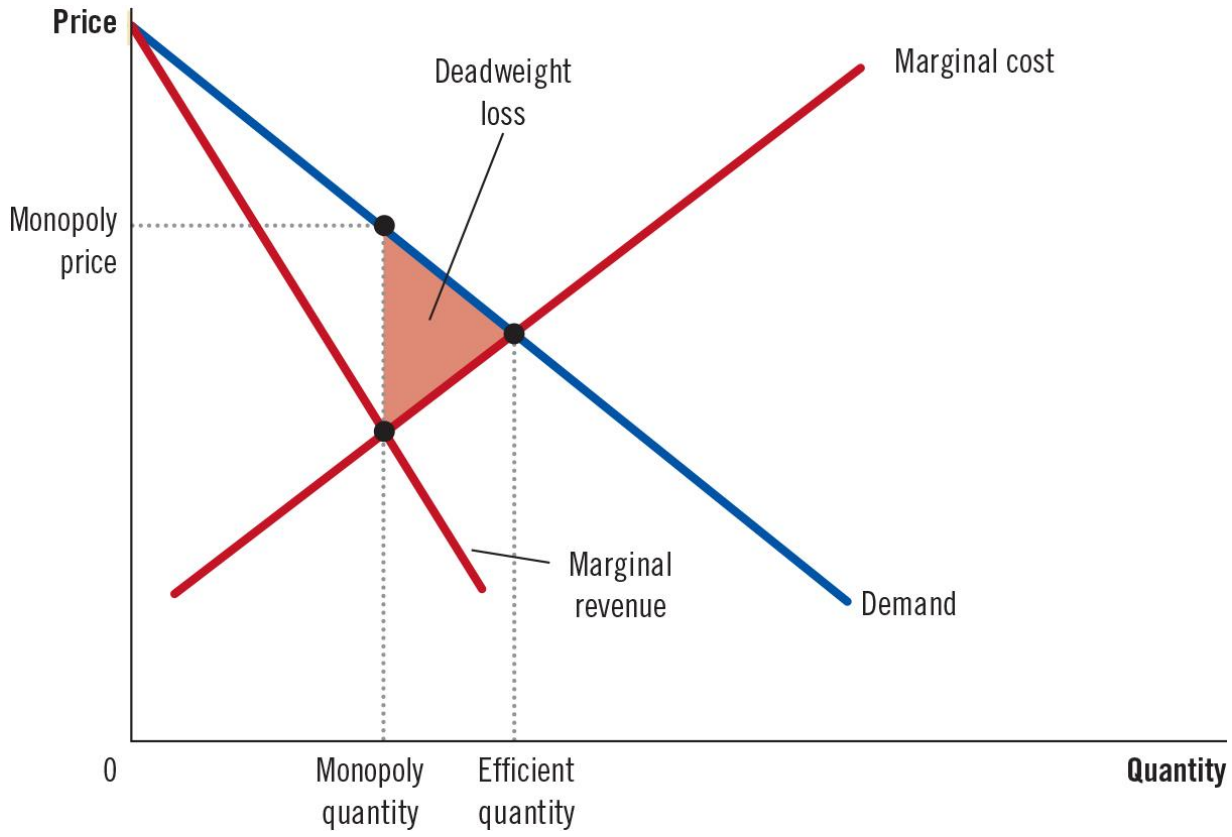


Figure 8 The Inefficiency of Monopoly

- Because a monopoly charges a price above marginal cost, not all consumers who value the good at more than its cost buy it.
- That means that the quantity produced and sold by a monopoly is below the socially efficient level.
- The deadweight loss is represented by the area of the triangle between the demand curve (which reflects the value of the good to consumers) and the marginal-cost curve (which reflects the costs of the monopoly producer).



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

16-4

Price Discrimination

What Is Price Discrimination?

- **Price discrimination***
  - The business practice of selling the same good at different prices to different customers
  - Marketing experts sometimes call it price customization
- Rational strategy to increase profit
- Requires the ability to separate customers according to their willingness to pay
- Can raise economic welfare

The Analytics of Price Discrimination (1 of 2)

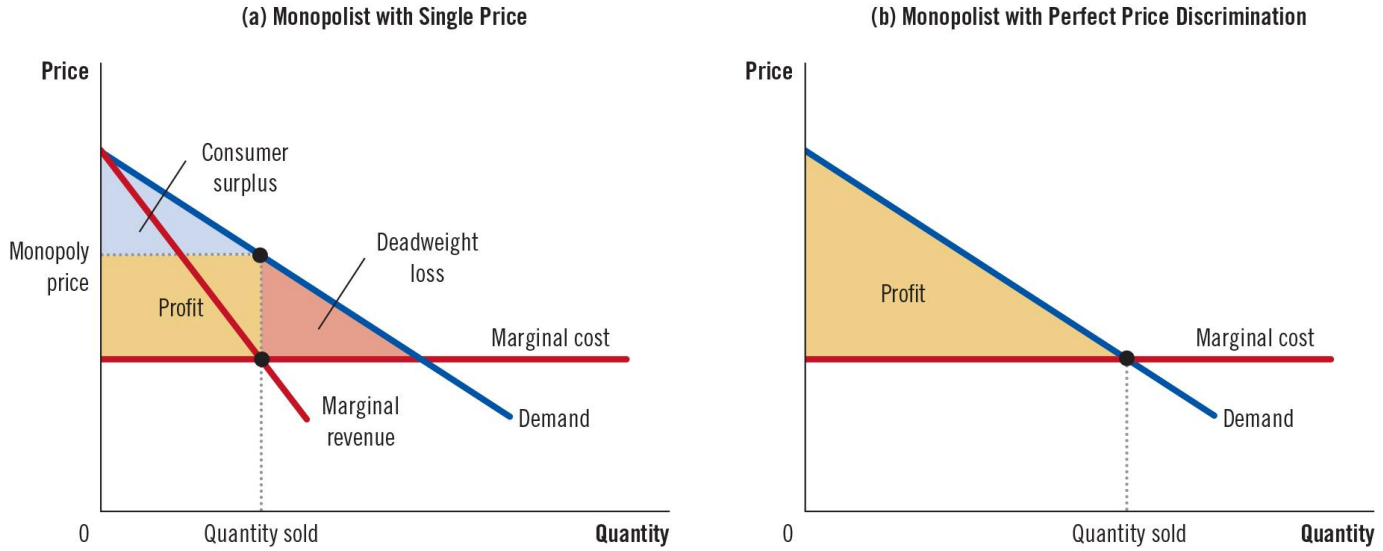
- Without price discrimination
  - Single price > *MC*
  - Consumer surplus
  - Producer surplus (Profit)
  - Deadweight loss

The Analytics of Price Discrimination (2 of 2)

- Perfect price discrimination
  - Monopolist knows customer's willingness to pay
  - Charges each customer a different price
  - Monopolist gets entire surplus (profit)
  - No deadweight loss

Figure 9 Welfare with and without Price Discrimination

Panel (a) shows a monopoly that charges the same price to all customers. Total surplus in this market equals the sum of profit (producer surplus) and consumer surplus. Panel (b) shows a monopoly that can price discriminate perfectly. Because consumer surplus equals zero, total surplus now equals the firm's profit. Comparing these two panels, you can see that perfect price discrimination raises profit, raises total surplus, and lowers consumer surplus.



Examples of Price Discrimination (1 of 2)

- Movie tickets
  - Lower price for children and seniors
- Airline prices
  - Lower price for round-trip with Saturday night stay
- Discount opportunities
  - Not all customers are willing to spend time to clip coupons

Examples of Price Discrimination (2 of 2)

- Financial aid
  - University financial aid based on family income
- Quantity discounts
  - Different prices to the same customer for different units

Lessons About Price Discrimination

1. Price discrimination is a rational strategy for a profit-maximizing monopolist
2. Seller must be able to separate customers according to their willingness to pay
3. Price discrimination can raise welfare as measured by total surplus

16-5

Public Policy toward Monopolies

Public Policy

- Government policymakers can deal with the problem of monopoly in several ways:
  - By trying to make monopolized industries more competitive
  - By regulating the behavior of the monopolies
  - By turning some private monopolies into public enterprises
  - By doing nothing at all

Increasing Competition with Antitrust Laws (1 of 2)

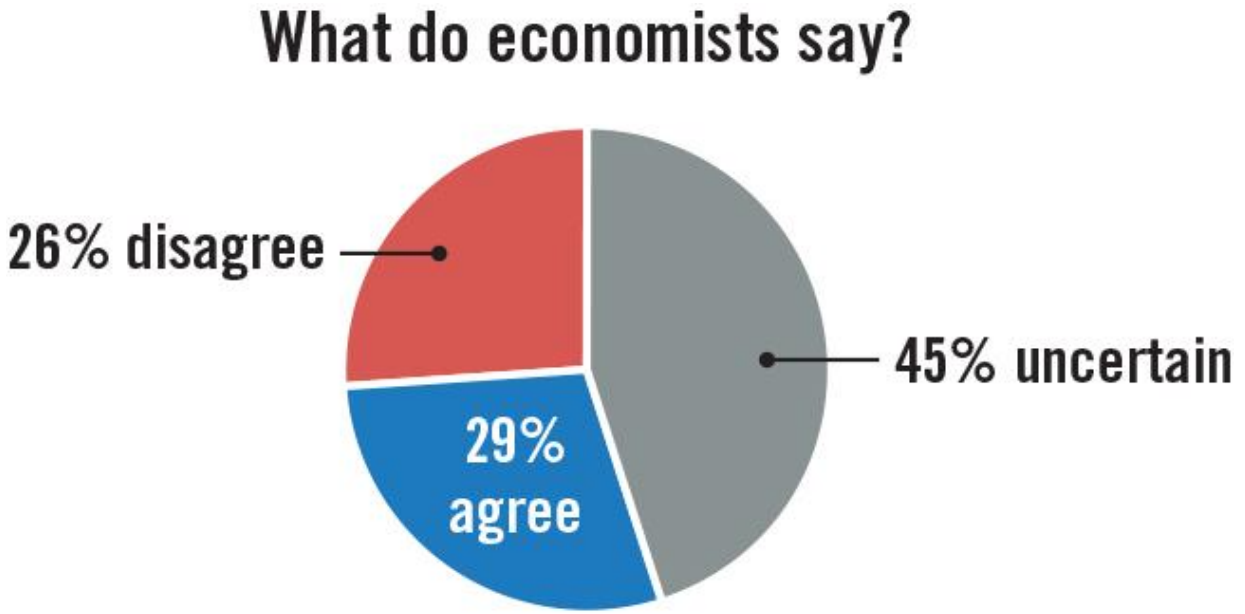
- **Antitrust laws**:
  - Statutes aimed at curbing monopoly power
  - "A comprehensive charter of economic liberty aimed at preserving free and unfettered competition as the rule of trade"
- Promote competition
  - Prevent mergers
  - Break up companies
  - Prevent companies from colluding to reduce competition

