Freie Universität Berlin **Sommersemester 2015**

Bayesian Macroeconometrics

Instructor:

Dr. Frank Schorfheide
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Topic:

This course provides an introduction to modern macroeconometrics. We will discuss the estimation and evaluation of vector autoregressive models (VARs), dynamic stochastic general equilibrium (DSGE) models, and general state-space models that are useful for the analysis of macroeconomic time series. The course will also provide an introduction to Bayesian inference and computations. It is highly recommended that you also register for Prof. Lütkepohl's "Multiple Time Series Analysis."

Readings:

The main readings for this course are a handbook chapter and a book that I have written with two co-authors. I will make pdf versions of these documents available through *Blackboard*.

Del Negro, Marco and Schorfheide, Frank (2011): "Bayesian Macroeconometrics," in: *The Oxford Handbook of Bayesian Econometrics*, p.293-389.

Herbst, Edward and Schorfheide, Frank (2015): *Bayesian Estimation of DSGE Models,* Princeton University Press, forthcoming.

I will subsequently refer to these documents as DS and HS, respectively. Additional references will be provided throughout the lectures. You can find all of my papers as well as replication code on my academic website *http://sites.sas.upenn.edu/schorf*.

Course Outline and Schedule

The course consists of 10 90 minute lectures. It is expected that you attend all of the lectures. There will be a written final exam at the end of the semester. The date of the exam is determined by the Freie Universität.

Tuesday, May 26, 14:15-15:45 & 16:15-17:45. Location: K 005, UG

Lecture 1 A Brief Introduction to Time Series Analysis

Lecture 2 Introduction to Bayesian Inference: Posterior for an AR(p) Model; direct sampling; point estimation. Readings: HS Chapters 3.1-3.2,

Wednesday, May 27, 14:15-15:45 & 16:15-17:45. Location: K 005, UG

Lecture 3 Introduction to Bayesian Inference: interval estimation, model selection and averaging, importance sampling. Readings: HS Chapters 3.2 and 3.4

Lecture 4 Bayesian Analysis of Reduced-Form VARs. Readings: DS Sections 2.1-2.2.

Friday, May 29, 12:15-13:45. Location: K 005, UG

Lecture 5 Bayesian Analysis of Structural VARs. Readings: DS Section 2.4-2.5.

Tuesday, June 2, 14:15-15:45 & 16:15-17:45. Location: K 005, UG

Lecture 6 Introduction to DSGE Modeling: specification, solution, prior distributions. Readings: HS Chapter 2, DS Sections 4.1-4.2.

Lecture 7 Introduction to DSGE Modeling: obtaining the likelihood function via Kalman Filtering. Readings: HS Chapter 2, DS Sections 4.1-4.2.

Wednesday, June 3, 14:15-15:45 & 16:15-17:45 Location: K 005, UG

Lecture 8 Estimating a DSGE Model using the Metropolis-Hastings Algorithm. Readings: HS Chapters 3.5, 4.1 - 4.2, DS Section 4.3.

Lecture 9 DSGE Model Evaluation. Readings: DS Section 4.7.

Friday, June 5, 12:15-13:45. Location: HS 103

Lecture 10 State-space Models for Empirical Work in Macroeconomics: Gibbs sampling and data augmentation, models for mixed frequency data, time-varying coefficient models, dynamic factor models. References: DS Sections 5 and 6.2.