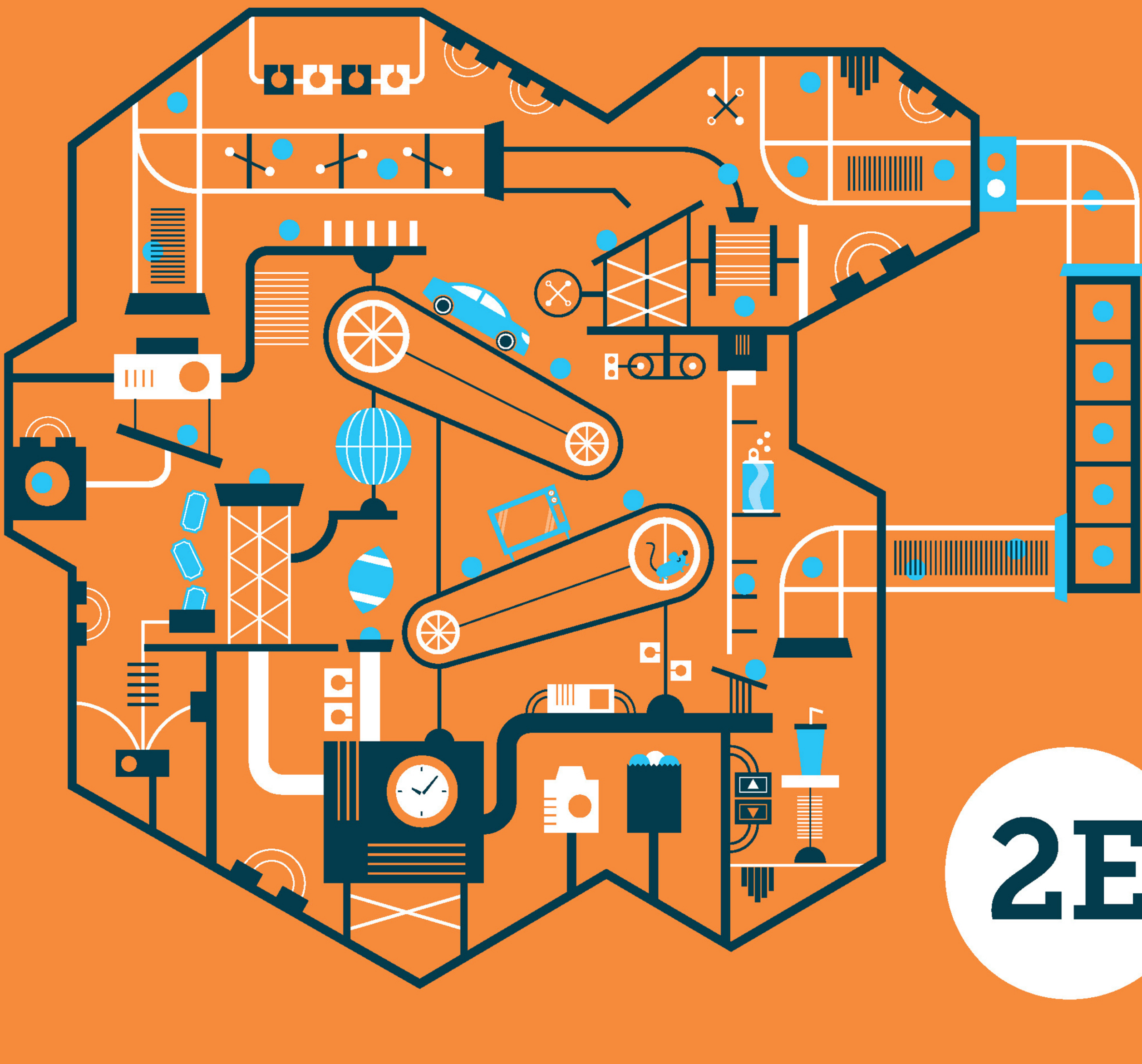
Principles of
Macroeconomics



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Principles of Macroeconomics

Second Edition

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In memory of our editor, Jack Repcheck, whose zest for life was contagious. Thanks for believing in us and challenging us to share our passion for economic education with others.

D.M and L.C.

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PREFACE

We are teachers of principles of economics. That is what we do. We each teach principles of microeconomics and macroeconomics to over a thousand students a semester, every single semester, at the University of Arizona and the University of Virginia. To date, we have taught over 40,000 students.

We decided to write our own text for one big reason. We simply were not satisfied with the available texts and felt strongly that we could write an innovative book to which dedicated instructors like us would respond. It's not that the already available texts were bad or inaccurate; it's that they lacked an understanding of what we, as teachers, have learned through fielding the thousands of questions that our students have asked us over the years. We do not advise policymakers, but we do advise students, and we know how their minds work.

For instance, there really was no text that showed an understanding for where students consistently trip up (for example, cost curves) and therefore provided an additional example or better yet, a worked exercise. There really was no text that was careful to reinforce new terminology and difficult sticking points with explanations in everyday language. There really was no text that leveraged the fact that today's students are key participants in the twenty-first-century economy and that used examples and cases from markets in which they interact all the time (such as the markets for cell phones, social networking sites, computing devices, and online book sellers).

What our years in the classroom have brought home to us is the importance of meeting students where they are. This means knowing their cultural touchstones and trying to tell the story of economics with those touchstones in mind. In our text we meet students where they are through resonance and reinforcement. In fact, these two words are our mantra—we strive to make each topic resonate and then make it stick through reinforcement.

Whenever possible, we use student-centered examples that resonate with students. For instance, many of our examples refer to jobs that students often hold and businesses that often employ them. If the examples resonate, students are much more likely to dig into the material wholeheartedly and internalize key concepts.

