

International Finance Seminar: Foreign Currency Portfolio Selection and Bayesian Machine Learning

SPRING 2020

(tentative)

Description of the Course

- This course provides basic Bayesian econometric techniques for empirical international finance. Emphasis is on techniques of multivariate stochastic volatility models, Markov-chain Monte Carlo (MCMC) simulation, Bayesian model selection, and various applications to state-space models and international asset pricing models.
- Knowledge in Korean is required as TA session is conducted in Korean.
- Important Note: This is a follow-up course of international finance I. Only the students who have taken international finance I are allowed to take this course.
- The following schedule shows the topics that will be covered in each of the term's lectures. This schedule should be considered tentative, as it is likely to change during the course, depending on various factors. Should changes be made, they will be posted on the Blackboard and announced in class. The course website will always contain the latest schedule.

Instructor

Kyu Ho Kang, Politics and Economics Building 328, email: kyuho@korea.ac.kr

Time and Location

- Class: Monday and Wednesday 10:30AM - 11:45AM, Location: Woodang hall 108
- **Weekly TA session (advanced Matlab programming):** TBD. Conducted in Korean, TA session attendance is **mandatory**.

Office Hours

Wednesday 1:30PM - 2:30PM or by appointment

Textbook

- 강규호, 베이지안 계량경제학, 박영사
- Edward Greenberg, *Introduction to Bayesian Econometrics*, 2nd edition, Cambridge University Press

Prerequisite

The following prerequisites are **strongly** required.

- Courses in graduate level: International Finance 1, Econometrics I, Time Series, Macroeconomics I
- Programming language: Matlab (intermediate level)

Grading Policy

There will be weekly assignments, and two midterms in class and one term paper. The weekly assignments consist of the problem sets in the textbook and Matlab programming. They will count toward the grade as follows.

Term paper	25%
1st Midterm Exam	25%
2nd Midterm Exam	25%
Weekly (programming) Assignments	25%
Total	100%

Please note that there will not be any make-up exams except as required by university policy.

Academic Integrity

This course applies a very strict set of criteria regarding academic integrity and the consequences for violating course policies are serious. You are strongly encouraged to discuss any topic including ideas about how to prepare the exams and term project. But, under no circumstances will exchange of answers via written or electronic means be permitted between individuals. It is considered dishonest either to read another students solution or to provide anyone with a copy of your work. Be very careful when working with others on individual

term project as this is generally discouraged. The work you submit must be your own original writing effort.

Topics

1. Markov-chain Monte Carlo (MCMC) Simulation
 - (a) Classical Simulations
 - (b) Basics of Markov Chains
 - (c) Random-walk Metropolis-Hasting Algorithm
 - (d) Hamiltonian Method
 - (e) Tailored Metropolis-Hasting Algorithm
 - (f) Multiple-block Metropolis-Hasting Algorithm
 - (g) Convergence Diagnostics
 - (h) Marginal Likelihood Computation and Model Comparison
 - (i) Model Averaging and Pooling
 - (j) Predictive Density Forecasting Evaluation

2. Stochastic Volatility Models and Bayesian Foreign Currency Management
 - (a) Stochastic Volatility
 - (b) Forecasting VaR and Conditional VaR
 - (c) Multivariate Stochastic Volatility
 - (d) Multivariate Stochastic Volatility with Time-Varying Conditional Correlations
 - (e) Forecasting Exchange Rates and Foreign Asset Returns
 - (f) Bayesian Portfolio Selection
 - (g) Foreign Currency Portfolio Management