

Political Science 8125
Dynamic Analysis (Time Series
Modeling in Politics, Part I)
Electronic Classroom, Rarig Hall [U.of MN];
3136 Derby Hall [OSU]; The Pyle Center [U. of W];
Room 103, 508 S. 6th Street [U. of Illinois]
Spring Semester 2002
11:00-1:00 CST, Fridays

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This course introduces students to time series methods and to the applications of these methods in political science. After a brief review of the calculus of finite differences and of certain estimation techniques, we study stationary ARMA models. We learn not only how to construct such models but also how to use them in policy analysis. The last session of the course is devoted to measurement issues of special interest to time series analysts.

This is the first part of a fourteen week seminar team-taught with Professor Janet Box-Steffensmeier. Students are strongly encouraged to take both parts of the course.

Required Texts

Students should purchase:

Enders, Walter. 1995. Applied Econometric Time Series. N.Y. Wiley.

-----, 1996. RATS Handbook for Econometric Time Series. N.Y. Wiley.

Software

Regression Analysis and Time Series (RATS) is the statistical package that will be used. The RATS Handbook (available for purchase) and the RATS manual (available in each department) will be very useful for completing the data analyses. The RATS/Estima website is: <http://www.estima.com/>

Written Work

Students will complete three assignments. The first is a short problem set on the calculus of finite differences. This problem set will be graded pass/fail.

In addition, students will write a short critical evaluation of the Sprague article in week three of the syllabus, and they will construct and apply an ARMA model for a data set of their choosing. This data set should contain series with at least forty time points. The data set need not be the same one students use in part two of the course. However, it is permissible to use the same data set for both parts of the

class. Faculty will work with students to help identify (construct) time series of high pedagogical value.

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COURSE OUTLINE AND READING ASSIGNMENTS

January 25 Introduction

Required

Brunner, R. D. and K. Liepelt, "Data Analysis, Process Analysis, and System Change"
Midwest (American) Journal of Political Science [AJPS] 17, 1972: 538-569.

Goldberg, S. An Introduction to Difference Equations N.Y. Wiley, 1958, Chaps. 1,2

Patterson, K. An Introduction to Applied Econometrics: A Time Series Approach
NY St. Martins, 2000: Chap 2.

Recommended

Cortes et. al, Systems Analysis for Social Scientists NY Wiley, 1974, Chap. 1

Freeman, J. (1995) "The Searchers I: Specification Uncertainty in the Study of Macro-
Politics," Manuscript, esp. pps. 1-25.

Hamilton, J. Time Series Analysis Princeton, NJ: Princeton University Press, 1994:
Chaps. 1,2

February 1, 8 The Calculus of Finite Differences

Required

Enders, Chap. 1

Huckfeldt et. al., Dynamic Modeling: An Introduction Beverly Hills, CA: Sage,
Chaps. 3, 5, 6

Przeworski, A. and J. Sprague Paper Stones: A History of Electoral Socialism
Chicago, ILL: University of Chicago Press, 1986, pps. 1-11, 57-99, 187-201.

Sprague, J. "One Party Dominance in Legislatures" Legislative Studies Quarterly
6(2), 1981, pps. 259-285.

Recommended

Freeman, J. and D. Snidal, A Diffusion, Development and Democratization in Western Europe @ Canadian Journal of Political Science 15 (2), 1982: 299-329.
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Goldberg, chp. 3.

Hamilton, chp. 5.

Huckfeldt et. al., chps. 1, 2, 4.

Richards, D. A Chaotic Model of Power Concentration in the International System, @ International Studies Quarterly 37, 1993: 55-72.

----- ed. Political Complexity: Nonlinear Models of Politics Ann Arbor, University of Michigan Press, 2000.

Zinnes, D.A. and R.G. Muncaster A The Dynamics of Hostile Activity and the Prediction of War @ Journal of Conflict Resolution 28 (2), 1984: 187-229.

Feb 15, 22 Identifying, estimating and using stationary ARMA models.

REQUIRED

Enders, chp. 2.

McCleary and Hay, Applied Time Series Analysis for the Social Sciences Beverley Hills, CA, 1980: chps 2, 3, 6.

Haynie, S. A Leadership and Consensus on the U.S. Supreme Court @ Journal of Politics [JOP] 54(4), 1992: 1158-1169.

Li, R. P., A A Dynamic Comparative Analysis of Presidential and House Elections @ AJPS 20, 1976: 670-691.

Quinn, D.P. and R. Jacobson, A Industrial Policy Through Restrictions on Capital Flows @ AJPS 33(3), 1989: 700-736.

Recommended

Hamilton, Chapters 2, 3.

Li, R. P. and W. R. Thompson, "The Stochastic Process of Alliance Formation Behavior" American Political Science Review [APSR] 72(4), 1978: 1288-1303.

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March 1 Nonstationarity, seasonality, and the decomposition of time series; intervention analysis and policy evaluation with ARIMA models

REQUIRED

Enders, pps. 165-195.

McCleary and Hay, Chapter 3,4.

Alt, J. "Political Parties, World Demand, and Unemployment" APSR 79(4), 1986: 1016-1040.

Hibbs, D. "Political Parties and Macroeconomic Performance" APSR 71(4), 1977: 1467-1479.

Suzuki, Motoshi and Henry W. Chappell Jr. "The Rationality of Economic Voting Revisited" JOP 58(1), 1996: 224-236.

Recommended

Box, G.E.P. and G. C. Tiao. "Intervention Analysis with Applications to Economic and Environmental Problems" Journal of the American Statistical Association 70, 70-79.

Rasler, Karen. "War, Accommodation, and Violence in the United States, 1890- 1970" APSR 80, 1986: 921-945.

Rasler, K. and W. Thompson, "War and the Economic Growth of the Major Powers" AJPS 29(3), 1985: 513-538.

Wood, B. Dan, "Principals, Bureaucrats, and Responsiveness in Clean Air Enforcements" APSR 82(1) 1988, pp. 213-236.

Wood, B. Dan and R. W. Waterman. 1991. "The Dynamics of Control of Bureaucracy" APSR 85(3): 801-828.

Yantek, T. "Polity and Economy Under Extreme Economic Conditions: A Comparative Study of The Reagan and Thatcher Experiences" AJPS 32(1), 1988: 196-216.

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March 8 Selected Topic: Systematic Sampling and Temporal Aggregation

REQUIRED

Freeman, John R. "Systematic Sampling, Temporal Aggregation and the Study of Political Relationships." In Political Analysis vol. 1, J. Stimson editor. Ann Arbor: University of Michigan Press, 1990.

Goldstein, Joshua S. "Reciprocity in Superpower Relations: An Empirical Analysis" International Studies Quarterly 35, 1991: 195-209.

Robertson, John C. and Ellis W. Tallman "Data Vintages and Measuring Forecast Model Performance." Economic Review Atlanta, GA: Federal Reserve Bank of Atlanta, Fourth Quarter, 1998: 4-20.

Recommended

Tiao, G.C. and W. Wei, "Effect of Temporal Aggregation on the Dynamic Relationship of Two Time Series Variables," Biometrika 63(3), 1976: 513-523.

Zellner, A. and C. Montemarquette. "A Study of Some Aspects of Temporal Aggregation Problems in Econometric Analysis." Review of Economics and Statistics 53, 1971: 335-342.