



Micro- Economics

WILLIAM G. SHEPHERD · ANN PUTALLAZ · W.H. LOCKE ANDERSON

Micro- Economics

WILLIAM G. SHEPHERD · ANN PUTALLAZ · W.H. LOCKE ANDERSON

◀ University of Michigan ▶

PRENTICE-HALL, INC., Englewood Cliffs, N.J. 07632

Library of Congress Cataloging in Publication Data

SHEPHERD, WILLIAM G.
Microeconomics.

Includes index.

1. Microeconomics. I. Putallaz, Ann F. II. Anderson,
W. H. Locke. III. Title.

HB172.S527 1983 338.5 82-12217
ISBN 0-13-581033-7

PHOTO CREDITS

The Bettman Archive/page 231
Culver Pictures, Inc./page 9
The Granger Collection/page 10 (Marshall)
New York Public Library/357 (Walras)
United Press International Photo/
pages 10 (Keynes), 42, 43, 357

Development editor: Gerald Lombardi
Production editor: Sonia Meyer
Interior design and layout: A Good Thing, Inc., and Christine Gehring-Wolf
Cover design: Christine Gehring-Wolf
Cover photo: PASTNER/FPG
Assistant Art Director: Linda Conway
Manufacturing buyer: Ed O'Dougherty

© 1983 by Prentice-Hall, Inc., Englewood Cliffs, N.J. 07632

All rights reserved. No part of this book
may be reproduced in any form or
by any means without permission in writing
from the publisher.

Printed in the United States of America
10 9 8 7 6 5 4 3 2 1

ISBN 0-13-581033-7

Prentice-Hall International, Inc., *London*
Prentice-Hall of Australia Pty. Limited, *Sydney*
Editora Prentice-Hall do Brasil, Ltda., *Rio de Janeiro*
Prentice-Hall Canada Inc., *Toronto*
Prentice-Hall of India Private Limited, *New Delhi*
Prentice-Hall of Japan, Inc., *Tokyo*
Prentice-Hall of Southeast Asia Pte. Ltd., *Singapore*
Whitehall Books Limited, *Wellington, New Zealand*

Preface

Teachers know, and their students soon learn, that economics is an evolving field. Yet the basic concepts are relatively stable. In this book we present those concepts, as they are shared and used by economists. We try to convey both the simple beauty of economic logic and the complex variety of its practical uses in the world.

Economics is exciting and important, but parts of it can also be puzzling and genuinely difficult to master. Some students approach economics as a duty: a hard subject that's sure to be dull and not very rewarding. Yet economists know it instead as a fascinating field, which can clarify an astonishing range of topics with a few tools.

To help students advance from reluctance to enjoyment, we present logic, facts, policies, and other materials both in good balance and in an effective sequence. We stress *logic* because economics is above all a connected set of logical concepts and hypotheses. But logic alone is not enough. We must also emphasize

the *matters of degree*, which good economists learn to judge carefully. Logic and degree—hypotheses and facts—are a two-sided theme for students to watch as they learn both to grasp the tools and to evaluate real conditions.

Beyond that, we have another paired goal for students: first, to learn economics as it is, but also to acquire a healthy skepticism about economists' work and advice. Because economics is a human creation, it involves human errors and contradictions. By learning this, students come to understand that economic knowledge always has gaps and soft spots as it evolves, and that it cannot accomplish all—or even half—of the tasks we ask of it.

This sort of sympathetic realism need not undercut students' motives to learn the analysis. Instead, by gently dispelling students' hopes of finding something that is infallible, it encourages them to take a sensible view of the whole world. This demystifying process can in turn make it easier to learn.

Students often resist this balanced treatment, asking instead just to be told what material they "have to learn." We think that all students can learn both the basic ideas and the economist's skeptical, independent-minded approach. That is the spirit which we have tried to convey.

The text We have labored long to make this book short. Despite its substantial size, the volume is a compact presentation of principles and examples. Every line reflects difficult choices we have had to make about depth and detail. Our choices have been guided by three main goals. The first is to be *clear*, using plain English concisely. The second is to be *complete* on technical analysis, making sure that the prose is thorough, step by step. The third is to give sufficient *variety* of "real" illustrations and cases, showing readers the important practical uses of the concepts.

The format The order of topics has been carefully chosen to provide a progression from basic concepts to more advanced issues. The chapters proceed generally from fundamental analysis to more complex, applied, and policy-oriented issues. The whole sequence of topics allows for flexibility in emphasizing some topics or omitting others, even among sections within chapters.

