

MACROECONOMICS

AN INTRODUCTION TO ADVANCED METHODS

THIRD EDITION

William M. Scarth
McMaster University

Preface

Almost 40 years ago, Robert Lucas and Thomas Sargent argued that conventional macroeconomic methods were “fatally flawed;” since then, macroeconomics has been a most exciting part of our discipline. After all, it is stimulating to be involved in the initiation of new research agendas. But while this activity is exciting for researchers in the field, it can be frustrating for students and their instructors. Journal articles by original researchers rarely represent the best pedagogic treatment of a subject, especially when the analysis becomes quite technical. Thus, when the first edition of this text was published 20 years ago, I set out to bridge the gap between intermediate macro texts and the more advanced analysis of graduate school.

But I had a second purpose as well – to draw attention to the work of macroeconomists who have been trying to integrate two quite different schools of thought. On the one hand, there is the rigour and the explicit micro-foundations provided by the New Classical approach, and on the other hand, there is the concern with policy that stems from the Keynesian tradition of focusing on the possibility of market failure. The problem in the 1970s and 1980s was that the Classics achieved their rigour by excluding market failure, while the Keynesians achieved their supposed policy relevance by excluding explicit micro-foundations. So both schools of thought were limited in a fundamental way. My earlier editions drew attention to analyses by macroeconomists who saw the merit in both traditions, and who were, therefore, developing models that could score well on both the criteria for judging model usefulness (consistency with empirical observation and consistency with constrained maximization principles). Happily, this drive toward integration has succeeded. Indeed, the integrated approach has now acquired a title – the “New Neoclassical Synthesis” – and it now occupies centre stage in the discipline. It is high time that a new edition of the book discusses this accomplishment, instead of talking about the desirability of moving toward this goal.

With the increasing use of mathematics in graduate school, virtually all undergraduate programs now offer advanced theory courses, and it has become less appealing to use the same books at both levels. I have found it best to leave PhD students to be served by the excellent books that now exist for them, and to focus this book on senior undergraduate students and MA students in more applied programs. With this focus, it is appropriate that the book stress policy application, not just the teaching of techniques. The tradition has been to assume that every student who enrolls in a course at this level is so motivated that no effort

is needed to demonstrate the applicability of the analysis. In contrast to this, I have found that, especially at the senior undergraduate level, each student's ability to master research methods is still very much dependent on her belief that this analysis is fundamentally "relevant" for the issues that she talks about with non-economists. The book respects this need in every chapter.

Ten years have passed since the second edition, so many changes have been necessary to bring the book up-to-date. There is now more coverage of New Classical work, endogenous growth theory, and the theory behind the natural unemployment rate. The new material involves calibrated versions of the theory that make it possible for readers to see how modern models and methods can directly inform policy debate. And the New Neoclassical Synthesis permits a consistent comparison of the "short-term pain" and the "long-term gain" that is part of many policy initiatives.

Here is a brief introduction to the book's structure. Chapter 1 provides a concise summary (and extension) of intermediate-level macroeconomics. It ends with the identification of three shortcomings – the need for more explicit treatment of dynamics, expectations, and micro-foundations. The next three chapters cover the analysis that has emerged to address each of these issues. Chapter 2 examines the First Neoclassical Synthesis – a system that involved the Classical model determining full equilibrium, and a Keynesian model of temporarily sticky prices determining the approach to that full equilibrium. Chapter 3 gives extensive discussion of the development of rational expectations, and Chapter 4 provides the dynamic optimization analysis that is necessary for models to have a more thorough micro base. The next three chapters cover models that are not so limited, since they incorporate model-consistent expectations and optimization underpinnings. Chapter 5 covers the first school of thought to stress the desirability of keeping these features central – real business cycle theory. Then, with temporary nominal rigidity added to a simplified New Classical model, Chapters 6 and 7 explain both the methods needed to analyze the New Neoclassical Synthesis, and the success we have had in applying this approach to a set of central policy issues.

The book shifts to long-run issues for the final five chapters. Chapters 8 and 9 focus on theory and policy issues concerning the natural unemployment rate, while Chapters 10, 11 and 12 discuss both old and new growth theory. With the chapters on micro-foundations, New Classical work, labour markets, and growth, more than half of this edition is focused on the long run.

I have tried to maintain the user friendly exposition that has been appreciated in earlier editions – giving equal treatment to explaining technical details and to exposing the essence of each result and controversy. Using basic mathematics throughout, the book introduces readers to the actual research methods of macroeconomics. But in addition to explaining methods, it discusses the underlying logic at the intuitive level, and with an eye to both the historical development of the subject, and the ability to apply the analysis to applied policy debates. Concerning application, some of the highlighted topics are: the Lucas critique of standard methods for evaluating policy, credibility and dynamic consistency issues in policy design, the sustainability of rising debt levels and an evaluation of Europe's Stability Pact, the optimal inflation rate, the implications of alternative monetary policies for pursuing price stability (price-level vs inflation-rate targeting, fixed vs flexible exchange rates), tax reform (trickle-down controversies and whether second-best initial conditions ease the trade-off between efficiency and equity objectives), theories of the natural unemployment rate and the possibility of multiple equilibria, alternative low-income support policies, and globalization (including the alleged threat to the scope for independent macro policy).

