THIRD EDITION

MODERN PRINCIPLES OF ECONOMICS

Tyler Cowen • Alex Tabarrok

You'll be hooked from page 1...

The prisoners were dying of scurvy, typhoid fever, and smallpox, but nothing was killing them more than bad incentives. In 1787, the British government had hired sea captains to ship convicted felons to Australia. Conditions on board the ships were monstrous; some even said the conditions were worse than on slave ships. On one voyage, more than one-third of the men died and the rest arrived beaten, starved, and sick. A first mate remarked cruelly of the convicts, "Let them die and be damned, the owners have [already] been paid for their passage."[1]

...by the most compelling writing in the principles of economics market...

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A skyrocketing price is a signal to bring resources here!

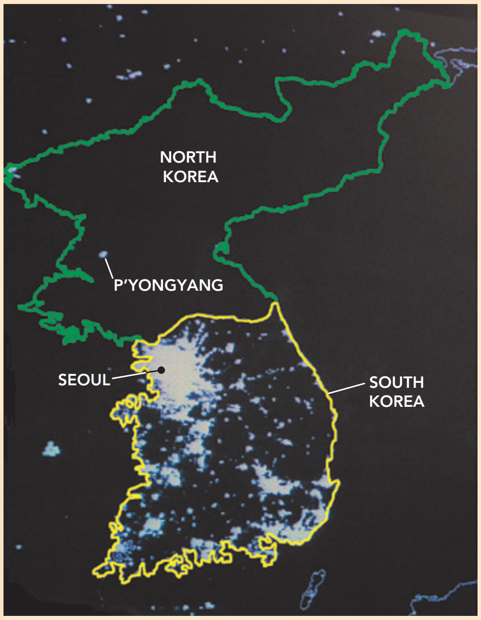
JOHN KOBAL FOUNDATION /MOVIEPIX/GETTY IMAGES

Marxist Economics Groucho said he didn't want to join any club that would have him as a member, thus pioneering the analysis of adverse selection.

JONATHAN ERNST/REUTERS/LANDOV

In the market for used cars . . . The lemons are the only used cars that will be bought and sold.

FIGURE 27.6



JASON REED/REUTERS/LANDOV

Can You Tell Which Country Has Better Institutions? South Korea and North Korea photographed at night from outer space.

...and the beautiful, uncluttered design with pictures and captions that drive the story.

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The compelling examples enhance the story and illuminate concepts...

KEY: CHAPTER OPENING means chapter opening example; RUNNING EXAMPLE means running example in the chapter.

Chapter 1: The Big Ideas

Page 1 CHAPTER OPENING: A small change in wording has a big effect on the incentives of captains transporting convicts to Australia.
Page 3: How can drugs be too safe?

Chapter 2: The Power of Trade and Comparative Advantage

Page 21: Economics is about cooperation, not just competition.

Chapter 3: Supply and Demand

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Page 36: Intuitive picture of the supply of oil and why it slopes upward

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Page 108 : Wage subsidies?

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MODERN PRINCIPLES OF ECONOMICS

Third Edition

Tyler Cowen
George Mason University

Alex Tabarrok
George Mason University

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Economics is the study of how to get the most out of life.

Tyler and Alex

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ALEX TABARROK

ABOUT THE AUTHORS

Tyler Cowen (left, in North Korea) is Holbert C. Harris Professor of Economics at George Mason University. His latest book is *The Great Stagnation*. With Alex Tabarrok, he writes an economics blog at MarginalRevolution.com. He has published in the *American Economic Review, Journal of Political Economy,* and many other economics journals. He also writes regularly for the popular press, including the *New York Times,* the *Washington Post, Forbes,* the *Wilson Quarterly, Money Magazine,* and many other outlets.

Alex Tabarrok (right, in South Korea) is Bartley J. Madden Chair in Economics at the Mercatus Center at George Mason University. His latest book is *Launching the Innovation Renaissance*. His research looks at bounty hunters, judicial incentives and elections, crime control, patent reform, methods to increase the supply of human organs for transplant, and the regulation of pharmaceuticals. He is the editor of the books *Entrepreneurial Economics: Bright Ideas from the Dismal Science* and *The Voluntary City: Choice, Community, and Civil Society,* among others. His papers have appeared in the *Journal of Law and Economics, Public Choice, Economic Inquiry,* the *Journal of Health Economics,* the *Journal of Theoretical Politics,* the *American Law and Economics Review,* and many others. Popular articles have appeared in the *New York Times,* the *Wall Street Journal, Forbes,* and many other magazines and newspapers.

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PREFACE: TO THE INSTRUCTOR

> The prisoners were dying of scurvy, typhoid fever, and smallpox, but nothing was killing them more than bad incentives.

That is the opening from Chapter 1 of *Modern Principles*, and only an economist could write such a sentence. Only an economist could see that incentives are operating just about everywhere, shaping every aspect of our lives, whether it be how good a job you get, how much wealth an economy produces, and, yes, how a jail is run and how well the prisoners end up being treated. We are excited about this universal and powerful applicability of economics, and we have written this book to get you excited too.

In the first two editions, we wanted to accomplish several things. We wanted to show the power of economics for understanding our world. We wanted to create a book full of vivid writing and powerful stories. We wanted to present modern economics, not the musty doctrines or repetitive examples of a generation ago. We wanted to show—again and again—that incentives matter, whether discussing the tragedy of the commons, political economy, or what economics has to say about wise investing. Most generally, we wanted to make the invisible hand visible, namely to show there is a hidden order behind the world and that order can be illuminated by economics.

Make the Invisible Hand Visible

One of the most remarkable discoveries of economic science is that under the right conditions the pursuit of self-interest can promote the social good. Nobel laureate Vernon Smith put it this way:

> At the heart of economics is a scientific mystery . . . a scientific mystery as deep, fundamental and inspiring as that of the expanding universe or the forces that bind matter. . . . How is order produced from freedom of choice?

We want students to be inspired by this mystery and by how economists have begun to solve it. Thus, we will explain how markets generate cooperation from people across the world, how prices act as signals and coordinate appropriate responses to changes in economic conditions, and how profit maximization leads to the minimization of industry costs (even though no one intends such an end).

We strive to make the invisible hand visible, and we do so with the core idea of supply and demand as the organizing principle of economics. Thus, we start with supply and demand, including producer and consumer surplus and the two ways of reading the curves, and then we build equilibrium in its own chapter, then elasticity, then taxes and subsidies, then the price system, then price ceilings and floors, then international trade, and then externalities. All of this material is based on supply and demand so that students are continually gaining experience using the same tools to solve more and deeper problems as they proceed. The interaction of supply and demand generates market prices and quantities, which in turn lies behind the spread of information from one part of a market economy to another. Thus, we show how the invisible hand works through the *price system*.

In Chapter 7 we show how the invisible hand links romantic American teenagers with Kenyan flower growers, Dutch clocks, British airplanes, Colombian coffee, and Finnish cell phones. We also show how prices signal information and how markets help to solve the *great economic problem* of arranging our limited resources to satisfy as many of our wants as possible.

The focus on the invisible hand, or *the price system*, continues in Chapter 8. As in other texts, we show how a price ceiling causes a shortage. But a shortage in one market can spill over into other markets (e.g., shortages of oil in the 1970s meant that oil rigs off the coast of California could not get enough oil to operate). In addition, a price ceiling reduces the incentive to move resources from low-value uses to high-value uses, so in the 1970s we saw long lines for gasoline in some states yet *at the same time* gas was plentiful in other states just a few hours away. Price ceilings, therefore, cause a misallocation of resources across markets as well as a shortage within a particular market. We think of Chapters 7 and 8 as a package: Chapter 7 illustrates the price system when it is working and Chapter 8 illustrates what happens when the price system is impeded.

