VICTORIA
UNIVERSITY OF WELLINGTON

School of Economics and Finance

ECON 423: MACROECONOMIC MODELLING OF THE NEW ZEALAND ECONOMY

Trimester One 2010

COURSE OUTLINE

Names and Contact Details

Contact is best initiated by email or through making an appointment
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

Trimester Dates

Teaching Period: Monday 1st March – Friday 4th June 2010
Study Period: Monday 7th June – Thursday 10th June 2010
Examination Period: Friday 11th June – Wednesday 30th June 2010 (inclusive)

Class Times and Room Numbers

Wednesdays 2.40 p.m. – 4.30 p.m.
        RWW 128

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.

Withdrawal from Courses:

Information available via

> **Withdrawal dates: Late withdrawals with Associate Dean (Students) permission**
> **(See Section 8: Withdrawals - from the Personal Courses of Study Statute)**
> http://policy.vuw.ac.nz/Amphora!~~policy.vuw.ac.nz~POLICY~000000001743.pdf

> **Withdrawal dates: refunds:**
> http://www.victoria.ac.nz/home/admisenrol/payments/withdrawlsrefunds.aspx

Course Content

ECON 423 features macroeconomic and structural modelling of the New Zealand economy, blending relevant economic theory, applied econometric and policy relevant material. In 2010, the modelling will place most focus on the Reserve Bank of New Zealand's new core macroeconomic model, KITT, and on selected applied/computable general equilibrium (AGE/CGE) modelling.

Course Learning Objectives

By the end of this course students should be able to
1. assess the key insights from best practice international modelling, and recent New Zealand policy applications
2. critically evaluate the relative strengths and weaknesses of comparative static and dynamic approaches to computable general equilibrium modelling
3. explain and assess the relative roles of deterministic and stochastic macroeconomic models, and their steady state and dynamic properties
4. display a sound appreciation of the roles of macroeconomic and structural models in forecasting, projection and policy processes

Course Delivery

There will be 12 meetings during the trimester. Guest lecturers will lead several sessions. The first four two-hour lectures will feature an introduction to structural/ CGE modelling. The first session will feature introductory concepts, including how to assess structural change and the role of interindustry analysis. The next two sessions will complete our coverage of essentially short run comparative static CGE modelling concepts and applications, and the fourth session will feature recent developments in dynamic/intertemporal CGE modelling. The eight macroeconomic modelling sessions will cover: macroeconomic modelling processes, including evaluation of the relative strengths and weaknesses modelling and non-modelling approaches; underlying macroeconomic concepts and ideas; applications featuring the National Bank of New Zealand model (NBNZ-DEMONZ), and the RBNZ's FPS model; and four sessions on the structure, steady state and dynamic properties, and evaluation methods of the RBNZ's Dynamic Stochastic General Equilibrium (DSGE) model KITT (Kiwi Inflation Targeting Technology). Reference will also be made, where appropriate, to features of the recent write-up of New Zealand Treasury's NZTM model.

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 15 weeks, hours expected would average around 10 hours per week. This would involve attending classes (2 lecture hours per week, for the 12 teaching weeks), plus reading for and completing assignment work and preparing for the final examination, for approximately 8.5 hours per week over 15 weeks. The 8.5 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.

Readings

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

1.   Why model? Structural/CGE Modelling: An Introduction (1 session)

Why model?

> * John Freebairn, "Some Final Comments", p. 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.
>
> Ryan, Michael and Kam Leong Szeto, "An Introduction to the New Zealand Treasury Model", New Zealand Treasury Working Paper 09/02, p 27
>
> *The Economist*, 13 July 2006, Special Report, "Economic models: Big questions and big numbers".
>
> ** 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.
>
> .

