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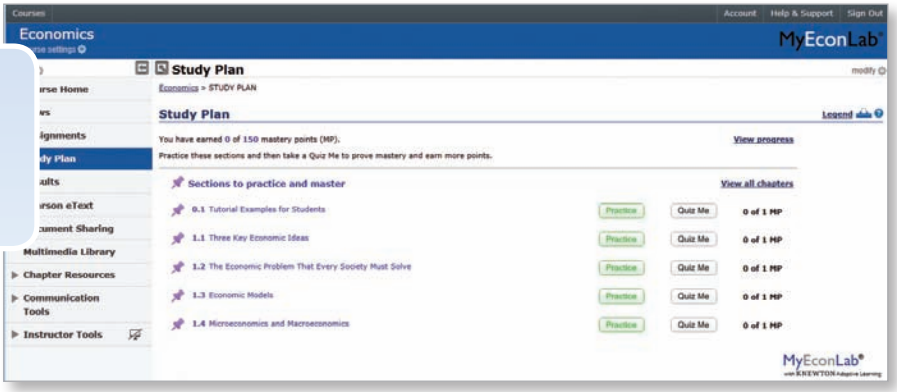

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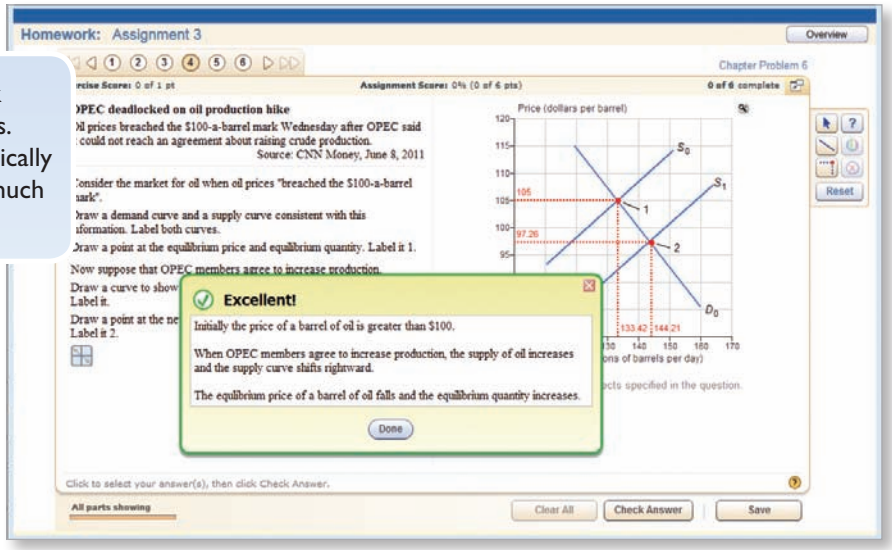

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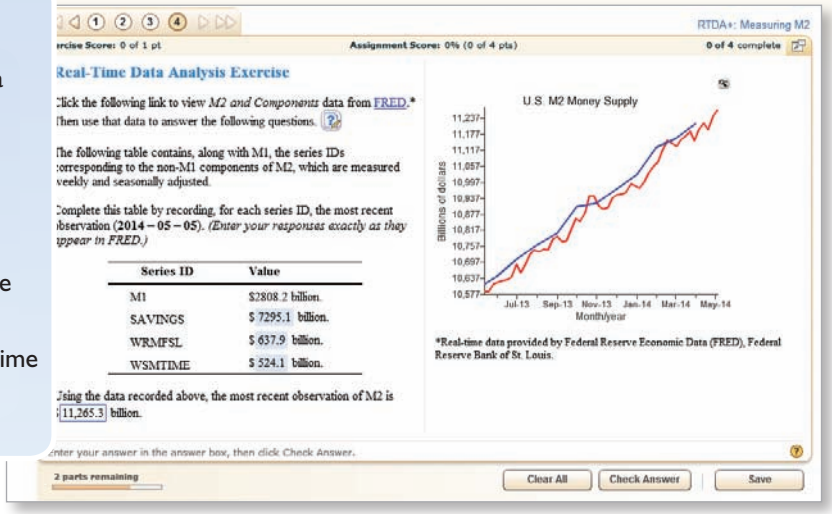

