

MICROECONOMICS

Principles for a Changing World



ERIC P. CHIANG

FOURTH EDITION

Microeconomics

Principles for a Changing World

4th
edition

Microeconomics

Principles for a Changing World

Eric P. Chiang
Florida Atlantic University



worth publishers

Macmillan Learning

New York

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Production Manager: **STACEY B. ALEXANDER**
Composition: **MPS LIMITED**
Printing and Binding: **LSC COMMUNICATIONS**
Cover Photos: **TSHOOTER/SHUTTERSTOCK (AIRPLANE WINDOW); ANTON BALAZH/SHUTTERSTOCK (EARTH IMAGE)**
Back Cover Photo: **IZABELA HABUR/ISTOCKPHOTO**

ISBN-13: 978-1-4641-8667-7

ISBN-10: 1-4641-8667-7

Library of Congress Control Number: 2016931971

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First printing

Printed in the United States of America

Worth Publishers

One New York Plaza

Suite 4500

New York, NY 10004-1562

www.macmillanlearning.com

To John and Tina Chiang:

my parents, who instilled in me a work ethic that allowed me to pursue endless opportunities

Tribute to Jerry Stone

Jerry Stone long-believed that the best principles of economics textbooks are authored by people invested in their students' classroom experience. The decisions made in the shaping of the first several editions of *CoreEconomics* were educated by Jerry's thirty-plus years in the classroom. The foundation of this edition is a testament to Jerry's accomplishment: a book envisioned, designed, and executed to be the principles of economics book that teaches better than any other textbook on the market.

Jerry had a remarkable career as a longtime teacher at Metropolitan State University of Denver and as an author of two successful principles of economics textbooks. Those who knew Jerry miss his steadfast commitment to the teaching of economics, a legacy that lives on in each new edition of *Economics: Principles for a Changing World*. Jerry Stone passed away after a difficult battle with cancer in August of 2010.

about the author



Eric P. Chiang received his bachelor's degree in economics from the University of Nevada Las Vegas, and his master's and doctorate in economics from the University of Florida. His first academic position was at New Mexico State University. Currently, Eric is an associate professor and graduate director of the Department of Economics at Florida Atlantic University. Eric also serves as the director of instructional technology for the College of Business.

In 2009 Eric was the recipient of Florida Atlantic University's highest teaching honor, the Distinguished Teacher of the Year Award. Among numerous other teaching awards, he also was named the Stewart Distinguished Professor at the College of Business. He has written approximately thirty articles in peer-reviewed journals on a

range of subjects, including technology spillovers, intellectual property rights, telecommunications, and health care. His research has appeared in leading journals, including the *Review of Economics and Statistics*, *Journal of Technology Transfer*, and *Southern Economic Journal*. He is a frequent presenter at major economics conferences and at universities across the country and around the world.

As an instructor who teaches both face-to-face and online courses, Eric uses a variety of technological tools, including clickers, Web-based polling, lecture capture, and homework management systems to complement his active-learning-style lectures. As an administrator in the College of Business, Eric's role as director of instructional technology involves assisting instructors with effectively implementing classroom technologies. In this position, Eric also ensures that the quality of online courses meets accreditation standards, including those set by the Association to Advance Collegiate Schools of Business (AACSB).

In addition to his dedication to teaching economic principles and his administrative duties, Eric devotes time to new research in economic education. His current research focuses on student learning outcomes in economics education based on the different methods of instruction in use today.

The fourth edition of *Economics: Principles for a Changing World* embodies Eric's devotion to economics education and the benefits of adapting to the new, often creative ways in which students learn and instructors teach.

In his spare time, Eric enjoys studying cultures and languages, and travels frequently. He has visited all fifty U.S. states, many of them to run half-marathons, and over eighty countries, and enjoys long jogs and walks when he travels in order to experience local life to the fullest.

Vision and Story of Economics

Economics is a way of looking at the world and understanding how and why it's changing.