Students who catch even a glimpse of the invisible hand learn something of great importance. Civilization is possible only because under some conditions the pursuit of self-interest promotes the public good.

In discussing the invisible hand, we bring more Hayekian economics into the classroom without proselytizing for Hayekian politics. That is, we want to show how prices communicate information and coordinate action while still recognizing that markets do not always communicate the right information. Thus, our chapters on the price system are rounded out with what we think is an equally interesting and compelling chapter on externalities. The subtitle of Chapter 10, "When the Price Is Not Right," harkens directly back to Chapter 7. By giving examples where the price signal is right and examples where the price signal is wrong, we convey a sophisticated understanding of the role of prices.

Demonstrate the Power of Incentives

Our second goal in writing *Modern Principles of Economics* is to show—again and again—that incentives matter. In fact, incentives are the theme throughout *Modern Principles*, whether discussing the supply of oil, the effects of price controls, or the gains from international trade. We also include Chapter 22, "Managing Incentives." In this chapter, we explain topics such as the trade-offs between fixed salaries and piece rates, when tournaments work well, and how best to incentivize executives. This chapter can be read profitably by anyone with an interest in *incentive design*—by managers, teachers, even parents! Chapter 22 will be of special interest to business and MBA students (and professors).

Present Modern Models and Vivid Applications

"Modern" is our third goal in writing *Modern Principles*. For example, we include an entire chapter on price discrimination, in which we cover not just traditional models but also tying and bundling. Students today are familiar with tied goods like cell phones and minutes, or printers and ink, as well as with bundles like Microsoft Office. A modern economics textbook should help students to *understand their world*.

We include business examples and topics throughout the text. We cover business issues as diverse as why businesses cluster and how network externalities push businesses to compete "for the market" rather than "in the market," to how successful cartels such as the NBA deal with the incentive to cheat, to how businesses actually go about price discriminating. Our chapter on incentives, already mentioned, is critical for managers in a variety of fields.

We also present a modern perspective on the costs and benefits of market power. A significant amount of market power today is tied to innovation, patents, and high fixed costs. Understanding the trade-offs involved with pricing AIDS drugs at marginal cost, for example, is critically important to understanding pharmaceutical policy. Similar issues arise with music, movies, software, chip design, and universities. Our material on monopoly and innovation is consistent with and provides a foundation for modern theories of economic growth.

Our chapters on monopoly and price discrimination (Chapters 13 and 14) are filled with business applications, real-world examples, and insightful discussions of policy.

Our game theory chapters (Chapters 15 and 16) are especially geared toward modern real-world choices and problems. Naturally, we cover cartel behavior. We also cover network externalities extensively. In many high-tech and online markets, the value of a good depends on how many other people are using the same good. Students are very familiar with examples such as Facebook and they want to know how the principles of economics apply to these contemporary goods. We even challenge students by showing how the principles of network externalities apply to cultural goods and even to the songs they listen to!

A modern text needs to place economics in context. We have a whole chapter on normative judgments (Chapter 21). It covers the assumptions behind cost-benefit analysis, the idea of a Pareto improvement, and the ethical judgments that have been used to praise or condemn economic reasoning. Rightly or wrongly, commentators often mix economic and moral judgments and we teach students to recognize which is which. We stress to the student that economics cannot answer normative issues but the student should be aware of what those normative issues are.

We offer an entire chapter (Chapter 23) on the stock market, a topic of direct practical concern to many students. We teach the basic trade-off between risk and return (no free lunches) and explain why it is a good idea to diversify investments. We also explain the microeconomics of bubbles, which of course bridges to current macroeconomic issues.

We knew that to reflect modern macroeconomics, we had to cover the Solow model and the economics of ideas, real business cycles, and New Keynesian economics. While most textbooks now cover the rudiments of economic growth, the importance of ideas as a driving factor is rarely even mentioned. Other textbooks do not offer a balanced treatment of real business cycle theory and New Keynesian theory, instead favoring one theory and relegating the other to a few pages that are poorly integrated with the overall macro model. In contrast, we believe that adequately explaining business fluctuations, unemployment, and both the potential and limits of monetary and fiscal policy requires a balanced but unified treatment that draws on ideas from both models.

We also knew that financial crises and bubbles are very real, and that fluctuations in output and employment are a social and economic issue around the world. In fact, we included substantial material on banking panics, bubbles, wealth shocks, and the importance of financial intermediation in the very first draft of *Modern Principles*. Our book incorporates these topics from the ground floor rather than attempting to squeeze such material into hastily added boxes or appended paragraphs. In the third edition, we include more material on the shadow banking system and on the importance of housing and other sources of collateral shocks.

Guiding Principles and Innovations: In a Nutshell

Modern Principles offers the following features and benefits:

1. We teach the economic way of thinking.
2. *Modern Principles* has a more intuitive development of markets and their interconnectedness than does any other textbook. More than any other textbook, we teach students how the *price system* works.
3. *Modern Principles* helps students to see the invisible hand. We offer an intuitive proof of several "invisible hand theorems." For example, we show that through the operation of incentives and the price system, well functioning markets will minimize the aggregate sum of the costs of production even though no one intends this result. Local knowledge creates a global benefit.
4. We offer an entire chapter on incentives and how they apply to business decisions, sports, and incentive design. When, for instance, should you reward your employees with a tournament form of compensation, and when a straight salary? Most texts are oddly silent on such practical issues, but it is precisely such issues that interest many students and show them the relevance of the economic way of thinking. We also offer an entire chapter on network goods, including the value of Facebook, the tech sector, and how markets for music work.
5. We offer an entire chapter on the stock market, a topic of concern to many students. We teach the basic trade-off between risk and return and explain why it is a good idea to diversify investments. We also explain the microeconomics of bubbles.
6. Why are some nations rich and other nations poor? *Modern Principles* has more material on development and growth than any other principles textbook.
7. *Modern Principles* offers the most intuitive development of the Solow model of growth in any textbook.
8. *Modern Principles* is the only principles book with a balanced treatment of real business cycle theory and New Keynesian macroeconomics.
9. Financial panics and asset bubbles are covered—a topic of great interest in today's environment! There are separate and comprehensive chapters on financial intermediation and on the stock market. We also cover the financial crisis that began in 2007.
10. We look closely at unemployment, its nature and causes, including the unusually long duration of unemployment experienced in the United States after the financial crisis. We also look at labor force participation rates in the United States over time and around the world. Why have women increased their labor force participation and why are only one-third of Belgian men aged 55–64 in the labor force?
11. *Modern Principles* explains how fiscal and monetary policy work differently, depending on whether the shock hitting the economy is a real shock or a nominal shock.

12. Today's students live in a globalized economy. Events in China, India, Europe, and the Middle East affect their lives. *Modern Principles* features international examples and applications throughout, rather than just segregating all of the international topics in a single chapter.
13. Less is more. This is a textbook of *principles*, not a survey or an encyclopedia. A textbook that focuses on what is important helps the student to focus on what is important. There are fewer yet more consistent and more comprehensive models.
14. No tools without applications. Real-world vivid applications are used to develop theory. Applications are not pushed aside into distracting boxes that students do not read.
15. Excel is used as a tool in appendices to help students develop insight, hands-on experience, and modeling ability.

What's New in the Third Edition?

