

Solutions to Quick Quizzes

Chapter 1

1. There are many possible answers.
2. There are many possible answers.
3. The three principles that describe how the economy as a whole works are: (1) a country's standard of living depends on its ability to produce goods and services; (2) prices rise when the government prints too much money; and (3) society faces a short-run trade-off between inflation and unemployment. A country's standard of living depends largely on the productivity of its workers, which in turn depends on the education of its workers and the access its workers have to the necessary tools and technology. Prices rise when the government prints too much money because more money in circulation reduces the value of money, causing inflation. Society faces a short-run trade-off between inflation and unemployment that is only temporary. Policymakers have some short-term ability to exploit this relationship using various policy instruments.

Chapter 2

1. Economics is like a science because economists devise theories, collect data, and analyze the data in an attempt to verify or refute their theories. In other words, economics is based on the scientific method.
Figure 1 shows the production possibilities frontier for a society that produces food and clothing. Point A is an efficient point (on

the frontier), point B is an inefficient point (inside the frontier), and point C is an infeasible point (outside the frontier).

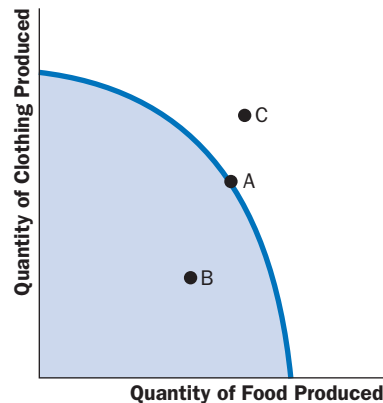


Figure 1

The effects of a drought are shown in Figure 2. The drought reduces the amount of food that can be produced, shifting the production possibilities frontier inward.

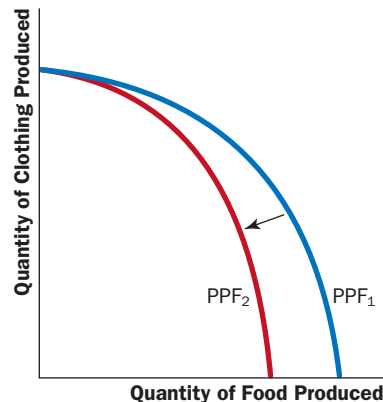


Figure 2

Microeconomics is the study of how households and firms make decisions and how they interact in markets. Macroeconomics is the study of economy-wide phenomena, including inflation, unemployment, and economic growth.

2. An example of a positive statement is "a higher price of coffee causes me to buy more tea." It is a positive statement because it is a claim that describes the world as it is. An example of a normative statement is "the government should restrain coffee prices." It is a normative statement because it is a claim that prescribes how the world should be. Many other examples are possible.

Parts of the government that regularly rely on advice from economists are the Department of the Treasury in designing tax policy, the Department of Labor in analyzing data on the employment situation, the Department of Justice in enforcing the nation's antitrust laws, the Congressional Budget Office in evaluating policy proposals, and the Federal Reserve in analyzing economic developments. Many other answers are possible.

3. Economic advisers to the president might disagree about a question of policy because of differences in scientific judgments or differences in values.

Chapter 3

1. Figure 1 shows Robinson Crusoe's production possibilities frontier

for gathering coconuts and catching fish. If Crusoe lives by himself, this frontier limits his consumption of coconuts and fish, but if he can trade with natives on the island, he will possibly be able to consume at a point outside his production possibilities frontier.

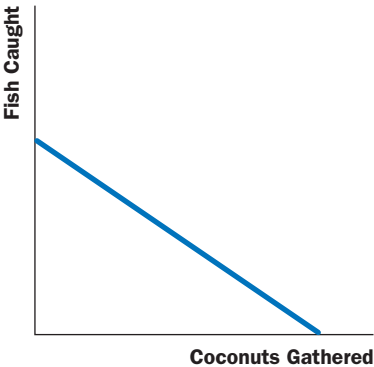


Figure 1

- Crusoe’s opportunity cost of catching one fish is 10 coconuts, since he can gather 10 coconuts in the same amount of time it takes to catch one fish. Friday’s opportunity cost of catching one fish is 15 coconuts, since he can gather 30 coconuts in the same amount of time it takes to catch two fish. Friday has an absolute advantage in catching fish, since he can catch two per hour, while Crusoe can catch only one per hour. But Crusoe has a comparative advantage in catching fish, since his opportunity cost of catching a fish is less than Friday’s.
- If the world’s fastest typist happens to be trained in brain surgery, she should hire a secretary because the secretary will give up less for each hour spent typing. Although the brain surgeon has an absolute advantage in typing, the secretary has a comparative advantage in typing because of the lower opportunity cost of typing.

Chapter 4

- A market is a group of buyers (who determine demand) and a

group of sellers (who determine supply) of a particular good or service. A perfectly competitive market is one in which there are many buyers and many sellers of an identical product so that each has a negligible impact on the market price.

- Here is an example of a monthly demand schedule for pizza:

Price of Pizza Slice	Number of Pizza Slices Demanded
\$0.00	10
0.25	9
0.50	8
0.75	7
1.00	6
1.25	5
1.50	4
1.75	3
2.00	2
2.25	1
2.50	0

The demand curve is graphed in Figure 1.

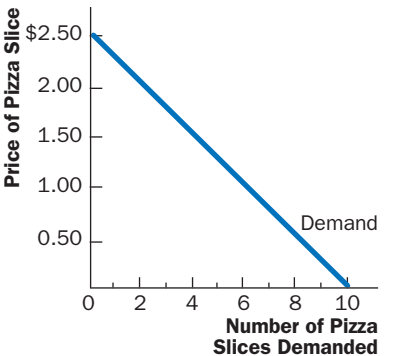


Figure 1

Examples of things that would shift the demand curve include changes in income, prices of related goods like soda or hot dogs, tastes, expectations about future income or prices, and the number of buyers.

A change in the price of pizza would not shift this demand curve; it would only lead to a movement from one point to

another along the same demand curve.

- Here is an example of a monthly supply schedule for pizza:

Price of Pizza Slice	Number of Pizza Slices Supplied
\$0.00	0
0.25	100
0.50	200
0.75	300
1.00	400
1.25	500
1.50	600
1.75	700
2.00	800
2.25	900
2.50	1000

The supply curve is graphed in Figure 2.

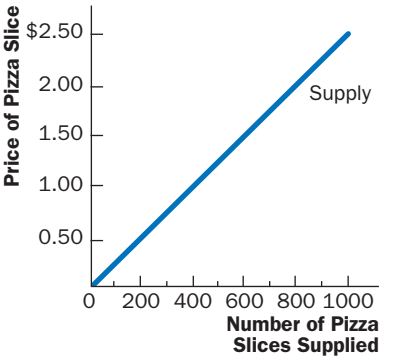


Figure 2

Examples of things that would shift the supply curve include changes in prices of inputs like tomato sauce and cheese, changes in technology like more efficient pizza ovens or automatic dough makers, changes in expectations about the future price of pizza, or a change in the number of sellers.

A change in the price of pizza would not shift this supply curve; it would only lead to a movement from one point to another along the same supply curve.

- If the price of tomatoes rises, the supply curve for pizza shifts to the left because there has been an increase in the price of an input

into pizza production, but there is no shift in demand. The shift to the left of the supply curve causes the equilibrium price to rise and the equilibrium quantity to decline, as Figure 3 shows.

If the price of hamburgers falls, the demand curve for pizza shifts to the left because the lower price of hamburgers will lead consumers to buy more hamburgers and fewer pizzas, but there is no shift in supply. The shift to the left of the demand curve causes the equilibrium price to fall and the equilibrium quantity to decline, as Figure 4 shows.

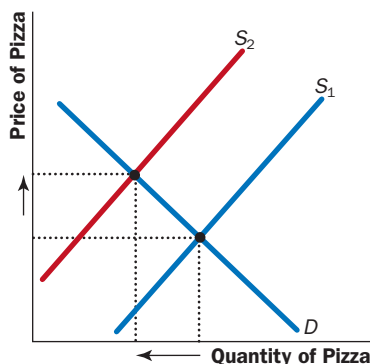


Figure 3

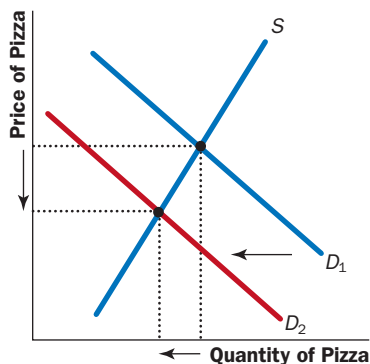


Figure 4

Chapter 5

1. The price elasticity of demand is a measure of how much the quantity demanded of a good responds to a change in the price of that good, computed as the percentage change in quantity demanded

divided by the percentage change in price.

