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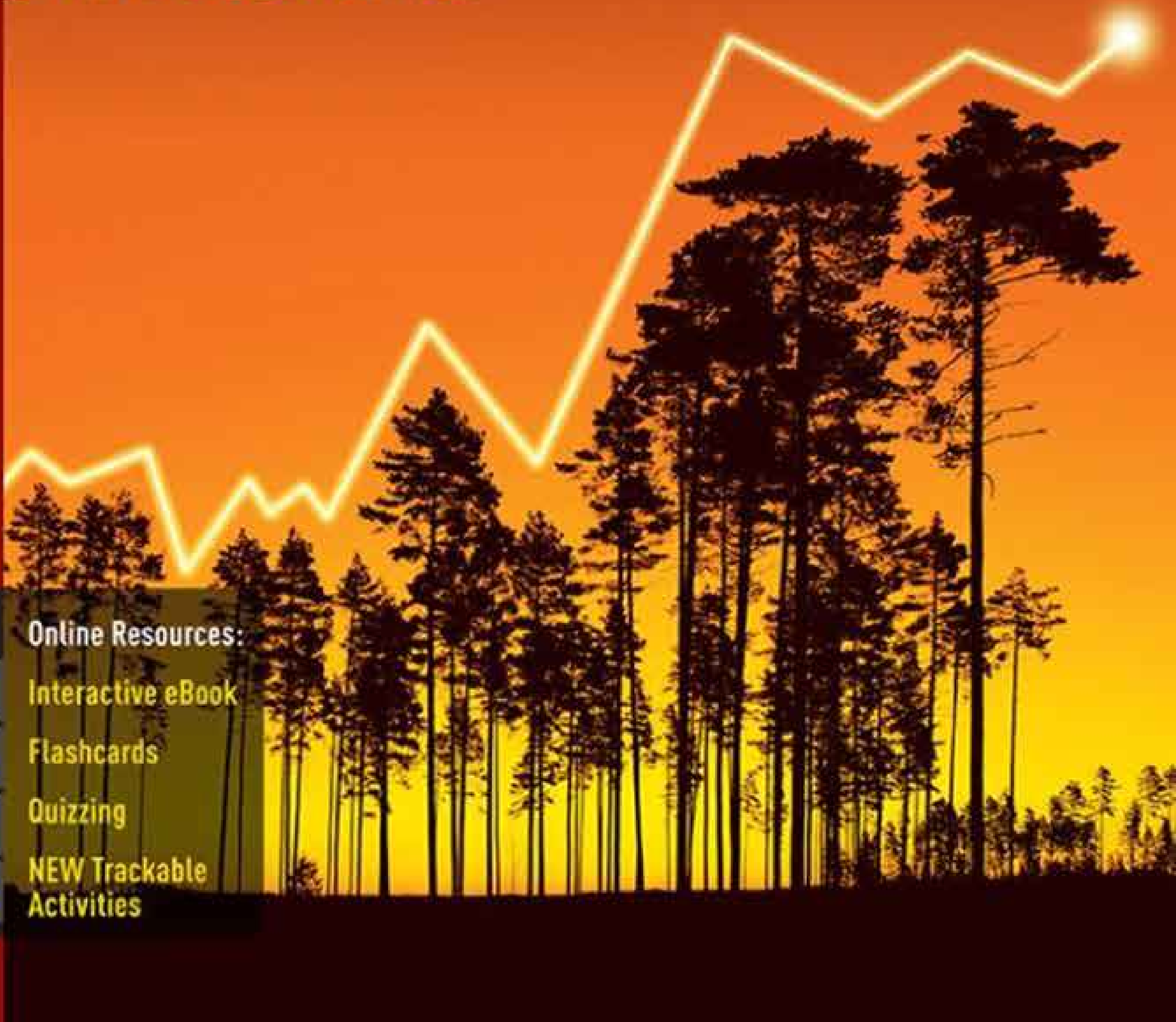

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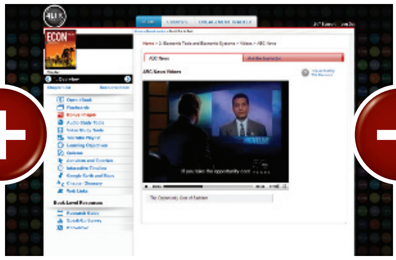

