TENTH EDITION

Macroeconomics

PRINCIPLES, APPLICATIONS, AND TOOLS

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Lewis and Clark College

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To Our Children

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Professor O'Sullivan's research explores economic issues concerning urban land use, environmental protection, and public policy. His articles have appeared in many economics journals, including the *Journal of Urban Economics*, *Journal of Environmental Economics and Management*, *National Tax Journal*, *Journal of Public Economics*, and *Journal of Law and Economics*.

Professor O'Sullivan lives with his family in Portland, Oregon. For recreation, he enjoys hiking, kiteboarding, and squash.

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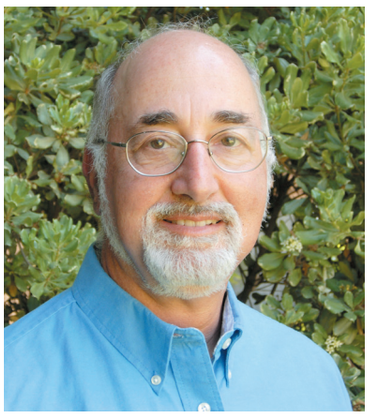

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PART 6
Inflation, Unemployment, and Economic Policy

PREFACE

In preparing this tenth edition, we had three primary goals. First, we wanted to incorporate the ongoing changes in the United States and world economies as they have continued to recover and adjust from the worldwide recession of the last decade. Second, we strived to update this edition to reflect the latest exciting developments in economic thinking and make these accessible to new students of economics. Finally, we wanted to stay true to the philosophy of the textbook—using basic concepts of economics to explain a wide variety of timely and interesting economic applications.

To improve student results, we recommend pairing the text content with **MyLab Economics,** which is the teaching and learning platform that empowers you to reach every student. By combining trusted author content with digital tools and a flexible platform, MyLab personalizes the learning experience and will help your students learn and retain key course concepts while developing skills that future employers are seeking in their candidates. From **Digital Interactives** to **Real-time Data Analysis Exercises**, MyLab Economics helps you teach your course, your way. Learn more at www.pearson.com/mylab/economics.

New to This Edition

In addition to updating all the figures and data, we made a number of other key changes in this edition. They include the following:

- At the end of each chapter, we have added Critical Thinking Exercises that challenge the student to think more deeply about the topics and ideas within the chapters.
- We discuss in Chapter 6 the links between disability insurance and labor force participation.
- We discuss in Chapter 8 the relationships between cities and economic growth.
- We discuss in Chapter 10 the concept of dynamic scoring and explain how it is used to estimate tax revenues in the federal budget process.
- We discuss in Chapter 12 the Dodd-Frank regulations and consider how they will impact the financial sector and the economy.
- In Chapter 14, we introduce Jerome Powell, the new Chairman of the Federal Reserve and discuss his prior experience and the challenges he will face in the new economic environment.
- In Chapter 18, we explore how automobile companies have been purchasing a large fraction of their parts outside the United States to put into "American" cars.
- We also incorporated a total of 21 exciting new Applications into this edition including four in the common chapters (Chapters 1–4). In addition, we incorporated a total of 9 new chapter-opening stories. These fresh applications and chapter openers show the widespread relevance of economic analysis.
- In the first four introductory chapters, the new applications include solar tax credits (Chapter 1), crop insurance and food production (Chapter 3), and the effects of the growing popularity of craft beer on hop prices (Chapter 4).
- In the core macroeconomics chapters, other new applications include explaining high rates of saving in China (Chapter 7), the behavior of households that are wealthy but have little cash on hand (Chapter 11), theories of why investment spending has been low in the United States (Chapter 12), the role that Bitcoin and other cryptocurrencies may play in the monetary system (Chapter 13), and the role that technological improvements in other countries will have on trade and welfare for the United States (Chapter 18).

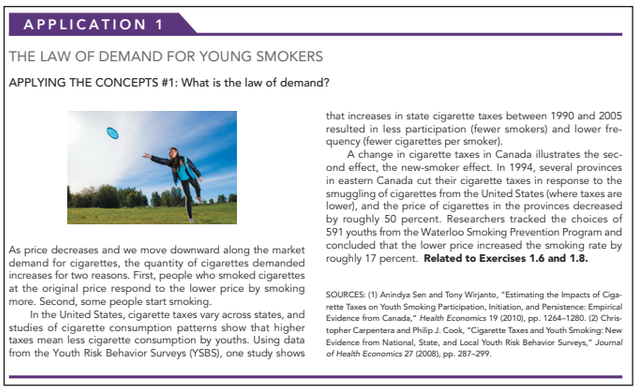
Solving Teaching and Learning Challenges

Many students who take the principles of economics class have difficulty seeing the relevance of the key concepts of economics, including the role of opportunity costs, thinking on the margin, the benefits of voluntary exchange, the idea of diminishing returns, and the distinction between real and nominal magnitudes. This reduces student preparedness and engagement. We explore the five key principles of economics we think are most important to students and use the following resources to engage students with the content to highlight not only how economics is relevant to their lives, but also their future careers.

