Special Topics in Microeconometrics
FALL 2012

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Office:

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Office Hours: By appointment.

Textbook - Wooldridge, J.M. (2002) *Econometric Analysis of Cross Section and Panel Data* Cambridge, MA: MIT Press

Other Useful Books :

- Amemiya, T. (1985) *Advanced Econometrics*, Cambridge, MA: Harvard University Press.
- R.F. Engle and D.L. McFadden, eds., (1994) *Handbook of Econometrics, Vol. 4* Amsterdam: North Holland
- Pagan, A. and A. Ullah (1999) *Nonparametric Econometrics*, Cambridge, UK: Cambridge University Press.
- Angrist, J. and J.-S. Pischke(2009) *Mostly Harmless Econometrics*, Princeton, NJ: Princeton University Press

Grading: There will be a few assignments, a take home final.

Scheme :

- Assignments : 30%
- Take Home Final: 70%

Course Objectives

Topics in microeconometrics is part of the second-year sequence in econometric methodology. This course will primarily cover non-linear statistical models. While applications of these models are most often found in microeconomic fields such as labour, i.o., and public finance, macroeconomists who are interested in incorporating heterogeneity and non-linearity into their models are also beginning to apply some of the methodologies we'll talk about. The course is intended both for students specializing in econometric theory and for students interested in applying the statistical methods we develop to (micro or macro) economic data.

The course will be (crudely) divided into two parts. The first part will focus primarily on second year phd "textbook" material, including parametric (review), semiparametric, and nonparametric methods. The second part will introduce more recent and advanced topics, such as treatment effects and, time permitting, endogeneity in nonlinear models.

Course Outline

1. **Latent Variable Models and Simulation Based Methods**: discrete response models; censored and truncated response models; sample selection models; parametric transformation models; parametric estimation methods.

   Wooldridge, Chapter 15.1-15.6, 15.9-15.10, 16.1-16.5, 17.1-17.6.;

   Amemiya, Chapter 10.

   Hajivassiliou, V.A. and P.A. Ruud (1994), "Classical Estimation Methods for LDV Models Using Simulation", in R.F. Engle and D.L. McFadden, eds., Handbook of Econometrics, vol. IV (North-Holland), Ch. 41

   Chernozhukov, V. and H. Hong(2003), "An MCMC approach to Classical Estimation", *Journal of Econometrics*, 115, 293-346

2. **Semiparametric Methods**: quantile, symmetry, independence and index restrictions and estimators; partially linear and nonparametric transformation modelling and estimation; semiparametric efficiency bounds;

Powell, J.L. (1994), "Estimation of Semiparametric Models", in R.F. Engle and D.L. McFadden, eds., Handbook of Econometrics, vol. IV (North Holland), Ch. 41

Powell, J.L., J.H. Stock and T.M. Stoker (1989), "Semiparametric Estimation of Index Coefficients", Econometrica, 57: 1404-1430

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

3. **Nonparametric Methods**: nonparametric density and regression estimation; kernel, nearest neighbor, series and local polynomial estimation methods; optimal local and global rates of convergence;

   Pagan and Ullah (1999), Chapters 1-3.

   Bierens, H.J. (1987), "Kernel Estimators of Regression Functions", in T.F. Bewley, ed., Advances in Econometrics, fifth World Congress, vol I, (Cambridge University Press)

   Härdle, W. and O. Linton (1994), "Applied Nonparametric Methods", in R.F. Engle and D.L. McFadden, eds., Handbook of Econometrics, vol. IV (North Holland), Ch. 38

4. **Treatment Effects**: Average Treatment Effects(ATE), Selection on Observables, Local Average Treatment Effects (LATE), Propensity Score Weighting.

   Wooldridge, 18.

   Hahn, J.(1998), "On the Role of the Propensity Score in Efficient Semiparametric Estimation of Average Treatment Effects", *Econometrica*, 66, 315–331.

   Angrist and Pischke, 3,4.

(Time Permitting)

5. **Endogeneity**: Instrumental variables, control function, nonlinear models, completeness.

Blundell, R. and J.L. Powell (2005), "Endogeneity in Nonparametric and Semiparametric Regression Models", working paper available at

http://www.ucl.ac.uk/ $\sim$ uctp39a/Blundell-Powell-Chpt8.pdf

Lewbel, A. (1998), Semiparametric Latent Variable Model Estimation With Endogenous or Mismeasured Regressors, *Econometrica*, 66, 105-121.

Abrevaya, J. J. Hausman, and S. Khan (2010),"Testing for Causal Effects in a Generalized Regression Model with Endogenous Regressors", *Econometrica*, 6, 2043-2061

Newey, W.K. and J.L. Powell(2003), "Instrumental Variable Estimation of Nonparametric Models", *Econometrica*, 71, 1565-1578.