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.
>
> <mark>* 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.</mark>
>
> Giesecke, James (2008), "The effects of recent structural, policy and external shocks to the Australian economy, 1996/97- 2001/02", *Australian Economic Papers*, March, 15-37.
>
> Nana, Ganesh, Viv B. Hall and Bryan P. Philpott, "Trans-Tasman CGE modelling", *Economic Modelling*, 12 (4), 1995, pp. 377-389.
>
> 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
>
> Giesecke, James and Chris Schilling (2009), "Short term gain, long term pain?", NZIER Working Paper 2009/3

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

2. 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; *Inter-Industry Study 1996 - 49 Industries – Interim Release of Tables*, Statistics New Zealand, available from www.stats.govt.nz (search 'input-output tables'); and Stroombergen, Adolf (2008), "ESSAM general equilibrium model: estimation of 2005/06 input-output tables", Motu Working Paper 08-01, April.

* 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)

3. 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).

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

The modelling process. 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.

* 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.

* 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.

* Fukac, Martin and Adrian Pagan, "Structural Macro-Econometric Modelling in a Policy Environment", RBNZ DP2009/16, December 2009; available from http://www.rbnz.govt.nz.

* 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.

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.

* Delbrück, F., A. Dunstan, D. Hargreaves, A. Lienert, H. Pepper, and C. Sleeman (2008). The evolution of the Forecast and Policy System (FPS) at the Reserve Bank of New Zealand. RBNZ Discussion Paper Series, 2008/11.

* Lees, Kirdan, "Introducing KITT: The Reserve Bank of New Zealand new DSGE model for forecasting and policy design", *Reserve Bank of New Zealand Bulletin*, 72 (2), June 2009, 5-20; http://www.rbnz.govt.nz/research/bulletin.

* Jaromír Beněs, Andrew Binning, Martin Fukăc, Kirdan Lees, Troy Matheson, *K.I.T.T.: Kiwi Inflation Targeting Technology*, Reserve Bank of New Zealand, 2009, ch. 1; available from http://www.rbnz.govt.nz/research/kitt/

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

Ryan, Michael and Kam Leong Szeto, "An Introduction to the New Zealand Treasury Model", New Zealand Treasury Working Paper 09/02

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

www.bankofcanada.ca/en/pubs.htm
www.norges-bank.no
www.riksbank.com
www.bcentral.cl/eng/stdpub
www.econtech.com.au
www.sensiblepolicy.com
www.rbnz.govt.nz

www.treasury.govt.nz

## 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.

* Blanchard, Olivier (2008), "The State of Macro", NBER Working Paper 14259, August, http://www.nber.org/papers/w14259.

* Woodford, Michael (2009), "Convergence in Macroeconomics: Elements of the New Synthesis", *American Economic Journal: Macroeconomics*, 1(1), 267-279.

* Fair, Ray C. (2009), "Has Macro Progressed?", Cowles Foundation Discussion Paper No. 1728, September, http://cowles.econ.yale.edu/P/cd/d17a/d1728.pdf

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

* Jaromír Benĕs, Andrew Binning, Martin Fukăc, Kirdan Lees, Troy Matheson, *K.I.T.T.: Kiwi Inflation Targeting Technology*, Reserve Bank of New Zealand, May 2009, chs. 1, 6

* 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.

Labbé, Felipe and Hamish Pepper (2009), "Assessing recent external forecasts", pp 19-25 in *Reserve Bank of New Zealand Bulletin*, Vol. 72, No. 4, December 2009; available from http://www.rbnz.govt.nz/research/bulletin.

Lees, K., T. Matheson, and C. Smith (2007), "Open economy DSGE-VAR forecasting and policy analysis — head to head with the RBNZ published forecasts", Reserve Bank of New Zealand Discussion Paper Series, 2007/01.

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

http://www.treasury.govt.nz/publications/informationreleases/forecastingperformance/reviews/tsyforperf08.pdf

6.   A Deterministic Practical Application, using NBNZ-DEMONZ (1 session)

* 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; Ryan, Michael and Kam Leong Szeto, "An Introduction to the New Zealand Treasury Model", New Zealand Treasury Working Paper 09/02, available from http://www.treasury.govt.nz/workingpapers/

7.   FPS: An Application (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.

Hall, Viv B and C John McDermott (2009), "An unobserved components common cycle for Australasia? Implications for a common currency", mimeo, August.

