Limits, Alternatives, and Choices

(An appendix on understanding graphs follows this chapter. If you need a quick review of this mathematical tool, you might benefit by reading the appendix first.) People's wants are numerous and varied. Biologically, people need only air, water, food, clothing, and shelter. But in modern societies people also desire goods and services that provide a more comfortable or affluent standard of living. We want bottled water, soft drinks, and fruit juices, not just water from the creek. We want salads, burgers, and pizzas, not just berries and nuts. We want jeans, suits, and coats, not just woven reeds. We want apartments, condominiums, or houses, not just mud huts. And, as the saying goes, "That is not the half of it." We also want flat-panel TVs, Internet service, education, homeland security, cell phones, health care, and much more.

Fortunately, society possesses productive resources, such as labor and managerial talent, tools and machinery, and land and mineral deposits. These resources, employed in the economic system (or simply the economy), help us produce goods and services that satisfy many of our economic
The Economic Perspective

Economists view things from a unique perspective. This economic perspective, or economic way of thinking, has several critical and closely interrelated features.

Scarcity and Choice

Scarcity means limited goods and services. Scarcity restricts options and demands choices. Because we “can’t have it all,” we must decide what we will have and what we must forgo.

At the core of economics is the idea that “there is no free lunch.” You may be treated to lunch, making it “free” from your perspective, but someone bears the cost. Because all resources are either privately or collectively owned by members of society, ultimately society bears the cost. Scarce inputs of land, equipment, farm labor, the labor of cooks and waiters, and managerial talent are required. Because society could have used these resources to produce something else, it sacrifices those other goods and services in making the lunch available. Economists call such sacrifices opportunity costs: To obtain more of one thing, society forgoes the opportunity of getting the next best thing. That sacrifice is the opportunity cost of the choice.

Purposeful Behavior

Economics assumes that human behavior reflects “rational self-interest.” Individuals look for and pursue opportunities to increase their utility—the pleasure, happiness, or satisfaction obtained from consuming a good or service. They allocate their time, energy, and money to maximize their satisfaction. Because they weigh costs and benefits, their economic decisions are “purposeful” or “rational,” not “random” or “chaotic.”

Consumers are purposeful in deciding what goods and services to buy. Business firms are purposeful in deciding what products to produce and how to produce them. Government entities are purposeful in deciding what public services to provide and how to finance them.

“Purposeful behavior” does not assume that people and institutions are immune from faulty logic and therefore are perfect decision makers. They sometimes make mistakes. Nor does it mean that people’s decisions are unaffected by emotion or the decisions of those around them. Indeed, economists acknowledge that people are sometimes impulsive or emotive. “Purposeful behavior” simply means that people make decisions with some desired outcome in mind.

Rational self-interest is not the same as selfishness. In the economy, increasing one’s own wage, rent, interest, or
profit normally requires identifying and satisfying somebody else's wants! Also, people make personal sacrifices for others. They contribute time and money to charities because they derive pleasure from doing so. Parents help pay for their children’s education for the same reason. These self-interested, but unselfish, acts help maximize the givers’ satisfaction as much as any personal purchase of goods or services. Self-interested behavior is simply behavior designed to increase personal satisfaction, however it may be derived.

**Marginal Analysis: Comparing Benefits and Costs**

The economic perspective focuses largely on marginal analysis—comparisons of marginal benefits and marginal costs, usually for decision making. To economists, “marginal” means “extra,” “additional,” or “a change in.” Most choices or decisions involve changes in the status quo, meaning the existing state of affairs.

Should you attend school for another year? Should you study an extra hour for an exam? Should you supersize your fries? Similarly, should a business expand or reduce its output? Should government increase or decrease its funding for a missile defense system?

Each option involves marginal benefits and, because of scarce resources, marginal costs. In making choices rationally, the decision maker must compare those two amounts. Example: You and your fiancée are shopping for an engagement ring. Should you buy a 1/2-carat diamond, a 1/4-carat diamond, a 1-carat diamond, or something even larger? The marginal cost of a larger-size diamond is the added expense beyond the cost of the smaller-size diamond. The marginal benefit is the perceived lifetime pleasure (utility) from the larger-size stone. If the marginal benefit of the larger diamond exceeds its marginal cost (and you can afford it), buy the larger stone. But if the marginal cost is more than the marginal benefit, you should buy the smaller diamond instead—even if you can afford the larger stone!

In a world of scarcity, the decision to obtain the marginal benefit associated with some specific option always includes the marginal cost of foregoing something else. The money spent on the larger-size diamond means foregoing some other product. An opportunity cost—the value of the next best thing forgone—is always present whenever a choice is made.

