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978-0-521-79006-2 - Microsimulation Modelling for Policy Analysis: Challenges and Innovations

Edited by Lavinia Mitton, Holly Sutherland and Melvyn Weeks

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Microsimulation Modelling for Policy Analysis Challenges and Innovations

Modern policy problems require analysts to capture the interactions between policy and the complexities of economic and social life, as well as between policies of different types. Increasingly, microsimulation is employed to analyse these problems. This book brings together examples of microsimulation modelling that are at the frontiers of developments in the field, either because they extend the range of techniques available to modellers, or because they demonstrate new applications for established methods. It represents the state of the art, with chapters on the use of microsimulation for comparative policy research and for challenging conventional assumptions, combining microsimulation with other types of economic models and the much-neglected subjects of model alignment and validation. Data and case studies are taken from regions including Asia-Pacific, Europe and North America.

LAVINIA MITTON was a Junior Research Officer at the Microsimulation Unit, Department of Applied Economics, University of Cambridge. She is now a research student at the London School of Economics.

HOLLY SUTHERLAND is a Senior Research Officer in the Department of Applied Economics, University of Cambridge and Director of the Microsimulation Unit.

MELVYN WEEKS is a Senior Research Officer at the Department of Applied Economics, University of Cambridge. He has previously lectured in Economics and Statistics at the University of York.

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Contributors

ROLF AABERGE, *Senior Research Fellow at the Research Department, Statistics Norway*

CAROLE BONNET, *Economic researcher at the French Ministry of Labour and Social Affairs*

STEVE CALDWELL, *Professor at the Institute of Public Affairs and Department of Sociology, Cornell University*

GRANT CAMERON, *Chief, Personal Income Tax Division, Tax Policy Branch, Department of Finance, Ottawa*

DENIS CHÉNARD, *Head Model Analyst for the DYNACAN project in the Department of Human Resource Development, Ottawa*

UGO COLOMBINO, *Professor of Microeconomics at the University of Turin*

ANDRÉ DECOSTER, *Professor at the Catholic University of Louvain, Centre for Economic Studies and the Kortrijk Campus*

ALAN DUNCAN, *Reader in Economics at the University of Nottingham*

ROSS EZZEDDIN, *Policy analyst with the Privy Council Office of the Government of Canada in Ottawa*

RUTH HANCOCK, *Senior Research Fellow, Nuffield Community Care Studies Unit, University of Leicester*

ANN HARDING, *Professor of Applied Economics and Social Policy and inaugural Director of the National Centre for Social and Economic Modelling at the University of Canberra*

GEORGIA KAPLANOGLU, *Currently works in the Economic Research Department of the Bank of Greece, Athens, and has recently completed a PhD at the University of Cambridge*

RONAN MAHIEU, *Economic researcher at the French Institute of Statistics (INSEE)*

RICHARD MORRISON, *Senior Methodologist, DYNACAN project, Department of Human Resource Development, Ottawa*

CATHAL O'DONOGHUE, *Research Associate with the Microsimulation Unit, Department of Applied Economics, University of Cambridge*

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xviii **List of contributors**

RICHARD PERCIVAL, *Senior Research Fellow, National Centre for Social and Economic Modelling University of Canberra*

KATHERINE RAKE, *Lecturer in Social Policy at the London School of Economics*

STEINAR STRØM, *Professor in Economics, University of Oslo*

HOLLY SUTHERLAND, *Director of the Microsimulation Unit in the Department of Applied Economics at the University of Cambridge*

NEIL SWAN, *Was project manager at the Spatial Modelling Centre in Kiruna, Sweden from 1997–1998*

FRANCESCA UTILI, *Currently working at the Department of Development and Cohesion Policies, Ministry of Treasury, Italy*

GUY VAN CAMP, *Researcher at the Centre for Economic Studies, Catholic University of Louvain*

AGNES WALKER, *Senior Research Fellow, National Centre for Social and Economic Modelling, University of Canberra*

MELVYN WEEKS, *Senior Research Officer at the Department of Applied Economics, University of Cambridge*

TOM WENNEMO, *Works in the Research Department of Statistics Norway*

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Foreword

In August 1998, the Microsimulation Unit of the Department of Applied Economics held a conference in Cambridge that attracted an impressive array of papers, many of which are presented in this volume. Microsimulation is the logical approach for the practical study of policy design, and it is particularly fitting that the conference was held in Cambridge. The Faculty of Economics and Politics has a strong tradition in the theory of public finance, going back to Pigou before the war, and pursued from the 1960s by James Meade (our first Cambridge Nobel Laureate in Economics), Jim Mirrlees (who was recently awarded the Nobel Prize for his work on optimal taxation), Tony Atkinson and Mervyn King. They did much to develop the theory of optimal taxation and the issues that must be confronted in the design of tax systems.