When we teach, we try to create a rhythm of reinforcement in our lectures that begins with the presentation of new material, followed by a concrete example and then a reinforcing device, and then closes with a "make it stick" moment. We do this over and over again. We have tried to bring that rhythm to the book. We believe strongly that this commitment to reinforcement works. To give an example, in our chapter "Oligopoly and Strategic Behavior," while presenting the crucial-yet-difficult subject of game theory, we work through the concept of the prisoner's dilemma at least six different ways.

No educator is happy with the challenge we all face to motivate our students to read the assigned text. No matter how effective our lectures are, if our students are not reinforcing those lectures by reading the assigned text chapters, they are only partially absorbing the key takeaways that properly trained citizens need to thrive in today's world. A second key motivation for us to undertake this ambitious project was the desire to create a text that students would read, week in and week out, for the entire course. By following our commitment to resonance and reinforcement, we are confident that we have written a text that's a good read for today's students. So good, in fact, that we believe students will read entire chapters and actually enjoy them. Many users of the first edition have indicated that this is the case.

What do we all want? We want our students to leave our courses having internalized fundamentals that they will remember for life. The fundamentals (such as understanding incentives, opportunity cost, and thinking at the margin) will help them to make better choices in the workplace, in their personal investments, in their long-term planning, in their voting, and in all their critical choices. The bottom line is that they will live more fulfilled and satisfying lives if we succeed. The purpose of this text is to help all of us succeed in this quest.

What does this classroom-inspired, student-centered text look like?

A Simple Narrative

First and foremost, we keep the narrative simple. We always bear in mind all those office-hour conversations with students where we searched for some way to make sense of this foreign language—for them—that is economics. It is incredibly satisfying when you find the right expression, explanation, or example that creates the "Oh, now I get it . . ." moment with your student. We have filled the narrative with those successful "now I get it" passages.

Real-World, Relatable Examples and Cases that Resonate

Nothing makes this material stick for students like good examples and cases that they relate to, and we have peppered our book with them. They are part of the narrative, set off with an **Economics in the Real World** heading. We further feature **Economics in the Media** boxed examples that use scenes from movies and TV shows that illustrate economic concepts. One of us has written the book (literally!) on economics in the movies, and we have used these clips year after year to make economics stick with students.

ECONOMICS IN THE REAL WORLD

Should We Bail Out Big Banks?

In September 2008, Lehman Brothers, one of the largest financial firms, went bankrupt as many of the real estate loans they were holding went sour. After the Lehman Brothers bankruptcy (which had followed an earlier bankruptcy of Bear Stearns), it appeared there might be a domino effect that would lead to the collapse of many large banks. To avoid this potential disaster, the U.S. government implemented the Troubled Asset Relief Program—which came to be known as TARP—in October 2008. TARP allocated $700 billion to keep banks from failing. The money was used to aid banks that had made bad loans.

Do America's wealthiest banks really need taxpayer-funded bailouts?

TARP was very controversial from the beginning. On the one hand, the government was clearly bailing out big banks after many had made poor business decisions, and people from all walks of life question why the gove
funds to help banks tha
recession, especially sin
population were still str
Others, including bo
ing presidents and their
in favor of TARP. They
cial intermediaries the
the bridge is strong and safe, savers can lend
can invest in future GDP. But if the bridge colla
If firms aren't producing, they certainly don't
unemployment rises. That's how important the
Even today, economists (and politicians) are
about the need for TARP; though many feel this
falling into an even more dire situation, others f
that no institution should be "too big to fail." W
the necessity of healthy financial institutions,
regulations, and policies affecting financial in
topics of debate.

ECONOMICS IN THE MEDIA

Direct Finance

The Big Short

The Big Short (2016) is based on the book with the same title by Michael Lewis. The movie is essentially a documentary that doesn't feel like a documentary as the actors carefully explain the details of the financial collapse that led to the Great Recession in 2007.

The movie introduces Mark Baum (played by Steve Carrell) and Michael Burry (played by Christian Bale), who were among the few people who recognized the dangers in the economy's rampant reliance on overvalued mortgage-backed securities.

In the movie, Baum and Burry travel to Florida to interview real borrowers. They knock on home doors and visit local businesses. These interviews help them see what almost nobody at the big banks sees: that the borrowers will not have the income to repay their loans when their low introductory interest rates increase. When these borrowers stop paying, their securitized mortgages being sold to investors will become worthless. When Baum realizes that he can make a lot of money by betting that these losses will happen (a process called "shorting" the mortgages), he recognizes that the economy will take a nosedive when other financial insiders finally reach the same conclusion. In the meantime, he determines, the very biggest investment banks (including Goldman Sachs and Lehman Brothers) are in over their heads, have no idea about the dangers that are brewing, and do not realize how dangerous subprime loans are to the economy.

In the movie *The Big Short*, we get a look at the complicated world of finance.

At the end of the day, *The Big Short* helps you understand secondary markets, securitization, and mortgage-backed securities. In addition, it provides a good look at some of the perverse incentives and dangers that lurk inside the real-world loanable funds market.

Applying Economic Decision-Making Through Problem-Solving

Most instructors in this course want students to learn to think like economists and to apply economic principles to their decision-making. This text shares this goal. To get students thinking about economics, we first open each chapter with a popular **misconception**. Students come to our classes with a number of strongly held misconceptions about economics and the economy, so we begin each chapter recognizing that fact and then establishing what we will do to clarify that subject area. Then, in each chapter, several **Practice What You Know** features allow students to self-check their comprehension while also laying the foundation for the step-by-step problem solving required for the end-of-chapter **Study Problems**. And throughout the text, key equations are used, and the **five core foundations of economics** (incentives, trade-offs, opportunity cost, marginal thinking, and trade creates value) are reinforced with a special icon to ensure that students are constantly connecting the dots.

