

# To the Teacher

## The Problem and the Pedagogical Approach

This textbook has had a long gestation. It began in the mid-1990s when I taught intermediate macroeconomics at the University of California, Davis. I became increasingly dissatisfied that even very good students, students who easily mastered the textbook materials, left our program with little factual knowledge of the economy and with little ability to make the theory that they had learned helpful in interpreting real-world macroeconomic issues. Even students who received *A*'s in Intermediate Macroeconomics often found it difficult to understand economic news and to use sound economic analysis to criticize the economic proposals of pundits, politicians or central bankers.

I began to rethink my course – what its objects should be and how I should teach it. Most economics majors do not go on to further graduate study in economics. The greatest value-added for the typical student would be a macroeconomic education adapted to understanding the real world as filtered through the media and politics. Even those who go on to graduate study would be better prepared to appreciate the ultimate motivation of macroeconomic theory if they had first developed a good practical understanding of applied macroeconomics. This textbook is the fullest expression of that rethinking and is grounded in about fifteen years of teaching macroeconomics at UC Davis and at Duke University along these new lines.<sup>1</sup>

Current intermediate macroeconomics texts suffer from three common problems:

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<sup>1</sup> A fuller account of the pedagogical philosophy behind my earlier courses and the book appears in Kevin D. Hoover, "Teaching Economics While Taking Complexity Seriously," in David Colander, editor. *The Complexity Vision and the Teaching of Economics*. Cambridge: Cambridge University Press, 2000, which can be downloaded from [appliedmacroeconomics.com](http://appliedmacroeconomics.com).

- ◆ *Theory is detached from the facts of the economy.* Textbooks often include boxed case studies to illustrate theoretical principles and illustrative graphs and tables of current data. The numbers in the chapters on national income accounting are updated with each edition. Yet the facts of the economy are usually peripheral – not woven tightly into the main exposition. And it is common for students to emerge nearly as ignorant at the end of the course of the basic features of the economy as at the beginning.
- ◆ *Exposition of theory is not well adapted to the real world.* Macroeconomic news generally reports rates of change (e.g., growth rates, inflation rates), while typical textbooks focus on levels (e.g., the aggregate supply and demand curves determine the level of prices and GDP). The teacher knows how to translate from one context to the other, but the average student finds it difficult. Much of real world macroeconomics is closely tied to the complexities of financial markets. Textbooks typically focus on “the” rate of interest as determined by the supply of and demand for money, leaving a richer analysis of financial markets to later money and banking courses.
- ◆ *Too much stress on theoretical closure and advanced topics at the expense of first principles.* Many intermediate macroeconomics textbooks read like graduate textbooks without the mathematics.

In contrast, this book aims to avoid these common pitfalls through a complete integration of macroeconomic theory and statistical analysis and interpretation.

The goal of economics is to make sense of the economy. *Applied Intermediate Macroeconomics* keeps that goal constantly in mind. It teaches macroeconomics as a tool

of factual and interpretive understanding of the economy. The key is that the textbook introduces elementary data analysis simultaneously with macroeconomic theory. Students apply these skills to the interpretation of actual United States economic data. Students develop competence to use economic theory and sophisticated back-of-the-envelope statistics as tools of analysis. They leave the course both with a well-grounded knowledge of the main features of the U.S. economy and the skills necessary to analyze any macroeconomy.

The textbook is structured around three parallel and interrelated streams:

- ◆ A clear presentation of the fundamentals of macroeconomic theory.
- ◆ A practical introduction to elementary statistics.
- ◆ A set of structured empirical exercises using actual macroeconomic data and the elementary statistical and graphical tools commonly available in modern spreadsheet software.

The focus is on macroeconomics, not statistics. The only purpose in introducing the statistics is to give the student a foundation for applying the theory to actual data. Statistical topics are limited to those suitable for the task at hand, and are introduced only as needed to support the developing account of the macroeconomy. Consider each of the three streams in turn:

## 1. MACROECONOMIC THEORY

The textbook has a clear theoretical point of view. It is Keynesian in the sense that recessions and cyclically high unemployment are regarded as (possibly remediable) deviations of the economy from optimal economic arrangements. Classical (and new

classical) analysis in which all markets are regarded as clearing are seen as a limiting case, practically important for fully employed economies. Doctrinal disputes are largely ignored in the text, as more likely to confuse than to inform the neophyte.

