**Key Concepts**

**Market Intervention**
- **Regulation** consists of rules administered by a government agency to that determine prices, product standards and types, and conditions for entry into the market.
- **Antitrust law** regulates and prohibits certain kinds of market behavior.

**Economic Theory of Regulation**
Both consumers and producers demand regulation that will be in their interest.
- Consumers’ demand for regulation increases when consumer surplus per buyer increases and the number of buyers increases.
- Producers’ demand for regulation increases when producer surplus per seller increases and the number of firms increases.

Regulation is supplied by politicians and bureaucrats. The supply increases in the consumer or producer surplus from the regulation increases and when the number of voters who benefit and know that they have benefited from the regulation increases.

In political equilibrium, no interest group presses for changes in existing regulations. There are two theories of the political equilibrium:
- **Public interest theory** — predicts that regulation maximizes total surplus, that is, attains efficiency.
- **Capture theory** — predicts that regulation maximizes producer surplus.

**Regulation and Deregulation**
From 1887, when the first federal regulatory agency was formed until 1977, regulation expanded until about one-quarter of the economy was regulated. Since then, there has been gradual deregulation. Both natural monopolies and cartels are regulated.
- **Natural monopoly** — when one firm can supply the market at lower cost than two or more firms. As illustrated in Figure 17.1, this definition means that the firm’s ATC curve slopes downward until it is beyond the demand curve.

---

**Figure 17.1**
A Natural Monopoly

If unregulated, the firm produces \( Q_{m0} \) and charges \( P_{m0} \). Two methods of regulating a natural monopoly are:
- **Marginal cost pricing rule** — sets the price equal
to marginal cost. In Figure 17.1 the price would be \( P_{mc} \) and the quantity produced \( Q_{mc} \). This policy maximizes total surplus, but the firm incurs an economic loss.

**Average cost pricing rule** — sets the price equal to average total cost. In Figure 17.1, the price would be \( P_{atc} \) and the quantity produced \( Q_{atc} \). A deadweight loss is created, but the firm does not suffer an economic loss.

Methods used to regulate natural monopolies include rate of return and incentive regulation:

- **Rate of return regulation** — sets the price at a level that lets the company earn a specified target rate of return on its capital. The firm has an incentive to inflate its costs as well as use more capital because higher costs are passed along to the consumers by the regulator in the form of a higher price and using more capital means the firm’s profit is larger.

- **Price cap regulation** — sets a price ceiling. This type of regulation gives the firm an incentive to operate efficiently. It lowers the price and increases output. **Earnings sharing regulation** is a type of price cap regulation under which the firm is required to share its profits with its customers if the profit rises above a target level.

The evidence about whether natural monopoly regulation is best characterized by the public interest theory or the capture theory is mixed.

**Cartel** — a collusive agreement among firms designed to boost the price and increase their profit. Public interest theory predicts that oligopolies are regulated to ensure a competitive outcome; the capture theory predicts that regulation will help the producer. Although the evidence is mixed, it tends to favor the capture theory.

Deregulation began in the 1970s. The transportation industry was deregulated in response to higher energy prices. The communications industry was deregulated because of improvements in technology that ended some natural monopolies by reducing the cost of telecommunications so that two or more firms could compete.

### Antitrust Law

- **Sherman Act** — the first federal antitrust law, passed in 1890, prohibited restrictions of trade and monopolization.

- **Clayton Act** — passed in 1914, prohibited certain business practices only if they substantially lessen competition or create a monopoly. The courts have ruled that price fixing is *per se* illegal. The rule of reason was the U.S. Supreme Court’s initial interpretation that only unreasonable acts violated the Sherman Act; eventually this rule was replaced by a view that some acts are illegal even if they are “reasonable.”

Merger guidelines used by the Federal Trade Commission include:

- If the initial Herfindahl-Hirschman Index (HHI) is less than 1,000, a merger will be unopposed.
- If the initial HHI is between 1,000 and 1,800, a merger that raises the HHI by 100 or more will be contested.
- If the initial HHI is larger than 1,800, a merger that increases the HHI by 50 or more will be challenged.

