2.3 Stability under Learning Dynamics 261
2.4 Determinants of Inflation 276
2.5 Inflation Stabilization through Commitment to a Taylor Rule 286
2.6 Inflation Targeting Rules 290

3 Money and Aggregate Demand 295
3.1 An Optimizing IS-LM Model 295
3.2 Real-Balance Effects 299

4 Fiscal Requirements for Price Stability 311

5 Dynamics of the Response to Monetary Policy 320

1 Delayed Effects of Monetary Policy 321
1.1 Consequences of Predetermined Expenditure 322
1.2 Habit Persistence in Private Expenditure 332

2 Some Small Quantitative Models 336
2.1 The Rotemberg-Woodford Model 336
2.2 More Complex Variants 345

3 Monetary Policy and Investment Dynamics 352
3.1 Investment Demand with Sticky Prices 353
3.2 Optimal Pricesetting with Endogenous Capital 357
3.3 Comparison with the Basic Neo-Wicksellian Model 361
3.4 Capital and the Natural Rate of Interest 372

PART II
Optimal Policy

6 Inflation Stabilization and Welfare 381

1 Approximation of Loss Functions and Optimal Policies 383

2 A Utility-Based Welfare Criterion 392
2.1 Output-Gap Stability and Welfare 393
2.2 Inflation and Relative-Price Distortions 396

3 The Case for Price Stability 405
3.1 The Case of an Efficient Natural Rate of Output 407
3.2 Consequences of a Mildly Inefficient Natural Rate of Output 411
3.3 Caveats 416

4 Extensions of the Basic Analysis 419
4.1 Transactions Frictions 420
4.2 The Zero Interest-Rate Lower Bound 427
4.3 Asymmetric Disturbances 435
4.4 Sticky Wages and Prices 443
4.5 Time-Varying Tax Wedges or Markups 448

5 The Case of Larger Distortions 455

7 Gains from Commitment to a Policy Rule 464

1 The Optimal Long-Run Inflation Target 468
1.1 The Inflationary Bias of Discretionary Policy 469
1.2 Extensions of the Basic Analysis 476

2 Optimal Responses to Disturbances 484
2.1 Cost-Push Shocks 486
2.2 Fluctuations in the Natural Rate of Interest 501

3 Optimal Simple Policy Rules 507
3.1 The Optimal Noninertial Plan 510
3.2 The Optimal Taylor Rule 513

4 The Optimal State-Contingent Instrument Path as a Policy Rule 517

5 Commitment to an Optimal Targeting Rule 521
5.1 Robustly Optimal Target Criteria 522
5.2 Implementation of a Targeting Rule 527

8 Optimal Monetary Policy Rules 534

1 A General Linear-Quadratic Framework 535
1.1 Optimal State-Contingent Paths 536
1.2 Alternative Forms of Policy Rules 543
1.3 Robustness to Alternative Types of Disturbances 547
1.4 Existence of Robustly Optimal Policy Rules 550
1.5 Optimal Instrument Rules 555

2 Optimal Inflation Targeting Rules 559
2.1 A Model with Inflation Inertia 560
2.2 A Model with Wages and Prices Both Sticky 565
2.3 A Model with Habit Persistence 568
2.4 Predetermined Spending and Pricing Decisions 569
2.5 Optimal Policy for a Small Quantitative Model 573

3 Optimal Interest-Rate Rules 582
3.1 An Optimal Rule for the Basic Neo-Wicksellian Model 583
3.2 Consequences of Inflation Inertia 592
3.3 Predetermined Spending and Pricing Decisions 604
3.4 Optimal Policy under Imperfect Information 606

4 Reflections on Currently Popular Policy Proposals 610
4.1 The Taylor Rule 610
4.2 Inflation-Forecast Targeting 619
APPENDIXES

A Addendum to Chapter 2
A.1 Proof of Proposition 2.1 627
A.2 Proof of Proposition 2.2 628
A.3 Log-Linearization and Determinacy of Equilibrium 630
A.4 Proof of Proposition 2.3 635
A.5 Proof of Proposition 2.4 637
A.6 Proof of Proposition 2.5 638
A.7 Proof of Proposition 2.7 639
A.8 Proof of Proposition 2.8 640
A.9 Proof of Proposition 2.9 641
A.10 Proof of Proposition 2.10 643
A.11 Proof of Proposition 2.11 644
A.12 Proof of Proposition 2.12 645
A.13 Proof of Proposition 2.13 646
A.14 Proof of Proposition 2.14 646
A.15 Proof of Proposition 2.15 647
A.16 Monetary Frictions with an Alternative Timing Convention 649
A.17 The Example of Schmitt-Grohé and Uribe 653

B Addendum to Chapter 3
B.1 Non-CES Demand and Variable Markups 656
B.2 Proof of Proposition 3.3 657
B.3 Proof of Proposition 3.4 659
B.4 Proof of Proposition 3.5 661
B.5 Proof of Proposition 3.6 662
B.6 Proof of Proposition 3.7 664
B.7 Proof of Proposition 3.8 666

C Addendum to Chapter 4
C.1 Determinacy of Equilibrium in Small Linear Models: Useful Results 670
C.2 Proof of Proposition 4.3 676
C.3 Proof of Proposition 4.4 677
C.4 Proof of Proposition 4.5 681
C.5 Proof of Proposition 4.6 682
C.6 Proof of Proposition 4.7 683
C.7 Proof of Proposition 4.9 683
C.8 Proof of Proposition 4.11 685

D Addendum to Chapter 5
D.1 Alternative Interpretation of the Habit Persistence Model 687