

TIME SERIES ANALYSIS
030:306, FALL 2008
T 1:30 PM – 4:20 PM, 137 SH

INSTRUCTOR:

Sara Mitchell
307 SH
Phone: 335-2471
Email: sara-mitchell@uiowa.edu
Http: www.saramitchell.org
Office Hours: Wednesday 2:00-4:30pm

COURSE DESCRIPTION:

This course is an introduction to methods of time series analysis. Students are assumed to understand basics of statistical inference, regression analysis, and scalar and matrix algebra (you should have taken 030:201 and 030:301, or equivalent courses). Some topics that will be covered include ARIMA models, intervention analysis, regression analysis of time series, cointegration, error correction models, vector autoregression, pooled time series, and time varying parameter models.

COURSE REQUIREMENTS:

Each student is expected to attend all class meetings and to have completed all required readings prior to each class.

1) Homework Assignments (35%)

You will complete four homework assignments throughout the semester. We will be using STATA 10.0, which is available in the Political Science computer lab. The STATA website is <http://www.stata.com>.

2) Final Exam (30%)

The final exam will be administered during finals week on Monday, December 15th from 2:15-4:15pm in 137 SH. The exam will be comprehensive and may include multiple choice, short answer, and essay questions.

3) Poster (35%): December 9th, 1:30-4:00pm in 302 SH hall

Choose a research question in your area of interest that involves some type of time series data. You will present your research in poster format at the end of the semester. The poster should identify your research question, identify one or more hypotheses to be tested (along with a causal story linking your variables), describe your research design, and present your empirical results. I expect the following empirical components in your poster: a) descriptive analysis of your data (plotting the data, ACF, PACF, ARIMA models, tests for stationarity, etc.) and b) some type of multivariate time series analysis (regression, ECM, VAR, etc.). The poster will be judged both for its substantive content and its aesthetic qualities. You must submit a copy of your poster materials to the instructor by 5pm on Monday, December 8th. More detailed instructions will be distributed later this semester.

REQUIRED TEXT (Available at Iowa Book):

Enders, Walter. 2003. *Applied Econometric Time Series, 2nd Edition*. New York: Wiley.

RECOMMENDED TEXTS:

Chatfield, Christopher. 2003. *The Analysis of Time Series: An Introduction, Sixth Edition*. New York: Chapman and Hall.

Cromwell, Jeff B., Michael J. Hannan, Walter C. Labys, and Michel Terraza. 1994. *Multivariate Tests for Time Series Models* (Sage University Paper series on Quantitative Applications in the Social Sciences, 07-100). Thousand Oaks, CA: Sage.

Davidson, Russell, and James G. MacKinnon. 1993. *Estimation and Inference in Econometrics*. Oxford: Oxford University Press.

Engle, Robert F. and C.W.J. Granger (eds.). 1992. *Long-Run Economic Relationships: Readings in Cointegration*. Oxford: Oxford University Press.

Granger, C.W.J. 1991. *Modelling Economic Series*. Oxford: Oxford University Press.

Granger, C.W.J. and Paul Newbold. 1986. *Forecasting Economic Time Series (Second Edition)*. San Diego, CA: Academic Press.

Hamilton, James D. 1994. *Time Series Analysis*. Princeton, New Jersey: Princeton University Press.

Harvey, Andrew. 1989. *Forecasting, Structural Time Series Models and the Kalman Filter*. Cambridge: Cambridge University Press.

Harvey, Andrew. 1993. *Time Series Models (Second Edition)*. Cambridge: MIT Press.

Hendry, David F. 1995. *Dynamic Econometrics*. Oxford: Oxford University Press.

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

Leamer, Edward E. 1978. *Specification Searches: Ad Hoc Inference with Nonexperimental Data*. New York: Wiley.