Every time I teach principles of economics, I keep in mind that many of my students are learning about economics for the first time, and how they perceive my course may influence their perceptions of economics for a long time. This was a guiding notion in the first edition of *CoreEconomics* and continues with this fourth edition, renamed *Economics: Principles for a Changing World*. Why the change in title?

The fourth edition still represents the “core” of economic principles. But it also provides students with a global perspective on how economic problems are addressed, an appreciation of data and how data are used, and the application of technology. I believe that such an approach is best suited to the changing world we live in.

Instructors and students face two sets of problems with each principles of economics class. Instructors ask, “How many students can we reach today? Can we reach

each one?” Students constantly ask, “How does this affect *my* life?”

I have taught over 15,000 students since 2001—in small classrooms, large auditoriums, online classes, day classes, evening classes, and even overseas. The diversity of my students has provided abundant examples of learning by experience. Each setting provides a laboratory for using innovative teaching techniques and technologies to motivate students to appreciate the endless possibilities that thinking like an economist can provide.

The challenge, of course, is reaching each and every student. This challenge is made especially difficult by the sheer amount of information now available to students and subsequently by the increasing number of ways in which students learn.

Part of the work on this edition and the last one actually led me to consider active learning methodologies. Instructors often encourage or even require students to read their textbook prior to the related lecture. If students do, class time can be used more effectively to refine the knowledge. The problem is that students often don't read the book ahead of class.

When I started doing research on this, I eventually came to the conclusion that using a textbook in such a way may not be all that effective, and I instead was inspired to create FlipItEcon along with my co-author José Vázquez. The textbook and its technology obviously still play a critical role in learning, but they may be better suited to providing deeper understanding *after* the lecture. This edition was created with that active learning objective in mind. Each chapter contains a wealth of vivid examples, intuitive explanations, and visuals to help build a more comprehensive understanding of concepts.

It's no longer enough to write a good or even great

textbook. The book is just one avenue for delivering information when students are accustomed to consuming information from so many different sources. To reach students, it's now essential to deliver information in a variety of formats beyond the textbook or even the lecture itself. I've thus worked with Worth Publishers to develop each of the elements of technology for *Economics: Principles for a Changing World*, so it is much more of an effective teaching tool for instructors.

—Eric P. Chiang

Principles for a Changing World

Developed by Eric Chiang's experiences teaching thousands of students around the world.

Today's students are bombarded by information from many sources. To apply economic thinking to this constant flow of data, students must recognize differences in perspective. The most effective instructors are flexible, using different channels and methods to present information from different economic perspectives. *Economics: Principles for a Changing World* is designed to give you the tools to do so.

Technology as a Tool for Success

Students are accustomed to using technology to learn, just as modern economists use technology for research. It stands to reason that the technology portion of this fourth edition should be just as integral as the textbook itself.

- **FlipItEcon** The only system designed for prelecture and ideal for active learning. **Eric Chiang** is the only principles author to have also authored an online learning system.
- **LaunchPad** Groundbreaking homework system created as part of the fourth edition, with content from the author and used in his own classes.

- **CourseTutor** The most comprehensive study guide in economics, now in a digital format within LaunchPad and tied to Chiang's signature author videos.

Data Literacy

Data can be used to support any number of stories. *By the Numbers* features and their accompanying exercises focus on helping students to read and understand data, instilling a critical eye to the data presented in daily life.

Global Perspective

Most principles texts simply seek to provide an international context for economic principles. The *Around the World* features help students recognize that people all over the world are faced with many of the same economic problems, yet seek to solve these challenges in different ways.

WHAT'S NEW IN THE FOURTH EDITION?

Three themes integrated in every chapter with *By the Numbers* infographics, *Around the World* features, and LaunchPad activity callouts.

Expanded video program with an author video for every chapter, including new coverage of **health care** and the Affordable Care Act.

A complete revision of sustainability coverage in Chapter 13, "Externalities and Public Goods."



