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National Bureau of Economic Research

Chicago

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Although market clearing prices have always been central to economic theory, an applied general equilibrium model in which prices simultaneously clear all markets is a relatively new development. Such large-scale models of entire national economies have proved useful in researching fiscal policy because they account for complex interrelationships among several segments of an economy and thus measure the widespread effects of a government's major economic decisions.

This book reports the authors' research on one of the most sophisticated general equilibrium models designed for tax policy analysis. Significantly disaggregated and incorporating the complete array of federal, state, and local taxes, the model represents the U.S. economy and tax system in a large computer package. The authors consider modifications of the tax system, including those being raised in current policy debates, such as consumption-based taxes and integration of the corporate and personal income tax systems. A counterfactual economy associated with each of these alternatives is generated, and the possible outcomes are compared.

The analyses that emerge from the model lead the authors to a number of conclusions that make this book especially relevant to the current concerns of policy makers and researchers. For example, the authors argue that substantial welfare gains for the economy could result from the integration of corporate and personal income taxes. They also show that tax rate increases would not lead to decreases in revenue for the U.S. economy, contrary to the so-called Laffer effect.

(Continued on back flap)

A General Equilibrium Model for Tax Policy Evaluation

A National Bureau
of Economic Research
Monograph

A General Equilibrium Model for Tax Policy Evaluation

Charles L. Ballard
Don Fullerton
John B. Shoven
John Whalley

The University of Chicago Press

Chicago and London

Charles L. Ballard is Assistant Professor of Economics, Michigan State University. Don Fullerton is Associate Professor of Economics, University of Virginia. John B. Shoven is Professor of Economics, Stanford University. John Whalley is Professor of Economics, University of Western Ontario. The latter three authors are also Research Associates of the National Bureau of Economic Research.

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(Resolution adopted October 25, 1926, as revised through September 30, 1974)

Contents

Preface

In economics, as in other fields, beliefs are reinforced or amended as successive researchers replicate or refute previous findings. For any particular contribution, the reader's confidence in the results depends fundamentally on his ability to reproduce them, regardless of whether he chooses to do so. When a large simulation model is summarized for the constrained space of a journal article, however, the reader may learn no more than the general approach of the model. The summary may be viewed as cryptic, and the model may be viewed as a black box. Confidence is accordingly limited. These considerations may have led Donald McCloskey to ask:

> What is legitimate simulation? Between A. C. Harberger's modest little triangles of distortion and Jeffrey Williamson's immense multi-equation models of the American or Japanese economies since 1870 is a broad range. Economists have no vocabulary for criticizing any part of the range. They can deliver summary grunts of belief or disbelief but find it difficult to articulate their reasons in a disciplined way. (1983, p. 502)

The purpose of this book is to provide all of the equations, data, and procedures that would be required to replicate the findings of one such simulation model. This numerical general equilibrium model of the United States tax system has been used in a number of previous journal articles to evaluate a number of tax issues and proposed tax reforms, but its detail has not yet been made generally available. We hope that this detail on particular procedures, equations, and data will be useful to other researchers pursuing similar objectives, and we hope that its availability will increase confidence in these previously published results. This considerable modeling detail is preceded by a general discussion of tax issues and methodology, and it is followed by updated results on the issues addressed in several of the previous papers.

Since its beginning in 1976, work on various aspects of this model has been supported by the Treasury Department's Office of Tax Analysis, by several grants from the National Science Foundation, and by the National Bureau of Economic Research. We are very grateful for this financial assistance, as we are for data, suggestions, and other contributions of a great many other researchers. Individuals at the Commerce Department's National Income Division were particularly helpful. The model originated with work for the Treasury Department, and it is still being operated there, so it is sometimes known as the Treasury general equilibrium model. It is also known as GEMTAP, for general-equilibrium-model taxation analysis package.

Some of the papers using this model have been coauthored by Charles Becker, Antonio Borges, Shantayanan Devarajan, Roger H. Gordon, Lawrence H. Goulder, Yolanda K. Henderson, Timothy J. Kehoe, A. Thomas King, Andrew B. Lyon, and Richard A. Musgrave. Additional research assistance has been provided by Thomas Kronmiller, Radwan Shaban, and Janet Stotsky. All of these individuals have made substantial contributions toward this book.

In addition to many seminar participants and anonymous referees, we are grateful for suggestions made by Alan J. Auerbach, J. Gregory Ballentine, Peter Baltaxe, Alan Blinder, George Borts, Miachel Boskin, David F. Bradford, Peter Diamond, Larry Dildine, Daniel Feenberg, Martin Feldstein, Harvey Galper, Mart Gertler, Malcolm Gillis, Ronald E. Grieson, Robert E. Hall, Arnold C. Harberger, Glenn Harrison, Robert H. Haveman, Charles R. Hulten, Dale W. Jorgenson, Michael Kaufman, Wouter Keller, Jon Kesselman, Nicholas Kiefer, Mark Killingsworth, Larry Kimbell, Mervyn A. King, Laurence Kotlikoff, Arthur B. Laffer, Charles McLure, Peter Mieszkowski, Hudson Milner, Franco Modigliani, John R. Piggot, Sherman Robinson, Harvey S. Rosen, Herbert Scarf, Jaime Serra-Puche, Joel Slemrod, Nicholas H. Stern, Wayne Thirsk, and Norman B. Ture.

Successive versions of this manuscript were typed by Althea Chaballa and Patrick Higgins. The long hours and outstanding work that they gave to this project have made our tasks much easier.