

FUNDAMENTALS OF MODELING III: APPLICATIONS

PLSC 519

Instructor: Milan Svolik, Associate Professor, Department of Political Science

Class Meetings: Thursday 10-11:50, RKZ 301

Office Hours: Fridays 3-5pm, 330 Rosenkranz Hall, or by appointment

Course Web Page: canvas.yale.edu

Description: This course surveys key applications of game-theory and related methods to the study of politics and political economy. It is intended for graduate students in political science and related disciplines who have taken an introductory course in game theory. Topics covered include electoral competition, political accountability, social choice, collective action, democratization, and war.

Course Requirements:

Attendance: Regular attendance is required. Notify me in advance if you will be absent.

Reading summaries: I will ask you to submit a paragraph-per-reading summary of any discussion readings assigned to “Reading Summaries” on Canvas by 8am on the day of the class. The purpose of these summaries is to facilitate your preparation for the class and encourage you to participate in class discussions. You can also use these summaries as an opportunity to provide feedback on the assigned readings. I may draw on your summaries during class discussion.

Presentations of readings: An important part of your participation will be to present one or several (depending on enrollment) readings of your choice. (★) denotes readings available for presentation. The presentation should focus on key elements of the formal model in the paper. It should be brief, preferably under 15 minutes.

Presentation of a non-assigned reading: I will ask you to present your “favorite” formal research paper that is not on the syllabus. This should be an unpublished or recently published piece.

Written assignments: I will ask you to submit two short analyses a formal paper (which can be the readings that you will present.) The short analyses should consist of a summary of the paper’s central argument, an exposition of the formal model, an simplification of the formal model, a numerical example of a key result, and an evaluation/critique.

A referee report: A two-page referee report of the first draft of one of your classmates’ final papers. A first draft of the final paper (around 5 pages) will be due two weeks before the end of the semester so that we can spend the last meeting of the semester going over your referee reports on these drafts.

A final research paper: A 15-20 page paper that either i) that presents an original formal political argument, or ii) critically reviews a literature on a topic approved by the instructor.

Grading: The final grade will be composed as follows: class participation 20%, two written assignments 2x20%, and final paper 40%.

Academic Integrity: Plagiarism is the use of someone else’s work, words, or ideas as if they were your own. Plagiarism is a serious offense that is punished severely at Yale. The most common penalty is suspension from the University. Please be sure to review [Yale’s Academic Integrity Policy](#).

Readings: Most instruction will be based on the following book; you may therefore consider purchasing it:

Gehlbach, Scott. 2013. *Formal Models of Domestic Politics*. Cambridge: Cambridge University Press.

Most remaining course readings are accessible online. Any non-accessible readings will be posted on Canvas under “Files/PDFs of Readings.”

Topics and Readings:

I. Electoral competition

Topics: The Downsian model of office-motivated candidates, Policy-motivated candidates with commitment, The citizen-candidate model, The probabilistic voting model, The differentiated candidates model

Chapters 1-2 in Gehlbach, Scott. 2013. *Formal Models of Domestic Politics*. Cambridge: Cambridge University Press.

(★) Krasa, Stefan and Polborn, Mattias. 2010. Competition between specialized candidates. *American Political Science Review*, 104(4):745–765.

Further Reading:

Chapter 3 in Persson, Torsten and Tabellini, Guido. 2000. *Political Economics*. Cambridge: MIT Press.

Roemer, John E. 2001. *Political competition: Theory and applications*. Cambridge, Mass.: Harvard University Press.

Austen-Smith, David and Banks, Jeffrey S. 2005. *Positive Political Theory II*. Ann Arbor: University of Michigan Press.

II. Political Agency

Topics: Principal-agent problems, Electoral accountability, Career concerns, Media

Chapter 7 and section 6.5 in Gehlbach, Scott. 2013. *Formal Models of Domestic Politics*. Cambridge: Cambridge University Press.

- (★) Besley, Timothy J. and Prat, Andrea. 2006. Handcuffs for the grabbing hand? Media capture and government accountability. *American Economic Review*, 96(3):720–736.

Further Reading:

Chapter 4 in Persson, Torsten and Tabellini, Guido. 2000. *Political Economics*. Cambridge: MIT Press.

Besley2006.

Padró i Miguel, Gerard. 2007. The control of politicians in divided societies: The politics of fear. *Review of Economic Studies*, 74(4):1259–1274.

