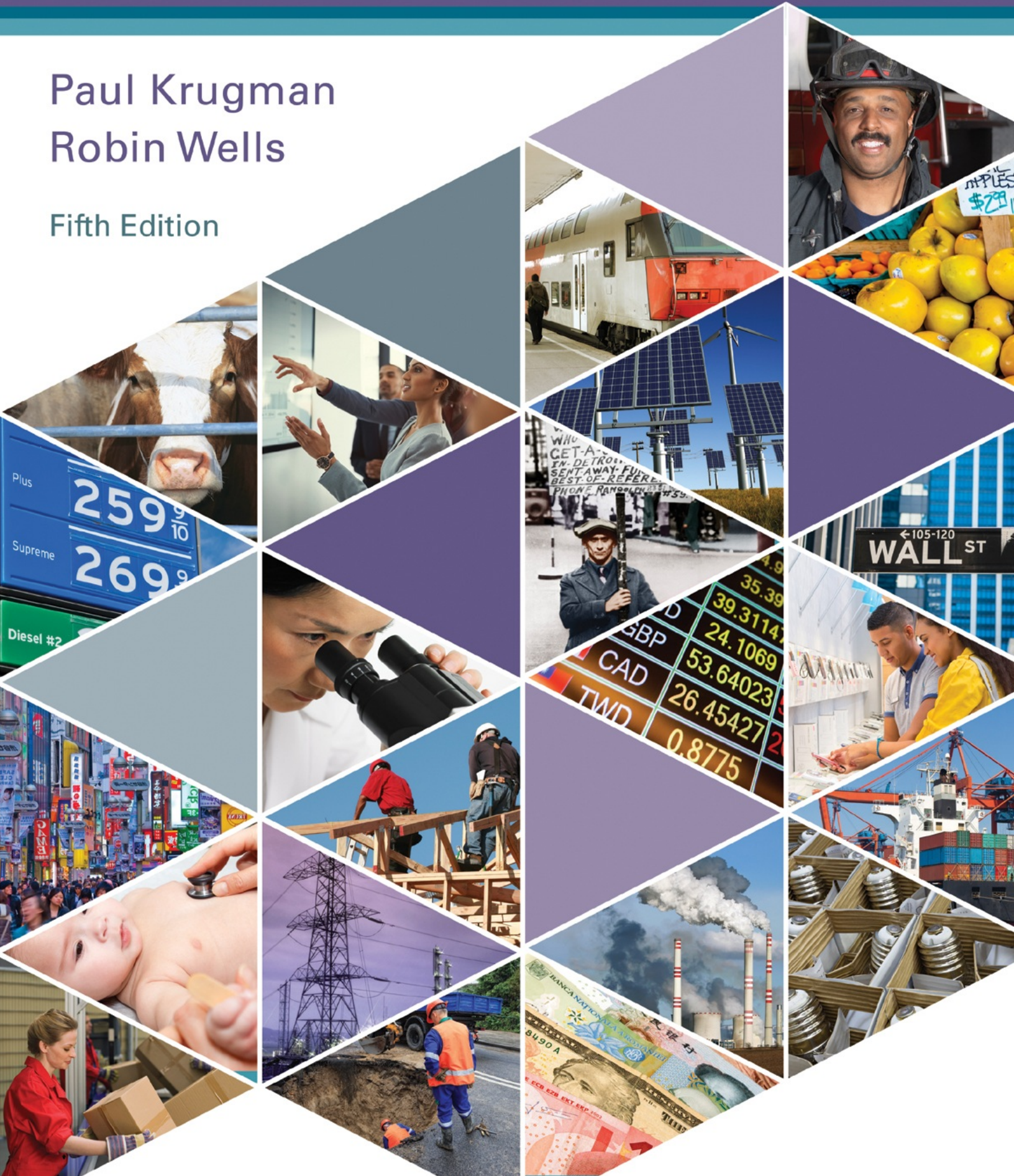


MACROECONOMICS

Paul Krugman
Robin Wells

Fifth Edition



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Fifth Edition

Paul Krugman

Graduate Center of the City University of New York

Robin Wells

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Macmillan Learning
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ISBN-13: 978-1-319-09875-9

