
PSC 571

Quantitative Approaches to International Politics

Spring 2011
Thurs, 2-4:40

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PURPOSE: This course examines statistical issues relevant to the study of international politics. We will consider issues such as self selection, strategic decision making, geographic interdependence, temporal dynamics, and the operationalization of major concepts, such as power, democracy, and the similarity of states' interests. Of particular interest will be the use and limitations of dyadic data and cross-sectional time series data. This course may be used to fulfill either the methods or IR comp, but not both simultaneously.

PREREQUISITES: Students must have taken PSC 505 and PSC 572 (or a similar general IR course).

COURSE REQUIREMENTS:

- **Participation and Weekly Assignments (30%).** Each week, students will be responsible (1) for having done all the required readings, (2) for presenting one of those readings, and (3) for participating in our discussions. The student presentation should be in the form of LaTeX'd notes, a Beamer presentation, or a Powerpoint presentation. The presentation should include (a) a summary of the article's main points/contributions, (b) a detailed walk through the main model and/or technique, (c) a summary of the results, and (d) a short critique of the paper. Applied or theoretical problems will also be assigned from time to time based on the required readings. Students will be expected to have completed the assignment and should be prepared to present their results in class.
- **Final Paper (70%).** A final paper is due the last day of final exams. The paper should either develop a new statistical technique or apply advanced methods to the study of international relations. Except in very rare circumstances, the paper should employ real data and make a substantive contribution.

COURSE SCHEDULE AND READINGS:

0. Course Organization

1. Selection

Required Readings:

- Smith, Alastair. 1996. "To Intervene or Not to Intervene: A Biased Decision." *Journal of Conflict Resolution* 40(1):16-40.
- Reed, William. 2000. "A Unified Statistical Model of Conflict Onset and Escalation." *American Journal of Political Science* 44(1):84-93.

- Signorino, Curtis S. 2002. "Strategy and Selection in International Relations." *International Interactions* 28(1):93-115.
- Clark, David H., and William Reed. 2003. "A Unified Model of War Onset and Outcome." *Journal of Politics* 65(1):69-91.

Recommended Readings:

- Schultz, Kenneth. 2001. "Looking for Audience Costs." *Journal of Conflict Resolution* 45(1):32-60.
- Danilovic, Vesna. 2001. "Conceptual and Selection Bias Issues in Deterrence." *Journal of Conflict Resolution* 45(1):97-125.
- Reed, William, and David H. Clark 2002. "Toward a Multiprocess Model of Rivalry and the Democratic Peace." *International Interactions* 28(1):77-92.

2. Geography and Spatial Interdependence

- Ward, Michael D., and Kristian Skrede Gleditsch. 2002. "Location, Location, Location: An MCMC Approach to Modeling the Spatial Context of War and Peace." *Political Analysis* 10(3):244-260.
- Heagerty, Patrick, Michael D. Ward, and Kristian Skrede Gleditsch. 2002. "Windows of Opportunity: Window Subseries Empirical Variance Estimators in International Relations." *Political Analysis* 10(3):244-260.
- Beck, Nathaniel, Kristian Skrede Gleditsch, and Kyle Beardsley. 2006. "Space Is More than Geography: Using Spatial Econometrics in the Study of Political Economy." *International Studies Quarterly* 50(1):27-44.
- Franzese, Robert and Jude Hayes. 2007. "Spatial-Econometric Models of Cross-Sectional Interdependence in Political Science Panel and TCSD Data." *Political Analysis*. 15(2):140-164.

3. Dyads, Interdependence, and Networks

- Hoff, Peter D. Hoff, and Michael D. Ward. 2004. "Modeling Dependencies in International Relations Networks." *Political Analysis* 12(2):160-175.
- Ward, Michael D. 2005. "What Are the Neighbors Doing?" Working paper, University of Washington.
- Ward, Michael D., Randolph M. Siverson, and Xun Cao. 2007. "Disputes, Democracies, and Dependencies: A Reexamination of the Kantian Peace." *American Journal of Political Science* 51(3):583-601.
- Handcock, Mark S., Adrian E. Raftery, and Jeremy M. Tantrum. 2007. "Model-Based Clustering for Social Networks." *Journal of the Royal Statistical Society*. 170(2):301-354.
- Poast, Paul. 2011. "(Mis)Using Dyadic Data to Analyze Multilateral Events." Forthcoming in *Political Analysis*.
- Poast, Paul. 2011. "War is K-adic." Working Paper.

