PRINCIPLES OF MACRO ECONOMICS

Third Edition

Robert H. Frank
Ben S. Bernanke

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Cover: Detail of the leaded glass entry ceiling light from the Frank Thomas house in Oak Park, Illinois.

Photo: © Chrysalis Books. Photographer—Simon Clay.

Design of book: The images in the design of this book are based on elements of the architecture of Frank Lloyd Wright, specifically from the leaded glass windows seen in many of his houses. Wright's design was rooted in nature and based on simplicity and harmony. His windows use elemental geometry to abstract natural forms, complementing and framing the natural world outside. This concept of seeing the world through an elegantly structured framework ties in nicely to the idea of framing one's view of the world through the window of economics.

The typeface used for some of the elements was taken from the Arts and Crafts movement. The typeface, as well as the color palette, bring in the feeling of that movement in a way that complements the geometric elements of Wright's windows. The Economic Naturalist icon is visually set apart from the more geometric elements but is a representation of the inspirational force behind all of Wright's work.

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DEDICATION

For Ellen

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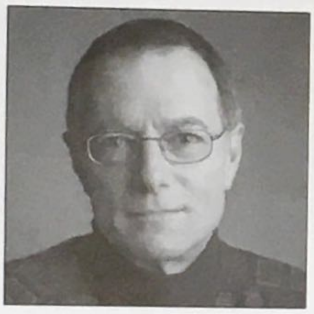
For Anna

B. S. B.

ABOUT THE AUTHORS

ROBERT H. FRANK

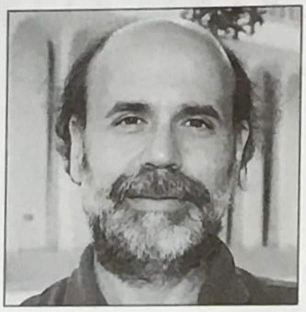


Professor Frank is the Henrietta Johnson Louis Professor of Management and Professor of Economics at the Johnson Graduate School of Management at Cornell University, where he has taught since 1972. His "Economic Scene" column appears monthly in *The New York Times*. After receiving his B.S. from Georgia Tech in 1966, he taught math and science for two years as a Peace Corps Volunteer in rural Nepal. He received his M.A. in statistics in 1971 and his Ph.D. in economics in 1972 from The University of California at Berkeley. During leaves of absence from Cornell, he has served as chief economist for the Civil Aeronautics Board (1978–1980), a Fellow at the Center for Advanced Study in the Behavioral Sciences (1992–93), and Professor of American Civilization at l'École des Hautes Études en Sciences Sociales in Paris (2000–01).

Professor Frank is the author of a best-selling intermediate economics textbook—*Microeconomics and Behavior*, Sixth Edition (Irwin/McGraw-Hill, 2006). He has published on a variety of subjects, including price and wage discrimination, public utility pricing, the measurement of unemployment spell lengths, and the distributional consequences of direct foreign investment. His research has focused on rivalry and cooperation in economic and social behavior. His books on these themes, which include *Choosing the Right Pond* (Oxford, 1995), *Passions Within Reason* (W. W. Norton, 1988), and *What Price the Moral High Ground?* (Princeton, 2004), have been translated into 10 languages. *The Winner-Take-All Society* (The Free Press, 1995), co-authored with Philip Cook, received a Critic's Choice Award, was named a Notable Book of the Year by *The New York Times*, and was included in *BusinessWeek*'s list of the 10 best books of 1995. *Luxury Fever* (The Free Press, 1999) was named to the *Knight-Ridder* Best Books list for 1999.

Professor Frank has been awarded an Andrew W. Mellon Professorship (1987–1990), a Kenan Enterprise Award (1993), and a Merrill Scholars Program Outstanding Educator Citation (1991). He is a co-recipient of the 2004 Leontief Prize for Advancing the Frontiers of Economic Thought. He was awarded the Johnson School's Stephen Russell Distinguished Teaching Award in 2004 and the School's Apple Distinguished Teaching Award in 2005. His introductory microeconomics course has graduated more than 6,000 enthusiastic economic naturalists over the years.