Incentives
Trade-offs
Opportunity cost
Marginal thinking
Trade creates value

PRACTICE WHAT YOU KNOW

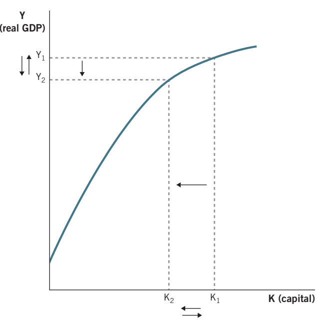
The Japanese government estimated total damages of $309 billion from the 2011 earthquake and tsunami.

Changes in Resources: Natural Disasters

In 2011, a major earthquake and tsunami in Japan destroyed significant physical capital, including roads, homes, factories, and bridges.

Question: How would you use an aggregate production function to illustrate the way a major destruction of capital affects a macroeconomy in the short run?

Answer:



This is an unusual situation in which the level of capital in a nation actually falls. Because capital (K) is on the horizontal axis of the production function, the decline in capital moves Japan back along its production function. This means less GDP for Japan (Y falls) until the nation can get its capital rebuilt.

Question: With no further changes, what happens to real GDP in the long run?

Answer: With no further changes, real GDP returns to the steady-state output level in the long run. At the new level of capital after the earthquake (K_2), the marginal product of additional capital is relatively high, so there is a greater return to building new capital. But in the long run, because there was no shift in the production function, the level of capital returns to the steady-state level (K_1), which means that output also returns to its steady-state level (Y_1).

PRACTICE WHAT YOU KNOW

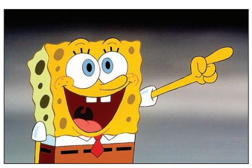
Demand for Loanable Funds: SpongeBob and Loanable Funds

Question: Which one of the following changes would affect the demand for loanable funds, and how?

a. Research shows that watching the cartoon *SpongeBob SquarePants* can shorten a child's attention span. Now assume that an entire generation of children grows up watching this cartoon, resulting in adults who are less patient (their time preferences have increased).

b. A technological advance leads to greater capital productivity.

c. The interest rate falls.



How dangerous is this sponge?

Answer:

a. This factor would not affect the demand for loanable funds, but it would affect the supply of loanable funds. Less patience means that time preferences increase and the supply of loanable funds declines.

b. This technological advance would increase the demand for loanable funds.

c. The falling interest rate would lead to a movement along the demand curve, rather than a shift in the demand curve for loanable funds. A shift can be caused by an increase in the supply of loanable funds.

Big-Picture Pedagogy

For beginning students, economics can be a subject with many new concepts and seemingly many details to memorize. To help keep students focused on the big ideas of each chapter while continuing to emphasize critical thinking, we use several unique features. First we introduce students to the objectives in each chapter in the form of **Big Questions** that students will explore rather than memorize. Then we come back to the Big Questions in the conclusion to the chapter with **Answering the Big Questions.**

BIG QUESTIONS

* **How is macroeconomics different from microeconomics?**
* **What does GDP tell us about the economy?**
* **How is GDP computed?**
* **What are some shortcomings of GDP data?**

Another notable reinforcement device is the **Snapshot** that appears in most chapters. We have used the innovation of modern infographics to create a memorable story that reinforces a particularly important topic. By combining pictures, text, and data in these unique features, we encourage students to think about and understand different components of a concept working together.

ANSWERING THE BIG QUESTIONS

How is macroeconomics different from microeconomics?

* Microeconomics is the study of individuals and firms, but macroeconomics considers the entire economy.
* Many of the topics in both areas of study are the same; these topics include income, employment, and output. But the macro perspective is much broader than the micro perspective.

What does GDP tell us about the economy?

* GDP measures both output and income in a macroeconomy.
* It is a gauge of productivity and the overall level of wealth in an economy.
* We use GDP data to measure living standards, economic growth, and business cycle conditions.

How is GDP computed?

* GDP is the total market value of all final goods and services produced in an economy in a specific time period, usually a year.
* Economists typically compute GDP by adding four types of expenditures in the economy: consumption (C), investment (I), government spending (G), and net exports (NX). Net exports are total exports minus total imports.
* For many applications, it is also necessary to compute real GDP, adjusting GDP for changes in prices (inflation).

What are some shortcomings of GDP data?

* GDP data do not include the production of nonmarket goods, the underground economy, production effects on the environment, or the value placed on leisure time.

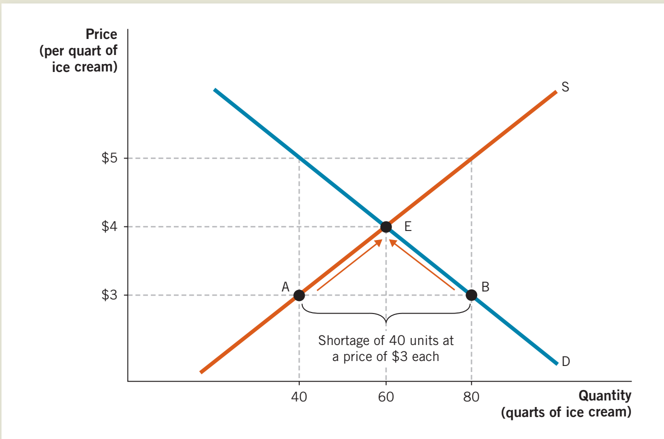
Solved Problems Pedagogy

Last but certainly not least, we conclude each chapter with a selection of fully solved problems that appear in the end-of-chapter material. These problems show students how to approach material they will see in homework, quizzes, and tests.