Rethinking the Connection Between Author, Text, and Technology

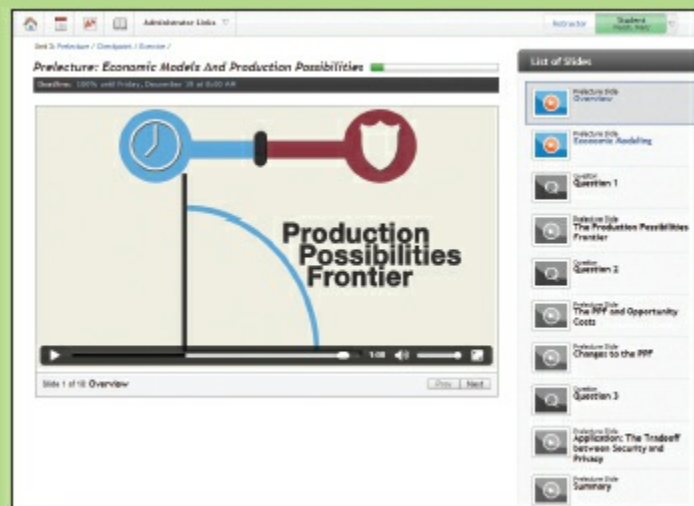
Ordinarily, textbooks are developed by first writing chapters, then making decisions about art and images, and finally assembling a test bank and ancillaries. Eric Chiang writes the text, develops the visual program, and assembles the resources for the homework system at the same time. These threads come together for a complete learning program, with every element integrated by the author himself.



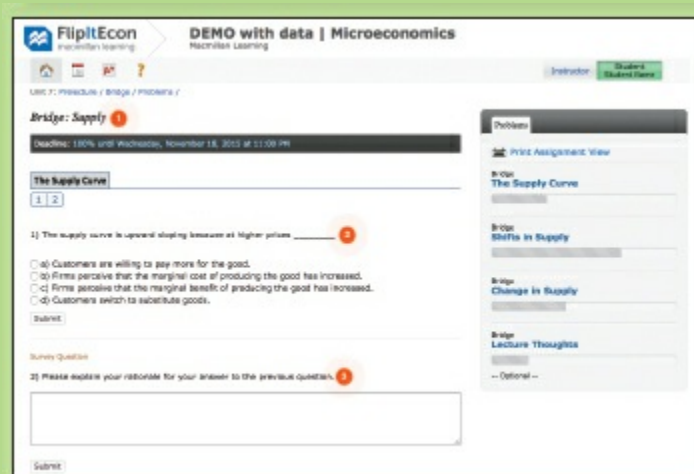
FlipItEcon FlipItEcon.com

Throughout his academic career, Eric Chiang has conducted a great deal of research on pedagogy in economic education. Much of this research has focused on increasing student retention and engagement, which inspired him to create **FlipItEcon** along with co-author José Vázquez. Although **FlipItEcon** can be used with any combination of textbook and resources, it's an ideal solution for

Economics, Fourth Edition, instructors simply looking to better prepare their students for class time and “flip” their level of engagement.



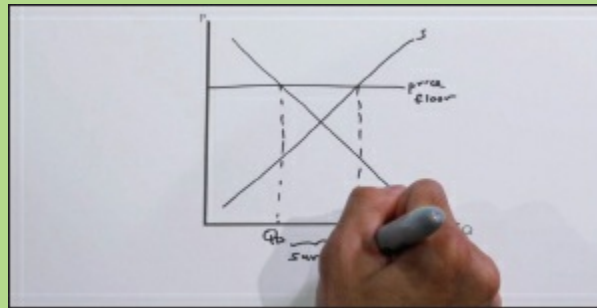
1. Animated **prelecture** tutorials provide a base-level understanding of core economic topics before students ever “set foot” in a class.
 - Straightforward animations provide information in an engaging format without distraction.
 - Information is “chunked” into short, easily remembered segments.
 - Embedded questions and a pacing system put learning in the students’ hands.



2. **Bridge** questions are designed to inform an instructor of students’ level of understanding before lecture as well as lead to

discussion, review, use of iClickers, or another activity during lecture. They “bridge” prelecture time to lecture time.

