Ec 822 Microeconometrics

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Reading List and Course Outline
(Spring 2000)

Required book (available at the bookstore):

Microeconometrics Packet
G.S. Maddala Limited Dependent and Qualitative Variables in Econometrics
P. Allison Event History Analysis
C. Hsiao Analysis of Panel Data
C. Manski Identification Problems in the Social Sciences (buy in groups)
A. Lancaster The Econometric Analysis of Transition Data

Reference books

W. Greene Econometric Analysis
T. Amemiya Advanced Econometrics

The reading list includes required readings and important but optional items that I have had to leave off of the reading list to keep the cost down. These are indicated by (**) and are available in Pauline Lonergan's office. Reference for further readings are indicated by (*). The required readings are in the required text or in the reading packet and must be read before coming to class. The references include alternative treatments of the topic in other textbooks and the seminal articles from which this literature has developed.

The grade for the course will be based on

1. Computer exercises (10%)
2. Midterm exam (30%)
3. Paper (25%)
4. Final exam (35%)

The paper will use one of the tools developed in this course. It should be in the format and style used in economics journals such as the American Economic Review or Review of Economics and Statistics. The paper can be on any topic you chose, but I would advise against a topic that requires new data collection. This is, however, a good opportunity to get to learn how to use a large data set, such as the Panel Study of Income Dynamics, which you may want to use in your dissertation. The paper is due by 6:00 PM in my box on the last scheduled day of classes. Your grade will be reduced by ten percentage points for each day late.

Reading List

Introduction

Theory and Measurement

Heckman, "Causal Parameters and Policy Analysis in Economics: A Twentieth Century Retrospective", NBER working paper 7333.

I. Estimation of Nonlinear Statistical Models

Estimation by Maximum Likelihood and Method of Moments

Theory:

Judge et al The Theory and Practice of Econometrics (first edition)
17.1-17.2 ('Nonlinear Statistical Models' is chapter 17 in this edition. Other editions cover the same material in different editions)

Hamilton "Generalized Method of Moments" in Time Series Analysis Ch 14 (skip 422-426)

Applications:

Abowd and Card, "On the Covariance Structure of Earnings and Hours Changes" Econometrica 1989

Computational Methods

Judge et al 17.3-17.3.5

Hamilton, Numerical Optimization (5.7 from Time Series Analysis)

*Gill, Murray and Wright Practical Optimization Ch 4

II. Qualitative and Censored Dependent Variables

Parametric Models

Discrete Choice Models

Linear Methods--Grouped Data and Linear Probability model

Maddala Ch 1 and 2.1-2.4; 2.8-2.9

Probit and Logit

Maddala Ch 1 and 2.1-2.6

*Amemiya 9.1- 9.2

Multinomial Qualitative Response Models (Y=0,1,2..)

Maddala 2.12 and 3.1

*Amemiya 9.3

Multivariate Qualitative Response Models (Y1=0,1; Y2=0,1...)

**Tunali,"A Common Structure for Models of Double Selection" Research In Labor Economics 1986 part B

*Amemiya 9.4

*Maddala Ch 5; 9.6

* Poirer, "Partial Observability in Bivariate Probit Models" Journal of Econometrics 12 (1980)

Selection Models

Tobit Model

Maddala 6.1-6.7

*Amemiya 10.1- 10.5

Generalized Tobit Model
Maddala 6.9 and Ch 8
*Amemiya 10.6- 10.10
*Heckman "Sample Selection Bias as Specification Error" Econometrica 1979
Application
Heckman "What Has Been Learned about Labor Supply in the Past Twenty Years?" American Economic Review May 1993

Endogenous Switching and Mixture Models
Maddala 9.7-9.8

Simultaneous Probit and Tobit
Heckman "Dummy Endogenous Variables in Simultaneous Equation Systems" Econometrica 1978

Selection on Observables
Hauseman and Wise "Stratification on Endogenous Variables and Estimation" in Manski and McFadden (eds) Structural Analysis of Discrete Data
Fitzgerald, Gottschalk and Moffitt "An Analysis of Sample Attrition in Panel Data" Journal of Human Resources, XXXIII, 2 pp. 252-299

III. Non-parametric and Semi-Parametric Methods

Non-parametric regression

Deaton "Introduction to Non-parametric Methods" in Data and Econometrics for Development
**Hardle Applied Nonparametric Regression, Ch 1,2,3 through 3.2
*Blundell and DuncanKernel Regression in Empirical Microeconomics Journal of Human Resources Winter 1998

Non-parametric and semi-parametric limited dependent variable

Manski, "Anatomy of the Selection Problem" Journal of Human Resources Summer 1989
Manski, Nonparametric Bounds on Treatment Effects" American Economic Review 80(2) 1990
Application
Engberg and Kim "Person or Place? Parametric and Semiparametric Estimates of Intra-metropolitan Earnings Variation" IPR DP #1089-96

Identification as a General Concept

Manski Identification Problems in the Social Sciences Ch 1-4

IV. Panel Data

Random and Fixed Effects Models

Linear Models (Y continuous)

Specification and Estimation

Hsiao Ch 1-3

*Amemiya 6.6

Application

Moffitt and Gottschalk "Trends in the Variance of Permanent and Transitory Earnings in the U.S. and their Relation to Earnings Mobility" (1998)

**Angrist "The Effect of Veterans Benefits on Education and Earnings", Industrial and Labor Relations Review; 46(4), July 1993, pg. 637-52.

