

microeconomics

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Paul Krugman is Professor of Economics at Princeton University, where he regularly teaches the principles course. He received his BA from Yale and his PhD from MIT. Prior to his current position, he taught at Yale, Stanford, and MIT. He also spent a year on the staff of the Council of Economic Advisers in 1982–1983. His research is mainly in the area of international trade, where he is one of the founders of the “new trade theory,” which focuses on increasing returns and imperfect competition. He also works in international finance, with a concentration in currency crises. In 1991, Krugman received the American Economic Association’s John Bates Clark medal. In addition to his teaching and academic research, Krugman writes extensively for nontechnical audiences. Krugman is a regular op-ed columnist for the *New York Times*. His latest trade book is a best-selling collection of his *Times* articles entitled *The Great Unraveling: Losing Our Way in the New Century*. His earlier books, *Peddling Prosperity* and *The Age of Diminished Expectations*, have become modern classics.

Robin Wells is Researcher in Economics at Princeton University, where she regularly teaches undergraduate courses. She received her BA from the University of Chicago and her PhD from the University of California at Berkeley; she then did postdoctoral work at MIT. She has taught at the University of Michigan, the University of Southampton (United Kingdom), Stanford, and MIT. Her teaching and research focus on the theory of organizations and incentives. She writes regularly for academic journals.

“What is above all needed is to let the meaning choose the word, and not the other way about.”

George Orwell,
“Politics and the English Language,” 1946

FROM PAUL

Robin and I like to think that we wrote this book with a similar principle in mind. We wanted to write a different sort of book, one in which making sure the student understands how the models apply to the real world is given as much attention as the models themselves. We wanted to adapt Orwell’s principle to the writing of an economics textbook: to let the purpose of economics—to achieve a deeper understanding of the world—rather than the mechanics of economics dictate the writing.

We believe that writing in this style reflects a commitment to the reader—a commitment to approach the material from a beginner’s point of view, to make the material entertaining and accessible, to make discovery a joy. That’s the fun part. But we also believe that there is another, equally compelling obligation on the part of an author of a principles of economics text. Economics is an extremely powerful tool. Many of us who are economists originally started in other disciplines (I started in history, Robin in chemistry). And we fell in love with economics because we believed it offers what most other disciplines don’t—a coherent worldview that offers real guidelines to making the world a better place. (Yes, most economists are idealists at heart.) But like any powerful tool, economics should be treated with great care. For us, this obligation became a commitment that students would learn the appropriate use of the models—understand their assumptions and know their limitations as well as their positive uses. Why do we care about this? Because we don’t live in a “one model of the economy fits all” world. To achieve deeper levels of understanding of the real world through economics, students must learn to appreciate the kinds of trade-offs and ambiguities that economists and policy makers face when applying their models to real-world problems. We hope this approach will make students more insightful and more effective participants in our common economic, social, and political lives.

To those familiar with my academic work, this perspective will probably look familiar. There I tried to make the problem to be solved the focus, and to avoid unnecessary technique. I tried to simplify. And I tried to choose topics that had important real-world implications. Writing for a large, nontechnical audience has only reinforced and expanded these tendencies. I had to begin with the working assumption that readers initially have no

reason to care about what I am writing about—that it is my responsibility to show them why they should care. So the beginning of each chapter of this book is written according to the dictum: “If you haven’t hooked them by the third sentence, then you’ve lost them.” I’ve also learned that about all you can take for granted in writing for a lay audience is basic numeracy—addition and subtraction, but no more than that. Concepts must be fully explained; likely confusions must be anticipated and headed off. And most of all, you must be judicious in choosing the content and pacing of the writing—don’t overwhelm your reader.

FROM ROBIN

Like Paul, I wanted to write a book that appeals to students without unduly sacrificing an instructor’s obligation to teach economics well. I arrived at a similar perspective on how this book should be written, but by a different path. It came from my experiences teaching economics in a business school for a few years. Facing students who were typically impatient with abstraction and often altogether unhappy to be taking economics (and who would often exact bloody revenge in teaching evaluations), I learned how important it is to “hook” the students into the subject matter. Teaching with case studies, I found that concepts had been truly learned only when students could successfully apply them. And one of the most important lessons I learned was not to patronize. We—economists, that is—often assume that people who aren’t familiar with conceptual thinking aren’t smart and capable. Teaching in a business school showed me otherwise. The majority of my students were smart and capable, and many had shouldered a lot of responsibility in their working lives. Although adept at solving practical problems, they weren’t trained to think conceptually. I had to learn to acknowledge the practical skills that they did have, but also show them the importance of the conceptual skills they didn’t have. Although I eventually returned to an economics department, the lessons I learned about teaching economics in a business school stayed with me and, I believe, have been crucial ingredients in writing this textbook.

Advantages of This Book

Despite our fine words, why should any instructor use our text? We believe our book distinguishes itself in several ways that will make your introductory economics course an easier and more successful undertaking for the following reasons:

- **Chapters build intuition through realistic examples.** In every chapter, we use real-world examples, stories, applications, and case studies to teach the core concepts and motivate student learning. We believe that the best way to introduce concepts and reinforce them is through real-world examples; students simply relate more easily to them.
- **Pedagogical features reinforce learning.** We've worked hard to craft a set of features that will be genuinely helpful to students. We describe these features in the next section, "Tools for Learning."
- **Chapters have been written to be accessible and entertaining.** We have used a fluid and friendly writing style that makes the concepts accessible. And we have tried whenever possible to use examples that are familiar to students: for example, choosing which course to take, buying a used textbook, or deciding where to eat at the food court at the local shopping mall.
- **Although easy to understand, the book also prepares students for further coursework.** Too often, instructors find that selecting a textbook means choosing between two unappealing alternatives: a textbook that is "easy to teach" but leaves major gaps in students' understanding, or a textbook that is "hard to teach" but adequately prepares students for future coursework. We have worked very hard to create an easy-to-understand textbook that offers the best of both worlds.
- **The book permits flexible yet conceptually structured use of chapters.** We recognize that many instructors will prefer to teach the chapters in a sequence different from the one found in the book. Chapters were written with this in mind. Instructors can use the chapters in any order they wish. Our overarching goal was flexibility of organization for everyone. For a detailed look at the organization of chapters and ways to use them, see pages ix through xiv of this preface.

Tools for Learning

We have structured each of the chapters around a common set of features. The following features are intended to help students learn better while also keeping them engaged.