- Students first answer a question designed to either be open-ended, address a typical misconception, or otherwise lead to further discussion in the lecture.
- Students then must explain the rationale behind their answer, allowing the instructor a deep level of insight into their understanding.



Once students have completed the Prelectures and Bridges, an instructor can assign Problems as either practice or post-class homework.

- Each unit has between 30–50 Problems, and all non-definitional problems include video feedback provided by the author himself.



LaunchPad features the most author-driven and text-specific content of any integrated homework system available. In this edition, you will find exciting changes to **LaunchPad**, including a collection of new activities designed to augment in-chapter content and features to support student learning.

LaunchPad for *Economics: Principles for a Changing World*,

Fourth Edition, includes:

- **Complete e-Book**
- **Pre-built Units** Offer instructors and students readymade units for study with **LearningCurve** quizzes, e-Book pages, tutorials, and graded homework for every chapter. Units are flexible and easy to adapt or expand to suit individual preferences.
- **NEW! Expanded Author Videos** This hugely popular feature now provides concise and engaging explanations for nearly every chapter along with assessment, including new coverage of health care and the Affordable Care Act.



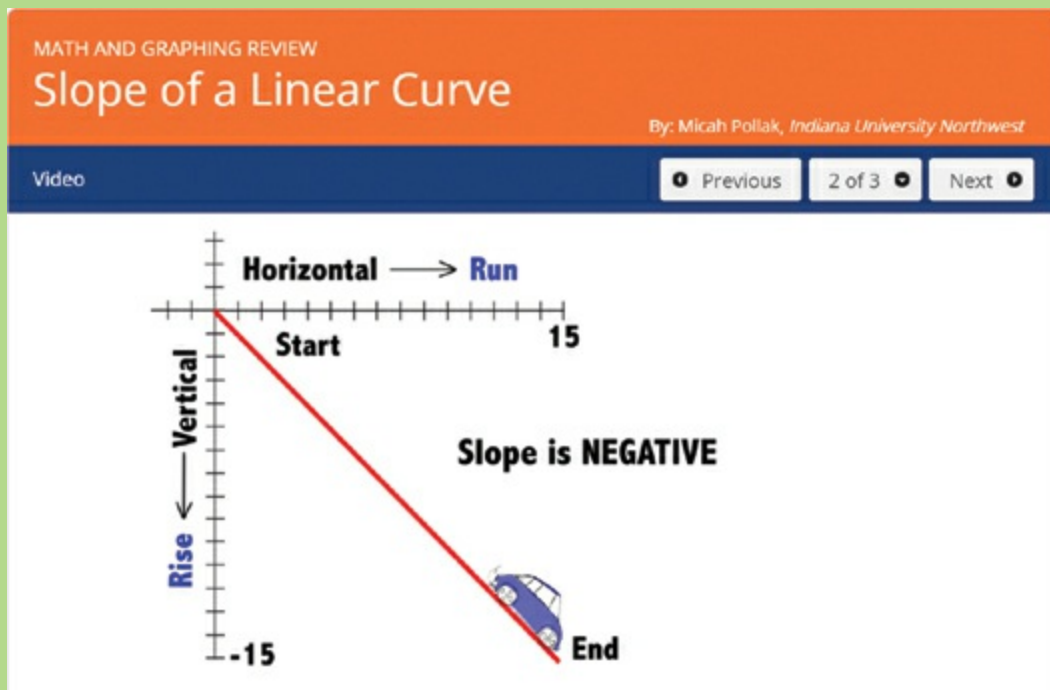
- **NEW! Digitized CourseTutor** One of the most notable features of *CoreEconomics* from its first edition, the CourseTutor study guide has now been brought into **LaunchPad** as part of the course units.

LearningCurve: Adaptive, formative quizzing, **LearningCurve**'s game-like quizzing motivates each student to engage with the course, and reporting tools help teachers get a handle on what their class needs. Just as apps are continuously updated and improved, **LearningCurve** now features the first in a series of updates to continually improve the user experience.

