Empirical Time Series Models for Economic Analysis

The objective of the course is twofold. First, to present some of the most popular time series models designed to analyze the propagation mechanisms and measure the effects of economic shocks. In particular we will cover Structural Vector Autoregressive models as well as several extensions like the Factor Augmented VAR, Smooth transition VAR, Threshold VAR and Time-Varying Coefficients VAR. The second objective is to discuss some recent applications of these models in economics. The focus will be on stock market bubbles, policy shocks, news shocks and technology shocks among others. Matlab programs to implement the theoretical methods and replicate the applications studied in class will be made available to students.

Requirement: basic knowledge of econometrics and time series econometrics.

Contents

I. Structural VAR (SVAR) models

II. Structural VAR (SVAR) models: Applications.
   Policy shocks. Technology shocks and News shocks. Uncertainty shocks

III. Factor Augmented VAR (FAVAR )

IV. Threshold VAR (TVAR) and Smooth Transition VAR (STVAR).
   Application: Fiscal policy shocks in booms and recessions.

V. Time-Varying Coefficients Models
   Theory. Applications: the Great Moderation, monetary policy and stock market bubbles

References


Sims, E., 2011, News, non-invertibility, and structural VARs, mimeo, University of Notre Dame.


This is the continuation of the first week course “Empirical Time Series Models for Economic Analysis” but can be taken independently. The course represents an advanced course in economic analysis with empirical time series models. The starting point is to illustrate the problem of non-fundamentalness, a problem that can arise in SVAR models because of a gap between the information set of the econometrician and that of the agents. We will cover both theoretical and empirical procedures to detect non-fundamentalness and discuss models to tackle non-fundamentalness, in particular Factor models and FAVARs. In this context we will review the news-driven business cycles debate and the fiscal foresight literature. Next we will study the implications of relaxing the assumption of perfect shocks observability for structural analysis with empirical models. We will see how to perform economic and policy analysis under the assumption that economic agents only observe a noisy signal of the structural shocks by means of Kalman filter techniques and dynamic identifications in SVAR models. As an application we will review the ongoing debate about news versus noise as the source of business cycle fluctuations. Matlab programs to implement the theoretical methods and replicate the applications studied in class will be made available to students.

Requirement: good knowledge of time series econometrics, in particular VAR analysis.

Contents

I. Non-fundamentalness and non-invertibility in SVAR models.

II. Solutions to the non-fundamentalness problem
   Structural models with large cross-section: Factor Models and FAVAR. Dynamic identification with Blaschke factors in SVAR models.

III. Applications.

IV. Structural empirical models under imperfect information.
    Signal extraction problems and agents’ nonfundamentalness. Structural estimation and the Kalman filter. Dynamic identification with Blaschke factors in SVAR models.

V. Applications.
    News, noise and business cycles fluctuations.
References


Bai, J., and S. Ng (2002). Determining the number of factors in approximate factor models, Econometrica 70, 191-221.


Sims, E., 2011, News, non-invertibility, and structural VARs, mimeo, University of Notre Dame.

