

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

ECON 423

1/3 2005

**MACROECONOMIC MODELLING
OF THE NEW ZEALAND ECONOMY**

Course Co-ordinator: Professor Viv Hall
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Lecture Time and Location: Monday 3.40 – 5.30 pm
RW 220

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

Course Objectives and Assessment:

This course features macroeconomic and structural modelling of the New Zealand economy, blending relevant economic theory, applied econometric and policy relevant material. In 2005, the modelling will include the Reserve Bank of New Zealand's FPS model and the NZ Treasury's NZTM 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 in depth 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 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 where appropriate.

For assessment purposes, you are required to sit the final examination in the mid-year 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. 21 March, Ass. 2 due Mon. 18 April
25% for the essay: due no later than Monday 16 May
60% for the final two-hour examination.

Topics and Readings

1 Introduction to macroeconomic and structural modelling for forecasting, projections and policy analysis. (1 session)

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

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; Frank A.G. den Butter and Mary S. Morgan, "What makes the models-policy interaction successful?", pp. 443-475.

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>.

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/>

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.

Kapetanios, G, A Pagan and A Scott, "Making a Match: Combining Theory and Evidence in Policy-oriented Macroeconomic Modelling", mimeo, January 20, 2005

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/AGE 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.

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

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

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. Wilcoxen (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.

Black *et al.*, s. 2.

Breece, James and Vincenzo Cassino, “The Forecasting and Policy System: Demand-side Satellite Models”, RBNZ DP G98/3, May 1998; available from <http://www.rbnz.govt.nz>.

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>.

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>.

“Treasury’s Forecasting Performance”, 26 November 2004, available from <http://www.treasury.govt.nz/forecasts/performance/tsyforperf04.pdf>

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 back-up detail on aspects of FPS, in a Canadian context, see Black, Richard, Douglas Laxton, David Rose and Robert Tetlow, “The Steady-State Model: SSQPM”, Part 1 of *The Bank of Canada’s New Quarterly Projection Model*, Bank of Canada Technical Report No. 72, November 1994; available from <http://www.bankofcanada.ca>.

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.

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, s. 5; available from <http://www.treasury.govt.nz/workingpapers/>

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>.

For further technical detail, and some illustrative Canadian simulations, see Coletti, Donald, Benjamin Hunt, David Rose and Robert Tetlow, “The Dynamic Model: QPM”, Part 3 of *The Bank of Canada’s New Quarterly Projection Model*, Bank of Canada Technical Report No. 75, May 1996; also available from <http://www.bankofcanada.ca>.

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.

9. FPS: Applications I (1 session)

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

10. FPS: Applications II (1 session)

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.

General University Policies and Statutes

Students should familiarise themselves with the University's policies and statutes, particularly those regarding assessment and course of study requirements, and formal academic grievance procedures.

Student Conduct and Staff Conduct

The Statute on Student Conduct together with the Policy on Staff Conduct ensure that members of the University community are able to work, learn, study and participate in the academic and social aspects of the University's life in an atmosphere of safety and respect. The Statute on Student Conduct contains information on what conduct is prohibited and what steps can be taken if there is a complaint. For queries about complaint procedures under the Statute on Student Conduct, contact the Facilitator and Disputes Advisor. This Statute is available in the Faculty Student Administration Office or on the website at: www.vuw.ac.nz/policy/StudentConduct.

The policy on Staff Conduct can be found on the VUW website at: www.vuw.ac.nz/policy/StaffConduct.

Academic Grievances

If you have any academic problems with your course you should talk to the tutor or lecturer concerned or, if you are not satisfied with the result of that meeting, see the Head of School or the Associate Dean (Students) of your Faculty. Class representatives are available to assist you with this process. If, after trying the above channels, you are still unsatisfied, formal grievance procedures can be invoked. These are set out in the Academic Grievances Policy which is published on the VUW website:

www.vuw.ac.nz/policy/AcademicGrievances.

Academic Integrity and Plagiarism

Academic integrity is about honesty – put simply it means **no cheating**. All members of the University community are responsible for upholding academic integrity, which means staff and students are expected to behave honestly, fairly and with respect for others at all times.

Plagiarism is a form of cheating which undermines academic integrity. Plagiarism is **prohibited** at Victoria.

The University defines plagiarism as follows:

Plagiarism is presenting someone else's work as if it were your own, whether you mean to or not.

'Someone else's work' means anything that is not your own idea, even if it is presented in your own style. It includes material from books, journals or any other printed source, the work of other students or staff, information from the Internet, software programmes and other electronic material, designs and ideas. It also includes the organization or structuring of any such material.

Plagiarism is not worth the risk.

Any enrolled student found guilty of plagiarism will be subject to disciplinary procedures under the Statute on Student Conduct (www.vuw.ac.nz/policy/studentconduct) and may be penalized severely.

Consequences of being found guilty of plagiarism can include:

- an oral or written warning
- suspension from class or university
- cancellation of your mark for an assessment or a fail grade for the course.

Find out more about plagiarism and how to avoid it, on the University's website at: www.vuw.ac.nz/home/studying/plagiarism.html.

Students with Disabilities

The University has a policy of reasonable accommodation of the needs of students with disabilities. The policy aims to give students with disabilities an equal opportunity with all other students to demonstrate their abilities. If you have a disability, impairment or chronic medical condition (temporary, permanent or recurring) that may impact on your ability to participate, learn and/or achieve in lectures and tutorials or in meeting the course requirements, then please contact the Course Coordinator as early in the course as possible. Alternatively you may wish to approach a Student Adviser from Disability Support Services to confidentially discuss your individual needs and the options and support that are available. Disability Support Services are located on Level 1, Robert Stout Building, or phoning 463-6070, email: disability@vuw.ac.nz. The name of your School's Disability Liaison Person can be obtained from the Administrative Assistant or the School Prospectus.

Student Support

Staff at Victoria want students' learning experiences at the University to be positive. If your academic progress is causing you concern, please contact the relevant Course Co-ordinator, or Associate Dean who will either help you directly or put you in contact with someone who can.

The Student Services Group is also available to provide a variety of support and services. Find out more at www.vuw.ac.nz/st_services/ or email student-services@vuw.ac.nz.

VUWSA employs two Education Coordinators who deal with academic problems and provide support, advice and advocacy services, as well as organising class representatives and faculty delegates. The Education Office is located on the ground floor, Student Union Building, phone 463 6983 or 463 6984, email education@vuwsa.org.nz.

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ECON 423

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ESSAY

(Due no later than Monday 16 May 2005)

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
February 2005