APEC 8212: Econometric Analysis II

Instructor:    Paul Glewwe                    Spring, 2018
Office:   332G Ruttan Hall
Phone:  612-625-0225
E-Mail:  pglewwe@umn.edu
Class Website:  https://ay17.moodle.umn.edu/course/view.php?id=10850
Office Hours:  By Appointment (send me an e-mail to schedule an appointment)
Lecture Hours:  MW 10:40 – 12:35 p.m.
Classroom:  Room 12, Biological Sciences Center
Teaching Assistant: Haseeb Ali
Office:   337g Ruttan Hall
E-Mail:  alixx616@umn.edu

Course Description:

This course is a continuation of Apec 8211. It provides deeper coverage of some topics covered in Apec 8211 (linear regression and instrumental variable estimation) and introduces many new topics (panel data, simultaneous equation estimation, estimation of nonlinear models, limited dependent variable models, models of censored data and sample selection, bootstrapping, density estimation, nonparametric and semi-parametric estimation). The course also covers program evaluation econometrics (randomized control trials, difference in differences estimation, matching methods, regression discontinuity, IV and LATE estimation, quantile regressions, and control function methods). The focus will be on empirical work rather than on theoretical topics.

There is one required textbook and three optional books for this course:


There is a draft book for the program evaluation lectures, chapters will be made available:

Paul Glewwe and Petra Todd. 2017. *Impact Evaluation in Developing Countries*

Grading:

There will be weekly homework and a final exam. Their weight in the final grade will be:

Homework: 30%
Mid-Term: 30%
Final: 40%  You must take the final at the scheduled time (Friday May 11, 8:00 a.m.)!

Computer Assignments:

Much of the homework will involve econometric estimation. The software used will be Stata, which has been ordered for student use by the Department of Applied Economics.
Lectures:

In addition to readings from Wooldridge and from Cameron and Trivedi, there will also be other readings. All will be available in Waite Library (and elsewhere, if requested).

“Advanced readings” are marked by an asterisk. These are optional and given for anyone interested in further reading. They are not on reserve but are in the University libraries.

1. Introduction + Conditional Expectations and Related Concepts (January 17).
   
   Readings: Wooldridge, Chapters 1 and 2

2. Review of Basic Asymptotic Theory (January 19 3:00 the 1st of 2 lectures on Friday).
   
   Readings: Wooldridge, Chapter 3
   Review Greene, Appendix D
   

3. Review of Single Equation Linear Model and OLS Estimation (January 22)
   
   Readings: Wooldridge, Chapter 4.

4. Instrumental Variable Methods (January 24 and 29)
   
   Readings: Wooldridge, Chapters 5 and 6
   Review Greene, Chapter 12, Sections 1-4

5. Systems of Regression Equations & Simultaneous Equation Models (Jan. 31, Feb. 5 & 7)

Readings: Wooldridge, Chapters 7, 8 and 9.

6. Panel Data (February 12 and 14)

Readings: Wooldridge, Chapters 10 and 11, Review Greene, Chapter 9
* Deaton* pp.105-111.

7. M-Estimation (nonlinear estimation) (February 19)

Readings: Wooldridge, Chapter 12.
8. Maximum Likelihood Estimation (February 21)

   Readings: Wooldridge, Chapter 13.
   Review Greene, Chapter 16.

9. General Method of Moments Approach (February 26)

   Readings: Wooldridge, Chapter 14.
   Greene, Chapter 15.
   * Davidson and MacKinnon, Chapter 17.

10. Limited Dependent Variable Models (February 28 and March 5 & 19)

   Maximum Likelihood Estimation and Probit and Logit.
   Readings: Wooldridge, Chapter 15 (sections 1 – 6)
   Review Greene, Chapter 23 (sections 1 – 4)

   Ordered Probits and Logits, Multinomial Probits and Logits
   Readings: Wooldridge, Chapter 16

   Specification Tests, Endogenous Regressors and Panel Data
   Readings: Wooldridge, Chapter 15 (sections 7 and 8)

   Tobit Models
   Readings: Wooldridge, Chapter 17 and 19
   Deaton, pp.86-92.

**Midterm: Wednesday, March 7**

**Spring Break: March 11-17**
11. Hazard Models (March 9) [Optional Lecture at Friday recitation time]

Readings: Wooldridge, Chapter 20.

12. Stratified and Clustered Sampling (March 21)
Readings: Wooldridge, Chapter 20 (other readings may be assigned)

13. Robust Estimation – Bootstrap and Related Methods (March 23 Friday Recitation Time)

Readings: Cameron and Trivedi, Chapter 11.
Deaton pp.58-61.

14. Density Estimation and Semi-parametric Econometrics (March 26 and 28)

Density Estimation
Readings: Cameron and Trivedi, Chapter 9, Sections 1-3.
Deaton pp. 169-181.

General Methods of Nonparametric and Semiparametric Econometrics
Readings: Cameron and Trivedi, 9.4-9.7, Deaton, pp.191-199.
* Ichimura and Todd. 2007. “Implementing Nonparametric and Semiparametric Estimators”, in *Handbook of Econometrics,* vol. 6B.
Application to Index Models and Selection Models
Readings: Wooldridge, Chapter 15 (subsections 7.5 and 8.6)

15. Econometrics of Program Evaluation (April 2, 4, 9, 11, 16, 18, 23, 25 & 30 and May 2)

The Evaluation Problem, and Introduction to Randomized Control Trials (RCTs) (April 2)
Readings: Glewwe and Todd, Chapters 3 and 6)

Regression Methods for RCTs, and Practical Advice for RCTs (April 4)
Readings: Glewwe and Todd, Chapters 7 and 8)

Sample Size, Sample Design, and Statistical Power (April 9)
Readings: Glewwe and Todd, Chapter 9)

Regression Methods for Nonexperimental Data: Cross-section and Before-after (April 11)
Readings: Glewwe and Todd, Chapter 11)

Regression Methods for Nonexperimental Data: Diff.-in-diff. and Within (April 16)
Readings: Glewwe and Todd, Chapter 12)

Matching Methods for Nonexperimental Data (April 18)
Readings: Glewwe and Todd, Chapters 13A and 13B)

Regression Methods for Nonexperimental Data: Regression Discontinuity (April 23)
Readings: Glewwe and Todd, Chapter 14)

Regression Methods for Nonexperimental Data: IV and LATE Estimation (April 25)
Readings: Glewwe and Todd, Chapter 15)

Quantile Regression Methods (April 30)
Readings: Glewwe and Todd, Chapter 16)

Regression Methods for Nonexperimental Data: Control Function Methods (May 2)
Readings: Glewwe and Todd, Chapter 17)

**Final Exam: Friday May 11, 8:00 a.m.**