PSC 405

Linear Models

Spring 2019
3:25-4:40 T/TH
Harkness 329

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PREREQUISITES

The prerequisites for this course include a mathematical statistics course at the level of PSC 404 and mathematical modeling at the level of PSC 407.

COURSE REQUIREMENTS

The requirements consist of problem sets, three papers, and a final. The problem sets will be divided between analytic and empirical exercises, and all empirical exercises will be performed in R. Students are also responsible for the additional readings. The course grade is calculated as follows: problem sets 20%, three papers 60% (20% each), final 20%.

COURSE WEBPAGE

`https://www.kevinclarke.org/psc-405.html`

TEXTS

The required texts for this course are:

- Hansen, Bruce E. 2014. *Econometrics.*
  `http://www.ssc.wisc.edu/~bhansen/econometrics/`
- Faraway, Julian. 2002. *Practical Regression and Anova using R.*
  `http://cran.r-project.org/doc/contrib/Faraway-PRA.pdf`
  The accompanying source code and data, are free on the web here:
  `http://cran.r-project.org/web/packages/faraway/index.html`
- Achen, Christopher. 1982. *Interpreting and Using Regression.* Sage.

For when you need a simpler overview or something more in-depth, the following texts may be helpful:

- Cameron and Trivedi. 2005. *Microeconometrics.* Cambridge.
- Davidson and MacKinnon. 1993. *Estimation and Inference in Econometrics.* Oxford.
- Gujarati, Damodar N. 2008. *Basic Econometrics.* 5th edition. McGraw-Hill.
- Kennedy, Peter. 2008. *A Guide to Econometrics.* 6th ed. Blackwell.
- Wooldridge, Jeffrey. 2003. *Introductory Econometrics: A Modern Approach.* 3rd edition. Thompson.
- Wooldridge, Jeffrey. 2010. *Econometric Analysis of Cross Section and Panel Data.* 2nd edition. MIT.

COURSE SCHEDULE

Topic 1: Linear Model Basics

Topic 2: Specification and misspecification

Topic 3: Instrumental variables

Topic 4: Nonlinear estimators

Topic 5: Generalized method of moments

Topic 6: Bayesian methods

Topic 7: Panel models

Topic 8: Semiparametric methods

Older readings with which you should be familar

- Achen, C. 1977. "Measuring Representation: Perils of the Correlation Coefficient." *American Journal of Political Science* 21:805-815.
- Freedman, D. 1991. "Statistical Models and Shoe Leather." *Sociological Methodology* 21:291-313.
- Rosenbaum, P. 1999. "Choice as Alternative to Control in Observational Studies." *Statistical Science* 14:259-304.

- Achen, C. 1990. "What Does 'Explained Variance' Explain?: Reply." *Political Analysis* 2:173-184.
- King, G. 1986. "How Not to Lie with Statistics," *American Journal of Political Science* 30:666-687.
- Belsley, Kuh, and Welsch. 1980. *Regression Diagnostics*, Ch. 2.
- Farrar & Glauber. 1967. "Multicollinearity in Regression Analysis: the Problem Revisited." *Review of Economics and Statistics* 49: 92-107.
- Lemieux, P. 1978. "A Note on the Detection of Multicollinearity." *American Journal of Political Science* 22: 183-186.
- Clarke, K. 2005. "The Phantom Menace: Omitted Variable Bias in Econometric Research." *Journal of Conflict Management and Peace Science* 22: 341-352.
- Friedrich, R. 1982. "In Defense of Multiplicative Terms in Multiple Regression Equations." *American Journal of Political Science* 26: 797-833.
- Braumoeller, B. 2005. "Hypothesis Testing and Multiplicative Interaction Terms." *International Organization* 58: 807-820. (And the "author's checklist": `www.people.fas.harvard.edu/~bfbraum/checklist.html`)
- Bartels, L. 1991. "Instrumental and 'Quasi-Instrumental' Variables." *American Journal of American Politics* 35: 777-800.
- Achen, C. 1985. "Proxy Variables and Incorrect Signs on Regression Coefficients." *Political Methodology* 11: 299-316.
- Mundlak, Y. 1978. "On the Pooling of Time Series and Cross Section Data." *Econometrica* 46: 69-85.
- Beck & Katz. 1995. "What to do (and not to do) with Time-Series Cross-Section Data." *American Political Science Review* 89: 634-647.