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# ECONOMICS

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**Third Edition**  
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# **ECONOMICS**

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**Third Edition**

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# **ECONOMICS**

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# Dedication

***With love for Annika, Aras, Arda, Eli,  
Greta, Mason, Max, and Noah,  
who inspire us every day.***

# About the Authors



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His research includes over 200 peer-reviewed journal articles and several published books, including the 2013 international best-seller, *The Why Axis: Hidden Motives and the Undiscovered Economics of Everyday Life* (with Uri Gneezy).



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## What's New in the Third Edition?

This revision is driven by the extraordinary period of economic history in which we are living in and its rich supply of applications that help bring the content into context for today's learners.

In our new edition of *Economics*, in addition to updating the existing data and empirical features, we have added Evidence-Based Economics Problems at the end of each chapter. These exercises provide students meaningful practice in analyzing and interpreting real-world economic questions. Here are some examples of other changes in the edition. Throughout this revision, we updated the data and charts to the most recent releases and made the text current for the recent global recession, the COVID-19 pandemic, and the 2020 election. We also undertook a number of more specific changes and added various new materials as we detail next.

- In Chapter 1, we've added new coverage on how to examine the economic impacts of COVID-19 through positive and normative lenses. We also discuss the trade-offs between health and economic output during the COVID-19 crisis. New Evidence-Based Economics Problems focus on the opportunity cost of social media, higher education, and going to a movie.
- In Chapter 4, we tell the story of how stay-at-home orders in 2020 impacted the demand for gasoline. A new Letting the Data Speak section profiles how the price of crude oil temporarily fell below \$0 per barrel.
- Chapter 5, a new Letting the Data Speak feature focuses on the impact of tax salience on price elasticity. New Evidence-Based Economics Problems explore the effectiveness of financial incentives to get people to quit smoking.
- In Chapter 6, a new Letting the Data Speak segment provides an example of long-run competitive equilibrium by examining the effect of base fare increases on Uber driver earnings.
- In Chapter 7, a new Letting the Data Speak feature "Adam Smith Visits the White House" examines the costs and benefits of government regulation and safety.
- In Chapter 9, a new Choices & Consequences example "Coronavirus Vaccination: Positive Externalities in Spots You Never Imagined," explores the society-wide impacts vaccination. New Evidence-Based Economics Problems analyze the linkage between hydraulic fracking and increased rates of earthquakes in Oklahoma.
- In Chapter 11, we emphasize the role of microeconomics in examining prominent social issues, from "Paying for Worker Training" to "Broadband and Inequality." New Evidence-Based Economics opener on employment discrimination and the Democratic presidential nomination. Using empirical research from economists Claudia Goldin, Cecilia Rouse, Marianne Bertrand, Sendhil Mullainathan, Kerwin Charles, and Jon Guryan, a new Evidence-Based Economics exercise examines the role of discrimination in explaining differences in wages across gender and ethnicity.
- In Chapter 14, we explore the connection between market power and the two-party system in a new Letting the Podcast Speak feature.
- In Chapter 16, we discuss how corporate social responsibility programs can address information asymmetries in the workplace in a new Letting the Podcast Speak section.