On the applied side, the first Director of the Department of Applied Economics, Sir Richard Stone (also a Nobel Laureate) was developing the statistical and quantitative techniques to test economic theory and quantify the impacts of economic policy decisions. Theory without measurement in economics is just mathematics or philosophy, measurement without theory is anecdote, but the combination of theory and measurement was the hallmark of Stone's vision for the Department. Stone's growth model of the British economy was one of the earlier simulation models that captured some of the micro-detail of the economy, and which served as a framework to organise a substantial research endeavour into consumer demand, industry-level employment determination and company behaviour.

The rapid development of the ambition and power of microsimulation techniques owes much to the development of computers, and it is instructive, looking back at Stone's early papers, to see the subtle change in the meaning of the word. When he referred to computers he meant teams of hard-working operatives hand-cranking calculating machines. It was only later that the Cambridge mainframe computer (Titan, one of the first time-shared computers anywhere) allowed him to develop his input–output

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Foreword

simulations, first for the Cambridge Growth Project model, and later for developing Social Accounting Matrices.

One of the direct consequences of the post World War II interest in public finance in Cambridge was the setting up of the Meade Committee 1975 by the Institute for Fiscal Studies with a brief to take a fundamental look at the UK tax structure. Since then, sophisticated microsimulation models have been developed at the London School of Economics under the guidance of Tony Atkinson, and transferred with the Microsimulation Unit to Cambridge. The Unit has not only developed its UK model but has now extended its brief to the whole of the European Union.

In parallel with the rise in computing power, the improvement in the quality and quantity of cross-section and time-series data provided the raw materials to which to apply the growing power of modern technology. When my colleagues and I analysed the Hungarian household budget survey data from the period before and after the tax reforms of 1988, we had to place the three linked waves of 12,000 households each with their 600 observations in the Manchester supercomputer for analysis. Now, the data can be manipulated on a PC, making it sufficiently accessible for research students to be able to use it as a resource for comparative research on different countries.

This improvement in speed and portability is critical in making microsimulation models accessible to policy-makers. This is essential if such techniques are to be genuinely useful in policy-making. As it becomes easier to develop compact and user-friendly models to predict who would gain, who would lose, and by how much as a result of a policy change, and make these available to the press and the media, perhaps policy-making will become both more rational and more democratic. One of the striking features of the conference was the combination of and interaction between academe and government. The book reflects this constructive dialogue in that roughly half the contributions come from outside the university sector.

The conference was boldly titled 'Microsimulation in the New Millennium' and the title was well chosen – not just because of its timing, but also because of the step change in the power and range of techniques that has taken place over the last decade of the old millennium. These techniques allow theory and measurement to achieve their full potential in informing decision-making and equip social scientists with laboratories for policy experiments. It will be interesting to see how much progress is made in the next decade; I am confident that Cambridge will continue to play its role in developing and applying the theory, the econometrics and the models to further this progress.

David M. Newbery
Department of Applied Economics
University of Cambridge
5 October 1999

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The chapters on this book are a selection chosen from papers that were presented at a workshop entitled ‘Microsimulation in the New Millennium: Challenges and Innovations’ which was held in Cambridge in August 1998. We are grateful to the Department of Applied Economics at the University of Cambridge, and in particular the Department’s Director, David Newbery, for supporting the workshop.

As a measure of the extent of interest in microsimulation as a technique for policy analysis, the workshop was attended by some 100 people, drawn from universities, research institutes, private sector bodies, government departments and international organisations from around the world. As well as participants from most countries of the European Union, the workshop involved people from Australia, Brazil, Canada, Hungary, New Zealand, South Africa, Slovenia and the US. We are very grateful to all the authors of the papers, discussants and session chairs for making the meeting a productive, stimulating and enjoyable occasion. As well as the contributors to this volume, we should like to thank Phil Agulnik, Leif Andreassen, Emanuele Baldacci, Dave Boutwood, Pierre Concialdi, Neela Dayal, Richard Eason, Ingemar Eriksson, Carlos Farinha Rodrigues, François Gardes, Thesia Garner, Michel Grignon, Anthony King, Horacio Levy, Bertrand Lhommeau, Magda Mercader Prats, Joachim Merz, Julian McCrae, Georg Mueller, Ronald Naylor, Jan Nelissen, Sophie Pennec, Tamás Rudas, Peter Smedley, Amedeo Spadaro, Christophe Starzec, Peter Szivós, István Tóth, Gert Wagner, Paul Williamson and Michael Wolfson.

Finally, special thanks are due to Heather Henchie and Ann Newton who organised the workshop and the editing of this volume with care, patience and skill.

Lavinia Mitton, Holly Sutherland and Melvyn Weeks
October 1999