2 THINKING LIKE AN ECONOMIST

WHAT'S NEW IN THE SEVENTH EDITION?

A new Graphing Functions section has been included in the appendix, along with two new Problems and Applications questions in the appendix. Quick Check Multiple Choice questions have been created. In the News: "Environmental Economists" in section 2.3 has been removed. Two new questions for review were added: questions 4 and 5.

LEARNING OBJECTIVES

By the end of this chapter, students should understand:

- how economists apply the methods of science.
- how assumptions and models can shed light on the world.
- two simple models—the circular flow and the production possibilities frontier.
- the difference between microeconomics and macroeconomics.
- the difference between positive and normative statements.
- the role of economists in making policy.
- why economists sometimes disagree with one another.

WHY IS THIS CHAPTER IMPORTANT TO STUDENTS?

Chapter 2 is the second chapter in a three-chapter section that serves as the introduction of the text. Chapter 1 introduced ten principles of economics that will be revisited throughout the text. Chapter 2 develops how economists approach problems, while Chapter 3 will explain how individuals and countries gain from trade.

The purpose of Chapter 2 is to familiarize students with how economists approach economic problems. With practice, students will learn how to approach similar problems in this dispassionate systematic way. They will see how economists employ the scientific method, the role of assumptions in model building, and the application of two specific economic models. Students will also learn the important distinction between two roles economists can play: as scientists when we try to explain the economic world, and as policymakers when we try to improve it.

IF NOTHING ELSE, MY STUDENTS SHOULD LEARN…

1. Economists try to address their subject with a scientist's objectivity. Like all scientists, they collect and analyze data, they make appropriate assumptions and build simplified models in order to understand the world around them. Two simple economic models are the circular-flow diagram and the production possibilities frontier.

2. The field of economics is divided into two subfields: microeconomics and macroeconomics. Microeconomists study decision making by households and firms and the interaction among households and firms in the marketplace. Macroeconomists study the forces and trends that affect the economy as a whole.

3. A positive statement is an assertion about how the world *is*. A normative statement is an assertion about how the world *ought to be*. When economists make normative statements, they are acting more as policy advisers than scientists.

4. Economists who advise policymakers offer conflicting advice either because of differences in scientific judgments or because of differences in values. At other times, economists are united in the advice they offer, but policymakers may choose to ignore it.

WHAT CAN I DO IN CLASS?

I. The Economist as Scientist

A. The Scientific Method: Observation, Theory, and More Observation

1. Observations help us to develop theory.

2. Data can be collected and analyzed to evaluate theories.

3. Unlike other sciences, conducting experiments in economics is often impractical.

4. Using data to evaluate theories is more difficult in economics than in physical science because economists are unable to generate their own data and must make do with whatever data are available.

5. Thus, economists pay close attention to the natural experiments offered by history.

B. The Role of Assumptions

1. Assumptions can simplify the complex world and make it easier to understand.

2. Example: to understand international trade, it may be helpful to start out assuming that there are only two countries in the world producing only two goods. Once we understand how trade would work in this simplified world, we are in a better position to understand trade in the more complex world in which we live.

3. One important role of a scientist is to understand which assumptions one should make.

4. Economists use different assumptions to answer different questions.

C. Economic Models

1. Economists use economic models to explain the world around us.

To illustrate to the class how simple but unrealistic models can be useful, bring a road map to class. Point out how unrealistic it is. For example, it does not show where all of the stop signs, gas stations, or restaurants are located. It assumes that Earth is flat and two-dimensional. But, despite these simplifications, a map usually helps travellers get from one place to another. Thus, it is a good model.

2. Most economic models are composed of diagrams and equations and omit many details to allow us to see what is truly important.

3. The goal of a model is to simplify reality in order to increase our understanding of it. This is where the use of assumptions is helpful.

Activity 1—Realism and Models: An Analogy

Type: In-class demonstration
Topics: Models
Materials needed: Airplane kit, sheet of paper
Time: 5 minutes
Class limitations: Works in any class size

Ask the class if a realistic model is better than an unrealistic model.

