Economics 7828 - Econometrics

Spring 2000

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Economics 7828 is a course in intermediate econometrics for PhD students and for Master's students specializing in the field. Building upon the statistical foundations presented in 7818, this course covers both theoretical and applied aspects of econometrics.

Economics 7818 is the prerequisite for this course, which requires a solid background in mathematical statistics and matrix algebra. Our text also covers the essentials of probability and statistics, matrix algebra, and linear statistical models in chapters 2-4.

You will be actively involved with computers in this course. Computer exercises and instruction will be based on the EViews econometrics package that is available on our PC network. Instruction on EViews will be provided through a series of econometrics exercises, designed to illustrate the use of an econometric software package and to develop skills in the application of econometric tests and procedures to economic data. Instructions and data sets for these exercises will be accessible from the Webct site for our class. Complete instructions on the use of EViews is available from the help menu of the EViews program.

Your grade in the course will be based on a midterm exam, a final exam, and an individual applied regression project, each weighted equally. Problems and computing assignments will be given frequently, and completion of these is essential to learning econometrics and, incidentally, doing well on the exams and the project. I will not grade your problem sets, but answers will be available on the Webct site, and we will go over some of these in class. I will ask you to turn in some computer assignments, to make sure you are keeping up with that part of the course.

Individual Regression Projects

The applied regression project should be an interesting and educational experience for each of you. You are free to choose any topic in empirical economics that is amenable to econometric analysis. Ideas for topics may be found in The Review of Economics and Statistics, Applied Economics, and other applied economics journals. You may also get some ideas from other economics courses, and from examples presented in the text, the EViews exercises, or in lectures.

Although the topic choice is fairly open-ended, I do want to make sure that everyone finds an appropriate topic and does so long before the end-of-term rush. You are therefore required to submit a brief written proposal identifying the topic you will investigate, sketching a tentative model for estimation, describing
hypotheses to be tested and questions to be addressed, and identifying the data sources and some background literature relevant to your project. This can be done in two or three pages. This proposal is due on Tuesday, February 22. You are invited to discuss your ideas with me at any time during the development of your project.

Once we have agreed on a project you should collect the necessary data and proceed with the estimation. In estimating your model there may be several variants you will try (alternative functional forms, differing variable definitions, alternative lag structures, alternative estimation techniques etc.). You will also certainly encounter various econometric problems. An important part of your assignment is to test for the presence of econometric problems (autocorrelation, heteroscedasticity, multicollinearity, etc.) and to deal with these problems using procedures you will learn in the course. The evaluation of your project will reflect, in part, your skill in handling these econometric problems, and your use and interpretation of variants of your basic model.

When you have completed your estimation, you should prepare your final report following the format of empirical articles in economics journals. Typically these papers include the following:

1. Introductory overview of the research question; statement of objectives.
2. Presentation of theory and review of relevant theoretical literature.
3. Discussion of previous empirical work in the area; critique and explanation of why your approach is vastly superior, or at least different.
4. Specification of your model(s) to be estimated; variable definitions and description of data sources.
5. Presentation of results: estimated equations and summary statistics; results of tests of econometric problems and description of corrective actions taken; results of statistical tests of hypotheses; comparison with other studies.
6. Conclusion; implications of your results for theory and policy; suggestions for further research (now that I have done all this work, this is how I would do it right).

Your final paper is due on the last day of our class, Thursday, May 4. Include with your written paper the computer printouts of your most important results, with some guide to the output in your text. Late papers will be penalized by 10 percentage points if I receive it before I must post grades, and by 20 percentage points if it is any later.

The Economics Department will make reasonable accommodations for persons with documented disabilities. Students must notify their instructors no later than Wednesday, January 26, and provide documentation of the disability obtained from the Disabilities Services office located in Willard Hall, Room 322.

Important Dates:

February 22 - Proposals Due
March 2 - Midterm Exam
May 4 - Projects Due

May 6 (Saturday 10:30-1:00) Final Exam

Readings and Assignments


I. Classical Linear Regression: estimation and tests of simple hypotheses. Chapter 6

II. Tests of general linear restrictions. Chapter 7

III. Functional forms and specification analysis. Chapter 8

IV. Large sample properties and maximum likelihood estimation, Chapter 9, sections 9.1-9.3, 9.6.


Midterm Examination - March 2

VI. Heteroscedasticity. Chapter 12

VII. Autocorrelation. Chapter 13.

VIII. Pooled regressions. Chapter 14.

IX. Seemingly Unrelated Regressions. Chapter 15.

X. Simultaneous equation models. Chapter 16.

Final Examination - May 6 (Saturday 10:30-1:00)