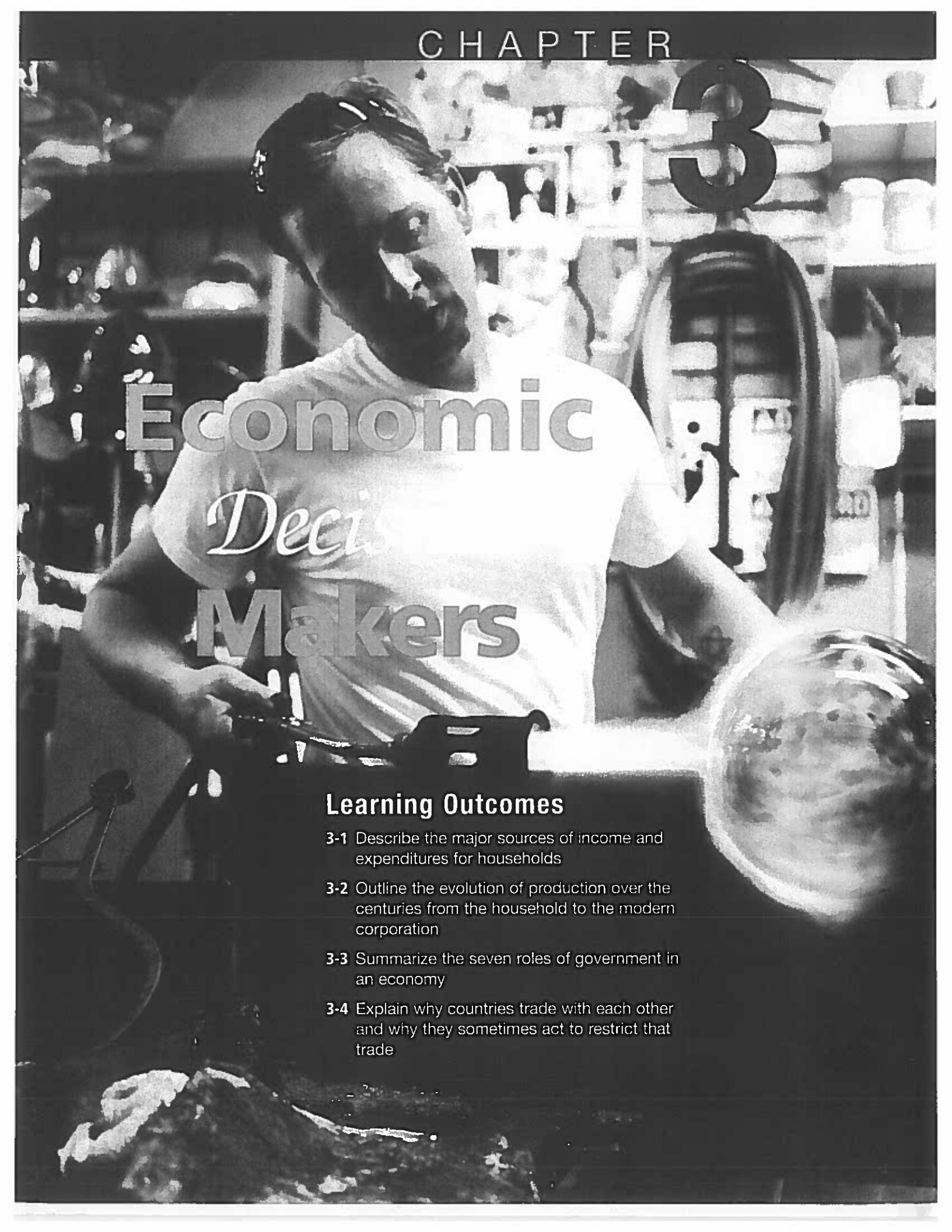




Economic *Decisions* Makers

Learning Outcomes

- 3-1** Describe the major sources of income and expenditures for households
- 3-2** Outline the evolution of production over the centuries from the household to the modern corporation
- 3-3** Summarize the seven roles of government in an economy
- 3-4** Explain why countries trade with each other and why they sometimes act to restrict that trade

“If we live in the age of specialization, then why haven’t specialists taken over all production?”

If we live in the age of specialization, then why haven’t specialists taken over all production? For example, why do most of us still do our own laundry and perform dozens of other tasks for ourselves? If the “invisible hand” of competitive markets is so efficient, why does government get into the act? And if specialization based on comparative advantage is such a good idea, why do most nations try to restrict imports? Answers to these and other questions are addressed in this chapter, which discusses the four economic decision makers: households, firms, governments, and the rest of the world.

To develop a better feel for how the economy works, you must get more acquainted with the key players. You already know more about them than you may realize. You grew up in a household. You have dealt with firms all your life, from Sony to Subway. You know much about governments, from taxes to public schools. And you have a growing awareness of the rest of the world, from online sites, to imported goods, to foreign travel. This chapter draws on your abundant personal experience with economic decision makers to consider their makeup and goals.

What do **you** think?

If I could afford it, I would hire a housekeeper.

Strongly Disagree

Strongly Agree

1 2 3 4 5 6 7

Topics discussed in Chapter 3 include

- Evolution of the household
- Role of government
- Evolution of the firm
- Taxing and public spending
- Types of firms
- International trade and finance

3-1 The Household

Households play the starring role in a market economy. Their demand for goods and services determines what gets produced. And their supply of labor, capital, natural resources, and entrepreneurial ability produces that output. As demanders of goods and services and suppliers of resources, households make all kinds of choices, such as what to buy, how much to save, where to live, and where to work. Although a household usually consists of several individuals, we will view each household as a single decision maker.



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Seventy percent of women with children under 18 are in the labor force.

3-1a The Evolution of the Household

In earlier times, when the economy was primarily agricultural, a farm household was largely self-sufficient. Each family member often specialized in a specific farm task—cooking meals, making clothes, tending livestock, planting crops, mending fences, and so on. These early households produced what they consumed and consumed what they produced. With the introduction of new seed varieties, better fertilizers, and labor-saving machinery, farm productivity increased sharply. Fewer farmers were needed to grow enough food to feed a nation. At the same time, the growth of urban factories increased the demand for factory labor. As a result, many workers moved from farms to urban factories, where they became more specialized but less self-sufficient.

Households evolved in other ways. For example, in 1950, only about 15 percent of married women with young children were in the labor force. Since then, higher levels of education among women

utility
The satisfaction received from consumption; sense of well-being

and a growing demand for their labor have increased women's earnings, thus raising their opportunity cost of working in the home. This higher opportunity cost contributed to their growing labor force participation. Today, about 70 percent of women with children under 18 are in the labor force.

The rise of two-earner households has affected the family as an economic unit. Households produce less for themselves and demand more from the market. For example, child-care services and fast-food restaurants have displaced some household production (Americans now consume at least one-third of their calories away from home). The rise in two-earner families has reduced specialization in household production—a central feature of the farm family. Nonetheless, some production still occurs in the home, as we'll explore later.

3-1b Households Maximize Utility

There are about 120 million U.S. households. All those who live together under one roof are considered part of the same household. What exactly do households attempt to accomplish in making decisions? Economists assume that people try to maximize their level of satisfaction, sense of well-being, happiness, and overall welfare. In short, households attempt to maximize **utility**. Households, like other economic decision makers, are viewed as rational, meaning that they try to act in their best interests and do not deliberately try to make themselves less happy. Utility maximization depends on each household's subjective goals, not on some objective standard. For example, some households maintain neat homes with well-groomed lawns; others pay little attention to their homes and use their lawns as junkyards.

3-1c Households As Resource Suppliers

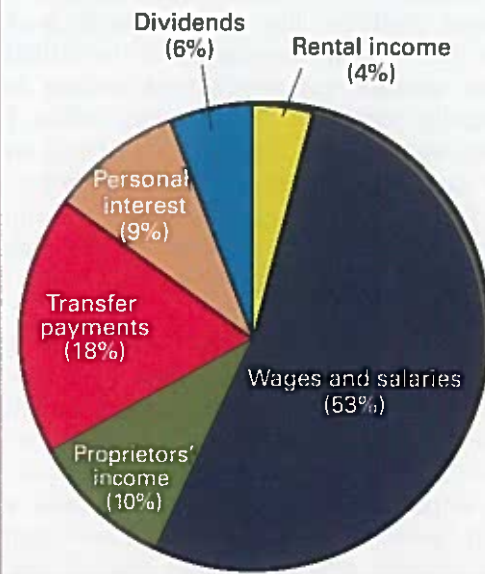
Households use their limited resources—labor, capital, natural resources, and entrepreneurial ability—in an attempt to satisfy their unlimited wants. They can use these resources to produce goods and services in their homes. For example, they can cook, wash, sew, dust, iron, sweep, vacuum, mop, mow, paint, and fix a leaky faucet. They can also sell these resources in the resource market and use the income to buy goods and services in the product market. The most valuable resource sold by most households is labor.

Panel (a) of Exhibit 1 shows the sources of personal income received by U.S. households in 2012, when personal income totaled \$13.7 trillion. As you can see, 53 percent of personal income came from wages and salaries. A distant second was transfer payments

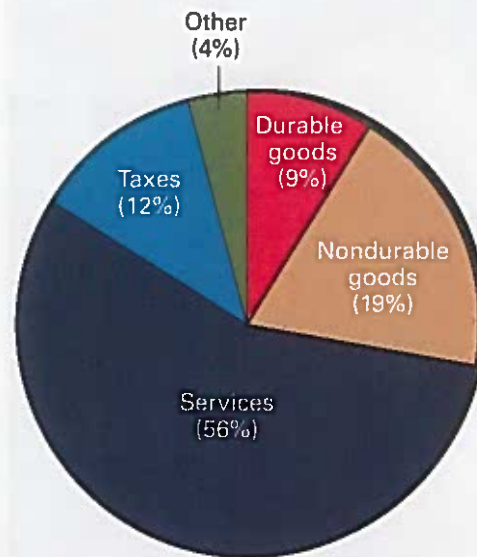
Exhibit 1

Where U.S. Personal Income Comes From and Where It Goes

(a) Nearly two-thirds of personal income in 2012 was labor income



(b) More than half of U.S. personal income in 2012 was spent on services



SOURCE: Based on figures from *Survey of Current Business*, Bureau of Economic Analysis, July 2013, Tables 1.5.5 and 2.1. For the latest figures, go to <http://www.bea.gov/scb/index.htm>.

(to be discussed next), at 18 percent of personal income, followed by proprietors' income at 10 percent. Proprietors are people who work for themselves rather than for employers; farmers, plumbers, and doctors are often self-employed. Proprietors' income should also be considered a form of labor income. Thus, two-thirds of personal income in the United States comes from labor earnings rather than from the ownership of other resources such as capital or natural resources.

Because of a limited education, disability, discrimination, poor health, the time demands of caring for small children, or just bad luck, some households have few resources that are valued in the market. Society has made the political decision that individuals in such circumstances should receive short-term public assistance. Consequently, the government gives some households **transfer payments**, which are outright grants. Cash transfers are monetary payments, such as welfare benefits, Social Security, unemployment compensation, and disability benefits. In-kind transfers provide for specific goods and services, such as food, health care, and housing.

3-1d Households As Demanders of Goods and Services

What happens to personal income once it comes into the household? Most goes to personal consumption,

which sorts into three broad spending categories: (1) *durable goods*—that is, goods expected to last three or more years—such as an automobile or a refrigerator; (2) *nondurable goods*, such as food, clothing, and gasoline; and (3) *services*, such as haircuts, air travel, and medical care. As you can see from panel (b) of Exhibit 1, spending on durable goods in 2012 claimed 9 percent of U.S. personal income; nondurables, 19 percent; and services, 56 percent. Taxes claimed 12 percent, and all other categories, including saving, claimed just 4 percent. So more than half of all personal income went for services—the fastest growing sector because many services, such as child care, are shifting from do-it-yourself home production to market purchases.

3-2 The Firm

Household members once built their own homes, made their own clothes and furniture, grew their own food, and amused themselves with books, games, and hobbies. Over time, however, the efficiency arising from comparative advantage resulted in a greater specialization among resource suppliers. This section takes a look at firms, beginning with their evolution.

transfer payments
Cash or in-kind benefits given to individuals as outright grants from the government



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Specialization and comparative advantage explain why households are no longer self-sufficient.

3-2a The Evolution of the Firm

Specialization and comparative advantage explain why households are no longer self-sufficient. But why is a firm the natural result? For example, rather than make a woolen sweater from scratch, couldn't a consumer take advantage of specialization by negotiating with someone who produced the wool,

another who spun the wool into yarn, and a third who knit the yarn into a sweater? Here's the problem with that model: If the consumer had to visit each of these specialists and reach an agreement, the resulting transaction costs could easily erase the gains from specialization. Instead of visiting and bargaining with each specialist, the consumer can pay someone to do the bargaining—an entrepreneur, who hires all the

Industrial Revolution

Development of large-scale factory production that began in Great Britain around 1750 and spread to the rest of Europe, North America, and Australia

firms

Economic units formed by profit-seeking entrepreneurs who employ resources to produce goods and services for sale

resources necessary to make the sweater. An entrepreneur, by contracting for many sweaters rather than just one, is able to reduce the transaction costs per sweater.

For about 200 years, profit-seeking entrepreneurs relied on “putting out” raw material, like wool and cotton, to rural households that turned it into finished products, like woolen goods made from yarn. The system developed in the British Isles, where workers’ cottages served as tiny factories, especially during winter months, when farming chores were few (so the opportunity cost was low). This approach, which came to be known as the cottage industry system, still exists in some parts of the world. You might think of this system as partway between household self-sufficiency and the modern firm.

