

UNIVERSITY OF MARYLAND
Department of Economics

Part A: Guido Kuersteiner
Part B: Ingmar R. Prucha

Econ 722
Spring 2016

Lecture: Part A, Th 5:00-7:30pm, Part B, Th 5:00-7:30pm (TYD 0102)

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ECONOMETRICS IV
Microeconometrics

COURSE OVERVIEW

Part A of the course will cover the following topics

- Binary Response Models (single equation, multiple equations, randomized experiment models)
- Multinomial Response Models
- Censored and Truncated Regression Models
- Sample Selection Models
- Program Evaluation and Treatment Effects Models

Part B of the course will cover the following topics

- Quantile Regression
- Non-parametric and Semi-parametric Estimation Methods
- Spatial/Cross Sectional Interaction Models
- Dynamic Panel Data Models
- Weak Instruments
- Cluster and Stratified Sampling (if not covered elsewhere)
- Boot strap and Jack Knife methods (if time permits)

COURSE AIMS

The course is oriented to provide students with a rigorous and broad knowledge of econometric methods especially important for conducting empirical research in micro-economics. The course is not geared towards training econometric theorists, although this course would be necessary training for such a specialization. In particular, the aim of the course is to provide students with the necessary tools to (i) read intelligently all empirical research (with a proper understanding of the underlying methodology of inference), and (ii) to conduct empirical research suitable for publication in **any** economics or econometrics journal. The course builds on Econometrics I and II, and complements Empirical Microeconomics.

ASSUMED REQUIREMENTS

Students are assumed to have knowledge of the material covered in Econometrics I and II.

PRINCIPAL TEXTS

Cameron, A.C., and P.K. Trivedi, *Microeconometrics, Methods and Applications*, Cambridge, 2005.

Wooldridge, J.M., *Econometric Analysis of Cross Section and Panel Data*, MIT Press, 2010.

SUPPLEMENTARY TEXTS

Arellano, M. *Panel Data Econometrics*, Oxford University Press, 2003.

Baltagi, B.H., *Econometric Analysis of Panel Data*, Wiley, Fourth Edition, 2013.

Li, Q., and J.S. Racine, *Nonparametric Econometrics, Theory and Practice*, Princeton University Press, 2007.

Pagan, A., and A. Ullah, *Nonparametric Econometrics*, Cambridge University Press, 1999.

GRADING POLICY

The final grade in Econ 722 will be based on the performance in Part A and B of the course, and an empirical research paper, each component getting equal weights:

Part A:	Exam	33.3%*
Part B:	Exam	33.3%*
Empirical Paper		33.3%

* No makeup exams will be given except in cases of illness (confirmed by a doctor's certificate), religious observance, participation in University activities at the request of the University authorities, or compelling circumstances beyond the student's control. If at all possible, the student must inform me (or the Economics Department) of her/his situation before the exam.

In case the University is closed during (part of) the official scheduled time period for the final exam, the exam will be rescheduled according to the instructions that will be given by the University in that eventuality.

MIDTERM EXAM: Tuesday, March 22, 5:00-7:00pm
FINAL EXAM: Tuesday, May 17, 2016, 4:00-6:00pm

Academic Integrity

The student-administered University Honor Code and Honor Pledge (shc.umd.edu/code.html) prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents and forging signatures. On every examination students must write by hand and sign the following pledge,

“I pledge on my honor that I have not given or received any unauthorized assistance on this examination or assignment.”

Compliance with the code is administered by the Student Honor Council, which strives to promote a community of trust on the College Park campus.

Copyright Protection for Class Materials

The lecture class and all other course materials that exist in a tangible medium, such as written or recorded lectures, Power Point presentations, handouts and tests, are copyright protected. Students may not copy and distribute such materials except for personal use and with the instructor's permission.

Attendance

By signing up for this class you agree to exam formats, course requirements and timing of exams and due dates of work to be handed in. Attendance in all lectures is expected.

Students with Disabilities

UMD guarantees appropriate accommodations for students with disabilities. If you require accommodations, please contact me as soon as possible. If you need further clarification, the link to DSS is: <http://faculty.umd.edu/teach/specialneeds.html>

COURSE EVALUATIONS

Students are encouraged to submit course evaluations through CourseEvalUM (www.courseevalum.umd.edu).

