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Random Utility Models and Strategic Choice

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Strategic choice is often present in political phenomena. Political actors rarely make isolated, individual choices with no interest in the anticipated actions and reactions of other political actors. Instead, decision makers often must take into account the actions of others in determining the best course of action. For example, a country contemplating an aggressive action against another state must consider the likelihood of the range of reactions from the targeted state from capitulation to retaliation. Likewise, the decision of a potential challenger in a Congressional race about whether or not to challenge an incumbent depends on the likely response of the incumbent to such a challenge.

While strategic choice is the centerpiece of formal, game-theoretic models of politics, it has traditionally been left out of empirical work in political science. Unfortunately, this omission can confound traditional methods of estimation and lead to incorrect inferences. What is needed is a method for incorporating strategic choice into statistical estimation methods.

This module presents a systematic development of such a method. We will begin with the theoretical framework of quantal response equilibrium and its application to experimental findings. We then use this equilibrium concept to develop a “strategic estimator” that incorporates the strategic choices of actors into the estimation procedure. We will also illustrate the use of this estimator by several applications.

Readings for this module are as follows:

Theoretical Framework: Quantal Response Equilibria

- Richard D. McKelvey and Thomas R. Palfrey, 1995, “Quantal Response Equilibria in Normal Form Games,” *Games and Economic Behavior*, 10:6-38.
- Richard D. McKelvey and Thomas R. Palfrey, 1996, “A Statistical Theory of Equilibrium in Games,” *The Japanese Economic Review*, 47(2):186-209.
- Richard D. McKelvey and Thomas R. Palfrey, 1998, “Quantal Response Equilibria for Extensive Form Games,” *Experimental Economics*, 1:9-41.
- Simon P. Anderson, Jacob K. Goeree and Charles A. Holt, 2002, “The Logit Equilibrium: A Perspective on Intuitive Behavioral Anomalies,” *Southern Economic Journal*, 69(1):21-47

Additional reading:

- Philip A. Haile, Ali Hortaçsu and Grigory Kosenok, 2008, “On the Empirical Content of Quantal Response Equilibrium,” *American Economic Review*, 98(1):180-200.

- Jacob K. Goeree, Charles A. Holt, and Thomas R. Palfrey, 2005, “Regular Quantal Response Equilibrium,” *Experimental Economics*, 8(4):347-367.

Applications of Quantal Response Equilibria

- Mark Fey, Richard D. McKelvey, and Thomas R. Palfrey, 1996, “An Experimental Study of the Constant-Sum Centipede Game,” *International Journal of Game Theory*, 25(3):269-87.
- C. Monica Capra, Jacob K. Goeree, Rosario Gomez and Charles A. Holt, 1999, “Anomalous Behavior in a Travelers Dilemma?” *American Economic Review*, 89(3):678-690.
- Jacob K. Goeree and Charles A. Holt, 2005, “An Explanation of Anomalous Behavior in Models of Political Participation,” *American Political Science Review*, 99: 201-213.

Additional reading:

- Serena Guarnaschelli, Richard D. McKelvey and Thomas R. Palfrey, 2000, “An Experimental Study of Jury Decision Rules,” *American Political Science Review*, 94(2):407-423.
- David K. Levine and Thomas R. Palfrey, 2005, “The Paradox of Voter Participation? A Laboratory Study,” *American Political Science Review*, 101(1):143-158.

Strategic Choice Estimation

- Curtis S. Signorino, 1999, “Strategic Interaction and the Statistical Analysis of International Conflict,” *American Political Science Review*, 93(2):279-297.

- Curtis S. Signorino and Kuzey Yilmaz, 2003, “Strategic Misspecification in Regression Models,” *American Journal of Political Science*, 47(3):551-566.

Additional reading:

- Alastair Smith, 1999, “Testing Theories of Strategic Choice: The Example of Crisis Escalation,” *American Journal of Political Science*, 43(4):1254-1283.
- Curtis S. Signorino, 2003, “Structure and Uncertainty in Discrete Choice Models,” *Political Analysis*, 11:316-344.
- Jeffrey B. Lewis and Kenneth A. Schultz, 2003, “Revealing Preferences: Empirical Estimation of a Crisis Bargaining Game with Incomplete Information,” *Political Analysis*, 11:345-367.
- Jonathan Wand, 2006, “Comparing Models of Strategic Choice: The Role of Uncertainty and Signaling,” *Political Analysis*, 14:101 - 120.

Applications of Strategic Choice Estimators

- Jamie L. Carson, 2003, “Strategic Interaction and Candidate Competition in U.S. House Elections: Empirical Applications of Probit and Strategic Probit Models,” *Political Analysis*, 11:368-380
- David Leblang, 2003, “To Devalue or to Defend? The Political Economy of Exchange Rate Policy,” *International Studies Quarterly*, 47(4):533-560.
- Muhammet Ali Bas, Curtis S. Signorino, Robert W. Walker, 2008, “Statistical Backwards Induction: A Simple Method for Estimating Recursive Strategic Models,” *Political Analysis*, 16:21-40.

Additional reading:

- Jamie L. Carson, 2005, “Strategy, Selection, and Candidate Competition in US House and Senate Elections,” *Journal of Politics*, 67(1):1-28.
- Stephen E. Gent, 2007, “Strange Bedfellows: The Strategic Dynamics of Major Power Military Interventions,” *Journal of Politics*, 69(4):1089-1102.