As the British economy expanded in the 18th century, entrepreneurs began organizing the stages of production under one factory roof. Technological developments, such as waterpower and later steam power, increased the productivity of each worker and helped shift employment from rural areas to urban factories. Work, therefore, became organized in large, centrally powered factories that (1) promoted a more efficient division of labor, (2) allowed for the direct supervision of production, (3) reduced transportation costs, and (4) facilitated the use of machines far bigger than anything used in the home. The development of large-scale factory production, known as the Industrial Revolution, began in Great Britain around 1750 and spread to the rest of Europe, North America, and Australia.

Production, then, evolved from self-sufficient rural households to the cottage industry system, where specialized production occurred in the household, to production in a firm. Today, entrepreneurs combine resources in firms such as factories, mills, offices, stores, and restaurants. Firms are economic units formed by profit-seeking entrepreneurs who combine labor, capital, and natural resources to produce goods and services. Just as we assume that households try to maximize utility, we assume that firms try to maximize profit. Profit, the entrepreneur’s reward, equals sales revenue minus the cost of production, including the opportunity cost of the entrepreneur’s time. Thus,

$$\text{Profit} = \text{Revenue} - \text{Cost}$$

3-2b Types of Firms

There are more than 30 million for-profit businesses in the United States. Two-thirds are small retail businesses, small service operations, part-time

home-based businesses, and small farms. Each year more than a million new businesses start up and many existing firms fail. A firm is organized in one of three ways: as a sole proprietorship, as a partnership, or as a corporation.

Sole Proprietorships

The simplest form of business organization is the **sole proprietorship**, a single-owner firm. Examples include self-employed plumbers, farmers, and dentists. Most sole proprietorships consist of just the self-employed proprietor—there are no hired employees. To organize a sole proprietorship, the owner simply opens for business by, for example, taking out a classified ad announcing availability for plumbing services or whatever. The owner is in complete control. But he or she faces unlimited liability and could lose everything, including a home and other personal assets, to settle business debts or other claims against the business. Also, because the sole proprietor has no partners or other investors, raising enough money to get the business up and running and keep it going can be a challenge. One final disadvantage is that a sole proprietorship usually goes out of business when the proprietor dies or leaves the business. Still, a sole proprietorship is the most common type of business, accounting most recently for 71 percent of all U.S. businesses. Nonetheless, because this type of firm is typically small, proprietorships generate just a tiny portion of all U.S. business sales—only 4 percent. But keep in mind that many of the largest businesses in the world today began as an idea of a sole proprietor.

Partnerships

A more complicated form of business is the **partnership**, which involves two or more individuals who agree to combine their funds and efforts in return for a share of any profit or loss. Law, accounting, and medical partnerships typify this business form. Partners have strength in numbers and often find it easier than sole proprietors to raise enough funds to get the business going. But partners may not always agree. Also, each partner usually faces unlimited liability for any debts or claims against the partnership, so one partner could lose everything because of another partner's mistake. Finally, the death or departure of one partner can disrupt the firm's continuity and require a complete reorganization. The partnership is the least common form of U.S. business, making up only 10 percent of all firms and 15 percent of all business sales.

Corporations

By far the most influential form of business is the corporation. A **corporation** is a legal entity established through articles of incorporation. Shares of stock confer corporate ownership, thereby entitling stockholders to a claim on any profit. A major advantage of the corporate form is that many investors—hundreds, thousands, even millions—can pool their funds, so incorporating represents the easiest way to amass large sums to finance the business. Also, stockholders' liability for any loss is limited to the value of their stock, meaning stockholders enjoy *limited liability*. A final advantage of this form of organization is that the corporation has a life apart from its owners. The corporation survives even if ownership changes hands, and it can be taxed, sued, and even charged with a crime as if it were a person.

The corporate form has some disadvantages as well. A stockholder's ability to influence corporate policy is limited to voting for a board of directors, which oversees the operation of the firm. Each share of stock usually carries with it one vote. The typical stockholder of a large corporation owns only a tiny fraction of the shares and thus has little say. Whereas the income from sole proprietorships and partnerships is taxed only once, corporate income gets whacked twice—first as corporate profits and second as stockholder income, either as corporate dividends or as realized capital gains. A *realized capital gain* is any increase in the market price of a share that occurs between the time the share is purchased and the time it is sold.

A hybrid type of corporation has evolved to take advantage of the limited liability feature of the corporate structure while reducing the impact of double taxation. The *S corporation* provides owners with limited liability, but profits are taxed only once—as income on each shareholder's personal income tax return. To qualify as an S corporation, a firm must have no more than 100 stockholders and no foreign stockholders.

Corporations make up only 19 percent of all U.S. businesses, but because they tend to be much larger than the other two business forms, corporations account for 81 percent of all business sales. Exhibit 2 shows, by business type, the percentage of U.S. firms and the percentage of U.S. sales. The sole

sole proprietorship

A firm with a single owner who has the right to all profits but who also bears unlimited liability for the firm's losses and debts

partnership

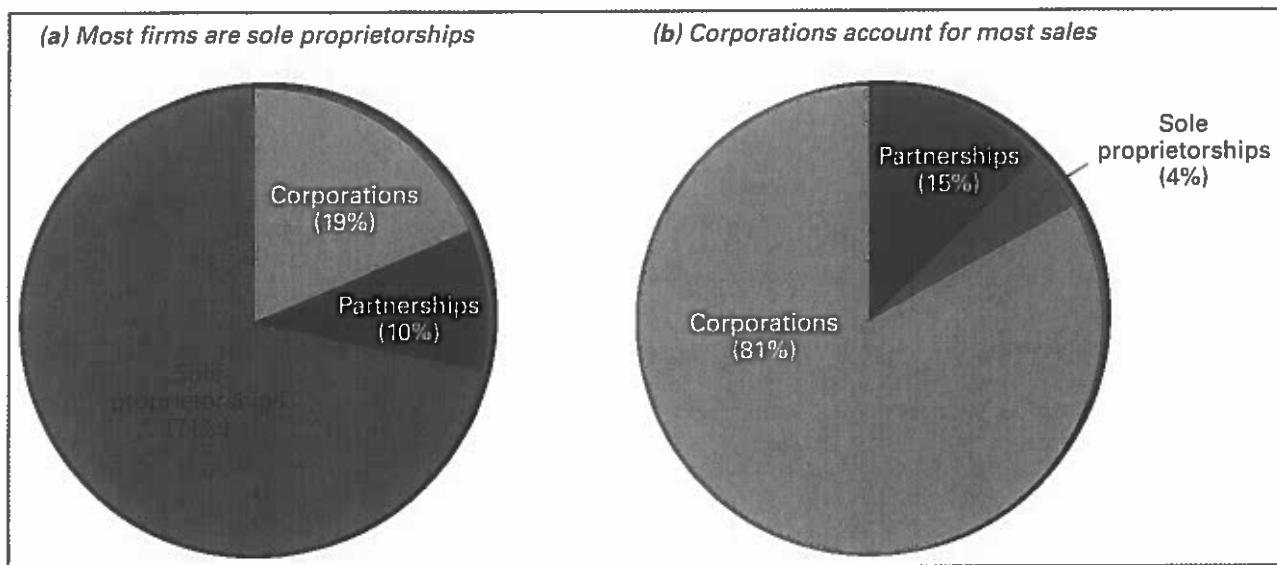
A firm with multiple owners who share the profits and bear unlimited liability for the firm's losses and debts

corporation

A legal entity owned by stockholders whose liability is limited to the value of their stock ownership

Exhibit 2

Percent Distribution by Type of Firm Based on Number of Firms and Firm Sales



SOURCE: U.S. Census Bureau, *Statistical Abstract of the United States: 2012*, U.S. Bureau of the Census, Table No. 744.

proprietorship is the most important in sheer numbers, but the corporation is the most important in total sales.

3-2c Cooperatives

A **cooperative**, or "co-op" for short, is a group of people who cooperate by pooling their resources to buy and sell more efficiently than they could independently. Cooperatives try to minimize costs and operate with limited liability of members. The government grants most cooperatives tax-exempt status. There are two types: consumer cooperatives and producer cooperatives.

Consumer Cooperatives

A **consumer cooperative** is a retail business owned and operated by some or all of its customers in order to reduce costs. Some cooperatives require members to pay an annual fee and others require them to work a certain number of hours each year in the business. Members sometimes pay lower prices than other customers or may share in any revenues that exceed costs. In the United States, consumer cooperatives operate credit unions, electric-power facilities, health plans, apartment buildings, and grocery stores. Many college bookstores are cooperatives. For example, the UConn Co-op is owned by about 30,000 students, faculty, and staff. These members receive discounts on their purchases.

cooperative

An organization consisting of people who pool their resources to buy and sell more efficiently than they could individually

Producer Cooperatives

In a **producer cooperative**, producers join forces to buy supplies and equipment and to market their output. Each producer's objective is to reduce costs and increase profits. Federal legislation allows farmers to cooperate without violating antitrust laws (to be discussed later in the chapter). Firms in other industries could not do this legally. Farmers pool their funds to purchase machinery and supplies, provide storage and processing facilities, and transport products to market. Sunkist, for example, is a farm cooperative owned and operated by about 6,500 citrus growers in California and Arizona.



Seafood Producers Cooperative (SPC) is a cooperative of over 500 fishermen who harvest their catch in the open ocean at the peak of quality.

3-2d Not-for-Profit Organizations

So far, you have learned about organizations that try to maximize profits or, in the case of cooperatives, to minimize costs. Some organizations have neither as a goal. **Not-for-profit organizations** engage in charitable, educational, humanitarian, cultural, professional, and other activities, often with a social purpose. Any revenue exceeding cost is plowed back into the organization. Government agencies do not have profit as a goal either, but governments are not included in this definition of not-for-profit organizations.

Like businesses, not-for-profit organizations evolved to help people accomplish their goals. Examples include nonprofit hospitals, private schools and colleges, religious organizations, the Red Cross, Greenpeace, charitable foundations, soup kitchens, orchestras, museums, labor unions, and professional organizations. In 2012, there were about 1.5 million not-for-profit organizations in the United States. They employed about 12 million workers, or about 8 percent of the U.S. workforce. Not-for-profit hospitals were the largest employers. For example, Houston's Texas Medical Center employs more than 60,000 people. But even not-for-profit organizations must somehow pay the bills. Revenue typically includes some combination of voluntary contributions and service charges, such as college tuition and hospital charges. In the United States, not-for-profit organizations are usually exempt from taxes.

3-2e Why Does Household Production Still Exist?

If firms are so efficient at reducing transaction and production costs, why don't they make everything? Why do households still perform some tasks, such as cooking and cleaning? *If a household's opportunity cost of performing a task is below the market price, then the household usually performs that task.* People with a lower opportunity cost of time do more for themselves. For example, janitors are more likely to mow their lawns than are physicians. Let's look at some reasons for household production.

No Skills or Special Resources Are Required

Some activities require so few skills or special resources that householders find it cheaper to do the jobs themselves. Sweeping the kitchen floor requires only a broom and some time, so it's usually performed by household members. Sanding a wooden floor, however, involves special machinery and expertise, so this service is usually left to professionals. Similarly, although you wouldn't hire someone



BUILDPIX/CONSTRUCTION PHOTOGRAPHY/ALAMY

Do it yourself, or pay someone to do it for you?

to brush your teeth, dental work is not for amateurs. Households usually perform domestic chores that demand neither expertise nor special machinery.

Household Production Avoids Taxes

Suppose you are deciding whether to pay someone \$3,000 to paint your house or do it yourself. If the income tax rate is one-third, you must earn \$4,500 before taxes to have the \$3,000 after taxes to pay for the job. And the painter who charges you \$3,000 nets only \$2,000 after paying \$1,000 in taxes. Thus, you must earn \$4,500 so that the painter can take home \$2,000. If you paint the house yourself, no taxes are involved. The tax-free nature of do-it-yourself activity favors household production over market transactions.

Household Production Reduces Transaction Costs

Getting estimates, hiring a contractor, negotiating terms,

not-for-profit organizations

Groups that do not pursue profit as a goal; they engage in charitable, educational, humanitarian, cultural, professional, or other activities, often with a social purpose

and monitoring job performance all take time and require information. Doing the job yourself reduces these transaction costs. Household production also allows for more personal control over the final product than is usually available through the market. For example, some people prefer home cooking because they can prepare home-cooked meals to individual tastes.

Household production often grows during hard times. The economic recession of 2007–2009 prompted some families to shift from market purchases to household production to save money. For example, sales of hair clippers used for home haircuts increased 10 percent in 2008 and 11 percent in 2009.¹

Technological Advances Increase Household Productivity

Technological breakthroughs are not confined to market production. Vacuum cleaners, washers and dryers, dishwashers, microwave ovens, and other modern appliances reduce the time and often the skill required to perform household tasks. Also, new technologies such as Blu-ray players, DVRs, HDTVs, broadband downloads, and computer games enhance home entertainment. The Information Revolution spawned by the microchip and the Internet has also enhanced the acquisition,

analysis, and transmission of information. Indeed, microchip-based technologies have shifted some production from the firm back to the household. Because of technological change, more people can work from their homes.

3-3 The Government

You might think that production by households and firms could satisfy all consumer wants. Why must yet another

1. Mary Pilon, "Per Capita Saving: Home Barbering Grows in Recession," *Wall Street Journal*, 31 August 2009.

economic decision maker get into the act? After all, governments play some role in every nation on earth.

3-3a The Role of Government

Sometimes the unrestrained operation of markets yields undesirable results. Too many of some goods and too few of other goods get produced. This section dis-

cusses the sources of market failure and how society's overall welfare may be improved through government intervention in the market.

Establishing and Enforcing the Rules of the Game

Market efficiency depends on people like you using your resources to maximize your utility. But what if you were repeatedly robbed of your paycheck on your way home from work? Or what if, after you worked two weeks in a new job, your boss called you a sucker and said you wouldn't get paid? Why bother working?

The market system would break down if you could not safeguard your private property or if you could not enforce contracts. Governments safeguard private property through police protection and enforce contracts through a judicial system. More generally, governments try to make sure that market participants

abide by the rules of the game. These

rules are established through government laws and regulations and also through the customs and conventions of the marketplace.