Increasing Competition with Antitrust Laws (2 of 2)

- Sometimes, companies combine to lower costs through more efficient joint production.
- These advantages are called **synergies**
  - E.g., many banks have merged to reduce administrative expenses
- Government must measure and compare the social benefit from synergies with the social costs of reduced competition
- It is open to debate whether the government can perform the necessary cost–benefit analysis with sufficient accuracy

Ask the Experts: Mergers and Competition—A

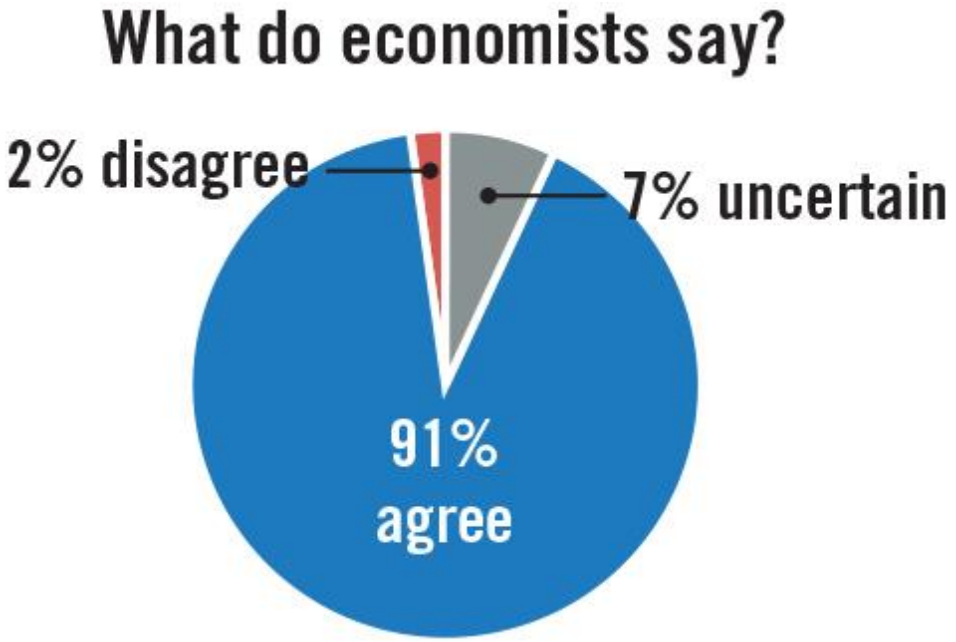
"If regulators had not approved mergers in the past decade between major networked airlines, travelers would be better off today."



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

Ask the Experts: Mergers and Competition—B

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



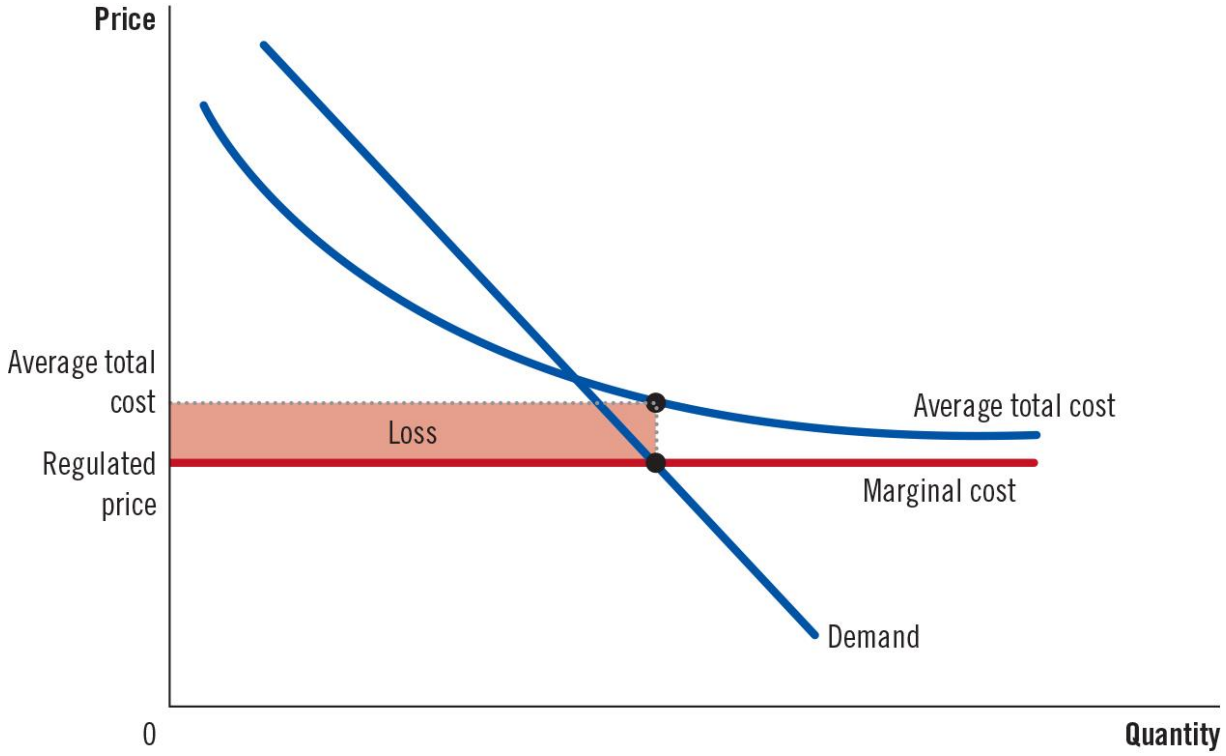
Source: IGM Economic Experts Panel, August 28, 2013, July 20, 2021.

Regulation

- Regulate the behavior of monopolists
  - Regulate price
- Common for natural monopolies
- Two practical problems arise with marginal-cost pricing
  - When *ATC* is declining, *MC* < *ATC*
  - No incentive to reduce costs
- In practice, the regulators allow some departure from marginal-cost pricing

Figure 10 Marginal-Cost Pricing for a Natural Monopoly

- Because a natural monopoly has declining average total cost, marginal cost is less than average total cost.
- Therefore, if regulators require a natural monopoly to charge a price equal to marginal cost, the price will be below average total cost, and the monopoly will lose money and exit the industry.



Public Ownership

- Rather than regulating a natural monopoly run by a private firm, a government unit can run the monopoly itself
  - E.g., telephone, postal service, water, power utilities
- Ownership of firm affects costs of production
  - Private owners have an incentive to minimize costs
  - Public employees may become a special-interest group and bend political system to their advantage

Above All, Do No Harm

- Do nothing
  - Some economists argue that it is often best for the government not to try to remedy the inefficiencies of monopoly pricing
  - Determining the proper role of the government in the economy requires judgments about politics as well as economics
  - "The degree of *market failure* for the American economy is much smaller than the *political failure* arising from the imperfections of economic policies found in real political systems"

——George Stigler (1982 Nobel Prize laureate)

16-6

Conclusion: The Prevalence of Monopolies

Table 3 Competition versus Monopoly: A Summary Comparison

	Competition	Monopoly
Similarities		
Goal of firms	Maximize profits	Maximize profits
Rule for maximizing	*MR = MC*	*MR = MC*
Can earn economic profits in the short run?	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 long run?	Yes	No
Can earn economic profits in the long run?	No	Yes
Price discrimination possible?	No	Yes

Think-Pair-Share Activity (1 of 2)

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 Activity (2 of 2)

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.