When demand is inelastic (a price elasticity less than 1), a price increase raises total revenue, and a price decrease reduces total revenue. When demand is elastic (a price elasticity greater than 1), a price increase reduces total revenue, and a price decrease increases total revenue. When demand is unit elastic (a price elasticity equal to 1), a change in price does not affect total revenue.

2. The price elasticity of supply is a measure of how much the quantity supplied of a good responds to a change in the price of that good, computed as the percentage change in quantity supplied divided by the percentage change in price.

The price elasticity of supply might be different in the long run than in the short run because over short periods of time, firms cannot easily change the sizes of their factories to make more or less of a good. Thus, in the short run, the quantity supplied is not very responsive to the price. However, over longer periods, firms can build new factories, expand existing factories, close old factories, or they can enter or exit a market. So, in the long run, the quantity supplied can respond substantially to a change in price.

3. A drought that destroys half of all farm crops could be good for farmers (at least those unaffected by the drought) if the demand for the crops is inelastic. The shift to the left of the supply curve leads to a price increase that will raise total revenue if the price elasticity of demand is less than 1.

No one farmer would have an incentive to destroy his crops in the absence of a drought because he takes the market price as given. Only if all farmers destroyed a portion of their crops together, for example through a government program, would this plan work to make farmers better off.

Chapter 6

1. A price ceiling is a legal maximum on the price at which a good can be sold. Examples of price ceilings include rent controls, price controls on gasoline in the 1970s, and price ceilings on water during a drought. A price floor is a legal minimum on the price at which a good can be sold. Examples of price floors include the minimum wage and farm price supports. A price ceiling leads to a shortage, if the ceiling is binding, because suppliers will not produce enough goods to meet demand. A price floor leads to a surplus, if the floor is binding, because suppliers produce more goods than are demanded.
2. With no tax, as shown in Figure 1, the demand curve is D_1 and the supply curve is S . The equilibrium price is P_1 and the equilibrium quantity is Q_1 . If the tax is imposed on car buyers, the demand curve shifts downward by the amount of the tax (\$1,000) to D_2 . The downward shift in the demand curve leads to a decline in the price received by sellers to P_2 and a decline in the equilibrium quantity to Q_2 . The price received by sellers declines by $P_1 - P_2$, shown in the figure as ΔP_S . Buyers pay a total of $P_2 + \$1,000$, an increase in what they pay of $(P_2 + \$1,000) - P_1$, shown in the figure as ΔP_B .

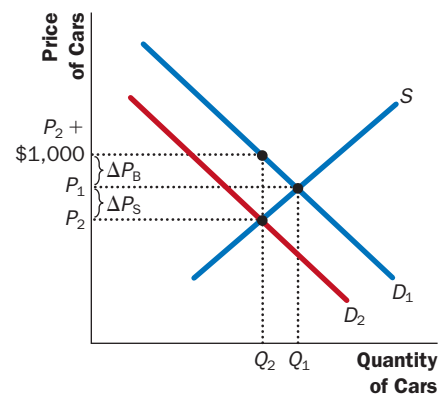


Figure 1

If the tax is imposed on car sellers, as shown in Figure 2, the supply curve shifts upward by the amount of the tax (\$1,000) to S_2 . The upward shift in the supply curve leads to a rise in the price paid by buyers to P_2 and a decline in the equilibrium quantity to Q_2 . The price paid by buyers increases by $P_2 - P_1$, shown in the figure as ΔP_B . Sellers receive $P_2 - 1,000$, a decrease in what they receive by $P_1 - (P_2 - \$1,000)$, shown in the figure as ΔP_S .

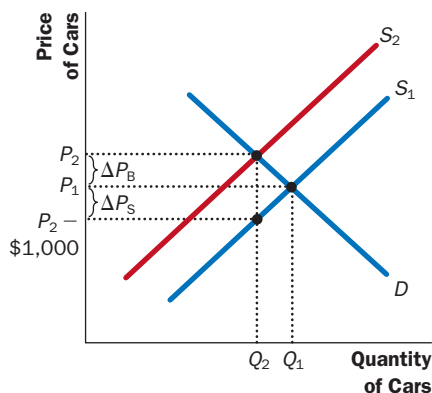


Figure 2

Chapter 7

- Figure 1 shows the demand curve for turkey. The price of turkey is P_1 and the consumer surplus that results from that price is denoted CS. Consumer surplus is the amount a buyer is willing to pay for a good minus the amount the buyer actually pays for it. It measures the benefit to buyers of participating in a market.

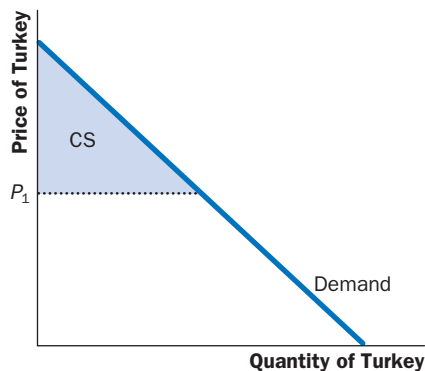


Figure 1

- Figure 2 shows the supply curve for turkey. The price of turkey is P_1 and the producer surplus that results from that price is denoted PS. Producer surplus is the amount sellers are paid for a good minus the sellers' cost of providing it (measured by the supply curve). It measures the benefit to sellers of participating in a market.

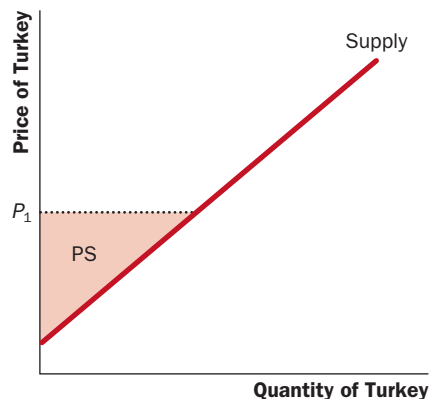


Figure 2

- Figure 3 shows the supply and demand for turkey. The price of turkey is P_1 , consumer surplus is CS, and producer surplus is PS. Producing more turkeys than the equilibrium quantity would lower total surplus because the value to the marginal buyer would be lower than the cost to the marginal seller on those additional units.

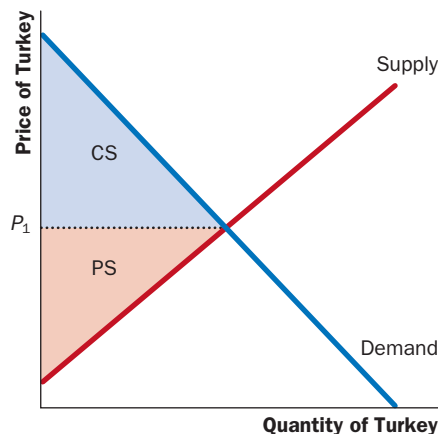


Figure 3

Chapter 8

- Figure 1 shows the supply and demand curves for cookies, with equilibrium quantity Q_1 and equilibrium price P_1 . When the government imposes a tax on cookies, the price to buyers rises to P_B , the price received by sellers declines to P_S , and the equilibrium quantity falls to Q_2 . The deadweight loss is the triangular area below the demand curve and above the supply curve between quantities Q_1 and Q_2 . The deadweight loss shows the fall in total surplus that results from the tax.

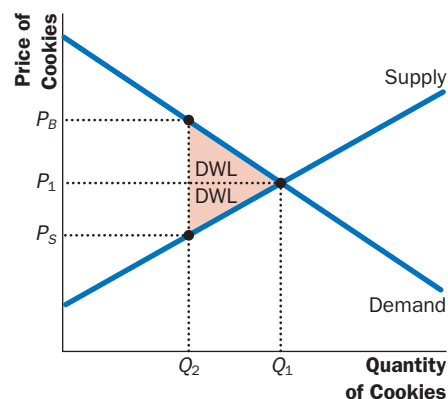


Figure 1

- The deadweight loss of a tax is greater the greater is the elasticity of demand. Therefore, a tax on beer would have a larger deadweight loss than a tax on milk because the demand for beer is more elastic than the demand for milk.
- If the government doubles the tax on gasoline, the revenue from the gasoline tax could rise or fall depending on whether the size of the tax is on the upward or downward sloping portion of the Laffer curve. However, if the government doubles the tax on gasoline, you can be sure that the deadweight loss of the tax rises because deadweight loss always rises as the tax rate rises.