In general, antitrust law seems to have moved the economy toward the goal of efficiency.
If one firm produced 100 units of output, the total cost is (100)($10) = $1,000. To have two firms produce 100 units, say each produces 50 units. Then, each firm’s total cost is (50)($15) = $750. The total cost of having 100 units produced by these two firms is $750 + $750, or $1,500. So, the total cost of having two firms produce 100 units of output — $1,500 — exceeds the total cost of having only one firm produce 100 units. Because one company can supply the market at a lower cost than two or more firms, a tension is created from society’s point of view. Having one firm in the industry and thereby reducing costs is good; the lower the cost of producing a product, the more resources available to produce other goods and services. However, monopolies restrict the level of their output in order to raise their prices and earn economic profits. The restriction of output creates economic inefficiency and harms society. The result from these countervailing forces is regulation: The government grants the right to one firm to have a monopoly, but in exchange the government regulates it. In this way, society attempts to gain the advantage of lower costs and sidestep the disadvantage of monopoly behavior. The capture theory of regulation, however, reminds us that this effort might not be successful.

Questions

True/False Questions

Market Intervention

1. Currently, about one-half of the nation’s output is produced by regulated industries.

2. Antitrust law is aimed at competitive industries.

Economic Theory of Regulation

3. The more producer surplus per seller, the greater are producers’ demands for regulation.

4. The public interest theory of regulation holds that regulations aim to attain efficiency.

5. According to the capture theory, government regulatory agencies eventually capture the profits of the industries they regulate.

6. According to the public interest theory of regulation, government regulation moves the economy closer to efficiency.

Regulation and Deregulation

7. For a natural monopoly, the ATC curve slopes upward when it crosses the demand curve.

8. A natural monopoly regulated using a marginal cost pricing rule might need to be subsidized in order to avoid an economic loss.

9. A natural monopoly regulated according to an average cost pricing rule produces an inefficient level of output.

10. Rate of return regulation gives producers a strong incentive to minimize their costs.

11. Evidence about cartel deregulation strongly supports the public interest theory of regulation.

Antitrust Law

12. The Sherman Act prohibits conspiracies that restrict interstate trade.

13. The rule of reason was a U.S. Supreme Court interpretation of the Sherman Act that said only “unreasonable” restraints of trade or other actions violated the Sherman Act.

14. The only situation in which price fixing is legal is if it is necessary to prevent a firm from going bankrupt.

15. The larger the initial Herfindahl-Hirschman Index, the more likely the Federal Trade Commission is to allow a merger to take place.

Multiple Choice Questions

Market Intervention

1. The main thrust of antitrust law is to
   a. prohibit monopoly practices that raise the price of a good and restrict the amount that firms produce.
   b. ensure that producers can earn the maximum possible profit.
   c. foster the role of deregulation.
   d. help firms overcome the constraints on their behavior imposed by regulations.
Economic Theory of Regulation

2. Economic regulation is supplied by
   a. monopolists.
   b. labor unions.
   c. voters.
   d. politicians and bureaucrats.

3. A large demand for regulation by consumers will result when there is a
   a. small consumer surplus per buyer.
   b. large consumer surplus per buyer.
   c. small number of buyers.
   d. large producer surplus per firm.

4. The public interest theory of regulation predicts that the political process seeks to maximize
   a. producer surplus.
   b. consumer surplus.
   c. deadweight loss.
   d. total surplus.

5. The capture theory of intervention predicts that government regulation will maximize
   a. producer surplus.
   b. consumer surplus.
   c. deadweight loss.
   d. total surplus.

Regulation and Deregulation

6. The history of regulation in the economy shows that from 1880 the extent of regulation generally
   a. increased until about 1977 and since then deregulation has occurred.
   b. increased steadily.
   c. decreased until about 1977 and since then has increased.
   d. none of the above.

7. An industry in which one firm can serve the market at a lower total cost than two or more firms is known as a(n)
   a. duopoly.
   b. oligopoly.
   c. deadweight loss industry.
   d. natural monopoly.