Solved Problems / 101

SOLVED PROBLEMS

5a. The equilibrium price is \$4, and the equilibrium quantity is 60 quarts. The next step is to graph the curves, as shown here.



b. A shortage of 40 quarts of ice cream exists at \$3 (quantity demanded is 80 and the quantity supplied is 40); therefore, there is excess demand. Ice cream sellers will raise their price as long as excess demand exists—that is, as long as the price is below \$4. It is not until \$4 that the equilibrium point is reached and the shortage is resolved.

8.a. The first step is to set $Q_D = Q_S$. Doing so gives us $90 - 2P = P$. Solving for price, we find that $90 = 3P$, or $P = 30$. Once we know that $P = 30$, we can plug this value back into either of the original equations, $Q_D = 90 - 2P$ or $Q_S = P$. Beginning with Q_D, we get $90 - 2(30) = 90 - 60 = 30$, or we can plug it into $Q_S = P$, so $Q_S = 30$. Because we get a quantity of 30 for both Q_D and Q_S, we know that the price of \$30 is correct.

b. In this part, we plug \$20 into Q_D. Doing so yields $90 - 2(20) = 50$. Now we plug \$20 into Q_S. Doing so yields 20.

c. Because $Q_D = 50$ and $Q_S = 20$, there is a shortage of 30 quarts.

d. Whenever there is a shortage of a good, the price will rise in order to find the equilibrium point.

9a. The reduction in consumer income led to a negative, or leftward, shift in the demand curve for gasoline. Because this is the only change, the equilibrium price of gasoline fell. In fact, by the end of 2008, the price of gasoline had fallen to under \$2 per gallon in the United States.

b. The significant drop in the cost of production led to a large increase, or rightward, shift in the supply of gasoline. This increase in supply led to a decrease in price. In fact, by early 2015, the average price of a gallon of regular gasoline in the United States fell to under \$2 per gallon.

Looking at parts (a) and (b) together, you can see that very different causes led to steep drops in the price of gasoline. In 2008 the cause was a decline in demand; in 2014 it was an increase in supply.

10. Because alcohol and Solo cups are complements, the key here is to recall that a change in the price of a complementary good shifts the demand curve for the related good. Lower alcohol prices will cause consumers to purchase more alcohol and therefore demand more Solo cups. In other words, the entire demand curve for Solo cups shifts to the right.

Principles of Macroeconomics—Hallmarks and Updates to the Second Edition

Principles of Macroeconomics follows the traditional structure found in most texts, but it contains several chapters on new topics that reflect the latest thinking and priorities in macroeconomics. First, at the end of the unit on macroeconomics basics, we have an entire chapter on financial markets, including coverage of securitization and mortgage-backed securities. The economic crisis of 2008-2009 made everyone aware of the importance of financial markets for the worldwide economy, and students want to know more about this fascinating project.

Economic growth is presented before the short run, and we have two chapters devoted to the topic. The first focuses on the facts of economic growth. It discusses in largely qualitative terms how nations like South Korea and Singapore can be so wealthy, and nations like North Korea and Liberia can be so impoverished. The second chapter presents the Solow growth model in very simple terms. We've included this chapter to highlight the importance of growth and modeling. That said, it is optional and can be skipped by those instructors who have had time for only one chapter on growth.

Coverage of the short run includes a fully developed chapter on the aggregate demand—aggregate supply model, and a second chapter that uses this key model to analyze—essentially side by side—the Great Depression and the Great Recession. We feel this is a very effective way of presenting several of the key debates within economics.

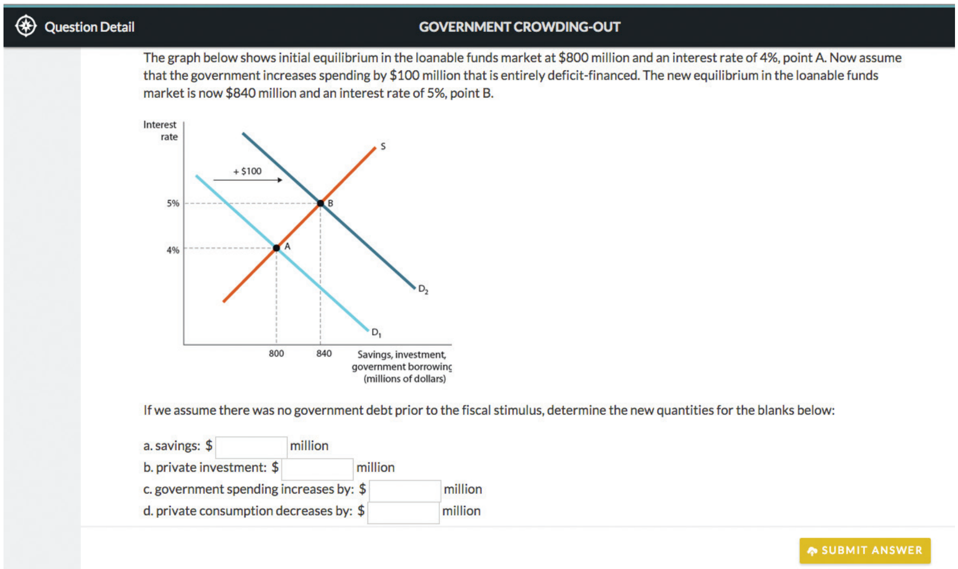
Finally, we have written a unique chapter on the federal budget, which has allowed us to discuss at length the controversial topic of entitlements and the foreign ownership of U.S. national debt.

Feedback from the first edition has driven important revisions for this new edition. In particular, we have added a new appendix on the Aggregate Expenditures model to chapter 14. We have also expanded our discussion of the origins of the great recession in this chapter, added new sections on "GDP and Happiness" in chapter 6 and the equation of exchange in chapter 8, and made major changes to Chapter 13 on the Aggregate Demand —Aggregate Supply model. Of course, we have updated the examples in the book, including new features on using the movie *The Big Short*, and how GDP is calculated in Europe. We have also added additional study problems at the end of each chapter.

