Preface to the Fourth Edition  xix
Introduction and Overview  1

Part I: Macroeconomic Accounts, Market Structure, and Behavioral Functions

1 Economic Structure and Aggregate Accounts  12

1 Economic Structure and Macroeconomics  13
   1.1 Openness to Trade in Goods and Assets  13
   1.2 Exchange-Rate Management  15
   1.3 Domestic Financial Markets  16
   1.4 The Government Budget  17
   1.5 Aggregate Supply and the Labor Market  18
   1.6 Stability of Policy Regimes  20
   1.7 Macroeconomic Volatility and Fluctuations  21
   1.8 Income Inequality  25

2 A General Accounting Framework  25
   2.1 The Nonfinancial Private Sector  26
   2.2 The Public Sector  27
      2.2.1 The Nonfinancial Public Sector  27
      2.2.2 The Central Bank  28
      2.2.3 The Consolidated Public Sector  29
   2.3 The Commercial Banking System  30
   2.4 Aggregate Relationships  31

3 Production Structure in an Open Economy  32
   3.1 The Mundell-Fleming Model  32
   3.2 The “Dependent Economy” Model  36
   3.3 A Model with Three Goods  39

4 The Structure of Labor Markets  42
   4.1 Functioning of Labor Markets  43
   4.2 Open and Disguised Unemployment  45
   4.3 Indexation and Wage Rigidity  45
   4.4 Labor Market Segmentation  47
# Contents

## 2 Behavioral Functions 52

1 Consumption and Saving 52
   1.1 Consumption Smoothing 56
   1.2 Planning Horizon and Liquidity Constraints 57
   1.3 Liquidity Constraints and Asymmetric Effects 59
   1.4 Effects of Interest Rate Changes on Savings 63
   1.5 Public and Private Consumption 64

2 Private Investment 65
   2.1 Conventional Determinants 65
   2.2 Reformulation of Theories 66
      2.2.1 Nature of the Financial System 66
      2.2.2 Imported Goods 66
      2.2.3 Debt Overhang Effects 67
      2.2.4 Role of Public Capital 67
      2.2.5 Macroeconomic Instability and Uncertainty 68
   2.3 Uncertainty and Irreversibility Effects 69

3 The Demand for Money 72
   3.1 Conventional Models 73
   3.2 Currency Substitution and Dollarization 75

## Part II: Financial Policies

### 3 The Government Budget and Fiscal Management 78

1 The Government Budget Constraint 79
2 The Measurement of Fiscal Deficits 81
3 Contingent Liabilities 83
4 Seigniorage and Inflationary Finance 84
   4.1 The Optimal Inflation Tax 85
   4.2 Collection Lags and the Olivera-Tanzi Effect 88
   4.3 Collection Costs and Tax System Efficiency 92
   4.4 Financial Repression and the Inflation Tax 93
5 Policy Consistency and Solvency 98
   5.1 The Intertemporal Solvency Constraint 98
   5.2 Financing Constraints and Policy Consistency 101
6 Fiscal Rules and Fiscal Discipline 103
7 Fiscal Rules, Public Investment, and Growth 104

Appendix: Fiscal Effects of Privatization 106

For general queries, contact webmaster@press.princeton.edu
# Macroeconomic Effects of Fiscal Policy 109