Promoting Competition

Although the "invisible hand" of competition usually promotes an efficient allocation of resources, some firms try to avoid competition through collusion, which is an agreement among firms to divide the market and fix the price. Or an individual firm may try to eliminate the competition by using unfair business practices. For example, to drive out local competitors, a large firm may temporarily sell at a price below cost. Government antitrust laws try to promote competition by prohibiting collusion and other anticompetitive practices.

Regulating Natural Monopolies

Competition usually keeps the product price below the price charged by a monopoly, a sole supplier to the market. In rare instances, however, a monopoly



Information Revolution

Technological change spawned by the microchip and the Internet that enhanced the acquisition, analysis, and transmission of information

market failure

A condition that arises when the unregulated operation of markets yields socially undesirable results

antitrust laws

Prohibitions against price fixing and other anticompetitive practices

monopoly

A sole supplier of a product with no close substitutes

OLEKSIY MAKSYMENKO PHOTOGRAPHY/ALAMY

can produce and sell the product for less than could competing firms. For example, electricity is delivered more efficiently by a single firm that wires the community than by competing firms each stringing its own wires. When it is cheaper for one firm to serve the market than for two or more firms to do so, that one firm is called a **natural monopoly**. Since a natural monopoly faces no competition, it maximizes profit by charging a higher price than would be optimal from society's point of view. A lower price and greater output would improve social welfare. Therefore, the government usually regulates a natural monopoly, forcing it to lower its price and increase output.

Providing Public Goods

So far this book has been talking about private goods, which have two important features. First, private goods are rival in consumption, meaning that the amount consumed by one person is unavailable for others to consume. For example, when you and some friends share a pizza, each slice they eat is one fewer available for you. Second, the supplier of a private good can easily exclude those who fail to pay. Only paying customers get pizza. Thus, private goods are said to be exclusive. So **private goods**, such as pizza, are both rival in consumption and exclusive. In contrast, **public goods** are nonrival in consumption. For example, your family's benefit from a safer neighborhood does not reduce your neighbor's benefit. What's more, once produced, public goods are available to all. Suppliers cannot easily prevent consumption by those who fail to pay. For example, reducing terrorism is nonexclusive. It benefits all in the community, regardless of who pays to reduce terrorism and who doesn't. Because public goods are nonrival and nonexclusive, private firms cannot sell them profitably. The government, however, has the authority to enforce tax collections for public goods. Thus, the government provides public goods and funds them with taxes.

Dealing With Externalities

Market prices reflect the private costs and private benefits of producers and consumers. But sometimes production or consumption imposes costs or benefits on third parties—on those who are neither suppliers nor demanders in a market transaction. For example, a paper mill fouls the air breathed by nearby residents, but the price of paper usually fails to reflect such costs. Because these pollution costs are outside, or external to, the market, they are called

externalities. An **externality** is a cost or a benefit that falls on a third party. A negative externality imposes an external cost, such as factory pollution, auto emissions, or traffic congestion. A positive externality confers an external benefit, such as getting a good education, getting inoculated against a disease (thus reducing the possibility of infecting others), or driving carefully. Because market prices usually do not reflect externalities, governments often use taxes, subsidies, and regulations to discourage negative externalities and encourage positive externalities. For example, a polluting factory may face taxes and regulations aimed at curbing that pollution. And because more educated people can read road signs and have options that pay better than crime, governments try to encourage education with free public schools, subsidized higher education, and by keeping people in school until their 16th birthdays.

“The supplier of a private good can easily exclude those who fail to pay.”

A More Equal Distribution of Income

As mentioned earlier, some people, because of poor education, mental or physical

disabilities, bad luck, or perhaps the need to care for small children, are unable to support themselves and their families. Because resource markets do not guarantee even a minimum level of income, transfer payments reflect society's willingness to provide a basic standard of living to all households. Most Americans agree that government should redistribute income to the poor (note the normative nature of this statement). Opinions differ about who should receive benefits, how much they should get, what form benefits should take, and how long benefits should last.

Full Employment, Price Stability, and Economic Growth

Perhaps the most important responsibility of government is fostering a healthy economy, which benefits just about everyone. The government—through its ability to tax, to spend, and to control the money supply—attempts to promote full employment, price stability, and economic growth. Pursuing these objectives by

natural monopoly
One firm that can supply the entire market at a lower per-unit cost than could two or more firms

private good
A good, such as pizza, that is both rival in consumption and exclusive

public good
A good that, once produced, is available for all to consume, regardless of who pays and who doesn't; such a good is nonrival and nonexclusive, such as a safer community

externality
A cost or a benefit that affects neither the buyer nor seller, but instead affects people not involved in the market transaction

taxing and spending is called **fiscal policy**. Pursuing them by regulating the money supply is called **monetary policy**. Macroeconomics examines both policies.

3-3b Government's Structure and Objectives

The United States has a *federal system* of government, meaning that responsibilities are shared across levels of government. State governments grant some powers to local governments and surrender some powers to the national, or federal, government. As the system has evolved, the federal government has primary responsibility for national security, economic stability, and market competition. State governments fund public higher education, prisons, and—with aid from the federal government—highways and welfare. Local governments provide primary and secondary education with aid from the state, plus police and fire protection. Here are some distinguishing features of government.

Difficulty in Defining Government Objectives

We assume that households try to maximize utility and firms try to maximize profit, but what about governments—or, more specifically, what about government decision makers? What do they try to maximize? One problem is that our federal system consists of not one but many governments—approximately 89,055 separate jurisdictions in all, including 1 nation, 50 states, 3,031 counties, 35,886 cities and towns, 12,884 school districts, and 37,203 special districts. What's more, because the federal government relies on offsetting, or countervailing, powers across the executive, legislative, and judicial branches, government does not act as a single, consistent decision maker. Even within the

federal executive branch, there are so many agencies and bureaus that at times they seem to work at cross-purposes. For example, at the same time as the U.S. Surgeon General required health warnings on cigarette packages, the U.S. Department of Agriculture pursued policies to benefit tobacco growers. Given this thicket of jurisdictions, branches, and bureaus, one useful theory of government

fiscal policy

The use of government purchases, transfer payments, taxes, and borrowing to influence economy-wide variables such as inflation, employment, and economic growth

monetary policy

Regulation of the money supply to influence economy-wide variables such as inflation, employment, and economic growth

behavior is that elected officials try to maximize the number of votes they get in the next election. So let's assume that elected officials are vote maximizers. In this theory, vote maximization guides the decisions of elected officials who, in turn, oversee government employees.

Voluntary Exchange Versus Coercion

Market exchange relies on the voluntary behavior of buyers and sellers. Don't like tofu? No problem—don't buy any. But in political markets, the situation is different. Any voting rule except unanimous consent must involve some government coercion. Public choices are enforced by the police power of the state. Those who don't pay their taxes could go to jail, even though they may object to some programs those taxes support, such as capital punishment.

No Market Prices

Another distinguishing feature of governments is that public output is usually offered at either a zero price or at some price below the cost of providing it. If you now pay in-state tuition at a public college or university, your tuition probably covers only about half the state's cost of providing your education. Because the revenue side of the government budget is usually separate from the expenditure side, there is no necessary link between the cost of a program and the benefit. In the private sector, the expected marginal benefit of a product is at least as great as marginal cost; otherwise, nobody would buy it.

3-3c The Size and Growth of Government

One way to track the impact of government over time is by measuring government outlays relative to the U.S. *gross domestic product*, or GDP, which is the total value of all final goods and services produced in the United States. In 1929, the year the Great Depression began, all government outlays, mostly by state and local governments, totaled about 10 percent of GDP. At the time, the federal government played a minor role. In fact, during the nation's first 150 years, federal outlays, except during war years, never exceeded 3 percent relative to GDP.

The Great Depression, World War II, a change in macroeconomic thinking, and extraordinary measures following the financial crisis of 2008 boosted the share of government outlays to 40 percent of GDP in 2013, with about two-thirds of that by the federal government. In comparison, government outlays relative to GDP were 41 percent in Canada, 43 percent in Japan,

45 percent in Germany, 47 percent in the United Kingdom, 50 percent in Italy, and 55 percent in France. Government outlays by 31 advanced industrial economies averaged 41 percent of GDP in 2013.² Thus, government outlays in the United States relative to GDP are slightly below the average of advanced economies.

Let's look briefly at the composition of federal outlays. Since 1960, defense spending has declined from over half of federal outlays to less than one-fifth by 2013, as shown in Exhibit 3. Redistribution—Social Security, Medicare, and welfare programs—has been the mirror image of defense spending, jumping from only about one-fifth of federal outlays in 1960 to half by 2013.

3-3d Sources of Government Revenue

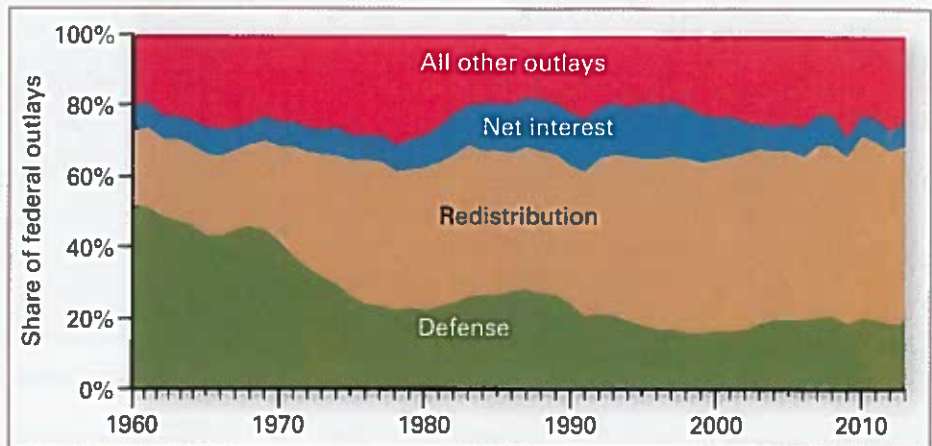
Taxes provide the bulk of revenue at all levels of government. The federal government relies primarily on the individual income tax, state governments rely on income and sales taxes, and local governments rely on the property tax. Other revenue sources include user charges, such as highway tolls, and borrowing. For additional revenue, some states also act as monopolies in certain markets, such as selling lottery tickets and liquor.

Exhibit 4 focuses on the composition of federal revenue since 1960. The share made up by the individual income tax has remained relatively steady, ranging from a low of 42 percent in the mid-1960s to a high of 50 percent in 2001, before settling down to 47 percent from 2011 to 2013. The share from payroll taxes more than doubled from 15 percent in 1960

2. The Organization of Economic Cooperation and Development, *OECD Economic Outlook*, 91 (May 2012), Annex Table 25.

Exhibit 3

Redistribution Has Grown and Defense Has Declined as Share of Federal Outlays: 1960–2013



SOURCE: Computed based on figures from the *Economic Report of the President*, February 2012, Table B-80. Figures for 2012 and 2013 are estimates. For the latest figures, go to <http://www.whitehouse.gov/administration/eop/cea/economic-report-of-the-President>.

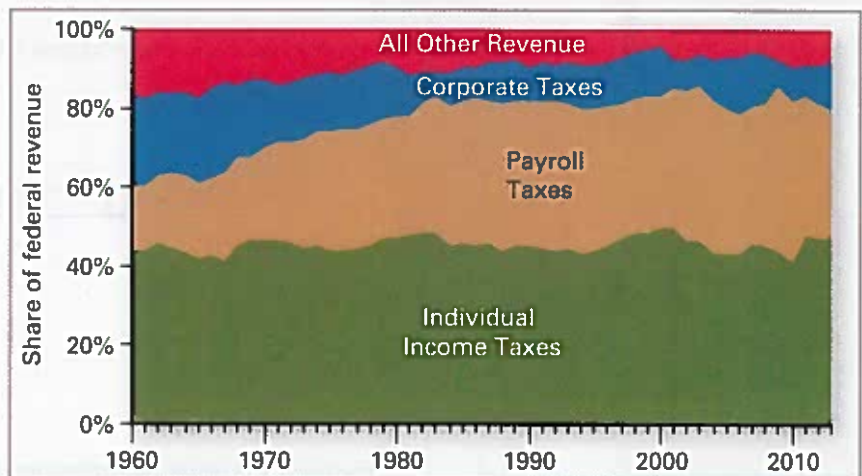
to 33 percent in 2013. Payroll taxes are deducted from paychecks to support Social Security and Medicare, which fund retirement income and medical care for the elderly. Corporate taxes and revenue from other sources, such as excise (sales) taxes and user charges, have declined as a share of federal revenue since 1960.

3-3e Tax Principles and Tax Incidence

The structure of a tax is often justified on the basis of one of two general principles. First, a tax could relate to the individual's ability to pay, so those with a greater ability pay more taxes. Income or property taxes often

Exhibit 4

Payroll Taxes Have Grown and Corporate Taxes Have Declined as a Share of Federal Revenue: 1960–2013



SOURCE: Computed based on figures from the *Economic Report of the President*, February 2012, Table B-80. Figures for 2012 and 2013 are projections. For the latest figures, go to <http://www.whitehouse.gov/administration/eop/cea/economic-report-of-the-President>.

rely on this ability-to-pay tax principle. Alternatively, the benefits-received tax principle relates taxes to the benefits taxpayers receive from the government activity funded by the tax. For example, the tax on gasoline funds highway construction and maintenance, thereby linking tax payment to road use, since those who drive more pay more gas taxes.

Tax incidence indicates who actually bears the burden of the tax. One way to evaluate tax incidence is by measuring the tax as a percentage of income. Under proportional taxation, taxpayers at all income levels pay the same percentage of their income in taxes. A proportional income tax is also called a flat tax, since the tax as a percentage of income remains constant, or flat, as income increases. Note that under proportional taxation, although taxes remain constant as a percentage of income, the dollar amount of taxes increases proportionately as income increases.

