BOSTON COLLEGE
Department of Economics

EC 821: Time Series Econometrics
Prof. Christopher Baum
Spring 2003
http://fmwww.bc.edu/EC-C/S2003/821/
Admin Bldg 486, 552–3673, baum@bc.edu
Hours: Thu 1:00–3:00 pm; by appt.; email anytime

This course covers major advances in time series analysis. In addition to univariate and multivariate models for stationary time series, it addresses the issues of unit roots, fractional integration, and cointegration. Time series models of heteroskedasticity are also discussed. The course stresses the application of technical tools to economic issues, including testing money-income causality, stock market efficiency, the life-cycle model, and the sources of business cycle fluctuations.

Required text:

K. Patterson (KP), An introduction to applied econometrics: A time series approach, Palgrave, 2000.

Other useful texts (on reserve at O'Neill Library)

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

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

Course requirements:

30% final examination; 20% midterm examination; 30% research paper, 20% graded homework assignments. No makeup examinations will be given, and the paper due date is absolute. Homework assignments, which will involve both analytical exercises and computer work, are to be your own work and will not be accepted after their due dates. They will make use of the Stata, Ox and RATS programming languages, which are available on departmental Unix systems.

Research paper:

The research paper must analyse an economic or financial issue by the use of time–series (or longitudinal) data and appropriate methodologies. A one–page proposal for the paper will be due in mid–March.

Schedule

The midterm will be held on 10 March (immutable date). There will be no class on 17 March.

Topics to be covered (preliminary)

1. Preliminaries	KP Ch2	JH 2
2. Stationary and nonstationary random variables	KP Ch 3	FH 2.2, JH 3
3. ARMA models	FH 6.1-6.3	JH 3, 5
4. Nonstationary univariate time series	KP Ch6	
5. Unit root tests	KP Ch7	JH 15–17, FH 9
6. Cointegration	KP Ch8	JH 19–20, FH 10
7. Endogeneity, long–run variance, FM–OLS	KP Ch9	
8. Vector autoregressions	KP Ch14	JH 10–11
9. Panel unit root tests		
10. Fractional integration and cointegration	JH 6	
11. ARCH: modelling volatility	KP Ch16	JH 21
12. Selected applications, chosen from	KP Ch10–13	

Additional readings (see course homepage for downloads)

2. Stationary and nonstationary random variables

Baum, C F and Richard Sperling, 2001. STS19: Multivariate portmanteau (Q) test for white noise. Stata Technical Bulletin 60, 2–3.

5. Unit root tests

Hansen, Bruce, 2001. The new econometrics of structural change: Dating breaks in U.S. labor productivity. Journal of Economic Perspectives 15:117–128.

Baum, C F, 2000. STS15: tests for stationarity of a time series. Stata Technical Bulletin 57, 36–39.

Baum, C F and Richard Sperling, 2000. STS15.1: tests for stationarity of a time series: Update. Stata Technical Bulletin 58, 2–3.

8. Vector autoregressions

Stock, James and Mark Watson, 2001. Vector autoregressions. Journal of Economic Perspectives 15:101–115.

9. Panel unit root tests

Banerjee, Anindya, 1999. Panel data unit roots and cointegration: An overview. Oxford Bulletin of Economics and Statistics, Special Issue, 607–629.

Hadri, Kaddour, 2000. Testing for stationarity in heterogeneous panel data. The Econometrics Journal, 3:148–161.

Nyblom, Jukka and Andrew Harvey, 2000. Tests of common stochastic trends. Econometric Theory, 16:176–199.

10. Fractional integration and cointegration

Baillie, Richard, 1996. Long memory processes and fractional integration in economettrics. Journal of Econometrics 73:5–59.

Baum, C F and Tairi Room, 2001. STS18: A test for long–range dependence in a time series. Stata Technical Bulletin 60, 2–3.

Baum, C F and Vince Wiggins, 2000. STS16: Tests for long memory in a time series. Stata Technical Bulletin 57, 39–44.

Doornik, Jurgen and Marius Ooms, 1999. A package for estimating, forecasting and simulating ARFIMA models: ARFIMA package 1.0 for Ox.

11. *ARCH : Modelling volatility*

Engle, Robert, 2001. GARCH 101: The use of ARCH/GARCH models in applied econometrics. Journal of Economic Perspectives 15:157–168.