EC 6429: Time Series Econometrics
Fall 2009
(Preliminary)

Professor: Serena Ng
Class time: Tuesday, 2:10-4pm Location: IAB 418
Office Hours: T, W, 10:30-noon.

**Description and Requirements:** The goal of the course is to equip students with basic econometric tools to analyze problems in macroeconomics and finance. The focus is on implementation. Students should have taken and passed 6411 and 6412. Otherwise, no grade will be given for 6429.

**Evaluation**

- 3 Problem sets: 30%
- Midterm 1 (October 14): 20%
- Midterm 2 (November 18): 20%
- Take home Final Exam (due December 14): 20%
- Project: 10%

The problem sets will consist of analytical questions and MATLAB exercises. Unless stated otherwise in class, no other software will be allowed. The 'project' consists of a 5 page summary and critique of an empirical macro paper.

**Useful Textbooks** :

Stock and Watson's slides: `http://www.nber.org/~confer/2008/si2008/tseprg.html`

Hamilton, J. D. (1994), *Time Series Analysis*, Princeton University Press.

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

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

Hayashi, F. (2000), *Econometrics*, Princeton University Press.

Tsay, R. (2005) Analysis of Financial Time Series, Second Edition, Wiley.

Cochrane, J. (2005). Unpublished lecture notes `http://faculty.chicagogsb.edu/john.cochrane/research/Papers/time_series_book.pdf`

## 1 Suggested Topics

1. Time series concepts: Wold representation, spectral representation, filters, spectra, estimation of spectrum (SW 1)

   - Hamilton 3.1, 3.2.
   - ARMA(p,q) and GARCH models, forecasting.
   - Specification tests: non-normality, non-linearity, serial correlation, ARCH. (Hamilton 21.1, Tsay, 2.1, 4.2)
   - Detrending, differencing, filtering, and seasonal adjustments (Hamilton Ch. 4, 15).
   - Hodrick, R. and F. Kydland (1997), Postwar US Business Cycle: an empirical investigation, JMCB, 29:1, 1-16.
   - Ravn, M. and H. Uhlig (2002), On Adjusting the HP Filter for the Frequency of Observations, RESTAT, 84:2, 371-76.
   - Cogley, T (2006), Data Filters, New Palgrave Dictionary of Economics (UC Davis WP).

2 HAC standard errors: (SW 9)

   - Hamilton Ch. 6, Hayashi, Ch. 6.6,
   - Andrews (1991), Heteroskedastic and Autocorrelation Consistent Matrix Estimation, Econometrica, 817-854.

3 Forecasting: basics, estimation of parameters, forecast comparison (SW 10)

   - Hamilton 3.3-3.7, Tsay Ch. 2

4 VAR: (SW 7)

   - Hamilton Ch.5, Ch. 11.2-11.3
   - estimation, causality, exogeneity
   - impulse response and decomposition of variance,
   - inference and bootstrap confidence intervals.
   - identification by short run, long run, sign restrictions, heteroskedasticity.

5. Time varying parameters: models, testing, estimation (SW 2,6)

   - Stock, J. and M. Watson (2002). Has the Business Cycle Changed and Why? NBER Macroeconomics Annual 2002, 159-218, MIT Press.
   - Stock, J. and M. Watson (2003). Has the Business Cycle Changed? Evidence and Explanations, in Monetary Policy and Uncertainty, KC-Fed, 9-56.

6 forecasting and macro modeling with many predictors: dynamic factor models, FAVAR, factors as instruments DSGE and factor models (SW 11,12)

   - Stock, J. and M. Watson 2005, Implications of Dynamic Factor Models for VAR analysis, NBER WP 11467

- Bovin, J. and M. Giannoni (2008), How has the Euro Changed the Monetary Transmission, forthcoming NBER Macroeconomics Annual.
- Lutkepohl, H. (2007), Econometric Analysis with Vector Autoregressive Models, EUI WP 2007/11.

7 Stochastic trends, the Beveridge-Nelson decomposition, unit root test, and structural breaks. (Hamilton Ch. 17, 18).

8 Cointegration: representation, testing and estimation; spurious and unbalanced regressions (Hamilton Ch.19).

9. Kalman filter and MCMC (SW 5)

- Harvey, A. C. (2006), Handbook of Forecasting, Ch. 7.

10 Weak IV, identification, and Many instruments: (SW 3,4)

- Kleibergen, F. and S. Mavroeidis (2008), Weak Instrument robust test in GMM and the New Keynesian Phillips Curve, Brown University Discussion paper.

11 Bayesian analysis

- Chib, Sid. (2001), Handbook of Econometrics volume 5, p. 3569-3469.

12 Econometrics of DSGE models (SW 8)

## 2 Suggested Papers

1. Cochrane, J. Identification with Taylor rules: A critical Rules. NBER 13410.

2. Leeper, E. and T. Walker and S. Yang, Fiscal foresight: analytics and econometrics. NBER 14028.

3. Stock, J. and M. Watson, Phillips curve inflation forecasts. NBER 14322.

4. Gali, J. On the sources of the great moderation. NBER 14171.

5. Reis, R. and M. Watson, Relative goods' prices, pure inflation, and the Phillips correlation, NBER 13615.

6 Altonji, J. and T. Smith, T and I. Vidangos, Modeling earnings dyanmics. NBER 14743.

7. Beaudry, P. and F. Portier, Stock prices, news and economic fluctuations, AER 2006, 96:4, 1293-1307.

8. Del Negro, M. and F. Schorfheide, Monetary policy with potentially misspecified models, AER, forthcoming.

9. Magnusson, L. and S. Mavroeidis, Identifying Euler equation models via stability restrictions. `http://www.econ.brown.edu/fac/Sophocles_Mavroeidis/`

10. Jorda, O. Simultaneous confidence interval regions for impulse responses. `http://www.econ.ucdavis.edu/faculty/jorda/pubs.html`

11.Cogley, T. and G. Primiceri and T. Sargent, Inflation-gap persistence in the U.S., `http://faculty.wcas.northwestern.edu/~gep575/manuscript_AEJ_Macro_2008_R2.pdf`

12. Hamilton, J. and S. Pruitt and S. Borger, The market perceived monetary policy rule. `http://dss.ucsd.edu/~jhamilto/mkt_perceive_taylor.pdf`