1 Ricardian Equivalence 110

2 Deficits, Inflation, and the “Tight Money” Paradox 111
   
   2.1 The Analytical Framework 112
   
   2.2 Constant Primary Deficit 114
   
   2.3 Constant Conventional Deficit 116

3 Deficits, Interest Rates, and Crowding Out 120
   
   3.1 Expectations, Deficits, and Real Interest Rates 120
   
   3.2 Deficits, Investment, and Crowding Out 126

4 Budget Deficits and the Current Account 127

5 Expansionary Fiscal Contractions 128

6 Fiscal Adjustment and the Labor Market 129
   
   6.1 The Model 130
      
      6.1.1 The Formal Economy 131
      
      6.1.2 The Informal Sector 134
      
      6.1.3 Consumption and Wealth 134
      
      6.1.4 Market for Informal Sector Goods 135
      
      6.1.5 The Informal Labor Market 135
      
      6.1.6 Government 137

   6.2 Dynamic Structure 137
   
   6.3 Steady-State Solution 139
   
   6.4 Government Spending Cut 141

# Financial Markets and the Monetary Transmission Mechanism 144

1 Financial Structure and the Role of Banks 145

2 Asymmetric Information and Credit 147
   
   2.1 The Stiglitz-Weiss Model of Credit Rationing 148
   
   2.2 Costly State Verification Models 152
      
      2.2.1 Bank Credit and the Supply Side 153
      
      2.2.2 The Cost of Funds–Contractual Interest Rate Curve 156
      
      2.2.3 Intermediation Costs, Employment, and Output 160

   2.3 Net Worth and Borrowing Constraints 161

3 The Monetary Transmission Mechanism: Overview 167
   
   3.1 The Pass-Through of Policy Rates to Market Rates 167
   
   3.2 Interest Rate Effects 170
   
   3.3 Exchange-Rate Effects 171
   
   3.4 Asset Prices and Balance Sheet Effects 172
      
      3.4.1 Net Worth and the Finance Premium 173
      
      3.4.2 The Financial Accelerator 173

For general queries, contact webmaster@press.princeton.edu
Contents

3.5 Credit Availability Effects 175
3.6 Expectations 176
4 Dollarization 177
  4.1 Determinants of Dollarization 177
  4.2 Persistence of Dollarization 177
  4.3 Dollarization and Macroeconomic Management 178
5 Macroprudential and Monetary Policies 180

6 A Framework for Monetary Policy Analysis 182

1 The Basic Model: Fixed Exchange Rates 183
  1.1 Structure of the Model 184
     1.1.1 Household Portfolio Allocation 184
     1.1.2 Commercial Banks 186
     1.1.3 Central Bank 188
     1.1.4 Price Level and the Real Sector 189
  1.2 Model Solution 190
  1.3 Policy and Exogenous Shocks 195
     1.3.1 Increase in the Refinance Rate 195
     1.3.2 Central Bank Auctions 196
     1.3.3 Increase in the Required Reserve Ratio 197
     1.3.4 Shifts in the Risk Premium and Contract Enforcement Costs 198
     1.3.5 Changes in Public Expenditure and World Interest Rates 200
2 Flexible Exchange Rates 200
  2.1 Model Structure 200
  2.2 Solution 205
  2.3 Policy and Exogenous Shocks 210
     2.3.1 Increase in the Refinance Rate 210
     2.3.2 Central Bank Auctions 212
     2.3.3 Increase in the Required Reserve Ratio 213
     2.3.4 Shifts in the Risk Premium and Contract Enforcement Costs 214
     2.3.5 Changes in Public Expenditure and World Interest Rates 214
3 Extensions 216
  3.1 Sterilization 217
  3.2 Working-Capital Needs 219
  3.3 Dynamics of Prices and Interest Rates 222

For general queries, contact webmaster@press.princeton.edu
7 Inflation Targeting, Macroeconomic Stability, and Financial Stability 224

1 Basic Framework: Closed Economy 225
   1.1 Strict Inflation Targeting 226
   1.2 Policy Trade-Offs and Flexible Targeting 229
2 Inflation Targeting in an Open Economy 232
3 Comparison with Other Regimes 235
   3.1 Monetary Targeting 236
   3.2 Exchange-Rate Targeting 237
   3.3 Nominal Income Targeting 239
4 Basic Requirements for Inflation Targeting 246
   4.1 Central Bank Independence and Credibility 246
   4.2 Absence of Fiscal Dominance 247
   4.3 Absence of de facto Exchange-Rate Targeting 248
   4.4 Healthy Financial System 249
   4.5 Transparency and Accountability 249
5 Performance of Inflation Targeting Regimes 250
6 Inflation Targeting and Financial Stability 254
7 Some Other Analytical Issues 256
   7.1 Non-Quadratic Policy Preferences 256
   7.2 Uncertainty and Optimal Policy Rules 258

