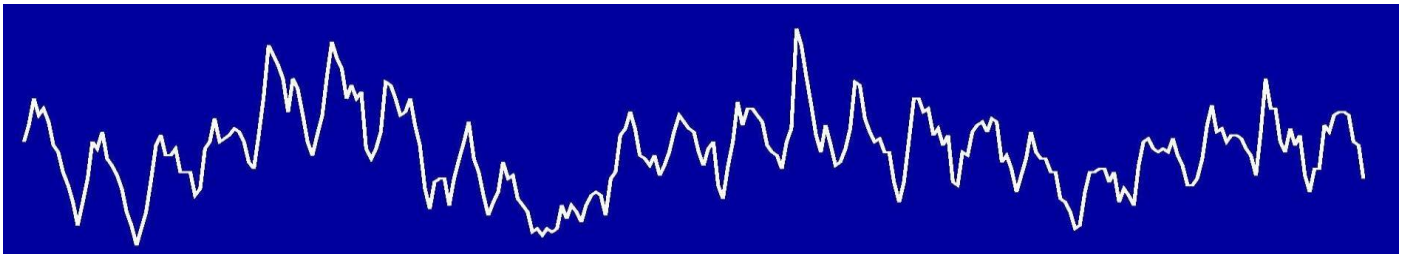

Political Science 8125 & 867
Dynamic Analysis (Time Series Modeling in Politics)
Electronic Classrooms
Spring Semester 2012
11:00-1:00 CST/12:00-2:00 EST, Fridays
Office hours for all by mutual arrangement.

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This course studies statistical techniques used to analyze social processes occurring through time. The course introduces students to time series methods and to the applications of these methods in political science. We begin by discussing social problems that are inherently dynamic in nature and also how time series are measured. We then review the calculus of finite differences. We move next to the study stationary ARMA models. In the following section of the course, we examine a number of important topics in time series analysis including "reduced form" methods (granger causality and vector autogression), unit root tests, near-integration, fractional integration, cointegration, and error correction models. Time series regression also is discussed. We learn not only how to construct these models but also how to use time series models in social science analyses.

We expect students to have a firm grounding in probability and regression analysis and to bring to the course some interesting questions about the dynamics of political processes. The emphasis throughout the course is on application, rather than on statistical theory. However, the focus of most lectures will be statistical theory. Homework focuses as much as possible on the time series you are interested in understanding. To that end, students will need to gather time serial data for analysis. It is strongly recommended that this be done during the first week of class (these data need not be used throughout the

term, though that would make your life easier). The length of the series should be at least 40 time points; longer series are better than shorter ones.

This is a 12-week seminar team-taught by the 3 J's: Jan, John, and Jon.

Schedule

We expect to cover the following topics in the weeks and dates indicated, though we may adjust slightly as the course progresses and as needed based on class interaction. Professor indicated will take the lead that day. She or he also will prioritize the reading (one week ahead of her or his session)

Topic 1: Motivation, Measurement & Intro to Difference Equations – Freeman
Topic 2: The Calculus of Finite Differences - Freeman
Topic 3: ARIMA Models–Box-Steffensmeier
Topic 4: Unit Roots, Near Integration and Fractional Integration –Box-Steffensmeier
Topic 5: Intervention Analysis & Changes in Regimes – Pevehouse
Topic 6: ARCH, GARCH, FIGARCH Models – Pevehouse
Topic 7: Time Series Regression Analysis – Box-Steffensmeier
Topic 8: VAR/Reduced Form Methods – Freeman
Topic 9: Cointegration & ECMs – Pevehouse
Topic 10: Guest Speaker Heather Ondercin!! and Intro to Cointegration & ECMs continued – Pevehouse
Topic 11: Bayesian Time Series Analysis - Freeman
Topic 12: Forecasting, DCC Models, Time Series Count Models & Sendoff - Box-Steffensmeier

Note. In some cases the Topic material is broken into two parts even though it is presented in a single week.

Required Texts

Students should purchase:

Enders, Walter. 2009. *Applied Econometric Time Series*. 3rd ed. N.Y.: Wiley.[1] (Unless otherwise noted the reading assignments are the same in each Edition)

Stata. *Time-Series Reference Manual*. College Station, Texas: Stata Press. (likely in your depts. and there is significant online help).