Distinctive features Apart from its whole approach, we have built into the book a number of special features, large and small, including the following: chapters 1 to 3 provide a thorough foundation of concepts and methods, rather than just an introduction. Special features beyond the standard topics include:

Chapter 1 Economic goals. The economic literature and the development of economics. The economist's approach.

Chapter 2 Microeconomic principles (opportunity cost, marginal conditions, diminishing marginal effect, scarcity, equilibrium, public choice). Macroeconomic principles.

Chapter 3 The linkage of diagrams, hypotheses, and models. Organizing and presenting data. Stocks and flows.

The next chapters present allocation analysis thoroughly and with unusual concern for general equilibrium.

Chapter 4 A focus on supply and demand concepts. Thorough treatment of elasticity.

Chapter 5 Supply and demand concepts and cases are knitted together; agriculture, oil prices, tax incidence, market controls. Measures of elasticities.

Chapter 6 Focuses on individual demand. Consumer surplus. An assessment of utility analysis.

Chapter 7 Uniquely thorough coverage of the enterprise. Actual patterns of firms. A tour of *Wall Street Journal* data. Nonprivate firms. Accounting, motives, and success indicators. A case study of starting up a firm.

Chapter 8 Intensive coverage of cost analysis. Link between productivity and cost. Economies of scale.

Chapter 9 The nature of competition, marginal cost, and efficiency conditions.

Chapters 10–13 cover monopoly power and its policy remedies with an industrial-organization focus.

Chapter 10 Varieties of markets, from pure monopoly to pure competition. Concise causes and effects of monopoly. Case studies of monopolies. Price discrimination fully explained.

Chapter 11 The dominant-firm case. Numerous practical instances, including newspaper markets. The Schumpeterian process. The contrast between tight and loose oligopoly. New data on the rise in competition since 1960.

Chapter 12 Antitrust agencies, trends, and criteria. A detailed presentation of cases and their economic effects.

Chapter 13 The economic content of regulation. Commissions and their setting. Key economic issues: marginal cost pricing, inefficiency, and deregulation. Public enterprise: its coverage and economic criteria.

Next come inputs and general equilibrium in Chapters 14–17. Both labor and capital are given detailed attention.

Chapter 14 Thorough analysis of input choices. Economic rent. Inputs' roles in creating value.

Chapter 15 The utility basis of work choices. Human capital and returns to education. Effects of labor unions.

Chapter 16 Uniquely thorough, integrated coverage of capital (physical and portfolio) and technological change. Investment choices, cost of capital, return to capital; risk and asset values. Expectations and stock prices. Stock markets as the control system of capitalism. Trends and elements of technological change.

Chapter 17 Complete coverage of equilibrium and allocation. Ripple effects and input-output tables. Limits on the invisible hand.

We round out microeconomics by analyzing major public policy choices in Chapters 18–21.

Chapter 18 A thorough analysis of social goods, external effects, and cost-benefit analysis. Taxes and incentive effects. Trends of taxes and spending.

Chapter 19 Trends and causes of inequality. Analysis of discrimination. Actual incidence of taxes and spending.

Chapter 20 Analysis of resource conservation: criteria and free-market efficiency. Common-property resources. Agriculture, the energy sector, and future world resource scarcities.

Throughout, there are “boxes” presenting unusual topics, special cases, or extended discussions. Also, each concept is printed in boldface type when it is first presented, and definitions of the concepts are gathered in a glossary at the back of the book.

Teaching aids Each chapter begins and ends with a brief summary of its main points. End materials also include a list of key concepts in the chapter, plus questions for review.

To complement this textbook, there is a set of additional materials: The *Study Guide* (which, along with the test bank, was written by Ann Putallaz with the assistance of Therese Mendola) is designed to help students identify and resolve areas of confusion, and to develop their ability to apply theoretical concepts in solving problems. For each chapter, true-false and multiple choice questions and applied problems are presented. The questions focus on concepts with which students frequently have difficulty. Detailed explanations of answers to the questions are provided to ensure that students do not answer a question correctly without understanding why it is correct, and that they are not unduly frustrated by having answered a question incorrectly and not knowing why. The problems help students learn to apply theoretical concepts correctly. Students who work with the study guide will be able to identify sources of confusion, and can build confidence in their ability to apply the material through problem solving. Throughout, an attempt is made to keep students' attention focused on core material, and to encourage them to feel at ease with the subject matter.