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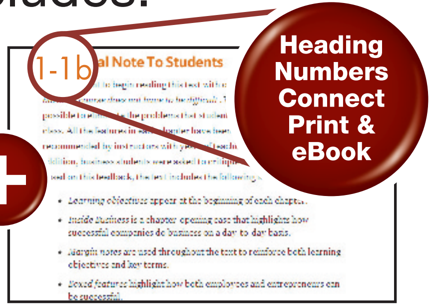

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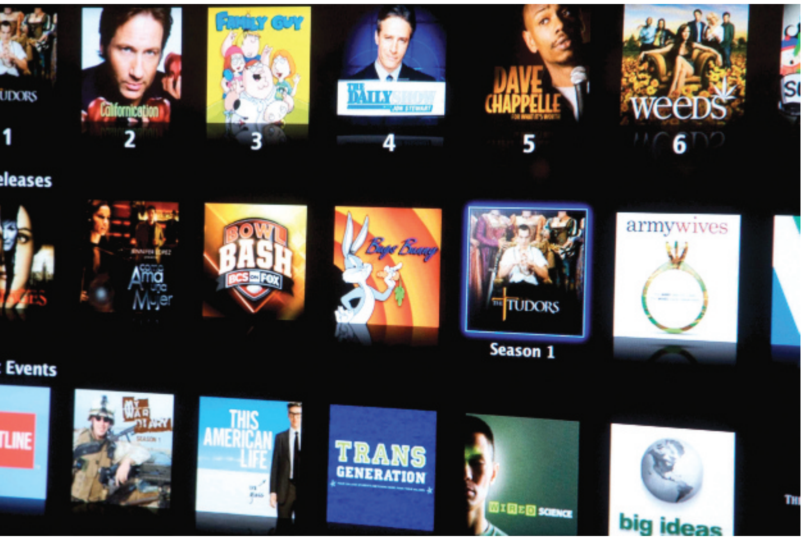


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CHAPTER 1

The Art and Science of Economic Analysis

Learning Outcomes

1-1 Explain the economic problem of scarce resources and unlimited wants

1-2 Describe the forces that shape economic choices

1-3 Explain the relationship between economic theory and economic reality

1-4 Identify some pitfalls of economic analysis

1-5 Describe several reasons to study economics

FOX TV/SETH MACFARLANE/PICTURE DESK

> *"Why are comic-strip and TV characters like those in Foxtrot, The Simpsons, and Family Guy missing a finger on each hand?"*

Why are comic-strip and TV characters like those in *Foxtrot*, *The Simpsons*, and *Family Guy* missing a finger on each hand? Why do the kids on *South Park* have hands that look like mittens? And where is *Dilbert's* mouth? Which college majors pay the most right after college and during mid-career? In what way are people who pound on vending machines relying on theory? Why is a good theory like a California Closet? What's the big idea with economics? Finally, how can it be said that in economics "what goes around comes around"? These and other questions are answered in this chapter, which introduces the art and science of economic analysis.

What do you think?

Economics is a science, not an art.

Strongly Disagree — *Strongly Agree*

1 2 3 4 5 6 7

You have been reading and hearing about economic issues for years—unemployment, inflation, poverty, recessions, federal deficits, college tuition, airfares, stock prices, computer prices, gas prices. When explanations of such issues go into any depth, your eyes may glaze over and you may tune out, the same way you do when a weather forecaster tries to provide an in-depth analysis of high-pressure fronts colliding with moisture carried in from the coast.

What many people fail to realize is that economics is livelier than the dry accounts offered by the news media. Economics is about making choices, and you make economic choices every day—choices about whether to get a part-time job or focus on your studies, live in a dorm or off campus, take a course in accounting or one in history, get married or stay single, pack a lunch or buy a sandwich. You already know much more about economics than you realize. You bring to the subject a rich personal experience, an experience that will be tapped throughout the book to reinforce your understanding of the basic ideas.

