



**College of Commerce
Economic and Financial Studies
Economics Department**

ECON332 – Econometric Models

First Semester, 2004

UNIT OUTLINE

Student Resource Centre
Division of Economic & Financial Studies
MACQUARIE UNIVERSITY

ECON332 - ECONOMETRIC MODELS

First Semester, 2004

Unit Outline

The purpose of this unit is to provide economics and econometrics students with an overview of the major types of economy-wide macroeconomic models used in practice. At least two major Australian macroeconomic models are discussed in detail.

Topics include: A taxonomy of economy-wide macroeconomic models from Klein to Johansen; the solution of linear and non-linear systems; multiplier analysis in linear and non-linear models; model simulation; policy analysis; the Orani model; the Murphy model; the Access Economics Model (AEM).

Familiarity with matrix algebra is desirable, but not essential. Model simulations are implemented using an econometric computer package.

Prerequisites

Students must have passed

1. ECON200 or ECON201, and
2. ECON141, or 3 credit points in the range STAT270 - STAT272.

References

References for topics that **may** be covered in the course are given below. However, it is not intended that students should attempt to assimilate the material in these references independently of guidelines which will be laid down in the lectures.

- (1) D.W. Challen and A.J. Hagger, *Macroeconometric Systems: Construction, Validation and Applications*, Macmillan, 1983.
- (2) Burns, M. and Murphy, C.W. (eds) (1988), "Macroeconomic Modelling in Australia", *Australian Economic Papers*, Special Issue.
- (3) C.W. Murphy et al, *A Macroeconometric Model of the Australian Economy for Medium-Term Policy Analysis*, Office of EPAC Technical Paper No. 2, Canberra Printing and Publishing, 1986 (referred to as AMPS).
- (4) G. Keating, *The Production and Use of Economic Forecasts*, Methuen & Co., 1985.
- (5) Fair, R.C. (1984) *Specification, Estimation and Analysis of Macroeconometric Models*, Harvard University Press.
- (6) Griliches, Z. and Intriligator, M.D. (eds) (1986) *Handbook of Econometrics*, Vol. 3, North-Holland.
- (7) Intriligator, M.D. (1978) *Econometric Models, Techniques and Applications*, North-Holland.
- (8) Kmenta, J. and Ramsay, J.B. (eds) (1981) *Large-Scale Macro-Econometric Models*, North-Holland.
- (9) Wallis, K.F. et al., *Models of the UK Economy*, Vols 1 (1984), 2 (1985), 3 (1986) and 4 (1987), Oxford University Press.
- (10) P. Arestis and G. Hadjimatheou, *Introducing Macroeconomic Modelling: An Econometric Study of the United Kingdom*, Macmillan, 1982.
- (11) L.R. Klein and R.M. Young, *An Introduction to Econometric Forecasting and Models*, Lexington, 1980.
- (12) Department of the Treasury, *The NIF-10 Model of the Australian Economy*, Aust. Govt. Publishing Service, 1981.
- (13) B.R. Parmenter, "Inter-Industry Analysis: the ORANI model of Australia's Industrial Structure", Ch. 5 of Webb and Allan (eds.), *Industrial Economics: Australian Studies*, George Allen & Unwin, 1982.

- (14) P.B. Dixon, B.R. Parmenter, J. Sutton and D.P. Vincent, *ORANI: A Multisectoral Model of the Australian Economy*, North-Holland, 1982.
- (15) P.B. Brain, *The Microeconomic Structure of the Australian Economy*, Longman Cheshire, Melbourne, 1986.
- (16) J. Piggott and J. Whalley (eds.), *New Developments in Applied General Equilibrium Analysis*, Cambridge University Press, 1985.
- (17) Cuthbertson, K., & M.P. Taylor/Newlin **MACROECONOMIC SYSTEMS** Basil Blackwell, 1987
- (18) Wynn, R.F. & K. Holden
AN INTRODUCTION TO APPLIED ECONOMETRIC ANALYSIS
The Macmillan Press, 1974
- (19) McKibbin W.J. & J.D. Sachs
GLOBAL LINKAGES: MACROECONOMETRIC INTERDEPENDENCE AND COOPERATION IN THE WORLD ECONOMY
The Brookings Institution, 1991
- (20) Hargreaves, C. (Editor)
A COMPARISON OF ECONOMY-WIDE MODELS OF AUSTRALIA
EPAC Commission Paper No. 2
Australian Government Publishing Service, 1994
- (21) Murphy, C.W.
The Macroeconomics of a Macroeconometric Model
ECONTECH, 1990
- (22) Murphy, C.W.
The Model in Detail
ECONTECH, 1990
- (23) Murphy, C.W.
Murphy Model of the Australian Economy
User's Guide for version 2.0
ECONTECH, 1990
- (24) Powell, A.A. & C.W. Murphy
**INSIDE A MODERN MACROECONOMETRIC MODEL:
A GUIDE TO THE MURPHY MODEL**
Springer-Verlag, 1995