BEN S. BERNANKE



Professor Bernanke received his B.A. in economics from Harvard University in 1975 and his Ph.D. in economics from MIT in 1979. He taught at the Stanford Graduate School of Business from 1979 to 1985 and moved to Princeton University in 1985, where he was named the Howard Harrison and Gabrielle Snyder Beck Professor of Economics and Public Affairs, and where he served as Chairman of the Economics Department. He is a Fellow of the American Academy of Arts and Sciences and of the Econometrics Society. He was named a member of the Board of Governors of the Federal Reserve in 2002 and became the chairman of the President's Council of Economic Advisers in 2005.

Professor Bernanke's intermediate textbook, with Andrew Abel, *Macroeconomics*, Fifth Edition (Addison-Wesley, 2004) is a best seller in its field. He has authored more than 50 scholarly publications in macroeconomics, macroeconomic history, and finance. He has done significant research on the causes of the Great Depression, the role of financial markets and institutions in the business cycle, and measuring the effects of monetary policy on the economy. His two most recent books, both published by Princeton University Press, include *Inflation Targeting: Lessons from the International Experience* (with coauthors) and *Essays on the Great Depression*. He has served as the editor of the *American Economic Review* and was the founding editor of the *International Journal of Central Banking*. Professor Bernanke has taught principles of economics at both Stanford and Princeton.

PREFACE

Although many millions of dollars are spent each year on introductory economics instruction in American colleges and universities, the return on this investment has been disturbingly low. Studies have shown, for example, that several months after having taken a principles of economics course, former students are no better able to answer simple economic questions than others who never even took the course. Most students, it seems, leave our introductory courses without having learned even the most important basic economic principles.

The problem, in our view, is that these courses almost always try to teach students far too much. In the process, really important ideas get little more coverage than minor ones, and everything ends up going by in a blur. Many instructors ask themselves, "How much can I cover today?" when instead they should be asking, "How much can my students absorb?"

Our textbook grew out of our conviction that students will learn far more if we attempt to cover much less. Our basic premise is that a small number of basic principles do most of the heavy lifting in economics, and that if we focus narrowly and repeatedly on those principles, students can actually master them in just a single semester.

The enthusiastic reactions of users of our first two editions affirm the validity of this premise. Although recent editions of a few other texts now pay lip service to the less-is-more approach, ours is by consensus the most carefully thought out and well-executed text in this mold. Avoiding excessive reliance on formal mathematical derivations, we present concepts intuitively through examples drawn from familiar contexts. We rely throughout on a well-articulated short list of core principles, which we reinforce repeatedly by illustrating and applying each principle in numerous contexts. We ask students periodically to apply these principles themselves to answer related questions, exercises, and problems.

Throughout this process, we encourage students to become "economic naturalists," people who employ basic economic principles to understand and explain what they observe in the world around them. An economic naturalist understands, for example, that infant safety seats are required in cars but not in airplanes because the marginal cost of space to accommodate these seats is typically zero in cars but often hundreds of dollars in airplanes. Scores of such examples are sprinkled throughout the book. Each one, we believe, poses a question that should make any normal, curious person eager to learn the answer. These examples stimulate interest while teaching students to see each feature of their economic landscape as the reflection of an implicit or explicit cost-benefit calculation. Students talk about these examples with their friends and families. Learning economics is like learning a language. In each case, there is no substitute for actually speaking. By inducing students to speak economics, the economic naturalist examples serve this purpose.

FEATURES

- **An emphasis on core principles:** As noted, a few core principles do most of the work in economics. By focusing almost exclusively on these principles, the text assures that students leave the course with a deep mastery of them. In contrast, traditional encyclopedic texts so overwhelm students with detail that they often leave the course with little useful working knowledge at all.

- **The Scarcity Principle:** Having more of one good thing usually means having less of another.
- **The Cost-Benefit Principle:** Take no action unless its marginal benefit is at least as great as its marginal cost.
- **The Incentive Principle:** Cost-benefit comparisons are relevant not only for identifying the decisions that rational people should make, but also for predicting the actual decisions they do make.
- **The Principle of Comparative Advantage:** Everyone does best when each concentrates on the activity for which he or she is relatively most productive.
- **The Principle of Increasing Opportunity Cost:** Use the resources with the lowest opportunity cost before turning to those with higher opportunity costs.
- **The Equilibrium Principle:** A market in equilibrium leaves no unexploited opportunities for individuals but may not exploit all gains achievable through collective action.
- **The Efficiency Principle:** Efficiency is an important social goal, because when the economic pie grows larger, everyone can have a larger slice.