8. In a large city, which of the following is most likely to be a natural monopoly?
   a. Burger King, a seller of hamburgers
   b. Cox Cable, the only company supplying cable TV
   c. Nike, a maker of shoes sold in the city
   d. JCPenney, a large department store

Use Figure 17.2 for the next four questions.

FIGURE 17.2
Multiple Choice Questions 9, 10, 11, 12

9. In Figure 17.2 total surplus is at its maximum when the quantity is
   a. $Q_1$ and the price is $P_4$.
   b. $Q_1$ and the price is $P_3$.
   c. $Q_2$ and the price is $P_2$.
   d. $Q_3$ and the price is $P_1$.

10. In Figure 17.2 profit is at its maximum when the quantity is
    a. $Q_1$ and the price is $P_4$.
    b. $Q_1$ and the price is $P_3$.
    c. $Q_2$ and the price is $P_2$.
    d. $Q_3$ and the price is $P_1$. 
11. If the natural monopoly in Figure 17.2 is unregulated and operates as a private profit-maximizer, what output will it produce?
   a. 0, because the firm suffers an economic loss when \( MR = MC \).
   b. \( Q_1 \)
   c. \( Q_2 \)
   d. \( Q_3 \)

12. If a regulatory agency sets a price just sufficient for the firm to earn a normal profit, what output will it produce?
   a. 0, because the firm suffers an economic loss when \( MR = MC \).
   b. \( Q_1 \)
   c. \( Q_2 \)
   d. \( Q_3 \)

13. If a natural monopoly is required to set its price equal to its marginal cost,
   a. the company earns an economic profit.
   b. the company incurs an economic loss.
   c. competitors will enter the market.
   d. the company will produce more than the efficient level of output.

14. When will the price charged by a natural monopoly be the lowest?
   a. When the monopoly is left unregulated.
   b. When the monopoly is regulated according to an average cost pricing rule.
   c. When the monopoly is regulated according to a marginal cost pricing rule.
   d. When the monopoly is regulated according to a deadweight loss pricing rule.

15. When will the output produced by a natural monopoly be the largest?
   a. When the monopoly is left unregulated.
   b. When the monopoly is regulated according to an average cost pricing rule.
   c. When the monopoly is regulated according to a marginal cost pricing rule.
   d. When the monopoly is regulated according to a deadweight loss pricing rule.

16. A natural monopoly under rate of return regulation has an incentive to
   a. inflate its costs.
   b. produce more than the efficient quantity of output.
   c. charge a price equal to marginal cost.
   d. maximize consumer surplus.

17. Price cap regulation give a natural monopoly the incentive to
   a. behave more like an unregulated monopoly by raising its price to maximize its profit.
   b. raise its price to the maximum amount consumers will pay.
   c. inflate its costs.
   d. reduce its costs.

18. Regulation that sets a price cap and then requires that the regulated firm share with its customers any profit above a target level is called
   a. rate of return regulation.
   b. average cost pricing regulation.
   c. marginal cost pricing regulation.
   d. earnings sharing regulation.

19. When airlines and trucking were deregulated, the evidence shows that consumer surplus ____ and total surplus ____.
   a. rose; rose
   b. rose; fell
   c. fell; rose
   d. fell; fell

Antitrust Law

20. Which of the following statements about the Sherman Act is correct?
   a. The Sherman Act was the second federal antitrust law.
   b. The Sherman act legalized monopolization if the company behaved “reasonably” once it became a monopoly.
   c. The Sherman Act outlawed natural monopolies.
   d. The Sherman Act made restriction of interstate trade illegal.
21. Which of the following statements about the “rule of reason” is FALSE?
   a. The U.S. Supreme Court announced the rule of reason as a ruling.
   b. The rule of reason states that only unreasonable restraints of trade violate the Sherman Act.
   c. The rule of reason remains in effect today.
   d. None of the above because they are all true statements.

22. All of the following are prohibited only if they substantially lessen competition EXCEPT
   a. price discrimination.
   b. price fixing.
   c. contracts that prevent a firm from selling competing items (exclusive dealing).
   d. acquiring a competitor’s shares or assets.

23. Microsoft
   a. was found guilty of violating antitrust laws and was forced to give up some of its businesses.
   b. was allowed to merge even though the HHI in the industry exceeded 1,800.
   c. admitted it was a monopoly and was split into two companies.
   d. None of the above.