ISBN-10: 1-319-09875-4

Library of Congress Control Number: 2017944025

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Worth Publishers

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About the Authors



Ligaya Franklin

PAUL KRUGMAN, recipient of the 2008 Nobel Memorial Prize in Economic Sciences, is a faculty member of the Graduate Center of the City University of New York, associated with the Luxembourg Income Study, which tracks and analyzes income inequality around the world. Prior to that, he taught at Princeton University for 14 years. He received his BA from Yale and his PhD from MIT. Before Princeton, 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 has included pathbreaking work on international trade, economic geography, and 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. He is a regular op-ed columnist for the *New York Times*. His best-selling trade books include *End This Depression Now!*, *The Return of Depression Economics and the Crisis of 2008*, a history of recent economic troubles and their implications for economic policy, and *The Conscience of a Liberal*, a study of the political

economy of economic inequality and its relationship with political polarization from the Gilded Age to the present. His earlier books, *Peddling Prosperity* and *The Age of Diminished Expectations*, have become modern classics.

ROBIN WELLS was a Lecturer and Researcher in Economics at Princeton University. 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.

Vision and Story of *Macroeconomics*

This is a book about economics as the study of what people do and how they interact, a study very much informed by real-world experience. These words, this spirit, have served as a guiding principle for us in every edition.

While we were driven to write this book by many small ideas about particular aspects of economics, we also had one big idea: an economics textbook should be built around narratives, many of them pulled from real life, and it should never lose sight of the fact that economics is, in the end, a set of stories about what people do.

Many of the stories economists tell take the form of models—for whatever else they are, economic models are stories about how the world works. But we believe that student understanding of and appreciation for models are greatly enhanced if they are presented, as much as possible, in the context of stories about the real world that both illustrate economic concepts and touch on the concerns we all face living in a world shaped by economic forces.

You'll find a rich array of stories in every chapter, in the chapter openers, Economics in Actions, For Inquiring Minds, Global Comparisons, and Business Cases. As always, we include many new stories and update others. We also integrate an international perspective throughout, more extensively than ever before. It starts with a new introduction and an opening story on China's Pearl River Delta that sets the stage for new attention to China's ascendance in the global economy. An overview of the types of narrative-based features in the text is on p. x.

We also include pedagogical features that reinforce learning. For example, each major section ends with three related elements devised with the student in mind: (1) the Economics in Actions: a real-world application to help students achieve a fuller understanding of concepts they just read about; (2) a Quick Review of key ideas in list form; and (3) Check Your Understanding self-test questions with answers at the back of the book. Our thought-provoking end-of-chapter problems are another strong feature. The Work It Out feature appears in all end-of-chapter problem sets, offering students online tutorials that guide them step-by-step through solving key problems.

With the Fifth Edition, a new feature, Discovering Data exercises, offers students the opportunity to use interactive graphs to analyze interesting economic questions. An overview of the text's tools for learning is on p. xi.

Students also benefit from the impressive set of online resources that are linked to specific chapter content. These include several exciting new digital features as well as adaptive quizzing, tutorials, interactive activities, graphing questions, and data-analysis questions. All have been devised with the goal of supporting instructor teaching and student learning in principles of economics courses.

We hope your experience with this text is a good one. Thank you for introducing it into your classroom.



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Engaging Students in the Study of Macroeconomics

We are committed to the belief that students learn best from a complete textbook program built around narratives, steeped in real life and current events, with a strong emphasis on global matters and with proven technology that supports student success.

Narrative Approach

This is a textbook built around narratives and stories, many pulled from real life. In every chapter, stories are used to teach core concepts and motivate learning. We believe that the best way to introduce concepts and reinforce them is through memorable, real-world stories; students simply relate more easily to them.



Global Focus

This book is unrivaled in the attention paid to global matters. We have thoroughly integrated an international perspective into the text, in the numerous applications, cases, and stories and, of course, in the data-based Global Comparison feature.

Technology That Builds Success

Macroeconomics is not just a textbook. It has evolved to become a complete program with interactive features designed and built to extend the goals of the text. This program encourages even stronger student engagement, mastery of the material, and success in the course.

interactive activity

Look for this Interactive Activity icon throughout the text to find materials that are enhanced by our online tools.