Under progressive taxation, the percentage of income paid in taxes increases as income increases. The marginal tax rate indicates the percentage of

each additional dollar of income that goes to taxes. Because high marginal rates reduce the after-tax return from working or investing, high marginal rates can reduce people's incentives to work and invest. The six marginal rates applied to the U.S. personal income tax ranged from 10 to 35 percent in 2012, down from a range of 15 to 39.6 percent in 2000. The top rate returned to 39.6 percent in 2013.

ability-to-pay tax principle

Those with a greater ability to pay, such as those earning higher incomes or those owning more property, should pay more taxes

benefits-received tax principle

Those who get more benefits from the government program should pay more taxes

tax incidence

The distribution of tax burden among taxpayers; who ultimately pays the tax

proportional taxation

The tax as a percentage of income remains constant as income increases; also called a flat tax

progressive taxation

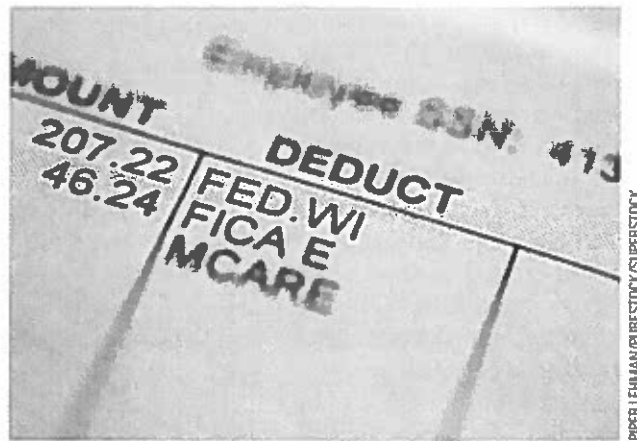
The tax as a percentage of income increases as income increases

marginal tax rate

The percentage of each additional dollar of income that goes to the tax

regressive taxation

The tax as a percentage of income decreases as income increases



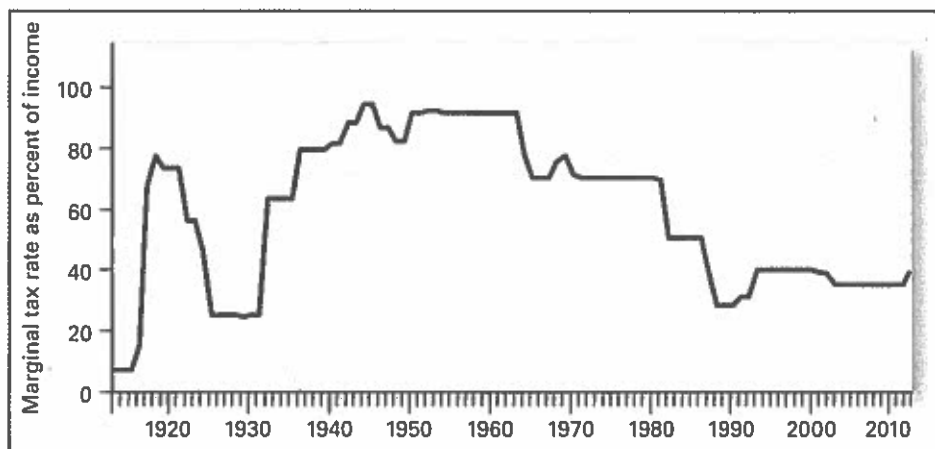
Decoding the taxes on your pay stub.

The top marginal tax bracket each year during the history of the personal income tax is shown by Exhibit 5. Although the top marginal rate is now lower than it was during most other years, high-income households still pay most of the federal income tax collected. About 40 percent of U.S. households pay no federal income tax. According to the U.S. Internal Revenue Service, the top 1 percent of tax filers, based on income, paid 38 percent of all income taxes collected in 2008. Their average tax rate was 23.3 percent. And the top 10 percent of tax filers paid 70 percent of all income taxes collected. Their average tax rate was 18.7 percent. In contrast, the bottom 50 percent of tax filers paid only 2.6 percent of all income taxes collected. Their tax rate averaged only 3.0 percent. Whether we look at marginal tax rates or average tax rates, the U.S. income tax is progressive. High-income filers pay the overwhelming share of income taxes.

Finally, under regressive taxation, the percentage of income paid in taxes decreases as income

Exhibit 5

Top Marginal Rate on Federal Personal Income Tax Since 1913



SOURCE: U.S. Internal Revenue Service. For the latest figures on the personal income tax go to <http://www.irs.gov/individuals/index.html>.



In Egypt, builders often leave the top floor of new construction unfinished to avoid paying property taxes.

increases, so the marginal tax rate declines as income increases. Most U.S. payroll taxes are regressive, because they impose a flat rate up to a certain level of income, above which the marginal rate drops to zero. For example, Social Security taxes were levied on the first \$113,700 of workers' pay in 2013. Employers pay 6.2 percent and employees pay 6.2 percent (the self-employed pay the entire 12.4 percent).

Taxes often do more than fund public programs. Some taxes discourage certain activity. For example, a pollution tax can help clean the air. A tax on gasoline can encourage people to work at home, carpool, or use public transportation. Some taxes have unintended consequences. For example, in Egypt a property tax is not imposed until a new building is complete. To avoid such taxes, builders never finish the job; multistory dwellings are usually missing the top floor. As another example of how taxes can distort the allocation of resources, property taxes in Amsterdam and Vietnam were originally based on the width of the building. As a result, buildings in those places are extremely narrow. Such taxes distort the efficient allocation of resources.

This discussion of revenue sources brings to a close, for now, our examination of the role of government in the U.S. economy. Government has a pervasive influence on the economy, and its role is discussed throughout the book.

3-4 The Rest of the World

So far, the focus has been on institutions within the United States—that is, on domestic households, firms, and governments. This focus is appropriate because our primary objective is to understand the workings of the U.S. economy, by far the largest in the world.

But the rest of the world affects what U.S. households consume and what U.S. firms produce. For example, Japan and China supply all kinds of manufactured goods to America, thereby affecting U.S. prices, wages, and profits. Likewise, political events in the Persian Gulf and North Africa can affect what Americans pay for oil. Foreign decision makers, therefore, influence the U.S. economy—what we produce and what we consume. The rest of the world consists of the households, firms, and governments in the other 200 or so sovereign nations throughout the world.

3-4a International Trade

In the previous chapter, you learned about comparative advantage and the gains from specialization. These gains explain why householders stopped doing everything for themselves and began to specialize. International trade arises for the same reasons. *International trade occurs because the opportunity cost of producing specific goods differs across countries.* Americans import raw materials like crude oil, bauxite (aluminum ore), and coffee beans and finished goods like cameras, DVD players, and cut diamonds. U.S. producers export sophisticated products like computer software, aircraft, and movies, as well as agricultural products like wheat, corn, and cotton. Farm exports are why America has long been called the “breadbasket of the world.”

“International trade occurs because the opportunity cost of producing specific goods differs across countries.”

Trade between the United States and the rest of the world has increased in recent decades. In 1970, U.S. exports of goods and services amounted to only 6 percent of the gross domestic product. That has increased to about 14 percent today. The top 10 destinations for U.S. exports in order of importance are Canada, Mexico, China, Japan, the United Kingdom, Germany, the Netherlands, South Korea, France, and Brazil.

The **merchandise trade balance** equals the value of exported goods minus the value of imported goods.

merchandise trade balance

The value during a given period of a country's exported goods minus the value of its imported goods

Goods in this case are distinguished from services, which show up in another trade account. For the last quarter century, the United States has imported more goods than it has exported, resulting in a merchandise trade deficit. Just as a household must pay for its spending, so too must a nation. The merchandise trade deficit must be offset by a surplus in one or more of the other balance-of-payments accounts. A nation's balance of payments is the record of all economic transactions between its residents and residents of the rest of the world.

3-4b Exchange Rates

The lack of a common currency complicates trade between countries. How many U.S. dollars buy a Porsche? An American buyer cares only about the dollar cost; the German carmaker cares only about the euros received (the common currency of 17 European countries). To facilitate trade funded by different currencies, a market for foreign exchange has developed. Foreign exchange is foreign currency needed to carry out international transactions. The supply and demand for foreign exchange comes together in foreign exchange markets to determine the exchange rate. The exchange rate measures the price of one currency in terms of another. For example, the exchange rate between the euro and the dollar might indicate that one euro exchanges for \$1.30. At that exchange rate, a Porsche selling for €100,000

costs \$130,000. The exchange rate affects the prices of imports and exports, and thus helps shape the flow of foreign trade.

3-4c Trade Restrictions

Despite clear gains from international specialization and exchange, nearly all nations restrict trade to some extent. These restrictions can take the form of (1) tariffs, which are taxes on imports; (2) quotas, which are limits on the quantity of a particular good that can be imported or exported; and (3) other trade restrictions. If specialization according to comparative advantage is so beneficial, why do most

countries restrict trade? Restrictions benefit certain domestic producers that lobby their governments for these benefits. For example, U.S. growers of sugarcane have benefited from legislation restricting imports, thereby raising U.S. sugar prices. These higher prices hurt domestic consumers, but consumers are usually unaware of this harm. Trade restrictions interfere with the free flow of products across borders and tend to hurt the overall economy.

3-5 Final Word

This chapter examined the four economic decision makers: households, firms, governments, and the rest of the world. Domestic households are by far the most important, for they supply resources and demand goods and services.

If you were to stop reading right now, you would already know more economics than most people. But to understand market economies, you must learn how markets work. The next chapter introduces demand and supply.

balance of payments

A record of all economic transactions during a given period between residents of one country and residents of the rest of the world

foreign exchange

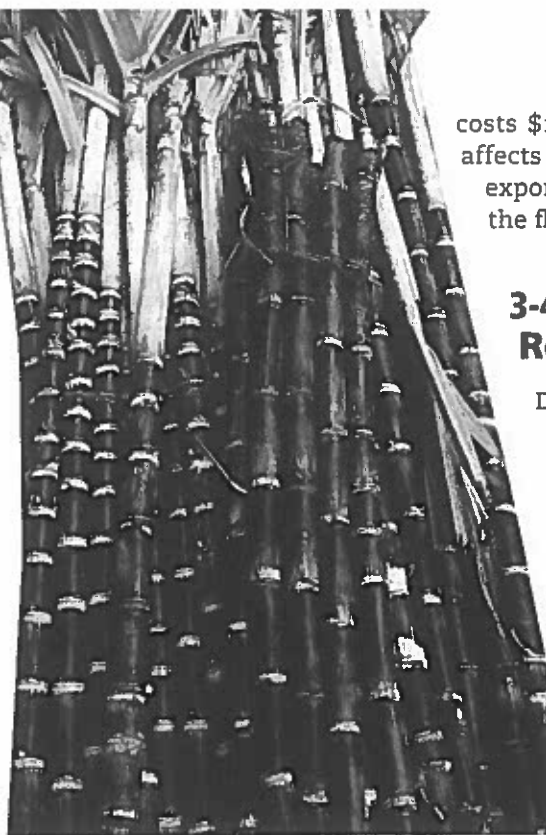
Foreign money needed to carry out international transactions

tariff

A tax on imports

quota

A legal limit on the quantity of a particular product that can be imported or exported



\$13.7

< Trillion of personal
income in the United
States in 2012

1.5 million

< Number of not-for-
profit organizations
in the United States

Number of owners/
operators of Sunkist
Farm co-ops >

6,500

71

< Percentage of all U.S.
businesses that are
sole proprietorships

Number of separate govern-
ment jurisdictions in the
United States >

89,055

Demand, Supply, *and* Markets

Learning Outcomes

- 4-1 Explain why a demand curve slopes downward
- 4-2 Identify five things which could shift a demand curve to the right or left
- 4-3 Explain why a supply curve usually slopes upward
- 4-4 Identify five things which could shift a supply curve to the right or left
- 4-5 Explain why surpluses push prices down while shortages drive prices up
- 4-6 Predict the impact of a change in demand or supply on the equilibrium price and quantity
- 4-7 Describe the result of a government-set price floor and price ceiling on a market

“Why do roses cost more on Valentine’s Day than during the rest of the year?”

Why do roses cost more on Valentine’s Day than during the rest of the year? Why do TV ads cost more during the Super Bowl (\$4 million for 30 seconds in 2013) than during Nick at Nite reruns? Why do Miami hotels charge more in February than in August? Why do surgeons earn more than butchers? Why do basketball pros earn more than hockey pros? Why do economics majors earn more than most other majors? Answers to these and most other economic questions boil down to the workings of demand and supply—the subject of this chapter.

This chapter introduces demand and supply and shows how they interact in competitive markets. *Demand and supply are the most fundamental and the most powerful of all economic tools*—important enough to warrant a chapter. Indeed, some believe that if you program a computer to answer “demand and supply” to every economic question, you could put many economists out of work. An understanding of the two ideas will take you far in mastering the art and science of economic analysis. This chapter uses more graphs than previous chapters, so you may need to review the Chapter 1 appendix as a refresher.

What do **you** think?

Professional athletes should earn comparable salaries regardless of the sport they play.

Strongly Disagree

Strongly Agree

1 2 3 4 5 6 7

Topics discussed in Chapter 4 include

- Demand and quantity demanded
- Movement along a demand curve
- Shift of a demand curve
- Supply and quantity supplied
- Movement along a supply curve
- Shift of a supply curve
- Markets and equilibrium
- Disequilibrium

4-1 Demand

How many six-packs of Pepsi will people buy each month at a price of \$4? What if the price is \$3? What if it’s \$5? The answers reveal the relationship between the price of a six-pack and the quantity of Pepsi demanded. Such a relationship is called

the demand for Pepsi. Demand indicates the quantity consumers are both willing and able to buy at each price during a given time period, other things constant. Because demand pertains to a specific period—a day, a week, a month—think of demand as the amounts purchased per period at each price. Also, notice the emphasis on willing and able. You may be able to buy a new Harley-Davidson Sportster Forty-Eight for \$11,000 because you can afford one, but you may not be willing to buy one if motorcycles don't interest you.