"What You Will Learn in This Chapter"

To help readers get oriented, the first page of each chapter contains a preview of the chapter's contents, in an easy-to-review bulleted list format, that alerts students to the critical concepts and details the objectives of the chapter.

Opening Story

In contrast to other books in which each chapter begins with a recitation of some aspect of economics, we open each chapter with a compelling story that often extends through the entire chapter. Stories were chosen to accomplish two things: to illustrate important concepts in the chapter and then to encourage students to want to read on to learn more.

As we've mentioned, one of our main goals is to build intuition with realistic examples. Because each chapter is introduced with a real-world story, students will relate more easily to the material. For example, Chapter 3 teaches supply and demand in the context of a market for scalped tickets to a sports event (our opening story on page 56 is "Gretzky's Last Game"). A complete list of our opening stories appears on the inside front cover.

"Economics in Action" Case Studies

In addition to introducing chapters with vivid stories, we conclude virtually every major text section with still more examples: a real-world case study called "Economics in Action." This feature provides a short but compelling application of the major concept just covered in that section. Students will experience an immediate payoff from being able to apply the concepts they've just read about to real phenomena. For example, in Chapter 6 we use the case of eBay, the online auctioneer, to communicate the concept of efficiency (see the "Economics in Action" entitled "eBay and Efficiency" on page 151). For a complete list of all the "Economics in Action" cases in the text, see the page facing the inside front cover and also our table of contents.

Unique End-of-Section Review: "Quick Review" and "Check Your Understanding" Questions

In contrast to most other textbooks, which offer a review of concepts only at the end of each chapter, we include review material at the end of each major section within a chapter.

Economics contains a lot of jargon and abstract concepts that can quickly overwhelm the principles student. So we provide **Quick Reviews**, short bulleted summaries of

concepts at the end of each major section. This review helps ensure that students understand what they have just read.

The **Check Your Understanding** feature, which appears along with every “Quick Review,” consists of a short set of review questions; solutions to these questions appear at the back of the book in the section set off with a burgundy tab at the edge of each page. These questions and solutions allow students to immediately test their understanding of the section just read. If they’re not getting the questions right, it’s a clear signal for them to go back and reread before moving on.

The “Economics in Action” cases, followed by the “Quick Reviews” and “Check Your Understanding” questions comprise our unique end-of-section pedagogical set that encourages students to apply what they’ve learned (via the “Economics in Action”) and then review it (with the “Quick Reviews” and “Check Your Understanding” questions). Our hope is that students will be more successful in the course if they make use of this carefully constructed set of study aids.

“For Inquiring Minds” Boxes

To further our goal of helping students build intuition with real-world examples, each chapter contains one or more “For Inquiring Minds” boxes, in which concepts are applied to real-world events in unexpected and sometimes surprising ways, generating a sense of the power and breadth of economics. These boxes help impress on students that economics can be fun despite being labeled “the dismal science.”

In a Chapter 10 box, for example, students learn how prices in a budget line serve the same function as the number of points assigned to a particular food in a Weight Watchers’ diet plan (see the “For Inquiring Minds” entitled “Food for Thought on Budget Constraints,” on page 240.) For a list of all “For Inquiring Minds” boxes, see the page facing the inside front cover and our table of contents.

“Pitfalls” Boxes


Certain concepts are prone to be misunderstood when students are beginning their study of economics. We have tried to alert students to these mistakes in the “Pitfalls” boxes. Here common misunderstandings are spelled out and corrected—for example, the difference between increasing total cost and increasing marginal cost (see the “Pitfalls” box on this topic on page 167). For a list of all the “Pitfalls” boxes in chapters, see the table of contents.

Student-Friendly Graphs

Comprehending graphs is often one of the biggest hurdles for principles students. To help alleviate that problem, this book has been designed so that figures are

large, clear, and easy for students to follow. Many contain helpful annotations—in an easy-to-see balloon label format—that link to concepts within the text. Figure captions have been written to complement the text discussion of figures and to help students more readily grasp what they’re seeing.

We’ve worked hard to make these graphs student-friendly. For example, to help students navigate one of the stickier thickets—the distinction between a shifting curve and movement along a curve—we encourage students to see this difference by using two types of arrows: a shift arrow (\longrightarrow) and what we call a “movement-along” arrow (\Rightarrow). You can see these arrows at work in Figures 3-12 and 3-13 on pages 73 and 74.

In addition, several graphs in each chapter are accompanied by the icon  **web...**, which indicates that these graphs are available online as simulations (the graphs are animated in a Flash format and can be manipulated). Every interactive graph is accompanied by a quiz on key concepts to further help students in their work with graphs.

Helpful Graphing Appendix For students who would benefit from an explanation of how graphs are constructed, interpreted, and used in economics, we’ve included a detailed graphing appendix after Chapter 2 on page 41. This appendix is more comprehensive than most because we know that some students need this helpful background, and we didn’t want to breeze through the material. Our hope is that this comprehensive graphing appendix will better prepare students to use and interpret the graphs in this textbook and then out in the real world (in newspapers, magazines, and elsewhere).

Definitions of Key Terms

Every key term, in addition to being defined in the text, is also placed and defined in the margin to make it easier for students to study and review.

A Look Ahead

The text of each chapter ends with an “A Look Ahead” section, a short overview of what lies ahead in upcoming chapters. This concluding section provides students with a sense of continuity among chapters.

End-of-Chapter Review

In addition to the “Quick Review” at the end of each major section, each chapter ends with a complete but brief **Summary** of the key terms and concepts. In addition, a list of the **Key Terms** is placed at the end of each chapter along with page references.

Finally, we have created for each chapter a comprehensive set of **End-of-Chapter Problems**—problems that test intuition as well as the ability to calculate important variables. Much care and attention have been devoted to the creation of these problems so that instructors can be assured that they provide a true test of students' learning.

Upcoming Variations of This Book

The text you are now holding is our introduction to microeconomics, intended for the one-semester principles course in microeconomics.

Here is an overview of other textbooks in this series:

- ▶ **Economics:** The complete version of this textbook, containing all microeconomics chapters plus the full complement of macroeconomics chapters, is intended for the two-semester principles course.
- ▶ **Macroeconomics:** The complete introduction to macroeconomics is intended for a one-semester principles course in macroeconomics.