**Theories, Principles, and Models**

Like the physical and life sciences, as well as other social sciences, economics relies on the **scientific method**. That procedure consists of several elements:

- Observing real-world behavior and outcomes.
- Based on those observations, formulating a possible explanation of cause and effect (hypothesis).
• Testing this explanation by comparing the outcomes of specific events to the outcome predicted by the hypothesis.
• Accepting, rejecting, and modifying the hypothesis, based on these comparisons.
• Continuing to test the hypothesis against the facts. If favorable results accumulate, the hypothesis evolves into a theory. A very well-tested and widely accepted theory is referred to as an economic law or an economic principle—a statement about economic behavior or the economy that enables prediction of the probable effects of certain actions. Combinations of such laws or principles are incorporated into models, which are simplified representations of how something works, such as a market or segment of the economy.

Economists develop theories of the behavior of individuals (consumers, workers) and institutions (businesses, governments) engaged in the production, exchange, and consumption of goods and services. Theories, principles, and models are “purposeful simplifications.” The full scope of economic reality itself is too complex and bewildering to be understood as a whole. In developing theories, principles, and models economists remove the clutter and simplify.

Economic principles and models are highly useful in analyzing economic behavior and understanding how the economy operates. They are the tools for ascertaining cause and effect (or action and outcome) within the economic system. Good theories do a good job of explaining and predicting. They are supported by facts concerning how individuals and institutions actually behave in producing, exchanging, and consuming goods and services.

There are some other things you should know about economic principles.

• Generalizations Economic principles are generalizations relating to economic behavior or to the economy itself. Economic principles are expressed as the tendencies of typical or average consumers, workers, or business firms. For example, economists say that consumers buy more of a particular product when its price falls. Economists recognize that some consumers may increase their purchases by a large amount, others by a small amount, and a few not at all. This “price-quantity” principle, however, holds for the typical consumer and for consumers as a group.
• Other-things-equal assumption In constructing their theories, economists use the *ceteris paribus* or *other-things-equal assumption*—the assumption that factors other than those being considered do not change. They assume that all variables except those under immediate consideration are held constant for a particular analysis. For example, consider the relationship between the price of Pepsi and the amount of it purchased. Assume that all the factors that might influence the amount of Pepsi purchased (for example, the price of Pepsi, the price of Coca-Cola, and consumer incomes and preferences), only the price of Pepsi varies. This is helpful because the economist can then focus on the relationship between the price of Pepsi and purchases of Pepsi in isolation without being confused by changes in other variables.

• Graphical expression Many economic models are expressed graphically. Be sure to read the special appendix at the end of this chapter as a review of graphs.

Microeconomics and Macroeconomics

Economists develop economic principles and models at two levels.

Microeconomics

**Microeconomics** is the part of economics concerned with decision making by individual customers, workers, households, and business firms. At this level of analysis, we observe the details of their behavior under a figurative microscope. We measure the price of a specific product, the number of workers employed by a single firm, the revenue or income of a particular firm or household, or the expenditures of a specific firm, government entity, or family. In microeconomics, we examine the sand, rocks, and shells, not the beach.

Macroeconomics

**Macroeconomics** examines either the economy as a whole or its basic subdivisions or aggregates, such as the government, household, and business sectors. An *aggregate* is a collection of specific economic units treated as if they were one unit. Therefore, we might lump together the millions of consumers in the U.S. economy and treat them as if they were one huge unit called “consumers.”
In using aggregates, macroeconomics seeks to obtain an overview, or general outline, of the structure of the economy and the relationships of its major aggregates. Macroeconomics speaks of such economic measures as total output, total employment, total income, aggregate expenditures, and the general level of prices in analyzing various economic problems. Very little attention is given to the specific units making up the various aggregates.

Figuratively, macroeconomics looks at the beach, not the pieces of sand, the rocks, and the shells.

The micro–macro distinction does not mean that economics is so highly compartmentalized that every topic can be readily labeled as either micro or macro; many topics and subdivisions of economics are rooted in both. Example: While the problem of unemployment is usually treated as a macroeconomic topic (because unemployment relates to aggregate production), economists recognize that the decisions made by individual workers on how long to search for jobs and the way specific labor markets encourage or impede hiring are also critical in determining the unemployment rate.