Every book must change with the time and ours has too. The new edition of *Modern Principles of Economics* includes many additions and structural changes:

1. We include a new Chapter 24, "Asymmetric Information: Moral Hazard and Adverse Selection." This chapter covers principal–agent problems and how producers may attempt to take advantage of consumers, for instance, when the producer knows more about the quality of the good than does the consumer. The key concepts of *moral hazard* and *adverse selection* are stressed and illustrated with examples, including automobile mechanics, used car salespeople, doctors, health insurance, and online Internet reviews. We also discuss signaling, such as how candidates prove they are worthy of jobs and why engagement rings are bought to signal the quality and commitment of a potential mate.
2. We have reorganized our chapters on game theory, added new material on game theory and new applications, and turned two chapters into three. In addition to the new chapter on asymmetric information (previously mentioned), the new Chapter 15 is "Oligopoly and Game Theory." It has more on cheating games, prisoner's dilemma, and cartel stability than the previous edition did. There are also new discussions of price matching games and also consumer loyalty programs, such as frequent flyer miles and buyer clubs. We again use game theory to help illuminate the world that students actually spend their money in.
3. The new version of Chapter 16 is now "Competing for Monopoly: The Economics of Network Goods." This chapter considers goods that are more valuable as the number of users increases, such as Facebook, where users wish to share a common network with their friends. Or perhaps listeners wish to share and discuss a common favorite song. We consider whether consumers can be stuck in the wrong network, why these markets often have concentrated supply (there is no close competitor to Facebook), and how such markets can drive high rates of innovation.
4. As part of this extension of the coverage of game theory, we have pulled out our coverage of monopolistic competition and now have an entirely separate Chapter 17, "Monopolistic Competition and Advertising." In this chapter we also cover the ideas of advertising as information, advertising

as signaling, and the behavioral economics of advertising. Advertising of course is especially important in monopolistically competitive market structures.

5. Following up on the introduction of this feature in the second edition, we continue to have extensive coverage of indifference curves and income and substitution effects in Chapter 25, "Consumer Choice."
6. Strong coverage of economic growth is enhanced by a discussion of growth and geography (Chapter 27).
7. We have made our presentations of the aggregate demand and aggregate supply model, as well as the Solow growth model, even simpler in visual terms and in exposition in the text. Furthermore, it is possible to teach the aggregate demand and supply model without covering the Solow model at all, for those who wish to consider that part of the book optional.
8. We have updated Chapters 30 and 37 on "Unemployment and Labor Force Participation" and "Fiscal Policy" to reflect very recent experience with the U.S. economy coming out of the Great Recession.
9. Quantitative easing is included in Chapter 34 on the Fed.
10. Our monetary policy chapter (Chapter 35) includes a new section on using a nominal GDP rule.
11. We have created free, online videos for most chapters in this book. These videos are short (five to seven minutes, usually), visually appealing, and easy to use. We all know that videos can be a very effective medium for teaching and a complement to the classroom and to the written text. We use videos to show supply and demand, the economics of price controls, externalities, trade and the division of labor, the history of economic growth, and many other centrally useful economic concepts. These videos are lively and to the point, in some cases using formal animation techniques, others with a virtual blackboard, à la Khan Academy. Our videos are supplemented with a personally curated list of other video material that wonderfully illustrates economic concepts and history. If you wish to start with a video to see how these work, just try the QR code in the margin to the right. What's a QR code? You just scan the code with a smartphone and it brings you to a useful Web site or video for illustrating economic concepts. No more typing in long or difficult to remember URLs. A book called *Modern Principles* should be taking advantage of modern technology. Links to the videos are also in our new coursespace, LaunchPad, along with assessment. The videos can also be found online at MRUniversity.com. And don't forget that a video, unlike your lecture, can be rewound, rewatched, or taken on a trip if a student misses class. It's also a lot more portable than a heavy textbook.

Introduction to Supply

http://qrs.ly/p34ax6h

Most importantly, we've kept all of the qualities and features that made the first two editions so popular.

What's in the Chapters?

We review the key aspects of supply and demand and the price system, done in six chapters. We present incentives as the most important idea in microeconomics. Microeconomics should be intuitive, should teach the skill of thinking like an economist, and should be drawn from examples from everyday life. Along these lines, these chapters run as follows.

Chapter 1: The Big Ideas in Economics What is economics all about? We present the core ideas of incentives, opportunity cost, trade, the importance of economic growth, thinking on the margin, and some of the key insights of economics such as that tampering with the laws of supply and demand has consequences and good institutions align self-interest with the social interest. The point is to make economics intuitive and compelling and to hook the student with examples from everyday life.

Chapter 2: The Power of Trade and Comparative Advantage Why is trade so important and why is it a central idea of economics? We introduce ideas of gains from trade, the production possibilities frontier, and comparative advantage to show the student some core ideas behind the economic way of thinking. The key here is to illustrate the power of economic concepts in explaining the prosperity of the modern world. An instructor can either use this material to entice the student, or postpone the subject and move directly to the supply and demand chapters.

Part 1: Supply and Demand

Chapter 3: Supply and Demand This chapter focuses on demand curves, supply curves, how and why they slope, and how they shift. The chapter presents some basic fundamentals of economic theory, using the central example of the market for oil. We also take special care to illustrate how demand and supply curves can be read "horizontally" or "vertically." That is, a demand curve tells you the quantity demanded at every price and the maximum willingness to pay (per unit) for any quantity.

It takes a bit more work to explain these concepts early on, but students who learn to read demand curves in both ways get a deeper understanding of the curves and they find consumer and producer surplus, taxes, and the analysis of price controls much easier to understand.

Chapter 4: Equilibrium: How Supply and Demand Determine Prices Market clearing is an essential idea for both microeconomics and macroeconomics. In this chapter, students learn how a well functioning market operates, how prices clear markets, the meaning of maximizing gains from trade, and how to shift supply and demand curves. The chapter concludes with a section on understanding the price of oil, a topic that recurs throughout the text.

Chapter 5: Elasticity and Its Applications Elasticity is often considered a dull topic so we begin this chapter with a shocking story:

> In fall 2000, Harvard sophomore Jay Williams flew to the Sudan where a terrible civil war had resulted in many thousands of deaths. Women and children captured in raids by warring tribes were being enslaved and held for ransom. Working with Christian Solidarity International, Williams was able to pay for the release of 4,000 people. But did Williams do the right thing?

What is a discussion of modern slavery doing in a principles of economics book? We want to show students that economics is a social science, that it asks important questions and provides important answers for people who want to understand their world. We take economics seriously and in *Modern Principles* we analyze serious topics.

Once we have shocked readers out of their complacency, we offer them an implicit deal—we are going to develop some technical concepts in economics, which at first may seem dry, but if you learn this material, there is going to be a payoff. We will use the tools to understand the economics of slave redemption as well as why the war on drugs can generate violence, why gun buyback programs are unlikely to work, and how to evaluate proposals to increase drilling in the Arctic National Wildlife Refuge.

Chapter 6: Taxes and Subsidies We analyze commodity taxes and subsidies, two core topics, to test, refine, and improve an understanding of microeconomics. We have all heard the question "Who pays?" and the statement "Follow the money," but few people understand how to apply these ideas correctly. The economist knows that the final incidence of a tax depends not on the laws of Congress but on the laws of economics, and this can be taught as yet another invisible hand result. Teaching the incidence of taxes and subsidies also gives yet another way of driving home the concept of elasticity, its intuitive meaning, and its real-world importance. We also include in this chapter a timely discussion of wage subsidies to which we compare the minimum wage.

