Economics 108

Introductory Econometrics II

Department of Economics, University of California, Riverside

Spring 2004

Professor: Tae-Hwy Lee
Lecture: T 12:40 pm - 2 pm, SPR 3123 and R 12:40 pm - 2 pm, STAT 2674
Office Hours: TR 9:00 - 9:30, TR 2:00 - 2:30, by appointment, or just knock the door.
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Dis: R 6:40 pm - 7:30 pm, SPR 2361
Lab: R 5:10 pm - 6 pm, SPR 2225
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UCR General Catalog 2003-2004 Course Description: ECON 108. Introductory Econometrics II, 4, Lecture, 3 hours; discussion, 1 hour; laboratory, 1 hour. Prerequisite(s): ECON 107 or consent of instructor. A continuation of ECON 107. Covers, at an introductory level, the basic concepts related to logit and probit models, simultaneous equations models, dynamic time series models, unit roots and Auto-Regressive Conditional Heteroskedasticity (ARCH), and forecasting.

Course Description: The course is an introduction to econometrics. The objective of the course is to learn essential statistical methods to analyze the relationship between two or more variables. It is designed to be useful for data analysis in economic and business issues. Computer program *EViews* will be used. Homeworks will require use of the computer. High degree of student participation is expected in the form of questions and answers relating to the material being developed in lectures. Class attendance is required and will be counted toward the course grade. You are expected to attend and be present for all lectures and dis/lab sessions.

Textbook: *Required.* Wooldridge, Jeffrey M., 2003, *Introductory Econometrics: A Modern Approach,* 2 ed., South-Western Publisher of Thomson Learning.

Course Outline: We will follow the text fairly closely, but occasionally the coverage of the material may be different from that in the text.

Review	Chapters 1, 2, 3, 4
Chapter 5	Multiple Regression Analysis: OLS Asymptotics
Chapter 6	Multiple Regression Analysis: Further Issues
Chapter 7	Multiple Regression Analysis: with Binary Variables
Chapter 8	Heteroskedasticity
Chapter 9	More on Specification and Data Problems
Chapter 10	Basic Regression Analysis with Time Series Data
Chapter 11	Further Issues in Using OLS with Time Series Data
Chapter 12	Serial Correlation and Heteroskedasticity in Time Series Regressions
Chapter 17	Limited Dependent Variable Models and Sample Selection Corrections
Chapter 18	Advanced Time Series Topics

Course Requirement and Grading: The schedule may be subject to change. You are fully responsible for following up all the announcements made during the lectures. Homework problem sets will be mainly computer exercises (with some problem-solving exercises as well). No credits for late homeworks. No make-up exams. No exceptions. Exams are open-book (only the textbook).

Class attendance	required	all lectures and dis/lab sessions
Homework	40%	weekly
Midterm	20%	May 6, in class
Final	40%	June 11, 8:00 - 11:00 am

1 How to use Lab

1. On the first LAB session on April 1, you will do whatever needed to start using the lab, run Eviews, download data, and etc. We will do some simple regression to make sure if you can start and use Eviews, and to learn how to save and how to print. We use Homework 1 to do this.
2. To use the machines at the lab, you need username and password.
3. Eviews is located on the hard drive. Eviews can be accessed from the desktop. You should save your files on your own diskettes (not on the hard disk).
4. Other Lab Facility: Watkin 2101 and Watkins 2111. To check if the lab is available, go to:

   http://scs.ucr.edu/calendar

2 How to download the data for the textbook?

Download the zipped file (which is big, nearly 3MB and does not fit in a floppy diskette) from:

http://wooldridge.swcollege.com

Choose the second edition. Click on "Data Sets". You will have to register with the serial number on the card inside of the textbook. Note that the URL addresses are case-sensitive.

3 How to use EViews?

To do Computer Exercise #2.10:

1. Open the EViews.
2. Open "File" in the menu. Choose "New" and Choose "Workfile".
3. Choose "undated or irregular" for the workfile frequency. Put 1 in "Start" date and put the number of data 1534 in "End date". (You need to know the number of observations in advance. The data description file "401K.DES" has the information, $n = 1534$.)
4. Click OK.
5. Open "file" in the menu. Choose "import" and choose "Read Text-Lotus-Excel".
6. Find the data set (401K.RAW) and then open it.
7. Name the variables: prate mrate totpart totelg age totemp sole ltotemp. (You can cut and paste these names from 401K.DES file.) Then click OK.
8. To estimate the model

$$prate_i = \beta_0 + \beta_1 mrate_i + u_i$$

(a) Open "Quick" in the menu and then choose "Estimate equation".

(b) Specify a regression equation. One way is to type: prate c mrate. Another way is to type: prate=c(1)+c(2)*mrate. Then click OK. (You can print it now)

(c) Click "Name" to save the equation. Then click ok.

9. To draw a scatter plot

   (a) Open "Quick" in the menu and then choose "Graph" and choose "Scatter".

   (b) Type the list of variables: prate mrate. Then click OK. (You can print it now)

   (c) Click "Name" to save the graph. Then click ok.

