

Advanced Time-Series Econometrics

Instructor: Frank Schorfheide, Room 525, McNeil Building

Email: schorf@ssc.upenn.edu

URL: <http://www.econ.upenn.edu/~schorf/teaching.htm>

Office Hours: Tuesdays 3-5p

Scheduled Class Time and Organization: We will meet twice a week
Tuesdays and Thursdays from 10:30a - 12:00n in Room 309, McNeil.

Course Description:

The course is designed as a sequel to Economics 706. Broadly speaking, we will study econometric models and methods that are useful to conduct substantive empirical research in macroeconomics. We consider the estimation and evaluation of dynamic stochastic general equilibrium models, analysis of linear and nonlinear vector autoregressive models, time series models with regime switches and time-varying coefficients, as well as dynamic factor models. For the most part, we will focus on Bayesian methods of inference, with detailed discussions of suitable Markov-Chain-Monte-Carlo methods.

Prerequisites: Economics 705 and 706 or equivalent graduate level econometrics.

Course Web Page: We will use the black-board software. You can log-in from <http://courseweb.library.upenn.edu>.

Course Requirements:

This is a research course! The goal is to lead students toward the current frontier in macroeconometrics.

- **Class Participation and Problem Sets [30%]:** There will be several problem sets, assigned during the semester. Moreover, you are expected to carefully study the assigned readings and participate in classroom discussions.
- **Research Paper [70%]:** with strong econometric component (theoretical or empirical). In-class oral paper proposal defense. Final written proposal must be submitted and approved by last day of class. Completed paper is due in the Fall semester, on the first day of class. (No exceptions)
- **Econometrics Workshop [extra credit]:** You are expected to attend the econometrics workshop, which takes place on Mondays from 3:30-5:00.

Course texts:

The course will follow my recently written chapter (co-authored with Marco Del Negro) on Bayesian Macroeconometrics for a new *Handbook of Bayesian Econometrics*. The chapter gives a broad overview of the field and we will fill in many of the details by consulting research papers. We will also cover other chapters of the Handbook. Geweke (2005) provides a solid introduction to Bayesian inference. You also might find the Hayashi textbook to be a useful reference. Much of the material related to the estimation and evaluation of DSGE models is summarized in a survey article by Sungbae An (a former Penn grad student) and myself. Kim and Nelson (1999) is a useful monograph on regime switching models. Finally, although by now a bit dated, Hamilton (1994) is still a very good and thorough general reference for time series analysis. Two recent books that provide an introduction to modern macroeconometrics are DeJong and Dave (2006) and Canova (2006).

An, Sungbae and Frank Schorfheide (2007): "Bayesian Analysis of DSGE Models," *Econometric Reviews*, **39**, 113-172.

Canova, Fabio (2007): *Methods for Applied Macroeconomic Research*, Princeton University Press.

Del Negro, Marco and Frank Schorfheide (2011): “Bayesian Macroeconometrics,” in *Handbook of Bayesian Econometrics*.

DeJong, David and Chetan Dave (2007): *Structural Macroeconometrics*, Princeton University Press.

Geweke, John (2005): *Contemporary Bayesian Econometrics and Statistics*, Wiley, New York, ISBN 0-471-67932-1.

Hamilton, James D. (1994): *Time Series Analysis*, Princeton University Press, ISBN 0-691-04289-6, QA280.H264 1994.

Hayashi, Fumio (2000): *Econometrics*, Princeton University Press, ISBN 0-691-01018-8, HB139.H39 2000.

Kim, Chang-Jin and Charles R. Nelson (1999): *State-Space Models with Regime Switching*, MIT Press, ISBN 0-262-11238-8.

Further Details: are available via blackboard.