Supplements and Media

Smartwork5

Smartwork5 for *Principles of Macroeconomics* is an online learning environment that helps instructors meet the teaching goal of connecting concepts and showing applications. Richly varied questions and intuitive functionality give users the flexibility to create the type of learning best for their students. Try a demo of the following features at digital.wwnorton.com/prinecoma2.



Smartwork5 Norton's easy to use homework system designed to integrate with your LMS.

Easy to launch, easy to use

Simple course setup and intuitive student registration minimize administrative headaches at the beginning of the semester. Instructors can use prebuilt activities or customize their own assignments and questions to suit their needs.

Integration with campus LMS platforms

Smartwork5 integrates with campus learning management systems. Student grades flow automatically to the instructor's LMS course. Single sign-on between the LMS and Norton digital products simplifies student access—and this means fewer password/log-in woes.

Trusted economics tools and content

Smartwork5 teaches students not just how to solve problems but how to problem-solve, connecting concepts to learned skills through varied applications. Smartwork5 includes assignments based on real-world economic scenarios, "Office Hour" Video Tutorials presented in the learning moment, analytical and interactive graphing questions, and application problems. Rich answer-specific feedback builds students' confidence and economic skills. Questions are book specific, matching the terminology and conventions that students see in their textbook. They are developed in collaboration with instructors actively teaching with the Mateer and Coppock textbook.

Rich performance reports

Intuitive performance reports for both individual students and entire classes help instructors gauge student comprehension and adjust their teaching accordingly.

An intuitive easy-to-use graphing tool

The Smartwork5 graphing interface consistently employs the same coloration and notation as the in-text art to underscore continuity and reduce confusion. The interface is easy to understand, and it functions on computers as well as tablet devices. Students are invited to manipulate precreated graphs or draw their own graphs from scratch.

Answer-specific feedback and hints

Smartwork5 teaches students to problem-solve, not just solve a single problem. Many online homework systems only offer solution explanations after the student has answered a question. Smartwork5, in contrast, provides explanations throughout the problem-solving process, giving answer-specific feedback and hints for common misconceptions.

InQuizitive

Award-winning InQuizitive is Norton's gamelike, adaptive quizzing and practice system. Developed with book-specific questions and content, this system lets students compete with themselves as they prepare their material for class. Demo InQuisitive at digital.wwnorton.com/prinecoma2.

Play with a purpose

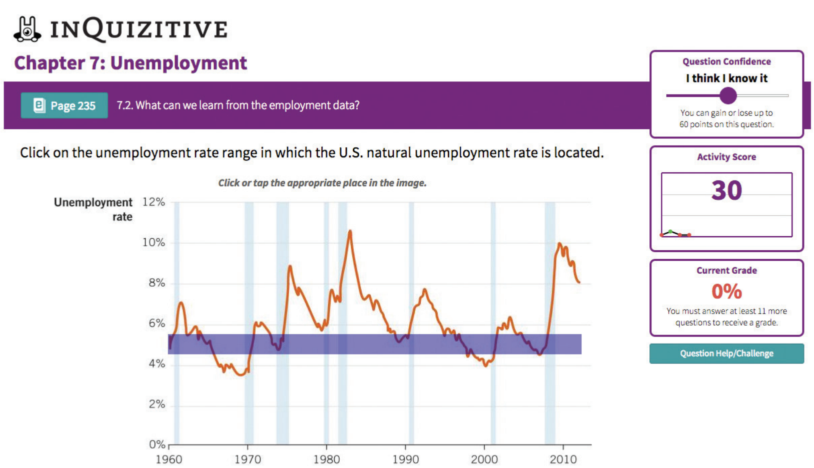
Gaming elements built into InQuizitive engage students and motivate them to keep working. Students wager points on every question based on their confidence level, gain additional points for hot streaks and bonus questions, and can improve their grade by continuing to work in InQuizitive.

Active learning, helpful feedback

InQuizitive includes a variety of question types beyond basic multiple choice. Image-click, numeric entry, and various graph interpretation questions build economic skills and better prepare students for lecture, quizzes, and exams. Rich answer-specific feedback helps students understand their mistakes.

Easy to use

Instructors can set up InQuizitive for their students in less than 5 minutes. Students can access InQuizitive on tablet devices as well as on computers, making it easy to study on the go. InQuizitive integrates into campus learning



InQuisitive Norton's game-like adaptive quizzing and practice system.

management systems; when integration is enabled, grades flow automatically to campus LMS gradebooks.

Formative assessment works

The efficacy of formative assessment is backed by education and psychology research (see inquizitive.wwnorton.com). Furthermore, performance-specific feedback, varied question types, and gaming elements built into InQuizitive have been shown to increase student engagement and retention of material.

Norton Coursepack

Bring tutorial videos, assessment, and other online teaching resources directly into your new or existing online course with the Norton Coursepack. It's easily customizable and available for all major learning management systems, including Blackboard, Desire2Learn, Moodle, and Canvas.

The Norton Coursepack for *Principles of Economics* includes:

- Concept Check quizzes
- Homework quizzes
- Office Hours video tutorials
- Interactive Scratch Paper modules
- Flashcards
- Links to the digital landing page for the e-book, InQuizitive, and Smartwork
- Test bank

The Ultimate Guide to Teaching Economics—Now with teaching tips for online courses

The Ultimate Guide to Teaching Economics is much more than an instructor's manual. It's a handbook for becoming a better teacher. The Ultimate Guide—the most innovative instructor's manual ever created for Principles of Economics—includes 1,000+ teaching tips from the classrooms of the authors and other innovative instructors, to help instructors, both new and experienced, incorporate best teaching practices and find inspiring ideas for enlivening their lectures.

