

# Contents

<b>1 Money and Credit Supply</b> .....	1
1.1 Money Definition, Functions, Kinds and Origin .....	1
1.1.1 Definition and Functions .....	1
1.1.2 Kinds of Money .....	6
1.1.3 Origin of Money .....	8
1.2 From the Gold to the Paper Money Standard .....	11
1.2.1 The Gold Standard .....	11
1.2.2 Gold Standard and the Price Level .....	14
1.2.3 Trade, Gold Movements, Prices and Income .....	14
1.2.4 Pros and Cons of the Gold Standard .....	16
1.2.5 The End of the Gold Standard .....	18
1.3 Money and Credit Creation .....	19
1.3.1 Base Money Supply .....	19
1.3.2 Central Bank Balance Sheet .....	22
1.3.3 The US Federal Reserve .....	23
1.3.4 The Eurosystem .....	27
1.3.5 Credit and Money Creation .....	29
1.3.6 Multiple Credit and Money Creation .....	30
1.3.7 The Tinbergen Approach to the Money Multiplier .....	34
1.3.8 Open Market Operations .....	38
1.3.9 A Closer Look at the Demand for Base Money .....	45
1.3.10 Supply of and Demand for Base Money .....	49
1.3.11 Impact of Short- on Long-Term Rates .....	53
1.3.12 Exogenous Versus Endogenous Money Supply .....	55
1.4 Money Aggregates .....	58
1.4.1 International Definitions of Money Aggregates .....	58
<i>Digression: Divisia Monetary Aggregates</i> .....	66
1.5 Impact of Portfolio Shifts on Money .....	71
1.5.1 Autonomous Bank Refinancing .....	71
1.5.2 Bank Refinancing Via Selling Assets .....	72
1.5.3 Disintermediation .....	73
1.5.4 Inversion of the Yield Curve .....	74
1.6 A Look at "Global Liquidity" .....	76

1.6.1	Calculating a Global Liquidity Aggregate .....	77
1.6.2	The Effects of Cross-Border Selling of National Currency on National Monetary Aggregates .....	79
	<i>Digression: Key Facts About Major Central Banks</i> .....	80
	References .....	87
<b>2</b>	<b>Money and Credit Demand</b> .....	91
2.1	Classical Demand for Money Theory .....	91
2.1.1	The Cambridge Approach .....	92
2.1.2	The Role of Wealth in the Transaction Approach .....	93
2.2	Keynesian Money Demand Theory .....	96
2.2.1	Explaining the Trend of Income Velocity of Money .....	101
2.2.2	Some Empirically Testable Money Demand Hypotheses .....	101
2.3	Portfolio Oriented Money Demand Theory .....	104
2.3.1	Monetarist Money Demand .....	104
2.3.2	Post-Keynesian Money Demand Theory .....	106
	<i>Digression: Income Velocities of US Monetary Aggregates</i> .....	115
2.4	Money-in-the-Utility Function and Cash-In-Advance Models of Money Demand .....	119
2.4.1	Money-in-the-Utility Function of Money Demand .....	119
2.4.2	Cash-in-Advance Models of Money Demand .....	120
2.5	Estimating Money Demand Functions for the US and the Euro Area .....	122
2.5.1	Money Demand in the US .....	122
2.5.2	Euro Area Money Demand 1980-Q1 to 2001-Q4 .....	130
2.5.3	Euro Area Money Demand 1980-Q1 to 2006-Q1 .....	135
2.6	Credit Demand .....	139
	References .....	146
<b>3</b>	<b>Interest Rate Theories</b> .....	151
3.1	Introductory Remarks .....	151
3.2	The Austrian Theory of the Interest Rate .....	153
3.3	The Neo-Classical Theory of the Interest Rate .....	160
3.3.1	The Intertemporal Budget Constraint .....	160
3.3.2	The Intertemporal Production Frontier (IPPF) .....	162
3.3.3	Determining the Market Interest Rate .....	164
3.3.4	Sum of the Parts: the Neo-Classical Interest Rate .....	169
3.4	Knut Wicksell's Theory of the Interest Rate .....	172
3.4.1	Wicksell's Loanable Funds Theory .....	172
3.4.2	The Concept of the Real Neutral Interest Rate .....	176
3.4.3	Estimating the Natural Real Interest Rate .....	180
3.5	The Keynesian Liquidity Preference Theory .....	185
3.6	Nominal Versus Real Interest Rates .....	187