What's New in the Fifth Edition?

Technology that offers the best value and price. Because students' needs are changing, our most powerful learning option is now our most affordable. SaplingPlus is a new digital solution that combines LearningCurve with an integrated e-Book, robust homework, improved graphing, and fully digital end-of-chapter problems including Work It Outs. And if print is important, a package with a loose-leaf copy of the text is only a few dollars more.

Discovering Data exercises help students interpret, analyze, share, and report on data. Students develop data literacy by completing these new interactive exercises, step-by-step problems that have students use up-to-the-minute FRED data.

Current events framed by the world's best communicators of economics. No other text stays as fresh as this one. The authors—who have explained economics to millions through trade books and newspaper columns—offer a new online feature, News Analysis, that pairs journalistic takes on pressing issues with questions based on Bloom's taxonomy. This complements the text's unparalleled coverage of current topics: sustainability, the economic impact of technology, pressing policy debates, and much more.

A richer commitment to broadening students' understanding of the global economy. With unparalleled insight and clarity, the authors use their hallmark narrative approach to take students outside of the classroom and into our global world, starting in the Introduction with a new opening story on the economic transformation in China's Pearl River Delta. The global focus is carried throughout in chapter openers, Economics in Action, Business Cases, and Global Comparisons. There is now more on the ascendance of China's economy, along with real-world stories about the economies of Europe, Bangladesh, and Japan, among many others.

Engaging Students with a Narrative Approach

11
Income and Expenditure

HARD TIMES IN HELSINKI

HELSINKI, THE CAPITAL OF FINLAND, was a cheerful-looking place in 2016, with plenty of chic shops and trendy restaurants. Yet times were tough for many Finns and many Finnish businesses. The unemployment rate was above 9%, almost twice its level in the United States. Retail sales were depressed. Stockmann, Finland's iconic department store, was losing a million euros a week.



After Finland's exports of Nokia phones and wood products plunged, the effects spread throughout the economy and multiplied, leading to an economic bust.

In fact, the scale of Finland's economic setback was startling: real GDP per capita was down almost 10% from its peak in 2008. What went wrong?

The answer, surprisingly, was that Finland was hurt by new developments in digital technology: in the early 2000s, the Finnish firm Nokia was one of the world's leading producers of cell phones, and a huge contributor to the Finnish economy. But Nokia failed to keep up when the iPhone and other smartphones took over most of the mobile phone business, and its sales collapsed.

Nor was Nokia's decline the only adverse shock. Outside Helsinki, Finland is basically one big forest, and exports of paper,

made from wood pulp, have long been key to its economic success. In fact, Nokia began as a wood pulp producer. But the digital revolution has many people staring at screens instead of reading documents on paper, and Finnish paper exports have been in decline.

The fall in exports explains why Finland's economy has been facing hard times. But a fall in exports doesn't tell us why retail sales are also down. Why are Finns spending less in department stores?

The answer is that when Finnish exports took a hit, this reduced household incomes, which led families to spend less on other goods and services. The fall in spending meant another round of income cuts among those who produced the goods and services people weren't buying. And the process didn't stop there: as incomes fell, consumer spending fell even further, leading to further declines in incomes, leading to further cuts, and so on.

Finland's troubles illustrate the way booms and busts happen for the economy as a whole. The business cycle is often driven by ups or downs in one particular kind of spending—either exports, as is the case in Finland, or investment spending. These first-round changes in spending then lead to changes in consumer spending, which magnify—or, as economists usually say, multiply—the effect of the initial changes on the economy as a whole.

In this chapter we'll study how this process works, showing how multiplier analysis helps us understand the business cycle. As a first step, we introduce the concept of the multiplier informally. ■

WHAT YOU WILL LEARN

- What is the importance of the **multiplier**, which summarizes how initial changes in spending lead to further changes?
- What is the **aggregate consumption function**?
- How do expected future income and aggregate wealth affect consumer spending?
- What determines investment spending and why do we need to distinguish between **planned investment spending** and **unplanned inventory investment**?
- How does the inventory adjustment process move the economy to a new equilibrium after a change in demand?
- Why is investment spending considered a leading indicator of the future state of the economy?

