

MATLAB Computer Session 2: Introduction to Bayesian VARs

Dimitris Korobilis and I have created a website containing Matlab code for Bayesian estimation of VARs and other models popular with empirical macroeconomists (see http://personal.strath.ac.uk/gary.koop/bayes_matlab_code_by_koop_and_korobilis.html). It is associated with our monograph. Koop, G. and Korobilis, D. (2010). *Bayesian Multivariate Time Series Methods for Empirical Macroeconomics* which is available on this website. The monograph and website provide additional material and background detail about this exercise. However, I have put the material directly used in this exercise on the website associated with this course: http://personal.strath.ac.uk/gary.koop/BoK_course.html

MATLAB Exercises:

1. VAR posteriors using analytical results, and their properties

Use the MATLAB code `BVAR_ANALYT.m` that estimates the VAR model using analytical methods (i.e. no posterior simulation is done), with a choice of three available priors (Noninformative, Minnesota and natural conjugate).

- (a) Load the macroeconomic dataset provided, and experiment with the prior hyperparameters of the Minnesota prior. (Note: This code does not directly print out any output to the screen. So you will have to figure out what the program is producing and how to print it out).
- (b) Take a training sample of the first 40 quarters of data and estimate a VAR model using this training sample (and a Noninformative prior. Use the posterior from the training sample VAR to determine the prior hyperparameters of a Normal-Wishart prior. Estimate a VAR using this prior and the remainder of the data. Compare your results with those of part a).

2. Prediction and impulse response analysis

Perform prediction and impulse response analysis using the code `BVAR_FULL.m` and replicate the results of the first empirical illustration in the monograph. This code gives you the option to choose six between different priors. Experiment with all of them and try different prior hyperparameter choices.