3.7	Credit Spreads .....	189
	References .....	192
<b>4</b>	<b>Financial Market Asset Pricing .....</b>	<b>195</b>
4.1	Prices, Returns and Distributions .....	195
4.1.1	Prices and Returns .....	195
4.1.2	Joint, Marginal, Conditional and Unconditional Distributions .....	198
4.2	Stylised Facts for International Asset Price Linkages .....	205
4.2.1	Latest Developments .....	205
4.2.2	Descriptive Statistics and Some Tests .....	209
4.2.3	Measuring International Asset Return Linkages .....	213
	<i>Digression: Price Earnings Ratios and Future Stock Market Performance</i> ..	233
4.3	Rational Expectations and the Efficient Market Hypothesis .....	237
4.3.1	Formalising the EMH .....	241
4.3.2	Orthogonality Property .....	241
4.3.3	Random Walk .....	242
4.3.4	No Abnormal Returns .....	243
4.3.5	Market Relevant Information .....	244
4.4	Bond Valuation – Basic Valuation Concepts .....	246
4.4.1	Prices, Yields and the RVF .....	246
4.4.2	Theories of the Term Structure of Interest Rates .....	263
	<i>Digression: The Information Content of the US Term Spread for Future Economic Activity</i> .....	267
4.4.3	The Term Structure Spread and Future Short-Term Rate Changes .....	274
4.5	Stock Valuation .....	278
4.5.1	Discounted Cash Flow Under EMH-RE .....	278
4.5.2	Dividend Yields, Expected Returns and the Campbell-Shiller Model .....	289
4.6	Capital Asset Pricing Model (CAPM) .....	302
4.6.1	Portfolio Selection Theory .....	302
4.6.2	Model of the Capital Market Line (CML) .....	305
4.6.3	Two-Fund Separation Theorem .....	306
4.6.4	The Capital Asset Pricing Model .....	306
4.6.5	Estimating the Beta-Factor .....	309
4.7	Liquidity Provision – A Theoretical Framework .....	312
4.7.1	The Financial System as a Private Provider of Liquidity .....	313
4.7.2	Financial Fragility and Cash-in-the-Market Pricing .....	315
4.7.3	Contagion .....	316
4.7.4	Asymmetric Information .....	317
	References .....	318
<b>5</b>	<b>Causes, Costs and Benefits of Sound Money .....</b>	<b>325</b>
5.1	The Objective of Price Stability .....	325

5.1.1	The Index Regime – Measuring Price Stability . . . . .	326
5.1.2	Headline Versus Core Indices . . . . .	327
5.1.3	Predictive Power of Core Inflation . . . . .	329
5.1.4	Role of Core Inflation in Monetary Policy . . . . .	330
5.1.5	International Definitions of Price Stability . . . . .	333
5.1.6	Inflation Versus Price Level Objective . . . . .	338
5.1.7	Price Level Stability and Positive Supply-Side Shocks . . . . .	341
5.1.8	Inflation Versus Price Level Targeting in a Simple Phillips Curve Model . . . . .	342
5.1.9	A Brief Look at Inflation History . . . . .	347
5.2	Causes of Inflation . . . . .	348
5.2.1	Monetary Inflation Theory . . . . .	349
5.2.2	Non-Monetary Inflation Theory . . . . .	368
5.2.3	Fiscal Theory of the Price Level . . . . .	374
5.3	Costs and Benefits of Inflation . . . . .	381
5.3.1	Costs of Inflation . . . . .	381
5.3.2	Benefits of Inflation – The Phillips Curve . . . . .	389
5.3.3	A Path-Dependent Long-Run Phillips Curve – The Case of Hysteresis . . . . .	400
5.3.4	Monetary Policy and the Phillips Curve . . . . .	421
5.4	“Optimal” Inflation . . . . .	431
5.5	Deflation . . . . .	434
5.5.1	Demand and Supply Shocks and Deflation . . . . .	438
5.5.2	Debt-Deflation Theories . . . . .	442
5.6	Asset Price Inflation . . . . .	449
5.6.1	From “Bubbles” to Asset Price Inflation . . . . .	449
5.6.2	Keeping Track of Asset Price Inflation . . . . .	453
	References . . . . .	466
<b>6</b>	<b>Theory of Monetary Policy . . . . .</b>	<b>479</b>
6.1	Uncertainty in Monetary Policy Making . . . . .	479
6.1.1	Model Uncertainty . . . . .	481
6.1.2	Data Uncertainty . . . . .	483
6.2	The Debate About “Rules Versus Discretion” . . . . .	486
6.2.1	Arguments in Favour of Monetary Policy Discretion . . . . .	487
6.2.2	Arguments in Favour of Rules . . . . .	487
6.3	The Time Inconsistency Problem . . . . .	488
6.3.1	Time Inconsistency in a Two-Period Model . . . . .	490
6.3.2	Time Inconsistency in a Multi-Period Model . . . . .	493
6.3.3	Alternative Solutions to Inflation Bias . . . . .	496
6.3.4	Conflicting Views on the Relation Between the Degree of Monetary Policy Autonomy and Structural Reforms . . . . .	499
6.3.5	A Benchmark Model . . . . .	503
6.3.6	Results from the Benchmark Model I: Credible Commitment to a Strict Monetary Policy Rule . . . . .	505

