

Applied Econometrics of Resource and Energy Demand

AAE 772
Spring 2017

Instructor:

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Class Meetings: Lectures T Th 1-2:15, Discussion M 1-1:50.

Course Objective

The primary goal of this course is to provide students with the skills necessary to apply econometric analysis to issues in resource and energy demand, including:

- Econometric analysis of the impacts of all types of demand-side resource/energy programs, with an emphasis on advances in experimental and quasi-experimental methods;
- The application of discrete choice econometrics to discrete choice experiments (conjoint analysis, contingent valuation) and program participation data;
- Forecasting resource and energy demand from estimated econometric models.

Readings

The course will involve readings from required texts and from the peer-reviewed academic literature and the “grey literature”. The course will draw primarily on material from the following textbooks:

Angrist, J.D. and J.S. Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press. 373p.

Imbens, G.W. and D.B. Rubin. 2015. *Causal Inference for Statistics, Social, and Biomedical Sciences: An Introduction*. Cambridge University Press. 625p.

Wooldridge, J.M. 2013 *Introductory Econometrics: A Modern Approach*. South-Western Cengage Learning. 881p.

Grading

Grades will be based on four quizzes (one approximately every three weeks) and problem sets to demonstrate various econometric techniques and issues. Quizzes count for 30% of the grade and the problem sets count for 70%.

Topics Schedule

Week 1: Review, selection bias, randomized controlled trials

Week 2: Basic models for estimating treatment effects in RCTs

Week 3: Panel data models in the context of RCTs (include lagged dependent variable models)

Week 4: Bad controls, nonspherical disturbances

Week 5: Introduction to econometric models of discrete choice problems: propensity scores

Week 6: Econometric modeling of binary choice problems

Week 7: Econometric modeling of DCEs

Week 8: Non-RCT program evaluation, introduction to matching

Week 9: Non-RCT program evaluation, matching with regression analysis

Week 10: Non-RCT program evaluation, more on matching

Week 11: Non-RCT program evaluation, sharp regression discontinuity designs

Week 12: Non-RCT program evaluation, IV methods

Week 13: Forecasting using econometric models I

Week 14: Forecasting using econometric models II

Week 15: Catchup, Review

Quiz Schedule

If possible, quizzes will be given in discussion section on the day indicated. They will be short, approximately 30 minutes each. If necessary due to time constraints in discussion, we will arrange for the quizzes to be taken later in the day.

Feb 13: Quiz 1 on material covered in weeks 1-4
March 6: Quiz 2 on material covered in weeks 5-7
April 3: Quiz 3 on material covered in weeks 8-10
May 1: Quiz 4 on material covered in weeks 11-14

Assignments

Assignments will be posted on Thursdays and due the following Thursday. Discussion sections on Mondays will provide an opportunity to get help from Ethan.

You should expect assignments on an approximately weekly basis (about 10 exercises), beginning in Week 1. It's an intense schedule but necessary to give you lots of practice developing your econometric and R skills..