ECON 224A

TIME SERIES ECONOMETRICS

Spring 2011

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Office Hours: SSPA 3145, by appointment

Time and Location: Mo 8:00 AM - 9.20 AM, SSPA 3132

Grading:

<table>
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<tr>
<th>Assignment</th>
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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.

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, Bayesian VAR models, and Dynamic Factor 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 as well.

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, and Lutkepohl is another choice for a theory book. 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, and by 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

*New Introduction to Multiple Time Series Analysis*, Lutkepohl

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)

3. Structural Breaks. Tests
   *Hamilton
   Enders

4. Forecasting.
   *Hamilton

5. VAR, Impulse Responses, SVAR
   *Hamilton* (1994)
   Enders
Leeper, and Zha (2003), "Modest policy interventions," Journal of Monetary Economics


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?.

*Giordani, P., 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. Dynamic Factor Models, Factor-Augmented VARs
    tba

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

10. Models with Time-Varying Volatility, GARCH, Stochastic Volatility
Pitt and Shephard (1999)
Particle Filter notes
Justiniano and Primiceri (2005)
Amisano and Tristani (2006)

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

12. **Nonlinear Models**

*tba*

13. **Bayesian Model Comparison, Bayesian Model Averaging**
   Koop
   Madigan, Raftery