Topics discussed in Chapter 1 include

- The economic problem
- Marginal analysis
- Rational self-interest
- Scientific method
- Normative versus positive analysis
- Pitfalls of economic thinking

1-1 The Economic Problem: Scarce Resources, Unlimited Wants

Would you like a new car, a nicer home, better meals, more free time, a more interesting social life, more spending money, more leisure, more sleep? Who wouldn't? But even if you can satisfy some of these desires, others keep popping up. *The problem is that although your wants, or desires, are virtually unlimited, the resources available to satisfy these wants are scarce*. A resource is *scarce* when it is not freely available—that is, when its price exceeds zero. Because resources are scarce, you must choose from among your many wants, and whenever you choose, you must forgo satisfying some other wants. The problem of scarce resources but unlimited wants exists to a greater or lesser extent for each of the 7 billion people on earth. Everybody—cab driver, farmer, brain surgeon, dictator, shepherd, student, politician—faces the problem. For example, a cab driver uses time and other scarce resources, such as the taxi, knowledge of the city, driving skills, and gasoline, to earn income. That income, in turn, buys housing, groceries, clothing, trips to Disney World, and thousands of other goods and services that help satisfy some of the driver's unlimited wants. **Economics** examines how people use their scarce resources to satisfy their unlimited wants. Let's pick apart the definition, beginning with resources, then goods and services, and finally focus on the heart of the matter—economic choice, which results from scarcity.

economics
The study of how people use their scarce resources to satisfy their unlimited wants

resources
The inputs, or factors of production, used to produce the goods and services that people want; resources consist of labor, capital, natural resources, and entrepreneurial ability

labor
The physical and mental effort used to produce goods and services

capital
The buildings, equipment, and human skills used to produce goods and services

natural resources
All gifts of nature used to produce goods and services; includes renewable and exhaustible resources

entrepreneurial ability
The imagination required to develop a new product or process, the skill needed to organize production, and the willingness to take the risk of profit or loss

entrepreneur
A profit-seeking decision maker who starts with an idea, organizes an enterprise to bring that idea to life, and assumes the risk of the operation

1-1a Resources

Resources are the inputs, or factors of production, used to produce the goods and services that people want. *Goods and services are scarce because resources are scarce*. Resources sort into four broad categories: labor, capital, natural resources, and entrepreneurial ability. **Labor** is human effort, both physical and mental. Labor includes the effort of the cab driver and the brain surgeon. Labor itself comes from a more fundamental resource: *time*. Without time we can accomplish nothing. We allocate our time to alternative uses: We can *sell* our time as labor, or we can *spend* our time doing other things, like sleeping, eating, studying, playing sports, going online, attending class, watching TV, or just relaxing with friends.

Capital includes all human creations used to produce goods and services. Economists often distinguish between physical capital and human capital. *Physical capital* consists of factories, tools, machines, computers, buildings, airports, highways, and other human creations used to produce goods and services. Physical capital includes the cab driver's taxi, the surgeon's scalpel, and the building where your economics class meets (or, if you are taking this course online, your computer and online connectors). *Human capital* consists of the knowledge and skill people acquire to increase their productivity, such as the cab driver's knowledge of city streets, the surgeon's knowledge of human anatomy, and your knowledge of economics.

Natural resources include all *gifts of nature,* such as bodies of water, trees, oil reserves, minerals, even animals. Natural resources can be divided into renewable resources and exhaustible resources. A *renewable resource* can be drawn on indefinitely if used conservatively. Thus, timber is a renewable resource if felled trees are replaced to regrow a steady supply. The air and rivers are renewable resources if they are allowed sufficient time to cleanse themselves of any pollutants. More generally, biological resources like fish, game, livestock, forests, rivers, groundwater, grasslands, and soil are renewable if managed properly. An *exhaustible resource*—such as oil or coal—does not renew itself and so is available in a limited amount. Once burned, each barrel of oil or ton of coal is gone forever. The world's oil and coal deposits are exhaustible.

A special kind of human skill called **entrepreneurial ability** is the talent required to dream up a new product or find a better way to produce an existing one. This special skill comes from an entrepreneur. An **entrepreneur** is a profit-seeking decision maker who starts with an idea, organizes an enterprise to bring that idea to life, and then assumes the risk of operation. An entrepreneur pays resource owners for the opportunity to employ their resources in the firm. Every firm in the world today, such as Ford, Microsoft, Google, and Facebook, began as an idea in the mind of an entrepreneur.

