

## **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

## **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

## **4 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

## **5 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

- 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

## **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

## **9 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**

## **10 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
<b>11</b>	<b>Analytical Issues in Disinflation Programs</b>	<b>381</b>
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

## **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



	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

## **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

- 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