4. Strategic Interaction

Part I

Required Readings:

- Signorino, Curtis S. 1999. "Strategic Interaction and the Statistical Analysis of International Conflict." *American Political Science Review* 93(2):279-297
- Smith, Alastair. 1999. "Testing Theories of Strategic Choice: The Example of Crisis Escalation." *American Journal of Political Science* 43(4):1254-1283.

- Carrubba, Clifford J., Amy Yuen, and Christopher Zorn. 2007. "In Defense of Comparative Statics: Specifying Empirical Tests of Models of Strategic Interaction." *Political Analysis*.
- Signorino, Curtis S. 2007. "On Formal Theory and Statistical Methods: A Response to Carrubba, Yuen, & Zorn." *Political Analysis*. (With reply by Carrubba, Yuen, & Zorn.)

Recommended Readings:

- Signorino, Curtis S., and Kuzey Yilmaz. 2003. "Strategic Misspecification in Regression Models." *American Journal of Political Science* 47(3):551-566.
- Signorino, Curtis S. 2003. "Structure and Uncertainty in Discrete Choice Models." *Political Analysis* 11(4):316-344.
- Signorino, Curtis S., and Ahmer Tarar. 2006. "A Unified Theory and Test of Extended Immediate Deterrence." *American Journal of Political Science* 50(3):586-605.
- Bas, Muhammet, Curtis S. Signorino, and Robert W. Walker. 2007. "Statistical Backwards Induction: A Simple Method for Estimating Recursive Strategic Models." *Political Analysis*, forthcoming.

Part II: Signaling

- Lewis, Jeffrey B., and Kenneth A. Schultz. 2003. "Revealing Preferences: Empirical Estimation of a Crisis Bargaining Game with Incomplete Information." *Political Analysis* 11(4):345-367
- Wand, Jonathan. 2006. "Comparing Models of Strategic Choice: The Role of Uncertainty and Signaling." *Political Analysis* 14(1):101-120.
- Schultz, Kenneth A., and Jeffrey B. Lewis. 2005. "Learning about Learning: A Response to Wand." *Political Analysis* 14(1):121-129.
- Whang, Taehee. 2007. "Unifying Theory and Testing of Economic Sanctions Outcomes." Working Paper. Texas A&M.
- Bas, Muhammet, Curtis Signorino, and Taehee Whang. 2011. "Knowing One's Future Preferences: A Correlated Agent Model with Bayesian Updating." Working Paper.

Part III: Misc

- Laffont, Jean-Jacques and Quang Vuong. 1996. "Structural Analysis of Auction Data." *AER*. 86(2):414-420.
- Bjorn, Paul A and Quang H. Vuong. 1984. "Simultaneous Equations Models for Dummy Endogenous Variables: A Game Theoretic Formulation with an Application to Labor Force Participation." Caltech Working Paper.
- Bresnahan, Timothy F. and Peter C. Reiss. 1991. "Empirical Models of Discrete Games." *Journal of Econometrics*. 48:57-81.
- Bajari, Patrick, Hang Hong, and Stephen P. Ryan. 2008. "Identification and Estimation of a Discrete Game of Complete Information." Working paper.

5. Rare Events

- King, Gary, and Langche Zeng. 2001. "Logistic Regression in Rare Events Data." *Political Analysis* 9(2):137-163.
- King, Gary, and Langche Zeng. 2001. "Explaining Rare Events in International Relations." *International Organization* 55(3):693-715.
- King, Gary, and Will Lowe. 2003. "An Automated Information Extraction Tool for International Conflict Data with Performance as Good as Human Coders: A Rare Events Evaluation Design." *International Organization* 57(3):617-642.

