

# Macroeconomics

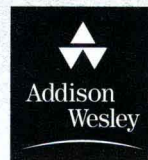


STEPHEN D. WILLIAMSON

# Macroeconomics

**Stephen D. Williamson**

*University of Iowa*



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Cover Photo: ©2002 PhotoDisk, Inc.

Library of Congress Cataloging-in-Publication Data

Williamson, Stephen D.

Macroeconomics / Stephen D. Williamson.

p. cm.

ISBN 0-201-70146-3

1. Macroeconomics. I. Title.

HB172.5 .W55 2002

339--dc21

2001046408

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ISBN 0-201-71046-3

# PREFACE

**T**his book follows a modern approach to macroeconomics by building macroeconomic models from microeconomic principles. As such, it is consistent with the way that macroeconomic research is conducted today.

This approach has three advantages. First, it allows deeper insights into economic growth processes and business cycles, the key topics in macroeconomics. Second, an emphasis on microeconomic foundations better integrates the study of macroeconomics with approaches that students learn in courses in microeconomics and in field courses in economics. Learning in macroeconomics and microeconomics thus becomes mutually reinforcing, and students learn more. Third, in following an approach to macroeconomics that is consistent with current macroeconomic research, students will be better prepared for advanced study in economics.

## Structure

The text begins in Part I with an introduction and study of measurement issues. Chapter 1 describes the approach taken in the book and the key ideas that students should take away. It previews the important issues that will be addressed throughout the book, along with some recent issues in macroeconomics, and the highlights of how these will be studied. Measurement is discussed in Chapters 2 and 3, first with regard to gross domestic product, prices, savings, and wealth, and then with regard to business cycles. In Chapter 3, we develop a set of key business cycle facts that will be used throughout the book, particularly in Chapters 10 and 11 where we investigate how alternative business cycle theories fit the facts.

Our study of macroeconomic theory begins in Part II. In Chapter 4, we study the behavior of consumers and firms in detail. In the one-period model developed in Chapter 5, we use the approach of capturing the behavior of all consumers and all firms in the economy with a single representative consumer and a single representative firm. The one-period model is used to show how changes in government spending and total factor productivity affect aggregate output, employment, consumption, and the real wage.

In Part III, we first use the theory of consumer and firm behavior developed in Part II to construct in Chapter 6 a two-period model that can be used to study consumption–savings decisions and the effects of government deficits on the economy. The two-period model is then extended to include investment behavior in the real intertemporal model of Chapter 7. This model will then serve as the basis for much of what is done in the remainder of the

book. In Chapter 8, we develop economic growth theory, and study two key models of economic growth: the Solow growth model and a model of endogenous growth.

In Part IV, we include monetary phenomena in the real intertemporal model of Chapter 7, so as to construct a monetary intertemporal model. This model is used in Chapter 9 to examine the effects of changes in the money supply on the economy and the effects of inflation. Then, in Chapters 10 and 11, we study Keynesian and equilibrium theories of the business cycle. These theories are compared and contrasted, and we examine how alternative business cycle theories fit the data and how they help us to understand recent business cycle behavior in the United States.

Part V is devoted to international macroeconomics. In Chapter 12, the models of Chapters 5 and 7 are used to show what benefits accrue from international trade, how changes in the relative prices of imports and exports affect the economy, and what determines the current account surplus. Then, in Chapter 13, we show how exchange rates are determined, and we investigate the roles of fiscal and monetary policy in an open economy that trades goods and assets with the rest of the world.

Finally, Part VI examines some important topics in macroeconomics. In Chapter 14, we study in more depth the role of money in the economy and the functions of the private banking system and the central bank. Then, in Chapter 15, we study the determinants of unemployment and two models of unemployment: the search model and the efficiency wage model. In Chapter 16, we see how central banks can cause inflation, either because they do not correctly understand the relationship between real macroeconomic activity and inflation, or because they cannot commit themselves to a low-inflation policy. We also demonstrate in this chapter how inflation has been reduced over the last twenty years in the United States, New Zealand, and Argentina.

## Features

Several key features enhance the learning process and illuminate critical ideas for the student. The intent is to make macroeconomic theory transparent, accessible, and relevant.

**Real-World Applications.** Applications to current and historical problems are emphasized throughout in two running features. The first is a set of “Theory Confronts Data” sections, which show how macroeconomic theory comes to life in matching (or sometimes falling short of matching) the characteristics of real-world economic data. A sampling of some of these sections includes the effects of the tax-withholding reductions implemented by President Bush in 1992, the effects of the increase in government spending during World War II, and the macroeconomic impact of increases in energy prices. The second running feature is a series of “Macroeconomics in Action” boxes. These real-world applications relating directly to the theory encapsulate ideas from front-line research in macroeconomics and the history of economic thought, and they aid students in understanding the core material. For example, some of the subjects examined in these boxes are the pitfalls of macroeconomic forecasting, Henry Ford and technological change, and East Asian growth miracles.

