

School of Economics and Finance

## **ECON 408 ADVANCED ECONOMETRICS A**

Trimester One 2011

### **COURSE OUTLINE**

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#### **Names and Contact Details**

Course lecturer & coordinator

Professor Dean Hyslop  
RH 310, Tel. 463 6964  
Email: [dean.hyslop@vuw.ac.nz](mailto:dean.hyslop@vuw.ac.nz)  
Office hours: by arrangement

#### **Trimester Dates**

**Teaching Period:** Monday 28 February – Friday 3 June 2011

**Study Period:** Monday 6 June – Thursday 9 June 2011

**Examination Period:** Friday 10 June – Saturday 2 July 2011 (inclusive)

#### **Withdrawal from Course**

1. Your fees will be refunded if you withdraw from this course on or before 11 March 2011.
2. The standard last date for withdrawal from this course is 14 May. After this date, students forced to withdraw by circumstances beyond their control must apply for permission on an '*Application for Associate Dean's Permission to Withdraw Late*' including supporting documentation.

The application form is available from either of the Faculty's Student Customer Service Desks.

#### **Class time and room**

Thursdays, 9.30 – 11.20am in RWW 128

## **Course Content**

This course focuses on advanced econometric theory and methods for microeconomic data. It will begin with a discussion of relevant asymptotic theory that underlies the econometric theory of most methods, followed by a discussion of computational-based sampling (Monte Carlo) methods that complement the asymptotic theory, are widely used in econometrics, and will be used in practical assignments throughout the course ... and beyond! The course will then provide a systematic coverage of the main generic estimation methods used in econometrics.

## **Materials and Equipment**

There will be approximately four assignments throughout the course, involving a combination of theoretical and hands-on applied examples. These assignments are intended to improve your understanding of the material, and will contribute to your final course grade. You are encouraged to learn and use the econometric software R, which is freeware, however it is acceptable to use alternative software such as GAUSS, MATLAB, STATA or EVIEWS if you prefer. I have limited knowledge of R, and have more familiarity with GAUSS and STATA to be able to provide advice.

## **Course Delivery**

The course will cover the following topics (with reference to the Davidson and MacKinnon, 2004, text below, unless otherwise noted):

- Asymptotic theory (DM, 1993, Chap. 4)
- Computational-based sampling methods (DM, 1993, Chap 21)
- A review of linear regression methods (Davidson & MacKinnon, Chap 1-4)
- Simultaneous equations identification and estimation (DM Chap 8)
- Multivariate systems of equation estimation (DM Chap 12)
- Maximum likelihood estimation (DM Chap 10)
- Generalised method of moments (GMM) estimation (DM Chap 9)

## **Course Learning Objectives**

By the end of this course students should be able to:

1. understand advanced econometric estimation methods and their asymptotic properties
2. use Monte Carlo and Bootstrap simulation approaches to analyse how econometric methods work in different contexts
3. apply econometric methods to analyse economic data

## **Assessment Requirements**

Assessment will be based on a combination of in-term assignments, a one hour midterm exam and a two hour final exam. The midterm exam will be held soon after the mid-trimester break, at a time to be determined. The final exam will be scheduled by the University during the examination period. The overall assessment will be:

- 25% in-term assignments
- 25% one hour midterm exam
- 50% two hour final exam

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 examination for this course will be scheduled at some time during the period from Friday 10 June – Saturday 2 July 2011.

### **Penalties**

Late submission of assignments will not be accepted without prior approval.

### **Mandatory Course Requirements**

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

### **Expected Workload**

You are expected to spend roughly 150 hours completing this course. This includes preview, lecture attendance, and review and study for assignments and exams. On average this is roughly 10 hours per week from the start of the course until the final exam, but the load may vary over time and across students.

### **Readings**

No set text book is assigned for this course. However, the following texts are recommended as useful references.

Davidson, Russell, and James G. MacKinnon (1993), *Estimation and Inference in Econometrics*, Oxford University Press.

Davidson, Russell, and James G. MacKinnon (2004), *Econometric Theory and Methods*, Oxford University Press.

Wooldridge, Jeffrey M. (2010), *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Cambridge, Massachusetts (2<sup>nd</sup> edition).

In addition, the following journal articles and other readings will be relevant.

- Asymptotic theory (DM, 1993, Chap. 4)  
White, H. (1984), *Asymptotic Theory for Econometricians*, Academic Press, Orlando, Florida.
- Computational-based sampling methods (DM, 1993, Chap 21)  
Baiocchi, Giovanni (2005), “Monte Carlo Methods in Environmental Economics”, Chapter 16 in Riccardo Scarpa and Anna Alberini (eds), *Applications of Simulation Methods in Environmental and Resource Economics*, Vol. 6, pp. 317-340.  
Efron, Bradley and Robert J. Tibshirani (1993), *An Introduction to the Bootstrap*, Monographs on Statistics and Applied Probability, No. 57, Chapman and Hall.  
Horowitz, Joel (2005), “The Bootstrap”, Chapter 52 in J.J. Heckman and E.E. Leamer (eds), *Handbook of Econometrics* (Vol 5), pp. 3159-3228.  
(\* ) Horowitz, Joel (2003), “The Bootstrap in Econometrics”, *Statistical Science*, Vol. 18(2), pp. 211-218.  
Nankervis, J.C. and N.E. Savin (1988), “The Student’s t Approximation in a Stationary First Order Autoregressive Model”, *Econometrica*, 56(1), pp. 119-145.