8.   KITT: Model design, microfoundations and economic structure

* Jaromír Beneš, Andrew Binning, Martin Fukăc, Kirdan Lees, Troy Matheson, *K.I.T.T.: Kiwi Inflation Targeting Technology*, Reserve Bank of New Zealand, 2009, Chs. 1, 2, 7.

* Lees, Kirdan, "Introducing KITT: The Reserve Bank of New Zealand new DSGE model for forecasting and policy design", *Reserve Bank of New Zealand Bulletin*, 72 (2), June 2009, 5-20; http://www.rbnz.govt.nz/research/bulletin.

Beneš, J. (2008), The IRIS toolbox for DSGE models, http://www.iris-toolbox.com/, site accessed 25 February 2010.

Binning, Andrew, "KITT Book Equations Derivation", 2009, available from
http://www.rbnz.govt.nz/research/kitt/

9. **KITT: The log linear model, data, steady state, estimation and model evaluation**

* Jaromír Beněs, Andrew Binning, Martin Fukăc, Kirdan Lees, Troy Matheson, *K.I.T.T.: Kiwi Inflation Targeting Technology*, Reserve Bank of New Zealand, 2009, Chs. 2.16, 3, 4.

10. **KITT: Some further tools to assist model evaluation and "storey telling", some dynamic responses to selected shocks.**

* Jaromír Beněs, Andrew Binning, Martin Fukăc, Kirdan Lees, Troy Matheson, *K.I.T.T.: Kiwi Inflation Targeting Technology*, Reserve Bank of New Zealand, 2009, Chs. 6, 5.

11. **KITT: An application (1 session)**

Specific application, presenter from the RBNZ: Reading to be advised.

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 no later than 5 pm Weds. 31 March;
: Ass. 2 due no later than 5 pm Weds. 21 April
25% for the essay: due no later than 5 pm Weds. 26 May
60% for the final two-hour examination.

Note: Your assessed work may also be used for quality assurance purposes, such as to assess the level of achievement of learning objectives as required for accreditation and audit purposes. The findings may be used to inform changes aimed at improving the quality of FCA programmes. All material used for such processes will be treated as confidential, and the outcome will not affect your grade for the course.

Examinations

Students who enrol in courses with examinations are obliged to attend an examination at the University at any time during the formal examination period. The final TWO HOUR examination for this course will be scheduled at some time during the period from
Examination Period: Friday 11th June – Wednesday 30th June 2010

Penalties
Coursework submitted late will not be graded.

Mandatory Course Requirements
Mandatory course requirements will be satisfied if all assessment requirements are completed.

Class Representative
A class representative is to be elected in the first class, and that person's name and contact details will be available to VUWSA, the Course Coordinator and the class. The class representative provides a communication channel to liaise with the Course Coordinator on behalf of students.

Communication of Additional Information
Additional information or information on changes will be conveyed to students through emails and Blackboard.

For the following important information follow the links provided:

Academic Integrity and Plagiarism
http://www.victoria.ac.nz/home/study/plagiarism.aspx

General University Policies and Statutes
http://www.victoria.ac.nz/home/about/policy

AVC (Academic) Website: information including: Conduct, Academic Grievances, Students with Impairments, Student Support
http://www.victoria.ac.nz/home/about_victoria/avcacademic/Publications.aspx

Faculty of Commerce and Administration Offices
http://www.victoria.ac.nz/fca/studenthelp/

Manaaki Pihipihinga Programme
http://www.victoria.ac.nz/st_services/mentoring/

Victoria University of Wellington
School of Economics and Finance

ECON 423   **1/3 2010**
ESSAY
(Due no later than Wednesday 26 May 2010)

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

<u>Guidelines</u>

- 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 2010