

Course Code Financial Econometrics Module 2, 2020

Course Information

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Classes:

Lectures: Monday & Thursday Venue: PHBS Building, Room, 8:30-10:30am

Course Website: https://cms.phbs.pku.edu.cn/

Reference Website: http://apps.olin.wustl.edu/faculty/chib/

1. Course Description

1.1 Context

Course overview:

This course is designed to offer students an introduction to Bayesian econometrics, to contrast this viewpoint with the frequentist perspective, and, more importantly, to get the student up-to-speed with modern simulation methods. The focus of this course is also on finance applications, that is, getting students proficient in using simulation based Bayesian methods to estimate some widely used financial models using "real world" data.

This class begins by covering Bayesian fundamentals, including a theoretical background of basic prior-posterior analysis and statistical inference. We continue to discuss simulation methods, including iterative schemes and Markov Chain Monte Carlo (MCMC) methods. At the same time, we illustrate their application to basic financial models. Problem sets and exams for the course will involve both theoretical derivation and programming, and I require students to do this programming using R.

Prerequisites: Econometrics, Probability theory

1.2 Textbooks and Reading Materials

Introduction to Bayesian Econometrics, Edward Greenberg

2. Learning Outcomes

2.1 Intended Learning Outcomes

Learning Goals	Objectives	Assessment (YES with details or NO)
1. The students will get a basic understanding of Bayesian statistics and econometrics	Students will get to know the Bayesian viewpoint	YES
2. The students get to know prior- posterior analysis and statistical inference	2.1. Students will be able to derive posterior given prior and the model (likelihood)	YES
	2.2. Students will be able to conduct statistical inference	YES
3. The students are exposed to simulation techniques	3.1. Students will learn how to conduct classical simulations	YES
	3.2. Students will practice simulation by simple MCMC methods	YES
	3.3. Students will learn Metropolis-Hasting Algorithm	YES
4. The students are familiar with solving financial models using R packages	CAPM, Factor models, model comparison, etc	YES
5. Extended topics	TBD	NO

2.2 Course specific objectives

2.3 Assessment/Grading Details

2.4 Academic Honesty and Plagiarism

It is important for a student's effort and credit to be recognized through class assessment. Credits earned for a student work due to efforts done by others are clearly unfair. Deliberate dishonesty is considered academic misconducts, which include plagiarism; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement;

or altering, forging, or misusing a University academic record; or fabricating or falsifying of data, research procedures, or data analysis.

All assessments are subject to academic misconduct check. Misconduct check may include reproducing the assessment, providing a copy to another member of faculty, and/or communicate a copy of this assignment to the PHBS Discipline Committee. A suspected plagiarized document/assignment submitted to a plagiarism checking service may be kept in its database for future reference purpose.

Where violation is suspected, penalties will be implemented. The penalties for academic misconduct may include: deduction of honour points, a mark of zero on the assessment, a fail grade for the whole course, and reference of the matter to the Peking University Registrar.

For more information of plagiarism, please refer to *PHBS Student Handbook*.

3. Topics, Teaching and Assessment Schedule

- Topic 1: Introduction to Bayesian statistics and econometrics
- Topic 2: Prior, likelihood, and posterior
- Topic 3: Introduction to R
- Topic 4: Classical simulation methods
- Topic 5: Simulation by MCMC methods
- Topic 6: Application to financial problems