Positive and Normative Economics

Both microeconomics and macroeconomics contain elements of positive economics and normative economics. Positive economics focuses on facts and cause-and-effect relationships. It includes description, theory development, and theory testing. Positive economics avoids value judgments. It tries to establish scientific statements about economic behavior and deals with what the economy is actually like. Such scientific-based analysis is critical to good policy analysis.

Economic policy, on the other hand, involves normative economics, which incorporates value judgments about what the economy should be like or what particular policy actions should be recommended to achieve a desirable goal. Normative economics looks at the desirability of certain aspects of the economy. It underlies expressions of support for particular economic policies.

Positive economics concerns what is, whereas normative economics embodies subjective feelings about what ought to be. Examples: Positive statement: “The unemployment rate in France is higher than that in the United States.” Normative statement: “France ought to undertake policies to make its labor market more flexible to reduce unemployment rates.” Whenever words such as “ought” or “should” appear in a sentence, you are very likely encountering a normative statement.

Most of the disagreement among economists involves normative, value-based policy questions. Of course, economists sometimes disagree about which theories or models best represent the economy and its parts, but they agree on a full range of economic principles. Most economic controversy thus reflects differing opinions or value judgments about what society should be like.

**QUICK REVIEW 1.1**

- Economics examines how individuals, institutions, and society make choices under conditions of scarcity.
- The economic perspective stresses (a) resource scarcity and the necessity of making choices, (b) the assumption of purposeful (or rational) behavior, and (c) comparisons of marginal benefit and marginal cost.
- In choosing the best option, people incur an opportunity cost—the value of the next-best option.
- Economists use the scientific method to establish economic theories—cause-effect generalizations about the economic behavior of individuals and institutions.
- Microeconomics focuses on specific decision-making units of the economy, macroeconomics examines the economy as a whole.
- Positive economics deals with factual statements (“what is”); normative economics involves value judgments (“what ought to be”).

**Individual’s Economizing Problem**

A close examination of the economizing problem—the need to make choices because economic wants exceed economic means—will enhance your understanding of economic models and the difference between microeconomic and macroeconomic analysis. Let’s first build a microeconomic model of the economizing problem faced by an individual.

**Limited Income**

We all have a finite amount of income, even the wealthiest among us. Even Donald Trump must decide how to spend his money! And the majority of us have much more limited means. Our income comes to us in the form of wages, interest, rent, and profit, although we may also receive money from government programs or family members. As Global Perspective 1.1 shows, the average income of Americans in 2008 was $47,580. In the poorest nations, it was less than $500.
GLOBAL PERSPECTIVE 1.1
Average Income, Selected Nations
Average income (total income/population) and therefore typical individual budget constraints vary greatly among nations.

<table>
<thead>
<tr>
<th>Country</th>
<th>Per Capita Income, 2008 (U.S. dollars, based on exchange rates)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switzerland</td>
<td>$65,330</td>
</tr>
<tr>
<td>United States</td>
<td>47,580</td>
</tr>
<tr>
<td>France</td>
<td>27,910</td>
</tr>
<tr>
<td>Japan</td>
<td>28,210</td>
</tr>
<tr>
<td>South Korea</td>
<td>21,530</td>
</tr>
<tr>
<td>Mexico</td>
<td>11,270</td>
</tr>
<tr>
<td>Brazil</td>
<td>7,250</td>
</tr>
<tr>
<td>China</td>
<td>2,770</td>
</tr>
<tr>
<td>Nigeria</td>
<td>1,680</td>
</tr>
<tr>
<td>India</td>
<td>1,070</td>
</tr>
<tr>
<td>Rwanda</td>
<td>110</td>
</tr>
<tr>
<td>Liberia</td>
<td>170</td>
</tr>
</tbody>
</table>


Unlimited Wants
For better or worse, most people have virtually unlimited wants. We desire various goods and services that provide utility. Our wants extend over a wide range of products, from necessities (for example, food, shelter, and clothing) to luxuries (for example, perfumes, yachts, and sports cars). Some wants such as basic food, clothing, and shelter have biological roots. Other wants, for example, specific kinds of food, clothing, and shelter, arise from the conventions and customs of society.

Over time, as new and improved products are introduced, economic wants tend to change and multiply. Only recently have people wanted iPods, Internet service, or camera phones because those products did not exist a few decades ago. Also, the satisfaction of certain wants may trigger others: the acquisition of a Ford Focus or a Honda Civic has been known to whet the appetite for a Lexus or a Mercedes.

Services, as well as goods, satisfy our wants. Car repair work, the removal of an inflamed appendix, legal and accounting advice, and haircuts all satisfy human wants. Actually, we buy many goods, such as automobiles and washing machines, for the services they render. The differences between goods and services are often smaller than they appear to be.