There are now 60 questions – extensively revised and updated. Full solutions are now on my web-site: <http://socserv.mcmaster.ca/scarth/> Also available on this site is an annotated list of general survey articles and books that will be up-dated as appropriate. Comments are welcome: scarth@mcmaster.ca

I have many debts to acknowledge. In earlier editions, I have thanked some of my mentors – individuals who have been instrumental in my own development. In this edition, I confine my acknowledgements to two groups – those who have provided helpful discussion concerning particular topics, and some impressive students who have helped improve earlier drafts. I thank John Burbidge, Peter Howitt, Harriet Jackson, Ron Kneebone, Jean-Paul Lam, David Laidler, Tiff Macklem, Lonnie Magee, Hamza Malik, Thomas Moutos, Tony Myatt, Siyam Rafique, Krishna Sengupta, John Smithin, Malick Souare, Mike Veall, and especially Leilei Tang and Huizi Zhao for their capable and generous assistance. It should, of course, be emphasized that none of these individuals can be held responsible for how I may have filtered their remarks.

As to the production of the book, Robert Ennis, Jennifer Sanders and Rod Banister at Thomson Nelson were most efficient and helpful. But my greatest debt is to my wife, Kathy, whose unfailing love and support have been invaluable. Without this support I would have been unable to work at making the exciting developments in modern macroeconomics more accessible.

Contents

| | |
|---|-----------|
| Chapter 1: Keynes and the Classics | 1 |
| 1.1 Introduction | 1 |
| 1.2 Criteria for Model Selection | 2 |
| 1.3 The Textbook Classical Model: The Labour Market with Flexible Wages | 5 |
| 1.4 The Textbook Keynesian Model: The Labour Market with Money-Wage Rigidity | 11 |
| 1.5 Generalized Disequilibrium: Money-Wage and Price Rigidity | 14 |
| 1.6 Conclusions | 17 |
| Chapter 2: The First Neoclassical Synthesis | 19 |
| 2.1 Introduction | 19 |
| 2.2 A Simple Dynamic Model: Keynesian Short-Run Features and a Classical Full-Equilibrium | 19 |
| 2.3 The Correspondence Principle | 23 |
| 2.4 Can Increased Price Flexibility be De-Stabilizing? | 26 |
| 2.5 Monetary Policy as a Substitute for Price Flexibility | 31 |
| 2.6 Conclusions | 35 |
| Chapter 3: Model-Consistent Expectations | 36 |
| 3.1 Introduction | 36 |
| 3.2 Uncertainty in Traditional Macroeconomics | 39 |
| 3.3 Adaptive Expectations | 48 |
| 3.4 Rational Expectations: Basic Analysis | 51 |
| 3.5 Rational Expectations: Extended Analysis | 56 |
| 3.6 Conclusions | 60 |

| | |
|---|------------|
| Chapter 4: The Micro-Foundations of Modern Macroeconomics | 64 |
| 4.1 Introduction | 64 |
| 4.2 The Lucas Critique | 64 |
| 4.2 Household Behaviour | 70 |
| 4.3 Firms' Behaviour: Factor Demands | 79 |
| 4.5 Firms' Behaviour: Setting Prices | 83 |
| 4.6 Conclusions | 87 |
| | |
| Chapter 5: The Challenge of New Classical Macroeconomics | 89 |
| 5.1 Introduction | 89 |
| 5.2 The Original Real Business Cycle Model | 89 |
| 5.3 Extensions to the Basic Model | 93 |
| 5.4 Optimal Inflation Policy | 101 |
| 5.5 Harberger Triangles vs. Okun's Gap | 105 |
| 5.6 Conclusions | 111 |
| | |
| Chapter 6: The New Neoclassical Synthesis | 112 |
| 6.1 Introduction | 112 |
| 6.2 Phase Diagram Methodology | 113 |
| 6.3 Stabilization Policy Analysis with a "New" Phillips Curve | 122 |
| 6.4 Some Precursors of the New Synthesis | 124 |
| 6.5 An Integrated Analysis: a "New" IS Curve <i>and</i> a "New" Phillips Curve | 131 |
| 6.6 Conclusions | 138 |
| | |
| Chapter 7: Stabilization Policy Controversies | 140 |
| 7.1 Introduction | 140 |
| 7.2 Commitment and Dynamic Consistency in Monetary Policy | 140 |
| 7.3 Fixed vs. Flexible Exchange Rates | 152 |
| 7.4 The Feasibility of Bond-Financed Government Budget Deficits | 156 |
| 7.5 An Evaluation of Balanced-Budget Rules and the European Stability Pact | 162 |
| 7.6 Conclusions | 169 |