6.3.7	Autonomy Results from the Benchmark Model II: Discretion and Time Inconsistency of Optimal Monetary Policy .....	506
6.3.8	Welfare Comparisons of Different Monetary Policy Regimes .....	508
6.3.9	Putting the Model into Perspective: Conditions for More Reforms Under a Discretionary Regime .....	509
6.3.10	Conditions Favoring More Reforms Under a Rule-Based Regime .....	510
6.3.11	Extension to the Open Economy Case .....	511
6.4	Institutions for Safeguarding Price Stability .....	524
6.4.1	The Way Towards Central Bank Independence .....	525
6.4.2	Dimensions of Central Bank Independence .....	528
6.4.3	Measuring Independence .....	529
6.4.4	Empirical Evidence .....	530
6.5	The Relation Between Fiscal and Monetary Policy .....	531
6.5.1	The Government's Single-Period Budget Constraint .....	532
6.5.2	Seigniorage and the Budget Constraint .....	533
6.5.3	Inflation and the Single-Period Budget Constraint .....	534
6.5.4	The Limits to Seigniorage Deficit Financing .....	535
6.5.5	The Intertemporal Budget Constraint .....	536
6.5.6	The Government Debt Dynamics .....	540
6.5.7	Extension of the Analysis .....	541
6.5.8	Consolidation Efforts .....	543
6.5.9	When Does It Become a "Ponzi Game"? .....	545
	<i>Digression: The Allocation of Power in the Enlarged ECB Governing Council</i> .....	545
	References .....	572
<b>7</b>	<b>Transmission Mechanisms</b> .....	581
7.1	The Effects of Changes in Money Supply .....	581
7.1.1	Interest Rate Channel .....	584
7.1.2	Asset Price Channel .....	587
7.1.3	Credit Channel .....	597
7.1.4	Credit Rationing .....	599
	<i>Digression: The Financial Crisis of 2007/2008 – Overview and Policy Lessons</i> .....	606
7.1.5	Exchange Rate Channel .....	621
7.2	Theory of Crisis: The Austrian Theory of the Business Cycle .....	623
7.3	The Vector-Autoregressive (VAR) Model – A Benchmark for Analysing Transmission Mechanisms .....	624
7.3.1	Overview on VAR Models .....	625
7.3.2	Technicalities of the VAR Model .....	626
7.3.3	Imposing Restrictions .....	627

7.3.4	Impulse Response Functions	628
7.3.5	A Simple VAR Model for the US	630
	<i>Digression: Global Liquidity and the Dynamic Pattern of Price Adjustment: A VAR Analysis for OECD Countries</i>	633
7.4	Monetary Policy and the “Zero Bound” to Nominal Interest Rates	651
7.4.1	Alternative Channels for Monetary Policy	653
	References	660
<b>8</b>	<b>Monetary Policy Strategies</b>	<b>667</b>
8.1	Strategy Requirements	667
8.1.1	On the Monetary Policy Strategy	667
8.1.2	Intermediate Variable	669
8.1.3	A Model for Intermediate Targeting	670
8.2	Monetary Targeting (MT)	675
8.2.1	Money Growth Targets	676
8.2.2	The Income Velocity of Money	679
8.2.3	Inflation Indicators – Measures of Excess Liquidity	680
8.2.4	The Price Gap	681
8.2.5	The Real Money Gap	685
8.2.6	The Nominal Money Gap	685
8.2.7	The Monetary Overhang	686
8.2.8	Comparisons of the Measures of Excess Liquidity	686
8.2.9	The Difference Between the Nominal Money Gap and the Monetary Overhang	687
8.2.10	The Difference Between the Nominal Money Gap and the Real Money Gap	688
8.3	Inflation Targeting (IT)	696
8.3.1	The Role of the Inflation Forecast Under IT	699
8.3.2	A Critical Review of the Inflation Forecasting Exercises	707
8.4	Nominal Income Targeting (NIT)	710
8.4.1	Positive Demand Side Shock	711
8.4.2	Negative Demand Side Shock	711
8.4.3	Positive Supply Side Shock	712
8.4.4	Negative Supply Side Shock	712
8.4.5	A Critical Review of NIT	713
8.4.6	Comparing NIT with MT	715
8.5	The Taylor Rule	716
8.5.1	A Taylor Rule for the Swedish Riksbank	720
8.5.2	The Measurement Problems of the Taylor Rule	723
8.5.3	Does the Taylor Rule Qualify as a Policy Strategy?	727
8.5.4	Comparing the Taylor Rule with MT	729
8.6	The McCallum Rule	731
8.6.1	Calculating the McCallum Rule	732
8.6.2	Illustrations of the Basic McCallum Equation	733
8.6.3	Extensions of the McCallum Rule	735

8.6.4	Final Remarks .....	737
8.7	Interest Rate Targeting .....	738
8.7.1	Monetary Policy and the Neutral Real Interest Rate .....	738
8.7.2	Poole’s Analysis of Interest Rate Targeting Versus Monetary Targeting .....	739
8.7.3	Poole’s Analysis in the Context of Stochastic Shocks .....	741
8.8	The Monetary Conditions Index (MCI) .....	746
	<i>Digression: How the ECB and the US Fed Set Interest Rates</i> .....	749
	References .....	787
<b>Index</b>	.....	<b>797</b>