

School of Economics and Finance

ECON 423 MACROECONOMIC MODELLING OF THE NEW ZEALAND ECONOMY

Trimester One 2007

COURSE OUTLINE

Contact Details

The Course Coordinator is: Professor Viv Hall
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Contact is best initiated by email or through making an appointment

Lecture Time and Location: Mondays 3.40 – 5.30 pm
RWW 220

Pre-requisite: ECON 305, together with suitably strong quantitative/econometric preparation; ECON 402 and ECON 403 would be ideal co-requisites, if not already completed.

Course Content and Objectives

This course features macroeconomic and structural modelling of the New Zealand economy, blending relevant economic theory, applied econometric and policy relevant material. In 2007, the modelling will focus primarily on the Reserve Bank of New Zealand's FPS model, and selected applied/computable general equilibrium (AGE/CGE) modelling.

The **overall objective** of the course will therefore be to ensure participants gain a thorough appreciation of the key aspects of these two types of modelling for policy purposes. The **intended specific learning outcomes** for those successfully completing ECON 423 include:

- (i) a sound appreciation of the roles of macroeconomic and structural models in forecasting, projection and policy processes;
- (ii) key insights from best practice international modelling, and recent New Zealand policy applications;
- (iii) an understanding of the relative strengths and weaknesses of partial, comparative static and dynamic approaches to structural modelling; and
- (iv) an appreciation of deterministic and stochastic macroeconomic modelling, and the relative roles of steady state and dynamic properties.

There will be 12 meetings during the trimester. Guest lecturers will lead several sessions. The first session will feature introductory concepts for both structural and macroeconomic modelling, with reference to "best practice" international work. Relative strengths and

weaknesses of modelling and non-modelling approaches will be evaluated. The next four sessions cover structural/CGE modelling in greater depth, three sessions covering essentially short run comparative static modelling concepts and applications, and the fourth featuring recent developments in dynamic/intertemporal CGE modelling. The seven macroeconomic modelling sessions will cover: underlying concepts and ideas; an application featuring the National Bank of New Zealand model, NBNZ-DEMONZ; the structure, steady state and dynamic properties of the FPS model; and FPS-based applications. Reference will be made to the New Zealand Treasury's NZTM model, and to the RBNZ's Dynamic Stochastic General Equilibrium (DSGE) modelling work, where appropriate.

Expected Workload

ECON 423 is a 15-point course, and on the basis of VUW having designated one point = 10 hours work, expected work load would total 150 hours. If that workload were spread over 12 weeks, hours expected would average around 12.5 hours per week. This would involve attending classes (2 lectures per week), plus reading, studying and completing assignments for approximately 10.5 hours per week. The 10.5 hours would of course vary for individual students, depending on the student's previous knowledge and understanding, and the final grade at Honours level to which the student aspires.

Assessment Requirements

For assessment purposes, you are required to sit the final examination in the Trimester One final examination period, and to complete coursework requirements. The coursework consists of two short assignments (to be distributed in the first half of the trimester), and an essay of no more than 2500 words (see the final page of this outline). Unlike the situation that exists in undergraduate papers, your final grade will be determined on the basis of your overall performance in the Honours programme. However, as a guide to the allocation of your efforts, the assessment in ECON 423 will be based on:

15% for assignments: Ass. 1 due Mon. 26 March, Ass. 2 due Mon. 23 April
25% for the essay: due no later than Monday 21 May
60% for the final two-hour examination.

Final Examination

Trimester One final examination dates are expected to be between Monday 11 June and Saturday 30 June. The ECON 423 final examination could occur any time within the confirmed period.

Topics and Readings (* denotes a key reading; denotes available from Commerce Library Reserve Collection)

1 Introduction to macroeconomic and structural modelling for the generation of forecasts and projections, and for policy analysis. (1 session)

Why model? The modelling process. Forms of structural modelling. Forms of macroeconomic modelling. International perspectives.

The Economist, 13 July 2006, Special Report, "Economic models: Big questions and big numbers".

John Freebairn, "Some Final Comments", pp. 193-196, in *A Comparison of Economy-Wide Models of Australia: Responses to a rise in labour productivity*, Colin

Hargreaves (ed.), Commission Paper No. 2, Economic Planning Advisory Commission, Canberra, October 1994.

* *Economic Modelling*, 15(3), July 1998, Special Issue: Empirical Models and Policy Making: contributions by G. Zalm, “The relevance of economic modelling for policy decisions”, pp. 309-316; Duguay, Pierre and David Longworth, “Macroeconomic models and policymaking at the Bank of Canada”, pp. 357-376.

* Murphy, Christopher W. et al., *A Macroeconometric Model of the Australian Economy for Medium-Term Policy Analysis*, Office of EPAC Technical Paper No. 2, Office of EPAC, Canberra, June 1986, chs. 1-3.