24. The Herfindahl-Hirschman index (HHI) in an industry is 900. A merger is proposed that will raise the HHI to 980. In this case, the
   a. Sherman Act will prohibit the merger.
   b. Federal Trade Commission will challenge the merger.
   c. Federal Trade Commission will not challenge the merger.
   d. rule of reason will prevent the merger if it is a merger among competitors.

■ Short Answer Questions

1. a. Describe the demand for and the supply of regulation.
   b. What is a political equilibrium? How is it similar to the equilibrium that occurs in the market for a good?
   c. What are two possible political equilibriums?

2. Suppose that two electric companies, Watts Up and Power to the People, can serve a residential block. The block has 10 houses on it. To serve the houses a main cable needs to be strung down the street; a main cable costs $100 to maintain. Then small feeder cables need to be extended to each house; these cost $10 to maintain per house.
   a. Suppose that Watts Up and Power to the People split the market so that each services 5 houses on the street. If both companies string their own main cables and then each extends feeder wires to its customers, what is Watts Up’s total cost of supplying power to its 5 customers? Watts Up’s average total cost? What are Power to the People’s total and average total costs?
   b. When Watts Up and Power to the People split the market evenly, as in part (a), what is the total cost to society of serving these 10 families?
   c. Suppose that only one company — say, Watts Up — supplies power to all the residents of the street. So there is one main cable and 10 feeder wires. Now, what is Watts Up’s total cost of supplying power to the street’s residents? What is its average total cost?
   d. If Watts Up has the monopoly in serving the customers on this street, what are the total costs incurred by society to serve these 10 families?
   e. Is this industry a natural monopoly? Explain your answer.

3. The last question reflected a social perspective when exploring the situation of a natural monopoly supplying power to 10 residents on a street. Let’s now explore the situation from the industry’s vantage point.
   a. If both companies string their own main cables and then extend feeder wires to 5 houses each, what is each company’s average total cost of servicing a house?
   b. Suppose that Watts Up gains a customer on the street so that it now serves 6 houses and Power to the People serves only 4. What is Watts Up’s average total cost? Power to the People’s average total cost?
   c. After Watts Up gains its customer, if Watts Up charges its customers a price between $26.67 and $35, does Watts Up earn an economic profit? What is the minimum price that Power to the People can charge and not incur an economic loss? Presuming that the residents on the street can switch power companies, what is likely to happen?
4. In Figure 17.3 draw a diagram illustrating a natural monopoly. If the company is regulated under an average cost pricing rule, show the level of production, the price, and the deadweight loss.

5. a. How is rate of return regulation of a natural monopoly implemented? What incentive do companies have to reduce their costs?
   b. What is price cap regulation? With this type of regulation, what incentive do companies have to reduce their costs?

6. We’ve met Igor in some past chapters. Igor has quit his job with his old master and now works for a new master: the Federal Trade Commission. Igor is overseeing a merger in the snake market. Currently, the snake market comprises 5 firms of equal size; that is, each firm has a 20 percent market share. Two firms are considering a merger so that after the merger the market will have 4 firms, one with a 40 percent share and 3 with 20 percent shares. Will Igor challenge the merger? Why or why not?

8. Igor’s new masters were pleased with his work in the snake market, so they put him to work regulating the bat industry. The bat industry has three firms in it. Figures 17.4 and 17.5 are identical: both show the market demand for bats, the associated marginal revenue curve for the market demand, and the horizontal sum of the marginal cost curves for the three firms in the bat industry.
   a. Suppose that Igor regulates the bat industry in the public interest. In Figure 17.4 indicate the equilibrium quantity and price of a bat. Show the consumer surplus, the producer surplus, and the total surplus.
   b. Now suppose that the bat industry is able to capture Igor. After being captured, Igor regulates the industry so that the bat producers can earn the maximum possible industrywide profit. In Figure 17.5 show the equilibrium number of bats and their price. Also show the consumer surplus, the producer surplus, and indicate the area that is the deadweight loss.
You’re the Teacher

1. “I just don’t get how a natural monopoly happens. I mean, why are some firms natural monopolies and not others? Is it because the government is regulating them that they are natural monopolies?” Your friend is struggling and is confused. Although it would be nice if your friend could sometimes help you, save your friend’s grade once again by explaining the origins of a natural monopoly. Be sure to address the (erroneous) idea that it is government regulation that makes an industry a natural monopoly.