“Sell for less, and the world will beat a path to your door.”

The Substitution Effect of a Price Change

What explains the law of demand? Why, for example, does the quantity demanded increase if the price declines?

The explanation begins with unlimited wants confronting scarce resources. Many goods and services can help satisfy particular wants. For example, you can satisfy your hunger with pizza, tacos, burgers, chicken, or hundreds of other foods. Similarly, you can satisfy your desire for warmth in the winter with warm clothing, a home heating system, a trip to Hawaii, or in many other ways. Clearly, some alternatives are more appealing than others (a trip to Hawaii is more fun than warm clothing). In a world without scarcity, everything would be free, so you would always choose the most attractive alternative. Scarcity, however, is the reality, and the degree of scarcity of one good relative to another helps determine each good's relative price.

Notice that the definition of demand includes the other-things-constant assumption. Among the “other things” assumed to remain constant are the prices of other goods. For example, if the price of pizza declines while other prices remain constant, pizza becomes relatively cheaper. Consumers are more willing to purchase pizza when its relative price falls; they substitute pizza for other goods. This idea is called the substitution effect of a price change. On the other hand, an increase in the price of pizza, other things constant, increases the opportunity cost of pizza—that is, the amount of other goods you must give up to buy pizza. This higher opportunity cost causes consumers to substitute other goods for the now higher-priced pizza, thus reducing their quantity of pizza demanded. Remember that it is the change in the relative price—the price of one good relative to the prices of other goods—that causes the substitution effect. If all prices changed by the same percentage, there would be no change in relative prices and no substitution effect.

The Income Effect of a Price Change

A fall in the price of a good increases the quantity demanded for a second reason. Suppose you earn \$30 a week from a part-time job, so \$30 is your money income. Money income is simply the number of dollars received per period, in this case, \$30 per week. Suppose you spend all that on pizza, buying three a week at \$10 each. What if the price drops to \$6? At that lower price, you can now afford five pizzas a week. Your money income remains at \$30 per week, but the drop in

4-1a The Law of Demand

In 1962, Sam Walton opened his first store in Rogers, Arkansas, with a sign that read, “Wal-Mart Discount City. We sell for less.” Now called Walmart, this store chain sells more than any other retailer in the world because prices there are among the lowest around. As a consumer, you understand why people buy more at a lower price. Sell for less, and the world will beat a path to your door. Walmart, for example, sells on average over 20,000 pairs of shoes an hour. This relation between the price and the quantity demanded is an economic law. The law of demand says that quantity demanded varies inversely with price, other

things constant. Thus, the higher the price, the smaller the quantity demanded; the lower the price, the greater the quantity demanded.

Demand, Wants, and Needs

Consumer demand and consumer wants are not the same. As we have seen, wants are unlimited. You may want a new Mercedes-Benz SL600 Roadster convertible, but the \$139,100 price tag is likely beyond your budget (that is, the quantity you demand at that price is zero). Nor is demand the same as need. You may need a new muffler for your car, but a price of \$300 is just too high for you right now. If, however, the price drops enough—say, to \$200—then you may be both willing and able to buy one.

demand

A relation between the price of a good and the quantity that consumers are willing and able to buy per period, other things constant

law of demand

The quantity of a good that consumers are willing and able to buy per period relates inversely, or negatively, to the price, other things constant

substitution effect of a price change

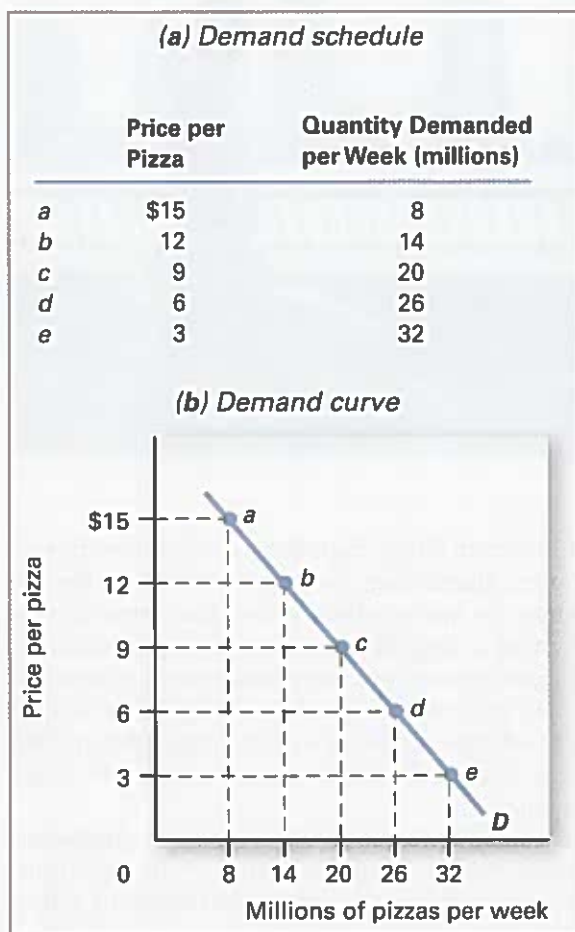
When the price of a good falls, that good becomes cheaper compared to other goods so consumers tend to substitute that good for other goods

money income

The number of dollars a person receives per period, such as \$400 per week

Exhibit 1

The Demand Schedule and Demand Curve for Pizza



price increases your **real income**—that is, your income measured in terms of what it can buy. The price reduction, other things constant, increases the purchasing power of your income, thereby increasing your ability to buy pizza. The quantity of pizza you demand will likely increase because of this **income effect of a price change**. You may not increase your quantity demanded to five pizzas, but you could. If you decide to purchase four pizzas a week when the price drops to \$6, you would still have \$6 remaining to buy other stuff. Thus, the income effect of a lower price increases your real income and thereby increases your ability to buy pizza and other goods, making you better off. The income effect is reflected in Walmart's slogan, which trumpets low prices: "Save money. Live better." Because of the income effect, consumers typically increase their quantity demanded when the price declines.

Conversely, an increase in the price of pizza, other things constant, reduces real income, thereby reducing your ability to buy pizza and other goods.

Because of the income effect, consumers typically reduce their quantity demanded when the price increases. The more important the item is as a share of your budget, the bigger the income effect. That's why, for example, some consumers cut back on a variety of purchases when the price of gasoline spikes, as it did in 2012. Again, note that money income, not real income, is assumed to remain constant along a demand curve. A change in price changes your real income, so real income varies along a demand curve. The lower the price, the greater your real income.

4-1b The Demand Schedule and Demand Curve

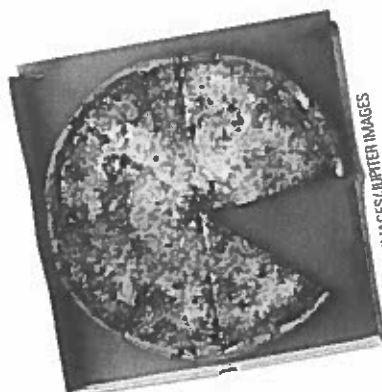
Demand can be expressed as a *demand schedule* or as a *demand curve*. Panel (a) of Exhibit 1 shows a hypothetical demand schedule for pizza. In describing demand, we must specify the units measured and the period considered. In our example, the unit is a 12-inch regular pizza and the period is a week. The schedule lists possible prices, along with the quantity demanded at each price. At a price of \$15, for example, consumers demand 8 million pizzas per week. As you can see, the lower the price, other things constant, the greater the quantity demanded. Consumers substitute pizza for other foods. And as the price falls, real income increases, causing consumers to increase the quantity of pizza they demand. If the price drops as low as \$3, consumers demand 32 million per week.

The demand schedule in panel (a) appears as a **demand curve** in panel (b), with price measured on the vertical axis and the quantity demanded per week on the horizontal axis. Each price-quantity combination listed in the demand schedule in the left panel becomes a point in the right panel. Point a, for example, indicates that if the price is \$15, consumers demand 8 million pizzas per week. Connecting points forms the demand curve for pizza, labeled D. (By the way, some demand curves are straight lines, some are curved lines, and some are even crooked lines, but they all are called demand curves.)

real income
Income measured in terms of the goods and services it can buy; real income changes when the price changes

income effect of a price change
A fall in the price of a good increases consumers' real income, making consumers more able to purchase goods; for a normal good, the quantity demanded increases

demand curve
A curve showing the relation between the price of a good and the quantity consumers are willing and able to buy per period, other things constant



A demand curve slopes downward, reflecting the law of demand: Price and quantity demanded are inversely related, other things constant. Besides money income, also assumed constant along the demand curve are the prices of other goods.

Thus, along the demand curve, the price of pizza changes *relative to the prices of other goods*. The demand curve shows the effect of a change in the *relative price of pizza*—that is, relative to other prices, which do not change.

Take care to distinguish between *demand* and *quantity demanded*. The *demand* for pizza is not a specific amount, but rather the *entire relationship* between price and quantity demanded—represented by the demand schedule or the demand curve. An individual point on the demand curve indicates the *quantity demanded* at a particular price. For example, at a price of \$12, the quantity demanded is 14 million pizzas per week. If the price drops from \$12 to, say, \$9, this is shown in Exhibit 1 by a movement along the demand curve—in this case from point *b* to point *c*. Any movement along a demand curve reflects a *change in quantity demanded*, not a change in demand. Got that?

quantity demanded

The amount of a good consumers are willing and able to buy per period at a particular price, as reflected by a point on a demand curve

individual demand

The relation between the price of a good and the quantity purchased by an individual consumer per period, other things constant

market demand

The relation between the price of a good and the quantity purchased by all consumers in the market during a given period, other things constant; sum of the individual demands in the market

The law of demand applies to the millions of products sold by grocery stores, department stores, clothing stores, shoe stores, drugstores, music stores, bookstores, hardware stores, other retailers, travel agencies, and restaurants, as well as through mail-order catalogs, the *Yellow Pages*, classified ads, online sites, stock markets, real estate markets, job markets, flea markets, and all other markets. The law of demand applies even to choices that seem more personal than economic, such as whether or not to own a pet. For example, after New York City passed an anti-dog-litter law, law-abiding



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owners had to follow their dogs around the city with scoopers, plastic bags—whatever would do the job. Because the law in effect raised the personal cost of owning a dog, the quantity of dogs demanded decreased. Some dogs were abandoned, increasing strays in the city. The number of dogs left at animal shelters doubled. The law of demand predicts this inverse relation between cost, or price, and quantity demanded.

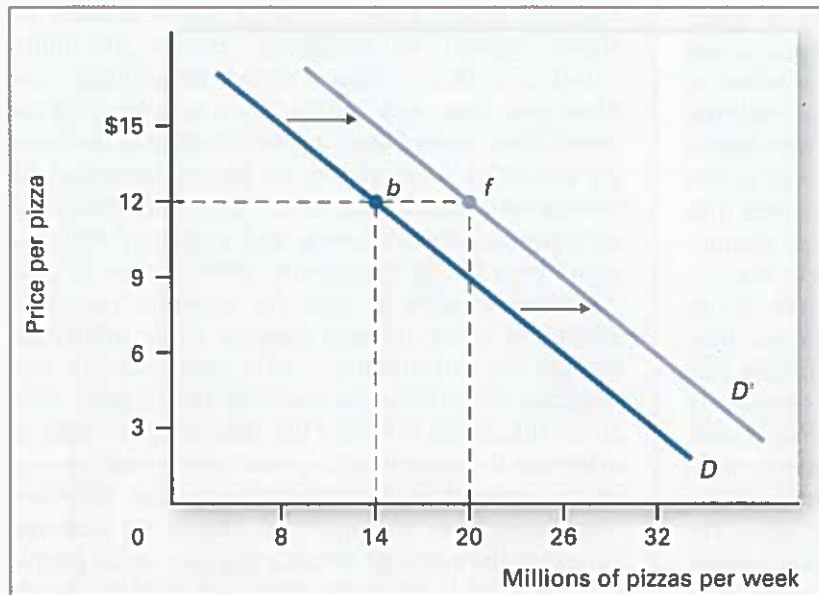
It is useful to distinguish between *individual demand*, which is the demand of an individual consumer such as you, and *market demand*, which is the sum of the individual demands of all consumers in the market. In most markets, there are many consumers, sometimes millions. The *market demand curve* shows the quantities demanded per period by all consumers at various prices. Unless otherwise noted, when we talk about demand, we are referring to market demand, as shown in Exhibit 1.

4-2 Shifts of the Demand Curve

A demand curve isolates the relation between the price of a good and quantity demanded when other factors that could affect demand remain unchanged. What are those other factors? Variables that can affect market demand are (1) the money income of consumers, (2) the prices of other goods, (3) consumer expectations, (4) the number or composition of consumers in the market, and (5) consumer tastes. How could changes in each affect demand?

Exhibit 2

An Increase in the Market Demand for Pizza



4-2a Changes in Consumer Income

Exhibit 2 shows the market demand curve D for pizza. This demand curve assumes a given money income. Suppose consumer income increases. Some consumers are then willing and able to buy more pizza at each price, so market demand increases. The demand curve shifts to the right from D to D' . For example, at a price of \$12, the amount of pizza demanded increases from 14 million to 20 million per week, as indicated by the movement from point b on demand curve D to point f on demand curve D' . In short, an increase in demand—that is, a rightward shift of the demand curve—means that consumers are willing and able to buy more pizza at each price.