8 Choosing an Exchange-Rate Regime I: Credibility, Flexibility, and Welfare 262

1 Basic Typology 263
2 Evolution of Exchange-Rate Regimes 263
3 Policy Trade-Offs and Credibility 265
   3.1 Time Inconsistency and Exchange-Rate Policy 266
   3.2 Credibility of a Fixed Exchange Rate 271
   3.3 Reputation, Signaling, and Commitment 271
4 Credibility vs. Flexibility: Role of Bands 274
   4.1 Rationale for Bands 274
   4.2 Bands and Monetary Policy Credibility 277
   4.3 Experience with Bands 278
5 Currency Unions 279
   5.1 Credibility Effects of Monetary Unions 280
   5.2 Welfare Effects of Optimum Currency Areas 284
      5.2.1 The Model 284
      5.2.2 Equilibrium 286
      5.2.3 Welfare Effects 287
Appendix: Krugman’s Target Zone Model 291

For general queries, contact webmaster@press.princeton.edu
Choosing an Exchange-Rate Regime II: The Role of Shocks, Contractionary Effects, and Moral Hazard  295

1 Role of Shocks  295
   1.1 Model Specification  296
   1.2 Model Solution  298

2 Contractionary Effects  302
   2.1 Effects on Aggregate Demand  303
      2.1.1 Consumption  303
      2.1.2 Investment  312
      2.1.3 Nominal Interest Rates  316
   2.2 Effects on Aggregate Supply  319
      2.2.1 Effects on the Nominal Wage  319
      2.2.2 Imported Inputs  322
      2.2.3 Effects through Working-Capital Costs  324
      2.2.4 Effects through Balance Sheets  326

3 An Assessment  327

Part III: Inflation Stabilization and Applied Models for Monetary Policy Analysis

Inflation and Short-Run Dynamics  331

1 Models of the Inflationary Process  332
   1.1 Inflation, Money, and Fiscal Deficits  332
      1.1.1 Adaptive Expectations  334
      1.1.2 Perfect Foresight  335
   1.2 Food Supply and the Wage-Price Cycle  338
      1.3 A Structuralist-Monetarist Model  343

2 Dynamics of Alternative Policy Rules  346
   2.1 A One-Good Framework  346
      2.1.1 Households  347
      2.1.2 Government and The Central Bank  350
      2.1.3 Money Market Equilibrium  351
      2.1.4 Dynamic Form  351
      2.1.5 Devaluation Rule  353
      2.1.6 Credit Growth Rule  357
      2.1.7 Dynamics with Alternative Fiscal Policy Rules  359
### 2.2 A Three-Good Model with Flexible Prices 360
- 2.2.1 Households 360
- 2.2.2 Output and the Labor Market 363
- 2.2.3 Central Bank and the Government 363
- 2.2.4 Market-Clearing Conditions 364
- 2.2.5 Dynamic Form 364
- 2.2.6 Policy Experiments 368

### 2.3 Extensions 373
- 2.3.1 Imported Intermediate Inputs 373
- 2.3.2 Sticky Prices 374

**Appendix: Impact and Steady-State Effects 377**

### 11 Analytical Issues in Disinflation Programs 381

#### 1 Topics in Exchange-Rate-Based Programs 381
- 1.1 The Boom-Recession Cycle 382
  - 1.1.1 Expectations, Real Interest Rates, and Output 383
  - 1.1.2 The Temporariness Hypothesis 387
  - 1.1.3 An Assessment 395
- 1.2 The Behavior of Real Interest Rates 401
  - 1.2.1 Credibility, Nominal Anchors, and Interest Rates 401
  - 1.2.2 Expectations, Fiscal Adjustment, and Interest Rates 402
- 1.3 Disinflation and Real Wages 404

#### 2 Role of Credibility in Disinflation Programs 412
- 2.1 Sources of Credibility Problems 413
  - 2.1.1 Internal Inconsistency 413
  - 2.1.2 Time Inconsistency 414
  - 2.1.3 Asymmetric Information 416
  - 2.1.4 Policy Uncertainty and Stochastic Shocks 416
  - 2.1.5 Political Uncertainty 417
- 2.2 Enhancing the Credibility of Disinflation Programs 418
  - 2.2.1 Signaling and Sustainability 418
  - 2.2.2 Price Controls 420
  - 2.2.3 Central Bank Independence 427
  - 2.2.4 External Enforcement and Foreign Assistance 429
  - 2.2.5 Sequencing and Political Support 430
- 2.3 Policy Lessons 432