2. “I think our teacher sometimes says that efficiency means that helping someone without hurting someone else is impossible. I seem to remember this comment from our book. But does this mean that when there is inefficiency, we can take actions that help everyone?” This student is close to seeing an important point. If you already see it, explain it; if you don’t, sneak a look at the answer...
Answers

True/False Answers

Market Intervention
1. F At its maximum in 1977, about one fourth of
the nation’s output was produced by regulated
industries. Since 1977, that fraction has fallen
substantially.
2. F Antitrust law is aimed at monopolistic and oli-
gopolistic industries.

Economic Theory of Regulation
3. T The more producer surplus per seller, the greater
the payoff to an individual producer if regulation
is shaped to benefit producers’ interests.
4. T The public interest theory stands in contrast to
the capture theory.
5. F The capture theory is that the industry captures
the regulator, so the regulator allows the industry
to charge (near) the monopoly price and pro-
duce (near) the monopoly level of output.
6. T If regulation follows the public interest theory, it
will increase economic efficiency, but if the
industry captures its regulator, regulation can
create inefficiency.

Regulation and Deregulation
7. F The ATC curve slopes downward until it crosses
the demand curve.
8. T The price set under a marginal cost pricing rule
is less than the ATC, so the firm incurs an eco-
monic loss.
9. T The natural monopoly produces the efficient
level of output when it is regulated to produce so
that its price equals its marginal cost.
10. F If the costs rise, the producer knows that the
regulators will allow the company to hike its
price to offset the higher costs.
11. F The evidence is mixed, but it tends to support
the capture theory of regulation.

Antitrust Law
12. T Conspiracies that restrain trade are outlawed in
the first section of the Sherman Act.
13. T This question essentially presents the definition
of the rule of reason.
14. F Price fixing is automatically and always — per se
— illegal.
15. F The lower the initial HHI, the more likely the
Federal Trade Commission will not challenge a
merger.

Multiple Choice Answers

Market Intervention
1. a Antitrust laws generally try to make the econ-
omy more competitive and closer to the efficient
level of production.

Economic Theory of Regulation
2. d Consumers and producers demand regulation;
politicians and bureaucrats supply it.
3. b Large consumer surplus per buyer increases the
potential payoff if buyers can sway regulators to
produce regulations in their favor.
4. d Total surplus is the sum of consumer surplus
plus producer surplus; when total surplus is as
large as possible, efficiency is achieved.
5. a By capturing the regulators, producers are able
to promote their own interests.

Regulation and Deregulation
6. a Deregulation started in 1977 and has continued
in recent years.
7. d The question presents the defining characteristic
of an industry that is a natural monopoly.
8. b Most locales have only one cable TV supplier
because cable TV is currently close to being a
natural monopoly.
9. d Total surplus is maximized at the level of output
where the MC curve crosses the demand curve
because at that point there is no deadweight loss.
10. a This is the monopoly level of output and price,
which is the combination of output and price
that maximizes economic profit.
11. b Left alone, it will operate as a monopoly and
maximize its profit.
12. c Earning a normal profit means that the company
produces so that \( P = ATC \), which means it pro-
duces \( Q_2 \) and charges \( P_2 \). This price–output
combination is exactly what the company would
do under an average cost pricing rule.
13. b Because the company suffers an economic loss, it will need to be subsidized, or be allowed to price discriminate in order to earn a normal profit.

14. c A marginal cost pricing rule results in the largest level of output. To induce demanders to buy the largest amount of output, the price must be the lowest.

15. c When regulated according to a marginal cost pricing rule, the natural monopoly produces the efficient amount of output.

16. a This incentive accounts for the recent adoption of incentive regulation methods in many telecommunications markets.