- Chapter 18 includes a new Letting the Podcast Speak feature focused on how companies can optimize apologies to their customers. The feature uses field experiment data of millions of Uber trips to answer the question “What is the most effective and efficient way to say ‘I’m sorry’?”
- In Chapter 19, we explore the macroeconomic indicators related to the COVID-19 recession. A new Evidence-Based Economics Problem highlights the national income accounting identity.
- Chapter 20 includes new Evidence-Based Economics Problems on efficiency and determinants of cross-country differences in GDP per capita.
- Chapter 21 features new Evidence-Based Economics Problems on GDP growth and investment into human capital, physical capital, and technology.
- In Chapter 22, a new Evidence-Based Economics Problem examines whether economic development is tied to climate.
- In Chapter 23, we added a new Evidence-Based Economics section about wages and employment during the COVID-19 pandemic. A new Letting the Data Speak feature profiles racial discrimination in the labor market. An updated “Luddites and Robots” Choice and Consequence feature explores future implications of AI on employment. New Evidence-Based Economics Problems assess downward wage rigidity and labor market contractions.
- In Chapter 24, we examine savings rate and bank failures during the COVID-19 recession and include a new Evidence-Based Economics Problem on bank failures.
- In Chapter 25, we explore the Fed’s reaction to the COVID-19 recession. Our new treatment of monetary policy emphasizes interest on reserves (IOR), which is now the key mechanism that the Fed uses to pin down the federal funds rate. A new Letting the Data Speak section includes research on inflation expectations. The Evidence-Based Economics Problem examines the quantity theory of money.
- In Chapter 26, we offer an updated and expanded discussion on the causes of recessions and a new Evidence-Based Economics section tracking the recession of 2020 and the global economic impact of the COVID-19 pandemic. New Evidence-Based Economic Problems cover the 2007–2009 and 2020 recessions, as well as an application of Okun’s Law.
- In Chapter 27, we’ve added a new discussion of the government expenditure multiplier during the 2007–2009 and 2020 recessions. We examine shifting the federal funds rate by shifting the demand for reserves and analyze recent changes in the Fed’s balance sheet and the federal funds rate. Chapter 27 also includes this new material:
- We discuss quantitative easing, the Fed’s role as lender of last resort, and monetary policy at the zero lower bound.
- A new Evidence-Based Economic Problem examines the spending multipliers of the CARES act, which builds from in-chapter explorations of the CARES act and the impact of fiscal policy on government deficits.
- Chapter 28 contains an updated Choice and Consequence feature on trade policy and politics, including recent changes in U.S. trade policy and Brexit. New Evidence-Based Economics Problems examine economic growth, different sectors of the economy, and child labor.
- Using updated data from 2020, Chapter 29 investigates the foreign exchange market and how it relates to the real economy. Updated Evidence-Based Economics Problems on managed exchange rates explore how George Soros’s hedge funds made considerable profits by betting on the devaluation of the British pound, Thai baht, and U.S. dollar.

# Solving Learning and Teaching Challenges

Many students who take introductory economics courses have difficulty seeing the relevance of the key concepts of opportunity cost, trade-offs, scarcity, and demand and supply to their lives and their careers. This reduces the willingness of many students to prepare for class and to be engaged during class. With this textbook, we show them how to apply economic thinking creatively to improve their work, their choices, and their daily lives. One of our main objectives in writing this textbook was to show that the fundamentals of economics are not just exciting but also alive with myriad personal applications.

We love economics. We marvel at the way economic systems work. When we buy a smartphone, we think about the complex supply chain and the hundreds of thousands of people who played a role in producing an awe-inspiring piece of technology that was assembled from components manufactured across the globe.

The market's ability to do the world's work without anyone being in charge strikes us as a phenomenon no less profound than the existence of consciousness or life itself. We believe that the creation of the market system is one of the greatest achievements of humankind.

We wrote this book to highlight the simplicity of economic ideas and their extraordinary power to explain, predict, and improve what happens in the world. We want students to master the *essential* principles of economic analysis. With that goal in mind, we identify the three key ideas that lie at the heart of the economic approach to understanding human behavior: optimization, equilibrium, and empiricism. These abstract words represent three ideas that are actually highly intuitive.

The breakneck speed of modern technological change has, more than ever, injected economics into the lives—and hands—of our students. The technologies that they use daily illustrate powerful economic forces in action: Uber users observe real-time congestion in the transportation market when they confront surge pricing, and Airbnb travelers explore the relationships among location, convenience, and price by comparing listings near different subway stops in the same city.

As educators, it's our job to transform economic concepts into language, visual representations, and empirical examples that our students understand. Today, markets are much more interactive than they were only a decade ago, and they exemplify that it is not just competitive markets with perfect information that are relevant to our economic lives. Our students routinely take part in auctions, purchase goods and services via organized platforms such as Uber, have to struggle with pervasive informational asymmetries as they participate in online exchanges, and have to guard themselves against a bewildering array of mistakes and traps that are inherent to these new transactions.