Part 2: The Price System

Chapter 7: The Price System: Signals, Speculation, and Prediction "A price is a signal wrapped up in an incentive." That's one of the most important ideas of economics, even if it takes a little work on the part of the students. And that is an idea that we drive home in this chapter. Partial equilibrium analysis can sometimes obscure the big picture of markets and how they fit together. General equilibrium analysis, either done mathematically or with an Edgeworth box, captures neither the "marvel of the market" (to use Hayek's phrase) nor the student's interest. We give a fast paced, intuitive, general equilibrium view of markets and how they tie together. We are linked to the world economy, and goods and services are shipped from one corner of the globe to another, yet without the guidance of a central planner. We show how the price of oil is linked to the price of candy bars. We also show how markets can predict the future, even the future of a movie like *American Pie 2*! For those familiar with Leonard Read's classic essay, this chapter is "I, Pencil" for the twenty-first century.

Chapter 8: Price Ceilings and Floors There is no better way to understand how the price system works than to see what happens when the price system does *not* work very well. That price controls bring shortages is one of the most basic and most solid results of microeconomics. When it comes to price controls, however, the bad consequences extend far beyond shortages. Price controls lead to quality reductions, wasteful lines, excess search, corruption, rent-seeking behavior, misallocated resources, and many other secondary consequences. Price controls are an object lesson in many important economic ideas and we teach the topic as such. Sometimes we're all better off if the university charges more for parking! Price controls also offer a good chance to teach some political economy lessons about why bad economic policies happen in the first place.

Sometimes governments prop up prices instead of keeping them down—the minimum wage for labor is one example, and airline regulation before the late 1970s is another. As with price ceilings, price floors bring misallocated resources, distortions in the quality of the good or service being sold, and rent seeking. Maybe the government can prop up the price of an airline ticket, as it did in 1974, but each airline will offer lobster dinners to lure away customers.

Chapter 9: International Trade We build on the basics of international trade—the division of knowledge, economies of scale, and comparative advantage—covered in Chapter 2, to show students how they can use the tools of supply and demand to understand the microeconomics of trade. We consider the costs of protectionism, international trade and market power, trade and wages, and most of all trade and jobs. Is protectionism ever a good idea? The chapter also offers a brief history of globalization as it relates to trade. We emphasize that the principles covering trade across nations are the same as those that govern trade within nations.

Chapter 10: Externalities: When the Price Is Not Right When do markets fail or otherwise produce undesired results? Prices do not always signal the right information and incentives, most of all when external costs and benefits are present. A medical patient may use an antibiotic, for instance, without taking into account the fact that disease-causing microorganisms evolve and mutate, and that antibiotic use can in the long run lead to bacteria that are antibiotic-resistant. Similarly, not enough people get flu vaccinations, because they don't take into account how other people benefit from a lower chance of catching a contagious ailment. Private markets sometimes can "internalize" these external costs and benefits by writing good contracts, and we give students the tools to understand when such contracts will be possible and when not. Market contracts, tradable permits, taxes, and command and control are alternative means of treating externalities. Building on our previous understanding of the invisible hand, we consider when these approaches will produce efficient results and when not.

Part 3: Firms and Factor Markets

Chapter 11: Costs and Profit Maximization under Competition This chapter makes cost theory *intuitive* once again. Costs are indeed an important economic concept; prices and costs send signals to firms and guide their production decisions, just as a price at Walmart shapes the behavior of consumers. But how exactly does this work? We've all seen textbooks that serve up an overwhelming confusion of different cost curves, all plastered on the same graph and not always corresponding in a simple or direct manner to economic intuition.

This chapter reduces the theory of cost and the theory of production to the essentials. A firm must make three key decisions: What price to set? What quantity to produce? When to enter and exit an industry? A simple notion of average cost suffices to cover decisions of firm entry and exit, while avoiding a tangle of excess concepts. Unlike many books, we stress the importance of "wait and see" and option value strategies. We can show firm-level and industry-level supply responses; constant, decreasing, and increasing cost industries; and how comparative statics differ for these cases.

Chapter 12: Competition and the Invisible Hand Profit maximization leads competitive firms to produce where $P = MC$, but why is this condition truly important? Most textbooks don't teach the marvelous result that when each firm produces where $P = MC$, total industry costs are minimized.

Competitive firms minimize total industry costs despite the fact that no firm intends this result and perhaps never even understands this result. As Hayek says, the minimization of total industry costs is "a product of human action but not of human design." We also show in this chapter how profit and loss signals result in a balancing of industries in a way that solves the great economic problem of getting the most value from our finite resources.

This material is so important that we have given it its own chapter. This chapter gives a deeper insight into Adam Smith's invisible hand, and how it relates to profit maximization, than does any other principles text.

Chapter 13: Monopoly When they can, firms use market power to maximize profit and this chapter shows how. (Some budding entrepreneurs in the class may take this as a how-to manual!) We build on concepts such as cost curves and elasticity to flesh out the economics and also the public policy of monopoly. If you own the intellectual property rights to an important anti-AIDS drug, just how much power do you have? It's good for you, but does this help or hurt broader society? Monopolies sometimes bring higher rates of innovation but in other cases, such as natural monopolies on your water supply, monopolies raise prices and reduce quantity with few societal benefits. Again, formal economic concepts such as elasticity and cost help us see the very real costs and benefits of such regulations as we experience them in our daily lives.

Chapter 14: Price Discrimination and Pricing Strategy *Modern Principles* devotes an entire chapter to this topic, which is fun, practical, and contains lots of economics. Students, in their roles as consumers, face (or, as sellers, practice!) price discrimination all the time, and that includes from their colleges and universities—remember in-state vs. out-of-state tuition? A lot of what students already "know" can be turned into more systematic economic intuition, including the concepts of demand and elasticity, and whether marginal cost is rising or falling. The pricing of printers and ink, pharmaceuticals, and cable TV all derive naturally from this analysis. Once students understand price discrimination, their eyes will be open to a world of economics in practice every day.

Chapter 15: Oligopoly and Game Theory Can OPEC nations really collude to force up the price of oil? Or is the price of oil set by normal competitive forces of supply and demand in world markets? Understanding when businesses "control price" and when they do not is one of the biggest gaps in understanding between someone with economics training and someone without such training. Cartels usually collapse because of cheating by cartel members, new entrants into the market, and legal prosecution from governments. Despite the challenges that cartels like OPEC face, many businesses nevertheless would love to cartelize their markets, even if they find it difficult to succeed for very long.

The incentive to cheat on cartels is a key to introducing game theory and also the prisoner's dilemma, which we cover in depth in this chapter. We consider the basic logic of the game, the motive for defecting, and how repeated interaction may induce cooperation, including in this context cooperation among the colluding cartel members. The appendix formally outlines the concept of Nash equilibrium. This chapter also introduces the concrete examples of a price-matching game and customer loyalty programs, such as frequent flier miles, to show how sellers may use game-theoretic tricks to maintain collusion.

Chapter 16: Competing for Monopoly: The Economics of Network Goods Students are eager to understand the world they live in. *Modern Principles* talks not about the market for ice cream but the market for oil, printers and ink, smartphones, Google, Facebook, and Match.com. In this chapter we focus on network goods, which have obtained a greater foothold in most of our lives with the coming of the digital age.

A lot of us use Microsoft Word because so many other people also do, thus making it easier to share word processing files. Facebook beat out MySpace and other social network services because it had more useful features and innovated more rapidly. Once Facebook had a big enough lead, more and more users switched to that system, so they could follow their friends more easily. Markets like this have some unusual properties. They tend to have lots of monopoly and lots of innovation, namely competition "for the market" vs. competition "in the market." If the dominant supplier switches, the market may change suddenly in fits and starts, rather than gradually. We show students how dating services work—in economic terms—and why friends so often seek out and enjoy the same musical songs. This hands-on chapter serves up a lot of topics of immediate interest to students and relates them to core microeconomic concepts.