Work in Progress

The instructors are writing a textbook on the subject of the course. In some weeks, draft chapters of this book will be assigned. The book is tentatively titled *Time Series Analysis for the Social Sciences*. We denote this title by TSASS.

Recommended Texts

Other books that will be used during the course and/or serve as excellent references include:

Chatfield, C. 2003. *The Analysis of Time Series: An Introduction*, 6th Edition. New York: Chapman and Hall.

Goldberg, S. 2010. *Introduction to Difference Equations.* New York: Dover Publications.

[1] Students may use the Second Edition of Enders book. But the reading assignments use the page numbers in the Third Edition.

Gottman, R.E. 1981. *Time Series Analysis: A Comprehensive Guide for Social Scientists* NY: Cambridge University Press.

Gujarati, Damodar. 1995. *Basic Econometrics, 3rd Edition*. New York: McGraw-Hill

Hamilton, J.D. 1994. *Time Series Analysis*. Princeton, NJ: Princeton University Press.

Huckfeldt, R. Robert, C.W. Kohfeld, and T.W. Likens. 1982. *Dynamic Modeling: An Introduction* Beverly Hills, CA.: Sage.

McCleary, R. and R.A. Hay, Jr. 1980. *Applied Time Series Analysis for the Social Sciences* Beverly Hills, CA.: Sage.

Maddala, G.S., and In-Moo Kim. 2000. *Unit Roots, Cointegration, and Structural Change*. Cambridge, MA: Cambridge University Press.

Mills, Terence C. 1990. *Time Series Techniques for Economists*. New York: Cambridge Unviersity Press.

Patterson, K.D. 2000. *Introduction to Applied Econometrics: A Time Series Approach*. New York: Palgrave.

Pindyck, R.S. and D.L. Rubenfeld. 1997. *Econometric Models and Economic Forecasts* 4th Edition. NY: McGraw-Hill.

Software

STATA is the primary statistical package that will be used. The STATA website is: http://www.stata.com/ You are welcome to use RATS, R, or other software, but please inform the instructors first.

Course Assignments

Students will complete four written assignments and give a short (approximately 15 minutes) oral presentation/critique for the course, for a total of 200 points. See also the Assignment links on the website for more details.

1) The presentation should be on one of the listed articles on the syllabus or another application chosen in consultation with the instructor. Many of the articles on the syllabus are applications. These applications are essential to rounding out your understanding of the methods. No more than 5 minutes of your presentation should be summary of the article. Most of your 15 minutes should be devoted to critique and to leading class discussion. There will typically be 2 students presenting any one article and usually from different universities. Another option for presentations is camtasia (or alternative video recording program). If you choose this option, your presentation will be posted on the class website and discussed online through the Discussion Tab of the class website. The presentation is worth 35 points.

2) Problem set. A short problem set on the calculus of finite differences will be required. The problem set is worth 25 points.

3) Short paper. Students have two options for the short paper. The first is a critique of the article presented in item 1. The second option is a critical evaluation of the Sprague article from the

assigned readings in week II (Topic 2). The short paper is worth 25 points. It should be about 5 pages in length.

4) The next assignment is considerably larger in scope. Students will estimate and apply an ARIMA model for a data set of their choosing. This data set should contain at least forty time points. The data set need not be the same one students use for the next assignment, however, we recommend it. Students are welcome to use their own original data, use data from the Time Series of Social Scientists (link on the website), or use and replicate other existing data sets. There is a limit of 8 pages (not including computer output). The ARIMA assignment is worth 55 points.

5) Finally, a short (approximately 8 pages, not including computer output) paper analyzing a substantive problem using time series data and techniques is required. Either Vector Autoregression or Error Correction techniques should be used. Emphasis should be on explaining the methods and interpretation of the results. The assignment is worth 60 points.

COURSE OUTLINE

We expect to have required readings available from the course website, which is through the OSU Carmen system.

Topic 1 [January 27]: *Motivation, Measurement, and Introduction to Difference Equations - Freeman*
The motivation for time series analysis
(a) Significant social problems that are about dynamics
(b) The pitfalls of cross-sectional analysis and the usefulness of time series
(c) Forecasting for theory validation and policy analysis
(d) Time series measurement
(e) Introduction to difference equations

REQUIRED

"Modeling Social Dynamics" Chapter 1 in TSASS

Recommended

Beck, Nathaniel and Jonathan M. Katz. 2011. "Modeling Dynamics in Time-Series-Cross-Section Political Economy Data." *Annual Review of Political Science* 14: 331-352.