The Organization of This Book and How to Use It

This book is organized as a series of building blocks in which conceptual material learned at one stage is clearly built upon and then integrated into the conceptual material covered in the next stage. These building blocks correspond to the ten parts into which the chapters are divided. It's equally important to remember that an instructor need not teach these parts in the same sequence as they are found in the book. We recognize that a number of chapters will be considered optional and that many instructors will prefer to teach the chapters using a different order. Chapters and sections have been written to incorporate a degree of flexibility in the sequence in which they are taught, without sacrificing conceptual continuity. So an instructor can achieve some course customization through the choice of which chapters to cover and in which order to cover them. We will give a brief overview of each part and chapter, followed by a discussion of the various ways in which an instructor can tailor this book to meet his or her needs.

Part 1: What Is Economics?

In the **Introduction**, “The Ordinary Business of Life,” students are initiated into the study of economics in the context of a shopping trip on any given Sunday in everyday America. It provides students with basic definitions of

terms such as *economics*, the *invisible hand*, and *market structure*. In addition it serves as a “tour d’horizon” of economics, explaining the difference between microeconomics and macroeconomics.

In **Chapter 1**, “**First Principles**,” nine principles are presented and explained: four principles of individual choice, covering concepts such as opportunity cost, marginal analysis, and incentives; and five principles of interaction between individuals, covering concepts such as gains from trade, market efficiency, and market failure. In later chapters, we build intuition by frequently referring to these principles in the explanation of specific models. Students learn that these nine principles form a cohesive conceptual foundation for all of economics.

Chapter 2, “**Economic Models: Trade-offs and Trade**,” shows students how to think like economists by using three models—the production possibility frontier, comparative advantage and trade, and the circular-flow diagram—to analyze the world around them. It gives students an early introduction to gains from trade and to international comparisons. The **Chapter 2 appendix** contains a comprehensive math and graphing review for those students and instructors who wish to cover this material.

Part 2: Supply and Demand

Chapter 3, “**Supply and Demand**,” covers the standard material in a fresh and compelling way: supply and demand, market equilibrium, and surplus and shortage are all illustrated using an example of the market for scalped tickets to a sports event. Students learn how the demand and supply curves of scalped tickets shift in response to the announcements of a star player's impending retirement.

Chapter 4, “**The Market Strikes Back**,” covers various types of market interventions and their consequences: price and quantity controls, inefficiency and deadweight loss, and excise taxes. Through tangible examples such as New York City rent control regulations and New York City taxi licenses, the costs generated by attempts to control markets are made real to students.

In **Chapter 5**, “**Elasticity**,” the actions of OPEC and their consequences for the world market for oil taken together are the real-world motivating example in our discussion of the price elasticity of demand. In this chapter, we introduce the various elasticity measures and show how elasticities are used to evaluate the incidence of an excise tax.

Part 3: Individuals and Markets

Through examples such as a market for used textbooks and eBay, students learn how markets increase welfare in **Chapter 6**, “**Consumer and Producer Surplus**.” Although

the concepts of market efficiency and deadweight loss are strongly emphasized, we also preview the ways in which a market can fail.

Chapter 7, “Making Decisions,” is a unique chapter. Microeconomics is fundamentally a science of how to make decisions. But that aspect is rarely highlighted in introductory microeconomics. Rather, other textbooks place much of the emphasis on comprehending the consequences of decision making instead of on developing an understanding of how decisions should be made in any context. For example, due to the almost exclusive emphasis that economics textbooks place on marginal analysis, we believe that students are often unable to distinguish between what is and what isn’t a marginal decision. To remedy this, we have included an entire section on “either-or” versus “how much” decisions—a distinction that is particularly useful in later chapters where we compare a firm’s output decision to its entry/exit decision. In addition, in Chapter 7 we reprise the concept of opportunity cost; present a thorough treatment of marginal analysis; explain the concept of sunk cost; and, for instructors who wish to teach it, cover present discounted value. Full coverage of sunk cost at this point will help students later in understanding the irrelevance of fixed cost in the firm’s short-run output decision. We think this chapter will be an important teaching aid because it helps students develop a deeper intuition about the common conceptual foundations of microeconomic models.

What Comes Next: The Firm or the Consumer? You may have noticed that we have placed the chapters covering the producer before the chapters covering the consumer. Why have we done this? Because we believe that it is a more natural conceptual progression to cover the producer after Chapter 7, “Making Decisions,” than it is to cover the consumer. Since students have just studied opportunity cost, economic profit versus accounting profit, marginal benefit and marginal cost, and sunk cost, we think examining the firm’s cost curves, its output decision, and its entry/exit decision is an easier next step for them to undertake.

We are aware that some instructors are likely to be skeptical of this approach. We have often heard instructors say that the consumer should be studied before the producer because students can relate to being a consumer but not to being the owner of a firm. We hope, however, to change that viewpoint because what we really want students to do is not just relate to being a consumer but *think like a rational consumer—a consumer who maximizes utility subject to scarce resources*. And we believe that it is easier for students to understand utility maximization (utility being an inherently slippery concept) after they have come to understand profit maximization.

Nonetheless, we want to strongly emphasize that it is very easy for instructors who wish to follow a traditional chapter sequence—with the consumer before the firm—to do just that. We wrote the chapters so that there is no loss whatsoever if an instructor follows Chapter 7 with Chapter 10, “The Rational Consumer,” and Chapter 11, “Consumer Preferences and Consumer Choice” (an optional chapter).

Part 4: The Producer

In Chapter 8, “Behind the Supply Curve: Inputs and Costs,” we develop the production function and the various cost measures of the firm. There is an extensive discussion of the difference between average cost and marginal cost, illustrated by examples such as a student’s grade point average. **Chapter 9, “Perfect Competition and the Supply Curve,”** explains the output decision of the perfectly competitive firm, its entry/exit decision, the industry supply curve, and the equilibrium of a perfectly competitive market. We draw on examples such as generic pharmaceuticals and the California energy crisis of 2000–2001 to contrast the behavior of oligopolists and monopolists.

Part 5: The Consumer

Chapter 10, “The Rational Consumer,” provides a complete treatment of consumer behavior for instructors who don’t cover indifference curves. There is a simple, intuitive exposition of the budget line, the optimal consumption choice, diminishing marginal utility, and income and substitution effects and their relationship to market demand. Students learn, for example, that a budget line constructed using prices is much like a Weight Watchers’ diet plan constructed using a “point” system. **Chapter 11, “Consumer Preferences and Consumer Choice,”** offers a more detailed treatment for those who wish to cover indifference curves. It contains an analysis of the optimal consumption choice using the marginal rate of substitution as well as income and substitution effects.