In this ever-changing world, students must understand not just well-known economic concepts such as opportunity cost, supply, and demand but also modern ones such as game theory, auctions, and behavioral mistakes. It is these modern concepts, which are bit parts in most Principles textbooks, that occupy center stage in ours. Today economic analysis has expanded its conceptual and empirical boundaries and, in doing so, has become even more relevant and useful.

This new world provides opportunities for the teaching of economics as well, provided that we adjust our Principles canon to include modern and empirically based notions of economics. This has been our aim from day one and continues to be our aim in this third edition.

At a time when competing empirical claims abound and news sources across the political spectrum are denounced as “fake,” our students need the skills to systematically question and evaluate what they read. That is why, in our Evidence-Based Economics segments and end-of-chapter assignments, we examine both the implications and the limitations of academic studies. We hope that our textbook will help form a new generation of careful thinkers, smart decision makers, engaged citizens, and even a few future economists!

# Our Vision: Three Unifying Themes

## Optimization

The first key principle is that people try to choose the best available option: optimization. We don't assume that people always successfully optimize, but we do believe that people try to choose the best option and often do a relatively good job of it. Because most decision makers try to choose the alternative that offers the greatest net benefit, optimization is a useful tool for predicting human behavior. Optimization is also a useful prescriptive tool. By teaching people how to do cost-benefit analysis we improve their decisions and the quality of their lives. By the end of this course, every student should be a skilled optimizer—without using complicated mathematics, simply by using economic intuition.

## Equilibrium

The second key principle extends the first: economic systems operate in equilibrium, a state in which everybody is simultaneously trying to choose the best option. We want students to see that they're not the only ones maximizing their well-being. An economic system is in equilibrium when each person feels that he or she cannot do any better by picking another course of action. The principle of equilibrium highlights the connections among economic actors. For example, Apple stores stock millions of iPhones because millions of consumers are going to turn up to buy them. In turn, millions of consumers go to Apple stores because those stores are ready to sell those iPhones. In equilibrium, consumers and producers are simultaneously optimizing, and their behaviors are intertwined.

## Empiricism

Our first two principles—optimization and equilibrium—are conceptual. The third is methodological: empiricism. Economists use data to test economic theories, learn about the world, and speak to policymakers. Accordingly, data play a starring role in our book, though we keep the empirical analysis extremely simple. It is this emphasis on matching theories with real data that we think most distinguishes our book from others. We show students how economists use data to answer specific questions, which makes our chapters concrete, interesting, and fun. Modern students demand the evidence behind the theory, and our book supplies it.

For example, we begin every chapter with an empirical question and then answer that question using data. One chapter begins by asking: Would a smoker quit the habit for \$100 per month? Later in that chapter, we describe how smoking rates fell when researchers paid smokers to quit.

In our experience, students taking their first economics class often have the impression that economics is a series of theoretical assertions with little empirical basis. By using data, we explain how economists evaluate and improve our scientific insights. Data also make concepts more memorable. Using evidence helps students build intuition because data move the conversation from abstract principles to concrete facts. Every chapter sheds light on how economists use data to answer questions that directly interest students. Every chapter demonstrates the key role that evidence plays in advancing the science of economics.

## Features

All of our features showcase intuitive empirical questions.

- In **Evidence-Based Economics (EBE)**, we show how economists use data to answer the question we pose in the opening paragraph of the chapter. The EBE uses actual data from field experiments and lab experiments or naturally occurring data while

highlighting some of the major concepts discussed within the chapter. This tie-in with the data gives students a substantive look at economics as it plays out in the world around them.

The questions explored aren't just dry intellectual ideas; they spring to life the minute the student sets foot outside the classroom—*Is Facebook free? Is college worth it? Will free trade cause you to lose your job? Is there value in putting yourself into someone else's shoes? What is the optimal size of government? Is there discrimination in the labor market?*

## EVIDENCE-BASED

## ECONOMICS

### Q: Would a smoker quit the habit for \$100 per month?



At the beginning of this chapter, we posed a question concerning whether a smoker would quit the habit for \$100 a month. The tools of this chapter can help us begin to think about whether such an incentive can work and why it might work.

In thinking about such a reward, we have learned that the impact of an increase in income leads to changes in the consumer budget constraint and subsequently the demand for goods and services. To see these tools in action, we return to the shopping-spree example. Exhibit 5.5 shows the mechanics behind the effects of an increase in what we have available to spend.

