Macroeconometrics - Spring 2015

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Syllabus

1 Description

The purpose of this course is to familiarize students with current techniques used in macroeconomic time series models with applications in macroeconomics, international finance, and finance; with the ultimate aim of providing students with the necessary tools to conduct original research in the area.

Topics include ARMA models, VARs and impulse response functions; unit roots, and trend/cycle decomposition methods, including Kalman filtering. We will mostly work with the classical framework in the time domain.

2 Prerequisites

Knowledge of basic mathematical statistics and linear algebra is necessary for the course. The mathematical appendix in the Hamilton textbook provides a good summary of useful mathematical and statistical tools.

The course is the continuation of "Applied Time Series Analysis" course but we will also review the univariate time series analysis in this course.

3 Requirements

One homework assignment with the weight of 30% of final grade. The class ends with in-class 2 hour long exam.

4 Readings

There is a number of textbooks that covers a part of material discussed in class. Book that covers most of the material is

- *Time Series Analysis* by James D. Hamilton, Princeton University Press, 1994.

Other texts that cover discussed material or serve as good introduction are

- *State-Space Models with Regime Switching* by Chiang-Jin Kim and Charles R. Nelson, MIT Press, 1999.
- *New Introduction to Multiple Time Series Analysis* by Helmut Lütkepohl, Springer-Verlag, 2005.

- *Introduction to Bayesian Econometrics* by Edward Greenberg, Cambridge University Press, 2007.
- *Structural Macroeconometrics* by David N. DeJong with Chetan Dave, Princeton University Press, 2007.

The readings include journal articles and chapters from the above books.

5 Outline

1. Stationary Time Series Analysis
   (a) Overview of ARMA models
   (b) State-Space Representation
   (c) Kalman Filter

2. Structural Analysis
   Granger Causality, IRFs, Estimation, Variance decomposition
   (a) Reduced-form VAR models
   (b) Structural VAR models

3. Unit Roots
   (a) Unit root tests
   (b) Cointegration *(if time permits)*
   (c) VEC models *(if time permits)*