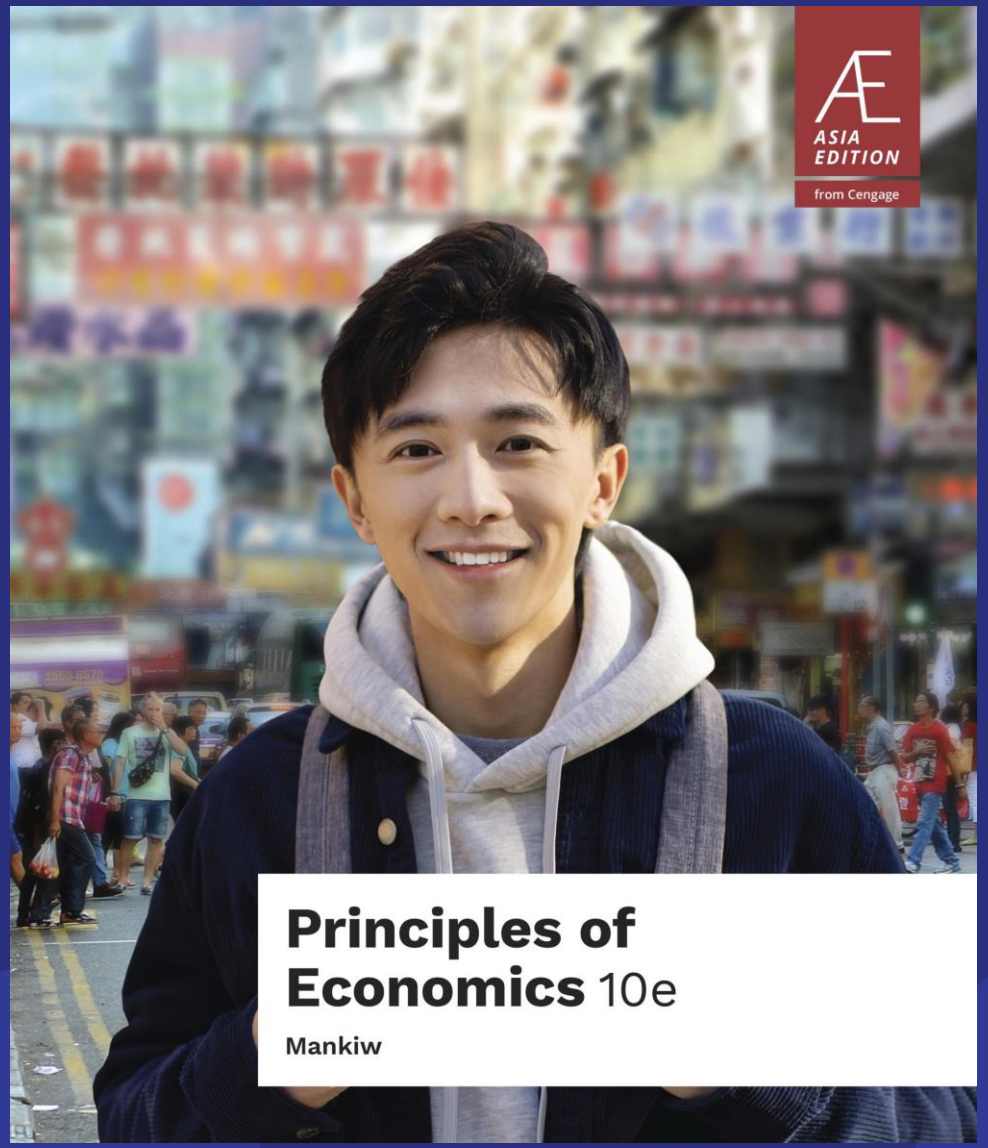
Self-Assessment

- How does the monopolist's incentive to price discriminate differ from the social planner's? Is it possible that the monopolist will price discriminate even though doing so is not socially desirable?

Summary

Click the link to review the objectives for this presentation.

Link to Objectives



Principles of Economics, 10e

Chapter 17: Monopolistic Competition

Chapter Objectives (1 of 2)

By the end of this chapter, you should be able to:

- Describe the characteristics of a monopolistically competitive market.
- Explain the impact of product differentiation on monopolistically competitive markets.
- Determine the profit-maximizing quantity and price for a monopolistically competitive firm.
- Compare the demand and marginal revenue curves of monopolistically competitive firms in the short run versus the long run.
- Explain the differences between a monopolistically competitive firm and a perfectly competitive firm.

Chapter Objectives (2 of 2)

- Identify the area on a graph that represents a monopolistically competitive firm's profit or loss.
- Explain the adjustment process in a monopolistically competitive market if a firm in that market is not making zero profit.
- Given a scenario about goods operating in a monopolistically competitive market, determine if it is a critique of advertising or a defense of advertising.

17-1

Between Monopoly and Perfect Competition

Oligopoly

- **Oligopoly***
  - A market structure in which only a few sellers offer similar or identical products
- When deciding how much to produce and what price to charge, each firm in an oligopoly is concerned with
  - What its competitors are doing
  - How its competitors would react to what it might do

*Words accompanied by an asterisk are key terms from the chapter.

Concentration Ratio

- Concentration ratio
  - Percentage of total output in the market supplied by the four largest firms
- Industries with four-firm concentration ratios of 90 percent or more
  - Aircraft manufacturing
  - Tobacco
  - Passenger car rentals
  - Express delivery services

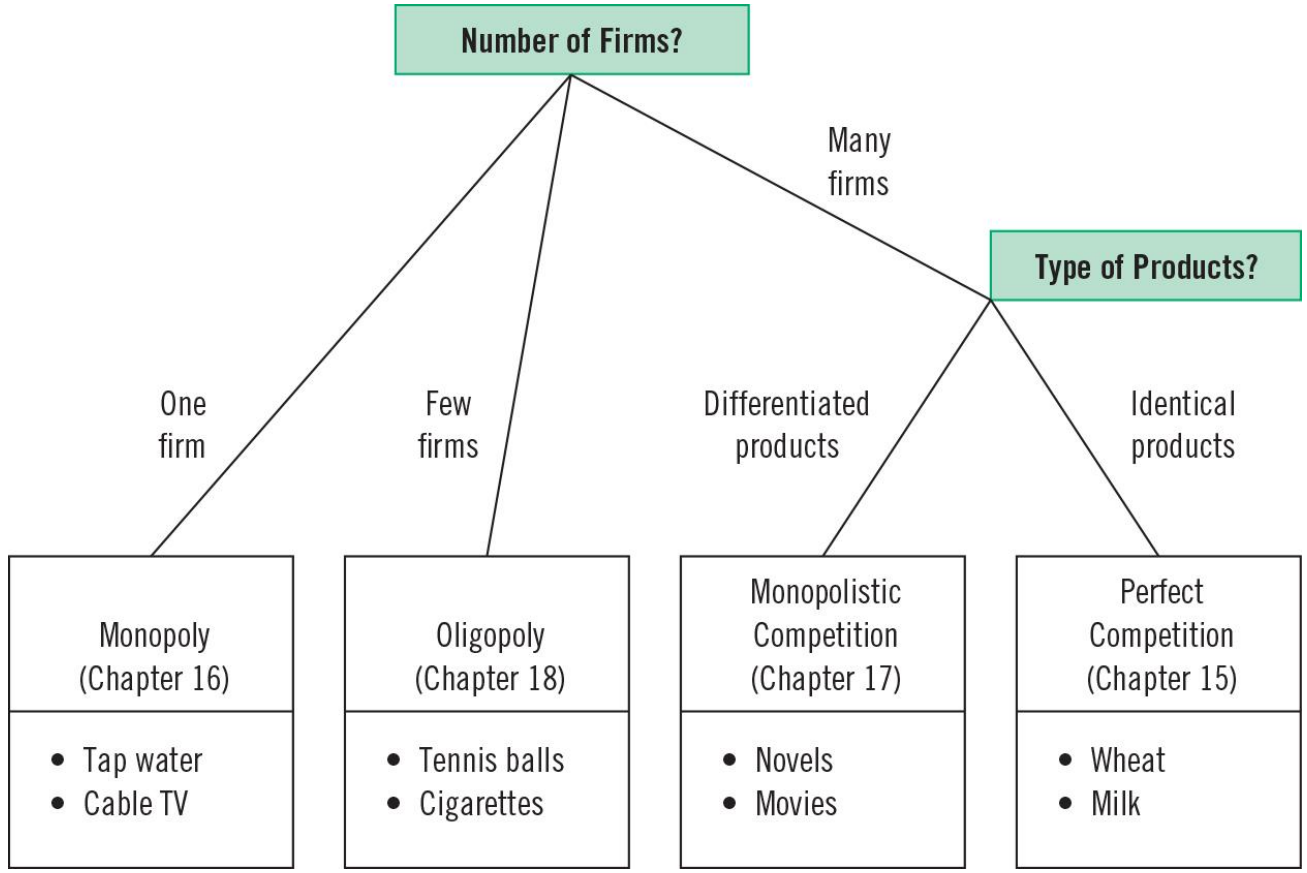
Monopolistic Competition

- **Monopolistic competition***
  - A market structure in which many firms sell products that are similar but not identical
- Attributes
  - Many sellers
  - Product differentiation
  - Free entry and exit

*Words accompanied by an asterisk are key terms from the chapter.

Figure 1 The Four Types of Market Structure

- Economists who study industrial organization divide markets into four types: monopoly, oligopoly, monopolistic competition, and perfect competition.



17-2

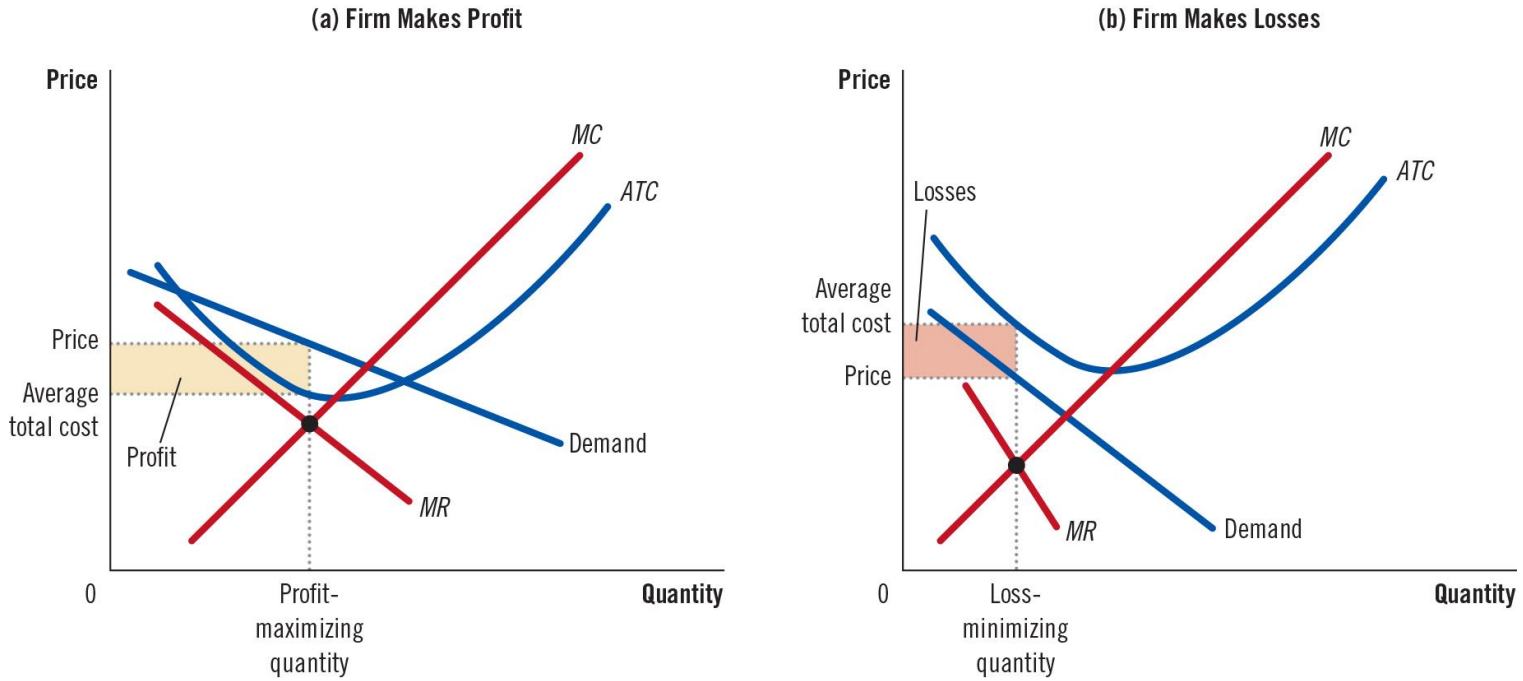
Competition with Differentiated Products