17. d By reducing its costs, regulators hope to make the firm more efficient.

18. d Price cap regulations and earning sharing regulations attempt to sharpen regulated firms’ incentives to cut costs and have become more common in the telecommunications industry.

19. a Because the total surplus increased, economic efficiency increased when these industries were deregulated.

Antitrust Law

20. d The Sherman Act was the first federal antitrust law and part of it outlawed restriction of interstate trade.

21. c The U.S. Supreme Court backed away from the rule of reason in its decision in the Alcoa case. There Alcoa was found guilty simply because it was “too big.”

22. b Price fixing is always illegal. If proved, there is no acceptable defense.

23. d In past years, the Justice Department has imposed some sanctions on Microsoft and might impose more in the future.

24. c Whenever the initial HHI is below 1,000, the U.S. Department of Justice will not contest a merger in the industry.

Answers to Short Answer Problems

1. a. The demand for regulation comes from consumers and producers, who both demand regulation that will be in their interest. Further, the demand for regulation on the part of consumers increases with the amount of consumer surplus per buyer and with the number of buyers. The demand for regulation from producers is affected by similar factors: It increases with the amount of producer surplus per producer and the number of producers.

b. The supply of regulation comes from politicians and bureaucrats. The supply increases when the amount of consumer or producer surplus increases and when the number of people who know they benefit from the regulation increases.

b. A political equilibrium occurs when no one finds it worthwhile to change his or her behavior. The political equilibrium is analogous to the equilibrium in a market insofar as once the economy reaches the equilibrium, unless something else changes, the equilibrium situation will persist. In a market equilibrium, there is a market price and quantity. So, too, in a political equilibrium there is a quantity of regulation.

c. The public interest theory and the capture theory describe the two possible equilibriums. In the public interest theory, the equilibrium is one that aims the economy toward efficiency by maximizing the total surplus (the sum of consumer surplus plus producer surplus) in the market. In the capture theory, the regulation supports the interests of producers. In this case, the demand for specific types of regulations by producers exceeds the demand for other types from consumers and so the supply of regulation goes to meet producers’ desires. This type of regulation can result in an inefficient level of production of the product.

2. a. Watts Up strings a main cable, which costs $100, and provides 5 feeder wires, at a cost of $10 each. So Watts Up’s total cost is $150. It supplies 5 families, so its average total cost is $150 divided by 5 customers, or $30. Power to the People’s total cost and average total cost are the same.

b. Watts Up incurs a total cost of $150; Power to the People has the same total cost. Hence the total cost to society is $300.

c. If only Watts Up supplies power, it strings a main cable ($100) and 10 feeder wires ($10 each) for a total cost of $200. Watts Up’s average total cost is $20 per customer.

d. With only one company supplying power, the total cost incurred by society is $200, the company’s total cost.
e. Yes, this industry is a natural monopoly because the total cost of having one firm supply the market is less than the total cost of two (or more) firms. Another way to see that this industry is a natural monopoly is by noting that the average total cost with 10 customers is less than that with 5 customers. The average total cost declines until the entire market is served, which means that this industry is a natural monopoly.

3. a. As worked out in part (a) of question 2, the average total cost when 5 houses are served is $30.

b. After Watts Up gains a customer, its total cost is $160: $100 for the main cable and $60 for 6 feeder wires. Its average total cost is $160/6, or $26.67 per customer. Power to the People’s total cost is now $140, or $100 for the main cable and $40 for the 4 feeder wires. Hence Power to the People’s average total cost is $140/4, or $35 per customer.

c. For any price greater than $26.67, Watts Up will earn an economic profit because its price will exceed its average total cost. Hence for prices between $26.67 and $35, Watts Up earns an economic profit. Power to the People must charge a price no less than $35 (so that its price is not less than its average total cost) to avoid an economic loss. So Watts Up can charge a lower price than Power to the People and still earn an economic profit. Customers are likely to switch from Power to the People, where they pay a higher price, to Watts Up, where they pay a lower price. As this switching occurs, Watts Up’s ATC continues to fall and Power to the People’s ATC rises. The ultimate result is likely to be that Watts Up becomes the monopoly supplier of electricity on this street. A key point is how the industry (naturally) evolves into a monopoly.

