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# PSC 571

## Quantitative Approaches to International Politics

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Spring 2008  
Thurs, 3:25-6:05

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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. Prerequisites: PSC 505 and PSC 572 (or similar course) required; PSC 506 recommended.

**PREREQUISITES:** Students must have taken PSC 505 and PSC 572 (or a similar general IR course). PSC 506 is recommended, but not required.

### **COURSE REQUIREMENTS:**

- **Participation and Weekly Assignments (50%).** Students will be responsible for having done the required readings each week and for participating in our discussions. Applied or theoretical problems will be assigned each week 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 (50%).** A final paper is due on July 1. 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**

- Fearon, James. 1994. "Signaling versus the Balance of Power and Interests: An Empirical Test of a Crisis Bargaining Model." *Journal of Conflict Resolution*. 38(2):236-269.
- 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.
- Lemke, Douglas, and William Reed. 2001. "War and Rivalry among Great Powers." *American Journal of Political Science* 45(2):457-469.
- Danilovic, Vesna. 2001. "Conceptual and Selection Bias Issues in Deterrence." *Journal of Conflict Resolution* 45(1):97-125.

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

## 2. Strategic Interaction

### Part I

- 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.
- 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.
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- 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.)

### 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.
- Signorino, Curtis S. and Taehee Whang. 2006. "Uncertainty and Learning in Statistical Strategic Models." Working Paper. University of Rochester.
- Whang, Taehee. 2007. "Unifying Theory and Testing of Economic Sanctions Outcomes." Working Paper. Texas A&M.

### Part III: Misc

- Clark, David H., and William Reed. 2005. "The Strategic Sources of Foreign Policy Substitution." *American Journal of Political Science* 49(3):609-624.
- Ramsay, Kristopher W., Curtis S. Signorino. 2005. "Bargaining and Society: A Statistical Model of the Ultimatum Game." Working paper, University of Rochester.

### 3. 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.
- Gleditsch, Kristian Skrede, and Michael D. Ward. 2006. "Diffusion and the International Context of Democratization." *International Organization* 60(4):911-933
- 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.

### 4. Dyadic Interdependence

- 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.

### 5. Duration Models

- 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.
- 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.

### 6. 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. 2007. "Back to the Future: Modeling Time Dependence in Binary Data." Working paper, University of Rochester.

## 7. 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.

## 8. 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.

## 9. Measuring Democracy

- 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.
- Elkins, Zachary. 2000. "Gradations of Democracy? Empirical Tests of Alternative Conceptualizations." *American Journal of Political Science* 44(2):293-300.
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- 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.
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- 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).
- Regan, Patrick M., and David H. Clark. "User's Manual for the IAEP Dataset." Institutions and Elections Project, Binghamton University.
- 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.
- 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." Working paper, Yale University.

## 10. 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 Computer Dyadic Interest Similarity." *Conflict Management and Peace Science*. 22(2):165-87.

## 11. 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.

## 12. 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.

### 13. 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).

### 14. 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.

### 15. 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.

### 16. 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." Working paper, University of Rochester.

### 17. 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.

## **18. 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 July 1*