Professor Leo Feler
Spring 2016

Class hours: Tuesdays 2:00-4:30pm, BOB 414
Office hours: Tuesdays 5:00-7:00pm
lfeler@jhu.edu

SA.340.731: Applied Econometrics

Objective:

This course examines identification issues in empirical microeconomics. It is meant to teach you how to use the theoretical econometrics you learned in your previous econometrics classes to analyze empirical issues. Since we will be applying econometric concepts, you will be using STATA quite heavily to analyze datasets. By the end of the course, my hope is that you will have solidified your understanding of econometrics by putting it into practice and learned how to approach and analyze significant research questions using data and several different estimation techniques.

Pre-requisites:

Statistics, econometrics, and previous knowledge of STATA.

Requirements:

Students should read assigned readings and attend and participate in all lectures. The readings are difficult. Please feel free to read them *after* I have gone over the material in class. This will help you navigate the readings.

There will be four required and one optional STATA-intensive problem sets, six quizzes given at the beginning of class, and a final exam. The problem sets are to be turned in individually, but you are encouraged to work with other members of the class. The final exam will involve a mix of data analysis using STATA output and short essays based on what we cover in class.

The final exam will take place during the scheduled time of the exam period.

Class handouts will be available on Blackboard.

Grading:

Problem Sets: 30%
Quizzes: 10%
Final Exam (cumulative): 60%

The lowest score of your six quizzes will be dropped. But if you miss a quiz, there is no make up.

You are allowed three "late days" for problem sets. You can allocate these however you wish. Use them all to turn one problem set in three days late, or use them individually on different problem sets. Aside from these three late days, there is no flexibility on the problem set deadlines for any reason. Please use your late days wisely. If you are using late days on a particular problem set, please notify the TA.

Office hours and Emails:

My office hours are Tuesdays, 5:00-7:00pm. Tuesdays and Wednesdays are my teaching and social days; if you see that my door is open (usually I leave it open just a little bit because of noise), feel free to come by even if it isn't during office hours. Mondays, Thursdays, and Fridays are my research days; even if I'm around, please save questions for teaching and social days unless it's urgent.

I tend to respond quickly to short emails that require a short response. If you send me a long email, please include your cell phone number so I can call you rather than type a long response.

TA and Sessions:

TA: Scott Abrahams
TA Email: sabraha9@jhu.edu
TA Session: Thursdays, 4:45-5:45 p.m. N517
TA Office Hours: Tuesdays, 11 a.m.-12:30 p.m. BOB752

Readings:

Required textbook

Angrist, Joshua and Jorn-Steffen Pishke, "Mostly Harmless Econometrics: An Empiricist's Companion," Princeton University Press, 2009.

Other useful (but not required) textbooks

Kennedy, Peter, "A Guide to Econometrics, 6th Edition," Wiley-Blackwell, 2008.

Cameron, A. Colin and Pravin K. Trivedi, "Microeconometrics using Stata," Stata Press, 2010.

Rough outline of lectures and readings

** means required; non-starred readings are optional. Please feel free to read the material after the lectures; this will make them easier to understand.*

Weeks 1, 2, 3: Overview and the linear regression model:

* Angrist, Joshua and Jorn-Steffen Pishke, "Mostly Harmless Econometrics: An Empiricist's Companion," Princeton University Press, 2009, Chapters 1-3 up to page 68 only, Chapter 8.
* DiNardo, John, and Jorn-Steffen Pischke, "The Returns to Computer Use Revisited: Have Pencils Changed the Wage Structure Too?" Quarterly Journal of Economics, 112(1), February 1997, 291-303.
* Ashenfelter, Orley and Alan Krueger, "Estimates of the Economic Return to Schooling from a New Sample of Twins," American Economic Review, 84(5), December 1994, 1157-1173.
Kennedy, Peter, "A Guide to Econometrics, 6th Edition," Wiley-Blackwell, 2008, Chapters 1-5
Angrist, Joshua and Alan Krueger, "Empirical Strategies in Labor Economics," in *Handbook of Labor Economics*, Volume 3A, North-Holland, 1999, Chapter 23.

Problem Set 1 distributed in week 2 and due week 5.

Weeks 4, 5: Selection on observables, propensity score and matching methods:

* Angrist, Joshua and Jorn-Steffen Pishke, "Mostly Harmless Econometrics: An Empiricist's Companion," Princeton University Press, 2009, Chapter 3 from page 68-110.
* Almond, Douglas, Kenneth Chay, and David Lee, "The Costs of Low Birth Weight," *Quarterly Journal of Economics*, August 2005.

Dehejia, Rajeev and Sadek Wahba, "Causal Effects in Non-Experimental Studies: Reevaluating the Evaluation of Training Programs," Journal of the American Statistical Association, 94, 1999, 1053-1062.

