ECON 224A
TIME SERIES ECONOMETRICS
Winter 2008

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Office Hours: SSPA 3145, Thu 3.00-4.30 PM

Time and Location: Tu-Th 9.30 AM - 10.50 PM, SSL 117

Grading:

<table>
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<th>Assignment</th>
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<tr>
<td>Report</td>
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<td>In-Class Presentations</td>
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There will be about 2-3 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. Instead, you will have to write a paper on a topic of your choice, which uses some of the techniques learned in class, and a referee report chosen from a list of papers I will suggest. There will be some in-class presentations in which you will in turn be responsible to present one of the topics or papers 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, but can be employed in other fields. 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 most comprehensive book if you are interested in learning time series is Hamilton (1994), although it focuses mostly on the classical, rather than Bayesian approach. A 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. The book by Lutkepohl and Kratzig is another good choice on applied time series. A Bayesian-oriented time series book is Bauwens, Lubrano, 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 or in newly published books (Schorfheide lecture notes, and books by Canova, DeJong and Dave).

Books:

*Time Series Analysis*, Hamilton

*Time Series for Macroeconomics and Finance*, Cochrane

*Applied Time Series Econometrics*, Enders

*Applied Time Series Econometrics*, Lutkepohl and Kratzig

*Bayesian Econometrics*, Koop

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

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

*Methods for Applied Macroeconomic Research*, Canova

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

*An Introduction to Modern Bayesian Econometrics*, Lancaster

Reading List - PRELIMINARY

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

   * *Hamilton
   * Enders
   * Cochrane

2. Nonstationarities. Deterministic and Stochastic Trends, Unit Root Tests (Classical vs. Bayesian View)
   * *Hamilton
   * Enders
   * Sims and Uhlig (1991)
   * Beveridge & Nelson (1982)

3. Structural Breaks. Tests
   * *Hamilton
   * Enders

4. Forecasting.

5. VAR, Impulse Responses, SVAR
   * Hamilton (1994)
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 Ramírez, 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)
*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](http://www.socsci.uci.edu/~fmilani/econ269a.html), for a list of papers (with links) that apply the techniques to different problems.

9. **Models with Time-Varying Volatility**

Pitt and Shephard (1999)
Particle Filter notes
Justiniano and Primiceri (2005)
Amisano and Tristani (2006)
GARCH

10. **Regime-Switching Models**
11. Nonlinear Models

12. Bayesian Model Comparison
   Koop
   Madigan, Raftery