EC 821

Time Series Econometrics

Spring 1998

Tuesday-Thursday noon-1:15pm

Carney Room 11

Professor Bruce Hansen

Carney 127

552-3678

bruce.hansen@bc.edu

Professor Serena Ng

Carney 238

552-2182

serena.ng@bc.edu

The general objective of this course is to give student a firm grounding in modern time series analysis, with an emphasis on applications of interest to macroeconomists.

References

The course material consists of chapters from the book by

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

(AH) Andrew Harvey, *Time Series Models*, MIT Press.

Some useful survey articles can be found in the *Handbook of Econometrics*, volumes II and IV, which are on reserve in the library.

Evaluation:

Problem sets_(approximately 5) _30%

Midterm exam _(take home)___30%

Final exam _(take home) __40%

Problem sets will consist of a mixture of theory and applied problems. The software Eviews is recommended for the applied problems, but feel free to use Gauss or Matlab, all available on FMRISC. The midterm and final exams will be take-home empirical exercises.

Course Description

1.1. Difference Equations, ARMA Models and the Box-Jenkins Methodology(3 lectures)

JH, Ch. 1-2

AH, Ch. 1-2

2. Forecasting (1.5 lecture)

JH, Ch. 4

3. Spectral Representation and Estimation (2 lectures)

JH, Ch. 6

AH, Ch. 6

Thomas Sargent, *Macroeconomic Theory*, Academic Press, Ch. XI.

4. Kalman Filter (2 lectures)

AH, Ch 4.

5. Regression Models for Stationary data (2 lectures)

JH, Ch. 7 and 8.

Den Haan W. J. and A. Levin (1996), "A Practitioner,s Guide to Robust Covariance Matrix Estimation", NBER Technical Working Paper 197.

5. VARs, Causality, Exogeneity (2 lectures)

JH, Ch. 10-11

Handbook of Applied Econometrics, "Vector Autoregressive Models: Specification, Estimation, Inference and Forecasting" by Fabio Canova.

6. Structural VARs (1 lecture)

Blanchard, O. J. and D. Quah (1989), "The Dynamic Effects of Aggregate Demand and Supply Disturbances", American Economic Review, 79, 655-673.

Bernanke, B. (1986), "Alternative Explanations of the Money-Income Correlation", Carneige Rochester Conference Series on Public Policy, 25, 49-99.

7. Unit Roots

JH, Ch. 15-17

Handbook of Econometrics, Volume 4 Chapter 46: Unit Roots, Structural Breaks, and Trends, by James Stock

8. Cointegration

JH, Ch. 18-20

Handbook of Econometrics, Vol. IV, Chapter 47: Vector Autoregressions and Cointegration, by Mark Watson

9. Structural Change

Andrews, D. (1993) "Tests for parameter instability and structural change with unknown change point" *Econometrica*, 821-856.

Stock, J.H. and M.W. Watson (1996) "Evidence on structural instability in macroeconomic time series relations" *Journal of Business and Economic Statistics*, 1-10.

Handbook of Econometrics, Vol. IV, Chapter 46: Unit Roots, Structural Breaks, and Trends, by James Stock.

10. Non-Linear Models of the Business Cycle

Hamilton, J.D. (1989), "A new Approach to the Economic Analysis of Non-Stationary Time Series and the Business Cycle", *Econometrica*, 57, pp. 357-384.

Koop, G.K., and P. Beaudry (1993) "Do Recessions permanently Change Output?", *Journal of Monetary Economics*, 149-163.

Potter (1995) "A nonlinear approach to U.S. GNP," *Journal of Applied Econometrics*, 109-125.

Terasvirta, T., and H.M. Anderson (1992), "Characterizing Nonlinearities in Business Cycles Using Smooth Transition Autoregressive Models", *Journal of Applied Econometrics*, S119-S136.

Handbook of Econometrics, Vol. IV, Chapter 48: AAspects of Modelling Nonlinear Time Series,@ by Timo Terasvirta, Dag Tjostheim and Clive Granger.

11 . ARCH and Stochastic Volatility

JH Ch. 21

AH Ch. 8

Bollerslev, T., R.Y. Chou, and K. F. Kroner (1992), "ARCH Modeling in Finance: A Review of the Theory and Empirical Evidence", *Journal of Econometrics*, 52, 5, pp. 5-59.

Handbook of Econometrics, Vol. IV, Chapter 49: Arch Models, by Tim Bollerslev, Robert Engle, and Daniel Nelson.