SCOTTISH GRADUATE PROGRAMME IN ECONOMICS

ECNM11060

Bayesian Econometrics

Course Overview

Academic Year 2025/26

Who are we?

⇒ **Lecturers:** Niko Hauzenberger (niko.hauzenberger@strath.ac.uk) and Ping Wu (ping.wu@strath.ac.uk)

⇒ **Tutor:** Zhoulihua Zhang (zhoulihua.zhang@strath.ac.uk)

⇒ Department of Economics, University of Strathclyde

⇒ All course materials (including course outline) available on the website: nhauzenb.github.io/SGPE-ECNM11060/

What is this class about?

⇒ An overview of Bayesian econometrics (week 1)

⇒ Bayesian linear regression (week 2)

⇒ Overview of recent advances in Bayesian macroeconometrics (week 2)

⇒ Introduction to Bayesian machine learning methods (week 3)

⇒ Bayesian vector autoregression (week 4)

⇒ Introduction to Bayesian state space models (week 5)

⇒ TVP-VARs with stochastic volatility (week 5/6)

⇒ Bayesian Inference in factor models (week 6)

Readings

- ⇒ The primary readings for the course are two textbooks
  - → Koop, G. (2003). *Bayesian Econometrics*, Wiley.
  - → Chan, J., Koop, G., Poirier, D. and Tobias, J. (2019). *Bayesian Econometric Methods, second edition*, Cambridge University Press.
- ⇒ Additional handbooks, book chapters and monographs on relevant topics:
  - → Koop, G. and Korobilis, D. (2009). Bayesian Multivariate Time Series Methods for Empirical Macroeconomics; Matlab codes available here.
  - → Dieppe, A., Legrand, R. and van Roye, B. (2016). The BEAR Toolbox.
  - → Blake, A. and Mumtaz, H. (2017). Applied Bayesian Econometrics for Central Bankers; Matlab codes available here.
  - → Chan, J. (2020). Large Bayesian Vector Autoregressions.
  - → Feldkircher, M., Huber, F., and Pfarrhofer, M. (2020). Factor Augmented Vector Autoregressions, Panel VARs, and Global VARs.
  - → Chan, J. (2024). BVARs and Stochastic Volatility.
  - → Hauzenberger, N., Huber, F., and Koop, G. (2024). Macroeconomic forecasting using BVARs; R codes available here.

Pre-requisites

$\Rightarrow$ You must have background knowledge of econometrics from previous coursework

$\Rightarrow$ We will assume **no prior knowledge** of Bayesian methods

$\Rightarrow$ You must have basic knowledge of probability (i.e., definitions and rules relating to conditional, marginal and joint probabilities and definitions and properties of common distributions such as the Normal and t-distributions)

$\Rightarrow$ Knowledge of basic matrix algebra

$\Rightarrow$ Appendices to Koop (2003) provide a summary of the probability theory and matrix algebra used in this course

Computer Sessions

- ⇒ Four hours of computer sessions allocated to this course
- ⇒ Computer tutorials begin next week with exercise sheets on the course website
- ⇒ Zhoulihua Zhang is the tutor for this course
- ⇒ Computer sessions use Matlab
- ⇒ Please download onto your laptop and bring to computer sessions
- ⇒ Details on Learn (see Matlab access)

Assessment

⇒ Assessment will be through an empirical project and a journal article review

⇒ Journal article review worth 40% of the final grade; instructions available here

⇒ Empirical project worth 60% of the final grade; instructions available here

⇒ Journal article review due on 10 April 2026

⇒ Empirical project due 29 May 2026