Resource owners are paid **wages** for their labor, **interest** for the use of their capital, and **rent** for the use of their natural resources. Entrepreneurial ability is rewarded by **profit**, which equals the *revenue* from items sold minus the *cost* of the resources employed to make those items. The word *profit* comes from the Latin *proficere*, which means "to benefit." The entrepreneur benefits from what's left over after paying other resource suppliers. Sometimes the entrepreneur suffers a loss. Resource earnings are usually based on the *time* these resources are employed. Resource payments therefore have a time dimension, as in a wage of $10 *per hour,* interest of 6 percent *per year,* rent of $600 *per month,* or profit of $10,000 *per year.*

1-1b Goods and Services

Resources are combined in a variety of ways to produce goods and services. A farmer, a tractor, 50 acres of land, seeds, and fertilizer combine to grow the good: corn. One hundred musicians, musical instruments, chairs, a conductor, a musical score, and a music hall combine to produce the service: Beethoven's *Fifth Symphony*. Corn is a **good** because it is something you can see, feel, and touch; it requires scarce resources to produce; and it satisfies human wants. The book you are now holding, the chair you are sitting in, the clothes you are wearing, and your next meal are all goods. The performance of the *Fifth Symphony* is a **service** because it is intangible, yet it uses scarce resources to satisfy human wants. Lectures, movies, concerts, phone service, wireless connections, yoga lessons, dry cleaning, and haircuts are all services.

Because goods and services are produced using scarce resources, they are themselves scarce. *A good or service is scarce if the amount people desire exceeds the amount available at a zero price.* Because we cannot have all the goods and services we would like, we must continually choose among them. We must choose among more pleasant living quarters, better meals, nicer clothes, more reliable transportation, faster computers, and so on. Making choices in a world of **scarcity** means we must pass up some goods and services. Exhibit 1 shows the options of one individual facing scarcity. But not everything is scarce. In fact, some things we would prefer to have

Exhibit 1

Scarcity Means You Must Choose among Options

wages
Payment to resource owners for their labor

interest
Payment to resource owners for the use of their capital

rent
Payment to resource owners for the use of their natural resources

profit
Reward for entrepreneurial ability; sales revenue minus resource cost

good
A tangible product used to satisfy human wants

service
An activity, or intangible product, used to satisfy human wants

scarcity
Occurs when the amount people desire exceeds the amount available at a zero price

less of. For example, we would prefer to have less garbage, less spam e-mail, and less pollution. Things we want none of even at a zero price are called *bads*, the opposite of goods.

A few goods and services seem *free* because the amount available at a zero price exceeds the amount people want. For example, air and seawater often seem free because we can breathe all the air we want and have all the seawater we can haul away. Yet, despite the old saying "The best things in life are free," most goods and services are scarce, not free, and even those that appear to be free come with strings attached. For example, *clean* air and *clean* seawater have become scarce. *Goods and services that are truly free are not the subject matter of economics. Without scarcity, there would be no economic problem and no need for prices.*

Sometimes we mistakenly think of certain goods as free because they involve no apparent cost to us. Napkins seem to be free at Starbucks. Nobody stops you from taking a fistful. Supplying napkins, however, costs the company millions each year and prices reflect that cost. Some restaurants make special efforts to keep napkin use down—such as packing them tightly into the dispenser or making you ask for them. And Starbucks recently reduced the thickness of its napkins.

You may have heard the expression "There is no such thing as a free lunch." There is no free lunch because all goods and services involve a cost to someone. The lunch may seem free to you, but it draws scarce resources away from the production of other goods and services, and whoever provides a free lunch often expects something in return. A Russian proverb makes a similar point but with a bit more bite: "The only place you find free cheese is in a mousetrap." Albert Einstein once observed, "Sometimes one pays the most for things one gets for nothing."

1-1c Economic Decision Makers

There are four types of decision makers in the economy: households, firms, governments, and the rest of the world. Their interaction determines how an economy's resources are allocated. *Households* play the starring role. As consumers, households demand the goods and services produced. As resource owners, households supply labor, capital, natural resources, and entrepreneurial ability to firms, governments, and the rest of the world. *Firms, governments,* and *the rest of the world* demand the resources that households supply and then use these resources to supply the goods and services that households demand. The rest of the world includes foreign households, foreign firms, and foreign governments that supply resources and products to U.S. markets and demand resources and products from U.S. markets.