For most people, the desires for goods and services cannot be fully satisfied. Bill Gates may have all that he wants for himself, but his massive charitable giving suggests that he keenly wants better health care for the world’s poor. Our desires for a particular good or service can be satisfied; over a short period of time we can surely get enough toothpaste or pasta. And one appendectomy is plenty. But our broader desire for more goods and services and higher-quality goods and services seems to be another story.

Because we have only limited income (usually through our work) but seemingly insatiable wants, it is in our self-interest to economize: to pick and choose goods and services that maximize our satisfaction given the limitations we face.

A Budget Line
We can clarify the economizing problem facing consumers by visualizing a budget line (or, more technically, a budget constraint). It is a schedule or curve that shows various combinations of two products a consumer can purchase with a specific money income. Although we assume two products, the analysis generalizes to the full range of products available to consumers.

To understand the idea of a budget line, suppose that you received a Barnes & Noble (or Borders) gift card as a birthday present. The $120 card is soon to expire. You take the card to the store and confine your purchase decisions to two alternatives: DVDs and paperback books. DVDs are $20 each and paperback books are $10 each. Your purchase options are shown in the table in Figure 1.1.

At one extreme, you might spend all of your $120 “income” on 6 DVDs at $20 each and have nothing left to spend on books. Or, by giving up 2 DVDs and thereby gaining $40, you can have 4 DVDs at $20 each and 4 books at $10 each. And so on to the other extreme, at which you could buy 12 books at $10 each, spending your entire gift card on books with nothing left to spend on DVDs.

The graph in Figure 1.1 shows the budget line. Notice that the graph is not restricted to whole units of DVDs and books as is the table. Every point on the graph represents a possible combination of DVDs and books, including fractional quantities. The slope of the graphed budget line measures the ratio of the price of books \( P_b \) to the price of DVDs \( P_d \): more precisely, the slope is \( \frac{P_b}{P_d} = -\frac{10}{20} = -\frac{1}{2} \). So you must forgo 1 DVD
FIGURE 1.1 A consumer's budget line. The budget line (or budget constraint) shows all the combinations of any two products that can be purchased, given the prices of the products and the consumer's money income.

<table>
<thead>
<tr>
<th>Units of DVDs (Price = $20)</th>
<th>Units of Books (Price = $10)</th>
<th>Total Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>0</td>
<td>$120 (= $120 + $0)</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>$120 (= $100 + $20)</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>$120 (= $80 + $40)</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>$120 (= $60 + $60)</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>$120 (= $40 + $80)</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>$120 (= $20 + $100)</td>
</tr>
<tr>
<td>0</td>
<td>12</td>
<td>$120 (= $0 + $120)</td>
</tr>
</tbody>
</table>

(measured on the vertical axis) to buy 2 books (measured on the horizontal axis). This yields a slope of $-\frac{1}{2}$ or $-0.5$.

The budget line illustrates several ideas.

**Attainable and Unattainable Combinations** All the combinations of DVDs and books on or inside the budget line are attainable from the $120 of money income. You can afford to buy, for example, 3 DVDs at $20 each and 6 books at $10 each. You also can obviously afford to buy 2 DVDs and 5 books, thereby using up only $90 of the $120 available on your gift card. But to achieve maximum utility you will want to spend the full $120. The budget line shows all combinations that cost exactly the full $120.

In contrast, all combinations beyond the budget line are unattainable. The $120 limit simply does not allow you to purchase, for example, 5 DVDs at $20 each and 5 books at $10 each. That $150 expenditure would clearly exceed the $120 limit. In Figure 1.1 the attainable combinations are on and within the budget line; the unattainable combinations are beyond the budget line.

**Trade-Offs and Opportunity Costs** The budget line in Figure 1.1 illustrates the idea of trade-offs arising from limited income. To obtain more DVDs, you have to give up some books. For example, to obtain the first DVD, you trade off 2 books. So the opportunity cost of the first DVD is 2 books. To obtain the second DVD the opportunity cost is also 2 books. The straight-line budget constraint, with its constant slope, indicates constant opportunity cost. That is, the opportunity cost of 1 extra DVD remains the same ($= 2 books) as more DVDs are purchased. And, in

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**CONSIDER THIS . . .**

**Did Gates, Winfrey, and Rodriguez Make Bad Choices?**

Opportunity costs come into play in decisions well beyond simple buying decisions. Consider the different choices people make with respect to college. College graduates usually earn about 50 percent more during their lifetimes than persons with just high school diplomas. For most capable students, "Go to college, stay in college, and earn a degree" is very sound advice.