Chapter 17: Monopolistic Competition and Advertising We cover monopolist competition in depth, focusing on the intuitions behind the concept. Monopolistic competition is in fact the most common market structure that students (and faculty!) encounter in daily life. Brands matter, and there is some market control over pricing, but it is far from absolute monopoly power. We show the basics of a monopolistic competition model, including how demand and the cost curves interact, and explain this in terms of markets that a person faces in everyday life. We also consider the motives and effects of advertising—a common feature of monopolistically competitive markets—in some detail. Advertising may boost price competition, may signal the quality of products, and may sometimes persuade or even trick consumers into buying goods and services they otherwise would be less interested in.

Chapter 18: Labor Markets Work touches almost all of our lives and most of the fundamental matters and conditions of work are ruled by economics. Wages. Working conditions. Bonuses. Investments in human capital and education. It's the marginal product of labor that has the strongest influence over the wage of a particular job. Risky jobs, like going out on dangerous fishing boats, pay more. Labor unions boost the wages of some workers but will hurt the wages of others. There is also the controversial topic of discrimination in labor markets. We show how some kinds of discrimination may survive, while others will tend to fall away, due to the pressure of market forces.

Part 4: Government

Chapter 19: Public Goods and the Tragedy of the Commons Public goods and externalities help us understand when private property rights do not always lead to good outcomes. The concepts of excludability and nonrivalry help us classify why governments have to provide national defense but why movie theaters are usually left to the private sector.

Why is it that the world is running out of so many kinds of fish? Economics has the best answer and it involves the tragedy of the commons. We show that economics is the single best entry point for understanding many common dilemmas of the environment.

Chapter 20: Political Economy and Public Choice If economics is so good, why doesn't the world always listen? Political economy is one of the most important topics. Economics has a lot to say about how politics works and the results aren't always pretty. Voters have a rational incentive to be ignorant or underinformed, and the end result is that special interests have a big say over many economic policies. Dairy farmers have a bigger say over milk subsidies than do the people who drink milk, and that is why the United States has milk price supports.

That said, democratic systems still outperform the available alternatives. We present the median voter theorem and also explain why political competition produces results that are at least somewhat acceptable to the "person in the street."

Chapter 21: Economics, Ethics, and Public Policy Most principles students leave the classroom still underequipped to understand real-world policy debates over economic issues. So often the debate descends into ethics: Are markets fair? Is the distribution of income just? Is it important that individual rights be respected? When is paternalism justified? We do *not* try to provide final, takeaway answers to these questions, but we do give the students the tools to unpack how these questions intersect with the economic issues they have been studying.

Should we give physically handicapped individuals better access to public facilities, or should the government simply send them more cash? Should there be a free market in transplantable human organs such as kidneys? For all the power of economics, virtually any public debate on questions like these will quickly bring in lots of ethical questions. We think that students should be familiar with the major ethical objections to "the economic way of thinking," and the strengths and weaknesses of those objections. We introduce the ideas of John Rawls and Robert Nozick, as well as the philosophy of utilitarianism. In our view this chapter is an important supplement to the power of economic reasoning.

Part 5: Decision Making for Businesses, Investors, and Consumers

Chapter 22: Managing Incentives Incentives matter! That may be the key single lesson of economics but a lot of textbooks don't have a complete chapter on incentives. Business applications, sports applications, and personal life all provide plenty of illustrations of economic principles. You get what you pay for, so if you can't measure quality very well, a lot of incentive schemes will backfire. Piece rates make a lot of workers more productive but strong incentives can impose risk on workers and induce them to quit their jobs altogether. As with grading on a curve, sometimes a boss wishes to pay workers relative to the performance of other workers. A lot of the most important incentives are about pride, fun, and fame, not just money.

Economists can never be doing enough to communicate what they know about incentives to a broader public. By making it easy, we want to increase the incentives here!

Chapter 23: Stock Markets and Personal Finance The stock market is the one topic that just about every student of economics cares about, and yet it is neglected in many textbooks. We view the stock market as a "teaching moment" as well as an important topic in its own right. What other economic topic commands so much attention from the popular press? Yet not every principles course gives the student the tools to understand media discussions or to dissect fallacies. We remedy that state of affairs. This chapter covers passive vs. active investing, the trade-off between risk and return, "how to really pick stocks," diversification, why high fees should be avoided, compound returns, and asset price bubbles. The operation of asset markets is something students need to know if they are to understand today's economy and the financial crisis.

And, yes, we do offer students some very direct and practical investment advice. Most people should diversify and "buy and hold," and we explain why. In terms of direct, practical value, we try to make this book worth its price!

Chapter 24: Asymmetric Information: Moral Hazard and Adverse Selection Some of the most important microeconomic problems in practical life concern asymmetric information. For instance, sometimes sellers know things that buyers do not. Imagine taking your car to an automechanic and being told it needs $500 worth of repairs—how do you know whether to believe the mechanic? The problem with asymmetric information is that it increases transactions costs and makes mutually beneficial market trades harder to pull off. We introduce a general class of issues known as *principal–agent problems*, namely that some individuals may try to take advantage of each other in market settings. These problems also include adverse selection, which plagues insurance markets, the sale of used cars, and the sale of art on eBay. Sometimes it is hard to assure quality as a buyer and, for related reasons, it can be hard to get a fair price as a seller of quality merchandise. We show that problems of asymmetric information are extremely common, but also that markets often can overcome them to a considerable degree. We also use the concepts of moral hazard and adverse selection to help explain some aspects of recent debates over President Obama's Affordable Care Act (Obamacare).

We close this chapter with the concept of signaling. Signaling occurs when a person undertakes a costly action to signal quality or reliability. A man may spend a lot of money on an engagement ring to show he is a serious courter who will make a reliable husband and life companion. One advantage of going to school is that you show the world you have discipline and the ability to finish projects and meet deadlines, above and beyond whatever you may learn there. We consider how signaling helps solve or at least alleviate many problems of asymmetric information.

Chapter 25: Consumer Choice This chapter adds an extensive and foundational treatment of indifference curves to the book. It starts with the notions of diminishing marginal utility and relative price ratios to derive indifference curves. A budget constraint is added to indifference curves to generate the standard propositions of consumer theory, including marginal rates of substitution, income effects, substitution effects, and the idea of a consumer optimum. The chapter includes novel applications, such as a unique and relevant application to Costco and why a company might charge consumers entry fees for membership.

Part 6: Economic Growth

Why are some nations rich, while others are mired in terrible poverty? How can growth be extended to all parts of our world? Students are eager to understand the key issues of growth and development and economics has much of importance to teach on this vital topic. Thus, we begin the macroeconomics part of the book with economic growth.

Chapter 26: GDP and the Measurement of Progress A visitor to India can see squalor in the streets but also cell phones, new stores, rising literacy, and better fed people. In the United States, the economy moves from a boom in which jobs are easy to find to a bust when people tighten their belts and hope for better times. How do we measure these changes? We focus on the definition, limitations, and meaning of GDP *and* the motivation for studying GDP as a measure of economic change. GDP chapters can be dry so we enliven our treatment through real-world examples and comparisons.

Chapter 27: The Wealth of Nations and Economic Growth We present the basic facts of economic growth: (1) GDP per capita varies enormously between nations, (2) everyone used to be poor, and (3) there are growth miracles and growth disasters. The key factors behind economic growth include capital, labor, and technology, but we also offer the student a deeper understanding of the importance of incentives and institutions. It is important to connect the physical factors of production with an understanding of how they got there. That means combining Solow and Romer-like models with institutional economics and an analysis of property rights.