What Comes Next: Markets and Efficiency or Market Structure? Many instructors are likely to consider the next two chapters—Chapter 12, “Factor Markets and the Distribution of Income,” and Chapter 13 “Efficiency and Equity”—optional. For those who wish to skip them, the next topic area will be market structure beyond perfect competition: monopoly, oligopoly, and monopolistic competition. Chapters 12 and 13 are likely to be used by instructors who want more in-depth coverage of microeconomics, as well as those who wish to emphasize labor markets, welfare, and public policy issues.

Instructors who prefer a traditional sequence of topics may wish to go from Part 5 (“The Consumer”) to Part 4 (“The Producer”) to Part 7 (“Market Structure: Beyond Perfect Competition”), bypassing Part 6 (“Markets and Efficiency”) altogether or covering it later. This is a good choice for those who wish to contrast the difference between the perfectly competitive firm’s output decision and the monopolist’s output decision. But, those who follow the existing chapter sequence—“The Producer” followed by “The Consumer” followed by “Market Structure: Beyond Perfect Competition”—will be able to draw a tighter connection among consumer behavior, monopoly pricing, price discrimination, product differentiation, and monopolistic competition. We have written the chapters so that either sequence works equally well.

Part 6: Markets and Efficiency

Chapter 12, “Factor Markets and the Distribution of Income,” covers the competitive factor market model and the factor distribution of income. It also contains modifications and alternative interpretations of the labor market: the efficiency-wage model of the labor market is discussed, and the influences of education, discrimination, and market power are also addressed. It presents, we hope, a balanced and well-rounded view of the strengths and limitations of the competitive market model of labor markets and leads to a greater appreciation of the issues of efficiency and equity discussed in the next chapter. For instructors who covered indifference curves in Chapter 11, the **Chapter 12 appendix** offers a detailed examination of the labor-leisure trade-off and the backward-bending labor supply curve.

In **Chapter 13, “Efficiency and Equity,”** after recapping efficiency in a single market, we compare and contrast this to what it means to have efficiency in a market economy as a whole. Some may wonder why it is useful to draw the distinction between partial equilibrium and general equilibrium in a principles course. We believe that doing so gives students a deeper understanding of the often-conflicting objectives of efficiency and equity—something that really can’t be fully explored in a partial equilibrium setting. As a real-world example, we discuss the reunification of West and East Germany in terms of the trade-offs faced by German policy makers, who sacrificed some efficiency-enhancing measures in order to reduce the income differences between East and West Germans. Students should come away from this chapter with a fuller appreciation of the complexity of real-world economic policy making—that is, how democracies may sometimes choose to sacrifice some efficiency for equity purposes.

Part 7: Market Structure: Beyond Perfect Competition

Chapter 14, “Monopoly,” is a full treatment of monopoly, including topics such as price discrimination and the welfare effects of monopoly. We provide an array of compelling examples, such as De Beers Diamonds, price manipulation by California power companies, and airline ticket-pricing. In **Chapter 15, “Oligopoly,”** we present basic game theory in both a one-shot and repeated-game context, as well as an integrated treatment of the kinked demand curve model. The models are applied to a wide set of actual examples, such as Archer Daniels Midland, a European vitamin cartel, OPEC, and airline ticket-pricing wars. In **Chapter 16, “Monopolistic Competition and Product Differentiation,”** students are brought face to face early on with an example of monopolistic competition that is a familiar feature of their lives: the food court at the local mall. We go on to cover entry and exit, efficiency considerations, and advertising in monopolistic competition.

What Comes Next: Extending Market Boundaries or Microeconomics and Public Policy? The next section of the book, “Extending Market Boundaries,” is devoted to applications and extensions of the competitive market model: Chapter 17, “International Trade,” and Chapter 18, “Uncertainty, Risk, and Private Information.” Both of these chapters are entirely optional. Instructors who prefer to skip one or both of these chapters can proceed to the following section, “Microeconomics and Public Policy.”

Part 8: Extending Market Boundaries

In Chapter 2, we presented a full exposition of gains from trade and the difference between comparative and absolute advantage, illustrated with an international example (trade between high-wage and low-wage countries). **Chapter 17, “International Trade,”** builds on that material. It contains a recap of comparative advantage, traces the sources of comparative advantage, considers tariffs and quotas, and explores the politics of trade protection. In response to current events, we give in-depth coverage to the controversy over imports from low-wage countries.

The inclusion in a principles text of **Chapter 18, “Uncertainty, Risk, and Private Information,”** may come as a surprise to some—a common reaction being “Isn’t this material too hard for principles students?” We believe that, with our treatment, the answer is “no” for many more students than is typically expected. In this chapter we explain attitudes toward risk in a careful and

methodical way, grounded in the basic concept of diminishing marginal utility. This allows us to analyze a simple competitive insurance market, and to examine the benefits and limits of diversification. Next comes an easily comprehensible and intuitive presentation of private information in the context of adverse selection and moral hazard, with illustrations drawn from the market for lemons (used cars) and franchising. We believe that instructors will be surprised by how easy it is to teach this material and how much it will enlighten students about the relevance of economics to their everyday lives.

Part 9: Microeconomics and Public Policy

Chapter 19, “Externalities,” covers negative externalities and solutions such as Coasian private trades, emissions taxes, and a system of tradable permits. We also examine positive externalities, technological spillovers, and the resulting arguments for industrial policy. **Chapter 20, “Public Goods and Common Resources,”** makes an immediate impression by opening with the story of how “The Great Stink of 1858” compelled Londoners to build a public sewer system. Students learn how to classify goods into four categories (private goods, common resources, public goods, and artificially scarce goods) based on two dimensions: excludability and rivalry in consumption. With this system, they can develop an intuitive understanding of why some goods but not others can be efficiently managed by markets.

Chapter 21, “Taxes, Social Insurance, and Income Distribution,” begins with a review of the burden of taxation and considerations of equity versus efficiency. Next, it examines the structure of taxes, current tax policy, and public spending in the United States. This is followed by an investigation into the sources of poverty and their implications for government tax and transfer policies. From this chapter, students can gain an appreciation of the difficult questions policy makers face in addressing issues of economic efficiency and welfare.

Part 10: New Directions for Markets

The final section of the book contains one chapter, **Chapter 22, “Technology, Information Goods, and Network Externalities.”**

We believe that Chapter 22, even though providing real economic models and relevant cases, will be enjoyable for both instructors and students. Starting with the example of sharing music files over the Internet, it introduces the concept of information goods and network externalities and analyzes the problems they cause for efficient pricing. We discuss the implications for standard-setting and the ambiguities that network externalities present for regulatory policy. Students will see how these issues affect their

daily lives through references to Kazaa, Apple Computers, and Microsoft.