Rosenbaum, Paul and Donald Rubin, "Reducing Bias in Observational Studies Using Subclassification on the Propensity Score," Journal of the American Statistical Association, 79, 1985, 516-524.

Lalonde, Robert, "Evaluating Econometric Evaluations of Training Programs with Experimental Data," *American Economic Review*, 76(4), September 1986, 604-620.

Jeffrey Smith, and Petra Todd, "Does Matching Overcome Lalonde's Critique of Nonexperimental Methods?" *Journal of Econometrics*, Volume 125 (1-2), 2004, 305-353.

Problem Set 2 distributed in week 5 and due week 7.

Weeks 6, 7: Regression discontinuity design approaches to omitted variables and selection bias:

* Angrist, Joshua and Jorn-Steffen Pishke, "Mostly Harmless Econometrics: An Empiricist's Companion," Princeton University Press, 2009, Chapter 6.
* Chay, Kenneth Y., Patrick McEwan, and Miguel Urquiola, "The Central Role of Noise in Evaluating Interventions that Use Test Scores to Rank Schools," *American Economic Review*, September 2005.

Ashenfelter, Orley and David Card, "Using the Longitudinal Structure of Earnings to Estimate the Effect of Training Programs," Review of Economics and Statistics, 1985, 648-660.

Imbens, Guido and Thomas Lemieux, "Regression Discontinuity Designs: A Guide to Practice," forthcoming.

Cook, Thomas and Donald Campbell, "The Regression-Discontinuity Design," in Quasi-Experimentation, Design & Analysis Issues for Field Settings, Houghton Mifflin, 1979, 137-146.

Problem Set 3 distributed week 8 and due week 10.

Weeks 8, 9, 10: Selection on unobservables, instrumental variables, control functions, heterogeneous treatment effects and self-selection:

* Angrist, Joshua and Jorn-Steffen Pishke, "Mostly Harmless Econometrics: An Empiricist's Companion," Princeton University Press, 2009, Chapters 4, 7.
* Chay, Kenneth and Michael Greenstone, "Does Air Quality Matter? Evidence from the Housing Market," *Journal of Political Economy*, April 2005, pp. 376-424.
* Angrist, Joshua, Guido Imbens, and Donald Rubin, "Identification of Causal Effects Using Instrumental Variables," Journal of the American Statistical Association, 91, 1996, 444-455.
* Feler, Leo, "Local Multipliers and Spillovers from Cash-Transfers to the Poor," Mimeograph, 2015. Available at: https://sites.google.com/site/lfeler1/. Please go to the website to access the most current version (do not access from Blackboard).

Kennedy, Peter, "A Guide to Econometrics, 6th Edition," Wiley-Blackwell, 2008, Chapters 6-9, 17.

Wooldridge, Jeffrey, "On Two Stage Least Square Estimation of the Average Treatment Effect in a Random Coefficient Model," Economics Letters, 56, 1997, 129-133.

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

Ahn, Hyungtaik and James Powell, "Semiparametric Estimation of Censored Selection Models with a Nonparametric Selection Mechanism," *Journal of Econometrics*, 58(1), 1993, pp. 3-29.

Heckman, James, "Dummy Endogenous Variables in a Simultaneous Equations System," *Econometrica*, 46, 1978, pp. 931-959.

Heckman, James, "Varieties of Selection Bias," American Economic Review, 80, 1990, 313-318.
Heckman, James and Bo Honoré, "The Empirical Content of the Roy Model," *Econometrica*, 59, 1990, pp. 1121-1149.
Card, David, "The Causal Effect of Education on Earnings," in *Handbook of Labor Economics*, Volume 3A, Chapter 30, North-Holland, 1999.

Problem Set 4 distributed week 10 and due week 12.

Weeks 11, 12, 13: Panel data models

* Angrist, Joshua and Jorn-Steffen Pishke, "Mostly Harmless Econometrics: An Empiricist's Companion," Princeton University Press, 2009, Chapters 5, 8 (read them again!).
* Arellano, Manuel and Stephen Bond, "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations," *Review of Economic Studies*, 58(2), 1991, pp. 277-297.

Kennedy, Peter, "A Guide to Econometrics, 6th Edition," Wiley-Blackwell, 2008, Chapter 15, 18, 19, 21, 22.
Chamberlain, Gary, "Panel Data," Chapter 22 in Handbook of Econometrics, Volume II, 1984, pp.1247-1318.
Baltagi, Badi, "Dynamic Panel Data Models," Chapter 8 in *Econometric Analysis of Panel Data*, Wiley, 1995, pp. 125-148.
Jakubson, George, "Estimation and Testing of the Union Wage Effect Using Panel Data," *Review of Economic Studies*, 58, 1991, pp. 971-991.

Optional **Problem Set 5 distributed week 12 and due week 13.** This problem set is optional because you will most likely have many other course obligations at this time of the semester. But doing the problem set will help you with the final exam. If you don't do the problem set, at least read the solutions once they're posted.