The *Test Bank* (available only to instructors) contains multiple choice questions for each chapter. The questions vary considerably in difficulty. Within each chapter, questions are generally arranged sequentially according to the location of the relevant material in the text. Frequently, more than one question is available for a given topic to allow instructors flexibility in designing tests. The test bank is stored in a computer file so that the publisher can provide instructors with individually tailored semester exams. The proce-

cedure for ordering these exams is described in the introduction to the *Test Item File*.

The *Instructor's Manual* (prepared by the authors and available only to instructors) is written with the needs of the instructor in mind. It emphasizes the goals of the text, chapter by chapter, and calls the instructor's attention to crucial concepts and diagrams and to areas that students may find particularly difficult. It also gives answers to selected review questions that appear at the end of the text chapters.

A *Transparency Package* containing the most important analytical diagrams is also available from Prentice-Hall.

Acknowledgments

We are deeply indebted to many people for supporting us in shaping this book. For special help from our colleagues at the University of Michigan we want to thank Alan Deardorff, Richard Porter, and Gavin Wright. Our teaching fellows have also given good advice from their classroom experience with the book.

Many scholars at other campuses have provided extensive reviews of early drafts. They include Rich Anderson, Texas A & M University; Marion S. Beaumont, California State University, Long Beach; Peter Bloch, Grinnell College; Daniel S. Christiansen, Albion College; Robert W. Clower, University of California, Los Angeles; J. Ronnie Davis, Western Washington University; James M. Ferguson, Federal Trade Commission; Alfred J. Field, University of North Carolina, Chapel Hill; Max E. Fletcher, University of Idaho; Ralph Gray, DePauw University; John R. Hanson II, Texas A & M University; Barry Hirsch, University of North Carolina, Greensboro; Tom Kniesner, University of North Carolina, Chapel Hill; Kenneth A. Lewis, Univer-

sity of Delaware; Michael Magura, University of Toledo; Robert Moore, Occidental College; Kent W. Olsen, Oklahoma State University; Larry Radecki, Federal Reserve Bank of New York; Michael Salemi, University of North Carolina, Chapel Hill; Allen Sanderson, Princeton University; Len Schiffrin, College of William and Mary; James Starkey, University of Rhode Island; John A. Tomashe, California State University, Los Angeles; Holly H. Ulbrich, Clemson University; Tom Ulen, University of Illinois, Urbana; and Jeffrey Wolcowitz, Harvard University.

We have benefitted from research assistance by Barton Lipman, Abdolhamid Mohtadi, George Shepherd, Theodora Shepherd, and Gilbert Skillman.

The publisher has also provided excellent technical support. The editorial gifts and personal commitment of Gerald Lombardi have improved the book on every page. David Hildebrand has steered the book with unfailing talent and devotion. The technical skills, hard work, and sharp eye of Sonia Meyer were invaluable aids to the production of the book.

Among the superb typists who have graced the book are Suzanne Gurney, Judith Jackson, Isabella Leach, Theodora Shepherd, and Joan Susskind.

Finally, our children have sacrificed to make this book possible, by doing without our attention from time to time. We thank them, too, with hopes that they will some day learn from reading it for themselves.

Contents

PREFACE, xv

◀ 1 ▶

The Economic Approach, 1

Economic Systems, 1

Scarcity and Choice, 2 Economic Goals, 3 Positive
and Normative Economics, 4

Economic Analysis, 7

Early Economic Thought, 7 Classical Economics, 8 Neoclassical
Economics, 8 The Literature, 12 Schools and Groups, 13
The Economic Approach: Matters of Logic and Degree, 13

Summary, 14

Key Concepts, 15

Questions for Review, 15

◀ **2** ▶

Basic Economic Principles, 17

The Economy as a System, 18

Households: The Decision Units for Selling Inputs and Buying
Goods, 19 Enterprises and Inputs, 20 Maximizing Behavior, 21
Market Exchange, 22 The Circular Flow, 23

Microeconomic Principles, 24

Opportunity Cost, 25 Marginal Conditions, 25
Diminishing Marginal Effect, 26 Efficiency and Scarcity:
The Production Possibility Boundary, 27
Equilibrium, 31 Public Choice, 32

Macroeconomic Principles, 33

The Circular Flow, 33 Income and Output, 34
Demand and Income, 34 Changes in Output, 35
Potential Output, 35 Stabilization Policy, 36

Summary, 37

Key Concepts, 37

Questions for Review, 37

◀ **3** ▶

Methods and Measurements, 39

Diagrams and Their Use, 40

Linear Equations and Their Graph, 41 Economic Models, 44
Time Series, 48 Distributions, 49