4. Figure 17.6 shows a natural monopoly. The distinguishing characteristic of a natural monopoly is that its ATC curve falls until after it crosses the demand curve. Under an average cost pricing rule, the company must set its price equal to its average cost, which means that the price that will be charged is $P_{\text{atc}}$ and the level of output is $Q_{\text{atc}}$. (To buy $Q_{\text{atc}}$, consumers are willing to pay $P_{\text{atc}}$, and this price equals the average cost of producing output $Q_{\text{atc}}$.) The deadweight loss equals the loss of consumer and producer surplus on the difference between the efficient level of output $Q_{\text{eff}}$ — where the demand (the marginal social benefit) and the marginal cost (the marginal social cost) curves cross — and the amount of output actually produced, $Q_{\text{atc}}$. It is illustrated by the shaded triangle.

5. a. Rate of return regulation is related to an average total cost price rule. Regulators determine a fair rate of return on the company’s capital. This rate of return is then multiplied by the total amount of the firm’s capital to determine the total “profit” that the regulators consider fair. (If the company has, say, $10 million in capital and the rate of return is 15 percent, the total amount of “profit” is $1.5 million, $10 million times 15 percent.) This total profit is added to the firm’s other costs and the amount becomes the regulators’ “target” for the firm’s total revenue. Then, the regulators determine a price that will enable the firm to earn this amount of revenue. Companies have very little incentive to reduce their costs; if costs rise, the regulators will raise the price that the company can charge, thus allowing the company to recoup the increased costs. Similarly, companies have an incentive to use more capital than necessary because the regulators will allow increase the company’s total return when its capital increases.

b. Price cap regulation sets a price ceiling and then allows the company to charge whatever price it wishes as long as the price remains under the ceiling. Typically there is an earnings sharing...
provision so that if the company’s profits rise above a certain level, they must be shared with consumers by reducing the price the company charges. These methods give the company more incentive to control its costs because, if the business can lower its costs and hence increase its profit, the company will be allowed to keep (at least part of) the higher profit.

6. Igor’s decision whether to challenge the merger depends on the initial Herfindahl–Hirschman index (HHI) and the effect of the merger on the HHI. Before the merger, HHI = 2,000, from $20^2 + 20^2 + 20^2 + 20^2 + 20^2$. If the merger occurs, the HHI = 2,800, or $40^2 + 20^2 + 20^2 + 20^2$. This merger would increase the HHI by 800. If the initial HHI exceeds 1,800, any merger that raises it by 50 or more is contested by the Federal Trade Commission. So, Igor will challenge this merger.

7. a. Figure 17.7 shows the industry output as $Q$ and the price as $P$ when this industry is regulated in the public interest. The consumer and producer surpluses also are shown; the total surplus is the sum of the consumer surplus and the producer surplus.

b. Once Igor is captured by the industry, the industry will operate as a monopoly. That is, it will operate at the level where the industry $MC$ equals the market $MR$, so, as shown in Figure 17.8, it produces $Q_m$ and is allowed to charge $P_m$. The consumer and producer surpluses also are shown. The total surplus is, as always, the sum of the consumer surplus and the producer surplus. Comparing Figure 17.7 with Figure 17.8 shows that although producer surplus increases, the total surplus is less when the industry is able to capture its regulator. The amount by which it is less is the deadweight loss, also illustrated in Figure 17.8. As usual, the deadweight loss is made of lost consumer surplus plus lost producer surplus.
1. “If you’re confused about the origin of a natural monopoly, you might be trying to make it too hard. But I finally figured it out. Here’s the deal: A natural monopoly occurs when the technology within an industry allows one firm to serve the market at lower cost than more than one firm can. In other words, a natural monopoly just happens; if the technology makes it possible for one firm to serve the market at lower total cost than a lot of firms, this industry is a natural monopoly. I used to confuse regulation with the formation of natural monopolies. Natural monopolies are not the result of regulation. It’s just the opposite: The industries are regulated because they are natural monopolies. You see, it’s the type of technology that has been developed determines whether the industry is a natural monopoly.”