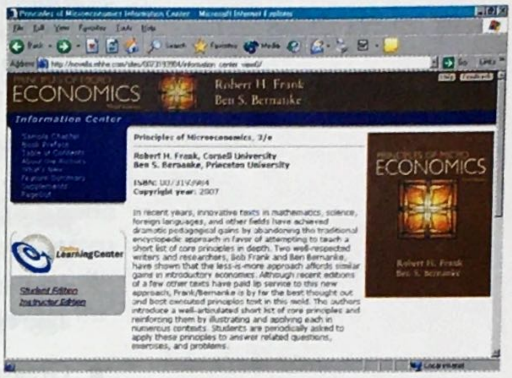
- **Economic naturalism expanded in Macro:** Economic naturalist examples typically invoke a more aggregative perspective in macroeconomics, but still entail explicit or implicit cost-benefit calculations. In macro, for example, the economic naturalist might ask questions like these:
  - Why did the Federal Reserve lower interest rates in 2001–2003 and then raise them in 2004–2005?
  - China as Number One?
  - Why has U.S. labor productivity grown so rapidly since 1995?
- **Active learning stressed:** The only way to learn to hit an overhead smash in tennis is through repeated practice. The same is true for learning economics. Accordingly, we consistently introduce new ideas in the context of simple examples and then follow them with applications showing how they work in familiar settings. At frequent intervals, we pose exercises that both test and reinforce the understanding of these ideas. The end-of-chapter questions and problems are carefully crafted to help students internalize and extend core concepts. Experience with our first two editions confirms that this approach really does prepare students to apply basic economic principles to solve economic puzzles drawn from the real world.
- **Modern Macroeconomics:** Recent developments have renewed interest in cyclical fluctuations without challenging the importance of such long-run issues as growth, productivity, the evolution of real wages, and capital formation. Our treatment of these issues is organized as follows:
  - A five-chapter treatment of long-run issues prior to an analysis of short-run fluctuations, followed by a modern treatment of short-term fluctuations and stabilization policy, emphasizing the important distinction between short- and long-run behavior of the economy.

- Consistent with both media reporting and recent research on the central bank reaction function, we treat the interest rate rather than the money supply as the primary instrument of Fed policy.

- The analysis of aggregate demand and aggregate supply relates output to inflation, rather than to the price level, sidestepping the necessity of a separate derivation of the link between the output gap and inflation.

- This book places a heavy emphasis on globalization, starting with an analysis of its effects on real wage inequality and progressing to such issues as the benefits of trade, the causes and effects of protectionism, the role of capital flows in domestic capital formation, the link between exchange rates and monetary policy, and the sources of speculative attacks on currencies.

- **Web site:** Developed by Scott Simkins of North Carolina A & T State University, an expert in the growing field of economics education on the World Wide Web. The ambitious Web site contains a host of features that will enhance the principles classroom, including dynamic graphs, video lectures, e-mail updates, microeconomic experiments, current news articles, information about the text, an eLearning session, and more.



A NOTE ON THE WRITING OF THIS EDITION

For two-and-a-half years, Ben Bernanke served as a member of the Board of Governors of the Federal Reserve System, and he has recently been appointed as chairman of the President's Council of Economic Advisers. These positions have allowed him to play an active role in making U.S. economic policy, but the rules of government service have restricted his ability to participate in the preparation of the third edition.

Fortunately, we were able to enlist the aid of Roger Kaufman of Smith College to take the lead in revising the macro portions of the book. Roger, who is a long-time user of the book and a superb teacher, brings extensive classroom experience to the project. He has done an excellent job of updating the book to reflect the most important recent developments in the world economy. Pedagogically, he has made the book more student-friendly and the presentation more patient, while retaining the book's underlying approach and strengths. Ben Bernanke and Robert Frank express their deep gratitude to Roger for the energy and creativity he has brought to his work on the book. He has made the book a better tool for students and professors.

IMPROVEMENTS

- **Expanded discussion of macroeconomic policy:** The revised monetary policy reaction function we introduce in Chapter 14 is a more realistic description of the way in which the Fed actually conducts monetary policy and clarifies the Taylor rule. In Chapter 15 we use this policy reaction function to help students distinguish between a move along the aggregate demand curve and a shift in the aggregate demand curve resulting from a change in monetary policy. Then, in a new, optional Chapter 16, we provide a more complete analysis of the interaction between fiscal and monetary policy, illustrating the crucial role of the