Chapter 9

1. Since wool suits are cheaper in neighboring countries, Autarka would import suits if it were to allow free trade.
2. Figure 1 shows the supply and demand for wool suits in Autarka. With no trade, the price of suits is 3 ounces of gold, consumer surplus is area A, producer surplus is area B + C, and total surplus is area A + B + C. When trade is allowed, the price falls to 2 ounces of gold, consumer surplus rises to A + B + D (an increase of B + D), producer surplus falls to C (a decline of B), so total surplus rises to A + B + C + D (an increase of D). A tariff on suit imports would reduce the increase in consumer surplus, reduce the decline in producer surplus, and reduce the gain in total surplus.

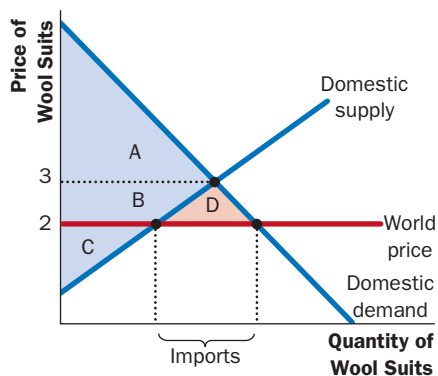


Figure 1

3. Lobbyists for the textile industry might make five arguments in favor of a ban on the import of wool suits: (1) imports of wool suits destroy domestic jobs; (2) the wool-suit industry is vital for national security; (3) the wool-suit industry is just starting up and needs protection from foreign competition until it gets stronger; (4) other countries are unfairly subsidizing their wool-suit industries; and (5) the ban on the importation of wool suits can be used as

a bargaining chip in international negotiations.

In defending free trade in wool suits, you could argue that: (1) free trade creates jobs in some industries even as it destroys jobs in the wool-suit industry and allows Autarka to enjoy a higher standard of living; (2) the role of wool suits for the military may be exaggerated; (3) government protection is not needed for an industry to grow on its own; (4) it would be good for the citizens of Autarka to be able to buy wool suits at a subsidized price; and (5) threats against free trade may backfire, leading to lower levels of trade and lower economic welfare for everyone.

Chapter 10

1. Examples of negative externalities include pollution, barking dogs, and consumption of alcoholic beverages. Examples of positive externalities include restoring historic buildings, research into new technologies, and education. (Many other examples of negative and positive externalities are possible.) Market outcomes are inefficient in the presence of externalities because markets produce a larger quantity than is socially desirable when there is a negative externality and a smaller quantity than is socially desirable when there is a positive externality.
2. The town government might respond to the externality from the smoke in three ways: (1) regulation; (2) corrective taxes; or (3) tradable pollution permits.

Regulation prohibiting pollution beyond some level is good because it is often effective at reducing pollution. But doing so successfully requires the government to have a lot of information about the industries and the alternative technologies that those industries could adopt.

Corrective taxes are a useful way to reduce pollution because the tax can be increased to get

pollution to a lower level and because the taxes raise revenue for the government. The tax is more efficient than regulation because it gives factories economic incentives to reduce pollution and to adopt new technologies that pollute less. The disadvantage of corrective taxes is that the government needs to know a lot of information to pick the right tax rate.

Tradable pollution permits are similar to corrective taxes but allow the firms to trade the right to pollute with each other. As a result, the government does not need as much information about the firms' technologies. The government can simply set a limit on the total amount of pollution, issue permits for that amount, and allow the firms to trade the permits. This reduces pollution while allowing economic efficiency. Those opposed to pollution permits argue that it is wrong to put a price on pollution and wrong to allow even low levels of pollution, but economists have little sympathy with these arguments.

3. Examples of private solutions to externalities include moral codes and social sanctions, charities, and relying on the interested parties entering into contracts with one other.

The Coase theorem is the proposition that if private parties can bargain without cost over the allocation of resources, they can solve the problem of externalities on their own.

Private economic participants are sometimes unable to solve the problems caused by an externality because of transactions costs or because bargaining breaks down. This is most likely when the number of interested parties is large.

Chapter 11

1. Public goods are goods that are neither excludable nor rival in consumption. Examples include

national defense, knowledge, and uncongested nontoll roads. Common resources are goods that are rival in consumption but not excludable. Examples include fish in the ocean, the environment, and congested nontoll roads.

2. The free-rider problem occurs when people receive the benefits of a good but avoid paying for it. The free-rider problem induces the government to provide public goods because the private market will not produce an efficient quantity on its own. The government uses tax revenue to provide the good, everyone pays for it, and everyone enjoys its benefits. The government should decide whether to provide a public good by comparing the good's costs to its benefits. If the benefits exceed the costs, society is better off.
3. Governments try to limit the use of common resources because one person's use of the resource diminishes others' use of it. This means that there is a negative externality and people tend to use common resources excessively.

Chapter 12

1. The two most important sources of tax revenue for the federal government are individual income taxes and payroll taxes (social insurance taxes). The two most important sources of tax revenue for state and local governments are sales taxes and property taxes.
2. The efficiency of a tax system depends on the costs of collecting a given amount of tax revenue. One tax system is more efficient than another if the same amount of tax revenue can be raised at a lower cost.

A tax system can be inefficient because of the deadweight losses that result when taxes distort the decisions that people make and because of the administrative burdens that taxpayers bear as they comply with tax laws. An efficient

tax system has low deadweight losses and small administrative burdens.

3. The benefits principle is the idea that people should pay taxes based on the benefits they receive from government services. It tries to make public goods similar to private goods by making those who benefit more from the public good pay more for it. The ability-to-pay principle is the idea that taxes should be levied on a person according to how well that person can shoulder the burden. It tries to equalize the sacrifice each person makes toward paying taxes.

Vertical equity is the idea that taxpayers with greater ability to pay taxes should pay larger amounts. Horizontal equity is the idea that taxpayers with similar abilities to pay taxes should pay the same amount.

Studying tax incidence is important for determining the equity of a tax system because understanding how equitable the tax system is requires understanding the indirect effects of taxes. In many cases, the burden of the tax is borne by individuals other than those who actually pay the tax.

Chapter 13

1. Farmer McDonald's opportunity cost is \$300, consisting of 10 hours of lessons at \$20 an hour that he could have been earning plus \$100 in seeds. His accountant would only count the explicit cost of the seeds (\$100). If McDonald earns \$200 from selling the crops, then McDonald earns a \$100 accounting profit (\$200 sales minus \$100 cost of seeds) but makes an economic loss of \$100 (\$200 sales minus \$300 opportunity cost).
2. Farmer Jones's production function is shown in Figure 1 and his total-cost curve is shown in Figure 2. The production function becomes flatter as the number of bags of seeds increases because of

the diminishing marginal product of seeds. The total-cost curve gets steeper as the amount of production increases. This feature is also due to the diminishing marginal product of seeds, since each additional bag of seeds generates a lower marginal product, and thus, the cost of producing additional bushels of wheat rises.

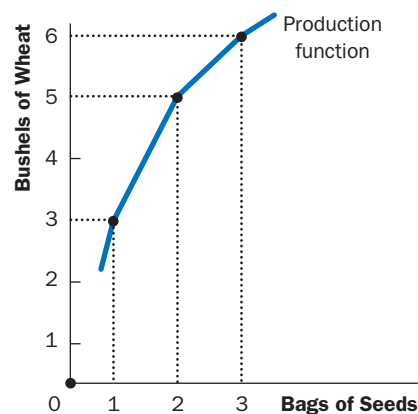


Figure 1

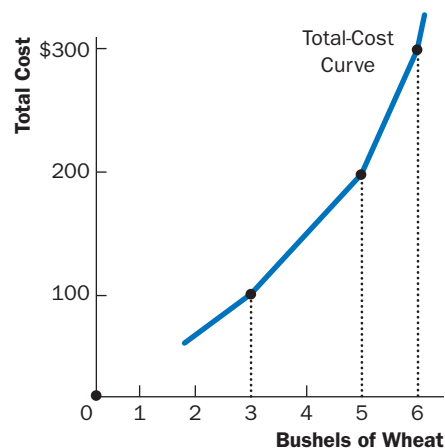


Figure 2

3. The average total cost of producing 5 cars is $\$250,000 / 5 = \$50,000$. Since total cost rose from \$225,000 to \$250,000 when output increased from 4 to 5, the marginal cost of the fifth car is \$25,000.

The marginal-cost curve and the average-total-cost curve for a typical firm are shown in Figure 3. They cross at the efficient scale

because at low levels of output, marginal cost is below average total cost, so average total cost is falling. But after the two curves cross, marginal cost rises above average total cost, and average total cost starts to rise. So the point of intersection must be the minimum of average total cost.