The tips in *The Ultimate Guide to Teaching Microeconomics* and *The Ultimate Guide to Teaching Macroeconomics* include:

- New—A Taking It Online appendix in each chapter that shows how the Ultimate Guide's class-tested teaching ideas can be adapted to online teaching environments
- New—Writing to Learn tips that give instructors short (one-page or less) paper prompts with ideas for potential student responses
- Think-pair-share activities to promote small-group discussion and active learning
- "Recipes" for in-class activities and demonstrations that include descriptions of the activity, required materials, estimated length of time, estimated difficulty, recommended class size, and instructions. Ready-to-use worksheets are also available for select activities.

- Descriptions of movie clips, TV shows, commercials, and other videos that can be used in class to illustrate economic concepts
- Clicker questions
- Ideas for music examples that can be used as lecture starters
- Suggestions for additional real-world examples to engage students

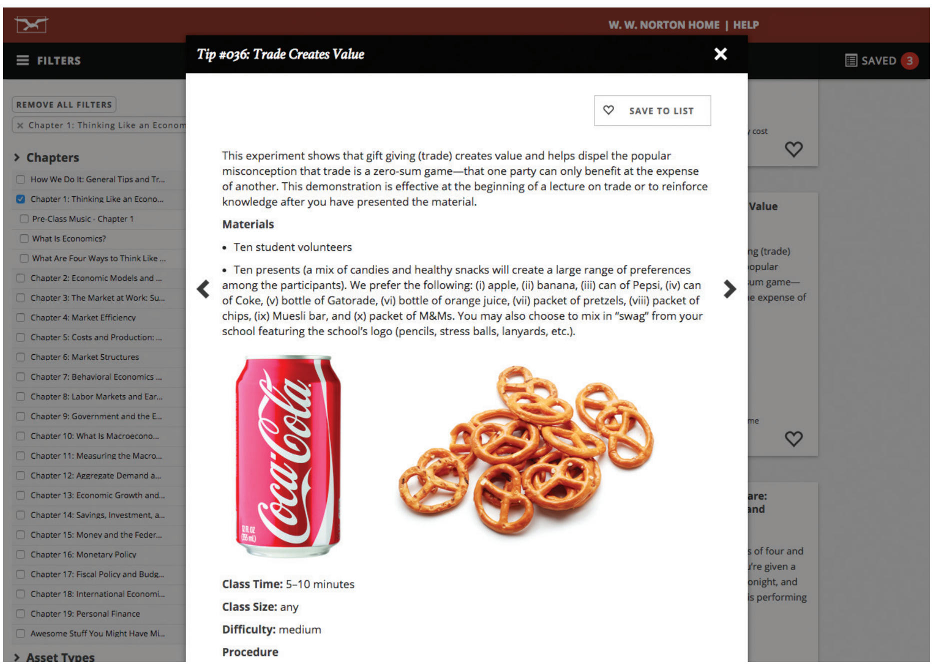
In addition to the teaching tips, each chapter begins with an introduction by Dirk Mateer, highlighting important concepts to teach in the chapter and pointing out his favorite tips. Each chapter ends with solutions to the unsolved end-of-chapter problems in the textbook.

Interactive Instructor's Guide

The Interactive Instructor's Guide (IIG) brings all the great content from *The Ultimate Guide to Teaching Economics* into a searchable online database that can be searched and filtered by a number of criteria, such as topic, chapter, key word, media format, and resource type. Instructors can even save their favorite assets to a list so they don't need to hunt for them each time they revisit the IIG.

To make it quick and easy for instructors to incorporate the tips from *The Ultimate Guide to Teaching Economics,* the IIG will include:

- Links for music and video tips when an online video is freely available
- Links to news articles for real-world examples when an article is available
- Downloadable versions of student worksheets for activities and demonstrations
- Downloadable PowerPoint slides for clicker questions
- Additional teaching resources not found in the Ultimate Guide



Interactive Instructor's Guide This searchable database of premium resources makes lecture development easy.

Office Hours Video Tutorials

This collection of more than 50 videos brings the office-hour experience online. Each video explains a fundamental concept and was conceived by and filmed with authors Dirk Mateer and Lee Coppock.

Perfect for online courses, each Office Hours video tutorial is succinct (90 seconds to 2 minutes in length) and mimics the office-hour experience. The videos focus on topics that are typically difficult to explain just in writing (or over email), such as shifting supply and demand curves.

The Office Hours videos have been incorporated throughout the Smart-Work online homework system as video feedback for questions, integrated into the e-book, included in the Norton Coursepack, and included in the Norton Coursepack.

Test Bank

Each chapter of the test bank for the second edition has been fully updated and expanded based on reviewer feedback. Each chapter includes between 100 and 150 questions and incorporates graphs and images where appropriate, The test bank has been developed using the Norton Assessment Guidelines. Hundreds of new questions have been developed for the second edition that focus on graphing, scenario-based questions, and calculations. Each question in the test bank is classified according to Bloom's taxonomy of knowledge types (remembering, understanding and applying, analyzing and evaluating, and creating). Questions are further classified by section and difficulty, making it easy to construct tests and quizzes that are meaningful and diagnostic.

Presentation Tools

Norton offers a variety of presentation tools so that new instructors and veteran instructors alike can find the resources that are best suited for their teaching style.

Enhanced Lecture Powerpoint Slides

These comprehensive, lecture-ready slides are perfect for new instructors and instructors who have limited time to prepare for lecture. The slides include elements such as images from the book, stepped-out versions of in-text graphs, additional examples not included in the chapter, and clicker questions.

Student Note-Taking Slides

This resource is a trimmed-down version of the lecture slides with instructor notes removed for instructors who prefer slides that are more visual and with limited bullets. These are great for posting to the LMS for students to download for note-taking during lecture.

