

Course in Bayesian Methods for VAR and DSGE Models
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Outline

The course present a self contained exposition of Bayesian methods applied to reduced form (VAR) and structural (DSGE) models.

It is assumed that participants are familiar with:

- (a) Solution methods for DSGE, mainly log-linear approximations.
- (b) VAR techniques, in particular identification and calculation of standard errors of impulse responses and variance decompositions
- (c) Notions of classical asymptotic theory, mainly consistency /asymptotic normality.
- (d) Current models used in dynamic macro theory and
- (e) RATS and Matlab programming languages.

Lectures are based on chapters 8 to 10 and the appendix of my forthcoming book: Methods for applied Macroeconomic Research. Copy of the chapters will be posted on my homepage and will be available at the beginning of the course. Practices are based on sample codes which I wrote and implement some of the techniques discussed in the lectures. They will also be posted on the same page. Those uncomfortable with any of (a)-(b)-(c) may want to use chapters 1, 2 and 4 of my book as references.

Program

1) Introduction to Bayesian Methods (1 lecture)

- Preliminaries : Bayes Theorem, Prior Selection, Nuisance Parameters
- Inference, Uncertainty, Confidence Intervals, (Asymptotic) Normal Approximation, Multiple models, Testing models, Forecasting.
- Hierarchical and Empirical Bayes Models, Meta-analysis.

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2) Posterior Simulators and Robustness (1 lecture)

- Acceptance and Importance Sampling
- MCMC methods (Gibbs sampler and Metropolis-Hastings)
- Prior Robustness

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3) Bayesian VARs (1.5 lectures)

- Likelihood function for an M variable VAR(p)
- Priors for VARs: General priors, Minnesota (Litterman) Prior, DSGE prior
- Structural BVAR models
- Time Varying coefficients-state space BVAR
- Dynamic Panels and Panel VARs

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4) Bayesian estimation of DSGE models (1.5 classes)

- Bayesian DSGE models
- Comparison with with ML/ GMM/VAR approaches

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