The Monopolistically Competitive Firm in the Short Run

- Profit Maximization
  - Produce the quantity where *MR = MC*
  - Uses demand curve to find price
    - If *P > ATC*: Profit
    - If *P < ATC*: Loss
- Similar to monopoly

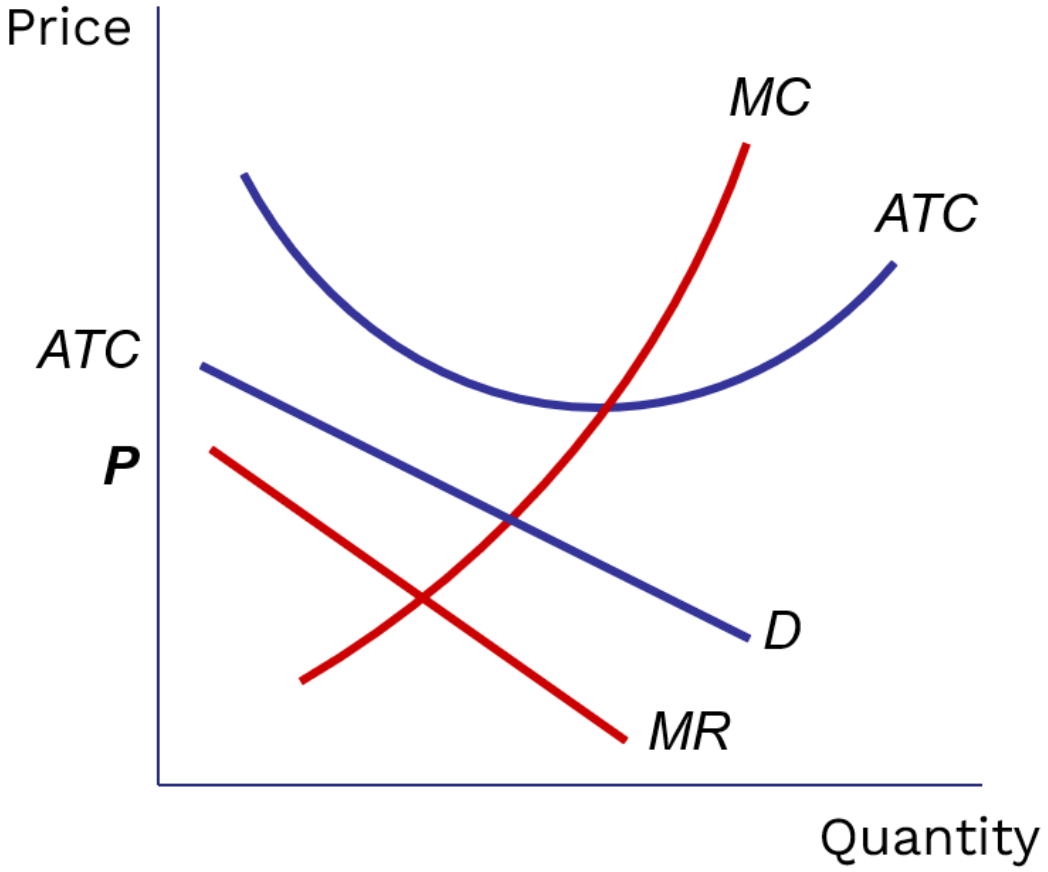
Figure 2 Monopolistic Competitors in the Short Run

Monopolistic competitors, like monopolists, maximize profit by producing the quantity at which marginal revenue equals marginal cost. The firm in panel (a) makes a profit because, at this quantity, price is greater than average total cost. The firm in panel (b) makes losses because, at this quantity, price is less than average total cost.



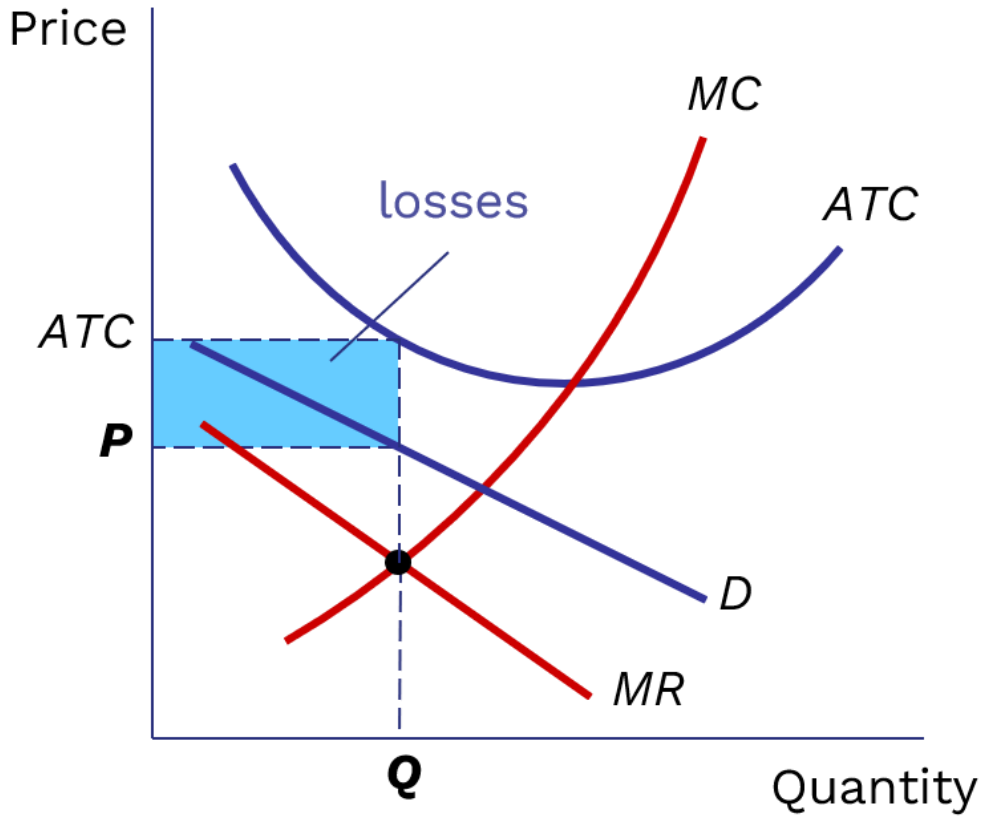
Active Learning 1: Profit or Loss in SR?

- Identify the firm's profit or loss



Active Learning 1: Answers

- For this firm, *P* < *ATC* at the output where *MR* = *MC*
- The best this firm can do is to minimize its losses



The Long-Run Equilibrium (1 of 3)

- When firms are making profits, new firms have incentive to enter the market
  - Demand curve shifts left
  - Firms experience declining profits
- When firms are making losses, firms have incentive to exit
  - Demand curve shifts right
  - Firms experience greater profits
- Process of entry and exit continues until the firms in the market make zero economic profit

The Long-Run Equilibrium (2 of 3)

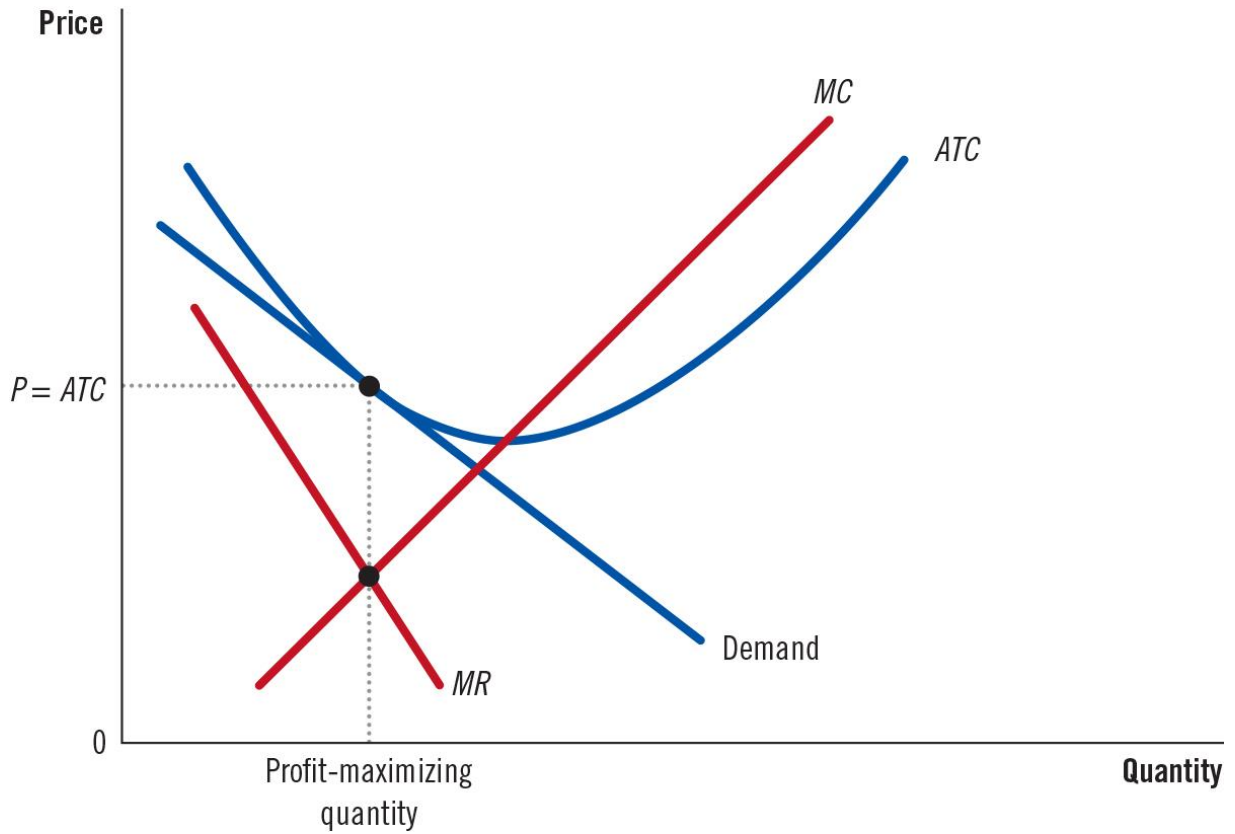
- Once entry and exit have driven profit to zero
  - Demand curve is tangent to average total cost curve
  - At quantity where *MR = MC*
  - *P = ATC*

The Long-Run Equilibrium (3 of 3)

- As in a monopoly market, price exceeds marginal cost ($P > MC$)
  - Profit maximization requires marginal revenue to equal marginal cost ($MR = MC$) and downward-sloping demand curve makes marginal revenue less than the price ($MR < P$)
- As in a perfectly competitive market, price equals average total cost ($P = ATC$)
  - Free entry and exit drive economic profit to zero in the long run

Figure 3 A Monopolistic Competitor in the Long Run

- In a monopolistically competitive market, if firms are making profits, new ones enter, causing the demand curves for the incumbent firms to shift to the left.
- Similarly, if firms are making losses, some of the firms in the market exit, causing the demand curves of the remaining firms to shift to the right.
- Because of these shifts in demand, monopolistically competitive firms eventually find themselves in the long-run equilibrium shown here.
- In this long-run equilibrium, price equals average total cost, and each firm earns zero profit.