6. Duration Models

Required Readings:

- Box-Steffensmeier, Janet M., and Christopher Zorn. 2002. "Duration Models for Repeated Events." *Journal of Politics* 64(4):1069-1094.
- Box-Steffensmeier, Janet M., Dan Reiter, and Christopher Zorn. 2003. "Nonproportional Hazards and Event History Analysis in International Relations." *Journal of Conflict Resolution* 47(1):33-53.
- Boehmke, Frederick J., Daniel S. Morey, Megan Shannon. 2006. "Selection Bias and Continuous-Time Duration Models: Consequences and a Proposed Solution." *American Journal of Political Science* 50(1):192-207.
- Box-Steffensmeier, Janet M., Suzanna De Boef, and Kyle A. Joyce. 2007. "Event Dependence and Heterogeneity in Duration Models: The Conditional Frailty Model." *Political Analysis*. 15(3):237-256.

Recommended Readings:

- Bennett, D. Scott, and Allan C. Stam III. 1996. "The Duration of Interstate Wars, 1816-1985." *American Political Science Review* 90(2):239-257.
- Bennett, D. Scott. 1998. "Integrating and Testing Models of Rivalry Duration." *American Journal of Political Science* 42(4):1200-1232.
- Bennett, D. Scott. 1999. "Parametric Models, Duration Dependence, and Time-Varying Data Revisited." *American Journal of Political Science* 43(1):256-270.

7. Binary Data and Temporal Dependence

- Beck, Nathaniel, Jonathan N. Katz and Richard Tucker. 1998. "Taking Time Seriously: Time-Series-Cross-Section Analysis with a Binary Dependent Variable." *American Journal of Political Science* 42(4):1260-1288.
- Clark, David H., and Robert A. Hart, Jr. 1998. "Controlling Duration Dependence in Conflict Analyses: A Replication and Extension of "Regime Types and Status Quo Evaluations"." *American Journal of Political Science* 42(4):1335-1342.
- Carter, David B., and Curtis S. Signorino. 2010. "Back to the Future: Modeling Time Dependence in Binary Data." *Political Analysis*. (and comments by Neal Beck).

8. Binary Data and Cross-Sectional Time Series Dependence

- Gourevitch, Peter A., and David Lake 2001. "Research Design and Method in International Relations: Editors' Introduction." *International Organization* 55(2):439-440.
- Green, Donald P., Soo Yeon Kim, and David H. Yoon. 2001. "Dirty Pool." *International Organization*. 55(2):441-468.
- Oneal, John R., and Bruce Russett. 2001. "Clear and Clean: The Fixed Effects of the Liberal Peace." *International Organization* 55(2):469-485.
- Beck, Nathaniel N., and Jonathan Katz. 2001. "Throwing Out the Baby with the Bath Water: A Comment on Green, Kim, and Yoon." *International Organization* 55(2):487-495.
- King, Gary. 2001. "Proper Nouns and Methodological Propriety: Pooling Dyads in International Relations Data." *International Organization* 55(2):497-507.

9. Measuring Power

- Singer, J. David, Stuart Bremer, and John Stuckey. 1972. "Capability Distribution, Uncertainty, and Major Power War, 1820-1965." in Bruce Russett, ed. *Peace, War and Numbers*. Beverly

Hills, CA: Sage.

- Singer, J. David. 1987. "Reconstructing the Correlates of War Dataset on Material Capabilities of States, 1816-1985." *International Interactions* 14:115-32.
- de Soysa, Indra, John R. Oneal, and Yong-Hee Park. "Testing Power-Transition Theory Using Alternative Measures of National Capabilities." *Journal of Conflict Resolution* 41(4):509-528.
- Memn, R. L., and D. Zinnes. 1988. "Validity of Power Indices." *International Interactions* 14:141-51.
- Baldwin, David A. 2002. "Power and International Relations." in Walter Carlsnaes, Thomas Risse and Beth A. Simmons., ed. *Handbook of International Relations*. Thousand Oaks, CA: Sage.

10. Measuring Democracy

Required Readings:

- Marshall, Monty G. and Keith Jagers. 2002. "POLITY IV PROJECT: Political Regime Characteristics and Transitions, 1800-2002, Dataset Users' Manual." University of Maryland: Integrated Network for Societal Conflict Research (INSCR) Program and Center for International Development and Conflict Management (CIDCM).
- Gleditsch, Kristian S., and Michael D. Ward. 1997. "Double Take: A Reexamination of Democracy and Autocracy in Modern Polities." *Journal of Conflict Resolution* 41(3):361-383.
- Jackman, Simon, and Shawn Treier. 2007. "Democracy as a Latent Variable." *American Journal of Political Science* forthcoming.
- Vreeland, James Raymond. 2007. "The Effect of Political Regime on Civil War: Unpacking Anocracy." *Journal of Conflict Resolution*.
- Signorino, Curtis S., and Jun Xiang. 2011. "Averaging Away the Effects: Aggregation Bias in Indices of Power and Democracy." Working Paper.

