Preface xi
About the authors xiii
Acknowledgements xiv

PART I
Introduction 1

1 Thinking about macroeconomics 2
Output, unemployment and prices 2
Economic models 6
A simple example: The coffee market 7
Flexible versus sticky prices 12

2 National-income accounting: Gross domestic product and the price level 14
Nominal and real GDP 14
Calculating real GDP 15
Real GDP as a measure of welfare 17
Alternative views of GDP: Expenditure, income and production 17
Measuring GDP by expenditure 18
Measuring GDP by income 20
Measuring GDP by production 22
Seasonal adjustment 23
Prices 24

PART II
Economic growth 27

3 Introduction to economic growth 28
Facts about economic growth 29
Economic growth around the world, 1960 to 2011 29
World poverty and income inequality 33
Long-term growth in rich countries 35
Patterns of world economic growth 36
Theory of economic growth 37

PART III
Economic fluctuations 95

4 Working with the Solow growth model 54
A change in the saving rate 54
A change in the technology level 56
Changes in labour input and the population growth rate 58
A change in labour input 59
A change in the population growth rate 60
Convergence 62
Convergence in the Solow model 62
Facts about convergence 65
Conditional convergence in the Solow model 67
Where do we stand with the Solow model? 71

5 Conditional convergence and long-run economic growth 75
Conditional convergence in practice 75
Recent research on the determinants of economic growth 76
Examples of conditional convergence 78
Long-run economic growth 79
Models with constant average product of capital 79
Exogenous technological progress 81
Endogenous growth theory 86
The diffusion of technology 89
What do we know about economic growth? 91

6 Macroeconomics without microeconomic foundations 96
The IS-LM model 97
Fiscal policy in the IS-LM model 100
Investor sentiment in the IS-LM model 101
Monetary policy in the IS-LM model 101

The IS-MP model 102

The IS-MP-PC model 103

Macroeconomics with microeconomic foundations 105

7 Markets, prices, supply and demand 106

Markets in the macroeconomy 107
The goods market 107
The labour market 108
The rental market 108
The bond market 109

Money as a medium of exchange 109

Markets and prices 110
The goods market 110
The labour market 111
The rental market 111
The bond market 111

Constructing the budget constraint 113
Income 113
Consumption 114
Assets 114
Household budget constraint 115

Clearing of the markets for labour and capital services 118
Profit maximization 118
The labour market 119
The market for capital services 121
Profit in equilibrium 123

8 Consumption, saving and investment 128

Consumption and saving 128
Consumption over two years 129
Consumption over many years 137
Consumption, saving and investment in equilibrium 141

9 An equilibrium business-cycle model 147

Cyclical behaviour of real GDP: Recessions and booms 147
An equilibrium business-cycle model 150
Conceptual issues 150
The model 151
Matching the theory with the facts 156
Consumption and investment 156

10 Capital utilization and unemployment 167

Capital input 167
The demand for capital services 168
The supply of capital services 169
Market clearing and capital utilization 171
The cyclical behaviour of capacity utilization 173
The labour force, employment and unemployment 174
Basic concepts and empirical patterns 174
A model of job finding 177
Search by firms 179
Job separations 180
Job separations, job finding and the natural unemployment rate 180
Economic fluctuations, employment and unemployment 184
Vacancies 185

PART IV
Money and prices 191

11 The demand for money and the price level 192

Concepts of money 192
The demand for money 196
The interest rate and the demand for money 197
The price level and the demand for money 197
Real GDP and the demand for money 197
Other influences on the demand for money 198
The money-demand function 198
Empirical evidence on the demand for money 199

Determination of the price level 200
The nominal quantity of money supplied equals the nominal quantity demanded 200
A change in the nominal quantity of money 202
The neutrality of money 203
A change in the demand for money 204
12 Inflation, money growth and interest rates 213

Cross-country data on inflation and money growth 214
Inflation and interest rates 216
Actual and expected inflation 217
Real and nominal interest rates 217
The real interest rate and intertemporal substitution 219
Actual and expected real interest rates 220
Interest rates on money 224
Inflation in the equilibrium business-cycle model 224
Intertemporal-substitution effects 225
Bonds and capital 225
Interest rates and the demand for money 225
Inflation and the real economy 226
Money growth, inflation and the nominal interest rate 228
A trend in the real demand for money 229
A shift in the money growth rate 230
Government revenue from printing money 233

PART V
The government sector 239

13 Government expenditure 240
Data on government expenditure 240
The government's budget constraint 244
Public production 245
Public services 246
The household's budget constraint 246
Permanent changes in government purchases 248
A permanent change in government purchases:
Theory 248
The cyclical behaviour of government purchases 252
Temporary changes in government purchases 253
A temporary change in government purchases:
Theory 253
Government purchases and real GDP during wartime:
Empirical 254
Wartime effects on the economy 256

14 Taxes 261
Government revenue in the Eurozone 261
Types of taxes 262
Taxes in the model 264
A tax on labour income 265
A tax on asset income 268
An increase in government purchases financed by a labour-income tax 271
Transfer payments 273

15 Public debt 276
The history of UK public debt 276
Characteristics of government bonds 277
Budget constraints and budget deficits 279
The government's budget constraint 279
The budget deficit 280
Public saving, private saving and national saving 280
Public debt and households' budget constraints 281
A simple case of Ricardian equivalence 281
Another case of Ricardian equivalence 283
Ricardian equivalence more generally 284
Economic effects of a budget deficit 285
Lump-sum taxes 285
Labour-income taxes 286
Asset-income taxes 287
The timing of taxes and tax-rate smoothing 288
Strategic budget deficits 288
The standard view of a budget deficit 289
Social security 293
Open-market operations 294

PART VI
Money and business cycles 297

16 Money and business cycles I: The price-misperceptions model 298
Effects of money in the equilibrium business-cycle model 298
The price-misperceptions model 299
A model with non-neutral effects of money 299
Money is neutral in the long run 302
Only unperceived inflation affects real variables 302
Predictions for economic fluctuations 303
Empirical evidence on the real effects of monetary shocks 305
Real shocks 307
Rules versus discretion 308

17 Money and business cycles II:
Sticky prices and nominal wage rates 314
The New Keynesian model 314
Price setting under imperfect competition 315
Short-run responses to a monetary shock 317
New Keynesian predictions 318
Price adjustment in the long run 319
Comparing predictions for economic fluctuations 321
Shocks to aggregate demand 322
Money and nominal interest rates 323
The Keynesian model: Sticky nominal wage rates 324
Long-term contracts and sticky nominal wage rates 327

PART VII
International macroeconomics 333

18 World markets in goods and credit 334
The balance of international payments 335
History of the UK current-account balance 337
Determinants of the current-account balance 341
Economic fluctuations 343
Harvest failures, government purchases, developing countries 345
Examples of international borrowing and lending 346
The current-account deficit and the budget deficit 346
The terms of trade 348
The terms of trade and the current-account balance 349
The terms of trade and investment 350
Empirical evidence from oil producers 350
The volume of international trade 352

19 Exchange rates 355
Different currencies and exchange rates 355
Purchasing-power parity 358
The PPP condition and the real exchange rate 358
The relative PPP condition 361
Interest-rate parity 363
Fixed exchange rates 366
Purchasing-power parity under fixed exchange rates 367
The nominal quantity of money under fixed exchange rates 368
Devaluation and revaluation 369
Flexible exchange rates 371
Fixed and flexible exchange rates: A comparison 372

Bibliography 376
Glossary 382
Index 390