Make Economics Relevant through Real-World Application

Real-world application is crucial to helping students find the relevance in economics. As such, our applications-driven text includes over 130 real-world Applications to help students master essential economics concepts. Here is an exam-

ple of our approach from Chapter 4, "Demand, Supply, and Market Equilibrium."



APPLICATION 1

THE LAW OF DEMAND FOR YOUNG SMOKERS

APPLYING THE CONCEPTS #1: What is the law of demand?

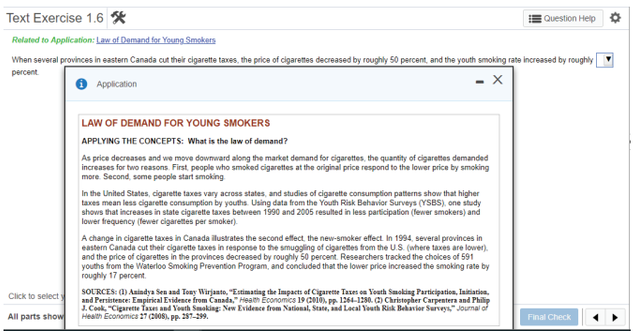
As price decreases and we move downward along the market demand for cigarettes, the quantity of cigarettes demanded increases for two reasons. First, people who smoked cigarettes at the original price respond to the lower price by smoking more. Second, some people start smoking.

In the United States, cigarette taxes vary across states, and studies of cigarette consumption patterns show that higher taxes mean less cigarette consumption by youths. Using data from the Youth Risk Behavior Surveys (YSBS), one study shows that increases in state cigarette taxes between 1990 and 2005 resulted in less participation (fewer smokers) and lower frequency (fewer cigarettes per smoker).

A change in cigarette taxes in Canada illustrates the second effect, the new-smoker effect. In 1994, several provinces in eastern Canada cut their cigarette taxes in response to the smuggling of cigarettes from the United States (where taxes are lower), and the price of cigarettes in the provinces decreased by roughly 50 percent. Researchers tracked the choices of 591 youths from the Waterloo Smoking Prevention Program and concluded that the lower price increased the smoking rate by roughly 17 percent. **Related to Exercises 1.6 and 1.8.**

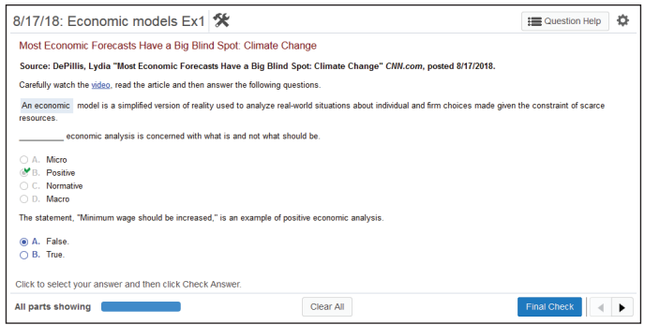
SOURCES: (1) Anindya Sen and Tony Wirjanto, "Estimating the Impacts of Cigarette Taxes on Youth Smoking Participation, Initiation, and Persistence: Empirical Evidence from Canada," *Health Economics* 19 (2010), pp. 1264–1280. (2) Christopher Carpenter and Philip J. Cook, "Cigarette Taxes and Youth Smoking: New Evidence from National, State, and Local Youth Risk Behavior Surveys," *Journal of Health Economics* 27 (2008), pp. 287–299.

Each Application has at least one related exercise available in MyLab Economics. These exercises can be found in the Application boxes in the eText with an opportunity for additional practice in the Study Plan, and in the end-of-chapter section. The **Study Plan** gives students personalized recommendations, practice opportunities, and learning aids to help them stay on track.