What’s Core, What’s Optional?

As noted earlier, we realize that some of our chapters will be considered optional. On the facing page is a listing of what we view as core chapters and those that could be considered optional. We’ve annotated the list of optional chapters to indicate what they cover should you wish to consider incorporating them into your course.

A Selection of Possible Outlines

To illustrate how instructors can use this book to meet their specific goals, we’ve constructed a selection of three possible outlines (see page xiv). By no means exclusive, these outlines reflect a likely range of different ways in which this book could be used:

- **Traditional Outline** (consumer first, producer second)
- **Public Policy and Welfare Outline** (includes factor markets and efficiency)
- **Applied Microeconomics Outline** (includes international trade and uncertainty, risk, and private information)

Although we don’t outline it here, we also offer a Decision-Based Outline. The choice between a Traditional Outline and the Decision-Based Outline is primarily a choice about the sequencing of Parts 4 and 5. An instructor who prefers to cover “The Consumer” before “The Producer” will choose the Traditional Outline. An instructor who wants to emphasize decision making should instead cover “The Producer” before “The Consumer,” just covering Parts 4 and 5 as ordered.

At this point, instructors can skip immediately to Part 7, to cover monopoly, oligopoly, and monopolistic competition. However, instructors who wish to focus more intensely on international economics, tools of microeconomics, or public policy (the Applied Microeconomics Outline or the Public Policy and Welfare Outline) may choose to teach Part 6, which addresses factor markets and economy-wide efficiency, before moving on to Part 7. After Part 7, instructors who have adopted an applied microeconomics or public policy focus may wish to cover some or all of Part 8, which contains a chapter on international trade and a chapter on risk and private information. Others, however, will prefer to skip to Part 9, which covers externalities, public goods, common resources, and tax policy. Finally, Part 10, consisting solely of Chapter 22 on the network economy, is a suitable choice for any of these outlines. But it will be a particularly good chapter for those who wish to focus on public policy.

WHAT'S CORE, WHAT'S OPTIONAL: AN OVERVIEW

| Core | Optional |
|---|---|
| <ul style="list-style-type: none"> 1. First Principles 2. Economic Models: Trade-offs and Trade 3. Supply and Demand 4. The Market Strikes Back 5. Elasticity 6. Consumer and Producer Surplus 8. Behind the Supply Curve: Inputs and Costs 9. Perfect Competition and the Supply Curve 10. The Rational Consumer 14. Monopoly 15. Oligopoly 16. Monopolistic Competition and Product Differentiation 19. Externalities 20. Public Goods and Common Resources 21. Taxes, Social Insurance, and Income Distribution | <ul style="list-style-type: none"> Introduction: The Ordinary Business of Life Appendix: Graphs in Economics A comprehensive review of graphing and math for students who would find such a refresher helpful. 7. Making Decisions A unique chapter aimed at helping students understand how decisions should be made in any context. Includes coverage of marginal analysis and cost-benefit analysis. Pairs well with Chapter 6. Prepares students for coverage of models in upcoming chapters. 11. Consumer Preferences and Consumer Choice This chapter offers a more detailed treatment of consumer behavior for instructors who wish to cover indifference curves. 12. Factor Markets and the Distribution of Income Plus Appendix: Indifference Curve Analysis of Labor Supply For instructors who want to go more in depth, this chapter covers the efficiency-wage model of the labor market as well as the influences of education, discrimination, and market power. The appendix examines the labor-leisure trade-off and the backward-bending labor supply curve. 13. Efficiency and Equity A unique chapter that explores what it means to have efficiency in a market economy as a whole. Gives students a deeper understanding of the often-conflicting objectives of efficiency and equity. Intended for instructors who emphasize welfare and public policy issues. 17. International Trade This chapter recaps comparative advantage, considers tariffs and quotas, and explores the politics of trade protection. Coverage here links back to the international coverage in Chapter 2. 18. Uncertainty, Risk, and Private Information A unique, applied chapter that explains attitudes toward risk, examines the benefits and limits of diversification, and considers private information in the context of adverse selection and moral hazard. 22. Technology, Information Goods, and Network Externalities A unique chapter that shows students how to use economic models to analyze information goods. A nice treat for students and instructors! |

THREE POSSIBLE OUTLINES

| Traditional | Public Policy and Welfare | Applied Microeconomics |
|---|--|--|
| <p>Part 1</p> <ol style="list-style-type: none"> 1. First Principles 2. Economic Models: Trade-offs and Trade <p>Appendix: Graphs in Economics</p> | <p>Part 1</p> <ol style="list-style-type: none"> 1. First Principles 2. Economic Models: Trade-offs and Trade <p>Appendix: Graphs in Economics</p> | <p>Part 1</p> <ol style="list-style-type: none"> 1. First Principles 2. Economic Models: Trade-offs and Trade <p>Appendix: Graphs in Economics</p> |
| <p>Part 2</p> <ol style="list-style-type: none"> 3. Supply and Demand 4. The Market Strikes Back 5. Elasticity | <p>Part 2</p> <ol style="list-style-type: none"> 3. Supply and Demand 4. The Market Strikes Back 5. Elasticity | <p>Part 2</p> <ol style="list-style-type: none"> 3. Supply and Demand 4. The Market Strikes Back 5. Elasticity |
| <p>Part 3</p> <ol style="list-style-type: none"> 6. Consumer and Producer Surplus 7. Making Decisions | <p>Part 3</p> <ol style="list-style-type: none"> 6. Consumer and Producer Surplus 7. Making Decisions | <p>Part 3</p> <ol style="list-style-type: none"> 6. Consumer and Producer Surplus 7. Making Decisions |
| <p>Part 5*</p> <ol style="list-style-type: none"> 10. The Rational Consumer 11. Consumer Preferences and Consumer Choice | <p>Either Part 4, then 5 Or, Part 5, then Part 4</p> | <p>Either Part 4, then 5 Or, Part 5, then Part 4</p> |
| <p>Part 4*</p> <ol style="list-style-type: none"> 8. Behind the Supply Curve: Inputs and Costs 9. Perfect Competition and the Supply Curve | <p>Part 6</p> <ol style="list-style-type: none"> 12. Factor Markets and the Distribution of Income <p>Appendix: Indifference Curve Analysis of Labor Supply</p> <ol style="list-style-type: none"> 13. Efficiency and Equity | <p>Part 6</p> <ol style="list-style-type: none"> 12. Factor Markets and the Distribution of Income <p>Appendix: Indifference Curve Analysis of Labor Supply</p> <ol style="list-style-type: none"> 13. Efficiency and Equity |
| <p>Part 7</p> <ol style="list-style-type: none"> 14. Monopoly 15. Oligopoly 16. Monopolistic Competition and Product Differentiation | <p>Part 7</p> <ol style="list-style-type: none"> 14. Monopoly 15. Oligopoly 16. Monopolistic Competition and Product Differentiation | <p>Part 7</p> <ol style="list-style-type: none"> 14. Monopoly 15. Oligopoly 16. Monopolistic Competition and Product Differentiation |
| <p>Part 9</p> <ol style="list-style-type: none"> 19. Externalities 20. Public Goods and Common Resources 21. Taxes, Social Insurance, and Income Distribution | <p>Part 8</p> <ol style="list-style-type: none"> 17. International Trade 18. Uncertainty, Risk, and Private Information | <p>Part 8</p> <ol style="list-style-type: none"> 17. International Trade 18. Uncertainty, Risk, and Private Information |
| <p>Part 9</p> <ol style="list-style-type: none"> 19. Externalities 20. Public Goods and Common Resources 21. Taxes, Social Insurance, and Income Distribution | <p>Part 9</p> <ol style="list-style-type: none"> 19. Externalities 20. Public Goods and Common Resources 21. Taxes, Social Insurance, and Income Distribution | <p>Part 9</p> <ol style="list-style-type: none"> 19. Externalities 20. Public Goods and Common Resources 21. Taxes, Social Insurance, and Income Distribution |
| <p>Part 10</p> <ol style="list-style-type: none"> 22. Technology, Information Goods, and Network Externalities | <p>Part 10</p> <ol style="list-style-type: none"> 22. Technology, Information Goods, and Network Externalities | <p>Part 9</p> <ol style="list-style-type: none"> 19. Externalities 20. Public Goods and Common Resources 21. Taxes, Social Insurance, and Income Distribution |