Although the textbook concentrates on the practical core of macroeconomic theory, which is familiar to economists and is covered in other macroeconomics texts, it is distinguished from these texts by its emphasis on empirical applications of the theory. Some features which enhance the empirical relevance of the theory include:

- ◆ *Emphasis on fundamental economic ideas and their application.* Some examples: the distinction between real and nominal magnitudes, the distinction between *ex ante* and *ex post* points of view, the importance of expectations, opportunity cost and present value, supply and demand, arbitrage, risk.
- ◆ *Richer than usual discussion of the structure and importance of financial markets for the macroeconomy.*
- ◆ *Orientation toward monetary and fiscal policy (including both aggregate effects and incentive effects) from the beginning of the book.* Relevant facts about policy can be gleaned from the earliest chapters on national accounting, through later chapters on factor markets, financial markets, and to the last chapters in which policy takes center stage.
- ◆ *Stress on a changing economy.* The analysis of economic growth and business cycles is integrated. The exposition is formulated so that the student can readily map the theory of the book on to the growth rates, inflation rates, utilization and unemployment rates that dominate economic policy goals and popular economic commentary.

A symposium in the *American Economic Review* (May 1997) posed the question, “Is there a core of practical macroeconomics that we should all believe?” The approach in this book comes closest to the separate answers offered in that symposium by Robert Solow and Alan Blinder. Between them, Solow and Blinder identified the practical core as including: neoclassical growth theory, the IS curve, the Phillips curve, Okun’s law. Blinder observed the necessity for a more realistic treatment of financial markets that would downplay the analytical role of the LM curve (the instability of money supply and demand having rendered it virtually irrelevant analytically and as a guide to policy) and would provide an adequate account of the term structure of interest rates. A similar case for eliminating the LM curve from the macroeconomic model has been made by David Romer (“Keynesian Macroeconomics without the LM Curve,” *Journal of Economic Perspectives*, Spring 2000) and by Benjamin Friedman (The LM Curve: A Not-So-Fond Farewell,” National Bureau of Economic Research, Working Paper No. 10123, 2003).

The theory in *Applied Intermediate Macroeconomics* departs from some of the common elements of many macroeconomics textbooks in order to implement this vision of the core of macroeconomics. Although it relies on an aggregate demand-aggregate supply conception of the economy, one departure is that it makes no use of the apparatus of an aggregate demand and supply curve in price-output space. This apparatus is not easy to relate to data on the economy at the level at which undergraduates are equipped, nor do the aggregate demand and supply curves integrate well with discussions of long-term economic growth, Okun’s law or the Phillips curve.

Instead, the analysis of aggregate supply is developed using the aggregate production function, which is easily quantified, and which ties in directly to the neoclassical

growth model and lends itself to discussions of productivity. Later the notion of the balanced growth path and productivity measures are easily related to Okun's law (which is given much stronger theoretical grounding in this text than is usually the case) and to the Phillips curve. The aggregate production function is also used to define a workable and data-relevant notion of potential output that is used throughout the book.

Another departure is that the core short-run macro model takes the form of three main elements: the IS curve, the Phillips curve, and the financial sector reflecting Federal Reserve interest-rate policy and the term structure of interest rates. These three elements are supplemented by Okun's law. The three element approach is fundamentally the one advocated in the symposium on core macroeconomics cited above. It also closely reflects the approach to macromodeling that now dominates thinking in the Federal Reserve and central banks around the world. This makes it especially easy to relate to current popular discussions of monetary policy.

While the approach retains the IS curve as a key element in the analysis of aggregate demand, it omits the LM curve. I believe that the LM curve analysis (1) is insufficiently rich to do justice to financial markets that play an increasingly prominent part in real-world macroeconomics; (2) overemphasizes the significance of the monetary aggregates, which are a tiny fraction of the asset base of the financial system; and (3) systematically misleads with respect to the actual conduct of monetary policy, which in most countries, including the United States (except for the 1979-82) period has been dominated by interest-rate targeting and, more recently in the crisis of 2008-09, by credit-oriented monetary policy – the so-called “quantitative easing.” In place of the LM curve, the current text contains three chapters that provide a rich discussion of the domestic and international financial systems

(tied through the flow-of-funds accounts to the national-income-accounting framework) and the behavior of interest rates, as well as a chapter on monetary policy that more closely reflects actual central-bank practices than one generally finds in textbooks at this level.

Some readers of earlier drafts have insisted on the importance of the LM curve. While I disagree, the LM curve and the IS-LM model are developed in the appendices to Chapters 7 and 13. An application of the IS-LM analysis (including the money-multiplier analysis) to the “monetarist episode” of 1979-82 is provided in the appendix to Chapter 16.

