Contents

1 Introduction and Overview

1.1 Introduction 3
1.2 A Brief History of Experimental Economics 5
1.3 A Simple Design for a Market Experiment 9
1.4 Experimental Methods: Advantages and Limitations 14
1.5 Types of Experiments 18
1.6 Some Procedural and Design Considerations 20
1.7 Laboratory Trading Institutions 33
1.8 Conclusion and Overview 44

Appendix A1 46

A1.1 Oral-Double Auction Instructions 47
A1.2 Suggestions for Conducting an Oral Double Auction 55

References 63
2  Decisions and Games

2.1  Introduction  67
2.2  Lotteries and Expected Values  68
2.3  A Sequential Search Experiment  73
2.4  Expected-Utility Maximization and Risk Aversion  79
2.5  Game Theory: Normal-Form Games  90
2.6  Extensive Forms and Backward-Induction Rationality  102
2.7  Decision Theory, Game Theory, and Price Theory  109
Appendix A2  111
  A2.1  Derivation of the Reservation Wage  111
  A2.2  Instructions for a Sequential Search Experiment  112
  A2.3  Constructing a von Neumann-Morgenstern Utility Function  115
  A2.4  Sequential Equilibria  117
  A2.5  Instructions for the Centipede Game  120
References  121

3  Double-Auction Markets

3.1  Introduction  125
3.2  Double-Auction Procedures and Performance  126
3.3  Computers and the Double Auction  135
3.4  Double-Auction Results: Design Effects  141
3.5  Double-Auction Results: Structural Boundaries  149
3.6  Multiple, Interrelated Double-Auction Markets  155
3.7  Double-Auction Asset Markets  162
3.8  Conclusion  167
References  169
4  Posted-Offer Markets

4.1  Introduction 173
4.2  Posted-Offer Procedures and Performance 175
4.3  Posted-Offer Results: Design Effects 184
4.4  Factors That Generate Supracompetitive Prices 192
4.5  Market Power 199
4.6  Regulation and Restraint of Monopoly Power 205
4.7  Conclusions 217

Appendix A4 220
A4.1 Instructions for a Posted-Offer Auction 220
A4.2 Posted-Offer Instructions for Computer Implementation 223
A4.3 Calculation of a Mixed-Strategy Equilibrium 232

References 236

5  Bargaining and Auctions

5.1  Introduction 241
5.2  Unstructured Bargaining without Side Payments 242
5.3  Bargaining Over an Externality: The Coase Theorem 255
5.4  Structured Bargaining: Ultimatum Game Experiments 263
5.5  Structured Bargaining: Alternating-Offer Experiments 269
5.6  Auctions with Fixed Supply 275
5.7  First-Price Auctions with Private Values 280
5.8  Common-Value Auctions and the Winner’s Curse 288
5.9  Design of New Auction Institutions 295
5.10 Conclusions 305

A5.1 Equilibrium Bidding Strategies 306
A5.2 Instructions for a Bargaining Game with Asymmetries 308
A5.3 Derivation of the Optimal Bid in an Ultimatum Game with Value and Information Asymmetries 311

References 312
6 Public Goods, Externalities, and Voting

6.1 Introduction 317
6.2 The Voluntary-Contributions Mechanism 319
6.3 The Voluntary-Contributions Mechanism: Results 325
6.4 Factors That May Alleviate Free-Riding 333
6.5 Incentive-Compatible Mechanisms 343
6.6 Externalities 350
6.7 Voting 360
6.8 Summary 364

Appendix A6 366
A6.1 A Public-Goods Problem with Private Information 366
A6.2 Instructions: The Voluntary Contributions Mechanism 370
A6.3 Incentive Compatibility in the Groves–Ledyard Mechanism 375

References 376

7 Asymmetric Information

7.1 Introduction 381
7.2 Quality Uncertainty and “Lemons” Market Outcomes 383
7.3 Reputation Effects 391
7.4 Signaling 396
7.5 Informational Asymmetries in Asset Markets 406
7.6 State Uncertainty and Insider Information 413
7.7 The Iowa Presidential Stock Market 422
7.8 Conclusion 426

Appendix A7 427
A7.1 Instructions: a Market Experiment with Information Asymmetries 427

References 432
8 Individual Decisions in Risky Situations

8.1 Introduction 435
8.2 Probability-Triangle Representations 438
8.3 Lottery-Choice Experiments 442
8.4 Financial Incentives and Controls for Wealth Effects 449
8.5 Preference Elicitation: Problems and Applications 457
8.6 Preference Reversals 468
8.7 Inducing Risk Preferences 472
8.8 Information Processing: Bayes’ Rule and Biases 477
8.9 Summary 485

Appendix A8 487
A8.1 Instructions for Lottery Experiments 487
A8.2 Instructions for Scoring-Rule Probability Elicitation 493
A8.3 Utility Elicitation 498

References 500

9 Economic Behavior and Experimental Methods:
Summary and Extensions

9.1 Introduction 505
9.2 Major Results of Experiments to Date 506
9.3 The Relationship among Theoretical, Experimental, and Natural Economic Environments 510
9.4 Experimental Design 516
9.5 Statistical Analysis of Data From Economics Experiments 525
9.7 Statistical Tests: Designs Involving Two or More Treatments 537
9.8 Conclusion: Toward a More Experimental Science 552

References 554

Index
Preface

This book provides a comprehensive treatment of the major areas of experimental economics. Although we present some new material, the emphasis is on organizing and evaluating existing results. The book can serve both as a teaching device and as an introduction to laboratory methods for professional economists who wish to find out about this relatively new area of research. Moreover, methodological and procedural issues are covered in detail, and there are a number of instructional appendices.

The book can be used as an anchoring device for a graduate course, which would be supplemented with journal articles, working papers, and detailed surveys. A topics course for advanced undergraduates can be structured around the first four chapters, selected readings from later chapters, and less technical published papers.