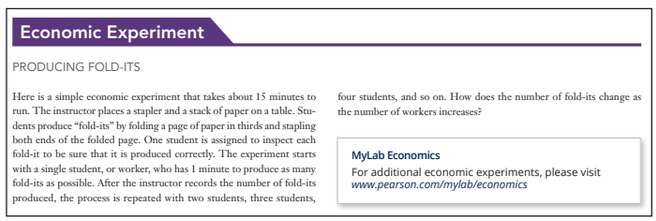
Our macroeconomic world is rich with data. We help students understand the importance of real and current data through the incorporation of Real-Time-Data Analysis Exercises in the Macroeconomics volume. The **Real-Time-Data Analysis Exercises**, marked with  , allow students and instructors to use the very latest data from FRED. By completing the exercises, students become familiar with a key data source, learn how to locate data, and develop important employability skills in interpreting data.

Students are often best motivated when they see the relevance of what they're learning to the world they live in. The **Current News Exercises** available to students in MyLab Economics help demonstrate the real world relevance of these important concepts. Every week, microeconomic and macroeconomic news stories and accompanying exercises are posted to MyLab Economics. Assignable and auto-graded, these multi-part exercises ask students to recognize and apply economic concepts to current events.



Stimulate Active Learning with Experiments

Economics Experiment sections are available throughout the text, engaging students with the opportunity to perform their own economic analysis.



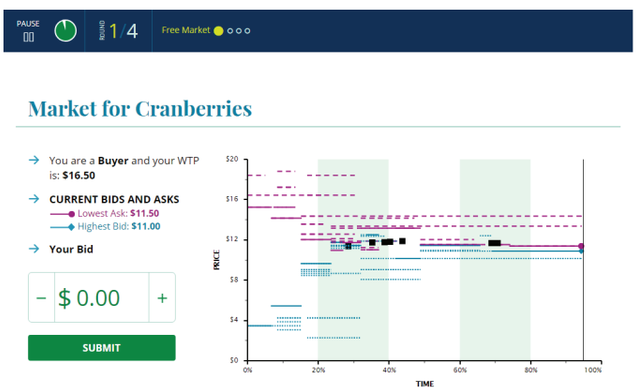
Economic Experiment

PRODUCING FOLD-ITS

Here is a simple economic experiment that takes about 15 minutes to run. The instructor places a stapler and a stack of paper on a table. Students produce "fold-its" by folding a page of paper in thirds and stapling both ends of the folded page. One student is assigned to inspect each fold-it to be sure that it is produced correctly. The experiment starts with a single student, or worker, who has 1 minute to produce as many fold-its as possible. After the instructor records the number of fold-its produced, the process is repeated with two students, three students, four students, and so on. How does the number of fold-its change as the number of workers increases?

MyLab Economics
For additional economic experiments, please visit
www.pearson.com/mylab/economics

Single Player Experiments are also available in MyLab Economics to engage students in economic decision-making. **Experiments** are an easy-to-use, fun, and engaging way to promote active learning and mastery of important economic concepts. Single-player experiments allow your students to play against virtual players from anywhere at any time so long as they have an Internet connection. Pre- and post-questions for each experiment are available for assignment.



Show the Big Picture with Five Key Principles

In Chapter 2, "The Key Principles of Economics," we introduce the following five key principles and then apply them throughout the book:

1. **The Principle of Opportunity Cost.** The opportunity cost of something is what you sacrifice to get it.
2. **The Marginal Principle.** Increase the level of an activity as long as its marginal benefit exceeds its marginal cost. Choose the level at which the marginal benefit equals the marginal cost.
3. **The Principle of Voluntary Exchange.** A voluntary exchange between two people makes both people better off.
4. **The Principle of Diminishing Returns.** If we increase one input while holding the other inputs fixed, output will increase, but at a decreasing rate.
5. **The Real-Nominal Principle.** What matters to people is the real value of money or income—its purchasing power—not the face value of money or income.

This approach of repeating five key principles gives students the big picture—the framework of economic reasoning. We make the key concepts unforgettable by using them repeatedly, illustrating them with intriguing examples, and giving students many opportunities to practice what they've learned, such as the **Concept Checks** available in MyLab Economics.

Practicing the Principles

Each section of each learning objective concludes with an online Concept Check that contains one or two multiple choice, true/false, or fill-in questions. These checks act as "speed bumps" that encourage students to stop and check their understanding of fundamental terms and concepts before moving on to the next section. The goal of this digital resource is to help students assess their progress on a section-by-section basis, so they can be better prepared for homework, quizzes, and exams.

The end-of-chapter exercises then test student understanding of the concepts presented in each chapter. These exercises are available in MyLab Economics and include multiple-choice, graph drawing, and free-response items, many of which are generated algorithmically so that each time a student works them, a different variation is presented. New to this edition are accessible versions of exercises in MyLab Economics that ask students to draw a graph. These accessible versions present the same question in a different form, which will allow every student the same opportunity to practice their knowledge of the key principles explored in the text.