- *Customizable format* allows instructors to tailor quizzes

to the exact content they are teaching.

- *Accessible format* was redone in compliance with WCAG2.0 AA standards for users with disabilities.
- *New design* emphasizes useful study tools, like the personalized study plan, links to the e-Book, and hints to structure student reading.



NEW! **Math and Graphing Review** is a critically important new **LaunchPad** resource created by a team of instructors for students who would benefit from a review of basic math and graphing—skills needed to do well in an introductory economics course. It is organized as a series of activities, each with a pretest question, an animation with clear explanations, and five concluding questions to test comprehension.

CHAPTER 1.

A. At your local family fun center, miniature golf is \$12 per person for unlimited rounds in a day, while each go-kart session is \$8.

Given the information above, fill out the table below.

Rounds of miniature golf	Total cost to play miniature golf
0 rounds	\$ <input type="text"/>
1 round	\$ <input type="text"/>
2 rounds	\$ <input type="text"/>
3 rounds	\$ <input type="text"/>

SUBMIT

B. At your local family fun center, miniature golf is \$12 per person for unlimited rounds in a day, while each go-kart session is \$8.

Given the information above, fill out the table below.

Go-kart sessions	Total cost to play miniature golf
0 sessions	\$ <input type="text"/>
1 session	\$ <input type="text"/>
2 sessions	\$ <input type="text"/>
3 sessions	\$ <input type="text"/>

SUBMIT

NEW! **Work It Out** activities are skill-building tutorials that walk students through each step of solving an end-of-chapter problem using choice-specific feedback and video explanations for each step. The new activity is a useful extension of the end-of-chapter Solved Problem feature, which provide detailed text feedback while leading students through a stepped-out problem.

LaunchPad provides instructors with the following resources:

FOR ASSESSMENT

Test Bank contains more than 4,000 carefully constructed, thoroughly edited and revised, and comprehensively accuracy-checked questions. Each chapter's test bank contains “anchor” questions written by the author himself.

End-of-Chapter Problems have been converted to a multiple-choice format accompanied by answer-specific feedback.

Graded Homework Assignments Each **LaunchPad** unit concludes with a pre-built assignment, providing instructors with a curated set of multiple-choice and graphing questions that are easily assigned for graded assessment.

ADDITIONAL RESOURCES

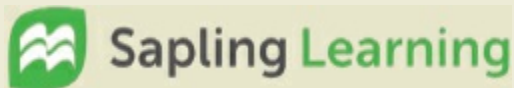
Gradebook offers clear feedback to students and instructors on individual assignments and on performance in the course as a whole.

LMS Integration ensures that **LaunchPad** is easily integrated into a school's learning management system and that an instructor's gradebook and roster are always in sync.

Instructor's Teaching Manual is the ideal resource for many classroom teaching styles. The Teaching Manual focuses on expanding and enlivening classroom lectures by highlighting varied ways to bring real-world examples into the classroom.

Lecture Slides are designed with visual learning in mind. This set of slides contains fully animated graphs, visual learning images, and additional examples and created links. *Economics*, Fourth Edition, is the only principles of economics textbook with slides created by the author.

Also available for instructors and students:



[saplinglearning.com](https://www.saplinglearning.com) Online homework system that helps students get better grades with targeted instructional feedback tailored to each individual's responses. It also helps instructors spend less time preparing for and managing a course by providing personalized classroom support from a doctorate- or master's-level colleague fully trained in Sapling's system.

