Bayesian Methods in Economics and Finance (September 10-15, 2012) Bertinoro

Lecturers
Roberto Casarin Venice University, Italy
Matteo Ciccarelli European Central Bank, DG Research
Antonietta Mira Università della Svizzera Italiana, Lugano, Switzerland
Francesco Pauli Trieste University, Italy

Tutors
Roberto Casarin Venice University, Italy

Coordinator
Gaetano Carmeci, DEAMS, Trieste University, Piazzale Europa, 1 34127 Trieste, Italy
Tel.+39 0405587100, Fax.+39 040567543, e-mail: gaetano.carmeci@econ.units.it .

Basic Requirements
Intermediate knowledge of econometrics.

Description
The course is an introduction on Bayesian Inference, starting from first principles and covering topics of interest for applied econometricians in economics and finance. The course is addressed to students without previous knowledge of Bayesian Econometrics.

Course outline

A. Fundamentals of Bayesian Statistics

B. The Normal linear regression model with natural conjugate priors

C. Bayesian computation

- **Monte Carlo simulation**
- **Markov chains**
- **Markov Chain Monte Carlo methods (Gibbs sampler, Metropolis-Hastings and Slice Sampler algorithm)**
  a. Comparing performance
  b. Checking convergence
  c. Optimal scaling
- **Adaptive MCMC**

D. Bayesian models in economics and finance

- **Multivariate and hierarchical models**
  a. Seemingly Unrelated Regression (SUR) models
    - *Application: Investment dynamics*

b. Panel data models
   - *Application: The effect of innovation on profit margins*

c. Reduced-form Bayesian VAR models
   - *Application: Forecasting macroeconomic variables*

d. Structural VARs and impulse response analysis
   - *Application: The credit channel of monetary policy in the U.S.*

e. VAR models with panel data (introduction)
   - *Application: The credit channel of monetary policy in the euro area*

- ***State-space and stochastic volatility models***

a. Linear and Gaussian State Space Models
b. Nonlinear and Non-Gaussian State Space and Sequential Monte Carlo
c. Stochastic Volatility Models
   - *Application: Exchange rates and stock markets*

SOFTWARE USED FOR THE APPLICATIONS: MATLAB AND RATS

Additional material including slides and codes will be distributed in advance

Timetable

Lectures and tutorials will be in English, with the following schedule (provisional):

Monday, Tuesday, Wednesday, Thursday and Friday: lectures: 9.00-10.50, 11.10-13.00, 15.30-17.20; tutorials: 17.40-19.30. **Saturday**: lectures: 9.00-10.50, 11.10-13.00.

For the computer tutorials, participants will use their mobile PCs.