Markets are the means by which buyers and sellers carry out exchange. By bringing together the two sides of exchange, markets determine price, quantity, and quality. Markets are often physical places, such as supermarkets, department stores, shopping malls, or yard sales. But markets also include other mechanisms by which buyers and sellers communicate, such as classified ads, radio and television ads, telephones, bulletin boards, online sites, and face-to-face bargaining. These market mechanisms provide information about the quantity, quality, and price of products offered for sale. Goods and services are bought and sold in **product markets**. Resources are bought and sold in **resource markets**. The most important resource market is the labor, or job, market. Think about your own experience looking for a job, and you'll already have some idea of that market.

1-1d A Simple Circular-Flow Model

Now that you have learned a bit about economic decision makers, consider how they interact. Such a picture is conveyed by the **circular-flow model**, which describes the flow of resources, products, income, and revenue among economic decision makers. The simple circular-flow model focuses on the primary interaction in a market economy—that between households and firms. Exhibit 2 shows households on the left and firms on the right; please take a look.

Households supply labor, capital, natural resources, and entrepreneurial ability to firms through resource markets, shown in the lower portion of the exhibit. In return, households demand goods and services from firms through product markets, shown on the upper portion of the exhibit. Viewed from the business end, firms demand labor, capital, natural resources, and entrepreneurial ability from households through resource markets, and firms supply goods and services to households through product markets.

The flows of resources and products are supported by the flows of income and expenditure—that is, by the flow of money. So let's add money. The demand and supply of resources come together in resource

market
A set of arrangements by which buyers and sellers carry out exchange at mutually agreeable terms

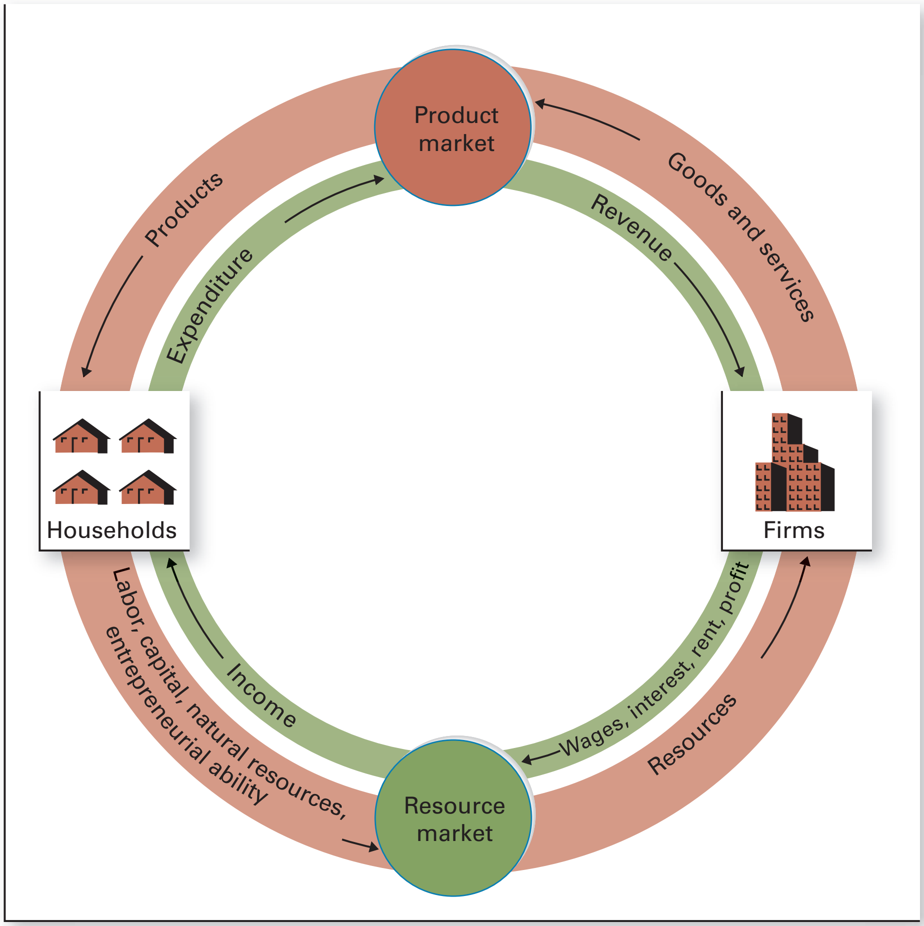
product market
A market in which a good or service is bought and sold

resource market
A market in which a resource is bought and sold

circular-flow model
A diagram that traces the flow of resources, products, income, and revenue among economic decision makers

Exhibit 2

The Simple Circular-Flow Model for Households and Firms



markets to determine what firms pay for resources. These resource prices—wages, interest, rent, and profit—flow as *income* to households. The demand and supply of products come together in product markets to determine what households pay for goods and services. These product prices of goods and services flow as *revenue* to firms. Resources and products flow in one direction—in this case, counterclockwise—and the corresponding payments flow in the other direction—clockwise. What goes around comes around. Take a little time now to trace the logic of the circular flows.