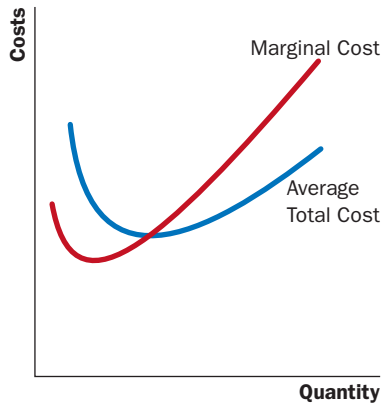


Figure 3

4. The long-run average total cost of producing 9 planes is \$9 million / 9 = \$1 million. The long-run average total cost of producing 10 planes is \$9.5 million / 10 = \$0.95 million. Since the long-run average total cost declines as the number of planes increases, Boeing exhibits economies of scale.

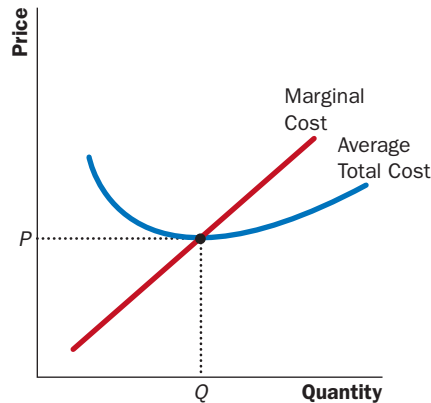
Chapter 14

1. When a competitive firm doubles the amount it sells, the price remains the same, so its total revenue doubles.
2. A profit-maximizing competitive firm sets price equal to its marginal cost. If price were above marginal cost, the firm could increase profits by increasing output, while if price were below marginal cost, the firm could increase profits by decreasing output.

A profit-maximizing competitive firm decides to shut down in the short run when price is less than average variable cost. In the long run, a firm will exit a market

when price is less than average total cost.

3. In the long run, with free entry and exit, the price in the market is equal to both a firm's marginal cost and its average total cost, as Figure 1 shows. The firm chooses its quantity so that marginal cost equals price; doing so ensures that the firm is maximizing its profit. In the long run, entry into and exit from the industry drive the price of the good to the minimum point on the average-total-cost curve.



Chapter 15

1. A market might have a monopoly because: (1) a key resource is owned by a single firm; (2) the government gives a single firm the exclusive right to produce some good; or (3) the costs of production make a single producer more efficient than a large number of producers.

Examples of monopolies include: (1) the water producer in a small town, who owns a key resource, the one well in town; (2) a pharmaceutical company that is given a patent on a new drug by the government; and (3) a bridge, which is a natural monopoly because (if the bridge is uncongested) having just one bridge is efficient. Many other examples are possible.

2. A monopolist chooses the amount of output to produce by finding

the quantity at which marginal revenue equals marginal cost. It finds the price to charge by finding the point on the demand curve that corresponds to that quantity.

3. A monopolist produces a quantity of output that is less than the quantity of output that maximizes total surplus because it produces the quantity at which marginal cost equals marginal revenue rather than the quantity at which marginal cost equals price. This lower production level leads to a deadweight loss.
4. Examples of price discrimination include: (1) movie tickets, for which children and senior citizens get lower prices; (2) airline prices, which are different for business and leisure travelers; (3) discount coupons, which lead to different prices for people who value their time in different ways; (4) financial aid, which offers college tuition at lower prices to poor students and higher prices to wealthy students; and (5) quantity discounts, which offer lower prices for higher quantities, capturing more of a buyer's willingness to pay. Many other examples are possible.

Compared to a monopoly that charges a single price, perfect price discrimination reduces consumer surplus, increases producer surplus, and increases total surplus because there is no deadweight loss.

5. Policymakers can respond to the inefficiencies caused by monopolies in one of four ways: (1) by trying to make monopolized industries more competitive; (2) by regulating the behavior of the monopolies; (3) by turning some private monopolies into public enterprises; or (4) by doing nothing at all. Antitrust laws prohibit mergers of large companies and prevent large companies from coordinating their activities in ways that make markets less competitive, but such laws may

keep companies from merging and generating synergies that increase efficiency. Some monopolies, especially natural monopolies, are regulated by the government, but it is hard to keep a monopoly in business, achieve marginal-cost pricing, and give the monopolist an incentive to reduce costs. Private monopolies can be taken over by the government, but the companies are not likely to be well run. Sometimes doing nothing at all may seem to be the best solution, but there are clearly dead-weight losses from monopoly that society will have to bear.

Chapter 16

- 1. Oligopoly is a market structure in which only a few sellers offer similar or identical products. Examples include the market for tennis balls and the world market for crude oil. Monopolistic competition is a market structure in which many firms sell products that are similar but not identical. Examples include the markets for novels, movies, restaurant meals, and computer games.
- 2. The three key attributes of monopolistic competition are: (1) there are many sellers; (2) each firm produces a slightly different product; and (3) firms can enter or exit the market freely.

Figure 1 shows the long-run equilibrium in a monopolistically competitive market. This equilibrium differs from that in a perfectly competitive market because price exceeds marginal cost and the firm does not produce at the minimum point of average total cost but instead produces at less than the efficient scale.

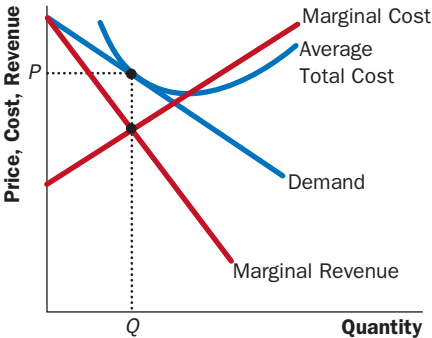


Figure 1

- 3. Advertising may make markets less competitive if it manipulates people’s tastes rather than being informative. Advertising may give consumers the perception that there is a greater difference between two products than really exists. That makes the demand curve for a product more inelastic, so the firms can then charge greater markups over marginal cost. However, some advertising could make markets more competitive because it sometimes provides useful information to consumers, allowing them to take advantage of price differences more easily. Advertising also facilitates entry because it can be used to inform consumers about a new product. In addition, expensive advertising can be a signal of quality.

Brand names may be beneficial because they provide information to consumers about the quality of goods. They also give firms an incentive to maintain high quality, since their reputations are important. But brand names may be criticized because they may simply differentiate products that are not really different, as in the case of drugs that are identical with the brand-name drug selling at a much higher price than the generic drug.

Chapter 17

- 1. If the members of an oligopoly could agree on a total quantity to produce, they would choose to produce the monopoly quantity, acting in collusion as if they were a monopoly.

If the members of the oligopoly make production decisions individually, self-interest induces them to produce a greater quantity than the monopoly quantity.

- 2. The prisoners’ dilemma is the story of two criminals suspected of committing a crime, in which the sentence that each receives depends both on his or her decision whether to confess or remain silent and on the decision made by the other. The following table shows the prisoners’ choices:

		Bonnie’s Decision	
		Confess	Remain Silent
Clyde’s Decision	Confess	Bonnie gets eight years Clyde gets eight years	Bonnie gets 20 years Clyde goes free
	Remain Silent	Bonnie goes free Clyde gets 20 years	Bonnie gets one year Clyde gets one year

The likely outcome is that both will confess, since that is a dominant strategy for both.

The prisoners' dilemma teaches us that oligopolies have trouble maintaining the cooperative outcome of low production, high prices, and monopoly profits because each oligopolist has an incentive to cheat.

3. It is illegal for businesses to make an agreement about reducing output or raising prices.

Antitrust laws are controversial because some business practices may appear anti-competitive while in fact having legitimate business purposes. An example is resale price maintenance.

Chapter 18

1. The marginal product of labor is the increase in the amount of output from an additional unit of labor. The value of the marginal product of labor is the marginal product of labor times the price of the output.

A competitive, profit-maximizing firm decides how many workers to hire by hiring workers up to the point where the value of the marginal product of labor equals the wage.

2. A brain surgeon has a higher opportunity cost of enjoying leisure than a janitor because the surgeon's wage is so much higher. That is why doctors work such long hours—because leisure is very expensive for them.
3. An immigration of workers increases labor supply but has no effect on labor demand. The result is an increase in the equilibrium quantity of labor and a decline in the equilibrium wage, as shown in Figure 1. The decline in the equilibrium wage causes the quantity of labor demanded to increase. The increase in the equilibrium quantity of labor causes the marginal product of labor to decrease.