**Art Program.** Graphs and charts are plentiful in this book, as visual representations of macroeconomic models that can be manipulated to derive important results, and for

showing the key features of important macro data in applications. To aid the student, graphs and charts use a consistent two-color system that encodes the meaning of particular elements in graphs and of shifts in curves.

**End-of-Chapter Summary and List of Key Terms.** Each chapter wraps up with a summary of the key ideas contained in the chapter, followed by a glossary of the chapter's key terms. The key terms are listed in the order in which they appear in the chapter, and they are highlighted in bold typeface where they first appear.

**Questions for Review.** These questions are intended as self-tests for students after they have finished reading the chapter material. The questions relate directly to ideas and facts covered in the chapter, and answering them will be straightforward if the student has read and comprehended the chapter material.

**Problems.** The end-of-chapter problems will help the student in learning the material and applying the macroeconomic models developed in the chapter. These problems are intended to be challenging and thought-provoking.

**Conference Board Problems.** These problems guide the student in making use of the Conference Board database that can be accessed on-line from the web site accompanying this text. The database is a comprehensive set of macroeconomic data, which can be used to understand the chapter material and to gain a deeper knowledge of macroeconomic data and phenomena.

**Notation.** For easy reference, definitions of all variables used in the text are contained on the end papers.

**Mathematics and Mathematical Appendix.** In the body of the text, the analysis is mainly graphical, with some knowledge of basic algebra required; calculus is not used. However, for students and instructors who desire a more rigorous treatment of the material in the text, a mathematical appendix develops the key models and results more formally, assuming a basic knowledge of calculus and the fundamentals of mathematical economics.

## Flexibility

This book was written to be user-friendly for instructors with different preferences and with different time allocations. The core material that is recommended for all instructors is the following:

- Chapter 1.** Introduction
- Chapter 2.** Measurement
- Chapter 3.** Business Cycle Measurement
- Chapter 4.** Consumer and Firm Behavior: The Work–Leisure Decision and Profit Maximization
- Chapter 5.** A Closed-Economy One-Period Macroeconomic Model

**Chapter 6.** A Two-Period Model: The Consumption–Savings Decision and Ricardian Equivalence

**Chapter 7.** A Real Intertemporal Model with Investment

Some instructors find measurement issues uninteresting, and may choose to omit parts of Chapter 2, though at the minimum instructors should cover the key national income accounting identities. Parts of Chapter 3 can be omitted if the instructor chooses not to emphasize business cycles, but there are some important concepts introduced here that are generally useful in later chapters, such as the meaning of correlation and how to read scatter plots and time series plots.

Though the text has an emphasis on microfoundations, Keynesian analysis is featured prominently. For example, we study a Keynesian sticky wage business cycle model in Chapter 10, and also examine a Keynesian coordination failure model in Chapter 11. Chapter 15 also looks at the efficiency wage model. However, those instructors who choose to ignore Keynesian analysis can do so without any difficulty. Instructors can choose to emphasize economic growth or business cycle analysis, or they can give their course an international focus. As well, it is possible to deemphasize monetary factors. As a guide, the text can be adapted as follows:

**Focus on Equilibrium Models.** Omit Chapter 10 (Keynesian Business Cycle Theory: The Sticky Wage Model).

**Focus on Economic Growth.** Include Chapter 8 (Economic Growth), and consider dropping Chapters 10 and 11 (Market-Clearing Models of the Business Cycle), depending on time available.

**Focus on Business Cycles.** Drop Chapter 8, and include Chapters 9 (A Monetary Intertemporal Model: The Neutrality of Money, Long-Run Inflation, and Money Demand), 10, and 11.

**International Focus.** Chapters 12 (International Trade in Goods and Assets) and 13 (Money in the Open Economy) can be moved up in the sequence. Chapter 12 can follow Chapter 7, and Chapter 13 can follow Chapter 9.

**Focus on Real Factors.** Much of Chapter 9 can be omitted for those not interested in the macroeconomic effects of monetary factors. All of the material after Chapter 9 can be handled with a basic knowledge of the money demand function and money neutrality.

**Advanced Mathematical Treatment.** Add material as desired from the Mathematical Appendix.

## Supplemental Materials

The following materials that accompany the main text will enrich the intermediate macroeconomics course for instructors and students alike.

**Instructor's Manual/Test Bank.** Written by Stephen McCafferty of Ohio State University, the Instructor's Manual/Test Bank provides strong instructor support. The Instructor's Manual portion contains sections on Teaching Goals, which give an aerial view of the chapters; classroom discussion topics, which explore lecture-launching ideas and questions; chapter outlines; and solutions to all Questions for Review and Problems found in the text. The Test Bank portion contains multiple-choice questions and answers. The Test Bank is also available in Test Generator Software (TestGen-EQ with QuizMaster-EQ). Fully networkable, this software is available for Windows and Macintosh. Test-Gen-EQ's friendly graphical interface enables instructors to easily view, edit, and add questions; export questions to create tests; and print tests in a variety of fonts and forms. Search and sort features let the instructor quickly locate questions and arrange them in a preferred order. QuizMaster-EQ automatically grades the exams, stores results on a disk, and allows the instructor to view or print a variety of reports.