III. Collective Action

Topics: Public Goods, Voter Participation, Revolts, Poisson Games, Global Games

Sections 8.1-2 in Gehlbach, Scott. 2013. *Formal Models of Domestic Politics*. Cambridge: Cambridge University Press.

- (★) Palfrey, Thomas R. and Rosenthal, Howard. 1985. Voter Participation and Strategic Uncertainty. *American Political Science Review*, 79:62–78.

- (★) Kuran, Timur. 1991. Now Out of Never: The Element of Surprise in the East European Revolution of 1989. *World Politics*, 44:7–48.

- (★) Myerson, Roger B. 1998. Population uncertainty and poisson games. *International Journal of Game Theory*, 27(3):375–392.

- (★) Morris, Stephen and Shin, Hyun Song. 2003. Global games: Theory and applications. In Mathias Dewatripont, Lars Peter Hansen, and Stephen J. Turnovsky, editors, *Advances in Economics and Econometrics*, pages 56–114. New York: Cambridge University Press

IV. Democratization and Regime Change

Topics: Transitions to Democracy, Democratic Breakdowns

Sections 6.5 and 8.3-4 in Gehlbach, Scott. 2013. *Formal Models of Domestic Politics*. Cambridge: Cambridge University Press.

Gehlbach, Scott, Sonin, Konstantin, and Svulik, Milan W. 2015. Formal models of nondemocratic politics. *Annual Review of Political Science*, 19:565–84.

(★) Chapters 1-3 in Bueno de Mesquita, Bruce, Smith, Alastair, Siverson, Randolph M., and Morrow, James D. 2003. *The Logic of Political Survival*. Cambridge, MA: MIT Press.

(★) Chapters TBA from Acemoglu, Daron and Robinson, James A. 2005. *Economic Origins of Dictatorship and Democracy*. New York: Cambridge University Press.

(★) Fearon, James D. 2011. Self-enforcing democracy. *The Quarterly Journal of Economics*, 126(4):1661–1708.

(★) Przeworski, Adam, Rivero, Gonzalo, and Xi, Tianyang. 2015. Elections under the shadow of force. *European Journal of Political Economy*, 39(2):235–48.

V. Bargaining and Conflict

Topics: Bargaining Models, Bargaining v. War, Wars of Attrition

Section 6.1 in Gehlbach, Scott. 2013. *Formal Models of Domestic Politics*. Cambridge: Cambridge University Press.

Fearon, James D. 1995. Rationalist Explanations for War. *International Organization*, 49(3):379–414.

Recommended Readings:

Below, I list some references that may be useful as an introduction to the application of game theory in the social sciences.

Some other game theory textbooks intended for political scientists:

Austen-Smith, David and Banks, Jeffrey S. 1999. *Positive Political Theory I*. Ann Arbor: University of Michigan Press.

Austen-Smith, David and Banks, Jeffrey S. 2005. *Positive Political Theory II*. Ann Arbor: University of Michigan Press.

McCarty, Nolan and Meirowitz, Adam. 2007. *Political Game Theory*. New York: Cambridge University Press.

Morrow, James D. 1994. *Game Theory for Political Scientists*. Princeton: Princeton University Press.

Some other game theory textbooks (intended primarily for economists):

Dixit, Avinash and Skeath, Susan. 1999. *Games of Strategy*. New York: Norton.

Dutta, Prajit K. 1999. *Strategies and Games : Theory and Practice*. Cambridge, Mass.: MIT Press.

Fudenberg, Drew and Tirole, Jean. 1991. *Game Theory*. Cambridge, MA: MIT Press.

Gibbons, Robert. 1992. *Game Theory for Applied Economists*. Princeton University Press.

Myerson, Roger B. 1991. *Game Theory: Analysis of Conflict*. Cambridge, MA: Harvard University Press.

Osborne, Martin J. and Rubinstein, Ariel. 1994. *A Course in Game Theory*. The MIT Press.

Rasmusen, Eric. 2006. *Games and Information: An Introduction to Game Theory*. Wiley-Blackwell.

Watson, Joel. 2002. *Strategy: An Introduction to Game Theory*. W. W. Norton & Company.

Some useful writings on the history, philosophy, and role of game theory in the social sciences:

“What Is Game Theory Trying to Accomplish?” by Robert Aumann in Arrow, K. and Honkapohja, S. 1985. *Frontiers of Economics*. Oxford: Basil Blackwell.

