Markets, Games, & Strategic Behavior

CHARLES A. HOLT
University of Virginia
part 1  ■  Basic Concepts: Decisions, Game Theory, and Market Equilibrium  1

■ chapter 1
   Introduction  3
   1.1 Origins  3
   1.2 Overview  5
   1.3 Methodology  8
   1.4 A Brief History of Experimental Economics  16
   Questions  18

■ chapter 2
   A Pit Market  21
   2.1 A Simple Example  21
   2.2 A Classroom Experiment  22
   2.3 Chamberlin’s Results and Vernon Smith’s Reaction  27
   2.4 Extensions  31
   Questions  32

■ chapter 3
   Some Simple Games: Competition, Coordination, and Guessing  35
   3.1 Game Theory and the Prisoner’s Dilemma  35
   3.2 A Prisoner’s Dilemma Experiment  37
   3.3 A Coordination Game  40
   3.4 A Guessing Game  42
   3.5 Extensions  44
   Questions  45

■ chapter 4
   Risk and Decision Making  47
   4.1 Who Wants to Be a Millionaire?  47
   4.2 A Simple Lottery-Choice Experiment  50
   4.3 Payoff Scale, Order, and Demographics Effects  54
   4.4 Extensions  58
   Questions  58
chapter 5
Randomized Strategies 59
5.1 Symmetric Matching Pennies Games 59
5.2 Battle of the Sexes 63
5.3 Extensions 67
Questions 67

part 2 Market Experiments 69

chapter 6
Monopoly and Cournot Markets 71
6.1 Monopoly 71
6.2 Cournot Duopoly 75
6.3 Cournot Oligopoly 77
6.4 Extensions 80
Appendix: Optional Quick Calculus Review 80
Questions 81

chapter 7
Vertical Market Relationships 83
7.1 Double Marginalization 83
7.2 The Newsvendor Problem 87
7.3 The Bullwhip Effect 90
7.4 Extensions 92
Questions 93

chapter 8
Market Institutions and Power 95
8.1 Introduction 95
8.2 The Exercise of Seller Market Power without Explicit Collusion 99
8.3 Edgeworth Cycles and Random Prices 102
8.4 The Effects of Market Power 103
8.5 Extensions 107
Appendix: Calculation of a Mixed-Strategy Equilibrium in Prices 107
Questions 109

chapter 9
Collusion and Price Competition 111
9.1 Collusion in Posted-Offer Markets: “This Is Economics” 111
9.2 Collusion with Secret Discounts 114
9.3 Extensions: Cheap Talk, Mutual Forbearance, and the “V Word” 117
Questions 120

chapter 10
Market Failure Due to Unraveling: Lemons and Matching Markets 123
10.1 Endogenous Product Quality 123
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.2</td>
<td>Clearinghouse Mechanisms and Unraveling in Labor Markets</td>
<td>127</td>
</tr>
<tr>
<td>10.3</td>
<td>Extensions: Baseball, Dorm Rooms, School Choice, Deep Space, Sorority Rush, ... but Marriage?</td>
<td>131</td>
</tr>
<tr>
<td>Questions</td>
<td>131</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Asset Markets and Price Bubbles</td>
<td>133</td>
</tr>
<tr>
<td>11.1</td>
<td>Bubbles and Crashes</td>
<td>133</td>
</tr>
<tr>
<td>11.2</td>
<td>A Digression on Present Value</td>
<td>137</td>
</tr>
<tr>
<td>11.3</td>
<td>The Limit Order Market Experiment</td>
<td>138</td>
</tr>
<tr>
<td>11.4</td>
<td>Other Research on the Call Market Institution</td>
<td>141</td>
</tr>
<tr>
<td>Questions</td>
<td>143</td>
<td></td>
</tr>
<tr>
<td>Part 3</td>
<td>Bargaining and Behavioral Labor Economics</td>
<td>145</td>
</tr>
<tr>
<td>12</td>
<td>Ultimatum Bargaining</td>
<td>147</td>
</tr>
<tr>
<td>12.1</td>
<td>Strategic Advantage and Ultimatums</td>
<td>147</td>
</tr>
<tr>
<td>12.2</td>
<td>Bargaining in the Bush</td>
<td>148</td>
</tr>
<tr>
<td>12.3</td>
<td>Bargaining in the Lab</td>
<td>151</td>
</tr>
<tr>
<td>12.4</td>
<td>Multi-Stage Bargaining</td>
<td>153</td>
</tr>
<tr>
<td>12.5</td>
<td>Extensions: “I Will Be Spending Years Trying to Figure Out What This All Meant.”</td>
<td>156</td>
</tr>
<tr>
<td>Questions</td>
<td>157</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Trust, Reciprocity, and Principal-Agent Games</td>
<td>159</td>
</tr>
<tr>
<td>13.1</td>
<td>The Trust Game</td>
<td>159</td>
</tr>
<tr>
<td>13.2</td>
<td>A Labor Market Reciprocity Game</td>
<td>162</td>
</tr>
<tr>
<td>13.4</td>
<td>Extensions: Field Experiments</td>
<td>164</td>
</tr>
<tr>
<td>Questions</td>
<td>165</td>
<td></td>
</tr>
<tr>
<td>Part 4</td>
<td>Public Choice</td>
<td>167</td>
</tr>
<tr>
<td>14</td>
<td>Voluntary Contributions</td>
<td>169</td>
</tr>
<tr>
<td>14.1</td>
<td>Social Norms and Public Goods</td>
<td>169</td>
</tr>
<tr>
<td>14.2</td>
<td>“Economists Free-Ride, Does Anyone Else?”</td>
<td>171</td>
</tr>
<tr>
<td>14.3</td>
<td>Single-Round Experiments</td>
<td>172</td>
</tr>
<tr>
<td>14.4</td>
<td>Multi-Round Experiments</td>
<td>176</td>
</tr>
<tr>
<td>14.5</td>
<td>Extensions</td>
<td>178</td>
</tr>
<tr>
<td>Questions</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>The Volunteer’s Dilemma</td>
<td>183</td>
</tr>
<tr>
<td>15.1</td>
<td>Sometimes It Only Takes One Hero</td>
<td>183</td>
</tr>
<tr>
<td>15.2</td>
<td>Initial Experimental Evidence</td>
<td>184</td>
</tr>
</tbody>
</table>
15.3 The Mixed-Strategy Equilibrium 186
15.4 An Experiment on Group Size Effects 189
15.5 Extensions 191
Questions 191