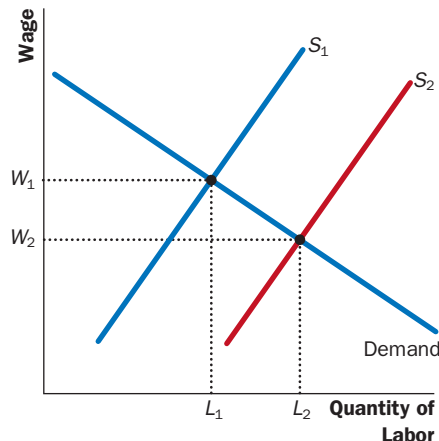


Figure 1

4. The income of the owners of land and capital is determined by the value of the marginal contribution of land and capital to the production process.

An increase in the quantity of capital would reduce the marginal product of capital, thus reducing the incomes of those who already own capital. However, it would increase the incomes of workers because a higher capital stock raises the marginal product of labor.

Chapter 19

1. A compensating differential is a difference in wages that arises to offset the nonmonetary characteristics of different jobs. Examples include coal miners who earn extra wages to compensate them for dangerous working conditions, workers on the night shift who get paid more than day-shift workers, and professors who are paid less than lawyers and doctors.

More educated workers earn more than less educated workers because they are more productive, so employers are willing to pay them more, and because more education may signal greater innate ability.

2. It is hard to establish whether a group of workers is being discriminated against because there are many reasons other than discrimination for wages to differ across workers, such as differences in human capital and job characteristics.

Profit-maximizing firms tend to eliminate discriminatory wage differentials because if some set of workers were being discriminated against, it would be in the interest of profit-maximizing firms to hire those workers with lower wages. But that, in turn, would raise the wages of those workers until the wages of all similar workers were equal.

A discriminatory wage differential might persist if customers are willing to pay to maintain the discriminatory practice or if the government mandates it.

Chapter 20

1. The poverty rate measures the percentage of the population whose family income falls below an absolute level called the poverty line. It tells you something about the distribution of income at the lower end of the income scale.

Three potential problems in interpreting the measured poverty rate are: (1) in-kind transfers are not accounted for in the poverty rate, so the poverty rate overstates the amount of poverty; (2) the poverty rate is based on annual income, but income over the life cycle is much more equally distributed than annual income; and (3) the poverty rate is affected by temporary changes in income, but inequality would be better measured by looking at permanent income.

2. Based on the assumption of diminishing marginal utility of income, a utilitarian would favor some redistribution of income from Pam to Pauline because it would

increase the total utility of society. A liberal would want to maximize the utility of the least well-off person in society, so a liberal would favor even greater redistribution. A libertarian would not want to redistribute income from Pam to Pauline as long as the process of earning income was a fair one.

3. Policies aimed at helping the poor include minimum-wage laws, welfare, a negative income tax, and in-kind transfers. Minimum-wage laws can help the working poor without any cost to the government but have the disadvantage of causing unemployment among some workers. Welfare assists the poor with direct aid but creates incentives for people to become needy. The negative income tax is a good way to implement a program of financial aid for the poor and does not distort incentives as much as some other programs do, but it may support those who are lazy and unwilling to work. In-kind transfers provide goods and services directly to the poor, ensuring that the poor get necessities such as food and shelter, but the government may not know what the poor need the most.

Chapter 21

1. A person with an income of \$1,000 could purchase $\$1,000/\$5 = 200$ pints of Pepsi if she spent all of her income on Pepsi or she could purchase $\$1,000/\$10 = 100$ pizzas if she spent all of her income on pizza. Thus, the point representing 200 pints of Pepsi and no pizzas is the vertical intercept and the point representing 100 pizzas and no Pepsi is the horizontal intercept of the budget constraint, as shown in Figure 1. The slope of the budget constraint is the rise over the run, or $-200/100 = -2$.

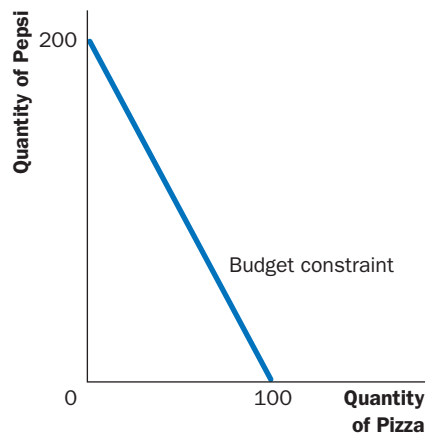


Figure 1

2. Figure 2 shows indifference curves between Pepsi and pizza. The four properties of these indifference curves are: (1) higher indifference curves are preferred to lower ones because consumers prefer more of a good to less of it; (2) indifference curves are downward sloping because if the quantity of one good is reduced, the quantity of the other good must increase in order for the consumer to be equally happy; (3) indifference curves do not cross because if they did, the assumption that more is preferred to less would be violated; and (4) indifference curves are bowed inward because people are more willing to trade away goods that they have in abundance and less willing to trade away goods of which they have little.

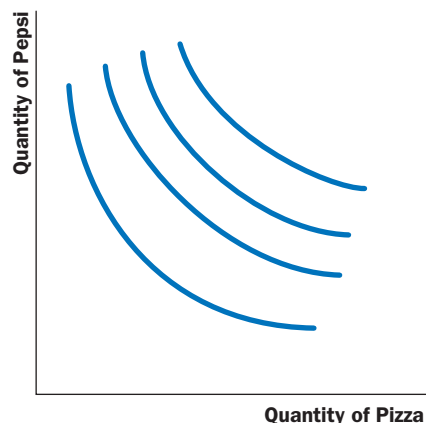


Figure 2

3. Figure 3 shows the budget constraint (BC_1) and two indifference curves. The consumer is initially at point A, where the budget constraint is tangent to an indifference curve. The increase in the price of pizza shifts the budget constraint to BC_2 , and the consumer moves to point C where the new budget constraint is tangent to a lower indifference curve. To break this move down into income and substitution effects requires drawing the dashed budget line shown, which is parallel to the new budget constraint and tangent to the original indifference curve at point B. The movement from A to B represents the substitution effect, while the movement from B to C represents the income effect.

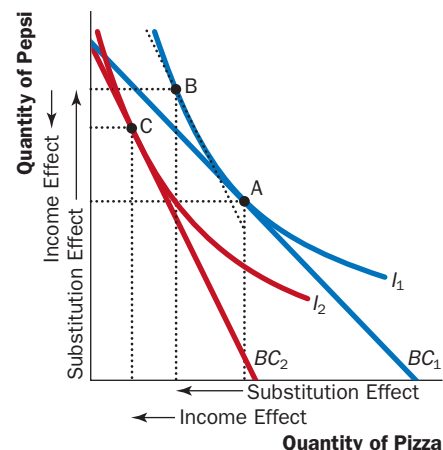


Figure 3

4. An increase in the wage can potentially decrease the amount that a person wants to work because a higher wage has an income effect that increases both leisure and consumption and a substitution effect that increases consumption and decreases leisure. Because less leisure means more work, a person will work more only if the substitution effect outweighs the income effect.

Chapter 22

1. Buyers of life insurance will likely have higher than average death rates. Two reasons for this are moral hazard and adverse selection.

Moral hazard is the tendency of a person who is imperfectly monitored to engage in dishonest or otherwise undesirable behavior. After purchasing insurance, an insured person may engage in riskier behavior than do people who are not insured.

Adverse selection is the tendency for the mix of unobserved attributes to become undesirable from the standpoint of an uninformed party. In this case, those with higher risk of death are more likely to want to buy insurance. As a result, the price of life insurance will reflect the costs of a riskier-than-average person. Buyers with low risk of death may find the price of life insurance too high and may choose not to purchase it.

A life insurance company can mitigate moral hazard by trying to monitor behavior better and charging higher rates to those who engage in risky behavior (such as smoking). It can mitigate adverse selection by trying to collect better information on applicants; for example, it may require that all applicants submit to a medical examination before issuing insurance.

2. According to the median voter theorem, if each voter chooses a point closest to his preferred point, the district vote will reflect the preferences of the median voter. Therefore, the district will end up with a student-teacher ratio of 11:1.
3. Human decision making can differ from the rational human being of conventional economic theory in three important ways: (1) people aren't always rational, (2) people care about fairness, and (3) people are inconsistent over time.