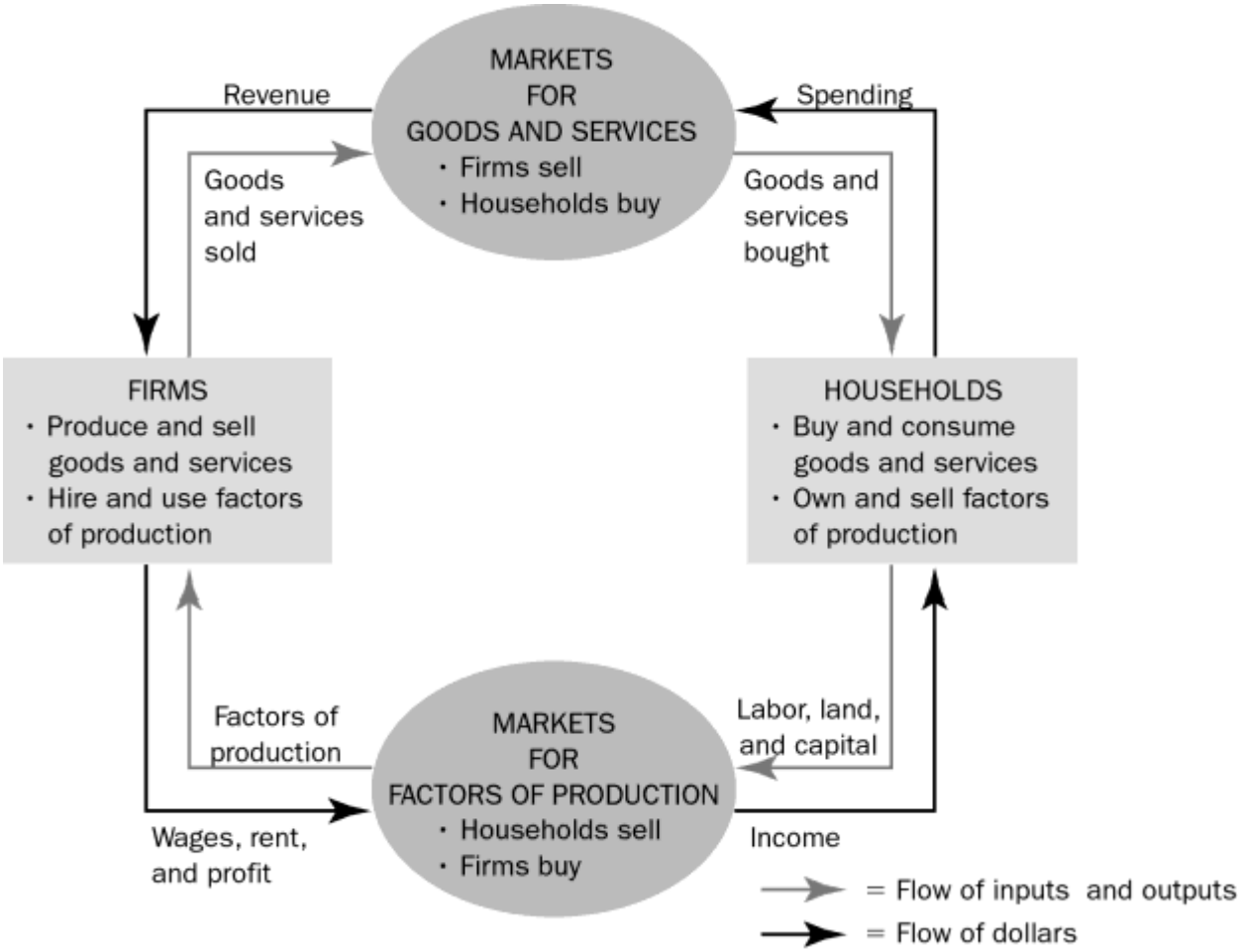
Show them the airplane model kit. Describe some of the details included in the model (rivets, canopy, struts, etc.). Shake the box to rattle the large number of parts. This is a fairly realistic model, although obviously not a real airplane. Its complexity adds realism, but at a cost; assembling the model is very time consuming. Drop the box on the floor. Tell the class, "This model, even when completed, cannot fly."