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ECONOMICS >> in Action


An Economic Breakthrough in Bangladesh

Western news media rarely mention Bangladesh: it's not a political hot spot, it doesn't have oil, and it's overshadowed by its immense neighbor, India. Yet it is home to more than 160 million people—and although it is still very poor, it is nonetheless one of the greatest economic success stories of the past generation.

As recently as the 1980s, real GDP per capita in Bangladesh—which achieved independence from Pakistan in 1971, after a brutal war—was barely higher than it had been in 1950, when the country was so poor that it literally lived on the edge of starvation. In the early 1990s, however, the nation began a process of political and economic reform, making the transition from military rule to democracy, freeing up markets, and achieving monetary and fiscal stability. And growth took off, most notably with the rise of Bangladesh as a major exporter of clothing to Western markets. Real GDP per capita grew at over 3% per year, from the late 1980s through 2010, doubling over the twenty-year period from 1990 to 2010.

By 2015 real GDP per capita was almost 2½ times what it had been in 1990. Other measures also showed dramatic improvements in the quality of life: life expectancy rose by a dozen years, child mortality fell by 70 percent, school enrollment rose sharply, especially for girls.

Make no mistake, Bangladesh is still incredibly poor by American standards. Wages are very low although rising, while working conditions are often terrible and dangerous—a point highlighted in 2013, when a factory complex collapsed, killing more than a thousand workers. But compared with its own past,



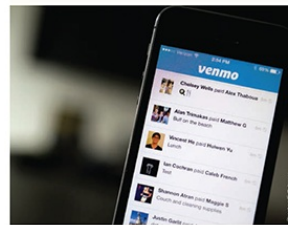
Although Bangladesh remains a very poor country, a high growth rate has improved living standards over the last 25 years.

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BUSINESS CASE Parking Your Money at PayPal



At first glance, leaving significant sums in PayPal accounts seems counterintuitive for two reasons. First, these accounts aren't protected by federal deposit insurance. Second, they pay no interest. But upon closer examination, this behavior makes good economic sense. People will typically hold only a tiny fraction of their wealth in their PayPal account, thereby making the lack of federal deposit insurance an acceptable risk. And interest rates on bank accounts are so low at the time of this writing (around 0.03% in Spring 2017) that losing that interest is a reasonable price to pay to avoid the hassle of moving funds back and forth between a bank account and a PayPal or Venmo account. The result is that many people are behaving like one user quoted by the *Wall Street Journal*, who now waits a while before transferring funds out of her Venmo account to her regular bank account: "I'm starting to intentionally keep my money in there a bit longer."

But will PayPal/Venmo or something like it begin to make major inroads into traditional banking? Some analysts think so. Others suggest, however, that conventional banks will find ways to make mobile payments easier, and that rising interest rates will lure customers back to conventional bank deposits. Time will tell.

Officially, PayPal, the electronic funds-transfer firm—which is also the owner of Venmo, a mobile-phone payment service that has become extremely popular—isn't considered a bank. Instead, regulators consider it a *money transmitter*, an entity that sends your money someplace rather than holding it and keeping it safe.

However, as users accumulate substantial sums in their PayPal accounts, that distinction has started to look questionable. Venmo users, in particular, often seem willing to let incoming payments sit in their accounts until the funds are spent. As a result, PayPal's accounts were estimated to total more than \$13 billion in 2016. If those billions were considered bank deposits, PayPal would be considered among the 50 largest banks in the United States.

QUESTIONS FOR THOUGHT

1. PayPal accounts aren't counted as part of the money supply. Should they be? Why or why not?
2. In 2010, only around 23% of mobile phones in the United States were smartphones. In 2017, that number increased to more than 80%. How does this situation play into the PayPal story, and how does it fit into the broader pattern of monetary history?
3. How might future actions by the Federal Open Market Committee affect the future of PayPal and similar services?

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To engage students, every chapter begins with a compelling story. **What You Will Learn** questions help students focus on key concepts in the chapter.

So students can immediately see economic concepts applied in the real world, **Economics in Action** applications appear throughout chapters.