* Black, Richard, Vincenzo Cassino, Aaron Drew, Eric Hansen, Benjamin Hunt, David Rose and Alasdair Scott, *The Forecasting and Policy System: the core model*, Research Paper No. 43, Reserve Bank of New Zealand, Wellington, August 1997, ss. 1, 2; available from <http://www.rbnz.govt.nz>.

Murchison, Stephen and Andrew Rennison, *TotEM: the Bank of Canada's New Quarterly Projection Model*, Bank of Canada Technical Report No. 97, December 2006, Introduction and ch 1; available from <http://www.bankofcanada.ca/en/res/tr/2006/tr97-e.html>.

Spencer, Grant and Ozer Karagedikli, “Modelling for monetary policy: the New Zealand experience”, *Reserve Bank of New Zealand Bulletin*, 69 (2), June 2006, 18-25; <http://www.rbnz.govt.nz/research/bulletin>.

* Kapetanios, G, A Pagan and A Scott, “Making a Match: Combining Theory and Evidence in Policy-oriented Macroeconomic Modelling”, *Journal of Econometrics*, 136 (2), February 2007, 565-594.

* Fukac, Martin and Adrian Pagan, “Issues in Adopting DSGE Models for Policy Decisions”, CAMA Working Paper 10/2006, March 2006; available from <http://cama.anu.edu.au/publications.htm>.

Szeto, Kam Leong, “A dynamic computable general equilibrium (CGE) model of the New Zealand economy”, New Zealand Treasury Working Paper 02/07, June 2002; available from <http://www.treasury.govt.nz/workingpapers/2002>

* Freebairn, John, “The IMPACT Project: A Review”, *The Economic Record*, 56(152), March 1980, pp. 17-35.

Philpott, Bryan, “General Equilibrium Modelling for Policy Analysis and Economic Planning”, *Research Paper on Economic Planning (RPEP) Occasional Paper 102*, Wellington, August 1992.

The following websites can also be investigated to gain a useful perspective on quality, model-based technical reports and working papers:

www.monash.edu.au/policy

www.agecon.purdue.edu/gtap

www.bankofcanada.ca/en/pubs.htm

www.econtech.com.au
www.sensiblepolicy.com
www.rbnz.govt.nz
www.treasury.govt.nz

2. Structural/CGE Modelling: An Introduction (1 session)

Piecemeal/partial, static, and dynamic (including intertemporal) approaches

Hall, Viv B., pp 47-51 in Silverstone, Brian *et al.*, *A Study of Economic Reform: The Case of New Zealand*, North-Holland, 1996; & pp 25-37 in van Bergeijk, Peter A. G. *et al.*, *Structural Reform in Open Economies: A Road to Success?*, Edward Elgar, 1999.

* Parmenter, B. R., “Inter-Industry Analysis”, ch. 5 in L. R. Webb and R. H. Allen (eds.) *Industrial Economics: Australian Studies*, Allen & Unwin, 1982, pp. 69-110, ss. 1, 2, 3.1, 4.

Dao, Dan, Steven Ross and Robert Campbell, *Structural Change and Economic Growth*, Background Paper No. 28, Economic Planning Advisory Council, Canberra, June 1993.

Dixon, Peter B. and Daina McDonald, *An Explanation of Structural Changes in the Australian Economy: 1986-87 to 1990-91*, Background Paper No. 29, Economic Planning Advisory Council, Canberra, June 1993.

Nana, Ganesh, Viv B. Hall and Bryan P. Philpott, “Trans-Tasman CGE modelling”, *Economic Modelling*, 12 (4), 1995, pp. 377-389.

A Comparison of Economy-Wide Models of Australia: Responses to a rise in labour productivity, Colin Hargreaves (ed.), Commission Paper No. 2, Economic Planning Advisory Commission, Canberra, October 1994: contributions by Glenn Withers, “Opening Remarks”, pp. 3-5; Chris Murphy and Rob Brooker, “Murphy Model and Microeconomic Reform”, pp. 65-83; Warwick McKibbin, “Labour Productivity Growth: Macroeconomic and Sectoral Results from the MSG2 and G-Cubed Multi-Country Models”, pp. 107-132; Michael Malakellis and Peter B. Dixon, “The Economic Implications of an Improvement in Labour Productivity: Comparative Dynamic Results from the MONASH Model”, pp. 161-190; John Freebairn, “Some Final Comments”, pp. 193-196.

Dixon, P B and M T Rimmer, *Dynamic General and Equilibrium Modelling for Forecasting and Policy*, Contributions to Economic Analysis Volume 256, North-Holland, December 2002; also www.monash.edu.au/policy

Dixon, Peter B, K R Pearson, Mark R Picton and Maureen Rimmer, “Rational expectations for large CGE models: A practical algorithm and a policy application”, *Economic Modelling*, 22, 2005, 1001-1019.

