The Italian Econometric Society (SIdE) in collaboration with the Venice centre in Economic and Risk Analytics for Public Policies (VERA) Ca' Foscari University of Venice organizes the course for PhD students in:

Bayesian Methods in Economics and Finance

Venice, August 30-September 3, 2021

Coordinator:

Gaetano Carmeci
Università di Trieste
Dipartimento di Scienze Economiche, Aziendali, Matematiche e Statistiche "B. de Finetti" (DEAMS) Via Tigor 22
34124 Trieste
tel. +39 0405587100
fax.+39 0405587005
e-mail: gaetano.carmeci@deams.units.it

Lecturers

Gaetano Carmeci, University of Trieste
Roberto Casarin, University of Venice, Italy Ca' Foscari
Matteo Ciccarelli, European Central Bank, DG Economics, Head of Forecasting and Policy Modelling Division
Federico Bassetti, Politecnico di Milano

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. The methods introduced in the lectures will be illustrated with hands-on applications in MATLAB based on reasoned statistical and economic examples.

Preliminary readings/Reference textbook for the course

- Berger, J. O. (1985), Statistical Decision Theory and Bayesian Analysis. Springer Series in Statistics (Second ed.). Springer Verlag.
- Gilks, W. R., S. Richardson and D. J. Spiegelhalter (1996), Markov chain Monte Carlo in practice, London: Chapman and Hall.
- Greenberg, E. (2008), Introduction to Bayesian Econometrics, Cambridge University Press. Koop, G. (2003), Bayesian Econometrics, J. Wiley.
- Koop, G., Dale J. P., Tobias, J. L. (2007.), Bayesian Econometric Methods, Cambridge University Press. Kroese, D.P. and J. Chan (2014), Statistical Modeling and Computation, Springer Verlag.
- Liu, J. (2001), Monte Carlo Strategies in Scientific Computing, Springer Verlag.
- Robert, C. P. (2001), The Bayesian Choice – A Decision-Theoretic Motivation (second ed.). Springer- Verlag.
- Robert, C.P. and Casella G. (2004), Monte Carlo Statistical Methods, New York: Springer Verlag.
- Robert, C.P. and Casella G. (2009), Introducing Monte Carlo Methods with R, New York: Springer
- Verlag. Zellner, A. (1971), Introduction to Bayesian Inference in Econometrics, Wiley and Sons.

Papers

- Bassetti, F., Casarin R., Leisen F. (2014), Beta-product dependent Pitman–Yor processes for Bayesian inference, Journal of Econometrics, 180(1), 2014, 49-72.
- Billio, M., Casarin, R., Rossini, L. (2019), Bayesian Nonparametric Sparse VAR Models, Journal of Econometrics, forthcoming.
- Cefis, E. and M. Ciccarelli (2005), Profit differentials and innovations, Econ. Innov. New Techn., Vol. 14(1– 2), January–March, pp. 43–61.
- Chib, S. (1995), Marginal likelihood from the Gibbs Sampler, JASA, 90, 1313-1321
- Chib, S. amd I. Jeliazkov (2001), Marginal likelihood from the Metropolis-Hastings output, JASA, 96, 270- 281.
- Gefang D. (2014), Bayesian doubly adaptive elastic-net Lasso for VAR shrinkage, International Journal of Forecasting, 30(1), 1-11.
- Gelfand, A., and D. Dey (1994), Bayesian model choice: Asymptotics and exact calculations, Journal of the Royal Statistical Society, Series B, 56, 501-514.
- George, E. and R. McCulloch (1993), Variable Selection via Gibbs Sampling, JASA, 88, 881-889.
- Kalli, M. and J. E. Griffin (2018), Bayesian nonparametric vector autoregressive models, Journal of Econometrics, 203(2), 267-282.
- Kass, R. and A. Raftery (1995), Bayes Factors, JASA, 90, 773-795.
- Lindley, D. and A.F.M. Smith (1972), Bayes estimates for the linear model, Journal of the Royal Statistical Society, Series B, 34, 1-41.

Handouts, readings and further material will be provided before the beginning of and during the lectures.

Course outline:

A. Fundamentals of Bayesian Statistics

B. Bayesian computation
- Monte Carlo simulation
- Markov chains
- Markov Chain Monte Carlo methods (Gibbs sampler and Metropolis-Hastings algorithm)
    a. Comparing performance
    b. Checking convergence
    c. Optimal scaling
- An introduction to advanced MCMC and other simulation methods

C. Bayesian methods for regression models
- Normal linear regression models
    a. Standard LRM with spherical and non-spherical errors
    b. Hierarchical models
    c. Seemingly Unrelated Regression models
    d. Panel data models
    e. Introduction to time-varying parameter and stochastic volatility models
- Bayesian VAR models
    a. Basic models
    b. Bayesian VAR Lasso
    c. Bayesian VAR nonparametric Lasso

SOFTWARE USED FOR THE APPLICATIONS: MATLAB

Participants will use their laptops with MATLAB already installed on them.

Venue and timetables

The Course requires full-time attendance, and participation is not compatible with other jobs at the same time (e.g. preparation of other exams). Lectures and tutorials will be in English, with the following schedule (provisional):

- Monday to Friday: lectures: 9.00-13.00, 15.00-18.00.

Fees and Enrollment

- Students, new graduated students, PhD students and temporary university staff: 340 euro
- University staff: 450 euro
- Others: 1500 euro

In case of enrollment in two or more courses, for a maximum of three, Student and Staff participants are entitled to a discount of 100 euros on each course. Other participants are entitled to a discount of 300 euros on each course.

* The amount due by Master and PhD students from University of Ca' Foscari is 30 euro, since the rest of the fee is sponsored by the Venice centre in Economic and Risk Analytics for Public Policies (VERA)

Contacts

- For more information: Laura Urraci e-mail: info@side-iea.it
- For administrative issues : Laura Urraci (admin@side-iea.it), Alessandra Picariello (alessandra.picariello@unibo.it), phone:+39 0512092637

Sponsors

VERA Center at University Ca' Foscari of Venice