A quick tour of the world shows why the student needs to learn different approaches to understanding economic growth.

Let's say we wish to understand why South Korea is wealthy, while North Korea starves. The best approach is to consider the roles of property rights and incentives in the two countries, a topic we cover in Chapter 27. Let's say we want to understand why China had been growing at 10% a year for almost 30 years. Then, the students need to learn the Solow model and the idea of "catching-up," which we cover in the first half of Chapter 28. Finally, let's say we want to understand why growth rates today are higher than in the nineteenth century, or why the future might bring a very high standard of living. We then need to turn to the Romer model and the idea of increasing returns to scale, which we cover in the second half of Chapter 28. Our approach to economic growth presents all these ideas in an integrated fashion.

Chapter 28: Growth, Capital Accumulation, and the Economics of Ideas: Catching Up vs. the Cutting Edge Yes, the Solow model finally has come to a principles book. Maybe that sounds daunting, but we offer a super simple version of Solow, intuitive every step along the way. One reviewer for the chapter wrote:

> This chapter is by itself one of the greatest selling points of the book. The chapter is superbly written and presents a difficult concept in a way that an intro-level student would not have trouble understanding. The authors . . . have done a great service to both instructors and students.

Another wrote:

> My first reaction was "No way the Solow model belongs in macro principles." However, after reading both the growth chapters, I changed my mind. These are excellent.

The Solow model stands at the foundation of modern approaches to economic growth. We cover some math but focus on the intuition behind the model, for instance, how diminishing returns to capital explains why China can grow faster than the United States. We cover capital growth, investment, and depreciation as concepts relevant for economic growth. We explain how an increase in the investment rate increases GDP per capita but in the long run does not increase the growth rate. We also cover why ever more capital cannot be the reason for long-run economic growth and the importance of ideas for economic growth. The appendix offers the quantitative relations of the Solow model in a simple spreadsheet.

The Solow model also leads into a discussion of how ideas are generated and why incentives and spillovers matter for idea generation. *Modern Principles* introduces the notion of increasing returns, as can arise from the production of ideas, and explains its economic importance. Larger economies might grow faster than smaller economies, and growth rates might increase over time, for reasons explained by the work of Paul Romer and other economists.

Chapter 29: Savings, Investment, and the Financial System Financial intermediation doesn't always receive a lot of attention from macro textbooks, but recent events have shown that the topic is critical. *Modern Principles* presents basic concepts behind intermediation, including consumption smoothing, the demand and supply of savings, equilibrium in the market for loanable funds, and the role of banks, bonds, and stock markets. We explain bank failures, panics, illiquidity, insolvency, and what happens when financial intermediation fails, with an emphasis on the financial crisis of 2007–2009. Students should understand why it is bad if a country has a broken banking system and how it got that way. All of this analysis will later be integrated with aggregate demand and supply. At the end of the chapter, an appendix presents bond pricing in terms of a spreadsheet and shows economically why bond prices and interest rates vary inversely. Modern macroeconomics is very much about banking and this chapter reflects the importance of the topic.

Part 7: Business Fluctuations

Chapter 30: Unemployment and Labor Force Participation We define the different kinds of unemployment: frictional, structural, and cyclical. We consider how unemployment is linked to economic growth and how so much unemployment can arise from business cycles. We cover structural unemployment in both Europe and the United States, and we also cover labor force participation rates to a greater extent than in other textbooks. Why is it, for example, that in Belgium only one-third of men ages 55–64 are working, while in the United States only one-third of men this age are retired! The chapter helps students to understand employment protection laws, labor force participation, lifecycle effects, minimum wages, taxes, pensions, and even how the pill increased female labor force participation. All of these points also will provide foundations for the later discussion of unemployment, wage stickiness, and aggregate demand.

Chapter 31: Inflation and the Quantity Theory of Money We start with a vivid example, namely hyperinflation in Zimbabwe, and explain how the rate of inflation rose into the quadrillions. We then introduce the quantity of money as a central concept in macroeconomics that will be used to explain inflation and, in future chapters, aggregate demand. We define inflation and present various price indices, including CPI, PPI, and the GDP deflator. As Milton Friedman explained, "Inflation is always and everywhere a monetary phenomenon."

The chapter covers the costs of inflation in detail: price confusion and money illusion, the redistribution of wealth, the breakdown of financial intermediation, and the interaction of inflation with the tax system. We explain why inflation happens and why inflation can be so difficult to end. An appendix creates a real price series for homes using Excel and the Internet.

Chapter 32: Business Fluctuations: Aggregate Demand and Supply In this chapter, we present our AD/AS model that allows for a balanced treatment of real shocks and aggregate demand shocks. We present the simplest real business cycle model and relate it to real-world concepts and examples. Supply-side fluctuations show up as shifts in the long-run aggregate supply curve, while an aggregate demand curve is based on the quantity theory. Using the quantity theory to derive an AD curve reduces the number of models students must learn and allows us to proceed quickly to sophisticated analyses of monetary and fiscal policy. We then introduce sticky prices and a short-run aggregate supply curve, responsive to both real and nominal shocks. The chapter ends by considering how the model can be used to explain the Great Depression of the 1930s.

An instructor's appendix available online (http://www.SeeTheInvisibleHand.com) discusses transition dynamics for both real and aggregate demand shocks.

Chapter 33: Transmission and Amplification Mechanisms In this chapter, which is optional, we explain in greater detail how economic forces can amplify shocks and transmit them across sectors of the economy and through time. When a shock is amplified, a mild negative shock can be transformed into a more serious reduction in output and a positive shock can be transformed into a boom. In addition, we show in this chapter how real shocks and aggregate demand shocks can interact—one type of shock can lead to the other, for example.

We illustrate real-world shocks and we give intuitive explanations of transmission mechanisms such as intertemporal substitution, uncertainty and irreversible investments, labor adjustment costs, time bunching, and damage to collateral value.

The material in this chapter provides a richer understanding of business fluctuations that goes beyond shifting the curves. Using the material in this chapter, a teacher can better relate the model to historical and contemporary events, illustrate the differences among recessions as well as their commonalities, and show how economists adapt models to think about unique events.

Part 8: Macroeconomic Policy and Institutions

Chapter 34: The Federal Reserve System and Open Market Operations To understand the Federal Reserve system, we introduce key concepts such as the U.S. money supplies, fractional reserve banking, the reserve ratio, the money multiplier, open market operations, and Fed influence on interest rates. With these tools in hand, we revisit concepts of aggregate demand, in particular through monetary policy. We cover all the core tools of monetary policy, including the recent innovations at the Fed, such as the term auction facility and quantitative easing, in response to the financial crisis. We treat the Federal Reserve as a major manager of systemic risk and analyze when the Fed is likely to succeed in this task and why the task is a difficult one, with attention to the concepts of moral hazard and also confidence building. The appendix covers the money multiplier process in detail.

Chapter 35: Monetary Policy Building on the analysis of the Fed, we consider the dilemmas of monetary policy in detail. The relevant cases include, among others: negative shocks to aggregate demand, rules vs. discretion, analyzing a decline in the rate of monetary growth, how the Fed can contribute to asset price bubbles, and responding to negative real shocks. We devote special attention to the Fed as a manager of market confidence and to how the Fed should respond to positive shocks and possible asset price bubbles, including to the housing market.

Chapter 36: The Federal Budget: Taxes and Spending Students need to understand the institutional details of government receipts and spending. That includes tax revenues (their size and nature), the individual income tax, taxes on capital gains and interest and dividends, the alternative minimum tax, Social Security and Medicare taxes, the corporate income tax, and the question of who really pays federal taxes. In addition, we cover state and local taxes and the components of spending, including Medicare, defense, discretionary spending, and other areas. Students should have a good sense of where the money comes from and what it is spent on. We also analyze the national debt, interest on the debt, and deficits. We consider the speculative question of whether the U.S. government will someday go bankrupt and what the answer to such a question depends on.

