Syllabus for Econ 510: Applied Econometrics for Macroeconomics
Rutgers University
Department of Economics
Fall, 2013

Contact Details:

Instructor: John Landon-Lane
Room: New Jersey Hall, Room 419
Telephone: (848) 932-8657
E-mail: lane@econ.rutgers.edu
Class web-site: http://sakai.rutgers.edu

Course Details:

Lecture Time: MW 1:10pm-2:30pm
Location: Scott Hall, room 205.

Course Overview

This course is a an applied econometrics course, with the emphasis on methods with direct application to macroeconomics. The aim of this course is to develop the skills needed to do empirical research in the field of macroeconomics. Therefore, the course will concentrate on the application of methods and results to contemporary topics in the field of macroeconomics.

It is my belief that the best way to learn the techniques needed for research in applied macroeconomics is by doing. The practical component of this course will include data collection and computer programming. It is very rare for modern econometric packages to have commands to do all the things you would want to do in this course. Therefore, it will be necessary to write your own computer code to complete assignments that are given. I do not require students to use any one computer language of package but I do require students to give me properly documented programs as part of an answer to any assignment given in this class. I suggest that you pick a package and stick with it for the duration of the course.

Learning Goals

At the end of this course, students are expected to be literate in the main methods

used in the applied macroeconomic literature. In particular students should be able to use advanced time series techniques to estimate macroeconomic models and use the results obtained to perform policy analysis. Students should know how to test for and correct non-stationarity in economic data, build and estimate time series models and use the results to evaluate economic policies.

Texts

The text that will be used in this class is

Lütkepohl, H. and Krätzig, M. (2004) *Applied Time Series Econometrics*, Cambridge University Press, Cambridge, United Kingdom. (ISBN 0-521-54787-3)

This is an excellent text and will be used as the text for the majority of the course.

This, however, is not the only text written about the topic of applied time series analysis. The following texts all have their good points and are useful resources for an applied macro-economist. The text by Hamilton (1994) is an excellent reference for time series analysis. This text covers most of the topics of this course in much more detail than this course requires. However, if you plan to undertake research using time series methods then I recommend that you buy this text.

Amisano, A. and C. Giannini, (1997) *Topics in Structural VAR Econometrics (2nd Edition)*, Springer-Verlag, Berlin.

Banerjee, A., Dolardo, J., Galbraith, J. and D. Hendry, (1993),*Co-Integration, Error Correction, and the Econometric Analysis of Non-Stationary Data*, Oxford University Press, Oxford, England.

Bauwens, L., Lubrano, M. and J-F Richard, (1999) *Bayesian Inference in Dynamic Econometric Models*, Oxford University Press, Oxford, England.

Clements, M. P. and D. F. Hendry (1998) *Forecasting Economic Time Series*, Cambridge University Press, Cambridge, England.

Hamilton, James (1994), *Time Series Analysis*, Princeton University Press, Princeton, NJ.

Harvey, Andrew (1989), *Forecasting, Structural Time Series Models and the Kalman Filter*, Cambridge University Press, Cambridge, England.

Johansen, S. (1995), *Likelihood-Based Inference in Cointegrated Vector Autoregressive*

Models, Oxford University Press, Oxford, United Kingdom.

Kim, C-J, and C. Nelson, (1999) *State-Space Models with Regime Switching: Classical and Gibbs-Sampling Approaches with Applications*, The MIT Press, Cambridge, MA.

Lütkepohl, H. (2005) *New Introduction to Multiple Time Series Analysis*, Springer-Verlag, Berlin.

Topics to be Covered:

The following is a tentative list of topics that will be covered in this course. I reserve the right to add or delete topics as the course progresses.

1. Univariate Time Series Topics
    a. stationary and non-stationary time series
    b. ARIMA
    c. conditional heteroscedasticity
    d. estimation methods
        - maximum likelihood methods
        - GMM
        - Bayesian estimation
2. Multi-variate time series topics
    a. Vector autoregressions,
    b. impulse response functions and variance decompositions,
    c. co-integration,
    d. vector error correction
    e. Bayesian VAR forecasting (*)
    f. structural VAR's
3. State-Space methods
    a. Kalman filter
    b. Markov switching
    c. Bayesian approaches to State-Space models. (*)

(*) If time permits.

The above list is indicative of the topics that will be taught and the order in which they will be taught in this course. The topics and their order may vary as the course proceeds.

Course Evaluation:

There will be a take home final examination for this course that will be worth 50% of the final grade. Five short projects, each worth 10% of the final grade, will be set during the semester. These projects will be based on the material taught in the course. All projects must be completed before a grade is assigned for this course.

Office Hours

My formal office hours will be on Monday and Wednesday from 11.00am until 12noon. I can meet students outside of these office hours by appointment only.