Microeconomics: Optimization, Experiments, and Behavior

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For Bojana, Keith, and Nicholas.

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Preface

A modern introduction to microeconomics should, in my opinion, (1) convey a sense of how microeconomics has developed in response to a changing array of practical problems and anomalies; (2) maintain a clear distinction between normative and positive theories; (3) integrate findings of behavioral and experimental economics; (4) cover recent, as well as classic, works; (5) feature clear and concise exposition; (6) move from simple, concrete applications to more difficult and abstract ones; (7) offer enough quantitative examples and exercises to show how microeconomic theory is applied and to help students to begin developing the mathematical skills required for success in advanced economics; and (8) provide—through footnotes and citations—links to more advanced treatments. With those goals in mind, I wrote the present text.

The most innovative feature of the book is its extensive coverage of recent research in behavioral and experimental economics. This research not only documents behavior inconsistent with some elements of traditional theory but also advances positive theories with superior predictive power. The research I cover includes studies of loss aversion, reference-dependent preferences, the context and framing of choice, hyperbolic discounting and inconsistent intertemporal choice, predictable errors in updating probabilities, nonlinear weighting of probabilities, and prospect theory. The importance of this material was highlighted by the Swedish Academy of Sciences when it awarded the 2002 Prize in Economic Sciences to Daniel Kahneman (a psychologist who helped lay the foundations of behavioral economics) and Vernon Smith (an experimental economist). Although the topics are "advanced" in the sense that they are near the frontier of economic research and seldom covered in textbooks, they are readily comprehended because they center on simple controlled experiments and relate to everyday concerns.

Covering results from behavioral and experimental economics along with traditional microeconomic doctrine involves rebalancing three key components of economics: issues, theory, and data. Traditional introductions emphasize issues, sketch theory, and use data only to illustrate theory. More advanced texts traditionally focus on theory, relegating issues and data to asides. Any data in traditional texts are usually from observational (nonexperimental) studies. The relationship between theory and observational data is likely to be ambiguous until probed by advanced econometric methods and may remain so even then. Recognizing that few students have the econometric skills needed for serious analysis of observational data, some authors focus their texts almost exclusively on theory and issues. Although widely used, such texts arouse misgivings in students and professors to whom data-free exposition smells of indoctrination (Leamer 1997). In comparison to traditional texts, this book places more emphasis on experimental data, both when they support received theory and when they reveal anomalies. Thus the book covers both feedlot experiments that

generate conventionally shaped isoquants and choice experiments that cast doubt on the predictive value of expected utility theory.

The book presupposes nothing beyond high-school algebra and intellectual curiosity. It is intended for undergraduate classes and independent reading.

Anyone writing for an audience that includes undergraduates must decide how to handle the growing gap between the rudimentary mathematical skills acquired in secondary schools, particularly in the United States, and the growing mathematical prerequisites for reading economists' professional journals. This gap must somehow be bridged if undergraduates are to be prepared for employment or graduate study in economics and related fields. To be fully prepared, students need not only classes in mathematics but also practice in formulating and solving quantitative economic problems. Too many texts either omit such problems or assume that students come fully equipped to handle them. In contrast, this text offers many opportunities to apply high-school algebra in an economic context and to develop basic skills in linear programming and risk modeling. Through footnotes and parenthetical remarks, it also encourages readers to make good use of any calculus they know. Exercises appear where appropriate in the text; solutions and supplemental problems are collected at the ends of chapters. When teaching from the book, I usually start each class by asking students if they had trouble solving any problems in the previous chapter and end class by helping students tackle the problems in the current chapter. By solving the problems, students can make appreciable progress toward becoming competent economists.

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While a graduate student at the University of California (Berkeley), I benefited from contact with many excellent professors, among whom six are particularly relevant to this work: From George Akerlof and Roy Radner I learned to appreciate rigorous theoretical analysis of both optimizing and nonoptimizing behavior. From Daniel McFadden and Thomas Rothenberg I learned how much economics can benefit from careful linkage of theory and data. From Laura D'Andrea Tyson and Benjamin Ward I learned the value of close attention to interactions between economic institutions and behavior.

Like most textbook authors, I am indebted to my predecessors. Microeconomic texts and treatises that I have used with pleasure as a student or a teacher include A. Asimakopulos's *An Introduction to Economic Theory: Microeconomics*, Theodore C. Bergstrom and John H. Miller's *Experiments with Economic Principles*, William J. Baumol's *Economic Theory and Operations Analysis*, Samuel Bowles and David Kendrick's *Notes and Problems in Microeconomic Theory*, Jae Wan Chung's *Utility and Production Functions*, Richard M. Cyert and James G. March's *A Behavioral Theory of the Firm*, Gerard Debreu's *Theory of Value*, A. K. Dixit's *Optimization in Economic Theory*, Robert H. Frank's *Microeconomics and Behavior*, C. E. Ferguson's *Microeconomic Theory*, James M. Henderson and Richard E. Quandt's *Microeconomic Theory: A Mathematical Approach*, Michael D. Intriligator's *Mathematical Optimization and Economic Theory*, Geoffrey A. Jehle and Philip J. Reny's *Advanced Microeconomic Theory*, David M. Kreps's *Notes on the Theory of Choice*, Heinz D. Kurz and Neri Salvadori's *Theory of Production*, Edmond Malinvaud's *Lectures on Microeconomic Theory*, Andreu Mas-Colell, Michael D. Whinston, and Jerry R. Green's *Microeconomic Theory*, Richard R. Nelson and Sidney G. Winter's *An Evolutionary Theory of Economic Change*, Walter Nicholson's *Microeconomic Theory: Basic Principles and Extensions*, Edmund S. Phelps's *Political Economy*, Robert S. Pindyck and Daniel L. Rubinfeld's *Microeconomics*, Dominick Salvatore's *Microeconomics: Theory and Applications*, Paul A. Samuelson's *Foundations of Economic Analysis*, Andrew Schotter's *Microeconomics: A Modern Approach*, Oz Shy's *Industrial Organization*, Joseph E. Stiglitz's *Principles of Microeconomics*, Henri Theil's *Optimal Decision Rules for Government and Industry* and *The System-Wide Approach to Microeconomics*, Hal R. Varian's *Microeconomic Analysis*, and W. Kip Viscusi, John M Vernon, and Joseph E. Harrington Jr.'s *Economics of Regulation and Antitrust*.