

The New School for Social Research
Department of Economics
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Fall 2011
Lecture: Wed. 18.00-19.50

GECO 6282 Advanced Econometrics II: Empirical Macroeconometrics

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Course Description

The primary purpose of this course is to introduce you to a variety of state-of-the-art estimation techniques used in empirical macroeconomic research. A special emphasis will be put on multivariate time series analysis (VAR & VECM modeling). Nonlinear time series & state-space models, as well as estimation techniques for panel data will also be handled.

Grading

Grading will be based on a midterm in-class exam (30%) and a final paper (40%). By working out and handing in all exercise sets one can earn the remaining 30%.

Course Prerequisites

GECO 6181 or equivalent. This assumes that students have a working knowledge in econometric theory, matrix algebra and multivariate calculus.

Course Outline

I. Introduction

- The evolution of macroeconomic modeling
- Modern approaches to empirical macroeconomic modeling: The Cowles Commission, the LSE and the VAR approaches

II. Review of Univariate Time Series Analysis

- ARMA Models: Estimation & model selection
- Non-Stationary Time Series
 - Trend- vs. Difference Stationary Series
 - Time Series Decomposition Methods
 - Unit Root and Stationarity Tests

III. Multivariate Time Series Analysis

- ARDL Models
- Cointegration and Error Correction
 - Short- vs. Long-Run Dynamics
 - Error Correction Representations
 - Estimation
- VAR Models: Formulation and OLS Estimation
 - Model Selection
 - Tools for VAR Analysis: Granger Causality, Impulse Response Functions and Variance Decompositions
 - Structural VAR Models
- VECM Models

IV. System Estimation Techniques

- Introduction
- System Estimation Techniques
 - 2SLS, 3SLS and SUR
 - System GMM
- Panel Data
 - Introduction
 - Fixed- & Random Effects Estimation

V. Nonlinear Time Series Models

- Introduction
- Structural Change & Nonlinearity in Econometric Models
 - Introduction
 - Tests for Structural Change & Nonlinearity
 - Estimation
- Tests for Nonlinearity
- Selected Nonlinear Time Series Models: GARCH, Threshold and Smooth Transition Models

VI. State-Space Modeling

- Introduction
- The Kalman Filter
- Time-Varying Coefficients Estimation

Course Textbooks

Bårdsen, G., Eitrheim, Ø. and Nymoen, R. (2005), *The Econometrics of Macroeconomic Modelling*, Oxford University Press, Oxford.

Enders, W. (2009), *Applied Econometric Time Series*, 3rd ed., John Wiley & Sons, Inc.

Favero, C. A. (2001), *Applied Macroeconometrics*, Oxford University Press, Oxford.

Franses, P. H. van Dijk, D. (2000), *Non-Linear Time Series Models in Empirical Finance*, Cambridge University Press, Cambridge, UK.

Greene, W. (2007), *Econometric Analysis*, sixth edn, Prentice Hall.

Hamilton, J. D. (1994), *Time Series Analysis*, Princeton University Press.

Hayashi, F. (2000), *Econometrics*, Princeton University Press, Princeton.

Lütkepohl, H. (2010), *New Introduction to Multiple Time Series Analysis*, Springer, Berlin.

Wooldridge, J. (2002), *Econometric Analysis of Cross Section and Panel Data*, MIT Press.