To provide students with an international perspective, the **Global Comparison** feature uses data and graphs to illustrate why countries reach different economic outcomes.

So students can see key economic principles applied to real-life business situations, each chapter concludes with a **Business Case**.

Engaging Students with Effective Tools for Learning

ECONOMICS >> in Action

China Pegs the Yuan

In the early years of the twenty-first century, China provided a striking example of the lengths to which countries sometimes go to maintain a fixed exchange rate.



China provides a striking example of the lengths to which countries sometimes go to maintain a fixed exchange rate.

In the first act of this story, China acted to keep its currency down. The country's spectacular success as an exporter had produced a rising surplus on current account, and private investors became increasingly eager to shift funds into China, to invest in its growing domestic economy.

These capital flows were somewhat limited by foreign exchange controls—but kept coming in anyway. As a result of the current account surplus and private capital inflows, China found itself in the position described by panel (b) of Figure 18-7: at the target exchange rate, the demand for yuan exceeded the supply. Yet the Chinese government was determined to keep the exchange rate fixed at a value below its equilibrium level.

To keep the rate fixed, China had to engage in large-scale exchange market intervention, selling yuan, buying up other countries' currencies (mainly U.S. dollars) on the foreign exchange market, and adding them to its reserves. Indeed, between early 2009 and early 2014 China added \$2 trillion to its foreign exchange reserves, which by mid-

2014 had risen to a remarkable \$4 trillion, roughly 40% of GDP. Not surprisingly, China's exchange rate policy led to some friction with its trading partners, who felt that it had the effect of subsidizing Chinese exports.

But then came the second act of the story. After 2012 China's current account surplus declined, partly reflecting rising wages and the rise of new competitors like Vietnam and Bangladesh. Also, China's economic growth, while still fast, slowed, and investors grew nervous about a possible financial or political crisis. So capital inflows turned into capital outflows: the 2015 outflow was estimated at an amazing \$1 trillion, the great majority of it going to the United States.

In the absence of government intervention, this capital flight might well have caused a sharp decline in the yuan. But the Chinese government was as reluctant to see its currency fall as it had once been to see it rise. So China began using its reserves of foreign currency to buy large quantities of yuan. And by early 2017 reserves had fallen from \$4 trillion to less than \$3 trillion.

>> Quick Review

- Countries choose different **exchange rate regimes**. The two main regimes are **fixed exchange rates** and **floating exchange rates**.
- Exchange rates can be fixed through **exchange market intervention**, using **foreign exchange reserves**. Countries can also use domestic policies to shift supply and demand in the foreign exchange market (usually monetary policy), or they can impose **foreign exchange controls**.
- Choosing an exchange rate regime poses a dilemma. Stable exchange rates are good for business. But holding large foreign exchange reserves is costly, using domestic policy to fix the exchange rate makes it hard to pursue other objectives, and foreign exchange controls distort incentives.

>> Check Your Understanding 18-3

Solutions appear at back of book.

1. Draw a diagram, similar to Figure 18-7, representing the foreign exchange situation of China when it kept the exchange rate fixed. Express the exchange rate as U.S. dollars per yuan. Then show with a diagram how each of the following policy changes will eliminate the disequilibrium in the market.

- China no longer fixes its exchange rate and allows it to float freely.
- Placing restrictions on foreigners who want to invest in China
- Removing restrictions on Chinese who want to invest abroad
- Imposing taxes on Chinese exports, such as shipments of clothing, that are causing a political backlash in the importing countries

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PITFALLS

DEMAND VERSUS QUANTITY DEMANDED


When economists say "an increase in demand," they mean a rightward shift of the demand curve, and when they say "a decrease in demand," they mean a leftward shift of the demand curve—that is, when they're being careful.

In ordinary speech most people, including professional economists, use the word *demand* casually. For example, an economist might say "the demand for air travel has doubled over the past 15 years, partly because of falling airfares" when he or she really means that the *quantity demanded* has doubled.