Take a sheet of paper and fold it into a paper airplane. Show the class this new model. Its virtues include simplicity and ease of assembly, but it is less realistic than the airplane model kit. Throw the airplane and explain, "While less detailed, this model can glide through the air."

Economic models are like the airplane model. They are much less complex than the real world, but they can show how markets actually work.

D. Our First Model: The Circular-Flow Diagram

Figure 2.1



1. Definition of **<u>circular-flow diagram</u>: a visual model of the economy that shows how dollars flow through markets among households and firms.**

2. This diagram is a very simple model of the economy. Note that it ignores the roles of government and international trade.

   a. There are two decision makers in the model: households and firms.

   b. There are two markets: goods market and factor market.

   c. Firms are sellers in the goods market and buyers in the factor market.

   d. Households are buyers in the goods market and sellers in the factor market.

e. The inner loop represents the flows of inputs and outputs between households and firms.

f. The outer loop represents the flows of dollars between households and firms.

E. Our Second Model: The Production Possibilities Frontier

1.

a. Definition of **<u>production possibilities frontier</u>: a graph that shows the combinations of output that the economy can possibly produce given the available factors of production and the available production technology.**

b. Unlike the circular-flow model, most economic models are built using the tools of mathematics.

> Spend more time with this model than you think is necessary. Be aware that the math skills of most of your students will be limited. It is important for the students to feel confident with this first graphical and mathematical model. Be deliberate with every point. If you lose them with this model, they may be gone for the rest of the course. Try to apply real-life examples to the model to help show its usefulness.

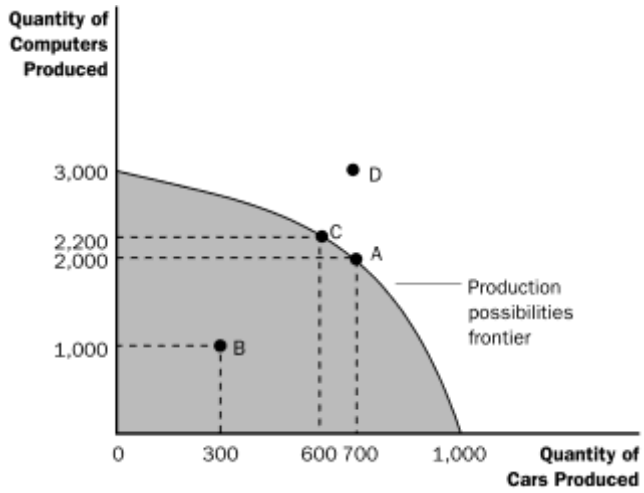
2. Example: a country that produces only two goods, cars and computers.

a. If all resources are devoted to producing cars, the economy can produce 1000 cars and zero computers.

b. If all resources are devoted to producing computers, the economy can produce 3000 computers and zero cars.

c. If resources are divided between the two industries, the feasible combinations of output are shown on the curve by points A and C.

Figure 2.2



You may want to include time dimensions for variables to make it clear that the production data are measured in terms of annual flows. This will help students to realize that a new production possibilities frontier occurs for each year. Thus, the axes show the level of output per year.

It is useful to point out that the production possibilities curve depends on two things: the availability of resources and the level of technology.

ALTERNATIVE CLASSROOM EXAMPLE:
A small country produces two goods: corn (measured in bushels) and trucks. Points on a production possibilities frontier can be shown in a table or a graph:

	A	**B**	**C**	**D**	**E**
Trucks	0	10	20	30	40
Corn	70	60	45	25	0

The production possibilities frontier should be drawn from the numbers above.

Students should be asked to calculate the opportunity cost of increasing the number of trucks produced by ten:
- between 0 and 10
- between 10 and 20
- between 20 and 30
- between 30 and 40

3. Production is *efficient* at points on the curve. This implies that the economy is getting all it can from the scarce resources it has available.

4. Production at a point inside the curve is *inefficient* but possible. It means the economy is producing less than it could from the resources it has available.