Brunner, R.D. and K. Liepelt. 1972. "Data Analysis, Process Analysis and System Change" *Midwest (American) Journal of Political Science [AJPS] 17(1): 538-569.*

Freeman, John R. 1990. "Systematic Sampling, Temporal Aggregation and the Time Series Analysis of Political Relationships." *Political Analysis* volume 1. J. Stimson Editor.

Cortes, et. al. l974. *Systems Analysis for Social Scientists.* NY: Wiley: Chap. 1

Hamilton, J. l994. *Time Series Analysis*. Princeton, NJ: Princeton University Press: Chaps. 1

Topic 2 [Feb 3] & See Below for Continuation: The Calculus of Finite Differences - *Freeman*
Time series measurement problems

(a) Deterministic and stochastic difference equations
(b) The concept of equilibration
(c) Systems of difference equations

REQUIRED

Enders Chapter 1

"Modeling Social Dynamics" Chapter 2 in TSASS,

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

Sprague, John. 1982. "One Party Dominance in Legislatures" *Legislative Studies Quarterly* 6(2): 259-285.

Recommended

Garratt, Anthony and Shaun P. Vahey. 2006. "U.K. Real Time Macro Data Characteristics." *The Economic Journal* 116(February) F119-F135.

Georgoutsos, D.A., G.P. Kouretas, D.E. Tserkezos. 1998. "Temporal Aggregation in Structural VAR Models." *Applied Stochastic Models and Data Analysis* 14: 19-34.

Granger, Clive W.J. 1990. "Aggregation of Time-Series Variables: A Survey." *Disaggregation in Econometric Modeling*: 17-34.

Granger, Clive W.J. and P.R. Sikklos. 1995. "Systematic Sampling, Temporal Aggregation, Seasonal Adjustment, and Cointegration: Theory and Evidence." *Journal of Econometrics* 66: 357-369.

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.

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

Zellner, A. and C. Montemarquette. l971. "A Study of Some Aspects of Temporal Aggregation Problems in Econometric Analysis." *Review of Economics and Statistics* 53: 335-342.

Freeman, J. and D. Snidal. 1982. "Diffusion, Development and Democratization in Western Europe." *Canadian Journal of Political Science* 15 (2): 299-329.

Hamilton, chp. 5.

Huckfeldt et. al., *1982 Dynamic Modeling: An Introduction* Sage Publications.

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

Zinnes, D.A. and R.G. Muncaster. l984. "The Dynamics of Hostile Activity and the Prediction of War." *Journal of Conflict Resolution* 28 (2): 187-229.

Topic 3 [February 10]: *Identifying, estimating and using models of single time series–Box-Steffensmeier*
Univariate time series models
(a) Stationary ARMA models – includes a discussion of ARIMA and ARFIMA
(c) ARCH models – includes a discussion of FIGARCH
(d) Dynamic Conditional Correlations
(e) Structural change
(f) Illustration: Demographic change in the U.S. and Europe
(g) Illustration: European Public Opinion/Government Spending

REQUIRED

Enders, chp. 2.

"Univariate Time Series Models" Chapter 3 in TSASS.

Recommended

Green, D., B. Palmquist, and E. Schickler 1998. "Macropartisanship: A Replication and Critique." *American Political Science Review* 92(4): 883-899.

Hamilton, Chapters 2, 3.

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

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

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

MacKuen, M., R. Erickson, and J. Stimson. 1989. "Macropartisanship." *American Political Science Review* 83(December): 1125-42.

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

O'Connor, Brendan, Ramnath Balasubramanyan, Bryan R. Routledg, and Noah A. Smith. 2010. "From Tweets to Polls: Linking Text Sentiment to Public Opinion Time Series." *Proceedings of the international AAAI Conference on Weblogs and Social Media.*

Quinn, D. P. and R. Jacobson. 1989 "Industrial Policy Through Restrictions on Capital Flows" *American Journal of Political Science* [AJPS] 33(3): 700-736.

Topic 4 [February 17]: *Unit Roots, Near Integration, and Fractal Integration – Box-Steffensmeier*
Univariate time series models continued

REQUIRED

Box-Steffensmeier, Janet M., and Renee M. Smith. 1996. "The Dynamics of Aggregate Partisanship." *The American Political Science Review* 90(3): 567-80.

