Econometrics of Panel Data

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Class Hours: Tuesday 9:00-12:00
Class Room: Zoom (email for link)

Course Description

This is a second Ph.D. course in applied econometrics though advanced undergraduates are welcome. The focus is on microeconometrics and panel data. It is a continuation of Prof. Scott's course, though once the basics are covered we will have more opportunity to explore topics related to student intrest.

Problem Sets: I have designed the problem sets in R, though you are free to use whichever statistical software you would like.

Books

I will follow two main textbooks.

- Greene (2017). *Econometric Analysis*. ISBN: 0134461363
- Tibshirani, Hastie, Friedman (2016), *The Elements of Statistical Learning*. ISBN: 0387848576. Available online at https://web.stanford.edu/~hastie/Papers/ESLII.pdf.
- Hansen. Econometrics (2020). https://www.ssc.wisc.edu/~bhansen/econometrics/Econometrics.pdf.

Course Policy

You are expected to attend every lecture and it is expected that you have done the reading BEFORE the class. This is a Ph.D. course which means you will be expected to read a lot on your own.

Grading Policy

- 60% of your grade will be performance on 6 problem sets (10% each).
- 30% of your grade will be performance on the final exam.
- 10% of your grade will be participation in class.

Academic Dishonesty Policy

Don't cheat. It is helpful to work with a partner on debugging code, but my expectation is that assignments are 100% your own work (including computer code).

Week 01, 02/02: Review of Linear Estimators, Asymptotics, and Simulation

Week 02, 02/09: Maximum Likelihood and Generalized Method of Moments
PS 1 Due

Week 03, 02/16: Delta Method and Bootstrap

Week 04, 02/23: Intro to Nonparametrics
PS 2 Due

Week 05, 03/02: Model Selection and Intro to Machine Learning

Week 06, 03/09: Program Evaluation and Selection Models
PS 3 Due

Week 07, 03/16: Matching and Local Average Treatment Effects
PS 4 Due

Break, 03/23: SPRING BREAK ?!?!

Week 08, 03/30: Diff in Diff and Regression Discontinuity

Week 09, 04/06: Synthetic Control and Marginal Treatment Effects
PS 5 Due

Week 10, 04/13: Discrete Choice

Week 11, 04/20: Machine Learning: Model Selection and Regularization (LASSO, RIDGE, PCA)

Week 12, 04/27: Advanced Panel Data
PS 6 Due

Week 13, 05/04: Topics based on interest: Duration Models, Dynamic Discrete Choice, Tree Models, Model Averaging Boosting/Bagging, etc