

Contents

Introduction 1

References and Suggested Readings 8

Part I / Real Dynamic Macroeconomic Models

1. Dynamic Programming 11

A General Intertemporal Problem 12

A Recursive Problem 13

Bellman's Equations 16

Nonstochastic Examples 22

The Optimal Linear Regulator Problem 27

Stochastic Control Problems 29

Examples of Stochastic Control Problems 31

The Stochastic Linear Optimal Regulator Problem 36

Dynamic Programming and Lucas's Critique 40

Dynamic Games and the Time Inconsistency Phenomenon 41

Conclusions 47

Exercises 47

References and Suggested Readings 54

2. Search 57

Nonnegative Random Variables 58

Stigler's Model of Search 59

Sequential Search for the Lowest Price 60

Mean-Preserving Spreads 63

Increases in Risk and the Reservation Price 65

Intertemporal Job Search 65
Waiting Times 70
Firing 70
Jovanovic's Matching Model 71
Conclusions 83
Exercises 85
References and Suggested Readings 91

3. Asset Prices and Consumption 92

Hall's Random Walk Theory of Consumption 93
The Random Walk Theory of Stock Prices 94
Lucas's Model of Asset Prices 95
Mehra and Prescott's Finite-State Version of Lucas's Model 100
Asset Pricing More Generally 101
The Modigliani-Miller Theorem 115
Government Debt and the Ricardian Proposition 116
Remarks on Testing and Estimation 119
Conclusions 120
Exercises 121
References and Suggested Readings 128

Part II / Monetary Economics and Government Finance

4. Currency in the Utility Function 133

The Price of Inconvertible Government Currency in Lucas's Tree Model 133
Issues and Models in Monetary Economics 137
Government Debt in the Utility Function 140
Government Currency in the Utility Function 142
Seignorage and the Optimum Quantity of Currency 145
A Neutrality Proposition 148
Conclusions 152
References and Suggested Readings 153

5. Cash-in-Advance Models 155

A One-Country Model 156
Fisher Equations 165
Inflation-Indexed Government Debt 166
Interactions of Monetary and Fiscal Policies 168
Interest on Reserves 177
A Two-Country Model 182
Exchange Rate Indeterminacy 188
Conclusions 192
Exercises 192
References and Suggested Readings 198

6. Credit and Currency with Long-Lived Agents 199

The Physical Setup 200
Optimal Allocations 201

Competitive Equilibrium 202
 A Digression on the Balances of Trade and Payments 207
 The Ricardian Doctrine about Taxes and Government Debt 207
 The Model with Valued Currency and No Private Debt 212
 An Interventionist Optimal Monetary Equilibrium 220
 Townsend's "Turnpike" Interpretation 224
 Conclusions 226
 Exercises 226
 References and Suggested Readings 230

7. Credit and Currency with Overlapping Generations 231

The Overlapping-Generations Model 232
 The Ricardian Doctrine about Taxes and Government Debt Again 244
 A Ricardian Proposition 250
 Currency, Bonds, and Open-Market Operations 253
 Computing Equilibria 257
 Interpretations as Currency Equilibria 264
 Optimality 266
 Four Examples on Inflation and Its Causes 269
 Seignorage and the Laffer Curve 275
 Dynamics of Seignorage 281
 Forced Saving 283
 International Exchange Rates 285
 Conclusions 289
 Exercises 290
 References and Suggested Readings 301

8. Government Finance in Stochastic Overlapping-Generations Models 304

The Economy 305
 Some Examples 309
 A General Irrelevance Theorem 319
 Wallace's Modigliani-Miller Theorem for Open-Market Operations 323
 Chamley and Polemarchakis's Neutrality Theorem 324
 Interpretation as a Constant Fiscal Policy 327
 Indexed Government Bonds 328
 A Ricardian Proposition 331
 Further Irrelevance Theorems 333
 Conclusions 333
 Exercises 334
 References and Suggested Readings 337

Appendix. Functional Analysis for Macroeconomics 339

Metric Spaces and Operators 340
 First-Order Linear Difference Equations 345
 A Formula of Hansen and Sargent 350
 A Quadratic Optimization Problem in R^∞ 352
 A Discounted Quadratic Optimization Problem 354

Predicting a Geometric Distributed Lead of a Stochastic Process	357
Discounted Dynamic Programming	360
A Search Problem	361
Exercises	362
References and Suggested Readings	363

Index	365
--------------	-----