chapter 16
Externalities, Congestion, and Common Pool Resources 193
16.1 Water 194
16.2 Ducks and Traffic 195
16.3 Fish 200
16.4 Extensions 202
Questions 203

chapter 17
Rent Seeking 205
17.1 Government with “a Smokestack on Its Back” 205
17.2 Rent Seeking in the Classroom Laboratory 207
17.3 The Nash Equilibrium 208
17.4 Comparative Statics for Changes in Cost and the Number
of Competitors 209
17.5 Extensions 210
Questions 212

chapter 18
Voting and Politics Experiments 215
18.1 The Median Voter Theorem 215
18.2 Experimental Tests of Spatial Voting Models 217
18.3 Fairness and Deviations from Core Outcomes 220
18.4 Legislative Bargaining 221
18.5 Agendas and Strategic Voting 222
18.6 Polls, Runoffs, and Other Coordinating Devices 224
18.7 Participation Games 225
18.8 Field Experiments 227
18.9 Extensions 228
Questions 229

part 5 • Auctions 231

chapter 19
Private Value Auctions 233
19.1 Introduction 233
19.2 Auctions: Up, Down, and the “Little Magical Elf” 234
19.3 Bidding against a Uniform Distribution 237
19.4 Bidding Behavior in a Two-Person, First-Price Auction 240
19.5 Extensions 242
Appendix: Risk Aversion 244
Questions 246
chapter 20

The Takeover Game  247

20.1 Wall Street (the Film)  247
20.2 A Takeover Game Experiment  248
20.3 Quality Unraveling  250
20.4 Extensions: The Loser’s Curse  252
Questions  252

chapter 21

Common-Value Auctions and the Winner’s Curse  255

21.1 “I Won the Auction but I Wish I Hadn’t”  255
21.2 The Nash Equilibrium  258
21.3 The Winner’s Curse  261
21.4 Extensions  262
Questions  263

chapter 22

Multi-Unit and Combinatorial Auctions  265

22.1 Dry 2K  265
22.2 FCC Bandwidth Auctions and Package Bidding Alternatives  272
22.3 Experimental Tests of Package Bidding Alternatives  276
22.4 Extensions  278
Questions  279

part 6

Behavioral Game Theory: Treasures and Intuitive Contradictions  281

chapter 23

Multi-Stage Games  285

23.1 Extensive Forms and Strategies  285
23.2 Two-Stage Trust Games  288
23.3 The Centipede Game  291
23.4 Extensions  292
Questions  293

chapter 24

Generalized Matching Pennies  295

24.1 The Case of Balanced Payoffs  295
24.2 Noisy Best Responses  296
24.3 The Effects of Payoff Imbalances  299
24.4 Probabilistic Choice  302
24.5 Extensions  304
Questions  305

chapter 25

The Traveler’s Dilemma  307

25.1 A Vacation with an Unhappy Ending?  307
- References 433
- Index 451

- **Class Experiments**

  Instructions CE-1
  chapter 2 · Pit Market CE-3
  chapter 3 · Push-Pull CE-7
  chapter 4 · Lottery Choice CE-11
  chapter 5 · Battle of Colors CE-15
  chapter 6 · Quantity Choice Market CE-19
  chapter 10 · Price/Quality Market CE-23
  chapter 12 · Bargaining CE-27
  chapter 14 · Play-or-Keep CE-31
  chapter 15 · Volunteer’s Dilemma Game CE-33
  chapter 17 · Lobbying Game CE-35
  chapter 19 · Private Value Auction CE-39
  chapter 20 · Takeover Game CE-43
  chapter 21 · Common Value Auction CE-47
  chapter 22 · Multi-Unit Auction CE-51
  chapter 25 · Claim Game CE-55
  chapter 26 · Effort Game CE-59
  chapter 27 · Binary Prediction Game CE-63
  chapter 28 · Paired Lottery Choices CE-67
  chapter 29 · Search Game CE-71
  chapter 30 · Bayes’ Rule CE-75