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

McDowall, David, Richard McCleary, Errol E. Meidinger, and Richard A. Hay, Jr. 1980. *Interrupted Time Series Analysis*. Sage University Paper series on Quantitative Applications in the Social Sciences, series no. 07-021. Beverly Hills: Sage.

Mills, Terrence C. 1990. *Time Series Techniques for Economists*. Cambridge: Cambridge University Press.

Ostrom, Charles W. 1990. *Time Series Analysis: Regression Techniques*. Beverly Hills, CA: Sage.

Pindyck, R.S. and D.L. Rubinfeld. 1991. *Econometric Models and Economic Forecasts, Third Edition*. New York: McGraw-Hill.

Sayrs, Lois W. 1989. *Pooled Time Series Analysis*. Sage University Paper series on Quantitative Applications in the Social Sciences, series no. 07-070. Beverly Hills: Sage.

Wooldridge, Jeffrey. 2009. *Introductory Econometrics: A Modern Approach, 4th Edition*. South-Western College Publishing.

CLASS SCHEDULE:

August 26th Graphing and Summarizing Time Series, Difference Equations

Required Reading

Enders, Chapter 1

Recommended Reading

Mills, Terrence C. 1990. *Time Series Techniques for Economists*. Cambridge: Cambridge University Press.

September 2nd Stationarity, Serial Correlation, and Normality;

Differencing and Lag Operators

Required Reading

Enders, Chapter 2

Recommended Reading

Davidson and MacKinnon (1993), Chapter 10

Durbin, J. and G.S. Watson. 1950. "Testing for Serial Correlation in Least Squares Regression I." *Biometrika* 37(3-4): 409-428.

Durbin, J. and G.S. Watson. 1951. "Testing for Serial Correlation in Least Squares Regression II." *Biometrika* 38(1-2): 159-178.

Granger and Newbold (1986), Chapter 1

Hamilton (1994), Chapters 1-2

Jarque, Carlos M. and Anil K. Bera. 1980. "Efficient Tests for Normality, Homoscedasticity, and Serial Independence of Regression Residuals." *Economic Letters* 6(3): 255-259.

McCleary and Hay (1980)

Ostrom (1990)

September 9th Autoregressive Integrated Moving Average (ARIMA) Models

Required Reading

Li, R.P. 1976. "A Dynamic Comparative Analysis of Presidential and House Elections." *American Journal of Political Science* 20(4): 671-691.

Rasler, Karen A. and William R. Thompson. 1985. "War Making and State Making: Governmental Expenditures, Tax Revenues, and Global Wars." *American Political Science Review* 79(2): 491-507.

Recommended Reading

Granger and Newbold (1986), Chapter 5

Hamilton (1994), Chapter 3

McCleary and Hay (1980)

Mills (1990), Chapter 7, 8, 10

McDowall et al (1980), pages 1-54

Phillips, P.C.B. 1987. "Time Series with a Unit Root." *Econometrica* 55: 277-301.

Phillips, P.C.B. and P. Perron. 1988. "Testing for a Unit Root in Time Series Regression." *Biometrika* 75(2): 335-346.

September 16th Intervention/Transfer Function Analysis

Required Reading

Enders, Chapter 5, pages 239-263

MacKuen, Michael B., Robert S. Erikson, and James A. Stimson. 1989. "Macropartisanship." *American Political Science Review* 83(4): 1125-1142.

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

Wood, B. Dan. 1988. "Principals, Bureaucrats, and Responsiveness in Clean Air Enforcements." *American Political Science Review* 82(1): 213-234.

Recommended Reading

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(1): 70-79.

Carmines, Edward G. and James A. Stimson. 1986. "On the Structure and Sequence of Issue Evolution." *American Political Science Review* 80(3): 901-920.

Erikson, Robert S., Michael B. MacKuen, and James A. Stimson. 1998. "What Moves Macropartisanship? A Response to Green, Palmquist, and Schickler." *American Political Science Review* 92(4): 901-912.