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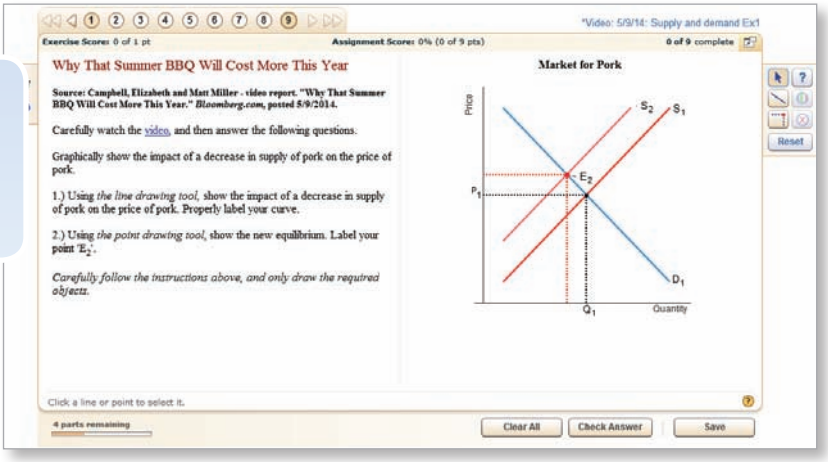

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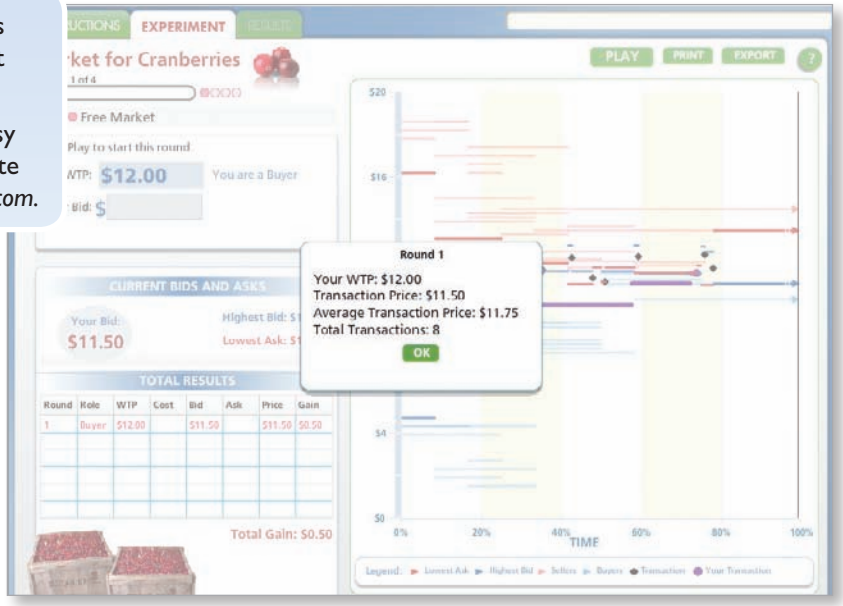

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Dedication

With love for Asu, Nina, and Jennifer,
who inspire us every day.

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CHAPTERS ON THE WEB

Web chapters are available on MyEconLab.

WEB Chapter 1 Financial Decision Making
WEB Chapter 2 Economics of Life, Health, and the Environment
WEB Chapter 3 Political Economy

Preface

We love economics. We marvel at the way economic systems work. When we buy a smartphone, we think about the complex supply chain and the hundreds of thousands of people who played a role in producing an awe-inspiring piece of technology that was assembled from components manufactured across the globe.

The market's ability to do the world's work without anyone being in charge strikes us as a phenomenon no less profound than the existence of consciousness or life itself. We believe that the creation of the market system is one of the greatest achievements of humankind.