## 2. PRACTICAL STATISTICS

Students will develop statistical skills in the service of economics. I have struggled on how best to incorporate statistical tools in the textbook. (It is practically much less of a problem in the actual conduct of a course.) In the end, it seemed most practical to present a comprehensive *Guide to Working with Economic Data* as a reference tool separate from the main text. Cross-references to particular parts of the *Guide* point out where statistical tools are relevant, and the end-of-chapter problems draw heavily on the skills taught in the *Guide*. (Each problem set notes the relevant sections of the *Guide*.)

The *Guide* aims to be a self-contained reference – with clear, detailed explanations and numerous examples. It can be read profitably front to back or dipped into on an as-needed basis. It is a subsidiary tool. My own practice has never been to try to teach a statistics course alongside an economics course. The *Guide* aims at basic competency in elementary statistics rather than proto-econometrics. Although many students will have already taken an introductory statistics course, it does not presuppose statistical knowledge. It gives a clear account from first principles that provides an adequate background

knowledge for the complete beginner and serves as a useful review for the better prepared student. The *Guide* uses only the most basic statistics – roughly things one can easily do with data using Microsoft’s *Excel* spreadsheet *without* any of the statistical add-ons.

The *Guide* emphasizes three aspects of working with economic data:

- ◆ *General statistical methods.* The *Guide* begins with mundane, but too often neglected topics: for example, units of measurement and the making of graphs and tables. It progresses to the simple but powerful statistical tools that are readily available in common spreadsheet packages, including descriptive statistics (means, variances, standard deviations, coefficients of variations, and correlation coefficients); trend fitting and single variable regression (as an option on scatterplots), and moving averages.
- ◆ *Specifically economic methods.* For the most part, the *Guide* introduces statistical techniques that are particularly relevant to economics in the order in which they arise naturally in their economic contexts. These include: conversion of nominal to real (constant dollars); index numbers; ratios and percentage shares; calculation of growth (and inflation) rates, including annualization and compounding; calculation of doubling times; logarithms and their relationship to growth rates; and the fitting linear and exponential trends.
- ◆ *Interpretive issues.* The end-of-chapter exercises stress the interpretive use of statistics. A number of formally difficult, sophisticated statistical issues are discussed in an informal manner, stressing their relevance to practical economic issues. These include the problem of spurious correlations resulting from common



causes or common trends, instability over time, the direction of causation, unobserved expectations, and time aggregation.

### 3. EXERCISES

Problem sets at the end of each chapter typically include both theoretical and empirical exercises. Empirical exercises are dominant. Some can be done with a calculator, but most presume that the student will have access to a spreadsheet program. Microsoft's *Excel* is the model, though other spreadsheet programs may well be adequate. While there is no systematic attempt to teach the fundamentals of *Excel* – my experience is that most students now have a rudimentary understanding before starting the class or can quickly come up to speed – there are numerous hints about how to apply *Excel* to particular problems.

The textbook is supported by a website (*appliedmacroeconomics.com*) containing, among other things, regularly updated data sets keyed to the empirical exercises for each chapter. The book and the website also contain a *Guide to Online Resources* that documents web-based sources of data. It is good for students to learn to find and use publicly available data sources. They should do so, for instance, for supplementary class projects. Nevertheless, there are many pitfalls; and experience shows that things work more smoothly if all students are using the same data for end-of-chapter exercises, and do not have to struggle to find it in the right format.

