Empirical Microeconomics
Spring, 2009 (Quarter III)
Ethan Kaplan

This course is taught jointly with Mårten Palme. Mårten will post his own syllabus for his portion. The course is a continuation of the courses taught by Juanna Joensen in Quarter I and Emilia Simeonova in Quarter II. As such, it will be a collection of missed topics, some more focused on identification (getting first moments right) and some more focused on standard errors (getting second moments right).

The course will include both econometric theory as well as empirical papers drawn from health economics, labor economics and political economy. Class participation is strongly encouraged. The first topic will extend the coverage of matching esimators covered in the first quarter. We will discuss the notion of robust estimation and problems with usage of the Gauss-Markov theorem. We will also discuss problems of standard error computation with matching estimators. We will look at matching estimators applied in health economics.

The second topic will be an extension of instrumental variables. We will consider the control function extension of the 2SLS estimator, switching regressions, and problems of IV estimation when instruments are weak. We will read the Angrist and Krueger quarter of birth paper and subsequent criticism in order to understand better what defines a weak instrument. In particular, we will discuss the common misperception that the weak instrument bias is increasing in the degree of over-identification of the estimator. We will discuss tests and solutions for weak instrument problems.

In the third and fourth sections, we will focus on standard errors. In the third section, we will discuss the problems of bias in standard errors in the presence of serially correlated error terms, how to identify non-serial disturbances, and techniques for dealing with error term correlation. In particular, we will look at clustering. We will consider recent developments in multi-dimensional clustering and we will revisit standard error computation problems which arise with matching estimation.

In the fourth section, we will look at count data estimation problems. In small samples, OLS can dramatically over-estimate standard errors of the impact of covariates upon the occurrence of rare events. In these cases, the problem is that the distribution of the error term is not-normally distributed. We will consider count data models designed specifically to deal with this problem. In particular, we will look at the Poisson Regression model and the Negative Binomial Regression model. We will also discuss the over-dispersion problem. We will consider an application of these models to the estimation of the impact of labor market strife upon product quality (tire failure rates).

If there is time, we will also cover non-parametric and semi-parametric estimation. Non-parametric and semi-parametric estimators can be very useful data description and data decomposition tools. In particular, we will look at the often used Dinardo, Fortin and Lemieux semi-parametric decomposition estimator.

Grades and examination:
The main requirement for the class is an empirical paper due at the end of the fourth quarter. You are expected to make a presentation of your work up to date at the end of the third quarter. This paper should be a continuation of the paper you started in Emilia Simeonova's class and/or Juanna Joensen's class.

You will also have two empirical problem sets in my section of the course.

Matching Estimators
* Almond, Douglas, Kenneth Chay and David S. Lee (2005), "The Costs of Low Birth Weight", *Quarterly Journal of Economics*, Vol. 120(3), pp. 1031-1083.

* Angrist, Joshua and Jinyong Han (2004), "When to Control for Covariates? Panel Asymptotics for Estimates of Treatment Effects", *Review of Economics and Statistics*, Vol. 86(1), pp. 1–15.

Abadie, Alberto and Guido Imbens (2006), "On the Failure of the Bootstrap for Matching Estimators", http://ksghome.harvard.edu/~aabadie/bootstrap.pdf

Heckman, James, Hidehiko Ichimura and Petra Todd (1997), "Matching As An Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme", **Review of Economic Studies** Vol. 64, pp. 605-654.

Weak Instruments, Control Functions and Switching Regressions
* Bound, John, David Jaeger, and Regina Baker (1995), "Problems With Instrumental Variables Estimation When the Correlation Between the Instruments and the Endogenous Explanatory Variables Is Weak," *Journal of the American Statistical Association*, 90, 443–

* Angrist, Joshua and Alan Krueger, "Does Compulsary Schooling Attendance Affect Schooling and Earnings?", *Quarterly Journal of Economics*, Vol. 106, pp. 979-1014.

* Garen, John. 1984. "The Returns to Schooling: A Selectivity Bias Approach with a Continuous Choice Variable." Econometrica, 52: 1199-1218.

* Oreopoulos, Philip, "Estimating Average and Local Average Treatment Effects When Compulsory Schooling Laws Really Matter", *American Economic Review,* Vol. 96(1), pp. 152-175.

Angrist, Joshua and Guido Imbens (1994), "Identification and Estimation of Local Average Treatment Effects", *Econometrica* Vol. 62(2), pp. 467-476.

Dickens, William T. and Kevin Lang (1985), "A Test of Dual Labor Market Theory." *American Economic Review* Vol. 75, pp. 792-805.

Eisensee, Thomas and David Stromberg (2007), “News Floods, News Droughts, and U.S. Disaster Relief”, *Quarterly Journal of Economics*, 122(2), 2007. http://www.iies.su.se/~stromber/Disasters.pdf (use the working paper version).

Wooldridge, Jeffrey (1997), “On two stage least squares estimation of the average treatment effect in a random coefficient model”, *Economics Letters*, Vol. 56, pp. 129-133.

Standard Errors. Clustering. Bootstrapping.

* Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan (2004), “How Much Should We Trust Differences-in-Differences Estimates?,” *Quarterly Journal of Economics*, Vol. 119, pp. 249-275.

* Cameron, Colin, Jonah Gelbach and Douglas Miller, “Robust Inference with Multi-Way Clustering”, working paper. http://cameron.econ.ucdavis.edu/research/CGM_twoway_ALL_13sept2006.pdf

* Wooldridge, J.M. (2003), “Cluster-Sample Methods in Applied Econometrics”, *American Economic Review*, Vol. 93, pp. 133-139.

Moulton, B.R. (1986), “Random Group Effects and the Precision of Regression Estimates,” *Journal of Econometrics*, 32, 385-397.

Moulton, B.R. (1990), “An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units,” *Review of Economics and Statistics*, 72, 334-38.

Petersen, M. (2006), “Estimating Standard Errors in Finance Panel Data Sets: Comparing Approaches,”, forthcoming *Review of Financial Studies.* http://www.kellogg.northwestern.edu/faculty/petersen/htm/papers/standarderror.pdf

Alternative Distribution Functions

* Krueger, Alan and Alexandre Mas (April, 2004), "Strikes, Scabs and Tread Separations: Labor Strife and the Production of Defective Bridgestone/Firestone Tires,", *Journal of Political Economy*, Vol. 112, Num. 2, pp. 253-289.

Cameron, Colin and Pravin Trivedi (1998), **Regression Analysis of Count Data (Econometric Society Monographs)**, Cambridge University Press.

Semi-Parametric and Non-Parametric Estimators

* Dinardo, John, Nicole Fortin and Thomas Lemieux (1996), “Labour Market Institutions and the Distribution of Wages, 1973-1992: a Semiparametric Approach”, *Econometrica*, Vol. 64, pp. 1001-1046.

* Yatchew, Adonis (1998), **Nonparametric Regression Techniques in Economics**, *Journal of Economic Literature* Vol. XXXVI, pp. 669-721.

Hardle, W. (1990), **Applied Nonparametric Regression**, Cambridge University Press.

Li, Qi, and Jeffrey Scott Racine (2006), **Nonparametric Econometrics: Theory and Practice**, Princeton University Press