We wrote this book to highlight the simplicity of economic ideas and their extraordinary power to explain, predict, and improve what happens in the world. We want students to master the *essential* principles of economic analysis. With that goal in mind, we identify the three key ideas that lie at the heart of the economic approach to understanding human behavior: optimization, equilibrium, and empiricism. These abstract words represent three ideas that are actually highly intuitive.

Our Vision: Three Unifying Themes

The first key principle is that people try to choose the best available option: *optimization*. We don't assume that people always successfully optimize, but we do believe that people try to optimize and often do a relatively good job of it. Because most decision makers try to choose the alternative that offers the greatest net benefit, optimization is a useful tool for predicting human behavior. Optimization is also a useful prescriptive tool. By teaching people how to optimize, we improve their decisions and the quality of their lives. By the end of this course, every student should be a skilled optimizer—without using complicated mathematics, simply by using economic intuition.

The second key principle extends the first: economic systems operate in *equilibrium*, a state in which everybody is simultaneously trying to optimize. We want students to see that they're not the only ones maximizing their well-being. An economic system is in equilibrium when each person feels that he or she cannot do any better by picking another course of action. The principle of equilibrium highlights the connections among economic actors. For example, Apple stores stock millions of iPhones because millions of consumers are going to turn up to buy them. In turn, millions of consumers go to Apple stores because those stores are ready to sell those iPhones. In equilibrium, consumers and producers are simultaneously optimizing and their behaviors are intertwined.

Our first two principles—optimization and equilibrium—are conceptual. The third is methodological: *empiricism*. Economists use *data* to test economic theories, learn about the world, and speak to policymakers. Accordingly, data play a starring role in our book, though we keep the empirical analysis extremely simple. It is this emphasis on matching theories with real data that we think most distinguishes our book from others. We show students how economists use data to answer specific questions, which makes our chapters concrete, interesting, and fun. Modern students demand the evidence behind the theory, and our book supplies it.

For example, we begin every chapter with an empirical question and then answer that question using data. One chapter begins by asking:

Would a smoker quit the habit for $100 a month?

Later in that chapter, we describe how smoking fell when researchers paid smokers to quit. Another chapter opens with the question

Why are you so much more prosperous than your great-great-grandparents were?

Later in that chapter, we demonstrate the central role played by technology in explaining U.S. economic growth and why we are much better off than our relatives a few generations ago.

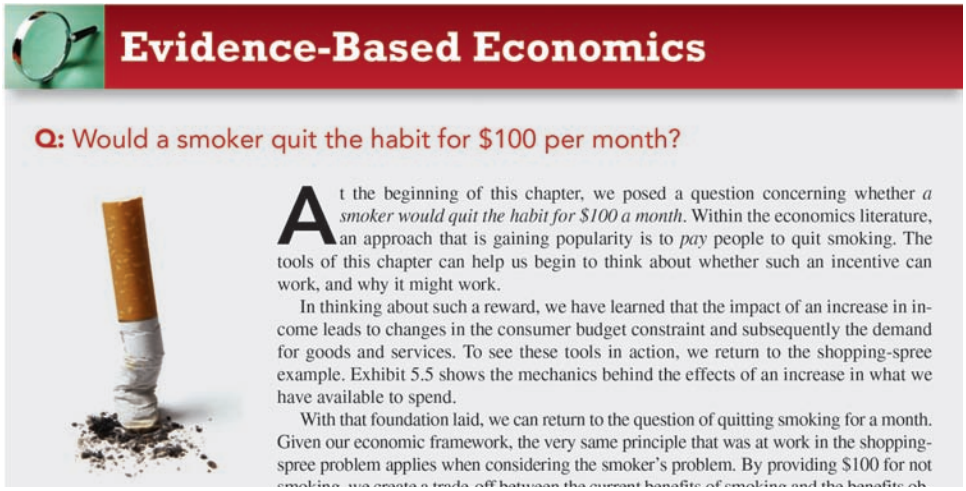
In our experience, students taking their first economics class often have the impression that economics is a series of theoretical assertions with little empirical basis. By using data, we explain how economists evaluate and improve our scientific insights. Data also make concepts more memorable. Using evidence helps students build intuition, because data move the conversation from abstract principles to concrete facts. Every chapter sheds light on how economists use data to answer questions that directly interest students. Every chapter demonstrates the key role that evidence plays in advancing the science of economics.