It's OK to be a bit sloppy in ordinary conversation. But when you're doing economic analysis, it's important to make the distinction between changes in the quantity demanded, which involve movements along a demand curve, and shifts of the demand curve (see Figure 3-3 for an illustration). Sometimes students end up writing something like this:

"If demand increases, the price will go up, but that will lead to a fall in demand, which pushes the price down . . ." and then go around in circles. If you make a clear distinction between changes in demand, which mean shifts of the demand curve, and changes in *quantity demanded*, which means movement along the demand curve, you can avoid a lot of confusion.

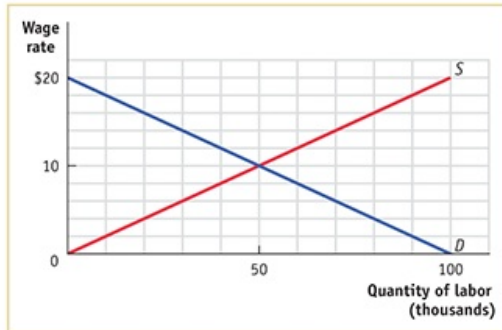
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3.  Access the Discovering Data exercise for Chapter 16 online to answer the following questions.
- How much did the monetary base change in the last year?
 - How did the change in the monetary base help in the government's efforts to finance its deficit?
 - Why is it important for the central bank to be independent of government policy makers?

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WORK IT OUT Interactive step-by-step help with solving this problem can be found online.

15. There is only one labor market in Profunctia. All workers have the same skills, and all firms hire workers with these skills. Use the accompanying diagram, which shows the supply of and demand for labor, to answer the following questions. Illustrate each answer with a diagram.



- What is the equilibrium wage rate in Profunctia? At this wage rate, what are the level of employment, the size of the labor force, and the unemployment rate?
- If the government of Profunctia sets a minimum wage equal to \$12, what will be the level of employment, the size of the labor force, and the unemployment rate?
- If unions bargain with the firms in Profunctia and set a wage rate equal to \$14, what will be the level of employment, the size of the labor force, and the unemployment rate?
- If the concern for retaining workers and encouraging high-quality work leads firms to set a wage rate equal to \$16, what will be the level of employment, the size of the labor force, and the unemployment rate?

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To reinforce learning, sections within chapters conclude with three tools: an application of key concepts in the **Economics in Action**; a **Quick Review** of key concepts; and a comprehension check with **Check Your Understanding** questions. Solutions for these questions appear at the back of the book.

Pitfalls teach students to identify and avoid common misconceptions about economic concepts.

End-of-chapter **Work It Out** skill-building problems provide interactive step-by-step help with solving select problems from the textbook.

Discovering Data exercises offer students the opportunity to use interactive graphs to analyze interesting economic questions.

Engaging Students with Technology

The technology for this new edition has been developed to spark student engagement and improve outcomes while offering instructors flexible, high-quality, research-based tools for teaching this course.



NEW! SaplingPlus combines powerful multimedia resources with an integrated e-Book and the robust problem library of Sapling Learning, creating an extraordinary new learning resource for students. Online homework helps students get better grades with targeted instructional feedback tailored to the individual. And it saves instructors time preparing for and managing a course by providing personalized support from a PhD or Master's level colleague trained in Sapling's system.

NEW! Pre-Lecture Tutorials foster basic understanding of core economic concepts before students ever set foot in class. Developed by two pioneers in active-learning methods—Eric Chiang, Florida Atlantic University, and José Vazquez, University of Illinois at Urbana–Champaign—this resource is part of the SaplingPlus learning path. Students watch Pre-Lecture videos and complete Bridge Question assessments that prepare them to engage in class. Instructors receive data about student comprehension that can inform their lecture preparation.

<< LearningCurve Adaptive Quizzing

Embraced by students and instructors alike, this incredibly popular and effective adaptive quizzing engine offers individualized question sets and feedback tailored to each student based on correct and incorrect responses. Questions are hyperlinked to relevant e-Book sections, encouraging students to read and use the resources at hand to enrich their understanding.

← Back to Study Plan Score: 245/600 Question Value: 25 points

One can determine whether a good is normal or inferior if one knows what happens to demand for the good when:

- the price of a substitute good increases.
- the price of a complement good increases.
- incomes increase.
- the price of a substitute good decreases.

Need help on this question?

