

Berkeley
Department of Agricultural and Resource Economics

Spring Semester 2006
ARE 213

Econometrics

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Lectures

Each week there will be two lectures of $1\frac{1}{2}$ hours, Tuesday/Thursday 11.00pm-12.30pm, in 2301 Tolman. There will be a weekly section Wednesdays 2:00-3:00pm in 2304 Tolman. There will be problem sets almost every week. These will involve both theoretical calculations and computer exercises in which you will be asked to analyze data sets. You can use any computer package you wish to use. Solutions will be handed out written in Matlab. Since there will be a fair number of problem sets, and in order to allow me to post the solutions quickly on the webpage for the course, I will not accept late problem sets.

Grades will be based on the problem sets, (60% of total grades, divided equally over approximately eight sets), and a final in-class exam (40% of the total grade).

Books

The textbook that will be used is

(W) WOOLDRIDGE, J., (1995), *Econometric Analysis of Cross Section and Panel Data*, MIT Press

In addition there will be a number of journal articles discussed in class. Most of them will be accessible through JSTOR. For unpublished papers links will be provided on the webpage.

(CI) CHAMBERLAIN, G. AND G. IMBENS (2003) "Random Effects Models with Many Instruments," *Econometrica*, Vol. 72, No. 1.

(L) LANCASTER, T., (1979), "Econometric Methods for Duration on Unemployment", *Econometrica*, Vol 47, No. 4, 939-956.

(McF) MCFADDEN, D., (1981) "Structural Discrete Probability Models Derived from Theories of Choice," Chapter 5 in *Structural Analysis of Discrete Data with Econometric Applications*, Manski and McFadden (eds.), 198-272, MIT Press, Cambridge, MA. Available on the web at <http://elsa.berkeley.edu/users/mcfadden/discrete.html>.

(Mo) MOULTON, B., (1990), "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units," *Review of Economics and Statistics*, 334-338.

(T) TOBIN, (1958) "Estimation of Relationships for Limited Dependent Variables," *Econometrica*, Vol 26, No. 1, 24-36.

Course Outline1. Ordinary Least Squares

- (a) Estimation, Inference and Predicting Outcomes (W 4.2.1-4) (W 4.2.1, 4.2.3, 4.2.3)
- (b) Variance Estimation and the Bootstrap (W 4.2.3, 12.8.2)
- (c) Omitted Variable Bias and Proxy Variables (W 4.3)
- (d) Clustering and Variance Estimation (W 6.3.4, Mo)
- (e) Measurement Error (W 4.4)

2. Maximum Likelihood Estimation

- (a) Basics and Likelihood Functions (W 13.1, 13.2)
- (b) Computational Issues (W 12.7)
- (c) Consistency, Asymptotic Normality and Efficiency (W 13.4, 13.5)
- (d) Classical Testing and Hausman Tests (W)

3. Discrete Choice Analysis

- (a) Binary Response Models (W 15.1-15.7)
- (b) Ordered Multinomial Response Models (W 15.10)
- (c) Multinomial, Conditional and Nested Logit Models (W 15.9.1 15.9.2)
- (d) McFadden's Conditional Logit Model for Gas/Electric Dryer Purchases (McF)
- (e) Multinomial Probit Models (W 15.9.2)
- (f) Random Coefficient Models (W)

4. Other Limited Dependent Variable Models

- (a) Duration Models
- (b) Truncation, Censoring, and Corner Solutions (W 16.4-16.8, T)
- (c) Selection Models (W 20)

5. Instrumental Variables Methods

- (a) Linear Models, TSLS and LIML (W 5.1 5.1.2, 5.3)
- (b) Heterogeneity and Local Average Treatment Effects (W 18.4)
- (c) Many Weak Instruments and Random Coefficients Models (CI)

6. Generalized Method of Moments Estimation

- (a) Consistency and Asymptotic Normality (W 12.1-4,
- (b) Variance Estimation and Testing (W 12.5, 12.6)

7. Panel Data

- (a) Fixed Effects and Random Effects (W 10.1-10.3)
- (b) Linear Models with Random Effects (W 10.4)
- (c) Linear Models with Fixed Effects (W 10.5-10.6)
- (d) Non-linear Panel Data Models with Fixed Effects (W 15.8)