#### 3 Disinflation and Nominal Anchors 434

**Appendix: Output Effects of Price Controls 437**
Contents

12 Dynamic Stochastic Equilibrium Models with Financial Frictions 441

1 Main Features of DSGE Models 442
2 A Basic Model 443
  2.1 Household 444
  2.2 Output and Price Formation 446
  2.3 Government 451
  2.4 Market-Clearing Conditions 451
  2.5 Interest Rate Rule 453
  2.6 The Log-Linearized Form 454
3 Financial Frictions in DSGE Models 456
  3.1 Accounting for Financial Frictions 456
  3.2 Extending the Basic Framework 459
    3.2.1 Intermediate Good Producers 461
    3.2.2 Capital Good Producer 462
    3.2.3 Commercial Bank 464
    3.2.4 Central Bank 467
    3.2.5 Government 467
4 Calibration and Estimation 469
5 Extensions 469
  5.1 Heterogeneous Agents and Expectations 470
  5.2 Open-Economy Considerations 470
  5.3 Macroprudential Regulation 472

Part IV: Financial Openness, Capital Flows, and Financial Crises

13 Financial Integration and Capital Flows 476

1 Benefits and Costs of Financial Integration 477
  1.1 Potential Benefits 477
    1.1.1 Consumption Smoothing 478
    1.1.2 Domestic Investment and Growth 478
    1.1.3 Enhanced Macroeconomic Discipline 481
    1.1.4 Banking System Efficiency and Financial Stability 481
  1.2 Potential Costs 482
    1.2.1 Concentration of Capital Flows and Lack of Access 482
    1.2.2 Domestic Misallocation of Capital Flows 483
    1.2.3 Loss of Macroeconomic Stability 484

© Copyright, Princeton University Press. No part of this book may be distributed, posted, or reproduced in any form by digital or mechanical means without prior written permission of the publisher.
Contents

1.2.4 Procyclicality of Short-Term Flows 484
1.2.5 Herding, Contagion, and Volatility of Capital Flows 484
1.2.6 Risk of Entry by Foreign Banks 487

1.3 Assessing the Evidence 488

2 Determinants of Capital Inflows 492
2.1 “Pull” Factors 492
2.2 “Push” Factors 493
2.3 Assessing the Evidence 497

3 Managing Capital Inflows: Policy Options 500
3.1 Restrictions on Gross Inflows 501
3.2 Encouragement of Gross Outflows 503
3.3 Trade Liberalization 503
3.4 Exchange-Rate Flexibility 504
3.5 Sterilization 505
3.6 Policies to Influence the Money Multiplier 507
3.7 Fiscal Contraction 507
3.8 Macroprudential Regulation 508

Appendix: Measuring the Degree of Financial Integration 510

14 Exchange-Rate Crises and Sudden Stops 514

1 Currency Crises: Conventional Approach 515
1.1 The Basic Model 516
1.2 Extensions to the Basic Framework 521
1.2.1 Sterilization 521
1.2.2 Alternative Post-Collapse Regimes 522
1.2.3 Real Effects of an Anticipated Collapse 523
1.2.4 Borrowing, Capital Controls, and Crisis Postponement 525
1.2.5 Interest Rate Defense 527
1.2.6 Other Directions 528

2 Policy Trade-Offs and Self-Fulfilling Crises 530
2.1 Example Based on Output-Inflation Trade-Offs 531
2.2 Public Debt and Self-Fulfilling Crises 533
2.3 Role of Credibility and Reputation 535
2.4 Other Sources of Policy Trade-Offs 536

3 A “Cross-Generation” Framework 538

4 Third-Generation Models 539

5 Sudden Stops 540
5.1 Alternative Models 543
5.1.1 Models with Multiple Equilibria 543
5.1.2 A Sudden Stop as a Unique Equilibrium 545
5.2 The Role of Reserves and Policy Responses 548
xvi  Contents

15  Banking Crises and Twin Crises  550

1  Banks as Maturity Transformers  552
   1.1  The Diamond-Dybvig Framework  552
   1.2  Business Cycles and Banking Crises  555

2  Twin Crises  556
   2.1  A Basic Model with Close Linkages  557
   2.2  The Chang-Velasco Framework  560
   2.3  The Flood-Marion Joint Distribution Approach  563