READING LIST FOR PART A (*required)

Binary Choice Models

*Wooldridge Chapter 15

Cameron and Trivedi Chapter 14

Multinomial Response Models

*Wooldridge Chapter 16

Cameron and Trivedi Chapter 15

Program Evaluation and Treatment Effect Models

Cameron and Trivedi Chapter 25

Imbens, G. (2005), "Semiparametric Estimation of Average Treatment Effects under Exogeneity: A Review" *Review of Economics and Statistics*

Heckman, J.J. (1978), "Dummy Endogenous Variables in a Simultaneous Equations System", *Econometrica*, 46, 931-960.

Heckman, J.J. (1997), "Instrumental Variables. A Study of Implicit Behavioral Assumptions Used in Making Program Evaluations", *Journal of Human Resources*, 32, 441-462.

Heckman, J.J. and Robb, R. (1985) "Alternative Methods for Evaluating the Impact of Interventions: An Overview", *Journal of Econometrics*, 30, 239-267.

Heckman, J. H. Ichimura, J. Smith and P. Todd (1998), "Characterizing Selection Bias Using Experimental Data", *Econometrica*, 66, 1017-1098.

Imbens, G.W. and Angrist, J. (1994), "Identification and Estimation of Local Average Treatment Effects", *Econometrica*, 62, 467-475.

Rosenbaum, P and D. Rubin (1983), "The Central Role of Propensity Score in Observational Studies for Causal Effects" *Biometrika*, 70, 41-55.

Van der Klaauw, W. (2003), "Estimating the Effects of Financial Aid Offers on College Enrollment: A Regression-Discontinuity Approach," *International Economic Review*, 43, 1249-1287.

Censored and Truncated Regression Models

*Wooldridge Chapter 17

Amemiya, T. (1984): "Tobit Models: A Survey," Journal of Econometrics, 24, 3-61.

Powell, J. (1986), "Symmetrically trimmed least squares estimation for tobit models," Econometrica, 54, 1435-1460.

Tobin, J., (1958) "Estimation of Relationships for Limited Dependent Variables," Econometrica, 26, 24-36.

Sample Selection Models

*Wooldridge Chapter 19

Gourieroux, C., Monfort, A., Renault, E., and Trognon, A. (1987), "Generalized Residuals", Journal of Econometrics, 52, 5-32.

Heckman, J.J. (1979), "Sample Selection Bias as a Specification Error", Econometrica, 47, 153-161.

Heckman, J.J.(1990), "Varieties of Selection Bias", American Economic Review, Papers and Proceedings, 80, 313-318.

Olsen, R.J. (1980), "A Least Squares Correction for Selectivity Bias", Econometrica, 48, 1815-1820.

Roy, A. (1951), "Some Thoughts on the Distribution of Earnings", Oxford Economic Papers, 33, 135-146.

Vella, F., (1998): Estimating Models with Sample Selection Bias: a survey, Journal of Human Resources, 33, 127-169.

READING LIST FOR PART B

Nonparametric and Semiparametric Estimation

Prucha, I.R., Handout on Nonparametric and Semiparametric Estimation

Below is a list of some texts and review articles. References to research articles are given in the handout.

Cameron, A.C., and P.K. Trivedi, 2005, Microeconometrics, Methods and Applications, Cambridge University Press, Cambridge, Ch. 9.

Fan, J., and I. Gijbels, 1996, Local Polynomial Modeling and Its Applications, Chapman & Hall, New York.

Haerdle, W., 1990, Applied Nonparametric Regression, Cambridge University Press, Cambridge.

Haerdle, W., and O. Linton, 1994, Applied Nonparametric Methods, in E.F. Engle and D.L. McFadden, Handbook of Econometrics, Vol. IV, Elsevier, New York, pp. 2297-2339.

Horowitz, J.L., 1998, Semiparametric Methods in Econometrics, Springer, New York.

Ichimura, H., and P. E. Todd, 2007, Implementing Nonparametric and Semiparametric Estimators, in J. Heckman and E. Leamer, eds., Handbook of Econometrics, Vol. VI B, Elsevier, New York, pp. 5360-5468.

Li, Q., and J.S. Racine, 2007, Nonparametric Econometrics, Theory and Practice, Princeton University Press, Princeton.

Pagan, A., and A. Ullah, 1999, Nonparametric Econometrics, Cambridge University Press, Cambridge.

Powell, J.L., 1994, Estimation of Semiparametric Models, in E.F. Engle and D.L. McFadden, Handbook of Econometrics, Vol. IV, Elsevier, New York, pp. 2444-2521.