5. Production at a point outside of the curve is not possible given the economy's current level of resources and technology.

6. The production possibilities frontier reveals Principle #1: People face tradeoffs.

   Suppose the economy is currently producing 600 cars and 2200 computers. To increase the production of cars to 700, the production of computers must fall to 2000.

7. Principle #2 is also shown on the production possibilities frontier: The cost of something is what you give up to get it (opportunity cost).

   The opportunity cost of increasing the production of cars from 600 to 700 is 200 computers.

Be aware that students often have trouble understanding why opportunity costs rise as the production of a good increases. You may want to use several specific examples of resources that are more suited to producing cars than computers (e.g., an experienced mechanic) as well as examples of resources that are more suited to producing computers than cars (e.g., an experienced computer programmer).

8. The shape of the production possibilities frontier indicates that the opportunity cost of cars in terms of computers increases as the country produces more cars and fewer computers. This occurs because some resources are better suited to the production of cars than computers (and vice versa).

9. The production possibilities frontier can shift if resource availability or technology changes.

Activity 2—Screwdrivers and Bloody Marys

Type: In-class discussion
Topics: Graphing, opportunity cost, tradeoffs
Materials needed: None
Time: 10 minutes
Class limitations: Works in any class size

Instructions
Draw a graph with Bloody Marys on the horizontal axis and Screwdrivers on the vertical axis.

A Bloody Mary contains tomato juice and one shot of vodka. A screwdriver contains orange juice and one shot of vodka. Assume that we have plenty of orange juice and tomato juice, but only one small bottle of vodka containing 6 shots.

How many Bloody Marys can we make if we only make Bloody Marys?
How many Screwdrivers can we make if we only make Screwdrivers?
Could we make 6 of both drinks? Why not?

On your graph, show all of the possible combinations of Bloody Marys and Screwdrivers that can be made, given a small bottle of vodka.

Points for Discussion
The combinations will make a linear production possibilities curve that is continuous since we could make half drinks, quarter drinks, or any fraction of either drink.

Several basic graphing techniques can be demonstrated: inverse relation, negative slope, etc.

The economic points are more interesting: We can produce any combination on or inside the line. If we produce inside the line, we are not fully using our resources. This is inefficient.

If we do use all of our scarce resources, increasing the production of one drink requires sacrificing production of the other. This lost production is opportunity cost.

Show what would happen to the curve should we suddenly get another small bottle of vodka.

You may also want to teach students about budget constraints at this time (call them "consumption possibilities frontiers"). This reinforces the idea of opportunity cost, and allows them to see how opportunity cost can be measured by the slope. Also, it will introduce students to the use of a straight-line production possibilities frontier (which is used in Chapter 3). However, be careful if you choose to do this as students find the difference between straight-line and concave production possibilities curves challenging.

ALTERNATIVE CLASSROOM EXAMPLE:
Ivan receives an allowance from his parents of $10 each week. He spends his entire allowance on two goods: ice cream cones (which cost $1 each) and tickets to the movies (which cost $5 each).

Students should be asked to calculate the opportunity cost of one movie and the opportunity cost of one ice cream cone.

Ivan's consumption possibilities frontier (budget constraint) can be drawn. It should be noted that the slope is equal to the opportunity cost and is constant because the opportunity cost is constant.

Ask students what would happen to the consumption possibilities frontier if Ivan's allowance changes or if the price of ice cream cones or movies changes.

F. Microeconomics and Macroeconomics

1. Economics is studied on various levels.

   a. Definition of **microeconomics: the study of how households and firms make decisions and how they interact in markets.**

   b. Definition of **macroeconomics: the study of economy-wide phenomena, including inflation, unemployment, and economic growth.**

2. Microeconomics and macroeconomics are closely intertwined because changes in the overall economy arise from the decisions of millions of individual households and firms.

3. Because microeconomics and macroeconomics address different questions, they sometimes take different approaches, have their own set of models, and are often taught in separate courses.