[Read the ebook page on this topic \(no penalty\)](#) [Get a Hint \(fewer points\)](#) [Show answer \(no points\)](#)

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NEW! Graphing Questions >>

Powered by improved graphing, multi-step questions paired with helpful feedback guide students through the process of problem solving. Students are asked to demonstrate their understanding by simply clicking, dragging, and dropping a line to a predetermined location. The graphs have been designed so that students' entire focus is on moving the correct curve in the correct direction, virtually eliminating grading issues for instructors.

Supply and Demand End of Chapter Problem

16. Use the accompanying diagram to illustrate how the following event affects the equilibrium price and quantity of pizza.

a. The price of mozzarella cheese rises.

Market for Pizza

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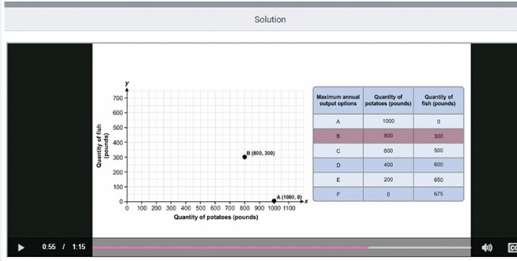
Work It Out >>

These skill-building activities pair sample end-of-chapter problems with targeted feedback and video explanations to help students solve problems step-by-step. This approach allows students to work independently, tests their comprehension of concepts, and prepares them for class and exams.

Trade-Offs and Trade Work It Out: Question 1 of 4

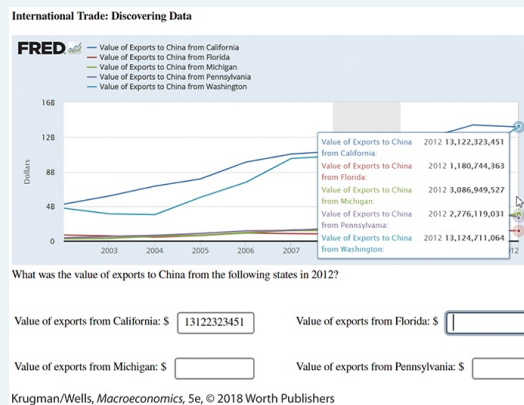
Atlantis is a small, isolated island in the South Atlantic. The inhabitants grow potatoes and catch fish. The accompanying table shows the maximum annual output combinations of potatoes and fish that can be produced. Obviously, given their limited resources and available technology, as they use more of their resources for potato production, there are fewer resources available for catching fish.

Using the data in the table, place the points in the accompanying graph to depict Atlantis's production possibilities frontier.



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<< NEW! Discovering Data Exercises help students interpret and analyze data by completing interactive, stepped-out exercises that use up-to-the-minute FRED data. These exercises help students develop data literacy and synthesizing skills, encourage economic analysis based on recent trends, and build an understanding of the broader economy.



Powerful Support for Instructors

FOR ASSESSMENT

Test Bank Fully revised for the Fifth Edition, the Test Bank, authored by Syon Bhanot, Swarthmore College, and Kevin Beckwith, Salem State University, contains multiple-choice and short-answer questions to help instructors assess students' comprehension, interpretation, and ability to synthesize.

End-of-Chapter and Work It Out Questions The in-text end-of-chapter problems have been converted to a multiple-choice format accompanied by answer-specific feedback. **Work It Out** activities walk students through each step of solving an end-of-chapter problem using choice specific feedback and video explanations for each step.

Homework Assignments Each chapter concludes with homework of various question types, including graphing questions featuring our updated graphing player, providing instructors with a curated set of multiple-choice and graphing questions that are easily assigned for graded assessment.

Practice Quizzes Designed to be used as a study tool for students, Practice Quizzes allow for multiple attempts as students familiarize themselves with chapter content.

ADDITIONAL RESOURCES

A Gradebook This useful resource offers clear feedback to students and instructors on individual assignments and on performance in the course.

LMS integration Included so that online homework is easily integrated into a school's learning management system and that an instructor's Gradebook and roster are always in sync.