Features

All of our features showcase intuitive empirical questions.

- In **Evidence-Based Economics (EBE)**, we show how economists use data to answer the question we pose in the opening paragraph of the chapter. The EBE uses actual data that highlights some of the major concepts discussed within the chapter. This tie-in with the data gives students a substantive look at economics as it plays out in the world around them.

  The questions explored aren't just dry intellectual ideas; they spring to life the minute the student sets foot outside the classroom—*Is Facebook free? Is college worth it? Will free trade cause you to lose your job? Is there value in putting yourself into someone else's shoes? Are tropical and semitropical areas condemned to poverty by their geographies? What caused the recession of 2007–2009? Are companies like Nike harming workers in Vietnam?*



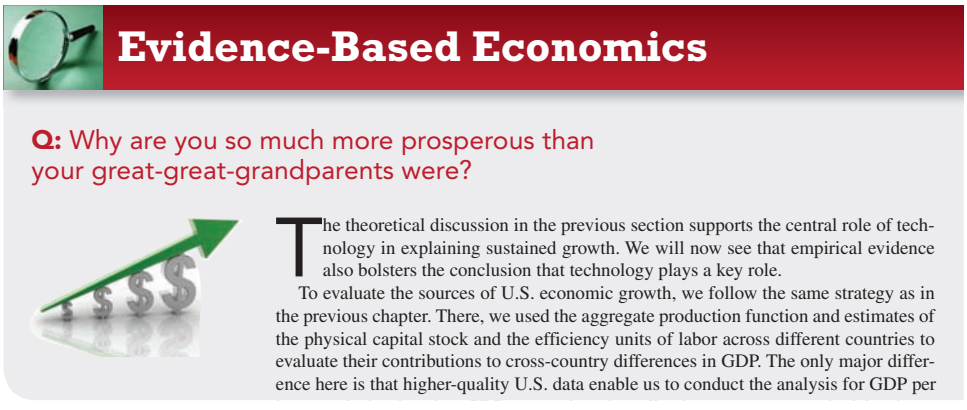
Evidence-Based Economics

Q: Would a smoker quit the habit for $100 per month?

At the beginning of this chapter, we posed a question concerning whether *a smoker would quit the habit for $100 a month*. Within the economics literature, an approach that is gaining popularity is to *pay* people to quit smoking. The tools of this chapter can help us begin to think about whether such an incentive can work, and why it might work.

In thinking about such a reward, we have learned that the impact of an increase in income leads to changes in the consumer budget constraint and subsequently the demand for goods and services. To see these tools in action, we return to the shopping-spree example. Exhibit 5.5 shows the mechanics behind the effects of an increase in what we have available to spend.

With that foundation laid, we can return to the question of quitting smoking for a month. Given our economic framework, the very same principle that was at work in the shopping-spree problem applies when considering the smoker's problem. By providing $100 for not



Evidence-Based Economics

Q: Why are you so much more prosperous than your great-great-grandparents were?

The theoretical discussion in the previous section supports the central role of technology in explaining sustained growth. We will now see that empirical evidence also bolsters the conclusion that technology plays a key role.

To evaluate the sources of U.S. economic growth, we follow the same strategy as in the previous chapter. There, we used the aggregate production function and estimates of the physical capital stock and the efficiency units of labor across different countries to evaluate their contributions to cross-country differences in GDP. The only major difference here is that higher-quality U.S. data enable us to conduct the analysis for GDP per

- **Letting the Data Speak** is another feature that analyzes an economic question by using real data as the foundation of the discussion. Among the many issues we explore are such topics as McDonald's and elasticity, fair trade, airline price wars, life expectancy and innovation, living in an interconnected world, and why Chinese authorities have historically kept the yuan undervalued.