Chapter 23

1. Gross domestic product measures two things at once: (1) the total income of everyone in the economy and (2) the total expenditure on the economy's output of final goods and services. It can measure both of these things at once because all expenditure in the economy ends up as someone's income.
2. The production of a pound of caviar contributes more to GDP than the production of a pound of hamburger because the contribution to GDP is measured by market value and the price of a pound of caviar is much higher than the price of a pound of hamburger.
3. The four components of expenditure are: (1) consumption, (2) investment, (3) government purchases, and (4) net exports. The largest component is consumption, which accounts for more than two-thirds of total expenditure.
4. Real GDP is the production of goods and services valued at constant prices. Nominal GDP is the production of goods and services valued at current prices. Real GDP is a better measure of economic well-being because changes in real GDP reflect changes in the amount of output being produced. Thus, a rise in real GDP means people have produced more goods and services, but a rise in nominal GDP could occur either because of increased production or because of higher prices.
5. Although GDP is not a perfect measure of well-being, policymakers should care about it because a larger GDP means that a nation can afford better healthcare, better educational systems, and more of the material necessities of life.

Chapter 24

1. The consumer price index measures the overall cost of the goods and services bought by a typical consumer. It is constructed by

surveying consumers to determine a basket of goods and services that the typical consumer buys. Prices of these goods and services are used to compute the cost of the basket at different times, and a base year is chosen. To compute the index, we divide the cost of the market basket in the current year by the cost of the market basket in the base year and multiply by 100. The CPI is an imperfect measure of the cost of living because of (1) substitution bias, (2) the introduction of new goods, and (3) unmeasured quality changes.

2. Since Henry Ford paid his workers \$5 a day in 1914 and the consumer price index was 10 in 1914 and 218 in 2010, then the Ford paycheck was worth $\$5 \times 218 / 10 = \109 a day in 2010 dollars.

Chapter 25

1. The approximate growth rate of real GDP per person in the United States is 1.83 percent (based on Table 1) from 1870 to 2006. Countries that have had faster growth include Japan, Brazil, Mexico, China, Germany, Canada, and Argentina; countries that have had slower growth include India, United Kingdom, Indonesia, Pakistan, and Bangladesh.
2. The four determinants of a country's productivity are: (1) physical capital, which is the stock of equipment and structures that are used to produce goods and services; (2) human capital, which is the knowledge and skills that workers acquire through education, training, and experience; (3) natural resources, which are inputs into production that are provided by nature, such as land, rivers, and mineral deposits; and (4) technological knowledge, which is society's understanding of the best ways to produce goods and services.
3. Ways in which a government policymaker can try to raise the growth in living standards in a society include: (1) investing

more current resources in the production of capital, which has the drawback of reducing the resources used for producing current consumption; (2) encouraging investment from abroad, which has the drawback that some of the benefits of investment flow to foreigners; (3) increasing education, which has an opportunity cost in that students are not engaged in current production; (4) protecting property rights and promoting political stability, for which no drawbacks are obvious; (5) pursuing outward-oriented policies to encourage free trade, which may have the drawback of making a country more dependent on its trading partners; (6) reducing the rate of population growth, which may have the drawbacks of reducing individual freedom and lowering the rate of technological progress; and (7) encouraging research and development, which (like investment) may have the drawback of reducing current consumption.

Chapter 26

1. A stock is a claim to partial ownership in a firm. A bond is a certificate of indebtedness. They are different in numerous ways: (1) a bond pays interest (a fixed payment determined when the bond is issued), while a stock pays dividends (a share of the firm's profits that can increase if the firm is more profitable); (2) a bond has a fixed time to maturity, while a stock never matures; and (3) if a company that has issued both stock and bonds goes bankrupt, the bondholders get paid off before the stockholders, so stocks have greater risk and potentially greater return than bonds. Stocks and bonds are similar in that both are financial instruments that are used by companies to raise money

for investment, both are traded on exchanges, both entail a degree of risk, and the returns to both are taxed (usually).

2. Private saving is the amount of income that households have left after paying their taxes and paying for their consumption. Public saving is the amount of tax revenue that the government has left after paying for its spending. National saving is equal to the total income in the economy that remains after paying for consumption and government purchases. Investment is the purchase of new capital, such as equipment or buildings.

These terms are related in two ways: (1) National saving is the sum of public saving and private saving. (2) In a closed economy, national saving equals investment.

3. If more Americans adopted a "live for today" approach to life, they would spend more and save less. This would shift the supply curve to the left in the market for loanable funds. At the new equilibrium, there would be less saving and investment and a higher interest rate.

Chapter 27

1. The present value of \$150 to be received in 10 years if the interest rate is 7 percent is $\$150 / (1.07)^{10} = \76.25 .
2. There are three ways in which a risk-averse person may reduce the risk he faces: (1) purchase insurance, (2) diversify his portfolio, or (3) choose safer alternatives by accepting a lower rate of return.
3. No. According to the efficient markets hypothesis, the price of a share of stock should reflect all available information about its value. Thus, the stocks on this list should perform no better on average than other stocks listed on the stock exchange.

Chapter 28

1. The unemployment rate is measured through a survey of 60,000 households to determine the percentage of the labor force that is unemployed. The unemployment rate overstates the amount of joblessness because some of those who report being unemployed may not, in fact, be trying hard to find a job. But the unemployment rate may understate the amount of joblessness because discouraged workers are considered not in the labor force even though they are workers without jobs.
2. An increase in the world price of oil increases the amount of frictional unemployment as oil-producing firms increase output and employment, but other firms, such as those in the auto industry, reduce output and employment. The sectoral shift from the auto industry to oil firms causes higher frictional unemployment for a time until workers have shifted from the auto industry to the oil industry. Although no increase in unemployment is really desirable, this type of frictional unemployment is a natural outcome of the reallocation of resources between different sectors. Public policies that might affect the unemployment caused by this change in the price of oil include government-run employment agencies, which can help autoworkers move into the oil industry, job-training programs to help workers adapt to a new industry, and unemployment insurance, which keeps workers from suffering economic hardship while changing from one industry to another.
3. Figure 1 shows the supply curve (S) and the demand curve (D) for labor. The wage (W) is above the equilibrium wage (W_E). The result is unemployment, equal to the amount by which the quantity of labor supplied (L_s) exceeds the quantity of labor demanded (L_D).

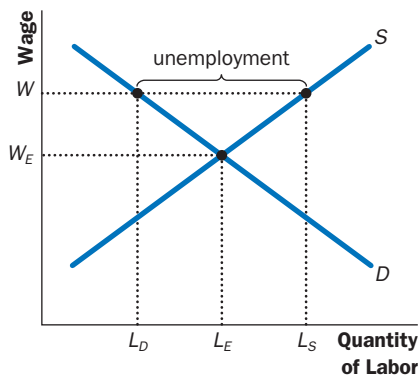


Figure 1

4. A union in the auto industry raises the wages of workers employed by General Motors and Ford by threatening to strike. To prevent the costs of a strike, the firms generally pay higher wages than they would if there were no union. However, the higher wages reduce employment at General Motors and Ford. The unemployed autoworkers seek jobs elsewhere, reducing wages and increasing employment in the nonunion sector.
5. There are four reasons that firms might find it profitable to pay wages above the level that balances the quantity of labor supplied and the quantity of labor demanded: (1) to ensure that workers are in good health so they will be more productive; (2) to reduce worker turnover because it is costly to hire new workers; (3) to make workers eager to keep their jobs, thus discouraging them from shirking; and (4) to attract a better pool of workers.

Chapter 29

1. The three functions of money are: (1) medium of exchange; (2) unit of account; and (3) store of value. Money is a medium of exchange because money is the item people use to purchase goods and services. Money is a unit of account

because it is the yardstick people use to post prices and record debts. Money is a store of value because people use it to transfer purchasing power from the present to the future.

2. The primary responsibilities of the Federal Reserve are to regulate banks, to ensure the health of the banking system, and to control the quantity of money that is made available in the economy. If the Fed wants to increase the supply of money, it usually does so by creating dollars and using them to purchase government bonds from the public in the nation's bond markets.
3. Banks create money when they hold a fraction of their deposits in reserve and lend out the remainder. If the Fed wanted to use all three of its tools to decrease the money supply, it would: (1) sell government bonds from its portfolio in the open market to reduce the number of dollars in circulation; (2) increase reserve requirements to reduce the money created by banks; and (3) increase the discount rate to discourage banks from borrowing reserves from the Fed.