Efron, Bradley (1982), "The jackknife, the bootstrap and other resampling plans", Vol. 38 of *CBMS-NSF Regional Conference Series in Applied Mathematics*, SIAM.

- A review of linear regression methods (DM, Chap 1-4)
  - Simultaneous equations identification and estimation (DM Chap 8)
- Epple, Dennis, and Bennett T. McCallum (2006), "Simultaneous Equation Econometrics: The Missing Example", *Economic Inquiry*, Vol. 44(2), pp. 374-384.
- Mroz, Thomas A. (1987), "The Sensitivity of an Empirical Model of Married Women's Hours of Work to Economic and Statistical Assumptions", *Econometrica*, Vol. 55(4), pp. 765-799.
- Weak Instruments
- Angrist, Joshua D., and Alan B. Krueger (1991), "Does Compulsory Schooling Attendance Affect Schooling and Earnings?", *Quarterly Journal of Economics*, Vol. 106, No. 4, pp. 979-1014.
- (\*) Bound, John, David A. Jaeger and Regina M. Baker (1995), "Problems with Instrumental Variables Estimation when the Correlation Between the Instruments and the Endogenous Explanatory Variables is Weak", *Journal of the American Statistical Association*, Vol. 90, No. 430, pp. 443-450.
- Staiger, Douglas, and James H. Stock (1997), "Instrumental Variables Regression with Weak Instruments", *Econometrica*, Vol. 65, No. 3, pp. 557-586.
- (\*) Stock, James H., Jonathan H. Wright and Motohiro Yogo (2002), "A Survey of Weak Instruments and Weak Identification in Generalized Method of Moments", *Journal of Business and Economic Statistics*, Vol. 20, No. 4, pp. 518-529.
- Multivariate systems of equation estimation (DM Chap 12)
  - Maximum likelihood estimation (DM Chap 10)
- (\*) Chesher, Andrew (1983), "The Information Matrix Test: Simplified Calculation Via a Score Test Interpretation", *Economics Letters*, Vol. 13, pp. 45-48.
- Davidson, Russell, and James G. MacKinnon (1992), "A New Form of the Information Matrix Test", *Econometrica*, Vol. 60, No. 1, pp. 145-157.
- Lancaster, Tony (1984), "The Covariance of the Information Matrix Test", *Econometrica*, Vol. 52, No. 5, pp. 1051-1053.
- White, Halbert (1982), "Maximum Likelihood Estimation of Misspecified Models", *Econometrica*, Vol. 50, No. 1, pp. 1-25
- Generalised method of moments (GMM) estimation (DM Chap 9)
- Chamberlain, Gary (1982), "Multivariate Regression Models for Panel Data", *Journal of Econometrics*, Vol. 18, pp. 5-46.
- Hansen, Lars Peter (1982), "Large Sample Properties of Generalized Method of Moments Estimators", *Econometrica*, Vol. 50, No. 4, pp. 1029-1054.
- (\*) Newey, Whitney K. (1983), "A Method of Moments Interpretation of Sequential Estimators", *Economics Letters*, Vol. 14, pp. 201-206.
- White, Halbert (1982), "Instrumental Variables Regressions with independent Observations", *Econometrica*, Vol. 50, No. 2, pp. 483-499.
- (\*) Wooldridge, Jeffrey M. (2001), "Applications of Generalized Method of Moments Estimation", *Journal of Economic Perspectives*, Vol. 15, No. 4, pp. 87-100.

### **Class Representative**

A class representative will 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 via email 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**

Find key dates, explanations of grades and other useful information at [www.victoria.ac.nz/home/study](http://www.victoria.ac.nz/home/study).

Find out about academic progress and restricted enrolment at [www.victoria.ac.nz/home/study/academic-progress](http://www.victoria.ac.nz/home/study/academic-progress).

The University's statutes and policies are available at [www.victoria.ac.nz/home/about/policy](http://www.victoria.ac.nz/home/about/policy), except qualification statutes, which are available via the Calendar webpage at [www.victoria.ac.nz/home/study/calendar](http://www.victoria.ac.nz/home/study/calendar) (See Section C).

Further information about the University's academic processes can be found on the website of the Assistant Vice-Chancellor (Academic) at [www.victoria.ac.nz/home/about\\_victoria/avcacademic/default.aspx](http://www.victoria.ac.nz/home/about_victoria/avcacademic/default.aspx)

#### **AVC (Academic) Website: information including: Conduct, Academic Grievances, Students with Impairments, Student Support**

[http://www.victoria.ac.nz/home/about\\_victoria/avcacademic/Publications.aspx](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/](http://www.victoria.ac.nz/st_services/mentoring/)