The screenshot shows a homework question interface. At the top, there are utility icons for Print, Calculator, and Periodic Table. The question is labeled "Question 7 of 11" and has two "Incorrect" status indicators. The text of the question reads: "The graphs below illustrate an initial equilibrium for the economy. Suppose that oil prices increase. Use the graphs to show the new positions of aggregate demand (AD), short-run aggregate supply (SRAS), and long-run aggregate supply (LRAS) in both the short-run and the long-run, as well as the short-run and long-run equilibria resulting from this change. Then answer what happens to the price level and GDP." Below the text are two graphs. The "Short-Run Graph" has "Aggregate Price Level" on the vertical axis and "Real GDP" on the horizontal axis. It shows a downward-sloping AD curve, an upward-sloping SRAS curve, and a vertical LRAS curve. The initial equilibrium is at the intersection of AD and SRAS. The "Long-Run Graph" has the same axes and shows the AD and SRAS curves shifting to new positions, with the LRAS curve remaining vertical. The initial long-run equilibrium is at the intersection of the original AD and SRAS. Below the graphs are two sets of dropdown menus for answers. The first set asks for the short-run price level and GDP, with "increases" selected for the price level and "Select answer" for GDP. The second set asks for the long-run price level and GDP, with "decreases" selected for the price level and "Select answer" for GDP. A red error message on the right says "Incorrect, in the short-run, does this change affect potential output of the economy?". At the bottom, there are navigation buttons: Previous, Give Up & View Solution, Try Again, Next, and Exit.

[econedactive.com](https://www.econedactive.com) EconED Active is a community focused on curating the best open source active learning content aligned to key topics in principles of economics. Find everything from

classroom activities to experiments, to new ways of presenting topics. Rate and share ideas and connect with other instructors passionate about teaching.

The screenshot shows the EconED Active website interface. At the top, there is a blue header with the EconED logo and the text "All Places > The Economics Community EconED Active". Below the header is a navigation bar with links: Welcome, Resources by Topic, Activity, Content, People, Images, Subspaces and Projects, Calendar, More, Actions, About, and Share. A login prompt reads "Log in to follow, share, and participate in this community. Not a member? Join Now!". The main content area is divided into several sections: a left sidebar with "Search by Topic", "Start a Conversation", "Join the Community", and "Add a Resource" (with sub-links for "Upload existing resource" and "Create new resource"); a central "Get your guide to active learning." section with a sub-header and a paragraph of text; a "POPULAR CONTENT" section listing items like "A Goldsmith Exercise for Learning Money Creation Activity"; and a right sidebar with "JUMPING IN" (listing "Why Interactive Teaching?", "Getting Started with Interactive Teaching", "Additional Resources", and "EconED Conference"), "RELATED LINKS" (with "Browse our economics titles"), and "TAGGED CONTENT" (listing several articles and resources).

community.macmillan.com Worth Economics partners with authors, instructors, and students to pioneer a complete learning experience. Our Economics Community is an outlet for you to interact with some of the thought leaders of economics education, follow their latest work, and share your own experiences in teaching and learning.



EconED Active
Stimulate, provoke, and engage your students with our growing collection of open resources for active learning.



EconED Conference
A unique conference focused on the intersection of education, economics, and technology.

FEATURED ECONED VIDEO



"The Industrial Organization of Online Education" Featuring Alex Tabarrok

MAGILLAN ECONOMICS AT SXSWEDU

The Research University in the New Millennium

Welcome!

The Economics Community is a partnership between Macmillan Economics, instructors, and students to pioneer a complete learning experience. Follow the thought leaders of economics education.

Join the community



LIVE BLOG: AROUND THE WORLD IN 80 HOURS

- Around the World in 80 Hours #17: Water is Life
- Around the World in 80 Hours #16: Remember Cecil?
- Around the World in 80 Hours #15: Soweto
- Around the World in 80 Hours #14: Apartheid Museum
- Around the World in 80 Hours #13: Hakuna Matata
- Around the World in 80 Hours #12: Brazil Jumps Off a Bridge
- Bridge Jumping in Brazil
- Around the World in 80 Hours #11: Batman Alley
- Around the World in 80 Hours #10: The Japanese Brazilians
- Around the World in 80 Hours #9: Trekking Sao Paulo

More Results

UPCOMING EVENTS

No events are currently scheduled.

ASK A QUESTION IN THE ECONOMICS COMMU...

