Economics 308: Econometrics
Spring 2006, TR 8:10 – 9:25
Calhoun 104

Professor Cliff J. Huang
Office: Calhoun 212A
Office hours: TR 10:00 – 11:30

Teaching Assistant: Mr. Chih-Wei Wang

Office: Calhoun 209
Office hours: Monday &Thursday 5:00 – 6:00

Text:

Ramanathan, R., *Introductory Econometrics with Applications*, South Western, 2002
Huang, Cliff J., *Econometrics Class Pak*, Vanderbilt University, 2004.

Supplementary Readings:

Kennedy, P. A. *Guide to Econometrics*, 3rd Ed. MIT Press, 1992
Gujarati, D. N. *Basic Econometrics*, 2nd Ed. McGraw-Hill, 1998

Course Objective:

The objective of the course is to provide an overall introduction to applications of econometric tools to economic measures. Emphasis is on the economic modeling, estimation techniques, and interpretation of empirical findings. The use of computer is an integrated part of the course. No prior knowledge of programming is required.

Prerequisite:

This course requires a background in introductory statistics. Students need to have a working knowledge of sampling distributions and statistical inferences given in Chapter 2 of the text.

Course Requirements and Grading:

There are three tests counting 75% of the grade and the problem sets count the remaining 25%. Studying together is encouraged, but under no circumstances should the problem sets be done with assistance from others.

Computation:

All computational works in the course must be performed on EViews. Instruction on using EViews will be given in class.

Course Outline:

1. Introduction to Empirical Economic Models
   - Economic models vs. econometric models
   - Topics in Introductory Econometrics
   - Introduction to EViews

2. Least-Squares Estimation
   - Least-squares method and normal equations
   - Estimation of population variance
   - Multiple linear regression
   - Decomposition of sum of squares and R^2.
   - Ballentine Venn diagram
   - Model selection criteria
   - Unit of measurement and transformation

3. Regression Analysis
   - Classical regression assumptions
   - Properties of LS estimator and Gauss-Markov theorem
   - Variance and standard error of LS estimator
   - Monte Carlo experiment

4. Hypothesis Tests
   - Individual coefficient test (t-test)
   - Joint coefficient test (F, Wald tests)

5. Specification Error Analysis
   - Omission of important variables
   - Inclusion of irrelevant variables

6. Functional Forms and Multicollinearity
   - Linear vs. non-linear regressions
   - Exact and near multicollinearity
   - Diagnosis and solutions

7. Qualitative Independent Variables
   - Binary variable for intercept and slopes
   - Piecewise regression
   - Chow test for structural changes

8. Serial Correlation
   - Serial correlation and Durbin-Watson test
   - Breusch-Godfrey LM test
   - Generalized least-squares estimation

9. Heteroscedasticity
   - Heteroscedastic errors
   - Park test, White test
   - White's HCCM estimation
   - Generalized (weighted) least-squares estimation

10. Distributed Lag Models
    Lagged independent variable models:
        Koyck (Geometric) and Almon (polynomial) lag models
    Lagged dependent variable models:
        Partial adjustment and adaptive expectation models
    Autoregressive (AR) model
    LS estimation with lagged dependent variables

11. Unit Roots and Cointegration
    Stationary and nonstationary process
    Unit root, ADF and PP tests
    Spurious regression and cointegration
    Error correction models
    Granger test for causality

12. Qualitative and Limited Dependent Variables
    Linear, logit, and probit probability models
    Tobit models

13. Simultaneous Equation Models
    Reduced from vs. structural form
    Identification problem
    Two-stage least-squares estimation

2006 Spring Class Schedule

Tuesday	Thursday
	(1/12) Ch 1: Introduction
(1/17) Ch 1: EViews (Meet at Lab)	(1/19) Ch 2: Least squares
(1/24) Ch 2: Multiple regression	(1/26) Ch 2: Goodness of fit
(1/31) Ch 2: Model selection	(2/2) Ch 3: Regression analysis
(2/7) Ch 3: Regression analysis	(2/9) Ch 4: Hypothesis tests
(2/14) Ch 4: Hypothesis tests	(2/16) Ch 5: Specification errors
(2/21) First test (1 – 3)	(2/23) Ch 5: Specification errors
(2/28) Ch 6: Functional from & multicollinearity	(3/2) Ch 6: Functional from & multicollinearity
(3/7) Spring Break (No class)	(3/9) Spring Break (No class)
(3/14) Ch 7: Qualitative variables	(3/16) Ch 7: Qualitative variables
(3/21) Ch 8: Heteroscedasticity	(3/23) Ch 8: Heteroscedasticity
(3/28) Second test (4 – 7)	(3/30) Ch 9: Serial correlation
(4/4) Ch 9: Serial correlation	(4/6) Ch 10: Distributed lag
(4/11) Ch 10: Distributed lag	(4/13) Ch 10: Distributed lag
(4/18) Ch 11: Unit root & cointegration	(4/20) Ch 11: Unit root & cointegration
(4/25) Ch 11: Unit root & cointegration	(4/29) Saturday 3:00 – 5:00 pm: Final Exam (8-11)