
PSC 505
Maximum Likelihood Estimation

Fall 2011
10:30-12:00 T/Th, Hark 329

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COURSE DESCRIPTION: This course builds upon the analytical and applied foundations of PSC 404 and 405, taking the latter's emphasis on the classical linear model as its point of departure. Because the classical linear regression model is inappropriate for data that arises in many interesting areas of political science, students need additional statistical tools in order to conduct rigorous empirical research. In this course, students will learn methods to analyze models and data for event counts, durations, censoring, truncation, selection, multinomial ordered/unordered categories, and strategic choices – in other words, all the other data out there.

A major goal of the course will be to teach students how to develop new models and techniques for analyzing issues they encounter in their own research. “Canned” statistical routines are often not appropriate for most of the micro-level models we develop as political science researchers. Students will therefore be required to program their own statistical routines (primarily in R).

PREREQUISITES: PSC 404 and 405, or the equivalent.

COURSE REQUIREMENTS:

Alt, James E., Gary King, and Curtis S. Signorino. 2001. "Aggregation among Binary, Count, and Duration Models: Estimating the Same Quantities from Different Levels of Data." *Political Analysis* 9: 1-24.

King, Gary, James E. Alt, Nancy Elizabeth Burns, and Michael Laver. 1990. "A Unified Model of Cabinet Dissolution in Parliamentary Democracies." *American Journal of Political Science* 34: 846-871.

Cox Proportional Hazard Models

Box-Steffensmeier, Janet M. and Christopher J. W. Zorn. 2001. "Duration Models and Proportional Hazards in Political Science." *American Journal of Political Science* 45: 972-988.

Blossfeld, Hans-Peter and Gotz Rohwer. 2001. *DISCRETE-TIME SURVIVAL ANALYSIS*

Meng, Chun Lo and Peter Schmidt. 1985. "On the Cost of Partial Observability in the Bivariate Probit Model." *International Economic Review*. 26(1):71-85.

Reed, William. 2000. "A Unified Statistical Model of Conflict Onset and Escalation." *American Journal of Political Science* 44: 84—93.

Recommended:

Heckman, James J. 1976. "The Common Structure of Statistical Models of Truncation, Sample Selection and Limited Dependent Variables and a Simple Estimator for Such Models." *Annals of Economic and Social Measurement* 5: 475-492.

Dubin, Jeffrey A. and Douglas Rivers. 1989. "Selection Bias in Linear Regression, Logit, and Probit Models." *Sociological Methods and Research*. 18:360-390.

Homework Reading:

Toomet, Ott and Arne Henningsen. 2011. "Sample Selection Models in R: Package sampleSelection." Manual.

Mroz, Thomas A. 1987. "The Sensitivity of an Empirical Model of Married Women's Hours of Work to Economic and Statistical Assumptions." *Econometrica*. 55(4):765-799.

7.

Plaxina, Elena. 2003. "An Evaluation of the Effectiveness of Financial Transfer Institutions for the Environment: The Global Environment Facility of the World Bank." University of Rochester. Working Paper.

9. Model Discrimination

Signorino, Curtis S. 2002. "Strategy and Selection in International Relations." *International Interactions* 28: 93—115.

Clarke, Kevin A. and Curtis S. Signorino. 2010. "Discriminating Methods: Tests for Non nested Discrete Choice Models." *Political Studies* 58: 368—388.

Clarke, Kevin A. 2001. "Testing Nonnested Models of International Relations: Reevaluating Realism." *American Journal of Political Science* 45: 724-744.

Clarke, Kevin A. 2003. "Nonparametric Model Discrimination in International Relations." *Journal of Conflict Resolution* 47: 72-93.

10. Strategic Models, part II

Bargaining Models

Ramsay, Kristopher and Curtis S. Signorino. 2010. "A Statistical Model of the Ultimatum Game." Working Paper.

Haptonstahl, Stephen. 2009. "Bargaining Under Uncertainty: a Strategic Statistical Model of the Ultimatum Game." Working paper

Signaling Models

Lewis, Jeffrey B. and Kenneth A. Schultz. 2003. "Revealing Preferences: Empirical Estimation of a Crisis Bargaining Game with Incomplete Information." *Political Analysis* 11: 345—367.

Wand, Jonathan. 2005. "Comparing Models of Strategic Choice: The Role of Uncertainty and Signaling." *Political Analysis* 14: 101—120.

Bas, Muhammet, Curtis S. Signorino and Taehee Whang. 2011. "Knowing One's Future Preferences: A Correlated Agent Model with Bayesian Updating." Working Paper.

Flexible Functional Form Estimation

Kenkel & Signorino papers.

11. Parallel Computing in R

12. Student Paper Presentations: Last Class (Dec 13)

Topic and Data OK'd Nov 8

Rough Draft Due Nov 22 (just prior to Thanksgiving Break)

Comments Returned Dec 1

Final Paper Due 9am, Tuesday, Dec 20