10. To compute the sample of *mrate*

    (a) Double click *mrate* from the workfile.

    (b) Open "View" in the menu and then choose "Descriptive Statistics" and choose "Stats Table".

11. To save the workfile, open "File" and choose "Save as..." to save the workfile. Name the workfile as EX2-10.WF1 and save it.

Homework Assignment

Homework 1 (distributed on March 30 - due on April 6 in class): Chapter 4

1. Example 4.6, page 134: 401K.RAW
2. Example 4.9, page 150: BWGHT.RAW
3. Exercise 4.1, page 158
4. Exercise 4.2, page 158

Homework 2 (distributed on April 6 - due on April 13 in class): Chapter 5

1. Example 5.2, page 174: BWGHT.RAW
2. Example 5.3, page 177: CRIME1.RAW (see Example 3.**5**, p. 82)
3. Exercise 5.3, page 180
4. Exercise 5.5, page 180
5. Exercise 5.7, page 180

Homework 3 (distributed on April 13 - due on April 20 in class): Chapter 6(a)

1. Question 6.1, page 184
2. Question 6.3, page 196
3. Question 6.4, page 199
4. Example 6.3, page 195
5. Exercise 6.4, page 212
6. Exercise 6.7, page 213

Homework 4 (distributed on April 20 - due on April 27 in class): Chapter 6(b)

1. Example 6.5, page 204
2. Example 6.6, page 206
3. Exercise 6.15, page 216
4. Example 6.7, page 209

Homework 5 (distributed on April 27 - due on May 4 in class): Chapter 7

1. Replicate Examples in Chapter 7 (Examples 7.1 - 7.12) except those for which data is not provided. Carefully interprete the estimated models.
2. Exercise 7.3, page 250
3. Exercise 7.4, page 251
4. Exercise 7.5, page 251
5. Exercise 7.10, page 252

No homework in the week of the midterm exam (May 4 - May 11)
Note: The midterm exam is open-book and will cover Chapters 5, 6, and 7. .

1. May 6 Class: Midterm Exam (Part 1).
2. May 6 LAB: Midterm Exam (Part 2), a part of the midterm exam using Eviews. The part of the exam is also open-book.
3. May 6 DIS: TA will go over the exam.

Homework 6 (distributed on May 13 - due on May 18 in class): Chapters 8 and 9

1. Example 8.1, page 260: Compute White's robust t statistics for each coefficient estimate.
2. Example 8.4, page 267: Test for heteroskedasticity. Compare the two models in Equations (8.17) and (8.18), without and with logarithms respectively, in terms of heteroskedasticity. What do you learn by comparing these two models? Use the BP test for heteroskedasticity.
3. Example 8.5, page 269: Repeat #2 using the White test for heteroskedasticity.
4. Example 9.2, page 293: Test for functional misspecification. Compare the two models in Equations (9.4) and (9.5), without and with logarithms respectively, in terms of functional form misspecification. What do you learn by comparing these two models? Use the RESET test for functional form misspecification.

Homework 7 (distributed on May 18 - due on May 25 in class): Chapter 10

1. Problem 10.1, page 356
2. Problem 10.3, page 356
3. Problem 10.5, page 356
4. Example 10.4, page 338
5. Example 10.8, page 349

Homework 8 (distributed on May 25 - due on June 1 in class): Chapter 11

1. Example 11.4, pages 369-370 (EMH):

   (a) Estimate the AR(1) model, as shown in Eq (11.16). Test the hypothesis of the efficient market. What do you find?

   (b) Also, estimate the AR(2) model, as shown in the bottom of page 370. Test the hypothesis of the efficient market. What do you find?

   (c) Further, estimate the AR(3) model (not in the book), and do the same.

2. Example 11.5, page 371 (Expectation Augmented Phillips Curve):

   (a) Estimate the linear version of the expectation augmented Phillips curve as shown in Equation (11.19). Test if there is negative trade off relationship between cyclical unemployment and unanticipated inflation. Compare the results with those from the static Phillips curve of Example 10.1 (p. 336).

   (b) Estimate the natural rate of unemployment μ_0.

3. Example 11.6, page 378 (Fertility):

   (a) Assume that gfr_t is I(1). Estimate the two models in (11.26) and (11.27).

   (b) Compare these results with those in Example 10.4 and Example 10.8 (see Homework 7), where we assume that gfr_t is I(0). Discuss what you have found from this comparison.

4. Example 11.7, page 379 (Wage and Productivity):

   (a) Check if Wage and Productivity are I(0) or I(1). See the last paragraph of page 379.

   (b) Explain why the model in (11.29) is the better one than the model in (11.28).

Homework 9 (distributed on June 1 - due on June 8 to TA): Chapter 12

1. Example 12.1, page 397
2. Example 12.8, page 415
3. Example 12.9, page 417

Final exam (June 11, 8:00 - 11:00 am, **STAT 2674**): The final exam is open-book and will cover the materials discussed in class from Chapters 8, 9, 10, 11, 12 (and possibly some part of Chapter 18). There will be no LAB part in the final exam.