Nana, Ganesh, *A Multi-Industry Computable General Equilibrium Model with Dynamic Investor and Consumer Behaviour*, PhD thesis, Victoria University of Wellington, 1999, ch. 1.

3. Comparative Static CGE modelling (2 sessions)

Introduction, Input-Output Data and Models, The Johansen Approach

* Dixon, Peter B., B. R. Parmenter, Alan A. Powell and Peter J. Wilcoxon (DPPW), *Notes and Problems in Applied General Equilibrium Economics*, North-Holland Advanced Textbooks in Economics Volume 32, 1992, chs. 1, 2 (pp. 19-45).

* Parmenter (1982), s. 3.2 (a).

For a perspective on the basic data for New Zealand, see Nana, ch. 2; and *Inter-Industry Study 1996 - 49 Industries – Interim Release of Tables*, Statistics New Zealand, available from www.stats.govt.nz (search ‘input-output tables’).

* Further detail can be found in Dixon, Peter B., B. R. Parmenter, John Sutton and D. P. Vincent (DPSV), *ORANI: A Multisectoral Model of the Australian Economy*, North-Holland Contributions to Economic Analysis Volume 142, 1982, chs. 1, 2 (ss. 3-7), 4 (ss. 24-27, 29), 5 (ss. 30-32, 34).

The Construction of a Model for Practical Policy Analysis

* Parmenter (1982), s. 3.2 (b).

* DPSV, ch. 3 (especially ss. 13, 14, 18, 19, 22)

4. Intertemporal CGE Modelling (1 session)

An Introduction to Intertemporal Modelling

Malakellis, Michael, “Should Tariff Reductions be Announced? An Intertemporal Computable General Equilibrium Analysis”, *The Economic Record*, 74 (225), June 1998, pp. 121-138.

* Nana, Ganesh, chs. 1, 3, (pp. 75-101), 4 (pp. 141-149, 151-155), 5 (pp. 160-175).

5. Macroeconomic Modelling: Underpinning Concepts and Ideas (1 session)

The key macroeconomic relations. Long run and dynamic relations. Core and satellite models. Uncertainty. Deterministic and Stochastic Simulations. Economic Projections.

* *American Economic Review, Papers and Proceedings*, 87 (2), May 1997, “Is There a Core of Practical Macroeconomics that We Should All Believe?”, pp. 230-246, contributions by Robert M. Solow, John B. Taylor, Martin Eichenbaum, Alan S. Blinder, and Olivier Blanchard; also *American Economic Review, Papers and*

Proceedings, 91(2), May 2001, John B Taylor, “The Role of the Exchange Rate in Monetary-Policy Rules”, 263-267.

* *Journal of Economic Perspectives*, Fall 2006, 20 (4), “Macroeconomic Lessons”, pp 3-46, contributions by V. V. Chari and Patrick J. Kehoe and by N. Gregory Mankiw.

* Black *et al.*, s. 2.

* Conway, Paul, “Monetary Policy in an Uncertain World”, *Reserve Bank of New Zealand Bulletin*, 63 (3), September 2000, pp. 5-15; available from <http://www.rbnz.govt.nz/research/bulletin>.

* *Monetary Policy under Uncertainty*, Benjamin Hunt and Adrian Orr (eds.), Reserve Bank of New Zealand, 1999, pp. 1-9; available from <http://www.rbnz.govt.nz>.

* Drew, Aaron and Benjamin Hunt, “The Forecasting and Policy System: Preparing Economic Projections”, RBNZ DP G 98/7, October 1998; available from <http://www.rbnz.govt.nz>.

McCaw, Sharon and Satish Ranchhod, “The Reserve Bank’s forecasting performance”, pp 5-23 in *Reserve Bank of New Zealand Bulletin*, Vol. 65, No. 4, December 2002; available from <http://www.rbnz.govt.nz/research/bulletin>.

Matheson, Troy, “Phillips curve forecasting in a small open economy”, RBNZ DP2006/01, March 2006; available from <http://www.rbnz.govt.nz/research/discusspapers>.

Khoon Lek Gho and Daniel Lawrence, “Treasury’s Forecasting Performance: A Head-to-Head Comparison”, New Zealand Treasury Working Paper 06/10, July 2006; available from <http://www.treasury.govt.nz/workingpapers/2006>

6. A Deterministic Practical Application, using NBNZ-DEMONZ (1.5 sessions)

* Hall, Viv B. and David Rae, “Fiscal Expansion, Monetary Policy, Interest Rate Risk Premia, and Wage Reactions”, *Economic Modelling*, 15 (4), 1998, pp. 621-640.

* Rae, David, “NBNZ-DEMONZ: A Dynamic Equilibrium Model of New Zealand”, *Economic Modelling*, 13 (1), 1996, pp. 91-166.