*Instructors who wish to follow a decision-based sequence should use the parts of this text as we've ordered them: Part 4, "The Producer," followed by Part 5, "The Consumer."

Supplements and Media

Worth Publishers is pleased to offer an exciting and useful supplements and media package to accompany this textbook. The package has been crafted to help instructors teach their principles course and to help students grasp concepts more readily.

The entire package has been coordinated by Martha Olney, University of California-Berkeley, to provide consistency in level and quality. Rosemary Cunningham, Agnes Scott College, has coordinated all of the quizzing materials in the Study Guide, Test Bank, and all the online materials to guarantee uniformity.

Since accuracy is so critically important, all the supplements have been scrutinized and double-checked by members of the supplements team, reviewers, and a team of additional accuracy checkers. The time and care that have been put into the supplements and media ensure a seamless package.

Companion Website for Students and Instructors

econXchange

(www.worthpublishers.com/krugmanwells)

The companion website for the Krugman/Wells text offers valuable tools for both the instructor and students.

For instructors, this completely customized website offers many opportunities for quizzing and, most important, powerful grading tools. The site gives you the ability to track students' interaction with the Homework Advantage Center, the Practice Quizzing Center, and the Graphing Center by accessing separate online gradebooks for each category.

For students, the site offers many opportunities to practice, practice, practice. On the site, students can find online simulations, practice quizzes, video resources, graphing tutorials, and links to many other resources designed to help them master economic concepts. In essence, this site provides students with a virtual study guide, twenty-four hours a day, seven days a week by offering a pedagogically sound means of testing their understanding of text material.

This helpful, powerful site contains the following:

Homework Advantage Center This section of the site offers a secure, interactive, online environment. It allows you to create customized homework assignments, quizzes, or tests.

Selected end-of-chapter questions from the textbook have been incorporated into an online quizzing engine that allows the variables of each question to be algorithmically generated. Questions from the textbook's Test Bank are also incorporated into this engine with the same algorithmic generation capabilities. You can add your own questions or edit the questions provided by Worth.

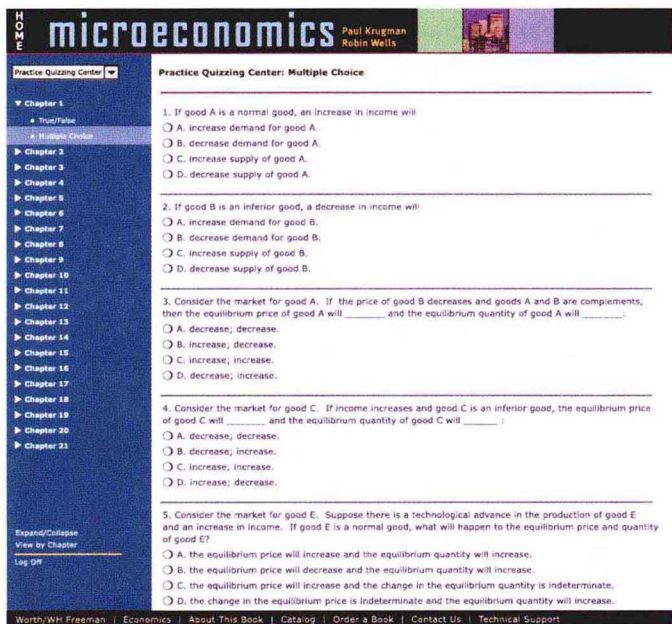
The Homework Advantage Center enables you to create a customized test for each and every student. Although each student will be asked the same question, the values of those questions will be completely different. Using the Homework Advantage Center, you can easily create and assign tests for automatic grading. You can also use the Homework Advantage Center to allow students to test their own skills and diagnose their understanding of the material.


All the student responses are stored in an electronic gradebook so that you can easily grade exams and generate reports. The gradebook has the following features that allow for flexibility in assessing students' abilities.