Ask a question

FEATURED PEOPLE

- Eric Chiang**
Associate Professor and Direct...
- Tyler Cowen**
- Jennifer Imzeki**
- Paul Krugman**
- Alex Tabarrok**
- Jose Vizquez**
Professor
- Robin Wells**

Thinking About Data Literacy

Students who continue on from principles to intermediate microeconomics will be asked to use data to solve economics problems. Before they can get to that point, they must learn to interpret and understand various formats of data presented to them. With the abundance of data in our daily lives and its growing importance in all manner of professions, developing this skill is just as important to students who will never take an economics course beyond principles as it is to future economists.

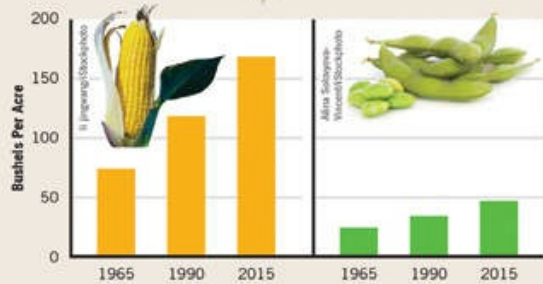
BY THE NUMBERS

Growth, Productivity, and Trade Are Key to Our Prosperity

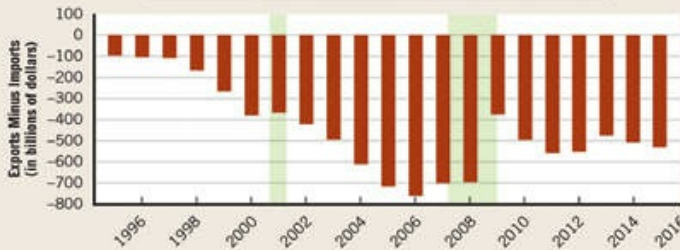
Over the last century, investment in education, infrastructure, and technology development, along with increased international trade, has resulted in increased productivity and growth, leading to higher incomes and standards of living around the world.



Farm productivity has dramatically increased since 1965 as a result of modern agricultural machinery and new seeds and fertilizers, resulting in higher yields per acre of crops such as corn and soybeans.



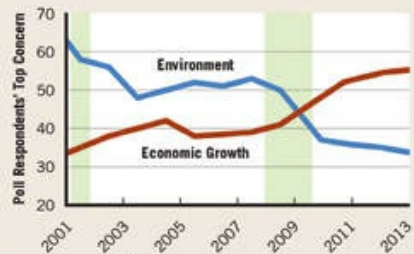
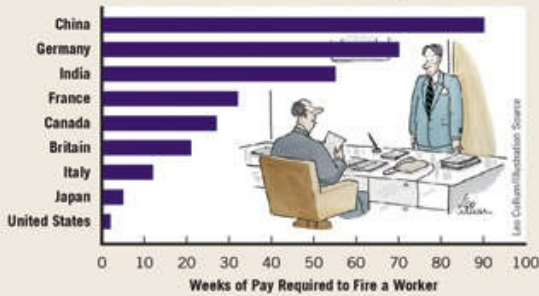
Go to **LaunchPad** to use the latest data to recreate this graph.



Our trade balance (exports minus imports) has grown steadily negative over the last two decades. During each of the last two recessions (shaded areas), our purchases of imports fell, improving our trade balance.

The By the Numbers — Do It Yourself! Lab Activity for this chapter will focus on the U.S. trade balance over the past two decades.

Firing workers can be costly in some countries. Firing a full-time worker with 20 years at the company costs roughly 70 weeks pay in Germany, but it is even more costly in China.



American attitudes about concerns for the environment or a preference for economic growth vary based on the state of the economy. As the economy enters a recession (shaded areas), the desire for economic growth increases while concern for the environment ebbs.

The **By the Numbers** feature in every chapter helps students visualize data from real life and offers an easy way to see how they link to concepts in the chapter. In addition to online **LaunchPad** exercises in interpreting data, two end-of-chapter problems test students on how well they understand the data presented.