| | |
|---|------------|
| Chapter 8: Structural Unemployment | 171 |
| 8.1 Introduction | 171 |
| 8.2 Asymmetric Information in the Labour Market: Efficiency Wages | 171 |
| 8.3 Imperfect Competition in the Labour Market: Unions | 175 |
| 8.4 Transaction Frictions in the Labour Market: Search Theory | 179 |
| 8.5 Related Issues in New Keynesian Economics: Real vs. Nominal Rigidities | 183 |
| 8.6 Conclusions | 188 |
| Chapter 9: Unemployment and Low Incomes: Applying the Theory | 190 |
| 9.1 Introduction | 190 |
| 9.2 Tax Reform: Direct vs. Indirect Taxation | 190 |
| 9.3 The Globalization Challenge: Is Mobile Capital a Bad Thing to Tax? | 195 |
| 9.4 Low-Income Support Policies in Developed and Developing Economies | 201 |
| 9.5 Multiple Equilibria | 206 |
| 9.6 Conclusions | 213 |
| Chapter 10: Traditional Growth Theory | 215 |
| 10.1 Introduction | 215 |
| 10.2 The Solow Model | 216 |
| 10.3 Exogenous Growth with Micro-Foundations | 222 |
| 10.4 A Benefit-Cost Analysis of Debt Reduction | 226 |
| 10.5 Natural Resources and the Limits to Growth | 232 |
| 10.6 Conclusions | 235 |
| Chapter 11: New Growth Theory | 236 |
| 11.1 Introduction | 236 |
| 11.2 A One-Sector Endogenous Growth Model | 236 |
| 11.3 Two-Sector Endogenous Growth Models | 240 |
| 11.4 Other Models of Endogenous Growth | 245 |
| 11.5 An Evaluation of Endogenous Growth Analysis | 252 |
| 11.6 Conclusions | 255 |

| | |
|--|------------|
| Chapter 12: Growth Policy | 257 |
| 12.1 Introduction | 257 |
| 12.2 Tax Reform: Income Taxes vs. the Progressive Expenditure Tax | 258 |
| 12.3 Economic Growth and Subjective Happiness | 270 |
| 12.4 Unemployment and Growth | 273 |
| 12.5 The Aging Population and Future Living Standards | 278 |
| 12.6 Conclusions | 281 |
| Questions | 283 |
| References | 309 |

Back Cover Summary

As a concise survey of the developments in modern macroeconomics, this book bridges the gap between intermediate-level texts and advanced material. By highlighting the New Neoclassical Synthesis, it draws attention to recent work which simultaneously emphasizes the rigour of the New Classical approach and a focus on market failure that is the essence of the Keynesian tradition. In addition to stabilization policy issues, there is extensive coverage of natural unemployment rate theories, and both old and new growth analysis. At the upper undergraduate level, the book can be used on its own; at the introductory post-graduate level, it represents a much-needed complement to journal readings and the more advanced research monographs.

The user friendly exposition gives equal billing to explaining technical derivations and to exposing the essence of each result and controversy at the intuitive level. Calibrated versions of the models allow readers to appreciate how modern macroeconomics can inform central policy debates. Many topical issues are highlighted: the Lucas critique of standard methods for evaluating policy, credibility and dynamic consistency issues in policy design, the sustainability of rising debt levels and an evaluation of Europe's Stability Pact, the optimal inflation rate, the implications of alternative monetary policies for pursuing price stability (price-level vs inflation-rate targeting, fixed vs flexible exchange rates), tax reform (trickle-down controversies and whether second-best initial conditions ease the trade-off between efficiency and equity objectives), theories of the natural unemployment rate and the possibility of multiple equilibria, alternative low-income support policies, and globalization (including the alleged threat to the scope for independent macro policy).

Using basic mathematics throughout, the book introduces its readers to the actual research methods of macroeconomics. But in addition to explaining methods, the author presents the underlying logic at the common-sense level, and with an eye to the historical development of the subject. Reader understanding is enhanced through the use of the many practice questions (with solutions available on the book's web-site). As with the earlier editions, both instructors and students will welcome having the exciting developments in modern macroeconomics made more accessible.

About the author: William Scarth is professor of economics at McMaster University, where he has been awarded the President's Award for Best Teacher, and the McMaster Student Union Lifetime Teaching Award. In addition to publishing many articles in academic journals (in the areas of macroeconomics, labour economics, international trade and public finance), Professor Scarth has authored three other textbooks, and he is a Research Fellow at the C.D. Howe Institute, Canada's leading nonprofit policy institute. Professor Scarth's recent work concerns how both globalization and a commitment to high productivity growth affect the ability of governments to provide low-income support policy within small open economies.