Enders, Chapter 6.

Lebo, Matthew, Robert W. Walker, and Harold D. Clarke. 2000. "You Must Remember This: Dealing with Long Memory in Political Analyses." *Electoral Studies,* Vol. 19, No. 2. (March): 31-48.

"Univariate Time Series Models" Chapter 8 (most likely) in TSASS.

Recommended

Box-Steffensmeier, Janet M., and Renee M. Smith. 1998. "Investigating Political Dynamics Using Fractional Integration Methods." *American Journal of Political Science* 42(2): 661-89.

Brooks, Chris, Melvin J. Hinich, and Robert E. Molyneux. 1999. "Episodic Nonlinear Event Detection: Political Epochs in Exchange Rates." in Political Complexity, ed., Diana Richards. University of Michigan Press.

Chambers, Marcus J. 1998. "Long Memory and Aggregation in Macroeconomic Time Series." *International Economic Review* 39 (4): 1053-1072.

DeBoef, Suzanna, and Jim Granato. 1997. "Near-Integrated Data and the Analysis of Political Relationships." *American Journal of Political Science* 41(2): 619-40.

Durr, R. "What Moves Policy Sentiments?" *American Political Science Review* 87:1: 158-172.

Freeman, John, Daniel Houser, Paul M. Kellstedt, and John T. Williams. 1998. "Long-Memoried Processes, Unit Roots, and Causal Inference in Political Science." *American Journal of Political Science*, Vol. 42, No. 4. (Oct.): 1289-1327.

Hamilton, J.D. 1994. *Time Series Analysis*. Princeton, NJ: Princeton University Press: Chapters 15-20.

Lebo, Matthew, and Harold D. Clarke. 2000. "Modelling Memory and Volatility: Recent Advances in the Analysis of Political Time Series." *Electoral Studies,* Vol. 19, No. 2. (March): 1-7.

Lebo, M. and W. Moore. 2003. "Dynamic Foreign Policy Behavior." *Journal of Conflict Resolution* 47 (1): 13-32.

Maddala, G.S., and In-Moo Kim. 2000. *Unit Roots, Cointegration, and Structural Change*. Cambridge: Cambridge University Press: Chapters 4, 6, 9.

Rossana, Robert J. and John Seater. 1992. "Aggregation, Unit Roots, and the Time Series Structure of Manufacturing Real Wages." *International Economic Review* 33 (1): 159-179.

Topic 5 [Feb 24]: *Intervention Models and Changes in Regime – Pevehouse*
Univariate time series models continued

REQUIRED

Enders, 2nd edition: 240-47, 200-207
Third edition: 273-280, 237-239

Enders' video presentation – see website.

Hibbs, D. 1977. "Political Parties and Macroeconomic Performance." *American Political Science Review* 71(4): 1467-1479.

Recommended

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

Box, G.E.P. and G. C. Tiao. 1975. "Intervention Analysis with Applications to Economic and Environmental Problems." *Journal of the American Statistical Association* 70: 70-79.

Corporale, Tony and Kevin Greier 2005 How Smart Is My Dummy? Time Series Tests for the Influence of Politics. POLITICAL ANALYSIS 13:77-94.

Flemming, R., J. Bohte, B. D. Wood. 1997. "One Voice Among Many: The Supreme Court's Influence on Attentiveness to Issues in the US, 1947-92." *AJPS* 41(4): 1224-50.

McCleary and Hay, Chapter 3,4.

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

Rasler, Karen. 1986. "War, Accommodation, and Violence in the United States, 1890- 1970." *American Political Science Review* 80: 921-945.

Wood, B. Dan. 1988. "Principals, Bureaucrats, and Responsiveness in Clean Air Enforcements." *American Political science Review* 82(1): pp. 213-236.

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

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

Topic 6 [March 2]: *ARCH, GARCH, FIGARCH, and Changes in Regime - Pevehouse*
Univariate time series models continued

REQUIRED

Brehm, John and Paul Gronke. 2002. "History, Heterogeneity, and Presidential Approval: A Modified ARCH Approach." *Electoral Studies* 21 (3): 425-452.