II. The Economist as Policy Adviser

A. Positive versus Normative Analysis

1. Example of a discussion of minimum-wage laws: Polly says, "Minimum-wage laws cause unemployment." Norm says, "The government should raise the minimum wage."

2. Definition of **positive statements: claims that attempt to describe the world as it is.**

3. Definition of **normative statements: claims that attempt to prescribe how the world should be.**

4. Positive statements can be evaluated using data, while normative statements involve personal viewpoints.

5. Positive views about how the world works can affect the normative views about what policies are desirable.

Use several examples to illustrate the differences between positive and normative statements and stimulate classroom discussion. Possible examples include the minimum wage, budget deficits, tobacco taxes, legalization of marijuana, and seat-belt laws.

Have students bring in newspaper articles and, in groups, identify each statement in an editorial paragraph as being a positive or normative statement. Discuss the difference between straight news stories and editorials and the analogy to economists as scientists and as policy advisers.

B. Economists in Ottawa

1. Economists are aware that tradeoffs are involved in most policy decisions.

2. Several federal government departments rely on the advice of economists—Finance Canada, Global Affairs Canada, Industry Canada, Employment and Social Development Canada, the Bank of Canada, and Statistics Canada.

3. The World Wide Web addresses, in Table 2.1, the organizations that hire economists and influence economic policy.

4. The research and writings of economists can also indirectly affect public policy.

C. Why Economists' Advice Is Not Always Followed

1. Figuring out the right policy is only part of the job for the government.

2. Politicians must consider and get advice from various bodies before implementing any new policy.

III. Why Economists Disagree

A. Differences in Scientific Judgments

1. Economists sometimes disagree about the validity of alternative theories or about the size of important parameters that measure how economic variables are related and the effects on the behaviour of households and firms.

2. Example: some economists feel that a change in the tax system that would eliminate a tax on income and create a tax on consumption would increase saving in this country. However, other economists feel that the change in the tax system would have little effect on saving behaviour and therefore do not support the change.

B. Differences in Values

1. Economists give advice based on different values rather than being based on scientific grounds only.

C. Perception versus Reality

1. While it seems as if economists do not agree on much, this is in fact not true. Table 2.2 contains 17 propositions that are endorsed by a majority of economists.

> Emphasize that more agreement exists among economists than most people think. The reason for this is probably that the things that are generally agreed upon are boring to most non-economists.

2. Almost all economists believe that rent control adversely affects the availability and quality of housing and is a costly way of helping the neediest members of society. Yet many provinces apply some form of rent control.

3. While most economists oppose barriers to trade, Parliament has chosen to restrict the importation of certain goods.

IV. Appendix—Graphing: A Brief Review

1. Graphs serve two purposes. First, when developing economic theories, they offer a way to visually express ideas. Second, when analyzing economic data, graphs provide a powerful way of finding and interpreting patterns.

> Many instructors may be unaware of how much trouble beginning students have grasping the most basic graphs. It is important for instructors to make sure that students are comfortable with these techniques.

A. Graphs of a Single Variable

1. Pie Chart

2. Bar Graph

3. Time-Series Graph

B. Graphs of Two Variables: The Coordinate System

1. Economists are often concerned with relationships between two or more variables.

2. Ordered pairs of numbers can be graphed on a two-dimensional grid.

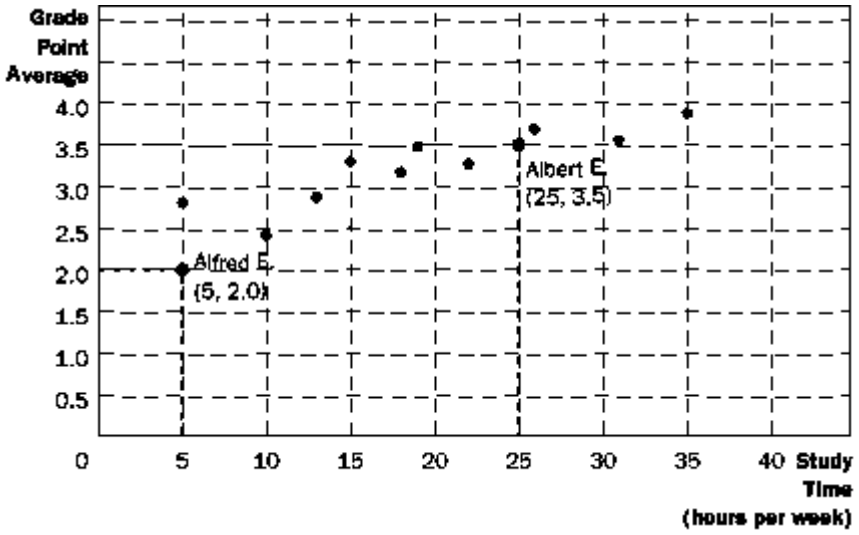
   a. The first number in the ordered pair is the *x*-coordinate and tells us the horizontal location of the point.