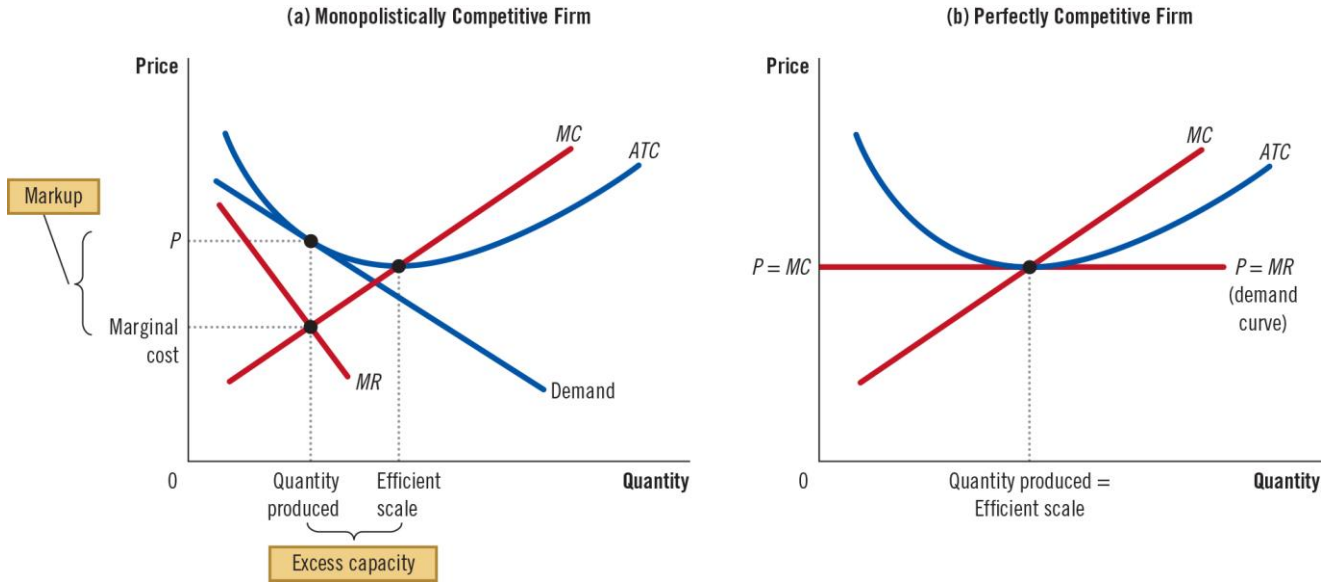


Monopolistic versus Perfect Competition

- Monopolistic competition
  - Quantity: not at minimum *ATC* (excess capacity)
  - *P* > *MC*, markup over marginal cost
- Perfect competition
  - Quantity: at minimum *ATC* (efficient scale)
  - *P* = *MC*

Figure 4 Monopolistic versus Perfect Competition

Panel (a) shows the long-run equilibrium in a monopolistically competitive market, and panel (b) shows the long-run equilibrium in a perfectly competitive market. Two differences are notable. (1) The perfectly competitive firm produces at the efficient scale, where average total cost is minimized. By contrast, the monopolistically competitive firm produces at less than the efficient scale. (2) Price equals marginal cost under perfect competition, but price is above marginal cost under monopolistic competition.



Monopolistic Competition and the Welfare of Society

- Inefficiency of markup of price over marginal cost
  - Deadweight loss of monopoly pricing
- Inefficiency of number of firms
  - Product-variety externality (positive externality on consumers)
  - Business-stealing externality (negative externality on existing firms)

17-3

Advertising

Amount of Advertising

- When firms sell differentiated products and charge prices above marginal cost, each firm has an incentive to advertise to attract more buyers
- Advertising spending
  - Differentiated consumer goods: 10-20% of revenue
  - Industrial products: Little advertising
  - Homogenous products: No advertising

The Debate over Advertising

- The critique of advertising
  - Firms advertise to manipulate people's tastes
    - Psychological rather than informational
    - Creates a desire that otherwise might not exist
  - Impedes competition
    - Makes buyers less concerned with price differences
    - Makes demand less elastic
    - Firm can increase profits by charging a larger markup
- over marginal cost.

The Defense of Advertising

- Provide information to customers
  - Customers - make better choices
  - Enhances the ability of markets to allocate resources efficiently
- Fosters competition
  - Customers - take advantage of price differences
  - Allows new firms to enter more easily

Advertising as a Signal of Quality

- Large amount of money on advertising can itself be a signal to consumers about quality
  - Little apparent information
  - Content of advertising is irrelevant

Brand Names

- Spend more on advertising and charge higher prices than generic substitutes
- Critics of brand names
  - Products are not differentiated
- Defenders of brand names
  - Consumers – information about quality
  - Firms – incentive to maintain high quality

17-4

Conclusion

Table 1 Monopolistic Competition: Between Perfect Competition and Monopoly (1 of 3)

	Perfect Competition	Monopolistic Competition	Monopoly
Features that all three market structures share			
Goal of firms	Maximize profits	Maximize profits	Maximize profits
Rule for maximizing	*MR = MC*	*MR = MC*	*MR = MC*
Can earn economic profits in the short run?	Yes	Yes	Yes

Table 1 Monopolistic Competition: Between Perfect Competition and Monopoly (2 of 3)

	Perfect Competition	Monopolistic Competition	Monopoly
Features that monopolistic competition shares with monopoly			
Price taker?	Yes	No	No
Price	$P = MC$	$P > MC$	$P > MC$
Produces welfare-maximizing level of output?	Yes	No	No

Table 1 Monopolistic Competition: Between Perfect Competition and Monopoly (3 of 3)

	Perfect Competition	Monopolistic Competition	Monopoly
Features that monopolistic competition shares with perfect competition			
Number of firms	Many	Many	One
Entry in the long run?	Yes	Yes	No
Can earn economic profits in the long run?	No	No	No

Think-Pair-Share Activity (1 of 2)

You are watching the Super Bowl and during a commercial break you see an ad featuring LeBron James. In the ad, LeBron James does nothing but shoot basketballs. He never speaks. There is no written copy. At the end of the advertisement, the Nike “swoosh” appears on the screen along with the words “Nike” and “LeBron James Signature Basketball Shoes.” You read in a newspaper that LeBron James received $40 million to be the spokesperson for Nike basketball shoes.

Think-Pair-Share Activity (2 of 2)

A. While watching, a friend says, “What a waste of society’s resources. I didn’t learn anything about Nike basketball shoes from that ad. I think there should be government regulations requiring ads to be informative in some way.” What have you learned from this ad?

B. Did the use of the Nike name and the Nike “swoosh” provide any information? Explain.

C. In general, does advertising tend to decrease competition and raise prices to consumers or increase competition and reduce prices to consumers? Why?