Art Slides and Art JPEGs

For instructors who simply want to incorporate in-text art into their existing slides, all art from the book (tables, graphs, photos, and Snapshot infographics) is available in both PowerPoint and .jpeg formats. Stepped-out versions of in-text graphs and Snapshot infographics are also provided and optimized for screen projection.

dirkmateer.com

Visit dirkmateer.com to find a library of hundreds of recommended movie and TV clips and links to online video sources to use in class.

leecoppock.com

This blog serves as a one-stop-shop for all the "econ news you can use." Here you will find timely economic data, graphics, and teaching materials you will need to keep your course fresh and topical.

ACKNOWLEDGMENTS

We would like to thank the literally hundreds of fellow instructors who have helped us refine both our vision and the actual words on the page for two editions of this text. Without your help, we would never have gotten to the finish line. We hope that the result is the economics teacher's text that we set out to write.

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Principles of Macroeconomics

Second Edition

PART 1

INTRODUCTION

CHAPTER

1

Five Foundations of Economics

MISCONCEPTION

Economics is the dismal science.

Perhaps you have heard of the "dismal science"? This derogatory description of economics was first used by historian and essayist Thomas Carlyle in the nineteenth century. He called economics the dismal science after economist Thomas Malthus predicted that population growth combined with the planet's limited resources would ultimately lead to widespread starvation.

Malthus was a respected thinker, but he was unduly pessimistic. The world population was 1 billion in 1800, and it is over 7 billion today. One of the things that Malthus did not take into account was increases in technology and productivity. Today, the efficiency of agricultural production enables more than 7 billion people to live on this planet. Far from being the dismal science, economics in the twenty-first century is a vital social science that helps world leaders improve their citizens' lives.

This textbook provides the tools you need to make your own assessments about the economy. What other discipline helps you discover how the world works, how to be an informed citizen, and how to live your life to the fullest? Economics can improve your understanding of the stock market and help you make better decisions. If you are concerned about Social Security, this textbook explains how it works. If you are interested in learning more about the economics of health care and some of the challenges it faces, the answers are here.

In this chapter, you will learn about five foundations of economics—incentives, trade-offs, opportunity cost, marginal thinking, and the principle that trade creates value. You will find that many of the more complex problems presented later in the text are based on these

Predicting the future is a tough business.

foundations, either singly or in combination. Think of this chapter as a road map that provides a broad overview of your first journey into economics. Let's get started!

BIG QUESTIONS

- What is economics?
- What are five foundations of economics?

What Is Economics?

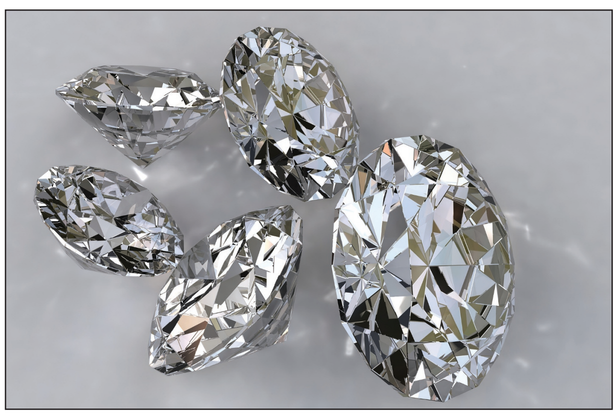
Economists study how decisions are made. Examples of economic decisions include whether you should buy or lease a car, sublet your apartment, or buy that Gibson guitar you've been eyeing. And just as individuals must choose what to buy within the limits of their income, society as a whole must determine what to produce from its limited set of resources.

Of course, life would be a lot easier if we could have whatever we wanted whenever we wanted it. Unfortunately, life does not work that way. Our wants and needs are nearly unlimited, but the resources available to satisfy these wants and needs are always limited. The term used to describe the limited nature of society's resources is **scarcity**. Even the most abundant resources, like the water we drink and the air we breathe, are not always abundant enough everywhere to meet the wants and needs of every person. So how do individuals and societies make decisions about scarce resources? This is the basic question economists seek to answer. **Economics** is the study of how individuals and societies allocate their limited resources to satisfy their nearly unlimited wants.

Scarcity refers to the limited nature of society's resources, given society's unlimited wants and needs.

Economics is the study of how individuals and societies allocate their limited resources to satisfy their nearly unlimited wants.

Water is scarce . . .



. . . and so are diamonds!

Microeconomics and Macroeconomics

The study of economics is divided into two subfields: microeconomics and macroeconomics. **Microeconomics** is the study of the individual units that make up the economy, such as households and businesses. **Macroeconomics** is the study of the overall aspects and workings of an economy, such as inflation (an overall increase in prices), growth, employment, interest rates, and the productivity of the economy as a whole. To understand the difference, consider a worker who gets laid off and becomes unemployed. Is this an issue that would be addressed in microeconomics or macroeconomics? The question seems to fit parts of both definitions. The worker is an individual, which is micro, but employment is one of the broad areas of concern for the economy as a whole, which is macro. However, because only one worker is laid off, this is a micro issue. If many workers were laid off and the result was a higher unemployment rate across the entire economy, the issue would be broad enough to be studied by macroeconomists. However, macroeconomics is more than just an aggregation of microeconomics. Macroeconomists examine, among other things, government policies regarding the federal budget and money supply, the reasons for inflation and unemployment, economic growth, international trade, and government borrowing—topics that are too complex to be understood using only microeconomic analysis.

Microeconomics is the study of the individual units that make up the economy.

Macroeconomics is the study of the overall aspects and workings of an economy.

What Are Five Foundations of Economics?

The study of economics can be complicated, but we can make it very accessible by breaking it down into a set of component parts. The five foundations presented here are key components of economics. They are a bit like the natural laws of physics or chemistry. Almost every economic subject can be analyzed through the prism of one of these foundations. By mastering the five foundations, you will be on your way to succeeding in this course and thinking like an economist.