Recommended Readings:

- Elkins, Zachary. 2000. "Gradations of Democracy? Empirical Tests of Alternative Conceptualizations." *American Journal of Political Science* 44(2):293-300.
- Bowman, Kirk, Fabrice Lehoucq, and James Mahoney. 2005. "Measuring Political Democracy: Case Expertise, Data Adequacy, and Central America." *Comparative Political Studies* 38(8):939-970.
- Munck, Gerardo L. and Jay Verkuilen. 2002. "Conceptualizing and Measuring Democracy: Evaluating Alternative Indices." *Comparative Political Studies* 35(1):5-34.
- Coppedge, Michael. 2002. "Democracy and Dimensions: Comments on Munck and Verkuilen." *Comparative Political Studies* 35(1):35-39.
- Monty G. Marshall, Ted Robert Gurr, Christian Davenport, and Keith Jagers. 2002. "Polity IV, 1800-1999: Comments on Munck and Verkuilen." *Comparative Political Studies* 35(1):40-45.
- Ward, Michael D. 2002. "Green Binders in Cyberspace: A Modest Proposal." *Comparative Political Studies* 35(1):46-51.
- Munck, Gerardo L., and Jay Verkuilen. 2002. "Generating Better Data: A Response to Discussants." *Comparative Political Studies* 35(1):52-57.
- Regan, Patrick M., and David H. Clark. "User's Manual for the IAEP Dataset." Institutions and Elections Project, Binghamton University.

11. Measuring the Similarity of States' Interests

- Bueno de Mesquita, Bruce. 1975. "Measuring Systemic Polarity." *Journal of Conflict Resolution* 19(2):187-216.

- Gartzke, Erik. 1998. "Kant We All Just Get Along? Opportunity, Willingness, and the Origins of the Democratic Peace." *American Journal of Political Science* 42(1):1-27.
- Signorino, Curtis S., and Jeffrey M. Ritter. 1999. "Tau-b or Not Tau-b: Measuring the Similarity of Foreign Policy Positions." *International Studies Quarterly* 43(1):115-144.
- Bennett, D. Scott, and Matthew Rupert. 2003. "Comparing Measures of Political Similarity: An Empirical Comparison of Using S or tau-b in the Study of International Conflict." *Journal of Conflict Resolution* 47(3):367-393.
- Sweeney, Kevin and Omar M.G. Khesk. 2005. "The Similarity of States: Using S to Compute Dyadic Interest Similarity." *Conflict Management and Peace Science*. 22(2):165-87.

12. Ideal Point Estimation in International Relations

- Poole, Keith T. and Howard Rosenthal. 1985. "A Spatial Model for Legislative Roll Call Analysis." *American Journal of Political Science*. 29(2):357-384.
- Clinton, Joshua, Simon Jackman, and Douglas Rivers. 2004. "The Statistical Analysis of Roll Call Data." *American Political Science Review*. 98(2):355-370.
- Voeten, Erik 2000. "Clashes in the Assembly." *International Organization* 54(2):185-217.
- Voeten, Erik 2007. "The Politics of International Judicial Appointments: Evidence from the European Court of Human Rights." *International Organization* 61(4):669-701.

13. Causal (not "Casual") Inference

- Donald B. Rubin. 1973. Matching to Remove Bias in Observational Studies. *Biometrics*, Vol. 29, No. 1. pp. 159-183.
- Rosenbaum, P.R. and D.B. Rubin. 1983. "The Central Role of the Propensity Score in Observational Studies for Causal Effects." *Biometrika*.
- Rosenbaum, P.R. and D.B. Rubin. 1985. "The Bias Due to Incomplete Matching." *Biometrics*.
- Holland, P.W. 1986. "Statistical and Causal Inference (with discussion)." *JASA*.
- Freedman, David A. 1991. "Statistical Models and Shoe Leather." With discussion by Richard A. Berk, Hubert M. Blalock, Jr., William M. Mason. Pp. 291-358 in *Sociological Methodology* 1991.
- Joshua D. Angrist; Guido W. Imbens; Donald B. Rubin. 1996. "Identification of Causal Effects Using Instrumental Variables" *JASA*. Vol. 91, No. 434. pp. 444-455.
- James Heckman and Salvador Navarro-Lozano. 2004. "Using matching, instrumental variables and control functions to estimate economic choice models." *Review of Economics and Statistics*. 86(1):30-57.
- Sekhon, Jasjeet S. 2009. Opiates for the Matches: Matching Methods for Causal Inference. *Annual Review of Political Science*. 12:487-508