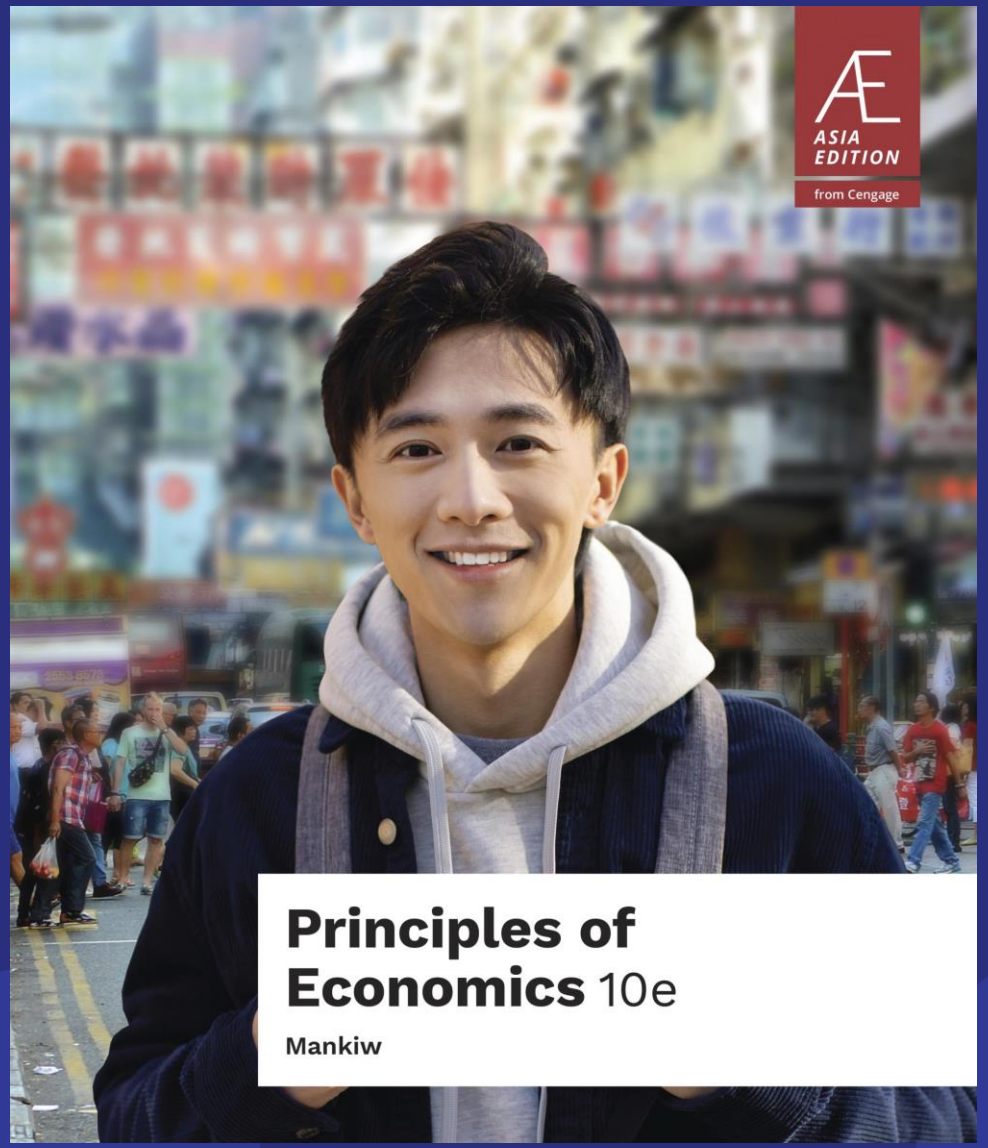
Self-Assessment

- How might advertising reduce economic well-being?
- How might advertising increase economic well-being?

Summary

Click the link to review the objectives for this presentation.

Link to Objectives



Principles of Economics, 10e

Chapter 18: Oligopoly

Chapter Objectives (1 of 2)

By the end of this chapter, you should be able to:

- Describe the characteristics of an oligopoly.
- Explain how production decisions are made in a duopoly market.
- Explain how collusion impacts production decisions in an oligopolistic market.
- Identify the Nash equilibrium, given a payoff matrix.
- Determine if a game represented by a payoff matrix is an example of the prisoners' dilemma.

Chapter Objectives (2 of 2)

- Identify the dominant strategy, if present, for each player, given a payoff matrix.
- Given a scenario, determine which antitrust law is violated.
- Given an example of a business practice, identify it as resale price maintenance, predatory pricing, or tying.

18-1

Markets with Only a Few Sellers

Oligopoly

- **Oligopoly***
  - A market structure in which only a few sellers offer similar or identical products
- **Game theory***
  - The study of how people behave in strategic situations

*Words accompanied by an asterisk are key terms from the chapter.

A Duopoly Example

- Duopoly is an oligopoly with only two members
  - For example, Jack and Jill own wells that produce water safe for drinking
  - Marginal cost of water is zero
  - Total revenue = Total profit

Table 1 The Demand Schedule for Water

Quantity	Price	Total Revenue (and total profit)
0 gallons	$120	$0
10	110	1,100
20	100	2,000
30	90	2,700
40	80	3,200
50	70	3,500
60	60	3,600
70	50	3,500
80	40	3,200
90	30	2,700
100	20	2,000
110	10	1,100
120	0	0

Competition, Monopolies, and Cartels

- If water market is perfectly competitive
  - Price = Marginal cost
  - Equilibrium quantity is 120 gallons
  - Quantity is efficient
- If water market is a monopoly
  - Price > Marginal cost
  - Profit is maximized at a quantity of 60 gallons and a price of $60 a gallon
  - Quantity is lower than the efficient quantity

Collusion and Cartels

- **Collusion***
  - Agreement among firms in a market about quantities to produce or prices to charge
- **Cartel***
  - Group of firms acting in unison

*Words accompanied by an asterisk are key terms from the chapter.

Cartel

- If oligopolists form a cartel
  - Maximize total profit
  - Produce monopoly quantity
  - Charge monopoly price
- For example, Jack and Jill can agree to split the market equally, each produces 30 gallons, the price is $60 a gallon, and each earns a profit of $1,800

Active Learning 1: Collusion in Smallville?

Duopoly outcome with collusion: Each gas station agrees to sell Q = 2,200 at *P* = $7, each earns profit = $13,200

A. If Casey's cheats on the agreement and plans to sell Q = 3,000, what happens to the market price? Calculate Casey's profit.

B. Is it in Casey's interest to cheat on the agreement?

C. If both gas stations cheat and plan to sell Q = 3,000 each, calculate their profits.

P	Q
$0	10,000
1	9,200
2	8,400
3	7,600
4	6,800
5	6,000
6	5,200
7	4,400
8	3,600
9	2,800

Active Learning 1: Answers

- If both stick to the agreement, each earns profit = $13,200

A. If Casey's cheats: Q_1 = 3,000, P = $6

  - Market quantity = 3,000 + 2,200 = 5,200
  - Casey's profit = 3,000 × (6 – 1) = $15,000

B. Yes. Higher profit!

C. If both cheat: $Q_1 = Q_2$ = 3,000, P = $5

  - Market quantity = 6,000
  - Each firm's profit = 3,000 × (5–1) = $12,000

P	Q
$0	10,000
1	9,200
2	8,400
3	7,600
4	6,800
5	6,000
6	5,200
7	4,400
8	3,600
9	2,800

The Equilibrium for an Oligopoly (1 of 2)

- Oligopolists cannot form cartels and earn monopoly profits
  - Squabbling among cartel members over how to divide the profit can make agreement among members difficult
  - Antitrust laws prohibit explicit agreements among oligopolists
  - Even talking about pricing and production restrictions with competitors can be a criminal offense

The Equilibrium for an Oligopoly (2 of 2)

- In the absence of a binding agreement, monopoly outcome is unlikely
- By pursuing their individual self-interest when deciding how much to produce, the duopolists
  - Produce a total quantity greater than the monopoly quantity
  - Charge a price lower than the monopoly price
  - Earn total profit less than the monopoly profit

Active Learning 2: Duopoly Equilibrium in Smallville

FC = 0 and MC = $1

If each firm sells Q = 3,000, *P* = $5, and each firm's profit is $12,000

A. Should Casey's increase Q to 3,800?

B. Should 7-eleven increase Q to 3,800?

P	Q
$0	10,000
1	9,200
2	8,400
3	7,600
4	6,800
5	6,000
6	5,200
7	4,400
8	3,600
9	2,800

Active Learning 2: Answers

A. If Casey's increases Q to 3,800
   - Market Q = 6,800, *P* = $4
   - Casey's profit = 3,800 × (4–1) = $11,400
   - Casey's earns a lower profit at Q = 3,800 than at Q = 3,000

B. The same is true for 7-eleven

P	Q
$0	10,000
1	9,200
2	8,400
3	7,600
4	6,800
5	6,000
6	5,200
7	4,400
8	3,600
9	2,800

Nash Equilibrium

- **Nash equilibrium***
  - A situation in which economic actors interacting with one another each choose their best strategy given the strategies that all the other actors have chosen
- For example, Jack and Jill increase market share, each produces 40 gallons, the price is $40 a gallon, and each earns a profit of $1,600

*Words accompanied by an asterisk are key terms from the chapter.

Individual Oligopoly Outcome

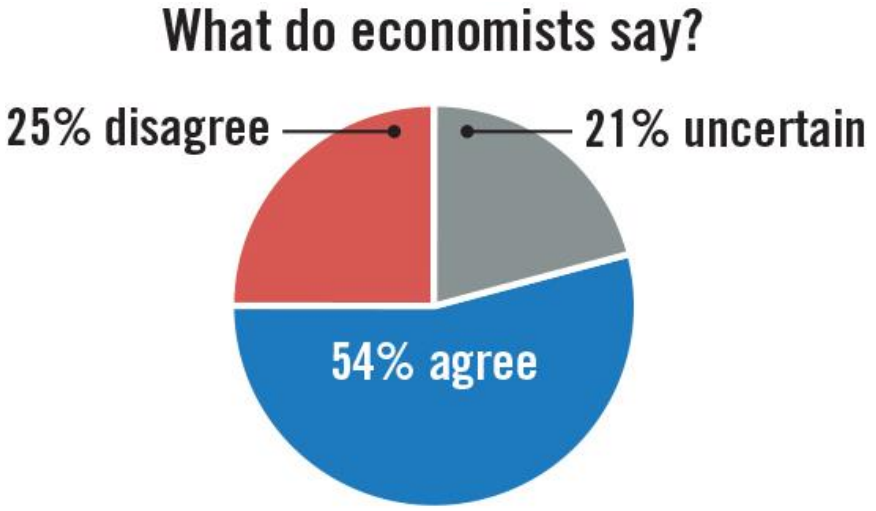
- When firms in an oligopoly individually choose production to maximize profit
  - Produce a quantity greater than the level produced by a monopoly and less than the level produced under perfect competition
  - Oligopoly price is less than the monopoly price but greater than the competitive price (which equals marginal cost)

How the Size of an Oligopoly Affects the Market Outcome

- As the number of sellers in an oligopoly grows, an oligopolistic market increasingly resembles a competitive market
- Price approaches marginal cost and the quantity produced approaches the socially efficient level
  - Output effect: Because price exceeds marginal cost, selling one more gallon of water at the going price increases profit
  - Price effect: Because raising production increases the total quantity sold, the price of water declines, as does the profit on all the other gallons sold

Ask the Experts: Market Share and Market Power

"If a small number of firms have a large combined market share in a properly defined market, it is strong evidence that those firms have substantial market power."



Source: IGM Economic Experts Panel, September 25, 2018.

