Contents

Preface xi

1.1	Game Theory 1	
	Games and Solutions 2	
-	Game Theory and the Theory of Competitive Equilibrium	
1.4	Rational Behavior 4	
1.5	The Steady State and Deductive Interpretations 5	
1.6	Bounded Rationality 6	
	Terminology and Notation 6	
	Notes 8	

Mixed Strategy West Equilibrium 314

I Strategic Games 9

2

Nash Equilibrium 11

2.1	Strategic Games 11
2.2	Nash Equilibrium 14
2.3	Examples 15
2.4	Existence of a Nash Equilibrium 19
2.5	Strictly Competitive Games 21
2.6	Bayesian Games: Strategic Games with Imperfect
	Information 24
	Notes 29

3	Mi	xed, Correlated, and Evolutionary Equilibrium	31			
	3.1	Mixed Strategy Nash Equilibrium 31				
	3.2	Interpretations of Mixed Strategy Nash Equilibrium	37			
	3.3	Correlated Equilibrium 44				
	3.4	Evolutionary Equilibrium 48				
		Notes 51				
4	Rationalizability and Iterated Elimination of Dominated					
		tions 53				
	4.1	Rationalizability 53				
	4.2		8			
	4.3		2			
		Notes 64				
5	Kne	Knowledge and Equilibrium 67				
	5.1	A Model of Knowledge 67				
	5.2	Common Knowledge 73				
	5.3	Can People Agree to Disagree? 75				
	5.4					
	5.5	The Electronic Mail Game 81				
		Notes 84				
II	Ex	tensive Games with Perfect Information	87			
6	Ext	censive Games with Perfect Information 89				
	6.1	Extensive Games with Perfect Information 89				
	6.2	Subgame Perfect Equilibrium 97				
	6.3	Two Extensions of the Definition of a Game 101				
	6.4	The Interpretation of a Strategy 103				
	6.5	Two Notable Finite Horizon Games 105				
	6.6	Iterated Elimination of Weakly Dominated Strategies 108				
		Notes 114				
7	Bar	egaining Games 117				
	7.1	Bargaining and Game Theory 117				
	7.2	A Bargaining Game of Alternating Offers 118				
	7.3	Subgame Perfect Equilibrium 121				
	7.4	Variations and Extensions 127				
		Notes 131				

3	Rep	eated Games 133
	8.1	The Basic Idea 133
	8.2	Infinitely Repeated Games vs. Finitely Repeated Games 134
	8.3	Infinitely Repeated Games: Definitions 136
	8.4	Strategies as Machines 140
	8.5	Trigger Strategies: Nash Folk Theorems 143
	8.6	Punishing for a Limited Length of Time: A Perfect Folk
		Theorem for the Limit of Means Criterion 146
	8.7	Punishing the Punisher: A Perfect Folk Theorem for the
		Overtaking Criterion 149
	8.8	Rewarding Players Who Punish: A Perfect Folk Theorem for
		the Discounting Criterion 150
	8.9	The Structure of Subgame Perfect Equilibria Under the
		Discounting Criterion 153
	8.10	Finitely Repeated Games 155
		Notes 160
9	Con	aplexity Considerations in Repeated Games 163
	9.1	Introduction 163
	9.2	Complexity and the Machine Game 164
	9.3	The Structure of the Equilibria of a Machine Game 168
	9.4	The Case of Lexicographic Preferences 172
		Notes 175
10	Imp	lementation Theory 177
		Introduction 177
		The Implementation Problem 178
		Implementation in Dominant Strategies 180
		Nash Implementation 185
		Subgame Perfect Equilibrium Implementation 191
	20.0	Notes 195

III	Extensive	Games	with	Imperfect
	Informatio	n 197		

- 11.1 Extensive Games with Imperfect Information 199
- 11.2 Principles for the Equivalence of Extensive Games 204
- 11.3 Framing Effects and the Equivalence of Extensive Games 209
- 11.4 Mixed and Behavioral Strategies 212
- 11.5 Nash Equilibrium 216 Notes 217

12 Sequential Equilibrium 219

- 12.1 Strategies and Beliefs 219
- 12.2 Sequential Equilibrium 222
- 12.3 Games with Observable Actions: Perfect Bayesian Equilibrium 231
- 12.4 Refinements of Sequential Equilibrium 243
- 12.5 Trembling Hand Perfect Equilibrium 246 Notes 254

IV Coalitional Games 255

13 The Core 257

- 13.1 Coalitional Games with Transferable Payoff 257
- 13.2 The Core 258
- 13.3 Nonemptiness of the Core 262
- 13.4 Markets with Transferable Payoff 263
- 13.5 Coalitional Games without Transferable Payoff 268
- 13.6 Exchange Economies 269 Notes 274

14 Stable Sets, the Bargaining Set, and the Shapley Value 277

- 14.1 Two Approaches 277
- 14.2 The Stable Sets of von Neumann and Morgenstern 278
- 14.3 The Bargaining Set, Kernel, and Nucleolus 281
- 14.4 The Shapley Value 289 Notes 297

15 The Nash Solution 299

- 15.1 Bargaining Problems 299
- 15.2 The Nash Solution: Definition and Characterization 301
- 15.3 An Axiomatic Definition 305
- 15.4 The Nash Solution and the Bargaining Game of Alternating Offers 310
- 15.5 An Exact Implementation of the Nash Solution 311
 Notes 312

List of Results 313

References 321

Index 341