1-2 The Art of Economic Analysis

An economy results as millions of individuals attempt to satisfy their unlimited wants. Because their choices lie at the heart of the economic problem—coping with scarce resources but unlimited wants—these choices deserve a closer look. Learning about the forces that shape economic choice is the first step toward mastering the art of economic analysis.

1-2a Rational Self-Interest

A key economic assumption is that individuals, in making choices, rationally select what they perceive to be in their best interests. By *rational*, economists mean simply that people try to make the best choices they can, given the available time and information. People may not know with certainty which alternative will turn out to be the best. They simply select the alternatives they *expect* will yield the most satisfaction and happiness. In general, **rational self-interest** means that each individual tries to maximize the expected benefit achieved with a given cost or to minimize the expected cost of achieving a given benefit. Thus, economists begin with the assumption that people look out for their self-interest. For example, the *USA Today* weekly football poll asks coaches to list the top 25 teams in the country. It is no surprise that coaches distort their selections to favor their own teams and their own conferences. And, to make their own records look better, coaches inflate the rankings of teams they have beaten.[1]

rational self-interest
Each individual tries to maximize the expected benefit achieved with a given cost or to minimize the expected cost of achieving a given benefit

1. Matthew Kotchen and Matthew Potoski, "Conflicts of Interest Distort Public Evaluations: Evidence from the Top 25 Ballots of NCAA Football Coaches," NBER Working Paper 17628 (November 2011).

Rational self-interest should not necessarily be viewed as blind materialism, pure selfishness, or greed. We all know people who are tuned to radio station WIIFM (What's In It For Me?). For most of us, however, self-interest often includes the welfare of our family, our friends, and perhaps the poor of the world. Even so, our concern for others is influenced by our personal cost of that concern. We may readily volunteer to drive a friend to the airport on Saturday afternoon but are less likely to offer a ride if the flight departs at 6:00 A.M. When we donate clothes to an organization such as Goodwill Industries, they are more likely to be old and worn than brand new. People tend to give more to charities when their contributions are tax deductible and when contributions garner social approval in the community (as when contributor names are made public or when big donors get buildings named after them).[2] TV stations are more likely to donate airtime for public-service announcements during the dead of night than during prime time (in fact, 80 percent of such announcements air between 11:00 P.M. and 7:00 A.M.). In Asia, some people burn money to soothe the passage of a departed loved one. But they burn fake money, not real money.

"A key economic assumption is that individuals, in making choices, rationally select what they perceive to be in their best interest."

The notion of self-interest does not rule out concern for others; it simply means that concern for others is influenced by the same economic forces that affect other economic choices. *The lower the personal cost of helping others, the more help we offer*. We don't like to think that our behavior reflects our self-interest, but it usually does. As Jane Austen wrote in *Pride and Prejudice*, "I have been a selfish being all my life, in practice, though not in principle."

1-2b Choice Requires Time and Information

Rational choice takes time and requires information, but time and information are themselves scarce and therefore valuable. If you have any doubts about the time and information needed to make choices, talk to someone who recently purchased a home, a car, or a personal computer. Talk to a corporate official trying to decide whether to introduce a new product, sell online, build a new factory, or buy another firm. Or think back to your own experience in choosing a college. You probably talked to friends, relatives, teachers, and guidance counselors. You likely used school catalogs, college guides, and Web sites. You may have even visited some campuses to meet the admissions staff and anyone else willing to talk. The decision took time and money, and it probably involved aggravation and anxiety.