Special Problems

Testing cov (X´e)=0 in Random Effects Model

*Chamberlain Handbook of Econometrics Ch 22, Sec 1,2

* Hausman "Specification Tests in Econometrics" Econometrica (1978)

Lagged Dependent and Initial Conditions Problem when T small

Hsiao 4.1- 4.3

*Amemiya 6.6.3

*Balestra and Nerlove "Pooling Cross Section and Time Series Data in the Estimation of a Dynamic Model" Econometrica 1966

Grouped Cross Sectional Data as Panel Data

Moulton "Random Group Effects and the Precision of Regression Estimates"

Gottschalk and Lang "Relative Efficiency of Grouped Data Estimators"

*Amemiya "A Note on a Random Coefficient Model", Computational Economics, 9: 355-361, 1996

Nonlinear Models (Discrete Choice Panel models)

Hsiao Ch 7

Maddala "Limited Dependent Variable Models Using Panel Data" JHR (Summer 1987)

*Chamberlain Handbook of Econometrics Ch22, Sec 3.1 and 3.2

*Heckman "Statistical Models for Discrete Panel Data" in Structural Analysis of Discrete Data

*Chamberlain Handbook of Econometrics Ch22, Sec 3.3

V. Event History Models

Basic Model

Allison Ch.1-4
Lancaster Ch 1, 2, 3 (skip 3.4-3.5)
**Allison "Discrete Time Methods for the Analysis of Event Histories" Sociological Methodology 1982
*Singer and Willet "Its about Time: Using Discrete-Time Survival Analysis" Journal of Educational Statistics Summer 1993 pp 155-195
*Amemiya Ch 11
*Miller 1-2; 6.1
*Kiefer, N. "Economic Duration Data and the Hazard Functions" Journal of Economic Literature 1988
* Heckman and Singer "Econometric Duration Analysis" Journal of Econometrics 24 (1984)

Special Problems

Heterogeneity versus state dependence

Lancaster 4; 7.1-7.3
*Vaupel and Yashin "The Deviant Dynamics of Death in Heterogeneous Populations"
*Heckman "Heterogeneity versus State Dependence" Studies in Labor Markets, 1981

Multiple and Repeated Outcomes

Allison Ch.5-6
**Blank "Analyzing the Length of Welfare Spells" Journal of Public Economics 1989
*Lancaster Ch 5
*H. David and M. Moeschberger The Theory of Competing Risks

VI. Instrumental Variables and Natural Experiments

James Heckman "Instrumental Variables", Journal of Human Resources, vol 32 (2), pps. 441-462.
**Angrist and Krueger "Does Compulsory School Attendance Affect Schooling and Earnings?" QJE 1991 vol. 106 979-1014. (and NBER WP 3572)
Bound, Jaeger and Baker "The Cure Can Be Worse than the Disease" NBER Technical Paper 137
Angrist and Krueger "Split Sample Instrumental Variables Estimates of the Return to Schooling" Journal of Business and Economic Statistics, vol 13 (2), pps. 225-235.

VII. Misc topics (readings to be added)

A. Quantile Regression

B. Measurement Error

C. Missing data (see Green)

D. Classical tests

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Guidelines for Empirical Paper

The term paper for Microeconometrics should be well written and should use techniques developed in this course. The objective is to have you write a short (5-7 page) paper which demonstrates your ability both to do sound empirical work and to write the results in a professional manner. The text and tables should be in the same format found in economics journals. Look through empirical journals such as the Review of Economics and Statistics before submitting your paper . For example, note that *tables are clearly labeled and don't use acronyms, nor do they look like they were cut and paste from computer output*. The paper will be graded equally on the basis of presentation and the level of the econometrics (a correct application of Probit is less demanding than a correct application of more complex models).

The paper should be your own work and should be written for this course. You may submit this paper (or any part of it) for another course, but you are then required to notify both professors and to footnote the fact that this is a joint submission.

Empirical papers typically contain four sections:

- The first section clearly states the question being asked. Don't start with weak statements such as "Estimating the labor supply effects of transfer programs is a very important topic". This statement imparts no information.

- The second section provides a formal description of the statistical model, including assumptions about the error structure and a discussion of identification. Write the model in terms of generic Y's X's and Z's or very simple notation (e.g., I_{it} for income of person i in year t), rather than the particular variables that you will use (e.g., ADJFAMINC). This helps clarify the econometric structure.

- The third section describes the data and variable definitions. Avoid using acronyms.

- The fourth section provides results. Tables should be self-contained and understandable without reference to definitions used in the text. This requires that tables have clear headings and that variable names be readily understood. For an example of the layout of tables see Rebecca Blank's paper "Analyzing the Length of Welfare Stalls " which is on the reading list.

You may depart from this generic structure, but be sure that there is a logical and consistent development of ideas. I also strongly encourage you to use headings. These help guide the reader and discipline the writer's organization.

You should attach the computer output which generated the results described in the paper. Circle and label the results so that I can easily match the output with the numbers in the paper.