TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
UNIVERSITY OF WELLINGTON

School of Economics and Finance

ECON 423 MACROECONOMIC MODELLING OF THE NEW ZEALAND ECONOMY

Trimester Two 2006

COURSE OUTLINE

Contact Details

The Course Coordinator is: Professor Viv Hall
Room: RH 401 in Rutherford House, 23 Lambton Quay
Voice/Message: (04) 463 5081
Email: viv.hall@vuw.ac.nz

Contact with the lecturer is best initiated by email or through making an appointment

Lecture Time and Location: Wednesdays 2.40 – 4.30 pm
RWW 127

Pre-requisite: ECON 305, together with suitably strong quantitative/econometric preparation; ECON 402 would be an ideal co-requisite, 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 2006, 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.

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 end-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. 7 August, Ass. 2 due Mon. 4 September
> 25% for the essay: due no later than Monday 2 October
> 60% for the final two-hour examination.

Final Examination

Trimester Two examination dates have been confirmed as Thursday 19th October to Saturday 11th November inclusive. The ECON 423 final examination could occur any time within this period.

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, Vicenzo 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", *Journal of Econometrics*, In Press Corrected Proof, available on line 24 January 2006.

Fukac, Martin and Adrian Pagan, "Issues in Adopting DSGE Models for Policy Decisions", mimeo, November 22, 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

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. 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)

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.

Faculty of Commerce and Administration Offices

Railway West Wing (RWW) - FCA Student and Academic Services Office

The Faculty's Student and Academic Services Office is located on the ground and first floors of the Railway West Wing. The ground floor counter is the first point of contact for general enquiries and FCA forms. Student Administration Advisers are available to discuss course status and give further advice about FCA qualifications. To check for opening hours call the Student and Academic Services Office on (04) 463 5376.

Easterfield (EA) - FCA/Education/Law Kelburn Office

The Kelburn Campus Office for the Faculties of Commerce and Administration, Education and Law is situated in the Easterfield Building - it includes the ground floor reception desk (EA005) and offices 125a to 131 (Level 1). The office is available for the following:

- Duty tutors for student contact and advice.
- Information concerning administrative and academic matters.
- Forms for FCA Student and Academic Services (e.g. application for academic transcripts, requests for degree audit, COP requests).
- Examinations-related information during the examination period.

To check for opening hours call the Student and Academic Services Office on (04) 463 5376.

General University Policies and Statutes

Students should familiarise themselves with the University's policies and statutes, particularly the Assessment Statute, the Personal Courses of Study Statute, the Statute on Student Conduct and any statutes relating to the particular qualifications being studied; see the Victoria University Calendar available in hard copy or under 'About Victoria' on the VUW home page at www.vuw.ac.nz.

Student 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 are to be taken if there is a complaint. For information about complaint procedures under the Statute on Student Conduct, contact the Facilitator and Disputes Advisor or refer to the statute on the VUW policy 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; class representatives may be able to help you in this. If you are not satisfied with the result of that meeting, see the Head of School or the relevant Associate Dean; VUWSA Education Coordinators are available to assist in 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 at 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. The University defines plagiarism as follows:

The presentation of the work of another person or other persons as if it were one's own, whether intended or not. This includes published or unpublished work, material on the Internet and the work of other student or staff.

It is still plagiarism even if you re-structure the material or present it in your own style or words.

Note: It is however, perfectly acceptable to include the work of others as long as that is acknowledged by appropriate referencing.

Plagiarism is prohibited at Victoria and is not worth the risk. Any enrolled student found guilty of plagiarism will be subject to disciplinary procedures under the Statute on Student Conduct and may be penalised severely. Consequences of being found guilty of plagiarism can include:

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

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 Impairments
The University has a policy of reasonable accommodation of the needs of students with disabilities. The policy aims to give students with disabilities the same opportunity as 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, 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 (DSS) to discuss your individual needs and the available options and support on a confidential basis. DSS are located on Level 1, Robert Stout Building, telephone (04) 463 6070, email disability@vuw.ac.nz. The name of your School's Disability Liaison Person is in the relevant prospectus or can be obtained from the School Office or DSS.

Student Support
Staff at Victoria want students to have positive learning experiences at the University. Each Faculty has a designated staff member who can either help you directly if your academic progress is causing you concern, or quickly put you in contact with someone who can. Assistance for specific groups is also available from the Kaiwawao Māori, Manaaki Pihipihinga or Victoria International.

In addition, the Student Services Group (email student-services@vuw.ac.nz) is available to provide a variety of support and services. Find out more at www.vuw.ac.nz/st_services/.

VUWSA employs 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 (tel. (04) 463 6983 or (04) 463 6984, email education@vuwsa.org.nz) is located on the ground floor, Student Union Building.

Manaaki Pihipihinga - Māori and Pacific Mentoring Programme (Faculty of Commerce and Administration)

This is a mentoring service for Māori and Pacific students studying at all levels. Weekly one hour sessions are held at the Kelburn and Pipitea Campuses in the Mentoring Rooms, 14 Kelburn Parade, and Room 210 and 211, Level 2, Railway West Wing. Sessions cover drafting and discussing assignments, essay writing, and any questions that may arise from tutorials and/or lectures. A computer suite networked to Cyber Commons is available for student use.

To register with Manaaki Pihipihinga, please contact one of the following:

Puawai Wereta
Room 210, Level 2
Railway West Wing
Tel. (04) 463 8997
Email: Puawai.Wereta@vuw.ac.nz

Fa'afoi Seiuli
Room 109 B
14 Kelburn Parade
Tel. (04) 463 5842
Email: Faafoi.Seiuli@vuw.ac.nz

Victoria University of Wellington
School of Economics and Finance

ECON 423 **2/3 2006**

ESSAY
(Due no later than Monday 2 October 2006)

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
July 2006