

Part I: Introduction to Monetary Economics	1
1 Overview	5
2 Money in the Utility Function	26
3 The Welfare Cost of Inflation in a Growing Economy	57
4 Government	72
5 More Explicit Models of Money	86
6 Optimal Fiscal and Monetary Policy	100
7 Money and the Business Cycle: Does Money Matter?	123
8 Sticky Prices in a Demand-satisfying Model	147
9 Sticky Prices with Optimal Quantity Choices	155
10 Flexible Prices	170
 Part II: An Introduction to the Economics of Uncertainty	 179
11 Preliminaries	182
12 Does Insurance Require Risk Aversion?	197
13 Asset Prices and the Lucas “Tree Model”	202
 Part III: An Introduction to Uncertain and Sequential Trade (UST)	 207
14 Real Models	210
15 A Monetary Model	250

16	Limited Participation, Sticky Prices, and UST: A Comparison	261
17	Inventories and the Business Cycle	280
18	Money and Credit in the Business Cycle	302
19	Evidence from Micro Data	313
20	The Friedman Rule in a UST Model	327
21	Sequential International Trade	333
22	Endogenous Information and Externalities	356
23	Search and Contracts	369
 <i>References</i>		 385
<i>Index</i>		395

Contents

<i>Preface</i>	xiii
Part I: Introduction to Monetary Economics	1
1 Overview	5
1.1 Money, Inflation, and Output: Some Empirical Evidence	5
1.2 The Policy Debate	8
1.3 Modeling Issues	13
1.4 Background Material	14
1.4.1 The Fisherian diagram	15
1.4.2 Efficiency and distortive taxes	18
1.4.3 Asset pricing	21
2 Money in the Utility Function	26
2.1 Motivating the Money in the Utility Function Approach: The Single-period, Single-agent Problem	26
2.2 The Multi-period, Single-agent Problem	28
2.3 Equilibrium with Constant Money Supply	33
2.4 The Social and Private Cost for Accumulating Real Balances	34
2.5 Administrative Ways of Getting to the Optimum	36
2.6 Once and for All Changes in M	36
2.7 Change in the Rate of Money Supply Change: Technical Aspects	37
2.8 Change in the Rate of Money Supply Change: Economics	38
2.9 Steady-state Equilibrium (SSE)	41
2.10 Transition from One Steady State to Another	41
2.11 Regime Changes	43
2.12 Introducing Physical Capital and Bonds	45

2.13	The Golden Rule and the Modified Golden Rule	47
	Appendix 2A A dynamic programming example	53
3	The Welfare Cost of Inflation in a Growing Economy	57
3.1	Steady-state Equilibrium in a Growing Economy	57
3.2	Generalizing the Model in Chapter 2 to the Case of Growth	58
3.3	Money Substitutes	64
	Appendix 3A A dynamic programming formulation	69
4	Government	72
4.1	The Revenues from Printing Money	72
4.1.1	Steady-state revenues	72
4.1.2	Out of the steady-state revenues	73
4.1.3	The present value of revenues	75
	Appendix 4A Non-steady-state equilibria	76
4.2	The Government's "Budget Constraint"	78
4.2.1	Monetary and fiscal policy: Who moves first?	81
4.2.2	The fiscal approach to the price level	81
4.3	Policy in the Absence of Perfect Commitment: A Positive Theory of Inflation	82
5	More Explicit Models of Money	86
5.1	A Cash-in-advance Model	86
5.1.1	A two-goods model	87
5.1.2	An analogous real economy	89
5.1.3	Money super-neutrality in a one-good model	92
5.2	An Overlapping Generations Model	94
5.3	A Baumol–Tobin Type Model	96
	Appendix 5A	98
6	Optimal Fiscal and Monetary Policy	100
6.1	The Second-best Allocation	100
6.2	The Second Best and the Friedman Rule	103
6.3	Smoothing Tax Distortions	109
6.4	A Shopping Time Model	112
7	Money and the Business Cycle: Does Money Matter?	123
7.1	VAR and Impulse Response Functions: An Example	125
7.2	Using VAR Impulse Response Analysis to Assess the Money–Output Relationship	127