Chapter 37: Fiscal Policy What forms does fiscal policy take and when does it work best to improve macro-economic performance? What are the limits of fiscal policy and when will a fiscal stimulus work best? We cover crowding out, bond vs. tax finance of expansionary fiscal policy, tax rebates and tax cuts, automatic stabilizers, and Ricardian equivalence. Students also learn when fiscal policy is potent enough, when timing issues get in the way of effective fiscal policy, and whether fiscal policy can address the macroeconomic problems from negative real shocks, all with emphasis on the fiscal stimulus policies in response to the recent recession. When is government debt a problem and how can debt crises bring an economy to its knees? The overall purpose of this chapter is to teach students when fiscal policy is a good or bad idea.

Part 9: International Economics

Chapter 38: International Finance The multiplicity of currencies sometimes makes international finance a daunting topic, but we keep it simple and show how it applies core economic principles that students already understand. The topics include the U.S. trade deficit, the balance of payments, the current account, the capital account (the financial account), the Official Reserves account, and the two sides of accounting identity behind the balance of payments. All of these topics are explained in terms of consistent economic intuitions. We also consider what a trade deficit really means, and we relate that to the trading behavior of individuals. The chapter analyzes exchange rates and their determinants in terms of supply and demand analysis, as stems from goods markets and asset markets. Long-run exchange rates have an (imperfect) connection to purchasing power parity, due to trade and economic arbitrage. Building on aggregate demand analysis, we consider how monetary policy and fiscal policy affect exchange rates and so influence output and employment. In this framework, we consider the relative merits of fixed vs. floating exchange rates and consider the problems with the eurozone. The chapter closes with a presentation of the nature and functions of the IMF and World Bank.

Alternative Paths through the Book

Modern Principles of Economics has been written with trade-offs in mind and it's easy to pick and choose from among the chapters when time constrains. We offer a few quick suggestions. Chapter 7 is fun to teach but more difficult to test than some of the other chapters. But don't worry, you will find plenty of testable material in other chapters, and for your best students the introduction to the price system in Chapters 7 and 8 will be an eye-opener!

We spend more time on price controls than do other books because we don't confine ourselves to the usual shortage diagram, but we also illustrate the general equilibrium effects of price controls. We have also included a section of advanced material on the losses from random allocation that may be skipped in larger classes or if time constrains.

We have greatly simplified the presentation on cost curves and removed most of production theory, so do take the time to cover monopoly and the chapter on price discrimination. Students love the material on price discrimination because once they understand the concepts, they see the applications all around them. Chapter 16, "Competing for Monopoly: The Economics of Network Goods," is a very appealing chapter for students, and we recommend it for its applications, but if you don't have time, it can be skipped.

Asteroid deflection and the decline of the tuna fisheries are a must, so do cover Chapter 19 on public goods and the tragedy of the commons. Once again, students appreciate the focus on important, real-world applications of the economic way of thinking.

Chapters 20 and 21 on political economy and ethics are optional. If you can teach only one chapter, we think Chapter 20 on political economy has crucial material for avoiding the nirvana fallacy: We should always compare real-world markets with real-world governments when doing political economy. Chapter 21 on ethics works very well in smaller classes with lots of student interaction—we think it important that the philosophy professors are not the ones who get the only say on questions of ethics!

Chapter 22, "Managing Incentives," is fun to teach but it goes beyond the core and can be skipped. We believe this chapter will be especially appropriate for management, MBA, and pre-law students.

We encourage everyone to teach Chapter 23 on stock markets, time permitting.

Chapter 25, "Consumer Choice," is for those instructors who wish to cover indifference curves in considerable detail.

Instructors could cover only a portion of the Solow model in Chapter 28. We sometimes do this in our larger classes so this will be a good choice for many. The chapter has been written so that the most intuitive and important aspects of the model are covered in the beginning, more difficult and detailed material in the middle may be skipped, and then important material on growth and ideas is covered toward the end of the chapter. The material in the middle may be skipped without loss of continuity. Instructors with smaller and more advanced classes can easily cover the full chapter. The instructor's guide offers excellent tips from John Dawson for covering this material.

One important point: It is not at all necessary to teach the Solow model to cover our chapters on business fluctuations. The supply side is dealt with by using a long-run aggregate supply curve, which is explained in those chapters without relying on the Solow model.

We have divided the chapters in macroeconomic policy and institutions so that an instructor can cover monetary policy without covering the details of the Federal Reserve system and open market operations, and one can cover fiscal policy without covering the details of the federal budget: taxes and spending. The details are important and these chapters place monetary and fiscal policy within an institutional context so we do not necessarily recommend this approach, but when time is limited, more options are better than fewer.

Finally, one could skip international finance. To us, international economics means primarily that economics can help us to understand the world, not just one country and not just one time. As a result, we have included many international examples throughout *Modern Principles*. If time constrains, the details of tariffs, exchange rates, and trade deficits may be left to another course. Alas, we live in a finite world.

Most of all, we hope that *Modern Principles* helps you, the teacher, to have fun! We love economics and we have fun teaching economics. We have written this text for people not afraid to say the same. Don't hesitate to e-mail us with your questions, thoughts, and experiences, or just to say hello!

Media and Supplements

RESOURCES FOR STUDENTS AND INSTRUCTORS

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The following resources are available on LaunchPad:

For Students

- **LearningCurve** is an adaptive quizzing engine that automatically adjusts questions to the student's mastery level. With LearningCurve activities, each student follows a unique path to understanding the material. The more questions a student answers correctly, the more difficult the questions become. Each question is written specifically for the text and is linked to the relevant e-Book section. LearningCurve also provides a personal study plan for students, as well as complete metrics for instructors. Proven to raise student performance, LearningCurve serves as an ideal formative assessment and learning tool. For detailed information, visit http://learningcurveworks.com.
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- **NEW Assignable Videos and Assessment** Author-created short, fun, and professionally produced instructional videos are available for most chapters. The videos are available from the text via QR code or at MRUniversity.com. LaunchPad provides assignable, automatically graded quizzes to accompany each of the videos.

For Instructors

- **Graphing Questions** As a further question bank for instructors building assignments and tests, the electronically gradable graphing problems utilize our own robust graphing engine. In these problems, students will be asked to draw their response to a question, and the software will automatically grade that response. Graphing questions are tagged to appropriate textbook sections and range in difficulty level and skill.
- **Test Bank** The Test Bank provides a wide range of questions appropriate for assessing your students' comprehension, interpretation, analysis, and synthesis skills. The Test Bank offers multiple-choice, true/false, and short-answer questions designed for comprehensive coverage of the text concepts. Questions are categorized according to difficulty level (easy, medium, and challenging) and skill descriptor (fact-based, definitional, concept-based, critical thinking, and analytical thinking) and are tagged to their appropriate textbook section.
- **End-of-Chapter Quizzes** The end-of-chapter problems from the text have been converted to a multiple-choice format with answer-specific feedback. These problems can be assigned in homework assignments or quizzes.
- **Practice and Graded Homework Assignments** Each LaunchPad unit contains prebuilt assignments, providing instructors with a curated set of multiple-choice and graphing questions that can be easily assigned for practice or graded assessment.
- **Instructor's Resource Manual** The Instructor's Resource Manual provides suggested in-class and homework activities.
- **Solutions Manual** The Solutions Manual contains detailed solutions to all of the end-of-chapter problems from the textbook.