Thinking About What Global Means

One of the unique things about Eric Chiang is his philosophy on travel. Essentially, get in, get out, and try to gain as many impressions of world locales as you can. Years ago, he started his “Around the World in 80 Hours” trips where he would circumnavigate the globe, briefly stopping off in international spots, and film himself talking about the local economy. Why? People around the world are faced with many of the same economic problems and yet they solve them in surprisingly different ways.

**Tokyo Disneyland:
Is THAT the Line for
Space Mountain?!**

What are some factors that cause Tokyo Disneyland to be so crowded even during the middle of winter?

How long are you willing to wait to experience your favorite ride at a theme park? 20 minutes? 60 minutes? How about 3 hours? On an ordinary day at Tokyo Disneyland, one of the most popular theme parks in the world, the line for its famous attractions such as Space Mountain, Splash Mountain, and Tower of Terror can reach 200 minutes. . . . That's over a 3-hour wait to enjoy a 3-minute ride! What causes lines to form at theme parks?

Theme park rides have lines because the quantity of rides demanded exceeds the quantity supplied. Why is that? Because most theme parks



A 200-minute wait for a ride at Tokyo Disneyland.

charge a fixed admission fee for unlimited rides, visitors typically demand more rides than the theme park is able to supply, even if a ride is operating at full capacity. The extent of the shortage, and consequently the length of wait time, are influenced largely by market factors.

First, consider the role of preferences. Disneyland has a worldwide following, and for those living in Japan, visiting Tokyo Disneyland is certainly

easier than visiting Disney parks in California or Florida. Second, consider the number of potential buyers. Tokyo Disneyland is located in a metropolitan area with over 30 million people. The sheer number of potential visitors will lead to higher demand. And third, consider the role of pricing. Given its popularity, Tokyo Disneyland could charge higher prices to reduce the quantity demanded. Yet, in 2016 a one-day adult admission to Tokyo Disneyland cost only \$58, while its counterparts in California and Florida charged nearly \$120.

The combination of preferences, proximity to potential buyers, and relatively low prices cause demand for Tokyo Disneyland rides to far exceed the park's reasonable capacity (at least by U.S. standards), creating massive lines. Yet for enthusiastic Disney fans, smiling faces abound. Despite the crowds, it's still the "Happiest Place on Earth!"

GO TO **LaunchPad** TO PRACTICE THE ECONOMIC CONCEPTS IN THIS STORY

**Nunavut: Land of
Abundance and Scarcity**

How does the condition of scarcity determine the economic tradeoffs observed in Canada's newest and largest province?

What products is Canada known for? Canada is a northern country known for its lakes and forests. And what are forests made of? Trees, of course. How important are trees? Just ask the 32,000 residents in the newest Canadian province of Nunavut. They know, because they have no trees!

Larger in area than Alaska and California combined, Nunavut has many natural resources, but lacks the



one resource most often associated with Canada: trees. With much of Nunavut's land mass situated above the tree line, it must rely on goods supplied by other provinces and imported from other countries for its building materials and agricultural products. A

visit to Nunavut highlights the prevalence of scarcity and the necessity of specialization and trade.

For example, nearly all of Nunavut's food, household goods, and building materials must be flown in to its sparsely populated communities accessible only by air or snowmobile, resulting in extremely high prices for most goods. However, Nunavut has many gold mines and fisheries that allow it to specialize and export precious metals and its famous Arctic char fish, a close relative to the salmon.

Residents of even the most remote places of the world can solve the challenge of scarcity and gain access to many goods and services by engaging in specialization and trade.

GO TO **LaunchPad** TO PRACTICE THE ECONOMIC CONCEPTS IN THIS STORY

Eric started these journeys on his own accord to help illustrate this concept to his students. His experiences have been developed into the new **Around the World** feature in every chapter. Students read a synopsis of an international issue faced around the world, view media to further their understanding (some featuring Eric himself), and answer a question on how that issue is resolved in different places throughout the world.