Hibbs, Douglas A. Jr. 1977. "Political Parties and Macroeconomic Policy." *American Political Science Review* 71(4): 1467-1479.

Hibbs, Douglas A. Jr. 1977. "On Analyzing the Effects of Policy Interventions: Box-Jenkins and Box-Tiao vs. Structural Equation Models." *Sociological Methodology* 8: 137-179.

Moe, Terry M. 1982. "Regulatory Performance and Presidential Administration." *American Journal of Political Science* 26(2): 197-224.

Norpoth, Helmut. 1986. "Transfer Function Analysis," pages 241-273 in William D. Berry and Michael S. Lewis-Beck (eds.), *New Tools for Social Scientists*. Beverly Hills: Sage.

Oppenheimer, Bruce I., James A. Stimson, and Richard W. Waterman. 1986. "Interpreting U.S. Congressional Elections: The Exposure Thesis." *Legislative Studies Quarterly*, 11(2): 227-247.

Rasler, Karen. 1986. "War, Accommodation, and Violence in the United States, 1890-1970." *American Political Science Review* 80(3): 921-945.

Ringquist, Evan J. 1995. "Political Control and Policy Impact in EPA's Office of Water Quality." *American Journal of Political Science* 39(2): 336-363.

September 23rd Unit Roots and Near/Fractional Integration

Required Reading

Enders, Chapter 4

DeBoef, Suzanna and Jim Granato. 1997. "Near-Integrated Data and the Analysis of Political Relationships." *American Journal of Political Science* 41(2): 619-640.

Box-Steffensmeier, Janet M. and Renee M. Smith. 1998. "Investigating Political Dynamics Using Fractional Integration Methods." *American Journal of Political Science* 42(2): 661-689.

Recommended Reading

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

September 30th Distributed Lag and OLS Time Series Models

Required Reading

- Box-Steffensmeier, Janet M, Suzanna de Boef, and Tse-min Lin. 2004. "The Dynamics of the Partisan Gender Gap." *American Political Science Review* 98(3): 515-528.
- Burkhart, Ross E. and Michael S. Lewis-Beck. 1994. "Comparative Democracy: The Economic Development Thesis." *American Political Science Review* 88(4): 903-910.
- Lewis-Beck, Michael S. 1986. "Interrupted Time Series" pages 209-240 in William D. Berry and Michael S. Lewis-Beck (eds.), *New Tools for Social Scientists: Advances and Applications in Research Methods*. Beverly Hills: Sage.
- Wood, B. Dan and Richard W. Waterman. 1993. "The Dynamics of Political-Bureaucratic Adaptation." *American Journal of Political Science* 37(2): 497-528.

Recommended Reading

- Box-Steffensmeier, Janet M. and Tse-min Lin. 1996. "A Dynamic Model of Campaign Spending in Congressional Elections." *Political Analysis* 6(1): 37-66.
- Brophy-Baermann, Bryan and John A.C. Conybeare. 1994. "Retaliating Against Terrorism: Rational Expectations and the Optimality of Rules versus Discretion." *American Journal of Political Science* 38(1): 196-210.
- Lewis-Beck, Michael S. and John R. Alford. 1980. "Can Government Regulate Safety? The Coal Mine Example." *American Political Science Review* 74(3): 745-756.
- Monroe, Kristen R. 1981. "Presidential Popularity: An Almon Distributed Lag Model." *Political Methodology* 7(1): 43-69.
- Ostrom, Charles W., Jr. and Robin F. Marra. 1986. "U.S. Defense Spending and the Soviet Estimate." *American Political Science Review* 80(3): 819-842.

