ECON 224A
TIME SERIES ECONOMETRICS
Winter 2007

Professor: Fabio Milani, fmilani@uci.edu
Office Hours: SSPA 3145, Thu 3.00-4.30 PM

Time and Location: Tu-Th 11.00 AM - 12.20 PM
Course Webpage: http://www.socsci.uci.edu/~fmilani/econ224a.html

Grading:

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There will be about 3-4 assignments in the quarter. You can work in groups, but each member has to turn in the homework individually. There will be no final exam in the course. Instead, you will have to write a paper, on a topic of your choice, which uses some of the techniques learned in class. There will be some in-class presentations in which you will in turn be responsible to present one of the topics in the syllabus.

Course description:

The course is an introduction to time series econometrics, with special emphasis on Bayesian methods. The topics we’ll study include AR, MA, ARMA models, Stationarity, Deterministic and Stochastic Trends, Structural Breaks, VAR, Structural VAR, and Bayesian VAR models. We will see how to estimate state-space models, which are useful to estimate general equilibrium macroeconomic models. We will focus on linear rational expectations model with normal shocks, but we’ll also discuss the estimation issues that arise for nonlinear/non-normal models and for models with near-rational expectations.

The best book if you are interested in learning time series is Hamilton (1994), although it focuses mostly on the classical, rather than Bayesian approach. A much less technical book is Enders, which can be useful if you are interested in learning the techniques, but do not want to go into the details of the theory. A more Bayesian-oriented time series book is Bauwens, Luhrano, and Richard (1999). A Bayesian book, not really focused on time series, but useful is Koop (2004).

For the last part of the course (estimation of state-space, macro models), there are now a number of useful references, some of those available for free online.
Books:

*Time Series Analysis*, **Hamilton**

*Time Series for Macroeconomics and Finance*, **Cochrane**

*Applied Time Series Econometrics*, **Enders**

*Bayesian Econometrics*, **Koop**

*Bayesian Inference in Dynamic Econometric Models*, **Bauwens, Lubrano, and Richard**

*State-Space Models with Regime Switches*, **Kim and Nelson**


*Estimation and Evaluation of DSGE Models*, Lecture Notes, **Schorfheide**

**Reading List - PRELIMINARY**

(Highly recommended readings are indicated by a ' * ')

1. **Time Series Models: AR, MA, ARMA. Stationarity, Estimation.**
   *Hamilton*
   *Enders*
   *Cochrane*

2. **Nonstationarities. Deterministic and Stochastic Trends, Unit Root Tests**
   (Classical vs. Bayesian View)
   *Hamilton*
   *Enders*
   *Sims and Uhlig* (1991)

3. **Structural Breaks. Tests**
   *Hamilton*
   *Enders*

4. **Forecasting.**

5. **VAR, Impulse Responses, SVAR**
   *Sims* (1980), "Macroeconomics and Reality," *Econometrica*
   *Hamilton* (1994)
   *Enders*
   *Leeper, and Zha* (2003), "Modest policy interventions," *Journal of Monetary Economics*
   *Stock and Watson* (2001), "Vector Autoregressions," *Journal of Economic Perspectives*


Fernandez Villaverde, J., Rubio Ramirez, J. and Sargent, T. (2005) The ABC and (D's) to understand VARs, forthcoming AER.


*Christiano, Eichenbaum, and Evans, Monetary Policy Shocks: What Have We Learned and to What End?.

Christiano, L., Eichenbaum, M and Vigfusson, R., What Happens After a Technology Shock?


6. Bayesian VARs


Canova, Methods for Applied Macroeconomic Research

Litterman (1986), “Forecasting with Bayesian Vector Autoregressions - five years of experience”, JBES

TV Coefficients/TV Volatilities:
Hamilton (1994)
Kim and Nelson (1999)
Carter and Kohn (1994), On Gibbs sampling for state space models, Biometrika
*Primiceri (2005), "Time Varying Structural Vector Autoregressions and Monetary Policy", RES

7. State-Space Models, Kalman Filter
*Hamilton (1994)
Hamilton, "State-Space Models" Handbook of Econometrics, Volume 4
*Kim and Nelson
Canova
Schorfheide, Estimation and Evaluation of DSGE Models, Lecture Notes

8. Bayesian Estimation of DSGE Models
*Schorfheide, Estimation and Evaluation of DSGE Models, Lecture Notes
Schorfheide (2000)

*See http://www.socsci.uci.edu/~fmilani/econ269a.html, for a list of papers (with links) that apply the techniques to different problem.

9. Models with Stochastic Volatility
Pitt and Shephard (1999)
Particle Filter notes
Justiniano and Primiceri (2005)
Amisano and Tristani (2006)

10. Regime-Switching Models
Kim and Nelson
Hamilton (1994)
Sims and Zha (2006)

11. Model Comparison, BMA
Koop
Madigan, Raftery