New to this edition are the Critical Thinking exercises included in the end-of-chapter section. Every Critical Thinking exercise will be available in MyLab Economics as an essay question. These open-ended, thought-provoking questions challenge students to think more deeply about and apply the key concepts presented within the chapters.

Illustrating the Key Principles of Economics

These big picture concepts are also well-illustrated in the figures and tables included in the text. **Animated graphs** in MyLab Economics help students understand shifts in curves, movements along curves, and changes in equilibrium values. For every figure in the book, there is also an exercise directly related to that figure in MyLab Economics.

Developing Employability Skills

For students to succeed in a rapidly changing job market, they need thinking and communication skills. In addition, they need to be informed about career options and the pathway from college student to productive employee. This book—along with the MyLab—promotes skill development and career awareness.

We added a new section to Chapter 1 on page 10, "Employability: Economic Logic on the Job," where we discuss how economics promotes the sort of critical thinking and communication skills that employers value in their workers. Additionally, we discuss the role of economics in a liberal-arts education in building thinking skills that make a worker responsive to changes in the workplace. We also point readers to the U.S. Bureau of Labor Statistics as a good source of information about career paths that start with course work in economics.

Economics is the science of choice, and the book clearly illustrates the widespread application of economics. Throughout the book we use examples from business, government, and other organizations to show the practical deployment of economics to all sorts of decisions. This approach applies economic concepts with real-world situations, and thus imparts critical thinking skills to workers in all sorts of organizations. We deliver these practical applications in the text itself, as well as in chapter openers and 3 to 5 applications per chapter.

APPLICATION 1

DON'T FORGET THE COSTS OF TIME AND INVESTED FUNDS

APPLYING THE CONCEPTS #1: What is the opportunity cost of running a business?

Suppose you have the opportunity to develop a software application (an app). It would take you 1,000 hours (half a year of work time) to design and test the app. To develop the app, you need a high-powered computer that has a purchase price of $5,000 and can be resold at any time for the same price. What is the cost of developing the app?

We can use the principle of opportunity cost to compute the development cost. If you could earn $14 per hour as a janitor, the opportunity cost of your time is the $14,000 you could earn instead as a janitor. If you have a savings account that earns 6 percent per year, the opportunity cost of investing $5000 in the computer for half a year instead of the savings account is $150. Adding the opportunity cost of your time to the opportunity cost of your funds, the cost of developing the app is $14,150. **Related to Exercise 1.7.**

How Is The Book Organized?

Chapter 1, "Introduction: What Is Economics?" uses three current policy issues—traffic congestion, the trade-offs from international trade, and the recovery from the financial crisis of 2007—to explain the economic way of thinking. Chapter 2, "The Key Principles of Economics," introduces the five principles we return to throughout the book. Chapter 3, "Exchange and Markets," is devoted entirely to exchange and trade. We discuss the fundamental rationale for exchange and introduce some of the institutions modern societies developed to facilitate trade.

Students need to have a solid understanding of demand and supply to be successful in the course. Many students have difficulty understanding movement along a curve versus shifts of a curve. To address this difficulty, we developed an innovative way to organize topics in Chapter 4, "Demand, Supply, and Market Equilibrium." We examine the law of demand and changes in quantity demanded, the law of supply and changes in quantity supplied, and then the notion of market equilibrium. After students have a firm grasp of equilibrium concepts, we explore the effects of changes in demand and supply on equilibrium prices and quantities. You can present either macroeconomics or microeconomics chapters first, depending on your preference.

Summary of the Macroeconomics Chapters

Part 2, "The Basic Concepts of Macroeconomics" (Chapters 5 and 6), introduces students to the key concepts—GDP, inflation, and unemployment—that are used throughout the text and in everyday economic discussion. The two chapters in this section provide the building blocks for the rest of the book. Part 3, "The Economy in the Long Run" (Chapters 7 and 8), analyzes how the economy operates at full employment and explores the causes and consequences of economic growth.

Next we turn to the short run. We begin the discussion of business cycles, economic fluctuations, and the role of government in Part 4, "Economic Fluctuations and Fiscal Policy" (Chapters 9 through 12). We devote an entire chapter to the structure of government spending and revenues and the role of fiscal policy. In Part 5, "Money, Banking, and Monetary Policy" (Chapters 13 and 14), we introduce the key elements of both monetary theory and policy into our economic models. Part 6, "Inflation, Unemployment, and Economic Policy" (Chapters 15 through 17), brings the important questions of the dynamics of inflation and unemployment into our analysis. Finally, the last two chapters in Part 7, "The International Economy" (Chapter 18 and 19), provide an in-depth analysis of both international trade and finance.