Prakasa Rao, B.L.S., 1983, Nonparametric Functional Estimation, Academic Press, New York.

Silverman, B.W., 1986, Density Estimation for Statistics and Data Analysis, Chapman and Hall, New York.

Wassermann, L., 2006, All of Nonparametric Statistics, Springer, New York.

Yatchew, A., 2003, Semiparametric Regression for the Applied Econometrician, Cambridge University Press, Cambridge.

Spatial/Cross Sectional Interaction Models

Prucha, I.R., Handout on Estimation of Spatial Models

Below is a list of some texts and review articles. References to research articles are given in the handout.

Anselin, L., 1988, Spatial Econometrics: Methods and Models (Kluwer Academic Publishers, Boston).

Anselin L. 2001. Spatial econometrics. In A Companion in Theoretical Econometrics. Baltagi B. (Ed.). Basil Blackwell: New York, NY.

Arbia, G., 2006, Spatial Econometrics, Statistical Foundations and Applications to Regional Convergence (Springer, New York)

Cressie, N., 1993, Statistics of Spatial Data (Wiley, New York).

Cliff, A. and J. Ord., 1973, Spatial Autocorrelation (Pion, London).

Cliff, A. and J. Ord., 1981, Spatial Processes, Models and Applications (Pion, London).

Haining, R., 2003, Spatial Data Analysis, Theory and Practice (Cambridge University Press: Cambridge).

Below are some recent articles that explicitly connect spatial models and social interaction models

Lee, L.-F., 2007, Identification and Estimation of Econometric Models with Group Interactions, Contextual Factors and Fixed Effects, Journal of Econometrics, 140, 333-374.

Lee, L.-F., X. Liu and X. Lin, 2010, Specification and Estimation of Social Interaction Models with Network Structure, Contextual Factors, Correlation and Fixed Effects, The Econometrics Journal 13, 145-17.

Liu, X., and L.-F. Lee, 2010, GMM Estimation of Social Interaction Models with Centrality", Journal of Econometrics 159, 99-115.

Quantile Regression

Prucha, I.R., Handout on LAD and Quantile Regression

Below is a list of some texts and review articles. References to research articles are given in the handout.

Koenker, R. and K. Hallock, 2001, Quantile Regression, Journal of Economic Perspectives, 15, 143-156.

Cade, B. and B. Noon, 2003, A Gentle Introduction to Quantile Regression for Ecologists, Frontiers in Ecology and the Environment, 1, 412-420.

A more extended treatment of the subject is now also available:

Koenker, R., 2005, Quantile Regression, Econometric Society Monograph Series, Cambridge University Press. Errata list (<http://www.econ.uiuc.edu/~roger/research/rq/errata.pdf>)

Weak Instruments

Prucha, I.R., Handout on Weak Instruments

Below is a list of some review articles. References to research articles are given in the handout.

Andrews, DWK., and J.H. Stock , "Inference with Weak Instruments," with, in *Advances in Economics and Econometrics, Theory and Applications: Ninth World Congress of the Econometric Society*, Vol. III, ed. by R. Blundell, W.K. Newey and T. Persson. Cambridge, UK: Cambridge University Press, forthcoming 2006.

(<http://cowles.econ.yale.edu/P/cd/d15a/d1530.pdf>)

Hansen, C., J. Hausman, and W. Newey, Estimation with Many Instrumental Variables, Working Paper, 2006 (<http://faculty.chicagobooth.edu/christian.hansen/research/manyiv3jun14.pdf>)

Stock, J. H., J. H. Wright, and M. Yogo (2002): "A Survey of Weak Instruments and Weak Identification in Generalized Method of Moments," *Journal of Business and Economic Statistics*, 20, 518-529.

Dynamic Panel Data Models

Prucha, I.R., Handout on Panel Data Models

Below is a list of some texts and review articles. References to research articles are given in the handout.

Arellano, M., 2003, *Panel Data Econometrics*, Oxford University Press, Part III.

Arellano, M., and B. Honore, Panel Data Models: Some recent Development, in in J. Heckman and E. Leamer, eds., *Handbook of Econometrics*, Vol. V, Elsevier, New York, pp. 3229-3296.

Baltagi, B.H., 2013, *Econometric Analysis of Panel Data*, Wiley, Ch. 8.

Hsiao, C., 2014, *Analysis of Panel Data*, Cambridge University Press, Ch.4.

Wooldridge, J.M., 2010, *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Ch. 10, 11.