- (25) Pindyck, R.S. and R.L. Rubinfeld, **ECONOMETRIC MODELS AND ECONOMETRIC FORECASTS**, Third Edition, McGraw-Hill, 1991, chapters 12 and 13, pp. 331-412.
- (26) Wallis, K.F.
On Macroeconomic Policy and Macroeconometric Models
THE ECONOMIC RECORD, Vol. 69, No 205, June 1993, pp. 113-30.
- (27) **THE ACCESS ECONOMICS MACRO MODEL**, Version 3
Access Economics Pty. Ltd., 1995.
- (28) **TRYM, THE TREASURY MACROECONOMIC MODEL OF THE AUSTRALIAN ECONOMY**
Australia Bureau of Statistics, 1996
- (29) Breece, J.H., K.R. McLaren, C.W. Murphy and A.A. Powell, Using the Murphy Model to Provide Short-run Macroeconomic Closure for ORANI, **THE ECONOMIC RECORD**, Vol. 70, No 210, September 1994, pp. 292-314.
- (30) Powell, A.A., From Dornbusch to Murphy: Stylized Monetary Dynamics of a Contemporary Macroeconometric Model, paper presented at the Econometrics Conference, Monash University, July 1995.
- (31) Whiteley, J.D., **A COURSE IN MACROECONOMIC MODELLING AND FORECASTING**
Harvester/Wheatstead, London Business School

Preliminary Reading

The book by Challen & Hagger, the first item on the list of references, used to be a textbook for ECON332. It is now a little dated, and the unit now places greater emphasis on the actual models themselves than is the case in the book. (It is now out of print.) However, chapter one in Challen & Hagger has a very good overview of economy wide models classified into various types. This classification is still relevant and an interesting way of looking at the whole area.

Chapters 12 & 13 of the book by Pindyck R.S. and R.L. Rubinfeld, **ECONOMETRIC MODELS AND ECONOMIC FORECASTS**, Third Edition, McGraw-Hill, 1991, pp. 331-412, has a very good discussion of simulation based on econometric models.

Policy simulation using economy wide models is discussed extensively in ECON332. Along with forecasting, policy simulation is the major reason why economy wide models are constructed. In my view, the policy simulation aspects are more important than the forecasting aspects, but the two are very closely related.

Another very good introductory book is the book by Wynn R.F. and K. Holden (listed on page 3 of the references). This book was written in 1974, so it also is dated, but it has an extremely good introduction to economy wide econometric modelling. The entire book is worth reading. The first half of the book is devoted to particular sectors of the economy, Production, Investment and Wages and Prices. The second half, i.e. chapters 5 & 6, is devoted to early examples of major economy wide models, forecasting and multiplier analysis. Multiplier analysis is more general than policy simulation and is also discussed extensively in ECON332. If you don't have time to read the whole book, I certainly recommend that you read at least chapters 5 & 6.

Finally, if you need a basic introduction to Matrix Algebra, the last half (pages 189-314) of the book by D.E. James & C.D. Throsby, INTRODUCTION TO QUANTITATIVE METHODS IN ECONOMICS, is very good. Matrix Algebra is not essential for ECON332 but quite a lot of the literature in econometric modelling uses matrix algebra, so it is helpful to have had some exposure to it. Matrix algebra is avoided as much as possible in lectures and tutorials, and it is not examinable in ECON332, but, unfortunately, it is used in some of the key references because it is a very efficient technique for dealing with linear systems of equations. The major focus in ECON332 is not on linear systems of equations, it is on non-linear systems of equations, but it is often useful to discuss various aspects of systems modelling in the context of a linear system before moving on to the discussion of those aspects in the context of non-linear systems.

Assessment

- (a) A three hour written end-of semester examination
- (b) A major (computer-based) project.

The end-of-semester examination is worth 70% of the overall assessment. The project has a weight of 30%.

The project **must** be submitted in the ECON332 box located in the EFS Resource and Information Centre (ERIC), C5C-244. Do NOT submit the project directly to the lecturer. Do NOT leave the project under the lecturer's door.

The deadline for submission of the project is Friday 11 June, 6.30 pm.

Class Arrangements

There will be a three hour lecture/tutorial each week. Tutorials will normally be conducted in the last hour, but not necessarily.

In weeks 3, 5 and 8 a computing practical will replace the lecture/tutorial during the last hour, if required.

Lecture/Tutorials	Thursday 6 - 9 pm, X5B 132
Computing Practicals	Thursday 8 - 9 pm (Location to be advised) (Weeks 3, 5 and 8)

Topics

Weeks 1 – 6	Multiplier Analysis in Non-linear models
Weeks 7 – 9	The Murphy Model (and the Access Economics AEM Model)
Weeks 10 – 12	The Orani Model (and the MONASH Model)
Week 13	Exam Briefing and Review

Roger Tonkin (Lecturer)
Phone: 9850-8494
Room: C5C-381
Email: rtonkin@efs.mq.edu.au

**DO NOT REMOVE
THE STAPLES**