Szeto, Kam Leong, “A dynamic computable general equilibrium (CGE) model of the New Zealand economy”, New Zealand Treasury Working Paper 02/07, June 2002; “An econometric analysis of a production function for New Zealand”, Working Paper 01/30; Kam Leong Szeto and Melody Guy, “Estimating a New Zealand NAIRU”, Working Paper 04/10, September 2004; available from <http://www.treasury.govt.nz/workingpapers/>

7. The Structure of FPS, and possible future research directions (1.5 sessions)

* Black *et al.*, ss. 3, 6.

For a perspective from more recent Bank of Canada work, see Murchison, Stephen and Andrew Rennison, *TotEM: the Bank of Canada's New Quarterly Projection Model*, Bank of Canada Technical Report No. 97, December 2006; available from <http://www.bankofcanada.ca/en/res/tr/2006/tr97-e.html>.

For further detail on aspects of the economic theory underpinning many aspects of the FPS equations, refer to: the sections of Obstfeld, Maurice and Kenneth Rogoff, *Foundations of International Macroeconomics*, Cambridge, MIT Press, 1996, covered in recent years in ECON 402; and to the economic theory be covered in ECON 403 in 2007.

* Szeto, Kam Leong, Paul Gardiner, Richard Gray, and David Hargreaves, "A comparison of the NZTM and FPS models of the NZ economy", New Zealand Treasury Working Paper 03/25, September 2003, ss 1, 2, 4, 5; available from <http://www.treasury.govt.nz/workingpapers/>

* Hargreaves, David, Hannah Kite and Bernard Hodgetts, "Modelling New Zealand inflation in a Phillips curve", *Reserve Bank of New Zealand Bulletin*, 69 (3), September 2006, 23-37; available from <http://www.rbnz.govt.nz/research/bulletin>.

Spencer, Grant and Ozer Karagedikli, "Modelling for monetary policy: the New Zealand experience", *Reserve Bank of New Zealand Bulletin*, 69 (2), June 2006, 18-25; <http://www.rbnz.govt.nz/research/bulletin>.

8. FPS: Steady State and Dynamic Properties (1 session)

* Black *et al.*, ss. 4, 5

Drew, Aaron and Benjamin Hunt, "The Forecasting and Policy System: Preparing Economic Projections", RBNZ DP G 98/7, October 1998, s. 4; available from <http://www.rbnz.govt.nz>.

Drew, Aaron and Benjamin Hunt, "A comparison of the properties of NZM and FPS", RBNZ DP2000/02, March 2000; available from <http://www.rbnz.govt.nz>.

* Szeto *et al.*, ss. 1-4.

* Hargreaves, David, Hannah Kite and Bernard Hodgetts, "Modelling New Zealand inflation in a Phillips curve", *Reserve Bank of New Zealand Bulletin*, 69 (3), September 2006, s 4; available from <http://www.rbnz.govt.nz/research/bulletin>.

9. FPS: Applications I (1 session)

Specific application, presenter from the RBNZ, and reading to be advised.

10. FPS: Applications II (1 session)

Hall, Viv B, "An Australasian currency, New Zealand adopting the US dollar, or an independent monetary policy?", CAMA Working Paper 21/2005, October 2005, available from <http://cama.anu.edu.au/publications.htm>

* Drew, Aaron, Viv Hall, C John McDermott and Robert St. Clair, "Would adopting the Australian dollar provide superior monetary policy in New Zealand?", *Economic Modelling*, 21(6), December 2004, 949-964.

* Hall, Viv and Angela Huang, "Would adopting the US dollar have led to improved inflation, output and trade balances for New Zealand in the 1990s?", *New Zealand Economic Papers*, 38(1), June 2004, 49-63.

The University material, which is common to all courses, and is required to be drawn to the attention of all students, can be accessed from the ECON 423 Course Information Folder on Blackboard. This material covers: **Faculty of Commerce and Administration Offices; General University Policies and Statutes; Staff and Student Conduct; Academic Grievances; Academic integrity and Plagiarism; Students with Impairments; Student Support; and Manaaki Pihipihinga Programme.**

**Victoria University of Wellington
School of Economics and Finance**

ECON 423

1/3 2007

ESSAY

(Due no later than Monday 21 May 2007)

Critically evaluate any one major reference or set of references (not covered directly in class sessions), relevant to any one of ECON 423's Computable General Equilibrium or Macroeconomic Modelling topics 1 to 8.

Guidelines

- The maximum length (excluding footnotes, list of references, and a 100 word Abstract) is 2500 words.
- The essay should be written legibly, typed or word-processed on A4 paper, with adequate margins on each side and spacing between lines.
- The original should be handed in at the class on or before the above date. You should retain a copy of your essay.

Viv Hall
January 2007