18-2

The Economics of Cooperation

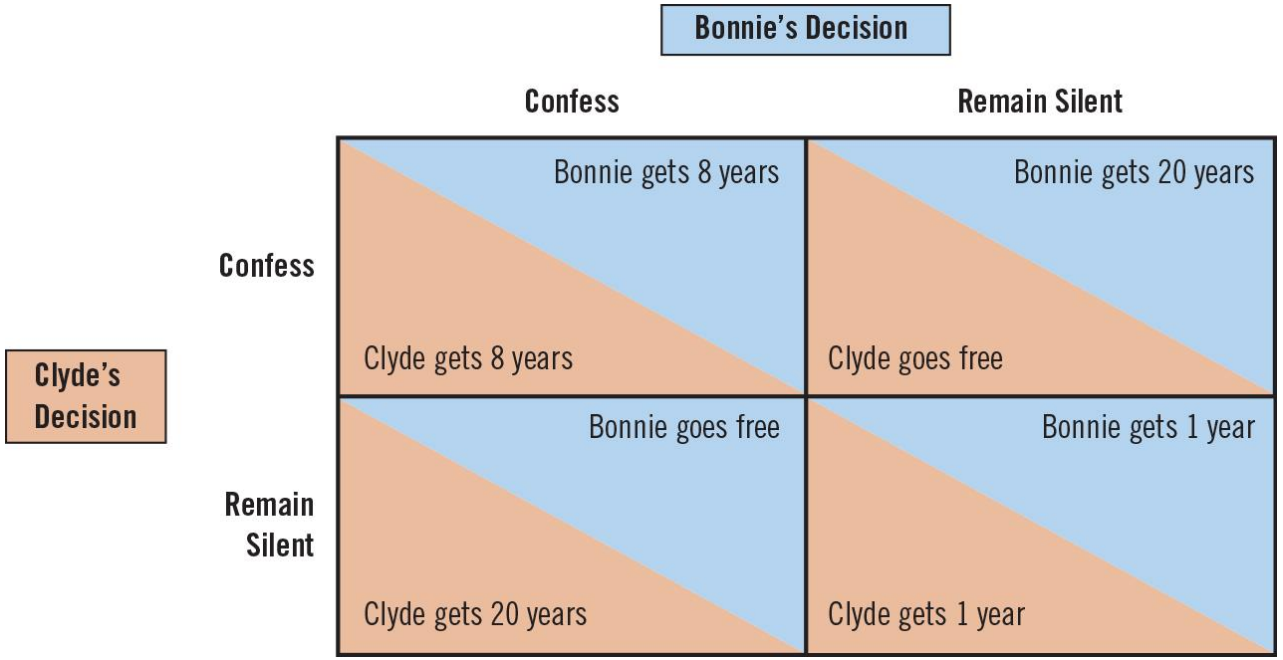
The Prisoners' Dilemma

- **Prisoners' dilemma***
  - Particular "game" between two captured prisoners that illustrates why cooperation is difficult to maintain even when it is mutually beneficial
- **Dominant strategy***
  - Strategy that is best for a player in a game regardless of the strategies chosen by the other players
- Cooperation between the prisoners is difficult to maintain because cooperation is individually irrational

*Words accompanied by an asterisk are key terms from the chapter.

Figure 1 The Prisoners' Dilemma

- In this game between two criminals suspected of committing a major crime, the sentence that each receives depends both on their decision whether to confess or remain silent and on the decision made by the other.

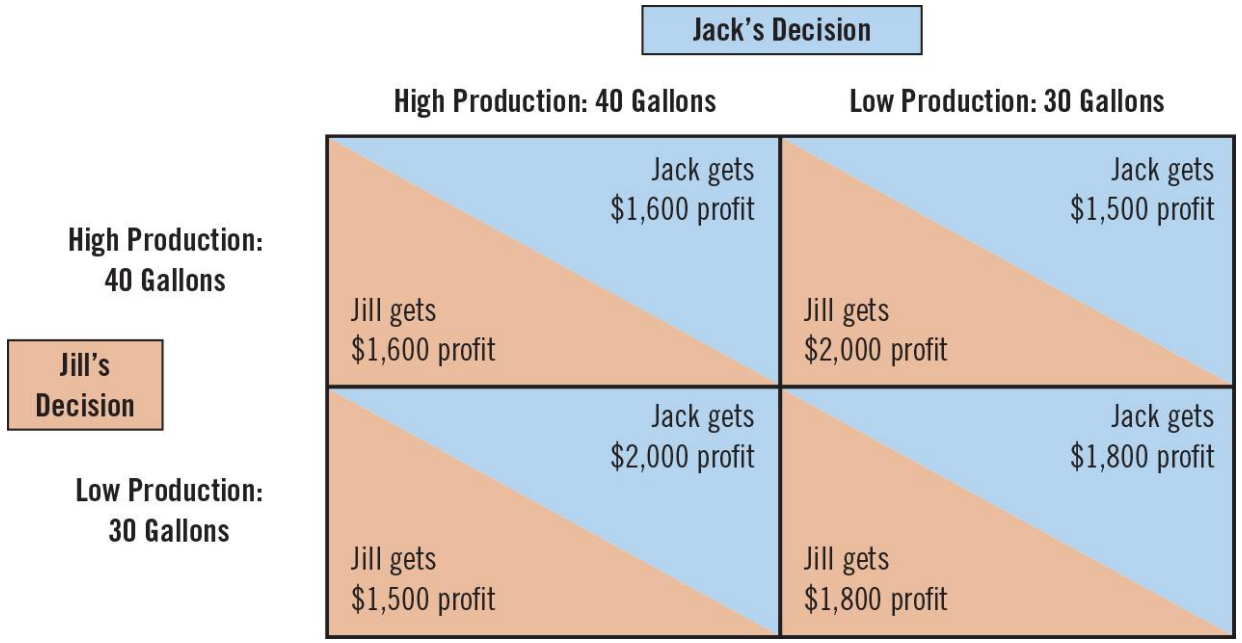


Oligopolies as a Prisoners' Dilemma

- Oligopolies have trouble maintaining monopoly profits
  - Monopoly outcome is jointly rational, but each oligopolist has an incentive to cheat
  - Self-interest makes it hard for the oligopolists to maintain the cooperative outcome with low production, high prices, and monopoly profits

Figure 2 Jack and Jill's Oligopoly Game

- In this game between Jack and Jill, the profit that each earns from selling water depends on both the quantity each chooses to sell and the quantity the other chooses to sell.



Other Examples of the Prisoners' Dilemma

- Arms races
  - Applies to relations among the United States, Russia, and another great military power, China
  - Dominant strategy: Arm
- Common resources
  - Dominant strategy: Each company drills two wells, lower profit

Figure 3 An Arms-Race Game

- In this game between two countries, the safety and power of each depends on what its adversary does, as well as on its own decision whether to arm.

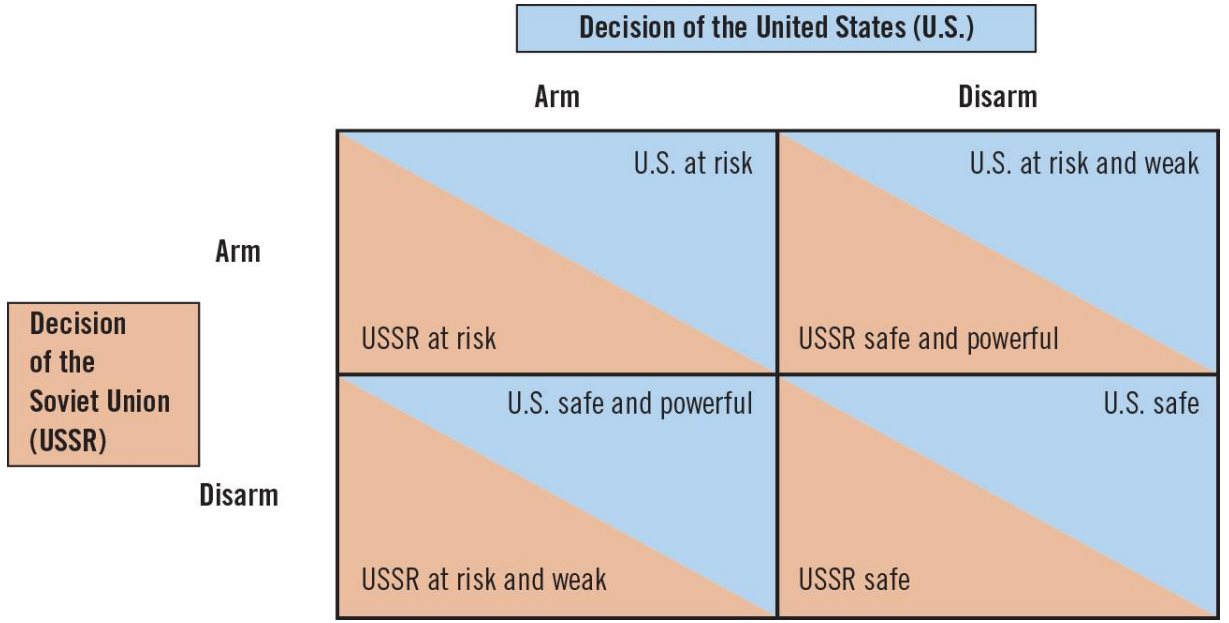
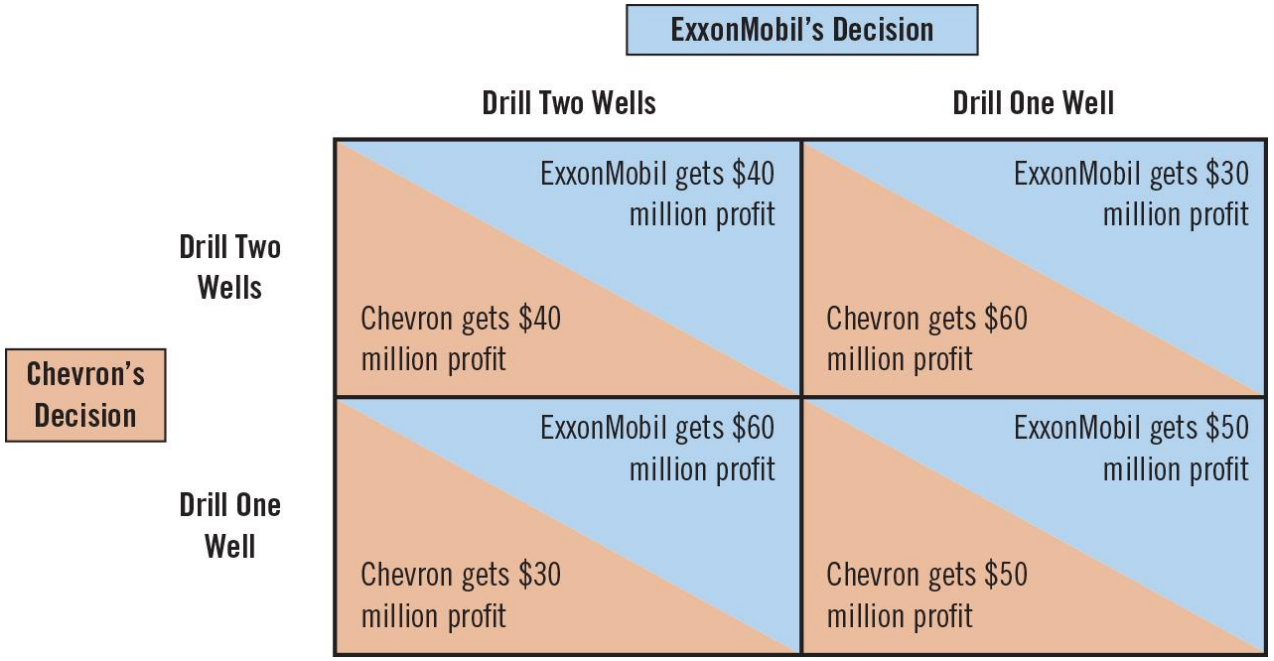


Figure 4 A Common-Resources Game

- When firms pump oil from a common pool, each firm's profit depends on both the number of wells it drills and the number of wells drilled by the other firm.