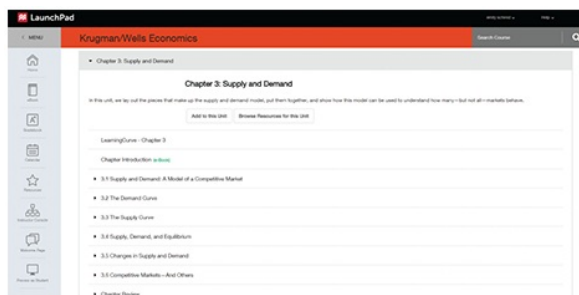
Instructor's Resource Manual Authored by Tori Knight, Carson-Newman

University, this manual offers instructors teaching materials and tips to enhance the classroom experience, along with chapter objectives, outlines, and other ideas.

Solutions Manual Prepared by the authors of the text, this manual offers detailed solutions to all of the text's end-of-chapter problems and the Business Case questions.

Interactive Presentation Slides These brief, interactive, and visually interesting slides, authored by Solina Lindahl, California Polytechnic State University, San Luis Obispo, are designed to hold students' attention in class with graphics and animations demonstrating key concepts, real-world examples, hyperlinks to relevant outside sources (including videos), and opportunities for active learning.

Additional technology resources available to support Krugman and Wells



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For longtime users, a new version of **LaunchPad** is available with this Fifth Edition. It includes an interactive e-Book, pre-built units offering instructors ready-made assignments with LearningCurve quizzes, graded homework, graphing questions, and Work It Out skill-building activities.



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FlipItEcon is available as a standalone resource or integrated with the SaplingPlus learning path. Developed by two pioneers in active-learning methods—Eric Chiang, Florida Atlantic University, and José Vazquez, University of Illinois at Urbana–Champaign—FlipIt gets students actively involved in learning economics in a fresh way. Students watch Pre-Lectures and complete Bridge Question assessments before class, helping them prepare for class so they can be engaged. FlipIt also gives instructors data about student comprehension that can inform their lecture preparation.

WHAT'S NEW IN THIS EDITION?

There are 33 new opening stories, Business Cases, and Economics in Action applications in this edition—nearly a third of these stories are new, ensuring that the Fifth Edition is truly current and relevant. Many other stories have been updated and refreshed.



Ryan Pyle/Getty Images

9 New Opening Stories

A Day in the Megacity

Big City, Not So Bright Ideas

Liftoff

Paying for a Hidden Empire

Hard Times in Helsinki

Different Generations, Different Policies

Spending Our Way Out of a Recession

Not So Funny Money

Old Books and New Ideas



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8 New Business Cases

How Priceline Revolutionized the Travel Industry

Uber Gives Riders a Lesson in Supply and Demand

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Acknowledgments

Our deep appreciation and heartfelt thanks go out to **Ryan Herzog**, Gonzaga University, for his hard work and extensive contributions during every stage of this revision. Ryan's creativity and insights helped us make this Fifth Edition possible. And special thanks to our three accuracy checkers of page proofs, to whom we are most grateful: Barbara Alexander, Babson College, Dixie Dalton, South-side Virginia Community College, and Thomas Dunn.

We must also thank the many people at Worth Publishers for their work on this edition: Chuck Linsmeier, Shani Fisher, Simon Glick, Sharon Balbos, Lukia Kliosis, Courtney Lindwall, Emily Schmid, Lindsay Neff, Kristyn Brown, and Joshua Hill in editorial. We thank Andrew Zierman, Tom Digiano, Tom Acox, and Travis Long for their enthusiastic and tireless advocacy of this book. Many thanks to the incredible production, design, photo, and media teams: Tracey Kuehn, Lisa Kinne, Susan Wein, Martha Emry, Blake Logan, Deb Heimann, Cecilia Varas, Elyse Rieder, Chris Efstratiou, Andrew Vaccaro, and Daniel Comstock.

Our deep appreciation and heartfelt thanks to the following reviewers, whose input helped us shape this Fifth Edition.

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Kelvin Wont, *University of Minnesota*
Hyun Woong Park, *Allegheny College*
Kristen Zaborski, *The State College of Florida*

We are indebted to the following reviewers, class testers, focus group participants, and other consultants for their suggestions and advice on previous editions.

Carlos Aguilar, *El Paso Community College*
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