### **Using the Text in a Course**

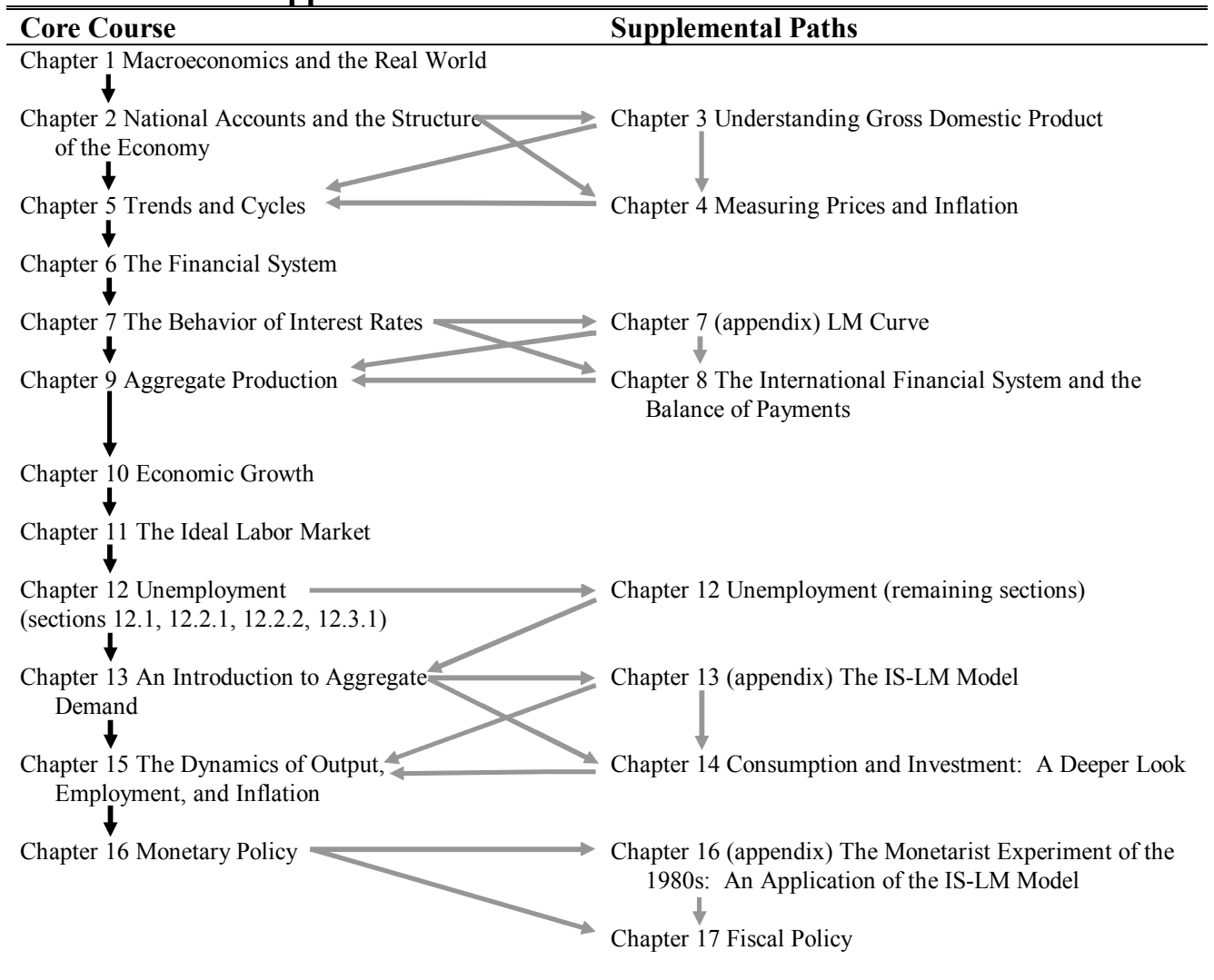
The chapters of the book are arranged in a logical order – a little different perhaps than in other textbooks. In keeping with the empirical orientation of the book, the basic data of the

economy – the national-income and product accounts, the balance of payments, and the flow of funds, as well the descriptive analysis of business cycles (viewing economic data as having trend and cyclical components are all introduced early). Because of their key role in connecting aggregate supply and demand, the real economic content of the book begins with domestic and international financial markets. Aggregate supply – both in the aspect of long-term economic growth and the cyclical behavior of labor markets is introduced next, followed by aggregate demand. Monetary and fiscal policy are integrated into the discussion of earlier chapters, but the book closes with a more detailed treatment of each.

While the chapters are designed to be read straight through, they have sufficient independence that instructors who prefer to consider topics in various different orders should find that the chapters can be treated somewhat flexibly. Flexibility is reinforced by a comprehensive glossary and list of symbols used in the text, allowing students to fill in missing terminology or concepts. Key concepts in each chapter are indicated in the text by bold-faced small capitals at the point of first use or best definition or discussion; while other important terminology is indicated by bold-faced regular type. All emboldened terms are defined in the glossary.

I have myself taught courses using the material in the book in different orders in both quarter and semester courses. The book is comprehensive in its treatment of most topics, so that some selection and omission is inevitable. The following table suggests a basic core course in domestic macroeconomics and notes several alternative or supplementary paths through the materials.

## Possible Course Structures Using Applied Intermediate Macroeconomics



Essential supporting materials for the course are accessible through the website *appliedmacroeconomics.com*. The website includes regularly updated data sets for problems, hints for getting started with *Excel*, answers to selected end-of-chapter problems, and various other supplemental materials and links.