14. Markov Transition Models

- Duncan, George T., and Randolph M. Siverson. 1975. "Markov Chain Models for Conflict Analysis: Preliminary Results from Sino-Indian Relations, 1959- 1964." *International Studies Quarterly* 19 (3):344-374.
- Jackman, Simon. 2000. "In and Out of War and Peace: Transitional Models of International Conflict." Working paper, Stanford University.
- Przeworski, Adam, and James Vreeland. 2002. "A Statistical Model of Bilateral Cooperation." *Political Analysis* 10(2).
- Gleditsch, Kristian Skrede, and Michael D. Ward. 2006. "Diffusion and the International Context of Democratization." *International Organization* 60(4):911-933

15. Structural Breaks

- Spirling, Arthur. 2007. "'Turning Points' in Iraq: Reversible Jump Markov Chain Monte Carlo in Political Science." *The American Statistician*, forthcoming.
- Spirling, Arthur. 2007. "Bayesian Approaches for Limited Dependent Variable Change Point Problems." *Political Analysis*, forthcoming.

16. Surveys and Experiments

- Herrmann, Richard K, James F. Voss, Tonya Y. E Schooler, and Joseph Ciarrochi. 1997. "Images in International Relations: An Experimental Test of Cognitive Schemata." *International Studies Quarterly* 41(3):403-433.
- Redd, Steven B. 2002. "The Influence of Advisers on Foreign Policy Decision Making: An Experimental Study" *Journal of Conflict Resolution* 46(3):335-364.
- Carpenter, Jeffrey P. 2003. "Bargaining Outcomes as the Result of Coordinated Expectations: An Experimental Study Of Sequential Bargaining." *Journal of Conflict Resolution* 47(2):119-139.
- Schneider Gerald, and Ulrike Sabrina Krämer. 2004. "The Limitations of Fair Division: An Experimental Evaluation of Three Procedures." *Journal of Conflict Resolution* 48(4):506-524.
- Tomz, Michael. 2007. "Domestic Audience Costs in International Relations: An Experimental Approach." *International Organization* 61(4):821-40.
- Tomz, Michael. 2007. "The Effect of International Law on Preferences and Beliefs." Working paper, Stanford University.

17. Split Population Models

- Clark, David H., and Patrick M. Regan. 2003. "Opportunities to Fight: A Statistical Technique for Modeling Unobservable Phenomena." *Journal of Conflict Resolution* 47(1):94-115.
- Xiang, Jun. 2007. "Modeling Unobservable Political-Military Relevance: Split Population Binary Choice Model With an Application to the Trade Conflict Debate." *Journal of Politics* 72(2): 484-498.

18. Neural Nets

- Beck, Nathaniel, Gary King, and Langche Zeng. 2000. "Improving Quantitative Studies of International Conflict: A Conjecture." *American Political Science Review* 94:1 21-36.
- de Marchi, Scott, Gelpi Christopher, and Jeffrey D. Grynviski. 2004. *American Political Science Review* 98(2):371-378.
- Beck, Nathaniel, Gary King, and Langche Zeng. 2004. "Theory and Evidence in International Conflict: A Response to de Marchi, Gelpi, and Grynviski." *American Political Science Review* 98(2):379-389.

19. Residualization

- Bueno de Mesquita, Bruce, Alastair Smith, Randolph M. Siverson, and James D. Morrow. 2003. *The Logic of Political Survival*. Cambridge, MA: The MIT Press.
- Clarke, Kevin A., and Randall W. Stone. 2007. "Democracy and the Logic of Political Survival." *American Political Science Review* forthcoming.

Paper due last day of final exams.