7.3	Specification Search	135
7.4	Variance Decomposition	142
8	Sticky Prices in a Demand-satisfying Model	147
9	Sticky Prices with Optimal Quantity Choices	155
9.1	The Production to Order Case	156
9.2	The Production to Market Case	161
10	Flexible Prices	170
10.1	Lucas' Confusion Hypothesis	170
10.2	Limited Participation	174
Part II:	An Introduction to the Economics of Uncertainty	179
11	Preliminaries	182
11.1	Trade in Contingent Commodities	185
11.2	Efficient Risk Allocation	190
12	Does Insurance Require Risk Aversion?	197
12.1	The Insurance-buying Gambler	200
12.2	Socially Harmful Information	201
13	Asset Prices and the Lucas "Tree Model"	202
Part III:	An Introduction to Uncertain and Sequential Trade (UST)	207
14	Real Models	210
14.1	An Example	210
14.1.1	Downward sloping demand	215
14.1.2	Welfare analysis	218
14.1.3	Demand and supply analysis	221
14.2	Monopoly	224
14.2.1	Procyclical productivity	226
14.2.2	Estimating the markup	227
14.3	Relationship to the Arrow–Debreu Model	228
14.4	Heterogeneity and Supply Uncertainty	231
14.4.1	The model	233

14.5 Inventories	237
14.5.1 Temporary (partial) equilibrium	238
14.5.2 Solving for a temporary equilibrium	240
14.5.3 Full equilibrium	243
14.5.4 Efficiency	243
Appendix 14A The firm's problem	247
Appendix 14B The planner's problem	248
15 A Monetary Model	250
15.1 An Example	251
15.2 Working with the Money Supply as the Unit of Account	253
15.3 Anticipated and Unanticipated Money	255
15.4 Labor Choice, Average Capacity Utilization and Welfare	256
15.5 A Generalization to Many Potential Markets	256
15.6 Asymmetric Equilibria: A Perfectly Flexible Price Distribution is Consistent with Individual Prices That Appear to Be "Rigid"	258
15.7 Summary of the Implications of the Model	259
16 Limited Participation, Sticky Prices, and UST: A Comparison	261
16.1 Limited Participation	261
16.2 Sticky Prices	265
16.3 UST	268
16.4 A Real Business Cycle Model with Wedges: Some Equivalence Results	274
16.5 Additional Tests Based on Unit Labor Cost and Labor Share	276
17 Inventories and the Business Cycle	280
17.1 Introducing Costless Storage	282
17.2 Adding Supply Shocks	288
17.3 Testing the Model with Detrended Variables	292
17.4 Using an Impulse Response Analysis with Non-detrended Variables to Test for Persistence	297
Appendix 17A The Hodrick–Prescott (H–P) filter	300
18 Money and Credit in the Business Cycle	302
18.1 A UST Model with Credit	302
18.2 Inventories Are a Sufficient Statistic for Past Demand Shocks	305
18.3 Estimating the Responses to a Money Shock	306

18.4	Estimating the Responses to an Inventories Shock	310
18.5	Concluding Remarks	312
19	Evidence from Micro Data	313
19.1	A Menu Cost Model	313
19.2	The Serial Correlation in the Nominal Price Change	315
19.3	A Two-Sided Policy	316
19.4	Relative Price Variability and Inflation	317
19.5	A Staggered Price Setting Model	319
20	The Friedman Rule in a UST Model	327
20.1	A Single-Asset Economy	327
20.2	Adding a Costless Bonds Market	330
20.3	Costly Transactions in Bonds	331
21	Sequential International Trade	333
21.1	A Real Model	334
21.2	A Monetary Model	341
21.3	Exchange Rates	348
	Appendix 21A Proofs of the Claims in the Monetary Model	350
	Appendix 21B Example 7 in detail	353
22	Endogenous Information and Externalities	356
22.1	A Real Model	356
22.2	A Monetary Model	361
22.3	Relationship to the New Keynesian Economics	367
23	Search and Contracts	369
23.1	Search over Time	369
23.2	Random Choice of Markets	371
23.3	Capacity Utilization Contracts and Carlton's Observations	375
	<i>References</i>	385
	<i>Index</i>	395