Caldeiera, Greg and Christopher, J. W. Zorn. 1998. "Of Time and Consensual Norms in the Supreme Court." *American Journal of Political Science* 42: 874-902.

Enders, Chapter 3 and Section 8 in Chapter 4.

Freeman, John, Jude C. Hays, Helmut Stix. 2000."Democracy and Markets: The Case of Exchange Rates." *American Journal of Political Science*, (July): 449-468.

Recommended

Bauwens, L., S. Laurent, and J.V.K.Rombouts 2006. "Multivariate GARCH Models: A Survey" *Journal of Applied Econometrics* 21: 79-109.

Jensen, Nathan M. and Scott Schmith. 2005. "Market Responses to Politics: The Rise of Lula And the Decline of the Brazilian Stock Market." *Comparative Political Studies* 38(10): 1245-1270.

J.C.Hays, J.R. Freeman and H. Nesseth. 2003. "Exchange Rate Volatility and Democratization in Emerging Market Countries." *International Studies Quarterly* 47: 203-288.

Maddala, G.S., and In-Moo Kim. 2000. *Unit Roots, Cointegration, and Structural Change*. Cambridge: Cambridge University Press: Chapter.

Maestas, Cherie and Robert R. Preuhs. 2000. "Modeling Volatility in Political Time Series." *Electoral Studies* 19: 95-110.

Park, Jong Hee. 2011. "Changepoint Models for Binary and Ordinal Probit Models: An Application to Bank Rate Policy in the Interwar Period." *Political Analysis* 19(2): 188-204.

Park, Jong Hee. 2010. "Structural Change in the U.S. Presidents' Use of Force Abroad." *American Journal of Political Science* 54(3).

TIME SERIES MODELING IN POLITICS**,** PART II

Topic 7 [March 9]: *Time Series Regression Principles + Perhaps an Intro to VAR – Box-Steffensmeier*
Multiple time series – Regression and VAR
(a) Time series regression
(b) Granger causality
(c) Vector autoregression
(d) Illustration: Reciprocity in international relations

REQUIRED

Keele, Luke J.and Suzanna DeBoef. (2008). "Taking Time Seriously" *AJPS* 52 (1): 184-200.

Keele, Luke J. and Nathan J. Kelly (2006). "Dynamic Models for Dynamic Theories: The Ins and Outs of Lagged Dependent Variables." *Political Analysis*.

Pindyck, R.S. and D.L. Rubenfeld. 1991. *Econometric Models and Economic Forecasts Third Edition*. NY: McGraw-Hill: Sections 6.2 and 9.1.

Recommended

Beck, N. 1985. "Estimating Dynamic Models is not Merely a Matter of Technique." *Political Methodology* 11 (1-2): 71-90.

Beck, Nathaniel. 1991. "Comparing Dynamic Specifications: The Case of Presidential Approval." *Political Analysis* 3: 51-88.

Box-Steffensmeier, Janet M. and Tse-Min Lin. 1995. "A Dynamic Model of Campaign Spending in Congressional Campaigns." *Political Analysis* 6

Jackson, John E. and Kenneth Kollman. 2012. "Modeling, Measuring and Distinguishing Path Dependence, Outcome Dependence, and Outcome Independence" *Political Analysis.*

Grier, K. B. 1989. "On the Existence of a Political Monetary Cycle." *American Journal of Political Science* 33 (2): 376-389.

Gujarati, Damodar. 1995. *Basic Econometrics, 3rd Edition*. New York: McGraw-Hill: Chapter 17.

Hamilton, J.D. 1994. *Time Series Analysis*. Princeton, NJ: Princeton University Press: Chapter 8.

Krause, G. 2000. "Testing for the Strong Form of Rational Expectations with Heterogeneously Informed Agents." *Political Analysis* 8(3): 285-305.

Mitchell, S. M. and W. Moore. 2002. "Presidential Uses of Force During the Cold War: Aggregation, Truncation, and Temporal Dynamics." *American Journal of Political Science* 46 (2): 438-453.

March 16 – No Class

Topic 8 [March 23]: *VAR/"Reduced Form" Methods - Freeman*
Multiple time series – Regression and VAR continued

REQUIRED

Enders, Chapter 5, sections 4 to 10.

Freeman, J. 1983. "Granger Causality and the Time Series Analysis of Political Relationships" *American Journal of Political Science*: 327-358.