Why People Sometimes Cooperate

- Cartels sometimes manage to maintain collusive arrangements, despite the incentive for members to defect
- In a game of repeated prisoners' dilemma, the players may well be able to reach the cooperative outcome

18-3

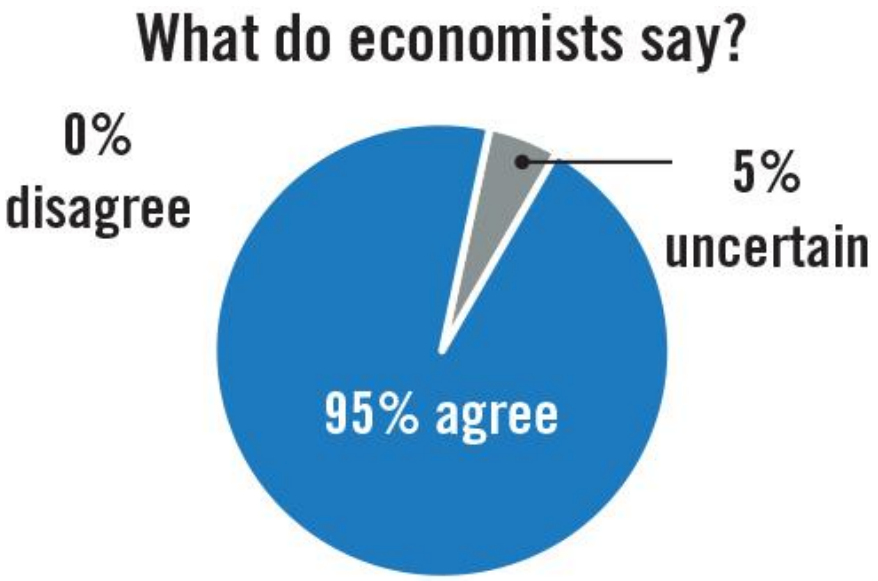
Public Policy toward Oligopolies

Restraint of Trade and the Antitrust Laws

- Governments can sometimes improve market outcomes
- Policymakers
  - Try to induce firms in an oligopoly to compete rather than cooperate
  - Move the allocation of resources closer to the social optimum

Ask the Experts: Antitrust in the Digital Economy

"Google's dominance of the market for internet search arose mainly from a combination of economies of scale and a quality algorithm."



Source: IGM Economic Experts Panel, November 3, 2020, December 22, 2020..

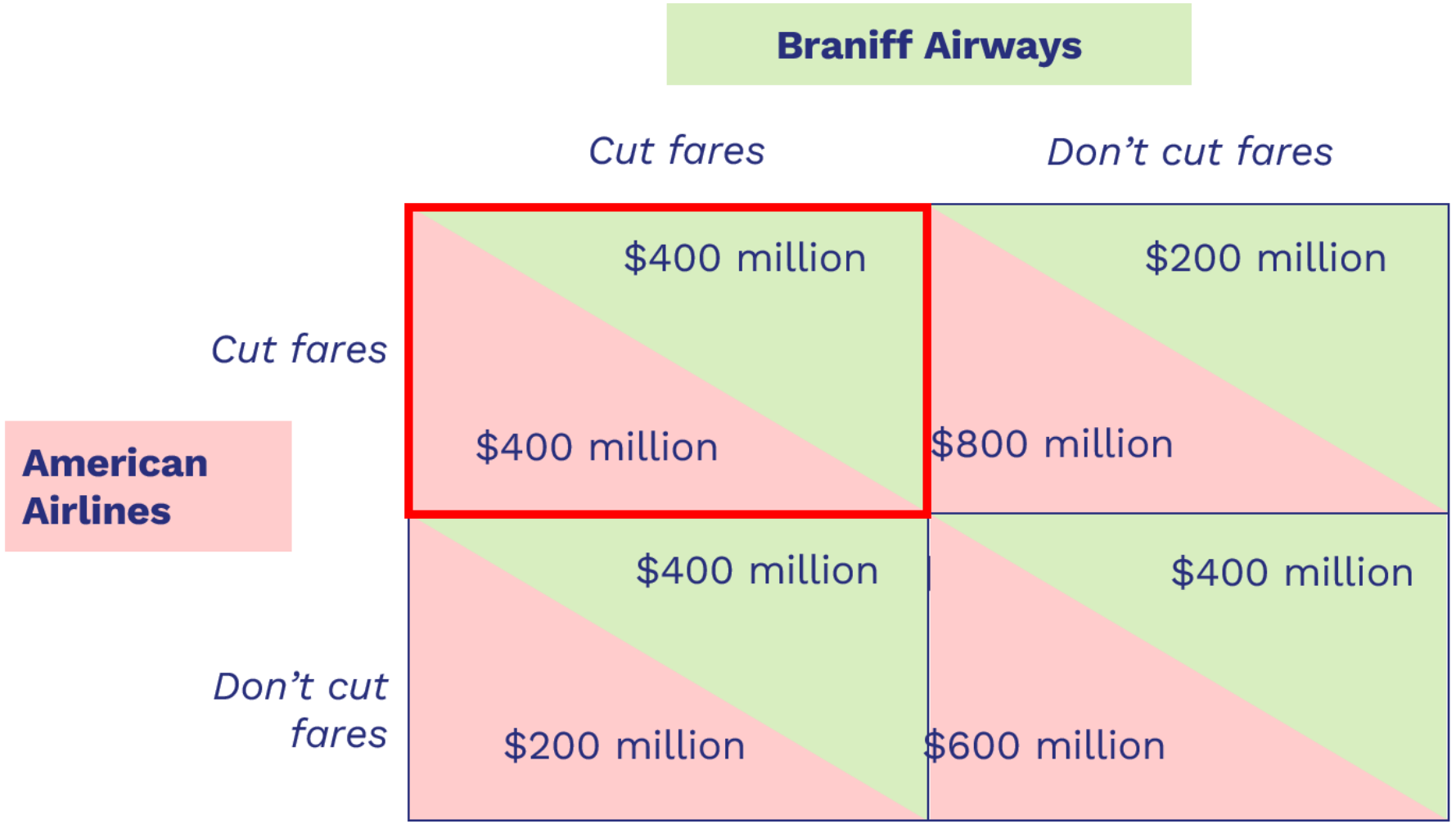
Antitrust Laws

- The Sherman Antitrust Act, 1890
  - Elevated agreements among oligopolists from an unenforceable contract to a criminal conspiracy
- The Clayton Act, 1914
  - Further strengthened the antitrust laws
  - Used to prevent mergers
  - Used to prevent oligopolists from colluding

Active Learning 3: The Airline Fare Wars Game

- The players: American Airlines and Braniff Airways
- The choice: Cut fares by 50% or leave fares alone
  - If both airlines cut fares, each airline's profit = $400 million
  - If neither airline cuts fares, each airline's profit = $600 million
  - If only one airline cuts its fares, its profit = $800 million; the other airline's profit = $200 million
- Draw the payoff matrix and find the Nash equilibrium

Active Learning 3: Answers



Controversies over Antitrust Policy

- Used to condemn some business practices whose effects are not obvious
  - Resale price maintenance
  - Predatory pricing
  - Bundling

Resale Price Maintenance

- Resale price maintenance (fair trade)
  - Require retailers to charge customers a given price
  - Might seem anticompetitive
  - Prevents the retailers from competing on price
- Defenders:
  - Not aimed at reducing competition
  - Legitimate goal: some retailers offer service

Predatory Pricing

- Predatory pricing
  - Charge prices that are too low
  - Anticompetitive
  - Price cuts may be intended to drive other firms out of the market
- Skeptics
  - Predatory pricing — not a profitable strategy
  - Price war — to drive out a rival' prices are driven below cost

Bundling

- Bundling
  - Offer two goods together at a single price
  - Expand market power
- Skeptics
  - Cannot increase market power by binding two goods together
  - Form of price discrimination
  - Bundling may increase profit

18-4

Conclusion

Conclusion

- Oligopolies would like to act like monopolies, but self-interest drives them toward competition
- Where oligopolies end up on this spectrum depends on the number of firms in the oligopoly and the extent to which the firms cooperate
- Policymakers regulate the behavior of oligopolists through the antitrust laws
- The application of these laws can be controversial because some behavior that can appear to reduce competition may have legitimate business purposes

Think-Pair-Share Activity

New on campus in a small town, your best friend, Elijah, is amazed that both grocery stores in town are open 24 hours. He says “This is a great idea! Staying open all the time must mean that both stores make lots of profit!”

A. Since there are only two grocery stores in town, is it likely they make “lots of profit” by staying open 24 hours?

B. Can you use prisoners’ dilemma to explain why the stores are open 24 hours a day?

Self-Assessment

- What kinds of behavior do the antitrust laws prohibit?

Summary

Click the link to review the objectives for this presentation.

Link to Objectives