The following are a few features of our macroeconomics chapters:

- **Flexibility.** A key dilemma confronting economics professors has always been how much time to devote to long-run topics, such as growth and production, versus short-run topics, such as economic fluctuations and business cycles. Our book is designed to let professors choose. It works like this: To pursue a long-run approach, professors should initially concentrate on Chapters 1 through 4, followed by Chapters 5 through 8.
- To focus on economic fluctuations, start with Chapters 1 through 4, present Chapter 5, "Measuring a Nation's Production and Income," and Chapter 6, "Unemployment and Inflation," and then turn to Chapter 9, "Aggregate Demand and Aggregate Supply."
- Chapter 11, "The Income-Expenditure Model," is self-contained, so instructors can either skip it completely or cover it as a foundation for aggregate demand.
- **Long Run.** Throughout most of the 1990s, the U.S. economy performed very well—low inflation, low unemployment, and rapid economic growth. This robust performance led to economists' increasing interest in trying to understand the processes of economic growth. Our discussion of economic growth in Chapter 8, "Why Do Economies Grow?" addresses the fundamental question of how long-term living standards are determined and why some countries prosper while others do not. This is the essence of economic growth. As Nobel Laureate Robert E. Lucas, Jr., once wrote, "Once you start thinking about growth, it is hard to think of anything else."
- **Short Run.** The great economic expansion of the 1990s came to an end in 2001, as the economy started to contract. The recession beginning in 2007 was the worst downturn since World War II. Difficult economic times remind us that macroeconomics is also concerned with understanding the causes and -consequences of economic fluctuations. Why do economies experience recessions and depressions, and what steps can policymakers take to stabilize the economy

and ease the devastation people suffer from them? This has been a constant theme of macroeconomics throughout its entire history and is covered extensively in the text.

- **Policy.** Macroeconomics is a policy-oriented subject, and we treat economic policy in virtually every chapter. We discuss both important historical and more recent macroeconomic events in conjunction with the theory. In addition, we devote Chapter 17, "Macroeconomic Policy Debates," to three important policy topics that recur frequently in macroeconomic debates: the role of government deficits, whether the Federal Reserve should target inflation or other objectives, and whether income or consumption should be taxed.
- **International Issues.** While international applications occur throughout the text, we devote two chapters specifically to international trade and finance. Chapter 18 develops the theory of international trade and discusses a wide range of policy topics including protectionism and what role international trade agreements play in today's world. In Chapter 19, we study international finance. We discuss how exchange rates are determined, our experiences with fixed and flexible exchange rates, and how international financial crises develop.

Instructor Teaching Resources

This program comes with the following teaching resources.

Supplements available to instructors at www.pearsonhighered.com	Features of the Supplement
Instructor's Manual Authored by Jeff Phillips of Colby-Sawyer College	• Chapter Summary: a bulleted list of key topics in the chapter • Learning Objectives • Approaching the Material; student-friendly examples to introduce the chapter • Chapter Outline: summary of definitions and concepts • Teaching Tips on how to encourage class participation • Summary and discussion points for the Applications in the main text • New Applications and discussion questions • Solutions to all end-of-chapter exercises.
Test Bank Authored by Brian Rosario of American River College	6,000 multiple-choice, true/false, short-answer, and graphing questions. Test questions are annotated with the following information: • **Difficulty:** 1 for straight recall, 2 for some analysis, 3 for complex analysis • **Type:** multiple-choice, true/false, short-answer, essay • **Topic:** the term or concept the question supports • **Learning outcome** • **AACSB** • **Page number in the text.**
Computerized TestGen	TestGen allows instructors to: • Customize, save, and generate classroom tests • Edit, add, or delete questions from the Test Bank • Analyze test results • Organize a database of tests and student results.
PowerPoints Authored by Paul Holmes of Ashland University	Slides include all the graphs, tables, and equations in the textbook. PowerPoints meet accessibility standards for students with disabilities. Features include, but not limited to: • Keyboard and Screen Reader access • Alternative text for images • High color contrast between background and foreground colors

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A long road exists between the initial vision of an innovative principles text and the final product. Along our journey we participated in a structured process to reach our goal. We wish to acknowledge the assistance of the many people who participated in this process.

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