With that foundation laid, we can return to the question of quitting smoking for a month. Given our economic framework, the very same principle that was at work in the shopping-spree problem applies when considering the smoker's problem. By providing \$100 for not smoking, we create a trade-off between the current benefits of smoking and the benefits obtained by \$100 of increased income. There is also another saving: by not smoking, you save the money otherwise spent on cigarettes or cigars. For simplicity, let's assume that is another \$100 per month. Thus the comparison that we need to make is whether, at the margin, \$200 of additional monthly income provides more benefits than the current benefits you gain from smoking. If they do, then you quit smoking. If they do not, then you continue smoking and miss out on the \$200 incentive.

- **Letting the Data Speak** is another feature that analyzes an economic question by using real data as the foundation of the discussion. Among the many issues we explore are such questions as *Should McDonald's be interested in elasticities? Do wages really go down if labor supply increases? Why do some firms advertise while others don't?*

## LETTING THE

## DATA SPEAK

### Fair Trade Products

#### What's Behind the Boom?

In response to the feeling that the growth of free trade has led to the exploitation of developing countries, a new market has opened up for the consumer concerned with a broad variety of production-related issues, including the environment, fair labor practices, and child labor in the developing world. Goods imported from the developing world that meet certain criteria are certified by third-party organizations as "fair trade" products.

To receive a fair trade label, the production of a good has to meet certain standards. For example, if the producer doesn't allow unionization, uses child or slave labor, or doesn't adhere to the UN Charter on Human Rights, then the product can't be classified as fair trade.

Consumers can't seem to get enough fair trade products. Sales growth for fair trade goods has reached double-digit proportions over the past decade. Surprisingly, sales continued to expand even after the 2008 recession, growing 15 percent in 2009.<sup>1</sup>

Despite the recent surge in demand for fair trade products, not everyone is a fan. Overseeing billions of dollars of production isn't easy, and the capacity for certifying organizations to



enforce labor standards sometimes can't keep up with the increasing demand for fair trade products.<sup>2</sup>

- In keeping with the optimization theme, in a feature titled **Choice & Consequence** we ask students to make a real economic decision or evaluate the consequences of past real decisions. We then explain how an economist might analyze the same decision. Among the questions investigated are *Do people really optimize? Should LeBron James paint his own house? Does revenge have an evolutionary logic?*

## CHOICE & CONSEQUENCE

### Coronavirus Vaccination: Positive Externalities in Spots You Never Imagined

Externalities are the result of agents trying to do the best they can and ignoring how their actions affect others. In this sense, it would be wrong to think of externalities as “mistakes.” Externalities may result from just *not knowing* the harm we cause others. In this case, we might make choices that we later regret.

Consider the case of coronavirus (COVID-19) vaccination. When you make the decision of whether to be vaccinated against COVID-19, you likely consider only the private benefits and costs from the vaccination—namely, the benefits and costs to yourself. But you are not the only person to incur benefits or costs.

If you decide to take the COVID-19 shot, others gain: once you are vaccinated, they are now protected against catching the coronavirus from you. But people can also lose if you choose not to get the shot because you could catch the coronavirus and spread it. Many of us do not naturally consider such externalities—whether positive or negative—when making a decision about whether to get a vaccination, but governments around the globe are beginning to bring such factors into the public eye. Indeed, in shutting down schools, business, airports, and any event that holds more than 50 people, policymakers have brought the externality discussion to every household in the world.

When considering the typical flu, how important is the externality? Researchers who have studied the



externalities of vaccinations report quite large effects.<sup>2</sup> For instance, in certain situations, the external effect of you getting a flu shot can be as high as 1.5 infections. Given that approximately 10 percent to 20 percent of the U.S. population contracts the flu each year, this estimate reveals the potential value in flu vaccination programs.

If you find it important to take account of your own externalities, the next time you are weighing your private benefits and costs of getting a flu or coronavirus vaccination, remember that not getting a shot could result in as many as 1.5 more infections for everyone else. In this sense, by avoiding the needle you have imposed a great externality on the rest of the population.

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