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Online Offerings

Worth/Aplia courses are all available with digital textbooks, interactive assignments, and detailed feedback.

www.saplinglearning.com

Sapling Learning provides the most effective interactive homework and instruction that improve student-learning outcomes for the problem-solving disciplines.

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Middle Tennessee State University

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Clemson University

Robert Krol
California State University, Northridge

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Western Kentucky University

Daniel Lin
American University

Melody Lo
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Karl A. Mitchell
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Miami University (Ohio)

Paul Roscelli
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Jason C. Rudbeck
The University of Georgia

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Baruch College and Graduate Center, The City University of New York

John Dawson
Appalachian State University

Timothy M. Diette
Washington and Lee University

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University of Alabama

Patricia Euzent
University of Central Florida

Paul Fisher
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Bill Gibson
The University of Vermont

David Gillette
Truman State University

Gerhard Glomm
Indiana University

Bradley Hobbs
Florida Gulf Coast University

Kate Krause
University of New Mexico

Daniel Kuo
Orange Coast College

Daniel Lin
American University

Solina Lindahl
California State Polytechnic University

Michael Mace
Sierra College

Michael Makowsky
Towson University

Norman Maynard
The University of Oklahoma

Joan Nix
Queens College, The City University of New York

Zuohong Pan
Western Connecticut State University

Steven Peterson
The University of Idaho

Jeff Sarbaum
University of North Carolina at Greensboro

James Self
Indiana University

Randy Simmons
Utah State University

Richard Stahl
Louisiana State University

Yoav Wachsman
Coastal Carolina University

Tyler Watts
Ball State University

Robert Whaples
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Texas Tech University

Michael Applegate
Oklahoma State University

J. J. Arias
Georgia College and State University

Jim Barbour
Elon University

David Beckworth
Texas State University

Robert Beekman
University of Tampa

Ryan Bosworth
North Carolina State University

Jennifer Brown
Eastern Connecticut State University

Douglas Campbell
University of Memphis

Michael Carew
Baruch College

Shawn Carter
Jacksonville State University

Philip Coelho
Ball State University

Jim Couch
North Alabama University

Scott Cunningham
University of Georgia

Amlan Datta
Texas Tech University

John Dawson
Appalachian State University

Timothy M. Diette
Washington and Lee University

Ann Eike
University of Kentucky

Tisha Emerson
Baylor University

Molly Espey
Clemson University

William Feipel
Illinois Central University

Amanda S. Freeman
Kansas State University

Gary Galles
Pepperdine University

Neil Garston
California State University, Los Angeles

William Gibson
University of Vermont

David Gillette
Truman State University

Lynn G. Gillette
Sierra Nevada College

Stephan F. Gohmann
University of Louisville

Michael Gootzeit
University of Memphis

Carole Green
University of South Florida

Paul Grimes
Mississippi State University

Philip J. Grossman
St. Cloud State University

Darrin Gulla
University of Kentucky

Kyle Hampton
The Ohio State University

Joe Haslag
University of Missouri—Columbia

Sarah Helms
University of Alabama—Birmingham

Matthew Henry
University of Georgia

John Hsu
Contra Costa College

Jeffrey Hummel
San Jose State University

Sarah Jackson
Indiana University of Pennsylvania

Dennis Jansen
Texas A&M University

Bruce Johnson
Centre College

Veronica Kalich
Baldwin Wallace College

Lillian Kamal
University of Hartford

John Keating
University of Kansas

Logan Kelly
Bryant University

Brian Kench
University of Tampa

David Kreutzer
James Madison University

Robert Krol
California State University, Northridge

Gary Lape
Liberty University

Rodolfo Ledesma
Marian College

Jim Lee
Texas A&M University—Corpus Christi

Daniel Lin
American University

Edward Lopez
San Jose State University

Hari Luitel
St. Cloud State University

Douglas Mackenzie
State University of New York—Plattsburgh

Michael Makowsky
Towson University

John Marcis
Coastal Carolina University

Catherina Matraves
Michigan State University

Meghan Millea
Mississippi State University

Stephen Miller
University of Nevada, Las Vegas

Ida Mirzaie
The Ohio State University

David (Mitch) Mitchell
South Alabama University

Ranganath Murthy
Bucknell University

Todd Myers
Grossmont College

Andre Neveu
Skidmore College

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San Jose State University

Alexandre Padilla
Metropolitan State College of Denver

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State University of New York—Cortland

John Perry
Centre College

Gina C. Pieters
University of Minnesota

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Clemson University

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Western Illinois University

Benjamin Powell
Suffolk University

Margaret Ray
University of Mary Washington

Dan Rickman
Oklahoma State University

Fred Ruppel
Eastern Kentucky University

Mikael Sandberg
University of Florida

Michael Scott
University of Oklahoma

James Self
Indiana University

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Martin Spechler
Indiana University–Purdue University, Indianapolis

David Spencer
Brigham Young University

Richard Stahl
Louisiana State University

Dean Stansel
Florida Gulf Coast University

Liliana V. Stern
Auburn University

Kay Strong
Bowling Green State University—Firelands

Jim Swofford
University of South Alabama

Sandra Trejos
Clarion University of Pennsylvania

Marie Truesdell
Marian College

Norman T. Van Cott
Ball State University

Kristin A. Van Gaasbeck
California State University—Sacramento

Michael Visser
Sonoma State University

Yoav Wachsman
Coastal Carolina University

Doug Walker
Georgia College and State University

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Notre Dame University

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Appalachian State University

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Oklahoma State University, Main Campus

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George Mason University

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University of West Florida

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Shippensburg University of Pennsylvania

Mark Wheeler
Western Michigan University

Bhavneet Walia
Western Illinois University

Sheng Yang
Black Hills State University

Lillian Kamal
University of Hartford

James Self
Indiana University

Kyle Hampton
University of Alaska, Anchorage

Kenneth Slaysman
York College of Pennsylvania

Alanna Holowinsky
Red River College

Irina Pritchett
North Carolina State University

James Watson
University of Colorado—Boulder

Pat Euzent
University of Central Florida

Brett Block
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1

The Big Ideas

CHAPTER OUTLINE

The prisoners were dying of scurvy, typhoid fever, and smallpox, but nothing was killing them more than bad incentives. In 1787, the British government had hired sea captains to ship convicted felons to Australia. Conditions on board the ships were monstrous; some even said the conditions were worse than on slave ships. On one voyage, more than one-third of the men died and the rest arrived beaten, starved, and sick. A first mate remarked cruelly of the convicts, "Let them die and be damned, the owners have [already] been paid for their passage."[1]

The British public had no love for the convicts, but it wasn't prepared to give them a death sentence either. Newspapers editorialized in favor of better conditions, clergy appealed to the captains' sense of humanity, and legislators passed regulations requiring better food and water, light and air, and proper medical care. Yet the death rate remained shockingly high. Nothing appeared to be working until an economist suggested something new. Can you guess what the economist suggested?

Instead of paying the captains for each prisoner placed on board ship in Great Britain, the economist suggested paying for each prisoner that walked off the ship in Australia. In 1793, the new system was implemented and immediately the survival rate shot up to 99%. One astute observer explained what had happened: "Economy beat sentiment and benevolence."[2]

The story of the convict ships illustrates the first big lesson that runs throughout this book and throughout economics: *incentives matter.*

By **incentives,** we mean rewards and penalties that motivate behavior. Let's take a closer look at incentives and some of the other big ideas in economics. On first reading, some of these ideas may seem surprising or difficult to understand. Don't worry: we will be explaining everything in more detail.

Incentives are rewards and penalties that motivate behavior.