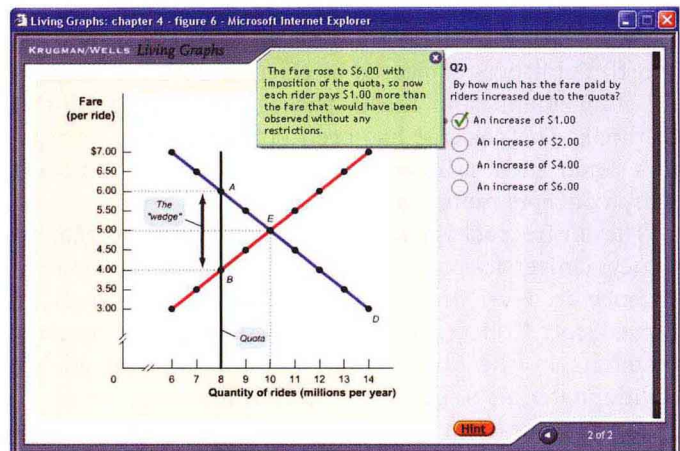
- Grades can be organized into as many as 25 related categories (tests, papers, homework, etc.).
- Assignments can be independently weighted.
- Letter grade cutoffs can be adjusted, and custom grading created ("Fair," "Good," "Excellent," and so on).
- Assignment scores and category averages can be entered or displayed as percentages, points, letter grades, or according to your own customized grading scheme.
- Gradebooks can be set up to report final averages as points earned across all categories.
- Student properties can include ID number, password (for online testing), e-mail address, and status (active, withdraw, incomplete).
- Grades can be dropped manually or automatically.
- Assignment, category, and final scores can be curved.

- Numerous reports can be customized and printed with an interactive print preview.
- Results can be merged from TheTestingCenter.Com.
- Student rosters can be imported and exported.

Practice Quizzing Center Developed by Debbie Mullin, University of Colorado-Colorado Springs, this quizzing engine provides 20 multiple-choice questions per chapter with appropriate feedback and page references to the textbook. The questions as well as the answer choices are randomized to give students a different quiz with every refresh of the screen. All student answers are saved in an online database that can be accessed by instructors.



Graphing Center Developed by Cadre LLC in conjunction with Debbie Mullin, University of Colorado-Colorado Springs, the Graphing Center includes selected graphs from the textbook that have been animated in a Flash format, allowing students to manipulate curves and plot data points when appropriate. Approximately five graphs from each chapter have been animated and are identified in the textbook by a web icon  within the appropriate figure. Having the ability to manipulate graphs and observe the results of the manipulation provides students with a keen understanding of the effects of the shifts and movements of the curves. Every interactive graph is accompanied by questions that quiz students on key concepts from the textbook and provide instructors with feedback on student progress. Student responses and interactions are tracked and stored in an online database that can be accessed by the instructor.



Research Center Created and continually updated by Jules Kaplan, University of Colorado-Boulder, the Research Center allows students to easily and effectively locate outside resources and readings that relate to topics covered in the textbook. It lists web addresses that hotlink to relevant websites; each URL is accompanied by a detailed description of the site and its relevance to each chapter, allowing students to conduct research and explore related readings on specific topics with ease. Also hotlinked are relevant articles by Paul Krugman and other leading economists.

Video Center In video interviews, the text's authors, Paul Krugman and Robin Wells, comment on specific aspects of each chapter and their relevance to students' lives. Each video is embedded in a Flash format with other pedagogical features and a running transcript of the authors' remarks. Videos can be presented in class to generate discussion or assigned as homework to give students a deeper understanding of key topics in the textbook.

Tutor Center Created by Can Erbil, Brandeis University, this PowerPoint presentation is ideal for students who need extra help in understanding the concepts in each chapter. The PowerPoint presentations for each chapter come complete with animations, notes, summaries, and graphics. This tool enables students to review and practice and helps them to more readily grasp economic concepts. The Tutor Center nicely complements the already extensive learning apparatus within the text itself.

Additional Student Supplements

Student CD-ROM This CD-ROM contains all of the multimedia content found on the Krugman/Wells Companion website, including the practice quizzes, interactive graphs, Krugman/Wells videos, and the student PowerPoint slides. This CD-ROM is ideal for students

with limited web access or for use in a lab setting. Available upon request, this CD can be packaged with the textbook at no additional cost to the student.

Study Guide Prepared by Rosemary Cunningham, Agnes Scott College, and Elizabeth Sawyer-Kelley, University of Wisconsin-Madison, and coordinated by Martha Olney, University of California-Berkeley, the Study Guide reinforces the topics and key concepts covered in the text. For each chapter, the Study Guide provides an introduction, fill-in-the-blank chapter review, learning tips with graphical analysis, four or five comprehensive problems and exercises, 20 multiple-choice questions, and solutions to all fill-in-the-blank reviews, problems, exercises, and quizzes found within the Study Guide.

Additional Instructor Supplements

Instructor's Resource Manual The Instructor's Resource Manual written by Diane Keenan, Cerritos Community College, and coordinated by Martha Olney, University of California-Berkeley, is an ideal resource for instructors teaching principles of economics. The manual includes: chapter-by-chapter learning objectives, chapter outlines, teaching tips and ideas, hints on how to create student interest, common misunderstandings that are typical among students, and activities that can be conducted in or out of the classroom.

Solutions Manual Detailed solutions to every end-of-chapter problem from the textbook have been written by Robin Wells, Princeton University, and Andreas Bentz, Dartmouth College, with review and consultation by Martha Olney, University of California-Berkeley.

Printed Test Bank The Test Bank, coordinated by Rosemary Cunningham, Agnes Scott College, with contributing authors Jack Chambless, Valencia Community College; Ardeshir Dalal, Northern Illinois University; Mark Funk, University of Arkansas-Little Rock; Lynn Gillette, University of Kentucky; Gus W. Herring, Brookhaven College; and Ranita Wyatt, Dallas Community College District, provides a wide range of creative and versatile questions ranging in levels of difficulty. Selected questions are paired with original graphs and graphs from the textbook to reinforce comprehension. Totalling over 2,500 questions, the Test Bank offers 60 multiple-choice questions and 20 true/false questions per chapter assessing comprehension, interpretation, analysis, and synthesis. Each question is conveniently cross referenced to the page number in the text where the appropriate topic is discussed. Questions have been

checked by the entire supplements team, reviewed extensively, and checked again for accuracy.