Goods are classified into two broad categories, depending on how consumers respond to changes in money income. The demand for a **normal good** increases as money income increases. Because pizza is a normal good, its demand curve shifts rightward when money income increases. Most goods are normal. In contrast, demand for an **inferior good** actually decreases as money income increases, so the demand curve



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shifts leftward. Examples of inferior goods include bologna sandwiches, used furniture, and used clothes. As money income increases, consumers tend to switch from these inferior goods to normal goods (such as roast beef sandwiches, new furniture, and new clothes).

4-2b Changes in the Prices of Other Goods

Again, the prices of other goods are assumed to remain constant along a given demand curve. Now let's bring these other prices into play. Consumers have various ways of trying to satisfy any particular want. Consumers choose among substitutes based on relative prices. For example, pizza and tacos are substitutes, though not perfect ones. An increase in the price of tacos, other things constant, reduces the quantity of tacos demanded along a given taco demand curve. An increase in the price of tacos also increases the demand for pizza, shifting the demand curve for pizza to the right. Two goods are considered **substitutes** if an increase in the price of one shifts the demand for the other rightward.

Goods used in combination are called **complements**. Examples include Pepsi and pizza, milk and cookies, computer software and hardware, and airline tickets and rental cars. Two goods are considered **complements** if an increase in the price of one decreases the demand for the other, shifting that demand curve leftward. For example, an increase in the price of Pepsi shifts the demand curve for pizza leftward. But most pairs of goods selected at random are **unrelated**—for example, pizza and housing, or milk and gasoline. Still, an increase in the price of an unrelated good reduces the consumers' real income and can thereby reduce the demand for pizza and other goods. For example, a sharp increase in housing prices reduces the income left over for other goods, such as pizza.

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normal good

A good, such as new clothes, for which demand increases, or shifts rightward, as consumer income rises

inferior good

A good, such as used clothes, for which demand decreases, or shifts leftward, as consumer income rises

substitutes

Goods, such as tacos and pizza, that relate in such a way that an increase in the price of one shifts the demand for the other rightward

complements

Goods, such as Pepsi and pizza, that relate in such a way that an increase in the price of one shifts the demand for the other leftward

4-2c Changes in Consumer Expectations

Another factor assumed constant along a given demand curve is consumer expectations about factors that influence demand, such as incomes or prices. A change in consumers' *income expectations* can shift the demand curve. For example, a consumer who learns about a pay raise might increase demand well before the raise takes effect. A college senior who lands that first real job may buy a new car even before graduation. Likewise, a change in consumers' *price expectations* can shift the demand curve. For example, if you expect the price of pizza to jump next week, you may buy an extra one today for the freezer, shifting this week's demand for pizza rightward. Or if consumers come to believe that home prices will climb next year, some will increase their demand for housing now, shifting this year's demand for housing rightward. The expectation of lower prices has the opposite effect. For example, during the recession of 2007–2009, people expected home prices to continue falling, so they put off buying homes, shifting the demand for housing leftward. Such expectations can often be self-fulfilling.

4-2d Changes in the Number or Composition of Consumers

As mentioned earlier, the market demand curve is the sum of the individual demand curves of all consumers in the market. If the number of consumers changes, the demand curve will shift. For example, if the population grows, the demand curve for pizza will shift rightward. Even if total population remains unchanged, demand could shift with a change in the

composition of the population. For example, an increase over time in teenagers as a share of the population could shift pizza demand rightward. A baby boom would shift rightward the demand for car seats and baby food. A growing Latino population would affect the demand for Latino foods.

tastes

Consumer preferences; likes and dislikes in consumption; assumed to remain constant along a given demand curve

movement along a demand curve

Change in quantity demanded resulting from a change in the price of the good, other things constant

shift of a demand curve

Movement of a demand curve right or left resulting from a change in one of the determinants of demand other than the price of the good

4-2e Changes in Consumer Tastes

Do you like anchovies on your pizza? How about sauerkraut on your hot dogs? Are you into tattoos and

body piercings? Is music to your ears more likely to be rock, country, hip-hop, reggae, R&B, jazz, funk, Latin, gospel, new age, or classical? Choices in food, body art, music, sports, clothing, books, movies, TV shows—indeed, all consumer choices—are influenced by consumer tastes. Tastes are nothing more than your likes and dislikes as a consumer. What determines tastes? Your desires for food when hungry and drink when thirsty are largely biological. So too is your desire for comfort, rest, shelter, friendship, love, status, personal safety, and a pleasant environment. Your family background affects some of your tastes—your taste in food, for example, has been shaped by years of home cooking. Other influences include the surrounding culture, peer pressure, and religious convictions. So economists can say a little about the origin of tastes, but they claim no special expertise in understanding how tastes develop and change over time. Economists recognize, however, that tastes have an important impact on demand. For example, although pizza is popular, some people just don't like it and those who are lactose intolerant can't stomach the cheese topping. Thus, most people like pizza but some don't.

In our analysis of consumer demand, we will assume that tastes are given and are relatively stable. Tastes are assumed to remain constant along a given demand curve. A change in the tastes for a particular good would shift that good's demand curve. For example, a discovery that the tomato sauce and cheese combination on pizza promotes overall health could change consumer tastes, shifting the demand curve for pizza to the right. But because a change in tastes is so difficult to isolate from changes in other determinants of demand, we should be reluctant to attribute a shift of the demand curve to a change in tastes. We therefore try to rule out other possible reasons for a shift of the demand curve before accepting a change in tastes as the explanation.

That wraps up our look at changes in demand. Before we turn to supply, you should remember the distinction between a movement along a given demand curve and a shift of a demand curve. A change in price, other things constant, causes a *movement along a demand curve*, changing the quantity demanded. A change in one of the determinants of demand other than price causes a *shift of a demand curve*, changing demand.

4-3 Supply

Just as demand is a relation between price and quantity demanded, supply is a relation between



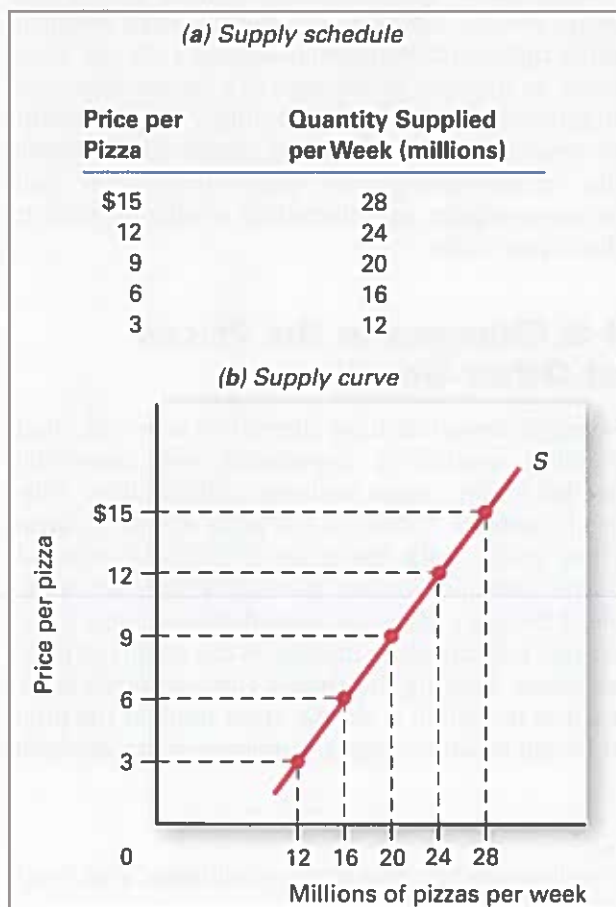
price and quantity supplied. **Supply** indicates how much producers are willing and able to offer for sale per period at each possible price, other things constant. The **law of supply** states that the quantity supplied is usually directly related to its price, other things constant. Thus, the lower the price, the smaller the quantity supplied; the higher the price, the greater the quantity supplied.

4-3a The Supply Schedule and Supply Curve

Exhibit 3 presents the market *supply schedule* and market **supply curve** *S* for pizza. Both show the quantities supplied per week at various possible prices by the thousands of pizza makers in the economy. As

Exhibit 3

The Supply Schedule and Supply Curve for Pizza



you can see, price and quantity supplied are directly, or positively, related. Producers have a profit incentive to offer more at a higher price than at a lower price, so the supply curve slopes upward.

There are two reasons why producers offer more for sale when the price rises. First, as the price increases, other things constant, a producer becomes more willing to supply the good. Prices act as signals to existing and potential suppliers about the rewards for producing various goods. A higher pizza price attracts resources from lower-valued uses. A higher price makes producers more willing to increase quantity supplied.

Higher prices also increase the producer's ability to supply the good. The law of increasing opportunity cost, as noted in Chapter 2, states that the opportunity cost of producing more of a particular good rises as output increases—that is, the *marginal cost* of production increases as output increases. Because producers face a higher marginal cost for additional output, they need to get a higher price for that output to be able to increase the quantity supplied. A higher price makes producers more able to increase quantity supplied. As a case in point, a higher price for gasoline increases oil companies' ability to extract oil from tar sands, to drill deeper, and to explore in less accessible areas, such as the remote jungles of the Amazon, the stormy waters of the North Sea, and the frozen tundra above the Arctic Circle. For example, at a market price of \$50 per barrel, extracting oil from tar sands is unprofitable, but at a price of \$55 per barrel, such production is profitable.

Thus, a higher price makes producers more willing and more able to increase quantity supplied. Producers are more willing because production becomes more attractive than other uses of the resources involved. Producers are more able because they can afford to cover the higher marginal cost that typically results from increasing output.

On the other hand, a lower price makes production less attractive, so suppliers are less willing and less able to offer the good. For example, a mining company "reacted quickly to steep copper price declines in 2008 by curbing production at its

supply

A relation between the price of a good and the quantity that producers are willing and able to sell per period, other things constant

law of supply

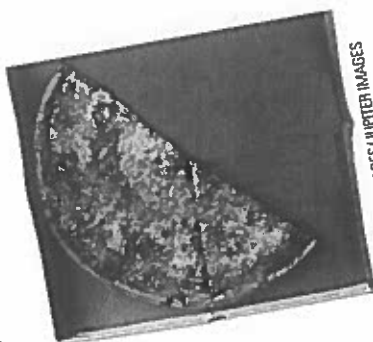
The amount of a good that producers are willing and able to sell per period is usually directly related to its price, other things constant

supply curve

A curve showing the relation between price of a good and the quantity producers are willing and able to sell per period, other things constant

North American sites and implementing layoffs at its mines and corporate headquarters.”¹

As with demand, we distinguish between *supply* and *quantity supplied*. Supply is the entire relationship between prices and quantities supplied, as reflected by the supply schedule or supply curve. Quantity supplied refers to a particular amount offered for sale at a particular price, as reflected by a point on a given supply curve. We also distinguish between *individual supply*, which is the supply of an individual producer, and *market supply*, the sum of individual supplies of all producers in the market. Unless otherwise noted, the term *supply* refers to market supply.



56 days in 2006 to only 24 days in 2009.² Consequently, supply will increase, as reflected by a rightward shift of the supply curve. For example, suppose a new, high-tech oven that costs the same as existing ovens bakes pizza in half the time. Such a breakthrough would shift the market supply curve rightward, as from S to S' in Exhibit 4, where more is supplied at each possible price. For

example, at a price of \$12, the amount supplied increases from 24 million to 28 million pizzas, as shown in Exhibit 4 by the movement from point g to point h . In short, an increase in supply—that is, a rightward shift of the supply curve—means that producers are willing and able to sell more pizza at each price.

4-4 Shifts of the Supply Curve

The supply curve isolates the relation between the price of a good and the quantity supplied, other things constant. Assumed constant along a supply curve are the determinants of supply other than the price of the good, including (1) the state of technology, (2) the prices of resources, (3) the prices of other goods, (4) producer expectations, and (5) the number of producers in the market. Let's see how a change in each affects the supply curve.

4-4a Changes in Technology

Recall from Chapter 2 that the state of technology represents the economy's knowledge about how to combine resources efficiently. Along a given supply curve, technology is assumed to remain unchanged. If a better technology is discovered, production costs will fall, so suppliers will be more willing and able to supply the good at each price. For example, new techniques helped Marathon Oil cut drilling time for a new well from

quantity supplied

The amount offered for sale per period at a particular price, as reflected by a point on a given supply curve

individual supply

The relation between the price of a good and the quantity an individual producer is willing and able to sell per period, other things constant

market supply

The relation between the price of a good and the quantity all producers are willing and able to sell per period, other things constant

4-4b Changes in the Prices of Resources

The prices of resources employed to make the good affect the cost of production and therefore the supply of the good. For example, suppose the price of mozzarella cheese falls. This reduces the cost of making pizza, so producers are more willing and better able to supply it. The supply curve for pizza shifts rightward, as shown in Exhibit 4. On the other hand, an increase in the price of a resource reduces supply, meaning a shift of the supply curve leftward. For example, a higher price of mozzarella increases the cost of making pizza. Higher production costs decrease supply, as reflected by a leftward shift of the supply curve.