The Interpretation of Numbers, 50

Problems of Bias and Deception, 50 Stocks and Flows, 51

Summary, 53

Key Concepts, 54

Questions for Review, 54

◀ 4 ▶

Demand and Supply, 55

Demand, 58

Influences on Demand, 58 The Demand Curve, 59 Quality Demanded and Demand, 61 Price Elasticity of Demand, 63 Elasticity and Total Revenue, 66 Determinants of the Price Elasticity of Demand, 67 Income Elasticity of Demand, 67 Cross-Elasticity of Demand, 70

Supply, 71

Influences on Supply, 71 The Supply Curve and Its Upward Slope, 72 Quantity Supplied Versus Supply, 73 Elasticity of Supply, 75 Determinants of Elasticity of Supply, 77

Interaction of Supply and Demand, 78

Summary, 81

Key Concepts, 83

Questions for Review, 83

◀ 5 ▶

Demand and Supply in Action, 85

Effects of Elasticities on Market Outcomes, 86

Elastic Demand and Supply, 86 Inelastic Demand and/or Supply, 87 The Price of Oil, 90

Interferences with the Market Process, 91

The Burden of a Sales Tax, 91 Price Controls, 94 Controls on Quantity, 97

Measuring Supply and Demand, 98

Summary, 101

Key Concepts, 102

Questions for Review, 102

◀ 6 ▶

Individual Demand, 103

The Analysis of Utility and Demand, 104

Rational Choices by Consumers, 105 Diminishing Marginal
Utility, 107 Individual Demand Curves: Preferences and Income, 110
Scarce Goods and Free Goods, 111 Marginal Utilities and Prices
in Equilibrium, 113 Shifts Versus Movements Along Demand Curves, 116
Consumer Surplus, 117 Market Demand Is the Sum of Individual
Demands, 118 Derived Demand, 120

The Validity of Demand Analysis, 120

Summary, 121

Key Concepts, 122

Questions for Review, 122

◀ 7 ▶

The Enterprise, 123

Patterns of Actual Enterprises, 124

Private Enterprises, 124 Other Types of Firms: Public Enterprises,
Nonprofit Firms, and Cooperatives, 135

The Enterprise, 135

Choices and Outcomes, 136 Inputs, Outputs, and
Production, 137 Simple Accounting, 138 Success Indicators:
Profitability and Stock Prices, 141

A Case Study: Starting a New Enterprise, 142

Choosing What to Produce, 142 Starting, 143 Lessons, 144

Summary, 145

Key Concepts, 145

Questions for Review, 146

◀ **8** ▶

Supply: The Nature of Costs, 147

Basic Concepts:

Technology, Opportunity Cost, and Economic Profit, 148

Technology, 148 Opportunity Cost, 149 Economic Profit, 151

Productivity and Costs in the Short Run, 153

Short Run and Long Run, 153 Productivity in the Short Run, 153 The
Law of Diminishing Marginal Returns, 157 Costs in the Short Run, 158

Productivity and Costs in the Long Run, 163

Derivation of the Long-Run Average Total Cost Curve, 164 Economies of
Scale: The Shape of the Long-Run ATC Curve, 167 The Marginal
Conditions Necessary for Least-Cost Production, 171

Summary, 173

Key Concepts, 174

Questions for Review, 175

◀ **9** ▶

Pricing and Output Under Perfect Competition, 177

The Rules for Maximizing Profits, 178

Should the Firm Produce at All? 178 How Much Should
the Firm Produce? 178

Setting Output Under Perfect Competition, 180

The Nature of Pure Competition, 180 Competition: A Process and a Zone
of Choice, 180 Rivalry and Pure Competition May Give Similar
Results, 181 Firm and Market Demand in Perfect Competition, 181
Marginal Cost, 182 The Firm's Short-Run Supply Curve in Perfect
Competition, 183 A More Complete Analysis, 184 The Short-Run Market
Supply Curve Is a Summation, 188 Shifts in the Firm and Industry
Supply Curves, 189 Short-Run and Long-Run Equilibrium in
Perfect Competition, 190

Long-Run Supply, 193

The Firm's Long-Run Supply Curve, 193 The Long-Run
Market Supply Curve, 194

Efficient Allocation Under Competition, 194

Summary, 196

Key Concepts, 197

Questions for Review, 197

◀ 10 ▶

Monopoly, 199

Varieties of Monopoly and Competition, 200

Monopoly and Its Effects, 200

The Characteristics of Monopoly, 200 How Monopoly Power Is Created
and Maintained, 203 The Effects of Monopoly Power, 204
Price Discrimination, 213

