

BOSTON COLLEGE
Department of Economics

EC 771A: Econometrics
Spring 2001
T & Th 9:00-11:00
email: jushan.bai@bc.edu

Professor Jushan Bai
Carney 147, 552-3689
Office Hours: T & Th 11:00-12:30

Course objective and Outline

This is the first econometrics course for graduate students. This course has two objectives. The first is to provide a theoretical foundation useful for further study of econometrics and the second is to gain practical experience in analyzing economic data with econometric methods. This course is divided into two parts. Topics for the first part include multiple regression models, least squares estimation, maximum likelihood estimation, hypothesis testing about regression coefficients, testing structural change, specification analysis, asymptotic properties of least squares estimators, instrumental variable estimation. The second part includes more advanced econometric techniques and will be taught by Professor Baum (beginning in the week of February 18).

Students are advised to visit Professor Baum's website, where many useful links can be found. For example, a link to the author of *Econometric Analysis* (our text book) and links to the data sets that will be used in our problem sets. Instructions and tips for loading data directly into STATA (the software we will use) can also be found at his website.

The prerequisite for this course is Econ 770, Statistics. Knowledge in matrix algebra is also essential. A course in econometrics at the undergraduate level will be helpful, but not required.

Textbooks

Required Textbook: William Greene (2000), *Econometric Analysis*, 4th Edition. Prentice Hall.

Useful references:

1. Henri Theil (1971), *Principles of Econometrics*. New York: Wiley.
2. Fumio Hayashi (2000), *Econometrics*. Princeton University Press.
3. Takeshi Amemiya (1985), *Advanced Econometrics*, Cambridge: Harvard University Press.

Requirements

There will be two problem sets and a final exam (for the first part). Problem sets will involve both theoretical and empirical questions. The first problem set is due on Thursday, January 30 and the second is due on Thursday, February 8. Late problem sets will not be accepted. The exam is scheduled for Thursday, Feb 15, in class. Course grade is determined by problem sets (40%) and the exam (60%). Class participation is required.

Topics

1. Classical linear regression, Chapter 6 of Greene

Linear models, assumptions, least squares estimation, properties of least squares estimators, hypothesis testing about a coefficient, confidence intervals.

Sections 6.1-6.6.

2. Inference, Chapter 7 of Greene

Testing restrictions, tests of structural change.

Sections 7.2, 7.6.

3. Specification Analysis, Chapter 8 of Greene

Sections 8.2, 8.4

4. Asymptotic Theory, Chapter 9 of Greene

Asymptotic properties of least squares estimators, stochastic regressors, measurement errors and instrumental variable estimation, normally distributed disturbances.

Sections 9.2, 9.4, 9.5, and 9.6.