Freeman, J. Williams, and T. Lin. 1989. "Vector Autoregression and the Study of Politics." *American Journal of Political Science*: 842-877.

Recommended

Box-Steffensmeier, Janet M., David Darmofal, and Christian A. Farrell. 2009. "The Aggregate Dynamics of Campaigns." *Journal of Politics* 71(1): 309-323.

Brandt, Patrick T. and John R. Freeman. 2009. "Modeling Macro-Political Dynamics." *Political Analysis* 17(2): 113-142.

Brandt, Patrick, and John T. Williams 2007. *Multiple Time Series Models* Sage.

Freeman, J. and J. Alt. 1994. "The Politics of Public and Private Investment in Britain" *The Comparative Political of the Welfare State*: 136-168.

Goldstein, J. S., J. Pevehouse, D. Gerner, and S. Telhami. 2001. "Dynamics of Middle East Conflict and U.S. Influence, 1979-1997." *Journal of Conflict Resolution* 45 (5): 594-620.

Goldstein, J. and J. Pevehouse. 1997. "Reciprocity, Bullying, and International Cooperation: Time-series Analysis of the Bosnian Conflict." *American Political Science Review* 91 (3): 515-529.

Goldstein, J. and J. Freeman. 1990. *Three Way Street: Strategic Reciprocity in World Politics* Chicago: University of Chicago Press.

Gujarati, Damodar. 1995. *Basic Econometrics, 3rd Edition*. New York: McGraw-Hill: 746-53.

Hamilton, J.D. 1994. *Time Series Analysis*. Princeton, NJ: Princeton University Press: Chapters 10-11.

Williams, J. 1990. "The Political Manipulation of the Macroeconomic Policy." *American Political Science Review* 84(3): 767-795.

Zeitzoff, Thomas. 2011. "Using Social Media to Model Conflict Dynamics: An Application to the 2008-2009 Gaza Conflict." *Journal of Conflict Resolution*.

Topic 9 [March 30]: *Cointegration and Error Correction - Pevehouse*
Multiple time series – Cointegration and ECMs
(a) Cointegration
(b) error correction models
(c) Illustration: Presidential approval and the economy

REQUIRED

Clarke, Harold D., and Marianne C. Stewart. 1994. "Prospections, Retrospections, and Rationality: The "Bankers" Model of Presidential Approval Reconsidered." *American Journal of Political Science* 38(4): 1104-23.

DeBoef, Suzanna. 2001. "Modeling Equilibrium Relationships: Error Correction Models with Strongly Autoregressive Data." *Political Analysis* 9 (1): 78-94.

Durr, Robert. 1993. "An Essay on Cointegration and Error Correction Models" *Political Analysis 4*: 185-228.

Enders: Chapter 6.

Kono, Daniel. 2008. "Democracy and Trade Discrimination" *Journal of Politics* 70: 942-955

Murray, Michael P. 1994. "A Drunk and Her Dog: An Illustration of Cointegration and Error Correction." *The American Statistician* 48:37-9.

Ostrom, Charles W. and Renee M. Smith. 1993. "Error Correction, Attitude Persistence and Executive Rewards and Punishments: A Behavioral Theory of Presidential Approval." *Political Analysis 4*: 127-184.

"Cointegration" Chapter in TSASS.

Recommended

Beck, Nathaniel. 1993. "The Methodology of Cointegration." *Political Analysis 4*: 237-248.

Box-Steffensmeier, Janet M., and Andrew R. Tomlinson. 2000. "Fractional Integration Methods in Political Science." *Electoral Studies* 19 (1, March): 63-76.

Durr, Robert. 1993. "Of Forest and Trees." *Political Analysis 4*: 255-258.

Engle, R.F. and Clive W.J. Granger. 1987. "Cointegration and Error Correction: Representation, Estimation, and Testing." *Econometrica* 55:251-276.

Engle, R.F. and Clive W.J. Granger. 1991. *Long Run Economic Relationships: Readings in Cointegration.* New York: Oxford University Press.

Greene, William H. 1993. *Econometric Analysis, 2nd Edition*: Sections 19.3 - 19.6.

Haber, Stephen and Victor Menaldo. 2011. "Do Natural Resources Fuel Authoritarianism? A Reappraisal of the Resource Curse." *American Political Science Review* 105(1): 1-16.