- “The Methodology of Positive Economics” in Friedman, Milton. 1966. *Essays In Positive Economics*. Chicago: University of Chicago Press.
- Kreps, David M. 1990. *Game Theory and Economic Modelling*. New York: Oxford University Press.
- Myerson, Roger B. 1992. On the value of game theory in social science. *Rationality and Society*, 4(1):62–73.
- Myerson, Roger B. 1999. Nash Equilibrium and the History of Economic Theory. *Journal of Economic Literature*, 37(3):1067–1082.
- Rubinstein, Ariel. 1991. Comments on the interpretation of game theory. *Econometrica*, 59:909–924.
- Rubinstein, Ariel. 2006. Dilemmas of an economic theorist. *Econometrica*, 74(4):965–883.

These speak more directly to the role of formal models in political science:

- Austen-Smith, David and Banks, Jeffrey S. 1998. Social Choice Theory, Game Theory, and Positive Political Theory. *Annual Review of Political Science*, 1:259–87.
- Clarke, Kevin A. and Primo, David M. 2007. Modernizing political science: A model-based approach. *Perspectives on Politics*, 5(4):741–53.
- Chapter 5 in Geddes, Barbara. 2003. *Paradigms and sand castles: Theory building and research design in comparative politics*. Ann Arbor, MI: University of Michigan Press.
- “The Role of Formal Models” in Chapter 1 in Powell, Robert. 1999. *In the Shadow of Power: States and Strategies in International Politics*. Princeton, NJ: Princeton University Press.
- Part III, “Formal Methods” in Sprinz, Detlef F. and Wolinsky-Nahmias, Yael. 2004. *Models, numbers, and cases: Methods for Studying International Relations*. Ann Arbor: The University of Michigan Press.

On the interplay between formal models and empirical research:

Chapter 4 in Clarke, Kevin A. and Primo, David M. 2012. *A Model Discipline: Political Science and the Logic of Representations*. New York: Oxford University Press.

Chapters 2 and 3 in Morton, Rebecca B. 1999. *Methods and models: a guide to the empirical analysis of formal models in political science*. New York: Cambridge University Press.

On the art and role of theoretical models more generally:

Epstein, Joshua M. 2008. Why model? *Journal of Artificial Societies and Social Simulation*, 11(4):1–12.

Varian, Hal R. 1997. How to build an economic model in your spare time. In Michael Szenberg, editor, *Passion and craft: Economists at work*. University of Michigan Press.

Samuelson, Paul A. 1972. Maximum principles in analytical economics. *American Economic Review*, 62(3):249–262.

On the history of game theory:

Kuhn, Harold W. 1997. *Classics in Game Theory*. Princeton, N.J.: Princeton University Press.

Nasar, Sylvia. 2001. *A Beautiful Mind*. New York: Simon & Schuster.

Poundstone, William. 1992. *Prisoner's Dilemma*. New York: Anchor Books.

On mathematical methods for applied formal modeling:

These are intended primarily for political scientists:

Gill, Jeff. 2006a. *Essential Mathematics for Political and Social Research*. New York: Cambridge University Press.

Moore, Will H. and Siegel, David A. 2013. *A Mathematics Course for Political and Social Research*. Princeton, NJ: Princeton University Press.

These are intended primarily for economists:

Chiang, Alpha and Wainwright, Kevin. 2004. *Fundamental Methods of Mathematical Economics*. New York: McGraw-Hill.

Gill, Jeff. 2006b. *Essential Mathematics for Political and Social Research*. New York: Cambridge University Press.

Hoy, Michael, Livernois, John, McKenna, Chris, and Rees, Ray. 2001. *Mathematics for Economics*. Cambridge: The MIT Press.

Simon, Carl P. and Blume, Lawrence E. 1994. *Mathematics for Economists*. New York: W. W. Norton & Company.

Some useful articles on how to present mathematical arguments correctly and intelligibly are:

Chapter 1 in Thomson, William. 2001. *A guide for the young economist*. Cambridge, MA: MIT Press.

“Minicourse on technical writing” in Knuth, Donald E., Larrabeem, Tracy, Roberts, Paul M., and Reynolds, Barbara E. 1989. *Mathematical Writing*. New York: Mathematical Association of America.

“How to write mathematics” by Paul Halmos in Steenrod, Norman E., Halmos, Paul, Schiffer, Menahem M., and Dieudonné, Jean A. 1973. *How to write mathematics*. New York: American Mathematical Society.

Boas, R. P. 1981. Can We Make Mathematics Intelligible? *American Mathematical Monthly*, 88.