Economics 696E: Topics in Econometrics
Spring 2006
Syllabus

Lectures: Fridays, 12:30-3:00 pm, McClelland 401KK
Office Hours: Tuesdays, 2-3:30 pm, or by appointment

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Summary:
This topics course in econometrics covers a number of techniques useful for analysis of microeconomic data. The methods discussed here would also be useful in other fields that use observational or experimental data. The course focuses on methods that do not require strict parametric assumptions, such as M-estimators, nonparametric regression estimators, and bootstrapping. We will also consider simulation-based methods for estimating parametric models. The course will discuss both asymptotic theory and practical implementation of the methods.

Prerequisites:
I assume you have already taken Economics 520, 522A, and 522B, or the equivalent. If you have not taken these courses, please contact me to discuss whether the course would be suitable for you.

Course Requirements:
There will be a number of problem sets given in the course, along with an in-class final examination. Some of the problem set questions will include empirical analysis of data. You are expected to be able to program estimators in some standard language such as Matlab, Gauss, Stata, or R. For the problem sets, you may discuss your solutions with other students, but you MUST write your own solutions and your own code. I will not accept duplicates of computer code--you must write your own programs with your own comments.

Topics: Key readings are marked with a star (*)

1. Review of Asymptotics

* Van der Vaart, A., (1998), Asymptotic Statistics, New York: Cambridge University Press. Ch. 1-2.

* Severini, T. A., 2005, Element of Distribution Theory, Cambridge University Press, Ch. 11, 12.1-12.5, 13.2.

Ferguson, T., (1996), A Course in Large Sample Theory, New York: Chapman and Hall.

* Wooldridge, 2002, Econometric Analysis of Cross Section and Panel Data, Cambridge, MA: MIT Press. Ch. 3.

2. Asymptotics for M-estimators and GMM

Hansen, L., (1982), "Large Sample Properties of Generalized Method of Moments Estimators," Econometrica 50, 1029-1054.

* Newey, W., and McFadden, D., 1994, "Large Sample Estimation and Hypothesis Testing," in Handbook of Econometrics, vol. IV, San Diego: Elsevier.

Van der Vaart, A., (1998), Asymptotic Statistics, New York: Cambridge University Press. Ch. 5.

Wooldridge, J., 2002, Econometric Analysis of Cross Section and Panel Data, Cambridge, MA: MIT Press. Ch. 12

3. Survey Sampling, Weighting, and Missing Data

(*) Cosslett, S. R., (1993), "Estimation from Endogenously Stratified Samples," in Handbook of Statistics, Vol 11, G. S. Maddala, C. R. Rao, and H. D. Vinod, eds., New York: North-Holland.

(*) DuMouchel, W. H., and Duncan, G. J., (1983), "Using Sample Survey Weights in Multiple Regression Analyses of Stratified Samples," Journal of the American Statistical Association 78 (383), 535-543.

Gill, R. D., Vardi, Y., and Wellner, J. A., (1988), "Large Sample Theory of Empirical Distributions in Biased Sampling Models," The Annals of Statistics 16(3), 1069-1112.

Imbens, G. W., and Lancaster, T., (1996), "Efficient Estimation and Stratified Sampling," Journal of Econometrics 74, 289-318.

Little, R. J. A., and Rubin, D. B., (2002), Statistical Analysis with Missing Data, 2nd ed., Hoboken, NJ: Wiley.

Manski, C. F., and Lerman, S. R., (1977), "The Estimation of Choice Probabilities from Choice-Based Samples," Econometrica 45, 1977-1988.

4. Bootstrap and Subsampling

(*) Efron, B., (1979), "Bootstrap Methods: Another Look at the Jackknife," The Annals of Statistics 7, 1-26.

Davison, A. C., and Hinkley, D. V., (1997), Bootstrap Methods and Their Application, New York: Cambridge University Press. Ch. 2.

(*) Politis, D., Romano, J., and Wolf, M., (1999), Subsampling, New York: Springer-Verlag. Ch. 1-2.

Van der Vaart, A., (1998), Asymptotic Statistics, New York: Cambridge University Press. Ch. 23.

5. Simulation-based estimators

Carlin, B. and Louis, T., (1996), Bayes and Empirical Bayes Methods for Data Analysis, New York: Chapman & Hall. Ch. 5.

(*) Chib, S., and Greenberg, E., (1996), "Markov Chain Monte Carlo Simulation Methods in Econometrics," Econometric Theory 12, 409-431.

Gelman, A., Carlin, J. B., Stern, H. S., and Rubin, D. B., (1995), Bayesian Data Analysis, New York: Chapman & Hall.

Geweke, J., Gowrisankaran, G., and Town, R., 2003, "Bayesian inference for hospital quality in a selection model," Econometrica 71, 1215-1238.

Gilks, W. R., Richardson, S., and Spiegelhalter, D. J., (1996), Markov Chain Monte Carlo in Practice, New York: Chapman & Hall.

(*) Hajivassiliou, V., and McFadden, D., (1998), "The Method of Simulated Scores for Estimation of LDV Models," Econometrica 66 (4), 863-896.

(*) McCulloch, R., Polson, N., and Rossi, P., 2000, "A Bayesian analysis of the multinomial probit model with fully identified parameters," Journal of Econometrics 99, 173-193.

(*) McFadden, D. (1989), "A Method of Simulated Moments for Estimation of Discrete Response Models without Numerican Integration," Econometrica 57, 995-1026.

(*) Pakes, A., and Pollard, D., 1989, "Simulation and the Asymptotics of Optimization Estimators," Econometrica 57, 1027-1057.

6. Bounds and moment inequality inference

Chernozhukov, V., Hong, H., and Tamer, E., (2004), "Inference on Parameter Sets in Econometric Models," working paper.

Horowitz, J., and Manski, C. F., (1995), "Identification and Robustness with Contaminated and Corrupted Data," Econometrica 63, 281-302.

Imbens, G. W., and Manski, C. F., (2004), "Confidence Intervals for Partially Identified Parameters," Econometrica 72, 1845-1857.

(*) Manski, C. F., (1990), "Nonparametric Bounds on Treatment Effects," American Economic Review Papers and Proceedings 80, 319-323.

(*) Manski, C. F., and Tamer, E., (2002), "Inference on Regressions with Interval Data on a Regressor or Outcome," Econometrica 70 (2), 519-546.

Tamer, E., (2003), "Incomplete Simultaneous Discrete Response Model with Multiple Equilibria," Review of Economic Studies 70, 147-165.

7. Kernel, nearest neighbor, and sieve estimators (If time permits)

Hardle, W., Applied Nonparametric Regression, Cambridge University Press. Ch. 3-4.

Hastie, T., Tibshirani, R., and Friedman, J., (2001), The Elements of Statistical Learning, New York: Springer-Verlag. Ch. 2, 5-6.

8. Semiparametric estimators with nonparametric components (if time permits)

Chamberlain, G., (1986), "Asymptotic Efficiency in Semiparametric Models with Censoring," Journal of Econometrics, 189-218.

Newey, W. K., (1990), "Semiparametric Efficiency Bounds," Journal of Applied Econometrics, 5, 99-135.

Newey, W. K., (1994), "The Asymptotic Variance of Semiparametric Estimators," Econometrica 62, 1349-1382.