Yet Microsoft cofounder Bill Gates and talk show host Oprah Winfrey both dropped out of college, and baseball star Alex Rodriguez ("A-Rod") never even bothered to start classes. What were they thinking? Unlike most students, Gates faced enormous opportunity costs for staying in college. He had a vision for his company, and his starting work young helped ensure Microsoft's success. Similarly, Winfrey landed a spot in local television news when she was a teenager, eventually producing and starring in the Oprah Winfrey Show when she was 32 years old. Getting a degree in her twenties might have interrupted the string of successes that made her famous talk show possible. And Rodriguez knew that professional athletes have short careers. Therefore, going to college directly after high school would have taken away four years of his peak earning potential.

So Gates, Winfrey, and Rodriguez understood opportunity costs and made their choices accordingly. The size of opportunity costs greatly matters in making individual decisions.

*Winfrey eventually went back to school and earned a degree from Tennessee State University when she was in her thirties.*
reverse, the opportunity cost of an extra book does not change (≈ 1/2 DVD) as more books are bought.

**Choice** Limited income forces people to choose what to buy and what to forgo to fulfill wants. You will select the combination of DVDs and paperback books that you think is "best." That is, you will evaluate your marginal benefits and marginal costs (here, product price) to make choices that maximize your satisfaction. Other people, with the same $120 gift card, would undoubtedly make different choices.

**Income Changes** The location of the budget line varies with money income. An increase in money income shifts the budget line to the right; a decrease in money income shifts it to the left. To verify this, recalculate the table in Figure 1.1, assuming the card value (income) is (a) $240 and (b) $60, and plot the new budget lines in the graph. No wonder people like to have more income. That shifts their budget lines outward and enables them to buy more goods and services. But even with more income, people will still face spending trade-offs, choices, and opportunity costs.

**WORKED PROBLEMS**

**W 1.1**

Budget line

**QUICK REVIEW 1.2**

- Because wants exceed incomes, individuals face an economizing problem: they must decide what to buy and what to forgo.
- A budget line (budget constraint) shows the various combinations of two goods that a consumer can purchase with a specific money income.
- Straight-line budget constraints imply constant opportunity costs for both goods.

### Society’s Economizing Problem

Society must also make choices under conditions of scarcity. It, too, faces an economizing problem. Should it devote more of its limited resources to the criminal justice system (police, courts, and prisons) or to education (teachers, books, and schools)? If it decides to devote more resources to both, what other goods and services does it forgo? Health care? Energy development?

### Scarce Resources

Society has limited or scarce economic resources, meaning all natural, human, and manufactured resources that go into the production of goods and services. This includes the entire set of factory and farm buildings and all the equipment, tools, and machinery used to produce manufactured goods and agricultural products; all transportation and communication facilities; all types of labor; and land and mineral resources.

### Resource Categories

Economists classify economic resources into four general categories.

**Land** Land means much more to the economist than it does to most people. To the economist land includes all natural resources ("gifts of nature") used in the production process. These include forests, mineral and oil deposits, water resources, wind power, sunlight, and arable land.

**Labor** The resource labor consists of the physical actions and mental activities that people contribute to the production of goods and services. The work-related activities of a logger, retail clerk, machinist, teacher, professional football player, and nuclear physicist all fall under the general heading "labor."

**Capital** For economists, capital (or capital goods) includes all manufactured aids used in producing consumer goods and services. Included are all factory, storage, transportation, and distribution facilities, as well as tools and machinery. Economists use the term investment to describe spending that pays for the production and accumulation of capital goods.

Capital goods differ from consumer goods because consumer goods satisfy wants directly, whereas capital goods do so indirectly by aiding the production of consumer goods. For example, large commercial baking ovens (capital goods) help make loaves of bread (consumer goods).

Note that the term "capital" as used by economists refers not to money but to tools, machinery, and other productive equipment. Because money produces nothing, economists do not include it as an economic resource. Money (or money capital or financial capital) is simply a means for purchasing goods and services, including capital goods.

**Entrepreneurial Ability** Finally, there is the special human resource, distinct from labor, called entrepreneurial ability. The entrepreneur performs several socially useful functions:

- The entrepreneur takes the initiative in combining the resources of land, labor, and capital to produce a good or a service. Both a sparkplug and a catalyst, the entrepreneur is the driving force behind production and the agent who combines the other resources in what is hoped will be a successful business venture.