Diploma 6.3 Computerized Test Bank The Krugman/Wells printed Test Bank is also available in CD-ROM format, powered by Brownstone, for both Windows and Macintosh users. With Diploma, you can easily create tests, write and edit questions, and create study sessions for students. You can add an unlimited number of questions, scramble questions, and include pictures, equations, and multimedia links. Tests can be printed in a wide range of formats or administered to students with Brownstone's network or Internet testing software. The software's unique synthesis of flexible word-processing and database features creates a program that is extremely intuitive and capable. With the new Diploma 6.3, you can:

- Work with complete word processing functions (including creating tables).
- Work with myriad question formats, including multiple choice, true/false, short answer, matching, fill in the blank, and essay.
- Attach feedback (rationales) to questions (or answers).
- Create, install, and use an unlimited number of question banks.
- Incorporate references (including tables, figures, and case studies).
- Attach customized instructions.
- Use multiple graphic formats (BMP, DIB, RLE, DXF, EPS, FPX, GIF, IMG, JPG, PCD, PCX, DCX, PNG, TGA, TIF, WMF, and WPG).
- Take advantage of a powerful algorithm engine for complex, dynamic question types and dynamic equations.
- Export self-grading tests (in HTML formats) for use with web browsers.
- Export test files in Rich Text File format for use with any word-processing program.
- Export test files to EDU, WebCT, and Blackboard course management systems.
- Preview and re-format tests before printing them.
- Include custom splash screens that feature graphics or images.
- Post tests to Diploma's online testing site, TheTestingCenter.com.

This computerized Test Bank is accompanied by a gradebook that enables you to record students' grades throughout a course; it also includes the capacity to track student

records and view detailed analyses of test items, curve tests, generate reports, add weights to grades, and allows you to:

- Organize grades into as many as 25 related categories.
- Adjust letter grade cutoffs and create customized grading.
- Enter/display assignment scores and category averages as percentages, points, letter grades, or according to your own customized grading scheme.
- Report final averages as points earned across all categories.
- Customize student properties (including ID number, password, e-mail address, and status).
- Drop grades either manually or automatically.
- Import and export student rosters.

Diploma Online Testing at www.brownstone.net is another useful tool within the Brownstone software that allows instructors to provide online exams for students using Test Bank questions. With Diploma, you can easily create and administer secure exams over a network and over the Internet, with questions that incorporate multimedia and interactive exercises. The program allows you to restrict tests to specific computers or time blocks, and it includes an impressive suite of gradebook and result-analysis features.

PowerPoint Slides Created by Can Erbil, Brandeis University, the enhanced PowerPoint presentation slides are designed to assist you with lecture preparation and presentation by providing original animations, graphs from the textbook, data tables, and bulleted lists of key concepts suitable for large lecture presentation. Although the slides are organized by topic from the text's table of contents, you can customize these slides to suit your individual needs by adding your own data, questions, and lecture notes. You can access these files on the instructor's side of the website or on the Instructor's Resource CD-ROM.

Instructor's Resource CD-ROM Using the Instructor's Resource CD-ROM, you can easily build classroom presentations around a variety of still and moving images—from the Krugman/Wells text, from your own sources, and even from the web. This customized presentation CD-ROM contains all text figures (in JPEG and GIF formats), video clips of interviews with Paul Krugman and Robin Wells, animated graphs, and enhanced PowerPoint slides. All of these resources are compatible with Microsoft PowerPoint software but can also be used independently to create a classroom presentation providing an unbeatable combination of convenience and power. This CD allows you to combine all of the publisher-provided instructor materials with your own materials into a customized presentation suitable for all lecture needs.

Overhead Transparencies Worth is also happy to provide you with more than 200 vivid color acetates of text figures designed for superior projection quality.

Web-CT E-pack The Krugman/Wells WebCT E-Packs enable you to create a thorough, interactive, and pedagogically sound online course or course website. The Krugman/Wells E-Pack provides you with cutting-edge online materials that facilitate critical thinking and learning, including course outlines, preprogrammed quizzes, links, activities, threaded discussion topics, animated graphs, and a whole array of other materials. Best of all, this material is pre-programmed and fully functional in the WebCT environment. Prebuilt materials eliminate hours of course-preparation work and offer significant support as you develop your online course. You can also obtain a WebCT-formatted version of the text's test bank.

Blackboard The Krugman/Wells Blackboard Course Cartridge allows you to combine Blackboard's popular tools and easy-to-use interface with the Krugman/Wells' text-specific, rich web content, including course outlines, preprogrammed quizzes, links, activities, interactive graphs, and a whole array of other materials. The result: an interactive, comprehensive online course that allow for effortless implementation, management, and use. The Worth electronic files are organized and prebuilt to work within the Blackboard software and can be easily downloaded from the Blackboard content showcases directly onto your department server. You can also obtain a Blackboard-formatted version of the book's test bank.

Aplia Aplia, founded by Paul Romer, Stanford University, is the first web-based company to integrate pedagogical features from a textbook with interactive media. Specifically designed for use with the Krugman/Wells text, the figures, end-of-chapter problems, boxes, text, and other pedagogical resources have been combined with Aplia's interactive media to save time for professors and encourage students to exert more effort in their learning.

The integrated online version of the Aplia media and the Krugman/Wells text includes:

- Extra problem sets suitable for homework and keyed to specific topics from each chapter
- Regularly updated news analyses
- Real-time online simulations of market interactions
- Interactive tutorials to assist with math
- Graphs and statistics
- Instant online reports that allow instructors to target student trouble areas more efficiently

With Aplia, you retain complete control and flexibility for your course. You choose the topics you want students to cover, and you decide how to organize it. You decide whether online activities are practice (ungraded or graded). You can even edit the Aplia content—making cuts or additions as you see fit for your course.

For a preview of Aplia materials and to learn more, visit <http://www.aplia.com>.

Dallas TeleLearning videos The Krugman/Wells text was chosen to accompany the economics telecourse developed by the Dallas Community College District (DCCCD). For use in class, instructors have access to videos produced by the DCCCD, the nation's leading developer of distance-learning materials. These videos dramatize key economic concepts and can be used in a classroom setting.

EduCue Personal Response System (PRS)—“Clickers”

Instructors can create a dynamic, interactive classroom environment with a personal response system, powered by EduCue. This wireless remote system allows you to ask your students questions, record their responses, and calculate grades instantly during lectures. Students use a hand-held wireless device (about the size of a television remote control) to transmit immediate feedback to a lecture hall receiver.

Wall Street Journal Edition For adopters of the Krugman/Wells text, Worth Publishers and the *Wall Street Journal* are offering a ten-week subscription to students at a tremendous savings. Professors also receive their own free *Wall Street Journal* subscription plus additional instructor supplements created exclusively by the *Wall Street Journal*. Please contact your local sales rep for more information or go to the *Wall Street Journal* online at www.wsj.com.

Financial Times Edition For adopters of the Krugman/Wells text, Worth Publishers and the *Financial Times* are offering a fifteen-week subscription to students at a tremendous savings. Professors also receive their own free *Financial Times* subscription for one year. Students and professors may access research and archived information at www.ft.com.

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