LETTING THE DATA SPEAK

Life Expectancy and Innovation

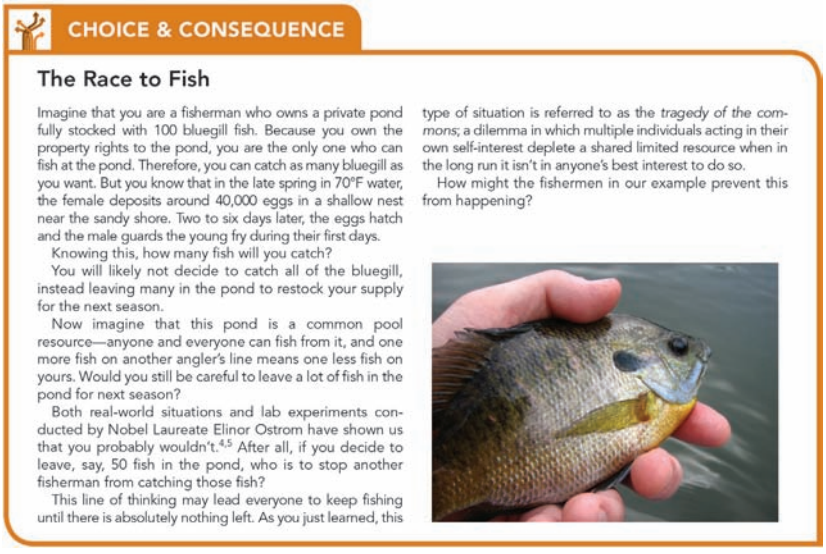
Life expectancy around the world was much lower 70 years ago than it is today.[4] In 1940, child and infant mortality rates were so high and adult diseases, such as pneumonia and tuberculosis, were so deadly (and without any cure) that life expectancy at birth in many nations stood at less than 40 years. For example, the life expectancy at birth of an average Indian was an incredibly low 30 years. In Venezuela, it was 33; in Indonesia, 34; in Brazil, 36. Life expectancy at birth in many Western nations was also low but still considerably higher than the corresponding numbers in the poorer nations. Consider that life expectancy at birth in the United States was 64 years.

In the course of the next three or four decades, this picture changed dramatically. As we saw in the previous chapter, while the gap in life expectancy between rich and poor nations still remains today, health conditions have improved significantly all over the world, particularly before the spread of the AIDS epidemic in sub-Saharan Africa starting in the 1980s. Life expectancy at birth in India in 1999 was 60 years. This was twice as large as the same number in 1940. It was also 50 percent higher than life expectancy at birth in Britain in 1820 (40 years), which had approximately the same GDP per capita as India in 1999. How did this tremendous improvement in health conditions in poor nations take place?

The answer lies in scientific breakthroughs and innovations that took place in the United States and Western Europe throughout the twentieth century. First, there was a wave of global drug innovation, most importantly the development of antibiotics, which produced many products that were highly effective against major killers in developing countries. Penicillin, which provided an effective treatment against a range of bacterial infections, became widely available by the early 1950s. Also important during the same period was the development of new vaccines, including ones against yellow fever and smallpox.

The second major factor was the discovery of DDT (Dichlorodiphenyl trichloroethylene). Although eventually the excess use of DDT as an agricultural pesticide would turn out to be an environmental hazard, its initial use in disease control was revolutionary. DDT allowed a breakthrough in attempts to control one of the major killers of children in relatively poor parts of the world—malaria. Finally, with the establishment and help of the World Health Organization (WHO), simple but effective medical and public health practices, such as oral rehydration and boiling water to prevent cholera, spread to poorer countries.

- In keeping with the optimization theme, from time to time we ask students to make a real economic decision or evaluate the consequences of past real decisions in a feature entitled **Choice & Consequence**. We explain how an economist might analyze the same decision. Among the choices investigated are such questions and concepts as the unintended consequences of fixing market prices, the tragedy of the commons, signaling, the power of growth, foreign aid and corruption, and policies that address the problem of banks that are "too big to fail."