4-4c Changes in the Prices of Other Goods

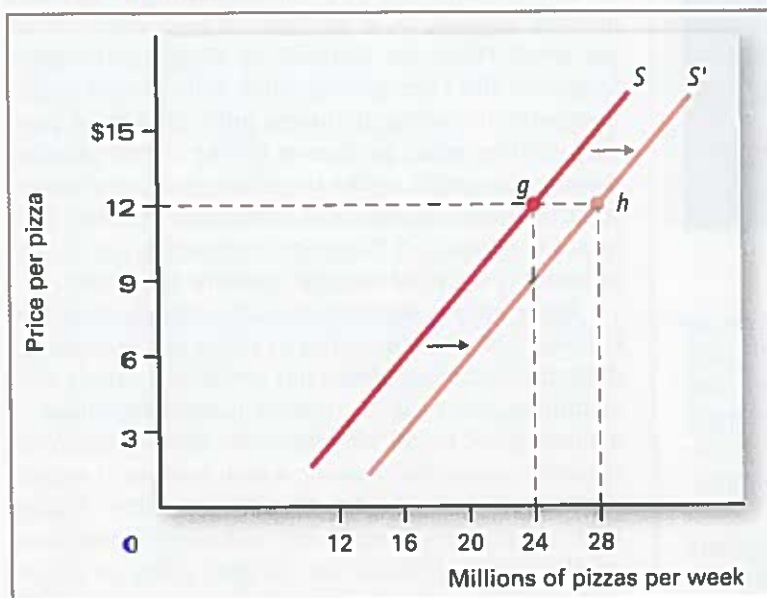
Nearly all resources have alternative uses. The labor, building, machinery, ingredients, and knowledge needed to run a pizza business could produce other goods instead. A drop in the price of one of these other goods, with the price of pizza unchanged, makes pizza production more attractive. For example, if the price of Italian bread declines, some bread makers become pizza makers so the supply of pizza increases, shifting the supply curve of pizza rightward as in Exhibit 4. On the other hand, if the price of Italian bread increases, supplying pizza becomes

1. Andrew Johnson, "Freeport Outsourcing Will Cut 60 Valley Jobs," *Arizona Republic*, 23 February 2010.

2. Ben Casselman, "Oil Industry Boom—in North Dakota," *Wall Street Journal*, 26 February 2010.

Exhibit 4

An Increase in the Supply of Pizza



relatively less attractive compared to supplying Italian bread. The opportunity cost of supplying pizza increases. As resources shift from pizza to bread, the supply of pizza decreases, or shifts to the left.

4-4d Changes in Producer Expectations

Changes in producer expectations can shift the supply curve. For example, a pizza maker expecting higher pizza prices in the future may expand his or her pizzeria now, thereby shifting the supply of pizza rightward. When a good can be easily stored (crude oil, for example, can be left in the ground), expecting higher prices in the future might prompt some producers to reduce their current supply while awaiting the higher price. Thus, an expectation of higher prices in the future could either increase or decrease current supply, depending on the good. More generally, any change affecting future profitability, such as a change in business taxes, could shift the supply curve now.

4-4e Changes in the Number of Producers

Because market supply sums the amounts supplied at each price by all producers, market supply depends on the number of producers in the market. If that number increases, supply will increase,

shifting supply to the right. If the number of producers decreases, supply will decrease, shifting supply to the left. As an example of increased supply, the number of gourmet coffee bars has more than quadrupled in the United States since 1990 (think Starbucks), shifting the supply curve of gourmet coffee to the right.

Finally, note again the distinction between a **movement along a supply curve** and a **shift of a supply curve**. A change in price, other things constant, causes a **movement along a supply curve**, changing the quantity supplied. A change in one of the determinants of supply other than price causes a **shift of a supply curve**, changing supply.

You are now ready to bring demand and supply together.

4-5 Demand and Supply Create a Market

Demanders and suppliers have different views of price. Demanders pay the price and suppliers receive it. Thus, a higher price is bad news for consumers but good news for producers. As the price rises, consumers reduce their quantity demanded along the demand curve and producers increase their quantity supplied along the supply curve. How is this conflict between producers and consumers resolved?

4-5a Markets

Markets sort out differences between demanders and suppliers. A market, as you know from Chapter 1, includes all the arrangements used to buy and sell a particular good or service. Markets reduce **transaction costs**—the costs of time and information required for exchange. For example, suppose you are looking for a summer job. One approach might be to go from employer to employer looking for openings. But

movement along a supply curve
Change in quantity supplied resulting from a change in the price of the good, other things constant

shift of a supply curve
Movement of a supply curve left or right resulting from a change in one of the determinants of supply other than the price of the good

transaction costs
The costs of time and information required to carry out market exchange



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this could have you running around for days or weeks. A more efficient strategy would be to pick up a copy of the local newspaper or go online and look for openings. Classified ads and Web sites, which are elements of the job market, reduce the transaction costs of bringing workers and employers together.

The coordination that occurs through markets takes place not because of some central plan but because of Adam Smith's "invisible hand." For example, auto dealers in your community tend to locate together, usually on the outskirts of town, where land is cheaper. The dealers congregate not because they all took an economics course or because they like one another's company but because grouped together they become a more attractive destination for car buyers. A dealer who makes the mistake of locating away from the others misses out on a lot of business. Similarly, stores locate together so that more shoppers will be drawn by the call of the mall. From Orlando theme parks to Broadway theaters to Las Vegas casinos, suppliers in a particular market tend to congregate to attract demanders. Some groupings can be quite specialized. For example, shops in Hong Kong that sell dress mannequins cluster along Austin Road. And diamond merchants in New York City congregate within the same few blocks.

surplus

At a given price, the amount by which quantity supplied exceeds quantity demanded; a surplus usually forces the price down

shortage

At a given price, the amount by which quantity demanded exceeds quantity supplied; a shortage usually forces the price up

equilibrium

The condition that exists in a market when the plans of buyers match those of sellers, so quantity demanded equals quantity supplied and the market clears

4-5b Market Equilibrium

To see how a market works, let's bring together market demand and market supply. Exhibit 5 shows the market for pizza, using schedules in panel (a) and curves in panel (b).

Suppose the price initially is \$12. At that price, producers supply 24 million pizzas per week, but consumers demand only 14 million, resulting in an excess quantity supplied, or a surplus, of 10 million pizzas per week. Producers compete by dropping the price. Suppliers don't like getting stuck with unsold pizzas. Competition among producers puts downward pressure on the price, as shown by the arrow pointing down in the graph. As the price falls, producers reduce their quantity supplied and consumers increase their quantity demanded. The price continues to fall as long as quantity supplied exceeds quantity demanded.

Alternatively, suppose the price initially is \$6. You can see from Exhibit 5 that at that price consumers demand 26 million pizzas but producers supply only 16 million, resulting in an excess quantity demanded, or a shortage, of 10 million pizzas per week. Consumers compete to buy the product, which is in short supply. Consumer competition forces the price higher. Profit-maximizing producers and eager consumers create market pressure for a higher price, as shown by the arrow pointing up in the graph. As the price rises, producers increase their quantity supplied and consumers reduce their quantity demanded. The price continues to rise as long as quantity demanded exceeds quantity supplied.

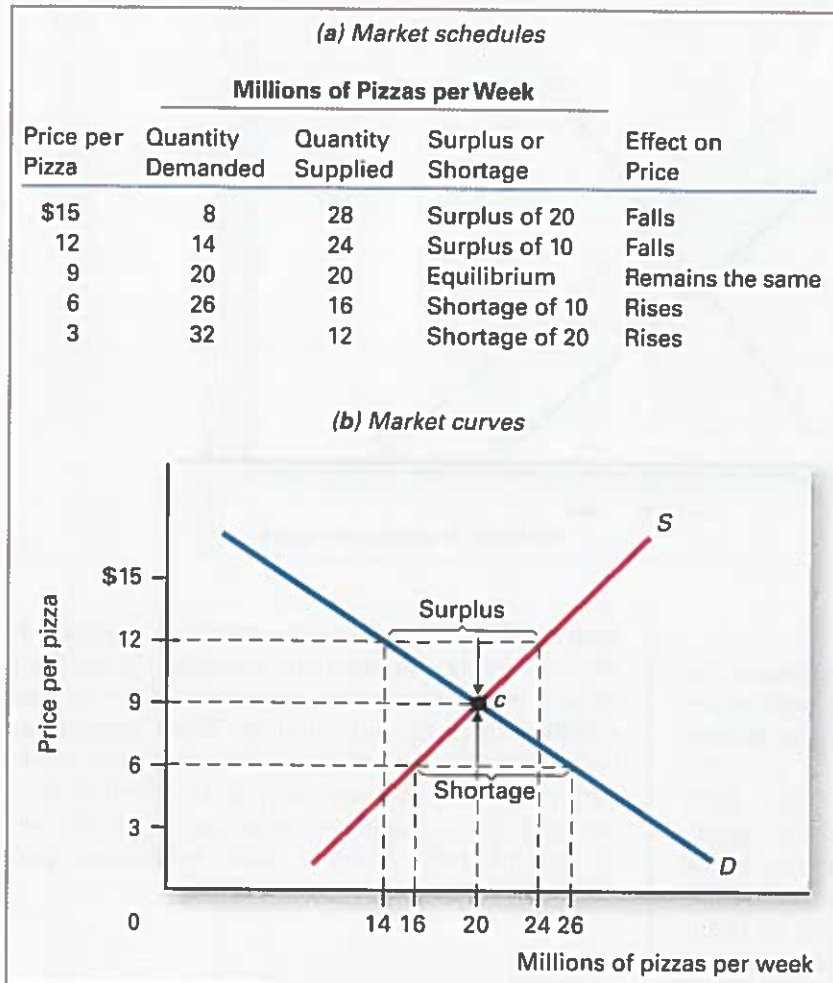
Thus, a surplus creates downward pressure on the price, and a shortage creates upward pressure. As long as quantity demanded differs from quantity supplied, this difference forces a price change. Note that a shortage or a surplus depends on the price. There is no such thing as a general shortage or a general surplus, only a shortage or a surplus at a particular price.

"A surplus creates downward pressure on the price, and a shortage creates upward pressure."

To repeat, buyers prefer a lower price and sellers prefer a higher price. A market reaches equilibrium when the quantity demanded equals quantity supplied. In equilibrium, the independent plans of buyers and sellers exactly match, so market forces exert no pressure for change. In Exhibit 5, the demand and supply curves intersect at the equilibrium point, identified as point c. The equilibrium price is \$9 per pizza, and the equilibrium quantity is 20 million per week. At that price and quantity, the market clears. Because there is no shortage or

Exhibit 5

Equilibrium in the Pizza Market



surplus, there is no pressure for the price to change. The demand and supply curves form an “x” at the intersection. The equilibrium point is found where “x” marks the spot.

Markets indicate the price and variety of goods available to you—from the latest social network to the smartest phone. You should be interested in equilibrium prices because they are what you pay for the thousands of goods and services you consume.

A market finds equilibrium through the independent actions of thousands, or even millions, of buyers and sellers. In one sense, the market is personal because each consumer and each

producer makes a personal decision about how much to buy or sell at a given price. In another sense, the market is impersonal because it requires no conscious communication or coordination among consumers or producers. The price does all the talking. *Impersonal market forces synchronize the personal and independent decisions of many individual buyers and sellers to achieve equilibrium price and quantity.* Prices reflect relative scarcity. For example, to rent a 26-foot truck one way from San Francisco to Austin, U-Haul recently charged \$3,236. Its one-way charge for that same truck from Austin to San Francisco was just \$399. Why the difference? Far more people wanted to move from San Francisco to Austin than vice versa, so U-Haul had to pay its own employees to drive the empty trucks back from Texas. Rental rates reflected that extra cost.

4-6 Changes in Equilibrium Price and Quantity

Equilibrium occurs when the intentions of demanders and suppliers exactly match. Once a market reaches equilibrium, that price and quantity prevail until some-

thing happens to demand or supply. A change in any determinant of demand or supply usually changes equilibrium price and quantity in a predictable way, as you'll see.

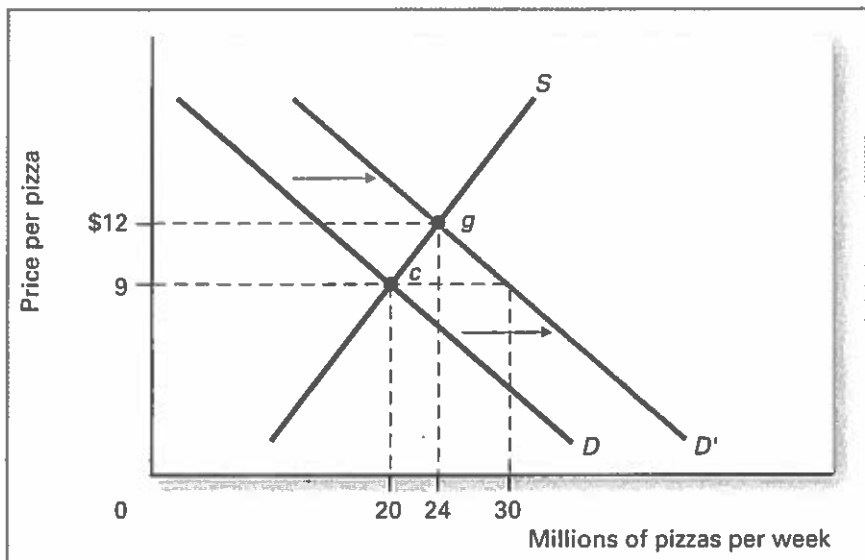
4-6a Shifts of the Demand Curve



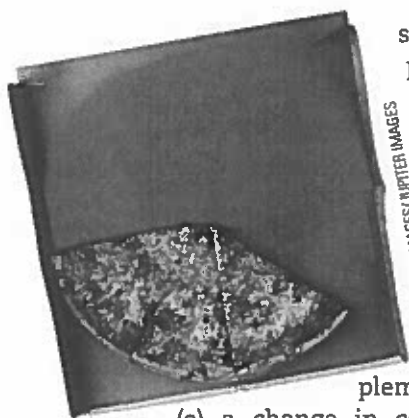
In Exhibit 6, demand curve D and supply curve S intersect at point c to yield the initial equilibrium price of \$9 and the initial equilibrium quantity of 20 million 12-inch regular pizzas per week. Now suppose that one of the determinants of demand changes in a way that increases demand, shifting the demand curve to the right from D to D' . Any of the following could

Exhibit 6

Effects of an Increase in Demand



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shift the demand for pizza rightward: (1) an increase in the money income of consumers (because pizza is a normal good); (2) an increase in the price of a substitute, such as tacos, or a decrease in the price of a complement, such as Pepsi;

(3) a change in consumer expectations that causes people to demand more pizzas now; (4) a growth in the number of pizza consumers; or (5) a change in consumer tastes—based, for example, on a discovery that the tomato sauce on pizza has antioxidant properties that improve overall health.