Chapter 30

1. When the government of a country increases the growth rate of the money supply from 5 percent per year to 50 percent per year, the average level of prices will start rising very quickly, as predicted by the quantity theory of money. Nominal interest rates will increase dramatically as well, as predicted by the Fisher effect. The government may be increasing the money supply to finance its expenditures.
2. Six costs of inflation are: (1) shoe-leather costs; (2) menu costs; (3) relative-price variability and the misallocation of resources;

(4) inflation-induced tax distortions; (5) confusion and inconvenience; and (6) arbitrary redistributions of wealth. Shoeleather costs arise because inflation causes people to spend resources going to the bank more often. Menu costs occur when people spend resources changing their posted prices. Relative-price variability occurs because as general prices rise, a fixed dollar price translates into a declining relative price, so the relative prices of goods are constantly changing, causing a misallocation of resources. The combination of inflation and taxation causes distortions in incentives because people are taxed on their nominal capital gains and interest income instead of their real income from these sources. Inflation causes confusion and inconvenience because it reduces money's ability to function as a unit of account. Unexpected inflation redistributes wealth between borrowers and lenders.

Chapter 31

1. Net exports are the value of a nation's exports minus the value of its imports, also called the trade balance. Net capital outflow is the purchase of foreign assets by domestic residents minus the purchase of domestic assets by foreigners. Net exports equal net capital outflow.
2. The nominal exchange rate is the rate at which a person can trade the currency of one country for the currency of another. The real exchange rate is the rate at which a person can trade the goods and services of one country for the goods and services of another. They are related through the expression: real exchange rate equals nominal exchange rate times domestic price divided by foreign price.

If the nominal exchange rate goes from 100 to 120 yen per dollar, the dollar has appreciated because a dollar now buys more yen.

- Because Spain has had high inflation and Japan has had low inflation, the number of Spanish pesetas a person can buy with Japanese yen has increased.

Chapter 32

- The supply of loanable funds comes from national saving. The demand for loanable funds comes from domestic investment and net capital outflow. The supply in the market for foreign-currency exchange comes from net capital outflow. The demand in the market for foreign-currency exchange comes from net exports.
- The two markets in the model of the open economy are the market for loanable funds and the market for foreign-currency exchange. These markets determine two relative prices: (1) the market for loanable funds determines the real interest rate and (2) the market for foreign-currency exchange determines the real exchange rate.
- If Americans decided to spend a smaller fraction of their incomes, the increase in saving would shift the supply curve for loanable funds to the right, as shown in Figure 1. The decline in the real interest rate increases net capital outflow and shifts the supply of dollars to the right in the market for foreign-currency exchange. The result is a decline in the real exchange rate. Since the real interest rate is lower, domestic investment increases. Since the real exchange rate declines, net exports increase and the trade balance moves toward surplus. Overall, saving and domestic investment increase, the real interest rate and

real exchange rate decrease, and the trade balance moves toward surplus.

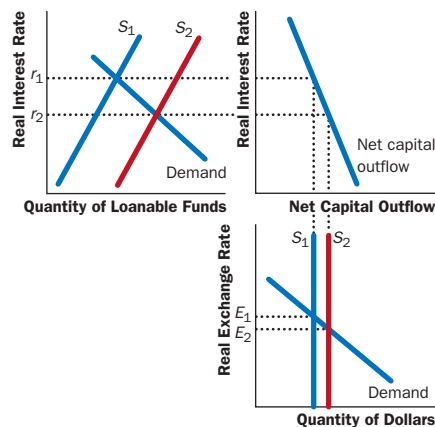


Figure 1

Chapter 33

- Three key facts about economic fluctuations are: (1) economic fluctuations are irregular and unpredictable; (2) most macroeconomic quantities fluctuate together; and (3) as output falls, unemployment rises.

Economic fluctuations are irregular and unpredictable, as you can see by looking at a graph of real GDP over time. Some recessions are close together and others are far apart. There appears to be no recurring pattern.

Most macroeconomic quantities fluctuate together. In recessions, real GDP, consumer spending, investment spending, corporate profits, and other macroeconomic variables decline or grow much more slowly than during economic expansions. However, the variables fluctuate by different amounts over the business cycle, with investment varying much more than other variables.

As output falls, unemployment rises, because when firms want to produce less, they lay off

workers, thus causing a rise in unemployment.

- The economy's behavior in the short run differs from its behavior in the long run because the assumption of monetary neutrality applies only to the long run, not the short run. In the short run, real and nominal variables are highly intertwined. Figure 1 shows the model of aggregate demand and aggregate supply. The horizontal axis shows the quantity of output, and the vertical axis shows the price level.

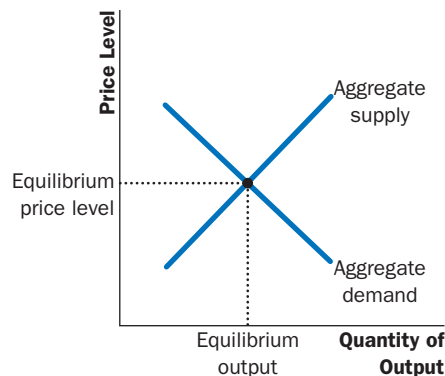


Figure 1

- The aggregate-demand curve slopes downward for three reasons. First, when prices fall, the value of dollars in people's wallets and bank accounts rises, so they are wealthier. As a result, they spend more, thereby increasing the quantity of goods and services demanded. Second, when prices fall, people need less money to make their purchases, so they lend more out, which reduces the interest rate. The lower interest rate encourages businesses to invest more, increasing the quantity of goods and services demanded. Third, since lower prices lead to a lower interest rate, some U.S. investors will invest abroad, supplying dollars to the foreign-

exchange market, thus causing the dollar to depreciate. The decline in the real exchange rate causes net exports to increase, which increases the quantity of goods and services demanded.

Any event that alters the level of consumption, investment, government purchases, or net exports at a given price level will lead to a shift in aggregate demand. An increase in expenditure will shift the aggregate-demand curve to the right, while a decline in expenditure will shift the aggregate-demand curve to the left.

4. The long-run aggregate-supply curve is vertical because the price level does not affect the long-run determinants of real GDP, which include supplies of labor, capital, natural resources, and the level of available technology. This is just an application of the classical dichotomy and monetary neutrality.

There are three reasons the short-run aggregate-supply curve slopes upward. First, the sticky-wage theory suggests that because nominal wages are slow to adjust, a decline in the price level means real wages are higher, so firms hire fewer workers and produce less, causing the quantity of goods and services supplied to decline. Second, the sticky-price theory suggests that the prices of some goods and services are slow to change.

If some economic event causes the overall price level to decline, the relative prices of goods whose prices are sticky will rise and the quantity of those goods sold will decline, leading firms to cut back on production. Thus, a lower price level reduces the quantity of goods and services supplied. Third, the misperceptions theory suggests that changes in the overall price level can temporarily mislead suppliers. When the price level falls

below the level that was expected, suppliers think that the relative prices of their products have declined, so they produce less. Thus, a lower price level reduces the quantity of goods and services supplied. The long-run and short-run aggregate-supply curves will both shift if the supplies of labor, capital, or natural resources change or if technology changes. A change in the expected price level will shift the short-run aggregate-supply curve but will have no effect on the long-run aggregate-supply curve.

5. When a popular presidential candidate is elected, causing people to be more confident about the future, they will spend more, causing the aggregate-demand curve to shift to the right, as shown in Figure 2. The economy begins at point A with aggregate-demand curve AD_1 and short-run aggregate-supply curve AS_1 . The equilibrium has price level P_1 and output level Y_1 . Increased confidence about the future causes the aggregate-demand curve to shift to AD_2 . The economy moves to point B, with price level P_2 and output level Y_2 . Over time, price expectations adjust and the short-run aggregate-supply curve shifts up to AS_2 and the economy moves to equilibrium at point C, with price level P_3 and output level Y_1 .

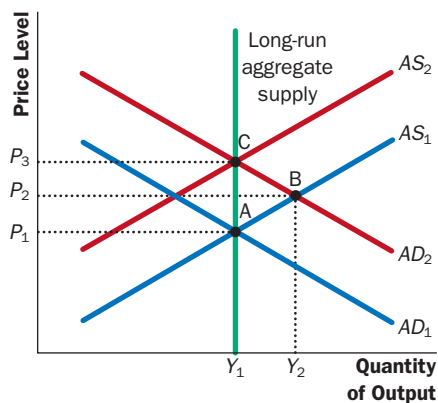


Figure 2

Chapter 34

1. According to the theory of liquidity preference, the interest rate adjusts to balance the supply and demand for money. Therefore, a decrease in the money supply will increase the equilibrium interest rate. This decrease in the money supply reduces aggregate demand because the higher interest rate causes households to buy fewer houses, reducing the demand for residential investment, and causes firms to spend less on new factories and new equipment, reducing business investment.
2. If the government reduces spending on highway construction by \$10 billion, the aggregate-demand curve shifts to the left because government purchases are lower. The shift to the left of the aggregate-demand curve could be more than \$10 billion if the multiplier effect outweighs the crowding-out effect, or it could be less than \$10 billion if the crowding-out effect outweighs the multiplier effect.
3. If people become pessimistic about the future, they will spend less, causing the aggregate-demand curve to shift to the left. If the Fed wants to stabilize aggregate demand, it should increase the money supply. The increase in the money supply will cause the interest rate to decline, thus stimulating residential and business investment. The Fed might choose not to do this because by the time the policy action takes effect, the long lag time might mean the economy would have recovered on its own, and the increase in the money supply will cause inflation.