Because information is costly to acquire, we are often willing to pay others to gather and digest it for us. College guidebooks, stock analysts, travel agents, real estate brokers, career counselors, restaurant critics, movie reviewers, specialized Web sites, and *Consumer Reports* magazine attest to our willingness to pay for information that improves our choices. As we'll see next, *rational decision makers continue to acquire information as long as the additional benefit expected from that information exceeds the additional cost of gathering it.*

1-2c Economic Analysis Is Marginal Analysis

Economic choice usually involves some adjustment to the existing situation, or status quo. Amazon.com must decide whether to add an additional line of products. The school superintendent must decide whether to hire another teacher. Your favorite jeans are on sale, and you must decide whether to buy another pair. You are wondering whether to carry an extra course next term. You just finished lunch and are deciding whether to order dessert.

Economic choice is based on a comparison of the *expected marginal benefit* and the *expected marginal cost* of the action under consideration. **Marginal** means incremental, additional, or extra. Marginal refers to a change in an economic variable, a change in the status quo. *A rational decision maker changes the status quo if the expected marginal benefit from the change exceeds the expected marginal cost.* For example, Amazon.com compares the marginal benefit expected from adding a new line of products (the additional sales revenue) with the marginal cost (the additional cost of the resources required). Likewise, you compare the marginal benefit you expect from eating dessert (the additional pleasure

marginal
Incremental, additional, or extra; used to describe a change in an economic variable

2. Dean Karlan and Margaret McConnell, "Hey Look at Me: The Effect of Giving Circles on Giving," NBER Working Paper 17737 (January 2012).

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or satisfaction) with its marginal cost (the additional money, time, and calories).

Typically, the change under consideration is small, but a marginal choice can involve a major economic adjustment, as in the decision to quit school and find a job. For a firm, a marginal choice might mean building a plant in Mexico or even filing for bankruptcy. By focusing on the effect of a marginal adjustment to the status quo, the economist is able to cut the analysis of economic choice down to a manageable size. Rather than confront a bewildering economic reality head-on, the economist begins with a marginal choice to see how this choice affects a particular market and shapes the economic system as a whole. Incidentally, to the noneconomist, *marginal* usually means relatively inferior, as in "a movie of marginal quality." Forget that meaning for this course and instead think of *marginal* as meaning incremental, additional, or extra.

1-2d Microeconomics and Macroeconomics

Although you have made thousands of economic choices, you probably seldom think about your own economic behavior. For example, why are you reading this book right now rather than doing something else? **Microeconomics** is the study of your economic behavior and the economic behavior of others who make choices about such matters as how much to study and how much to party, how much to borrow and how much to save, what to buy and what to sell. Microeconomics examines individual economic choices and how markets coordinate the choices of various decision makers. Microeconomics explains how price and quantity are determined in individual markets—the market for breakfast cereal, sports equipment, or used cars, for instance.

You have probably given little thought to what influences your own economic choices. You have likely given even less thought to how your choices link up with those made by millions of others in the U.S. economy to determine economy-wide measures such as total production, employment, and economic growth. **Macroeconomics** studies the performance of the economy as a whole. Whereas microeconomics studies the individual pieces of the economic puzzle, as reflected in particular markets, macroeconomics puts all the pieces together to focus on the big picture. Macroeconomics sees the forest, not the trees; the beach, not the grains of sand; and the Rose Bowl parade float, not the individual flowers.

The national economy usually grows over time, but along the way it sometimes stumbles, experiencing *recessions* in economic activity, as reflected by a decline in production, employment, and other aggregate measures. **Economic fluctuations** are the rise and fall of economic activity relative to the long-term growth trend of the economy. These fluctuations, or *business cycles,* vary in length and intensity, but they usually involve the entire nation and often other nations too. For example, the U.S. economy now produces more than four times as much as it did in 1960, despite experiencing eight recessions since then, including the Great Recession of 2007–2009.

To Review: The art of economic analysis focuses on how people use their scarce resources in an attempt to satisfy their unlimited wants. Rational self-interest guides individual choice. Choice requires time and information and involves a comparison of the expected marginal benefit and the expected marginal cost of alternative actions. Microeconomics looks at the individual pieces of the economic puzzle; macroeconomics fits the pieces together to form the big picture.

microeconomics
The study of the economic behavior in particular markets, such as that for computers or unskilled labor

macroeconomics
The study of the economic behavior of entire economies, as measured, for example, by total production and employment

economic fluctuations
The rise and fall of economic activity relative to the long-term growth trend of the economy; also called business cycles