CHOICE & CONSEQUENCE

The Race to Fish

Imagine that you are a fisherman who owns a private pond fully stocked with 100 bluegill fish. Because you own the property rights to the pond, you are the only one who can fish at the pond. Therefore, you can catch as many bluegill as you want. But you know that in the late spring in 70°F water, the female deposits around 40,000 eggs in a shallow nest near the sandy shore. Two to six days later, the eggs hatch and the male guards the young fry during their first days.

Knowing this, how many fish will you catch?

You will likely not decide to catch all of the bluegill, instead leaving many in the pond to restock your supply for the next season.

Now imagine that this pond is a common pool resource—anyone and everyone can fish from it, and one more fish on another angler's line means one less fish on yours. Would you still be careful to leave a lot of fish in the pond for next season?

Both real-world situations and lab experiments conducted by Nobel Laureate Elinor Ostrom have shown us that you probably wouldn't.[4,5] After all, if you decide to leave, say, 50 fish in the pond, who is to stop another fisherman from catching those fish?

This line of thinking may lead everyone to keep fishing until there is absolutely nothing left. As you just learned, this type of situation is referred to as the *tragedy of the commons*; a dilemma in which multiple individuals acting in their own self-interest deplete a shared limited resource when in the long run it isn't in anyone's best interest to do so.

How might the fishermen in our example prevent this from happening?

Organization

Part I Introduction to Economics lays the groundwork for understanding the economic way of thinking about the world. In ***Chapter 1***, we show that the principle of *optimization* explains most of our choices. In other words, we make choices based on a consideration of benefits and costs, and to do this we need to consider trade-offs, budget constraints, and opportunity cost. We then explain that *equilibrium* is the situation in which everyone is simultaneously trying to individually optimize. In equilibrium, there isn't any perceived benefit to changing one's own behavior. We introduce the free-rider problem to show that individual optimization and social optimization do not necessarily coincide.

Because data plays such a central role in economics, we devote an entire chapter—***Chapter 2***—to economic models, the scientific method, empirical testing, and the critical distinction between correlation and causation. We show how economists use models and data to answer interesting questions about human behavior. For the students who want to brush up their graphical skills, there is an appendix on constructing and interpreting graphs, which is presented in the context of an actual experiment on incentive schemes.

Chapter 3 digs much more deeply into the concept of optimization, including an intuitive discussion of marginal analysis. We use a single running example of choosing an apartment, which confronts students with a trade-off between the cost of rent and the time spent commuting. We demonstrate two alternative approaches—optimization in levels and optimization in differences—and show why economists often use the latter (marginal) technique.

Chapter 4 introduces the demand and supply framework via a running example of the market for gasoline. We show how the price of gasoline affects the decisions of buyers, like commuters, and sellers, like ExxonMobil. As we develop the model, we explore how individual buyers are added together to produce a market demand curve and how individual sellers are added together to generate a market supply curve. We then show how buyers and sellers jointly determine the equilibrium market price and the equilibrium quantity of goods transacted in a perfectly competitive market. Finally, we show how markets break down when prices aren't allowed to adjust to equate the quantity demanded and the quantity supplied.

Part II Foundations of Microeconomics anchors Micro with a deeper exploration of the sources of demand and supply. One important thing that we have learned as teachers is that even after a year of economics, most students really have no idea about the underpinnings of the demand and supply curves—specifically, where the curves actually come from. Most textbooks do not illuminate these issues.

When crafting Chapters 5 and 6, our goal was to provide two stand-alone chapters that show students that consumption and production are really two sides of the same coin, "glued" together by the idea of incentives. We gather consumer and producer concepts under their own respective umbrellas, and merge material that is spread out over several chapters in other texts. The goal is to show the commonalities and linkages between consumers' and producers' optimization decisions. With this setup, the student is able to view the whole picture in one place and understand how concepts tie together without flipping back and forth between several chapters.

In ***Chapter 5***, we look "under the hood" to show where the demand curve actually comes from. We frame the question of how consumers decide what to buy as "the buyer's problem" and discuss the three key ingredients of tastes and preferences, prices, and the budget set. The discussion is intuitive: once these three pieces are in place, the demand curve naturally falls out. This approach leads fluidly to a discussion of consumer surplus, demand elasticities, and how consumers predictably respond to incentives. In this way, the student can readily see holistically why policymakers and business people should concern themselves with the demand side of economics. For the students who want it, there is an appendix on income and substitution effects, which is presented as an extension of the text.

