ECG752 Econometrics II
Syllabus
Spring 2005

Instructor: Alastair Hall

Contact details: Office: 4162 Nelson Hall; phone: 513-2871; email: alastair_hall@ncsu.edu

Office hours: 2.15-3.15pm M W or by appointment

Class details: Lectures, 11.20-12.35pm M W in Nelson 4210; Occasional Computer labs, 11.20-12.35pm F, Nelson B411


Course Objectives:

ECG752 is the second of a two course sequence in econometrics for Ph.D students in economics. This first course, ECG751, covers statistical methods relevant for the analysis of cross-sectional data. ECG 752 covers statistical methods for the analysis of time series and panel data.

Time series analysis is an important branch of statistical theory with applications in diverse fields. In economics, most macroeconomic and financial data are time series. Over the last twenty years, there has been a growing recognition that the analysis of economic time series raise a number of unique inference issues. This has led to the emergence of the field of time series econometrics that includes such techniques as vector autoregressions, impulse response functions, autoregressive conditional heteroscedasticity (ARCH) models, tests for unit roots against various deterministic trend models, and cointegration.

Another important branch of econometrics involves methods for the analysis of panel data. Such data sets involve observations on individuals over time, and so its analysis involves a synthesis of cross-sectional and time series analysis and also unique aspects that arise through the combination of these two dimensions.
Presentation of material:

As noted above, the lectures take place on Mondays and Wednesdays between 11.20am and 12.35pm. The SAS related material is covered exclusively during sessions in the computer lab (Nelson B411) that are held on Fridays between 11.20am and 1.00pm. These are occasional and you will be advised of the schedule in the lectures.

Course Requirements and Grading:

The lectures assume the student has taken ECG 751 or its equivalent. Any student without this prerequisite must obtain the permission of the instructor to attend the class.

The material is divided up into three blocks. Your grade for each block will be calculated as follows. There is one computer assignment which counts 15%, one set of analytical problems which counts for 15%, and one exam which accounts for 70%. The course grade is based on the aggregate of your marks from each block.

The exam dates are as follows: Block 1, February 21 (week 7); Block 2, March 28 (week 12); Block 3, May ? (final exam slot).

Course website:

All handouts and course related materials will be posted on the class website: http://www4.ncsu.edu/~arhall/ECG752.htm

Course Outline:

1. Characteristics of economic time series
2. Introduction to basic time series concepts
3. Large sample theory for covariance stationary processes
   • Hamilton Ch. 7
   • Hayashi Ch. 2
4. Linear univariate time series models: ARMA models, estimation, model selection, forecasting
   • Hamilton Ch.s 3 & 4
   • Hayashi Ch 6.1, 6.2 & 6.4
   • Enders Ch. 2
5. Linear multivariate time series models: VAR models, exogeneity, Granger causality, impulse response.
   - Hamilton Ch.s 10 & 11
   - Hayashi Ch.6.3-6.4
   - Enders Ch. 5

6. Linear regression model with time series data: GLS, OLS with robust standard errors
   - Hamilton Ch. 8
   - Hayashi Ch. 6.6

7. Autoregressive conditional heteroscedasticity (ARCH) models
   - Hamilton Ch.s 21
   - Enders Ch. 3

8. Nonstationary time series models: unit roots and cointegration
   - Hamilton Ch.s 15-18
   - Hayashi Ch.s 9 & 10
   - Enders Ch.’s 4 & 6

9. Panel data: unobserved component models
   - Hayashi Ch 5.1-5.2