The five foundations of economics are:

- Incentives
- Trade-offs
- Opportunity cost
- Marginal thinking
- The principle that trade creates value

Each of these five foundations reappears throughout the book and enables you to solve complex problems. Every time you encounter one of the five concepts, you will see an icon of a house in the margin. As you become more adept at economic analysis, you will often use two or more of these foundational ideas to understand the economic world around you.

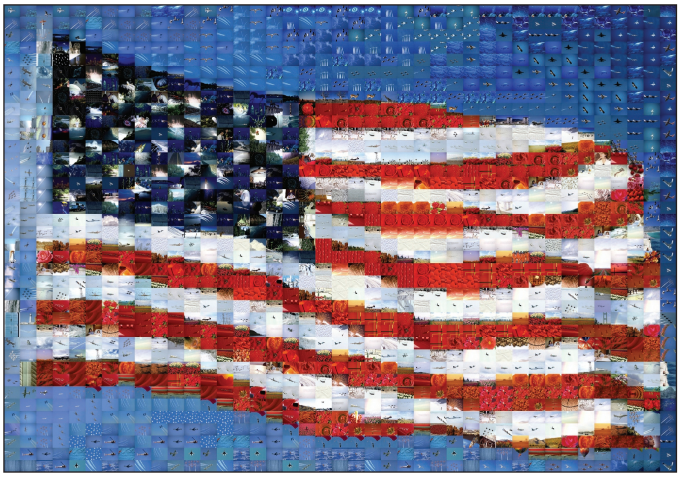
Incentives
Trade-offs
Opportunity cost
Marginal thinking
Trade creates value

Incentives

When you are faced with making a decision, you usually make the choice that you think will most improve your situation. In making your decision,

Incentives

PRACTICE WHAT YOU KNOW



This mosaic of the flag illustrates the difference between micro and macro. The small-sized pictures represent microeconomics and the roles that individual decisions play in the overall health of the economy, which is the composite we see when we look at the entire picture.

Microeconomics and Macroeconomics: The Big Picture

Identify whether each of the following statements identifies a microeconomic issue or a macroeconomic issue.

The national savings rate is less than 2% of income.

Answer: The national savings rate is a statistic based on the average amount each household saves as a percentage of income. As such, it is a broad measure of savings that describes a macroeconomic issue.

Jim was laid off from his job and is currently unemployed.

Answer: Jim's personal financial circumstances constitute a microeconomic issue.

Apple decides to open 100 new stores.

Answer: Even though Apple is a very large corporation and 100 new stores will create many new jobs, Apple's decision is a microeconomic issue because it is best understood as part of an individual firm's competitive strategy.

The government passes a jobs bill designed to stabilize the economy during a recession (an economic downturn).

Answer: You might be tempted to ask how many jobs are created, but that information is not relevant to answering this question. The key part of the statement refers to "stabiliz[ing] the economy during a recession," which is an example of the government taking an active role in managing the overall workings of the economy. Therefore, it is a macroeconomic issue.

Incentives are factors that motivate a person to act or exert effort.

you respond to **incentives**—factors that motivate you to act or exert effort. For example, your choice to study for an exam you have tomorrow instead of spending the evening with your friends is based on your belief that doing well on the exam will provide a greater benefit. You have an incentive to study because you know that an A in the course will raise your grade-point average and make you a more attractive candidate on the job market when you are finished with school. We can further divide incentives into two paired categories: positive and negative and direct and indirect.

Positive and Negative Incentives

Positive incentives encourage action by offering rewards or payments. For example, end-of-year bonuses motivate employees to work hard throughout the year, higher oil prices cause suppliers to extract more oil, and tax rebates encourage citizens to spend more money. *Negative incentives* discourage action by providing undesirable consequences or punishments. For instance, the fear of receiving a speeding ticket keeps motorists from driving too fast, higher oil prices might spur some consumers to use less oil, and the dread of a trip to the dentist motivates people to brush their teeth regularly. In each case, we see that incentives spur individuals to action.

Conventional wisdom tells us that "learning is its own reward," but try telling that to most students. Teachers are aware that incentives, both positive and negative, create additional interest among their students to learn the course material. Positive incentives include bonus points, gold stars, public praise, and extra credit. Many students respond to these encouragements by studying more. However, positive incentives are not enough. Suppose that your instructor never gave any grade lower than an A. Your incentive to participate actively in the course, do assignments, or earn bonus points would be small. For positive incentives to work, they generally need to be coupled with negative incentives. This is why instructors require students to complete assignments, take exams, and write papers. Students know that if they do not complete these requirements, they will get a lower grade, perhaps even fail the class.

Direct and Indirect Incentives

Incentives can also be direct or indirect. For instance, if one gas station lowers its prices, it most likely will get business from customers who would not usually stop there. This is a *direct incentive*. Lower gasoline prices also work as an *indirect incentive*, because lower prices might encourage consumers to use more gas.

Direct incentives are easy to recognize. "Cut my grass and I'll pay you $30" is an example of a direct incentive. Indirect incentives are more difficult to recognize. But learning to recognize them is one of the keys to mastering economics. For instance, consider the indirect incentives at work in welfare programs. Almost everyone agrees that societies should provide a safety net for those without employment or whose income isn't enough to meet their basic needs. In other words, a society has a direct incentive to alleviate suffering caused by poverty. But how does a society provide this safety net without taking away the incentive to work? If the amount of welfare a person receives is higher than the amount that person can hope to make from a job, the welfare recipient might decide to stay on welfare rather than go to work. The indirect incentive to stay on welfare creates an *unintended consequence*: people who were supposed to use

Public assistance: a hand in time of need or an incentive not to work?