Cases of Monopoly, 216

Standard Oil, 217 Electric Companies, 217

Summary, 218

Key Concepts, 218

Questions for Review, 219

◀ 11 ▶

Degrees of Competition, 221

The Dominant Firm, 222

Definition of Dominance, 222 Instances and Effects of
Dominance, 223 Possible Causes of Dominance, 224

Oligopoly, 229

Concentration and Leading Firms, 229 Conflicting Incentives Can Make
Oligopoly Unstable, 232 Types of Collusion, 234 The Central Tendency
Under Oligopoly, 235 Rigid Prices: Kinked Demand
Curves, 236 Economies of Scale: A Cause of Oligopoly? 239

Monopolistic Competition, 240
Patterns and Trends in Real Markets, 241
 Aggregate Concentration, 241 Concentration in Individual
 Markets, 242 Conglomerate Firms, 244

Summary, 246
Key Concepts, 247
Questions for Review, 247

◀ 12 ▶

**Policies Toward Monopoly Power:
 Antitrust, 249**

Origins and Standards of U.S. Antitrust Policies, 250
 Three Waves, 250 Standards of Efficient Policies, 252

U.S. Antitrust: Forms and Coverage, 253
 The Agencies and Laws, 253 History, 254 Antitrust
 Criteria, 256 Precedents, 257 Mergers, 258 Economic Effects, 258

Specific Parts of Antitrust, 259
 Antitrust Actions Toward Existing Concentration, 259 Antitrust Policies
 Toward Mergers, 264 Policies Toward Price Fixing
 and Other Actions, 267

Summary, 269
Key Concepts, 270
Questions for Review, 270

◀ 13 ▶

**Policies Toward Monopoly Power:
 Regulation and Public
 Enterprise, 271**

Regulation of Utilities, 272
 Patterns of Regulation, 272 Decisions on Price Levels and
 Structures, 275 Four Economic Issues of Regulation, 277

Public Enterprise, 283

Coverage and Purposes, 283 Subsidies and Efficiency, 286

Summary, 287

Key Concepts, 287

Questions for Review, 287

◀ 14 ▶

Input Markets, 289

The Demand for Inputs, 290

The Level of Input Use, 290 Marginal Revenue Product, 290 The Profit-Maximizing Level of Input Use, 292 Deriving the Firm's Demand Schedule for an Input, 293 Elasticity of Demand for an Input, 294 Shifts in the Marginal Revenue Product Schedule, 295 Comparison of Input Use of a Perfect Competitor and a Firm with Monopoly Power, 295

Supply and Equilibrium in Input Markets, 297

The Supply of Inputs, 297 Economic Rent, 299 Taxing Economic Rents, 301 Who Provides the Value of Production? 302

Summary, 303

Key Concepts, 304

Questions for Review, 304

◀ 15 ▶

**The Economics of Labor
and Unions, 305**

Labor Supply, Demand, and Market Outcomes, 306

The Marginal Utility of Work, 306 The Choice of a Job, 307 Individual Labor Supply Schedules, 308 Price and Income Effects, 308

The Market Supply Curve of Labor, 309 The Demand for Labor, 311
Equilibrium Between Supply and Demand, 313

Differences in Labor Skills, 315

Variations in Pay Rates, 315 Investment in Human Capital: The Cost of
Training, 316 Scarcity of Talent, 319

Departures from Competitive Market Outcomes, 320

Monopsony and Competitive Supply, 325 Bilateral Monopoly, 325
The Effects of Labor Groups on Workers' Incomes, 326

Summary, 328

Key Concepts, 329

Questions for Review, 329

◀ 16 ▶

Capital, Investment, and Technological Change, 331

Capital and Investment Decisions, 332

What Is Capital? 332 Actual Capital and Investment, 332 The Decision
to Invest, 333 Market Demand and Supply for Capital, 337

The Return to Capital, 338

Risk and Return, 338 Interest, 341 Profit, 342

The Value of Assets, 343

Fluctuations in Asset Values, 343 Expectations Govern Asset Values, 346
Bonds and Stocks, 347 The Choice Process Equalizes
Returns, 348 Three Levels of Knowledge, 348 Stock Markets as a
Control System, 348

Capital and Technological Change, 349

Trends of Capital and Productivity, 349 Forms and Components of
Technological Change, 351 Decisions to Innovate, 352 The Patent
System, 353

Summary, 353

Key Concepts, 354

Questions for Review, 354