In ***Chapter 6***, we use the same holistic approach, but here we follow a single company (The Wisconsin Cheeseman, which a coauthor worked at for two high school summers) to showcase "the seller's problem." The seller's problem also has three parts: production,

costs, and revenues. In thinking through the seller's problem, it is natural to treat these three components together rather than strew them over separate chapters as in other books. They need to be simultaneously considered by the firm when making optimal choices, so why not present them jointly? The running theme of The Wisconsin Cheeseman makes the chapter quite cohesive, and what was once a difficult puzzle to sort through becomes clear when presented under a single continuous example. For the more inquisitive students there is an appendix showing that for firms with different cost structures, economic profits can exist in long-run equilibrium.

Chapter 7 takes an aerial view by considering what happens when we put together the buyers of Chapter 5 and the sellers of Chapter 6 in a perfectly competitive market. The chapter begins by asking: can markets composed of only self-interested people maximize the overall well-being of society? The beauty of economics is on full display in this chapter, as it shows that in a perfectly competitive market, the invisible hand creates harmony between the interests of the individual and those of society. Prices guide the invisible hand and incentivize buyers and sellers, who in turn maximize social surplus by allocating resources efficiently within and across sectors of the economy. The chapter uses Vernon Smith's seminal laboratory experiments to provide the evidence that prices and quantities converge to the intersection of supply and demand.

In ***Chapter 8*** we first walk through a discussion of the production possibilities curve, comparative advantage, and the gains from trade. We move the discussion from individuals trading with each other to trade between states (an innovation in a principles text) and finally to trade between countries. Students can thus see that the principles motivating them to trade are the same as those motivating states and nations to trade. They develop an understanding that there are sometimes winners and losers in trade, but that overall, the gains from trade are larger than the losses. The key policy issue becomes: can we shift surplus to make trade a win–win for everyone?

If students stopped reading the book at this point, they would be rabid free-market proponents. This is because the beauty of the free market is unparalleled. ***Chapter 9*** begins a discussion of important cases that frustrate the workings of the invisible hand. When some firms produce, they pollute the air and water. There are some goods that everyone can consume once they are provided, such as national defense. Chapter 9 probes three cases of market failure—externalities, public goods, and common pool resources—and highlights an important link: in all three cases, there is a difference between social and private benefits or social and private costs. The student learns that the invisible hand of Chapter 7 can become "broken" and that government can enact policies in regard to externalities to improve social well-being, provide public goods, and protect common pool resources.

But government intervention can be a two-edged sword, and in ***Chapter 10*** we ask the question, "How much government intervention is necessary and how much is desirable?" We provide an aerial view of taxation and spending, and study how regulation—the main tool that governments use to deal with the externalities and other market failures of Chapter 10—has its costs and limitations. We see that the trade-off between equity and efficiency represents the nub of the conflict between those who support big government and those who argue for smaller government. The Evidence-Based Economics feature at the end of the chapter tackles the thorny question of the optimal size of government by exploring the deadweight loss of income taxation.

Chapter 11 motivates the importance of factor markets—the inputs that firms use to make their goods and services—by asking if there is discrimination in the labor market. This question is couched within a general discussion about why people earn different wages in the labor market. This approach allows the student to seamlessly transition from being a demander (as in Chapter 5 as a buyer) to being a supplier (of labor). The economics behind the other major factors of production—physical capital and land—naturally follow from the labor discussion. The chapter concludes by showing several interesting data sets measuring whether discrimination exists in labor markets.

Part III Market Structure introduces the alternatives to the perfectly competitive market: monopolies, oligopolies, and monopolistic competition. This section also provides the tools necessary to understand these market structures.

Chapter 12 on monopoly connects the student's thinking to Chapter 6 where the seller's problem was introduced and shows that all of the production and cost concepts learned