After the demand curve shifts rightward to D' in Exhibit 6, the amount demanded at the initial price of \$9 is 30 million pizzas, which exceeds the amount supplied of 20 million by 10 million pizzas. Competition among consumers for the limited quantity supplied puts upward pressure on the price. As the price increases, the quantity demanded decreases along the new demand curve D' , and the quantity supplied increases along the existing supply curve S until the two quantities are equal once again at equilibrium point g . The new equilibrium price is \$12, and the new equilibrium quantity is 24 million pizzas per week. Thus, given an upward-sloping supply curve, an increase in demand increases

both equilibrium price and quantity. A decrease in demand would initially create a surplus. Competition among producers to sell pizzas would lower both equilibrium price and quantity. These results can be summarized as follows: Given an upward-sloping supply curve, a rightward shift of the demand curve increases both equilibrium price and quantity and a leftward shift decreases both equilibrium price and quantity.

4-6b Shifts of the Supply Curve

Let's now consider shifts of the supply curve. In Exhibit 7, as before, we begin with demand curve D and supply curve S intersecting at point c to yield an equilibrium price of \$9 and an equilibrium quantity of 20 million pizzas per week. Suppose one of the determinants of supply changes, increasing supply from S to S' . Changes that could shift the supply curve rightward include (1) a technological breakthrough

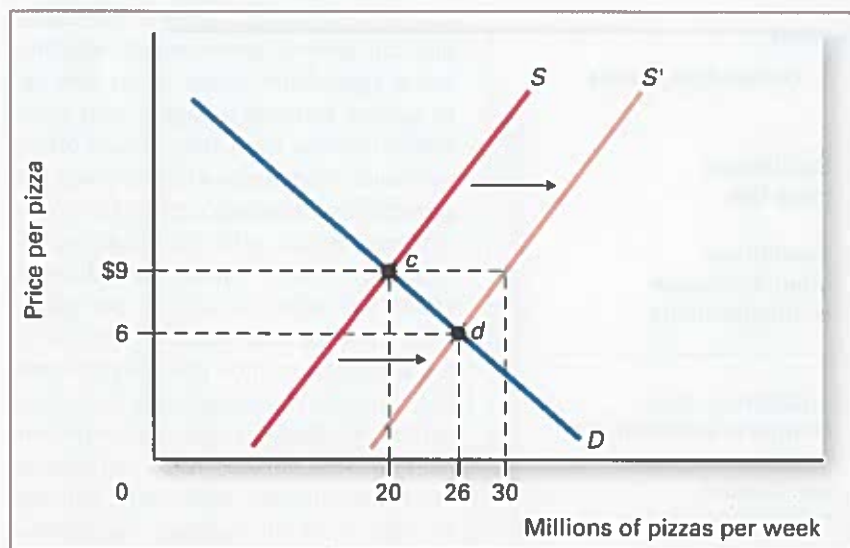
in pizza ovens; (2) a reduction in the price of a resource such as mozzarella cheese; (3) a decline in the price of another good such as Italian bread; (4) a change in expectations that encourages pizza makers to expand



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Exhibit 7

Effects of an Increase in Supply



production now; or (5) an increase in the number of pizzerias.

After the supply curve shifts rightward in Exhibit 7, the amount supplied at the initial price of \$9 increases from 20 million to 30 million, so producers now supply 10 million more pizzas than consumers demand. Pizza makers compete to sell the surplus by lowering the price. As the price falls, the quantity supplied declines along the new supply curve and the quantity demanded increases along the existing demand curve until a new equilibrium point d is established. The new equilibrium price is \$6, and the new equilibrium quantity is 26 million pizzas per week. In short, an increase in supply reduces the price and increases the quantity. On the other hand, a decrease in supply increases the price but decreases the quantity. Thus, given a downward-sloping demand curve, a rightward shift of the supply curve decreases price but increases quantity, and a leftward shift increases price but decreases quantity.

4-6c Simultaneous Shifts of Demand and Supply Curves

As long as only one curve shifts, we can say how equilibrium price and quantity will change. If both curves shift, however, the outcome is less obvious. For example,

has decreased and quantity has increased.

Conversely, if both demand and supply decrease, or shift leftward, equilibrium quantity decreases. But, again, we cannot say what will happen to equilibrium price unless we examine relative shifts. (You can use Exhibit 8 to consider decreases in demand and supply by viewing D' and S' as the initial curves.) If demand shifts more, the price will fall. If supply shifts more, the price will rise.

If demand and supply shift in opposite directions, we can say what will happen to equilibrium price. Equilibrium price will increase if demand increases and supply decreases. Equilibrium price will decrease if demand decreases and supply increases. Without reference to particular shifts,

Exhibit 8

Indeterminate Effect of an Increase in Both Demand and Supply

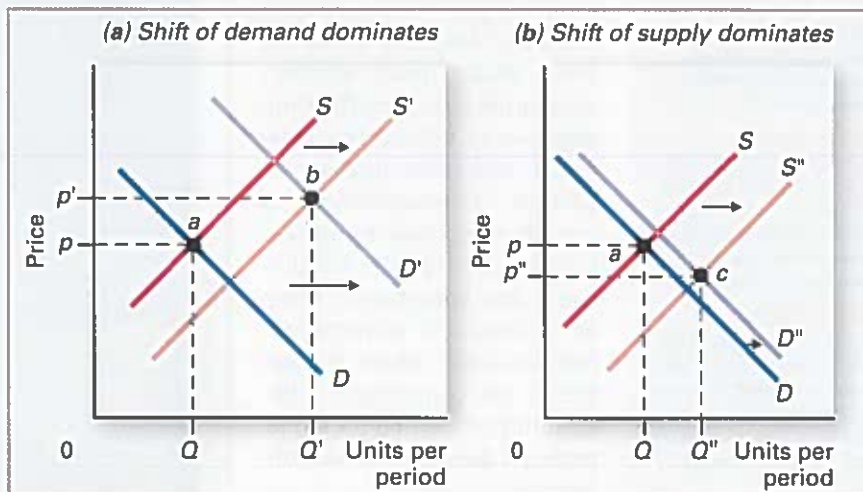


Exhibit 9

Effects of Shifts of Both Demand and Supply

		Shift of demand	
		Demand increases	Demand decreases
Shift of supply	Supply increases	Equilibrium price change is indeterminate. Equilibrium quantity increases.	Equilibrium price falls. Equilibrium quantity change is indeterminate.
	Supply decreases	Equilibrium price rises. Equilibrium quantity change is indeterminate.	Equilibrium price change is indeterminate. Equilibrium quantity decreases.

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however, we cannot say what will happen to equilibrium quantity.

These results are no doubt confusing, but Exhibit 9 summarizes the four possible combinations of changes. Using Exhibit 9 as a reference, please take the time right now to work through some changes in demand and supply to develop a feel for the results.

disequilibrium

The condition that exists in a market when the plans of buyers do not match those of sellers; a temporary mismatch between quantity supplied and quantity demanded as the market seeks equilibrium

price floor

A minimum legal price below which a product cannot be sold; to have an impact, a price floor must be set above the equilibrium price

price ceiling

A maximum legal price above which a product cannot be sold; to have an impact, a price ceiling must be set below the equilibrium price

4-7 Disequilibrium

A surplus exerts downward pressure on the price, and a shortage exerts upward pressure. Markets, however, don't always reach equilibrium quickly. During the time required to adjust, the market is said to be in disequilibrium. Disequilibrium is usually temporary as market forces push toward equilibrium. But sometimes, often as a result of government intervention, when market forces are suppressed, disequilibrium can last a while, perhaps decades, as we will see next.

4-7a Price Floors

Sometimes public officials force a price above the equilibrium level. For example, the federal government regulates some agriculture prices in an attempt to ensure farmers a higher and more stable income than they would otherwise earn. To achieve a higher price, the government imposes a price floor, or a minimum selling price that is above the equilibrium price. Panel (a) of Exhibit 10 shows the effect of a \$2.50 per gallon price floor for milk. At that price, farmers supply 24 million gallons per week, but consumers demand only 14 million gallons, yielding a surplus of 10 million gallons. This surplus milk will pile up on store shelves, eventually souring. To take it off the market, the government usually agrees to buy the surplus milk. The federal government, in fact, has spent billions buying and storing surplus agricultural products over

the years. Note, to have an impact, a price floor must be set *above* the equilibrium price. A price floor set at or below the equilibrium price wouldn't matter (how come?). Price floors distort markets and reduce economic welfare.

4-7b Price Ceilings

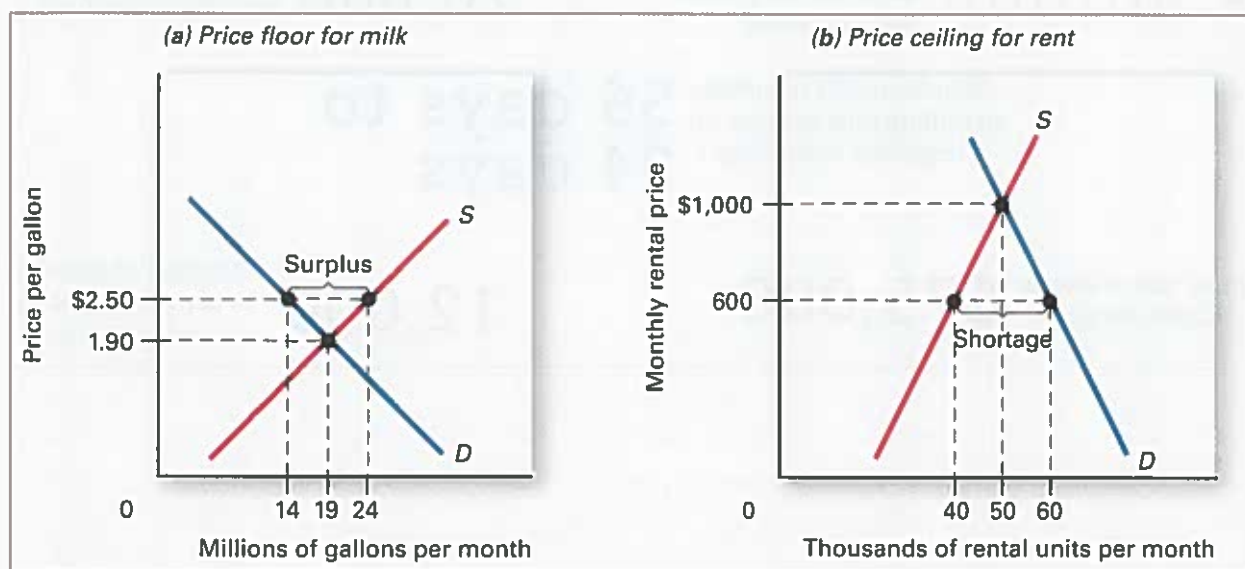
Sometimes public officials try to keep a price below the equilibrium level by setting a price ceiling, or



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Exhibit 10

Price Floors and Price Ceilings



a maximum selling price. Concern about the rising cost of rental housing in some cities prompted city officials to impose rent ceilings. Panel (b) of Exhibit 10 depicts the demand and supply of rental housing. The vertical axis shows monthly rent, and the horizontal axis shows the quantity of rental units. The equilibrium, or market-clearing, rent is \$1,000 per month, and the equilibrium quantity is 50,000 housing units. Suppose city officials set a maximum rent of \$600 per month. At that ceiling price, 60,000 rental units are demanded, but only 40,000 supplied, resulting in a housing shortage of 20,000 units. Because of the price ceiling, the rental price no longer rations housing to those who value it the most. Other devices emerge to ration housing, such as long waiting lists, personal connections, and the willingness to make under-the-table payments, such as “key fees,” “finder’s fees,” high security deposits, and the like. To have an impact, a price ceiling must be set *below* the equilibrium price. A price ceiling set at or above equilibrium wouldn’t matter. (Again, why not?) Price floors and ceilings distort markets and reduce economic welfare.

Government intervention is not the only source of market disequilibrium. Sometimes, when new products are introduced or when demand suddenly changes, it takes a while to reach equilibrium. For example, popular toys, best-selling books, and chart-busting CDs sometimes sell out. On the other hand, some products attract few customers and pile up unsold on store shelves, awaiting a “clearance sale.”

4-8 Final Word

Demand and supply are the building blocks of a market economy. Although a market usually involves the interaction of many buyers and sellers, few markets are consciously designed. Just as the law of gravity works whether or not we understand Newton’s principles, market forces operate whether or not participants understand demand and supply. These forces arise naturally, much the way car dealers cluster on the outskirts of town to attract more customers.

Markets have their critics. Some observers may be troubled, for example, that an NBA star like Kobe Bryant earns a salary that could pay more than 700 new schoolteachers \$35,000 per year; or that some corporate executives, such as the head of Goldman Sachs, a financial firm, earn enough to pay for 1,500 new schoolteachers; or that U.S. consumers spend over \$40 billion a year on their pets. On your next trip to the supermarket, notice how much shelf space goes to pet products—often an entire aisle. PetSmart, a chain store, sells over 12,000 different pet items. Veterinarians offer cancer treatment, cataract removal, root canals, even acupuncture. Kidney dialysis for a pet can cost over \$75,000 per year.

In a market economy, consumers are kings and queens. Consumer sovereignty rules, deciding what gets produced. Those who don’t like the market outcome usually look to government for a solution through price ceilings and price floors, regulations, income redistribution, and public finance more generally.

\$4 million

< Cost of a 30 second
ad on the 2013 Super
Bowl broadcast

20,000

< Pairs of shoes sold
per hour by Walmart

Marathon Oil's reduction
in drilling time because of
improved technology >

56 days to
24 days

Annual cost of kidney
dialysis for a pet >

\$75,000

12,000

< Number of different
items available for
pets at PetSmart