   b. The second number in the ordered pair is the *y*-coordinate and tells us the vertical location of the point.

3. The point with both an *x*-coordinate and a *y*-coordinate of zero is called the origin.

4. Two variables that increase or decrease together have a positive correlation.

5. Two variables that move in opposite directions (one increases when the other decreases) have a negative correlation.



C. Curves in the Coordinate System

1. Often, economists want to show how one variable affects another, holding all other variables constant.

   a. An example of this is a demand curve.

   b. The demand curve shows how the quantity of a good a consumer wants to purchase varies as its price varies, holding everything else (such as income) constant. It is downward sloping, indicating the negative relation between the two variables. See Figure 2A.3.

   c. If income does change, this will alter the amount of a good that the consumer wants to purchase at any given price. Thus, the relationship between price and quantity desired has changed and must be represented as a new demand curve. See Figure 2A.4.

d. A simple way to tell if it is necessary to shift the curve is to look at the axes. When a variable that is not named on either axis changes, the curve shifts otherwise it will be a movement along the curve.

D. Slope

1. We may want to ask how strongly a consumer reacts if the price of a product changes.

   a. If the demand curve is very steep, quantity desired does not change much in response to a change in price.

   b. If the demand curve is very flat, quantity desired changes a great deal when the price changes.

2. The slope of a line is the ratio of the vertical distance covered to the horizontal distance covered as we move along the line ("rise over run").

$$\boxed{\text{slope} = \frac{\Delta y}{\Delta x}}$$

3. A small slope means that the demand curve is relatively flat; a large slope means that the demand curve is relatively steep.

4. A positive number indicates an upward-sloping line while a negative number indicates a downward-sloping line.

5. The slope of a straight line will be constant.

E. Graphing Functions

1. When looking at the relationship between variables, for example like a demand curve, we can express it like this: the demand is a *function* of the price, where "function of" means "depends on."

2. Mathematically, in general terms we could write: $Q^{D} = f(P)$.

3. The general functional form for a linear demand curve is: $Q^{D} = f(P) = a - bP$ where *a* and *b* are called the parameters of the function. The negative sign indicates the negative slope.

4. Once we know the values for *a* and *b*, we can plug any price into the function and determine the demand.

5. We can use the *x*- and *y*-intercepts to easily calculate the slope of a linear demand curve.

F. Cause and Effect

1. Economists often make statements suggesting that a change in Variable A causes a change in Variable B. Therefore, graphs can be used to visualize this.

2. Ideally, we would like to see how changes in Variable A affect Variable B, holding all other variables constant.

3. This is not always possible and could lead to a problem caused by omitted variables.

    a. If Variables A and B both change at the same time, we may conclude that the change in Variable A caused the change in Variable B.

    b. But, if Variable C has also changed, it is entirely possible that Variable C is responsible for the change in Variable B.

4. Another problem is reverse causality.

    a. If Variable A and Variable B both change at the same time, we may believe that the change in Variable A led to the change in Variable B.

    b. However, it is entirely possible that the change in Variable B led to the change in Variable A.

    c. It is not always as simple as determining which variable changed first because individuals often change their behaviour in response to a change in their expectations about the future. This means that Variable A may change before Variable B but only because of the expected change in Variable B.