BOSTON COLLEGE
DEPARTMENT OF ECONOMICS

EC228
Fall 1996
T Th 12:00 - 1:15
Carney 009

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ECONOMETRICS

This is a course in the theory and application of regression analysis, a sequel to your introductory statistics course. As in your statistics course, we will concentrate on problems of estimation and hypothesis testing. Unlike your statistics course, however, the primary focus will not be on means of distributions but rather on something much more interesting -- relationships between variables. Most social science is about relationships between variables, and we will develop some statistical techniques to estimate the direction and magnitude of these relationships and test hypotheses about them.

We will first address these topics with a number of simplifying assumptions and discuss some very nice statistical properties of the estimators we will develop -- unbiasedness and efficiency (minimum variance). We will then ask what happens to these properties when the simplifying assumptions do not hold, and ask whether these properties can be revived by adjustments to the estimating technique.

The prerequisites for the course are calculus and statistics (EC151, EC155, EC157 or the equivalent). The text for this course, which is available in the bookstore, is:

> Regression: A Second Course in Statistics, by Wonnacott and Wonnacott (Robert E. Krieger Publishing Company).

We will cover most of Chapters 1 through 9 in this text. Those of you who have studied linear algebra may also want to read along in Chapter 12, which covers much of the same material in a much more succinct mathematical form. There will also be several fascinating econometrics articles assigned during the semester.

Regression analysis is done by computer programs. The one we will use is Statview 4.01, which is available through the OCF File Server in the O'Neill Computing Facility. Kevin Cahill will run a session or two early in the semester to introduce you to this software.

The requirements for the course (and approximate grade weights) are

- --a midterm exam (Thursday, October 24, during class) - 20%
- --a final exam (Monday, December 16, at 12:30 PM) - 35%
- --several problem sets - 15%, and
- --a significant research paper (details below) - 30%.

Academic Integrity: I expect all students to do only their own work on the exams, and to make serious individual efforts on the problems sets. We will discuss collaboration on the problems sets in class.

Research Paper: One very important component of this course is a significant research paper, done in groups of 3 or 4 students. This will be a practical application of regression theory to test some hypotheses that your group finds interesting. The topic is up to the group and can come from economics or from any other discipline.

Timetable: Students usually find this research paper to be one of the most rewarding and useful parts of the course. Students also find it one of the most time consuming. Below is a timetable designed to spread this work out over the semester. For the first time (an experiment!), I am asking for a draft of the paper before the end of the term (November 19), allowing some time for some quick extensions and revisions.

Sept. 3: Opening day

-1 week-

Sept. 10: Submit the names of the students in your group

-1 week-

Sept. 17: Submit a brief description of your group's topic (1 page)

-2 weeks-

Oct. 1: Submit the first progress report (1-2 pages)

-3 weeks-

Oct. 22: Submit the second progress report (1-2 pages)

-4 weeks-

(Oct. 24: Reminder: Midterm)

Nov. 19: First draft of the paper due

-3 weeks-

Dec. 9: Final draft of the paper due (2 copies, please)

Here is a possible outline for this paper:

I. Introduction
-What are the hypotheses being tested?
-Why are they interesting?
-What does theory (economic? other?) predict about the relationships being studied?

II. Brief Literature Review
-What other work has been done on these issues?
-What has been found?
-How does your paper differ from the others?

III. Data
-What data would you like to have?
-What data have you been able to obtain?
-What special data problems did you encounter?

IV. Empirical Work
-Regression analysis
-Interpretation of the results

V. Conclusion and Summary
-What have you learned?
-What, if any, are the policy implications?
-Are there suggestions for further research?

Topic: The topic of the paper is up to your research group, although you should clear it with me. Pick an area in which data are readily available, and avoid topics requiring new surveys (although this has been done) or involving simultaneous equations (for example, supply and demand). Experience suggests that cross-sectional studies work better than time-series for this assignment, although the latter has been done. The 1990 Census volumes, for example, provide excellent and abundant cross-sectional data on U.S. states and cities. Topics from previous years include:

- State by state variations in divorce rates
- Crime rates in U.S. cities
- The determinants of teen-age pregnancies by state
- State by state alcohol consumption
- Salary determination in major-league baseball, basketball or hockey
- The determinants of annual strike activity in the U.S.
- State by state variations in suicide rates
- State by state variations in fertility
- Voter turnout in Presidential election years
- Voter behavior
- Wage, earnings or poverty differentials by state
- Baseball attendance across cities
- State by state variations in traffic fatalities