2. “Yeah, you’re right: When there is inefficiency, we can take actions that help everyone! The idea is that inefficiency means a deadweight loss. When we remove the inefficiency, we eliminate the deadweight loss. That serves as a bonus — something that we can spread around and make everyone better off.

“Look, a numerical example will make this point a lot clearer. Take some industry. Suppose that consumer surplus would be $200 and producer surplus would be $100, for a total surplus of $300 if this industry is perfectly competitive. However, suppose that this industry is a monopoly. Then consumer surplus is, say, $80 and producer surplus is $150. In this case, the total surplus is $230 and the deadweight loss (the difference between the two total surpluses) is $70.

“Now, if we broke up the monopoly and made the industry perfectly competitive, we’d get a total surplus of $300. It would include a consumer surplus of $200 (so that consumers would gain $120, the new consumer surplus of $200 minus the current consumer surplus of $80) and a producer surplus of $100 (so that producers would lose $50, the difference between the current producer surplus of $150 minus the new producer surplus of $100). But suppose that we took away, say, $75 of the gain from consumers and gave it to producers. Then consumers would still be better off because their new consumer surplus would be $125, as compared to only $80 when the industry was a monopoly. And producers would also be better off because their producer surplus would be $175 versus only $150 as a monopoly. You see, with this redistribution, both consumers and producers can be better off when the industry is perfectly competitive!

“Okay, I’ll agree that this outcome is unrealistic because we’ve assumed that we can redistribute the gain as we want. If we didn’t do any redistribution and just broke up the monopoly, consumers would gain ($120) and producers would lose ($50). But what this story shows is important anyway: Whenever there is inefficiency, it can be eliminated and everyone made better off. You know, now that I think about it, it’s my guess that this is why our teacher likes the idea of efficiency so much!”
Chapter Quiz

1. In recent years,
   a. an increasing number of industries have been regulated and none deregulated.
   b. there has been little change in the total amount of regulation.
   c. many new industries have been regulated and few industries have been deregulated.
   d. several industries have been deregulated.

2. Firms’ demand for regulation will increase when ____ rise.
   a. consumer surplus per buyer and the number of buyers
   b. total revenue per firm and the number of firms
   c. the number of buyers and the number of firms
   d. the producer surplus per firm and the number of firms

3. The public interest theory of regulation predicts that ____ will be maximized and the capture theory predicts that ____ will be maximized.
   a. total surplus; deadweight loss
   b. consumer surplus; producer surplus
   c. total surplus; producer surplus
   d. deadweight loss; total surplus

4. Today, a regulated natural monopoly includes
   a. sellers of clothing.
   b. colleges.
   c. electrical generating companies.
   d. producers of personal computers.

5. For a regulated natural monopoly, setting an average cost pricing rule
   a. maximizes total surplus.
   b. maximizes consumer surplus.
   c. maximizes producer surplus.
   d. causes the firm to earn a normal profit.

6. Rate of return regulation is often imposed on
   a. a monopolistically competitive firm.
   b. a perfectly competitive firm.
   c. an oligopoly.
   d. a natural monopoly.

7. A cartel usually is designed to ____ and it also ____.
   a. increase consumer surplus; increases producer surplus
   b. increase producer surplus; creates a deadweight loss
   c. eliminate deadweight losses; increases total surplus
   d. increase producer surplus; increases total surplus

8. The Sherman Act
   a. made the rule of reason illegal.
   b. was the nation’s first antitrust law and was passed in 1945.
   c. prohibited restrictions of trade and attempts to monopolize.
   d. None of the above.

9. Which of the following business practices, if proven to exist, will always be held to be illegal under U.S. antitrust law?
   a. Contracts that require other goods be bought from the same firm (tying arrangements).
   b. Price fixing among three or fewer firms.
   c. Contracts that prevent a firm from selling competing items (exclusive dealing).
   d. All of the above.

10. The larger the initial HHI,
    a. the more likely the government will challenge a merger in the industry.
    b. the less likely the government will challenge a merger in the industry.
    c. the more competitive the industry.
    d. None of the above.

The answers for this Chapter Quiz are on page 368