**Study Guide.** Prepared by John Stinespring of the Georgia Institute of Technology and Paul Zak of Claremont McKenna College, the Study Guide contains true/false questions, short-answer questions, and multiple-choice questions, with complete answers — many presented as worked solutions. The Study Guide may be found on the Web site accompanying this text at [www.aw.com/williamson](http://www.aw.com/williamson).

**Instructor's Resource Disk.** The Instructor's Resource Disk includes Microsoft PowerPoint files of key figures from the text, the Computerized Test Bank files, the Instructor's Manual, and the Test Bank Microsoft Word files.

**Macroeconomics Homepage.** Students purchasing *Macroeconomics* are entitled to a prepaid six-month subscription to The Conference Board. This subscription gives students access to over 100 data series from the Business Cycle Indicators (BCI) database. The BCI database provides students with a unique opportunity to analyze the very data that professional economists, policymakers, and government officials use in their daily work. Each chapter of the textbook includes Conference Board Problems that make use of this valuable resource. Both the database and exercises in the text are designed to help students better understand real-world macroeconomic issues.

## Acknowledgments

Special thanks go to Denise Clinton, Mary Clare McEwing, Katherine Watson, Jennifer Jefferson and all of the people at Addison Wesley Longman who provided so much help and encouragement. I am also indebted to Dave Andolfatto, Scott Baier, Ken Beauchemin, Edward Kutsoati, Kuhong Kim, Young Sik Kim, Mike Loewy, B. Ravikumar, Ping Wang, and Bradley Wilson, who used early versions of the manuscript in their classes. Key critical input was also provided by the following reviewers, who helped immensely in improving the manuscript: Terrence Alexander, Iowa State University; David Aschauer, Bates College; Irasema Alonso, University of Rochester; David Andolfatto, Simon Fraser University; Scott Baier, Clemson University; Ken Beauchemin, State University of New York at Albany; Joydeep Bhattacharya, Iowa State University; Marco Cagetti, University of Virginia; Gabriele Camera, Purdue University; Leo Chan,



University of Kansas; Timothy Fuerst, Bowling Green State University; John Graham, Rutgers University; Yu Hsing, Southeastern Louisiana University; Bryce Kanago, University of Northern Iowa; George Karras, University of Illinois; John Knowles, University of Pennsylvania; Kathryn Marshall, Ohio State University; Steve McCafferty, Ohio State University; Oliver Morand, University of Connecticut; Douglas Morgan, University of California, Santa Barbara; Liwa Rachel Ngai, London School of Economics; Christopher Otrok, University of Virginia; Kevin Reffett, Arizona State University; Thomas Tallarini, Carnegie Mellon University; Paul Wachtel, Stern School of Business, New York University; Ping Wang, Vanderbilt University; Bradley Wilson, University of Alabama; Paul Zak, Arizona State University.

I also wish to thank the economists who worked on the supplements that accompany this text and who did such a fine job: Stephen McCafferty of Ohio State University (Instructor's Manual/Test Bank author), John Stinespring of the Georgia Institute of Technology (Study Guide), and Paul Zak of Claremont McKenna College (Study Guide).

*Stephen D. Williamson*

## About the Author

Stephen Williamson is the Chester A. Phillips Professor of Financial Economics and Department Chair in the Department of Economics, Tippie College of Business, University of Iowa, and is a Visiting Scholar at the Federal Reserve Bank of Richmond. He received a B.Sc. in Mathematics and an M.A. in Economics from Queen's University in Kingston, Canada, and his Ph.D. from the University of Wisconsin–Madison. He has held academic positions at Queen's University and the University of Western Ontario, and has worked as an economist at the Federal Reserve Bank of Minneapolis and the Bank of Canada. Professor Williamson has been an academic visitor at the Federal Reserve Banks of Atlanta, Minneapolis, and Cleveland, and the Board of Governors of the Federal Reserve System in Washington, D.C. He has also been a long-term visitor at the University of Tilburg, the Netherlands, and Victoria University of Wellington, New Zealand. Professor Williamson has published scholarly articles in the *American Economic Review*, the *Journal of Political Economy*, the *Quarterly Journal of Economics*, the *Review of Economic Studies*, the *Journal of Economic Theory*, and the *Journal of Monetary Economics*, among other prestigious economics journals. His research, focused mainly on macroeconomics, monetary theory, and the theory of financial intermediation, has been supported by the National Science Foundation, the Lynde and Harry Bradley Foundation, and the Social Sciences and Humanities Research Council of Canada. Professor Williamson lives in Iowa City, Iowa, with his spouse Jennifer Gibson, his three sons Paul, Allen, and Chris, and his Portuguese water dog Marco.

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