3  Asymmetric Information and Opportunism  564

4  Determinants of Banking Crises: Evidence  566
   4.1  Episodic Cross-Country Evidence  566
   4.2  Signaling Approach  568
   4.3  Econometric Investigations  569

16  Sovereign Debt Crises  572

1  Fiscal Sustainability and Fiscal Solvency  573
   1.1  The Algebra of Fiscal Solvency  574
   1.2  Implications for Fiscal Policy  576

2  Empirical Tests of Fiscal Sustainability  577
   2.1  Deterministic Tests  577
      2.1.1  Sustainable Debt  577
      2.1.2  The Sustainable Primary Surplus  578
   2.2  Time-Series Tests  578
      2.2.1  Hamilton and Flavin (1986)  579
      2.2.2  Trehan and Walsh (1991)  580
   2.3  Fiscal Reaction Functions  581
   2.4  Tests of Fiscal Vulnerability  582
      2.4.1  Value at Risk  582
      2.4.2  Mendoza and Oviedo (2004)  583

3  Fiscal Solvency and Debt Repayment  584

4  Costs of Default  588
   4.1  Default and Domestic Debt  589
   4.2  Default and Real Output  589
      4.2.1  Debt Overhangs  591
      4.2.2  Effects on International Trade  591
      4.2.3  Signaling  592

5  Sovereign Debt Crises and Banking Crises  592

6  Sovereign Debt Crises and Currency Crises  594

Appendix: Determinants of Sovereign Debt Crises: The Evidence  597
Part V: Growth, Structural Reforms, and Political Economy

17 Macroeconomic Policies and Growth 602

1 The Neoclassical Growth Model 603
2 The AK Model of Endogenous Growth 607
3 Human Capital, Knowledge, and Growth 609
   3.1 The Production of Human Capital 609
   3.2 The Production of Knowledge 610
4 Government Spending, Taxes, and Growth 611
   4.1 The Barro Model 612
   4.2 Infrastructure, Health, and Growth 614
      4.2.1 Production 614
      4.2.2 Household Preferences 615
      4.2.3 Production of Health Services 616
      4.2.4 Government 616
   4.3 The Decentralized Equilibrium 616
   4.4 Optimal Policies 619
   4.5 A Stock Approach 623
5 Financial Intermediation and Growth 625
   5.1 Effects on the Saving Rate 626
   5.2 Effects on the Allocation of Capital 627
   5.3 Intermediation Costs and Efficiency 628
6 Inflation and Growth 629
7 Macroeconomic Volatility and Growth 632
8 Middle-Income Growth Traps 634
9 A Methodological Note 638

18 Trade Liberalization, Financial-Sector Reforms, and Sequencing 640

1 Trade Reform 641
   1.1 Analytical Framework 643
      1.1.1 Output, Turnover Costs, and Wages 644
      1.1.2 Consumption and the Market for Nontraded Goods 646
      1.1.3 Government 647
      1.1.4 Labor Market Adjustment 647
   1.2 Tariffs, Real Wages, and Employment 651
      1.2.1 Steady-State Effects 651
      1.2.2 Short-Run Dynamics 654
Contents

2 Financial Liberalization 657
   2.1 Deregulation of Interest Rates 658
   2.2 Broader Aspects of Financial Liberalization 659
   2.3 Role of Regulation and Supervision 661

3 Sequencing of Reforms 665
   3.1 Stabilization, Financial Reform, and Capital Account Opening 665
   3.2 Capital and Current Account Liberalization 668
   3.3 Macroeconomic Stabilization and Trade Reform 670

4 Adjustment Costs, Credibility, and Speed of Reform 672

19 The Political Economy of Adjustment 675

1 Politics, Economic Policy, and Adjustment 675
   1.1 The Political Economy of Reform 676
   1.2 Political Instability, Inflation, and Fiscal Deficits 678

2 Conflicts of Interest and Economic Reforms 679
   2.1 The Uncertain-Benefits Approach 679
   2.2 The Distributional Conflict Approach 681

3 Political Stabilization Cycles 684
   3.1 Opportunistic Models 685
      3.1.1 Elections, Inflation, and Unemployment 685
      3.1.2 Elections and Devaluation Cycles 688
   3.2 Models with Informational Asymmetries 692

4 The Political Economy of Fiscal Rules 694

Epilogue 697
References 701
Index of Names 741
Index of Subjects 751