Krause, George A. 1997. "Voters, Information Heterogeneity, and the Dynamics of Aggregate Economic Expectations." *American Journal of Political Science* 41 (4 Oct.): 1170-1200.

Mark Ramirez. 2009. "The Dynamics of Partisan Conflict on Congressional Approval. *AJPS* 53 (3): 681-694.

Smith, Robert. 1993. "Error Correction, Attractions, and Cointegration." *Political Analysis 4*: 249-254.

Williams, John. 1993. "What Goes Around, Comes Around: Unit Root Tests and Cointegration." *Political Analysis 4*: 229-236.

April 6 – No Class

April 13 – No Class, Meet at MPSA Conference Friday Night Pizza Dinner

Topic 10 [April 20] – Guest Speaker: Heather Ondercin http://heatherondercin.weebly.com/
And Cointegration & ECMs Continued – Pevehouse

See readings from Topic 9

Topic 11 [April 30]: *Bayesian Time Series - Freeman*
(a) Frequentist vs. Bayesian approaches to statistics in general and to time series analysis in particular
(b) The Minnesota Prior
(c) Illustration: Macropartisanship revisted

REQUIRED

Brandt, Patrick T. and John R. Freeman 2006. "Advances in Bayesian Time Series Modeling and the Study of Politics: Theory Testing, Forecasting and Policy Analysis." *Policy Analysis* 14(1): 1-36.

Brandt, Patrick T., Michael Colaresi, and John R. Freeman 2008 "The Dynamics of Reciprocity, Accountability, and Credibility." *Journal Conflict Resolution* 52(3): 343-379

Kadane, J. B., N.H.Chan, and L.J. Wolfson 1996 "Priors for Unit Root Models" *Journal Of Econometrics* 75: 99-111.

Recommended

Bauwens, L., M. Lubrano, and J.-F. Richard 1999. *Bayesian Inference in Dynamic Econometric Models* Oxford University Press.

Brandt, Patrick and John R. Freeman. 2009. "Modeling Macropolitical Dynamics." *Political Analysis* 17(2): 113-142.

Sattler, Thomas, John R. Freeman, and Patrick Brandt. 2008 "Political Accountability And the Room to Maneuver: A Search for a Causal Chain." *Comparative Political Studies.* 41(9): 1212-1239 [Corrigendum, 42(1): 125-131.]

Sattler, Thomas, Patrick Brandt, and John R. Freeman. 2010. "Democratic Accountability in Economies." *Quarterly Journal of Political Science* 5:71-91.

Sims, C.A. and T. Zha 1998. "Bayesian Methods for Dynamic Multivariate Models" *International Economic Review*

_____ 1999 "Error Bands for Impulse Responses" *Econometrica* 67(5): 1113-1156.

Topic 12 [May 4]: *Forecasting Social Series – Box-Steffensmeier*
(a) Forecasting as model validation and as policy analysis
(b) Forecasting with univariate models
(c) Forecasting with multivariate models
(d) Illustrations: Forecasting crime in the U.S., election outcomes, and relations between India and Pakistan
And more … *DCC Models, Time Series Count Models and Go Forth Speech*
We will summarize our principal arguments, revisit some of the issues raised regarding the relevance of time series methods for social science, look briefly at some extensions and connections to other kinds of dynamic models, and make some recommendations regarding the implementation of time series methods.

REQUIRED for Forecasting

Clements, Michael P. and David F. Hendry "An Introduction to Forecasting" Chapter 1 in *Forecasting Economic Time Series* NY Cambridge University Press, 1998: 1-32.

Pindyck, Robert and Daniel L. Rubenfeld, "Estimating and Forecasting with Time Series Models" Chapter 18 in *Economic Models and Econometric Forecasting* Fourth Edition NY McGraw Hill, l998: 549-579..

Kou, S. G. and Michael E. Sobel (2004) "Forecasting the Vote: A Comparison Of Election Market and Public Opinion Polls" *Political Analysis* 12(3), 2004: 277-295.

"Forecasting" Chapter 7 in TSASS.

<u>REQUIRED for DCC & Time Series Count Models</u>

Brandt, Patrick, John Williams, Benjamin Fordham, and Brian Pollins. 2000 "Dynamic Modeling for Persistent Event Count Time Series" *AJPS* October: 823-843.

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Video presentation by Matt Lebo – see website.