Chapter 35

1. The Phillips curve is shown in Figure 1.

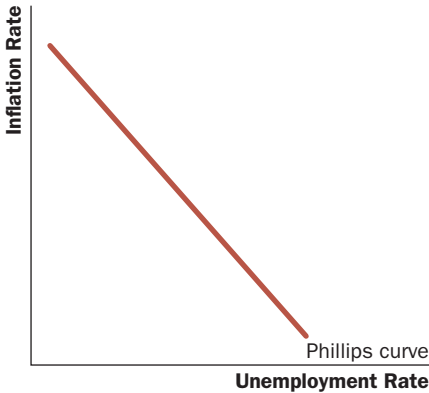


Figure 1

To see how policy can move the economy from a point with high inflation to a point with low inflation, suppose the economy begins at point A in Figure 2. If policy is used to reduce aggregate demand (such as a decrease in the money supply or a decrease in government purchases), the aggregate-demand curve shifts from AD_1 to AD_2 , and the economy moves from point A to point B with lower inflation, a reduction in real GDP, and an increase in the unemployment rate.

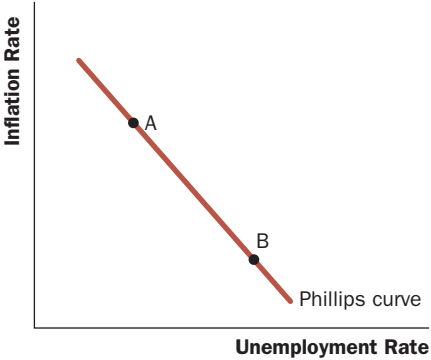
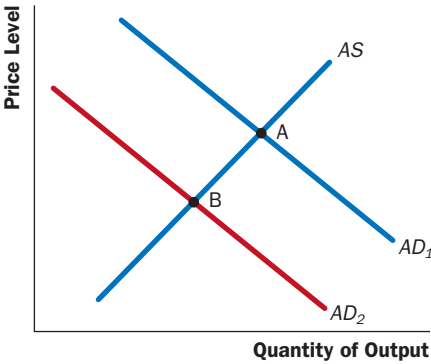


Figure 2

2. Figure 3 shows the short-run Phillips curve and the long-run Phillips curve. The curves are different because in the long run, monetary policy has no effect on unemployment, which tends toward its natural rate. However, in the short run, monetary policy can affect the unemployment rate. An increase in the growth rate of money raises actual inflation above expected inflation, causing firms to produce more since the short-run aggregate supply curve is positively sloped, which reduces unemployment temporarily.

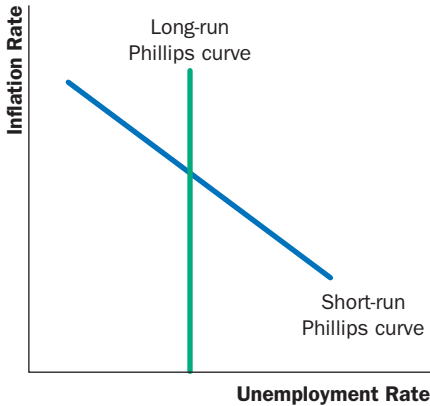


Figure 3

3. Examples of favorable shocks to aggregate supply include improved productivity and a decline in oil prices. Either shock shifts the aggregate-supply curve to the right, increasing output and reducing the price level, moving the economy from point A to point B in Figure 4. As a result, the Phillips curve shifts to the left, as the figure shows.

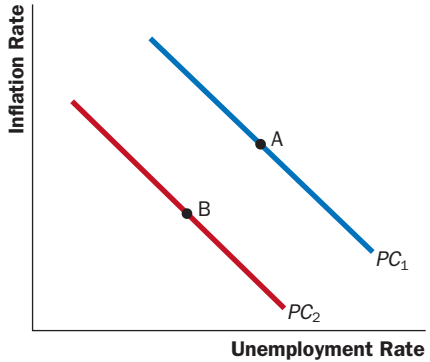
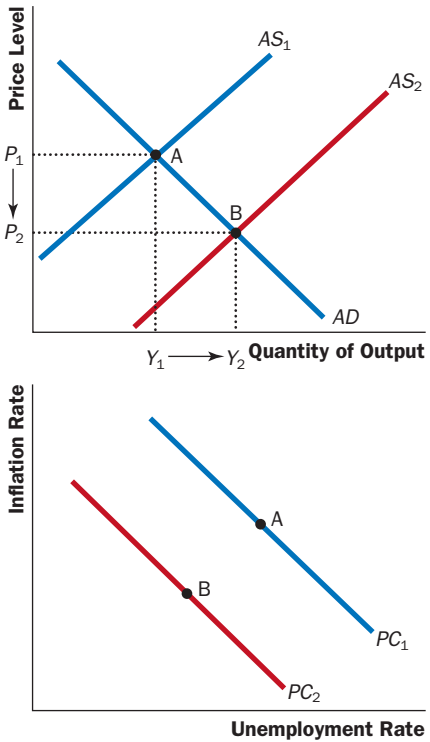


Figure 4

4. The sacrifice ratio is the number of percentage points of annual output lost in the process of reducing inflation by 1 percentage point. The credibility of the Fed's commitment to reduce inflation might affect the sacrifice ratio because it affects the speed at which expectations of inflation adjust. If the Fed's commitment to reduce inflation is credible, people will reduce their expectations of inflation quickly, the short-run Phillips curve will shift downward, and the cost of reducing inflation will be low in terms of lost output. But if the Fed is not credible, people will not reduce their expectations of inflation quickly, and the cost of reducing inflation will be high in terms of lost output.

Chapter 36

1. Monetary and fiscal policies work with a lag. Monetary policy works with a lag because it affects spending for residential and business investment, but spending plans for such investment are often set in advance. Thus, it takes time for changes in monetary policy, working through interest rates, to affect investment. Fiscal policy works with a lag because of the long political process that governs changes in spending and taxes.

These lags matter for the choice between active and passive policy because if the lags are long, policy must be set today for conditions far in the future, about which we

can only guess. Since economic conditions may change between the time a policy is implemented and when it takes effect, policy changes may be destabilizing. Thus, long lags suggest a policy that is passive rather than active.

2. A dollar of additional government spending has a larger effect on GDP than a dollar of tax cuts. This occurs because, in general, some of the dollar tax cut will end up as saving.
3. There are many possible rules for monetary policy. One example is a rule that sets money growth at 3 percent per year. This rule might be better than discretionary policy because it prevents a political business cycle and the time inconsistency problem. It might be worse than discretionary policy because it would tie the Fed's hands when there are shocks to the economy. For example, in response to a stock-market crash, the rule would prevent the Fed from easing monetary policy, even if it saw the economy slipping into recession.
4. The benefits of reducing inflation to zero include: (1) reducing shoe-leather costs; (2) reducing menu costs; (3) reducing the variability of relative prices; (4) preventing unintended changes in tax liabilities due to nonindexation of the tax code; (5) eliminating the confusion and inconvenience resulting from a changing unit of account; and (6) preventing arbitrary redistribution of wealth associated

with dollar-denominated debts. These benefits are all permanent. The costs of reducing inflation to zero are the high unemployment and low output needed to reduce inflation. According to the natural rate hypothesis, these costs are temporary.

5. Reducing the budget deficit makes future generations better off because with lower debt, future taxes will be lower. In addition, lower debt will reduce real interest rates, causing investment to increase, leading to a larger stock of capital in the future, which means higher future labor productivity and higher real wages. A fiscal policy that might improve the lives of future generations even more than reducing the budget deficit is increased spending on education, which will also increase incomes in the future.
6. Our society discourages saving in a number of ways: (1) taxing the return on interest income; (2) taxing some forms of capital twice; (3) taxing bequests; (4) having means tests for welfare and Medicaid; and (5) granting financial aid as a function of wealth. The drawback of eliminating these disincentives is that, in many cases, doing so would reduce the tax burden on wealthy taxpayers. The lost revenue to the government could require raising other taxes, which might increase the tax burden on the poor.