October 7th Granger Causality, Exogeneity, and General to Specific Modeling

Required Reading

- Freeman, John. 1983. "Granger Causality and the Time Series Analysis of Political Relationships." *American Journal of Political Science* 27(2): 327-358.
- Granato, Jim. 1991. "An Agenda for Econometric Model Building." *Political Analysis* 3(1): 123-154.
- Reuveny, Rafael and Heejoon Kang. 1996. "International Trade, Political Conflict/Cooperation and Granger Causality." *American Journal of Political Science* 40(3): 943-970.
- Thurman, Walter N. and Mark E. Fisher. 1988. "Chickens, Eggs, and Causality, or Which Came First?" *American Journal of Agricultural Economics* 70(2): 237-238.

Recommended Reading

- Cromwell et al (1994), pages 32-55
- Engle, Robert F., David F. Hendry, and Jean-Francois Richard. 1983. "Exogeneity." *Econometrica* 51(2): 277-304.
- Geweke, John. 1984. "Inference and Causality in Economic Time Series Models," pages 1101-1144 in Griliches and Intrilligator (eds.), *Handbook of Econometrics, Volume 2*. Amsterdam: Elsevier.
- Granato, Jim, Ronald Inglehart and David Leblang. 1996. "The Effect of Cultural Values on Economic Development: Theory, Hypotheses, and Some Empirical Tests." *American Journal of Political Science* 40(3): 607-631.

- Granger (1990)
 Hendry (1995)
 Hendry, David F. and Jean-Francois Richard. 1982. "On the Formulation of Empirical Models in Dynamic Econometrics." *Journal of Econometrics* 20(1): 3-33.
 Hendry, David F. and Jean-Francois Richard. 1983. "The Econometric Analysis of Time Series." *International Statistical Review* 51(2): 111-163.
 Hendry, David F. and Jean-Francois Richard. 1988. "Recent Developments in the Theory of Encompassing." *Institute of Statistics and Decision Sciences, Duke University* 88-05.
 Hoole, Francis and Chi Huang. 1989. "The Global Conflict Process." *Journal of Conflict Resolution*, 33(1): 142-163.
 Mills (1990), pages 281-305
 Sayrs, Lois W. 1993. "The Long Cycle in International Relations: A Markov Specification." *International Studies Quarterly* 37(2): 215-237.

October 14th Cointegration, Partial Adjustment, and Error Correction Models

Required Reading

Enders, Chapter 6

- Caldeira, Gregory A. and Christopher J.W. Zorn. 1998. "Of Time and Consensual Norms in the Supreme Court." *American Journal of Political Science* 42(3): 874-902.
 Lebo, Matthew J. and Will H. Moore. "Dynamic Foreign Policy Behavior." *Journal of Conflict Resolution* 47(1): 13-32.
 Ostrom, Charles W, Jr. and Renee Smith. 1992. "Error Correction, Attitude Persistence, and Executive Rewards and Punishments: A Behavioral Theory of Presidential Approval." *Political Analysis* 4(1): 127-183.

Recommended Reading

- Adam, Christopher. 1991. "Financial Innovation and the Demand for £M3 in the UK: 1975-1986." *Oxford Bulletin of Economics and Statistics* 53(4): 401-424.
 Beck, Nathaniel. 1993. "The Methodology of Cointegration." *Political Analysis* 4(1): 237-248.
 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): 1104-1123.
 Cromwell et al (1994), pages 17-31, 68-70
 DeBoef, Suzanna. 2001. "Modeling Equilibrium Relationships: Error Correction models with Strongly Autoregressive Data." *Political Analysis* 9(1): 78-94.
 Dickey, David A., Dennis W. Jansen, and Daniel L. Thornton. 1991. "A Primer on Cointegration with an Application to Money and Income." *Federal Reserve Bank of St. Louis Review*. 73(2): 58-78.
 Durr, Robert. 1993. "An Essay on Cointegration and Error Correction Models." *Political Analysis* 4(1): 185-228.
 Engle, R.F. and C.W.J. Granger. 1987. "Cointegration and Error Correction: Representation, Estimation, and Testing." *Econometrica* 55(2): 251-276.
 Engle, R.F. and C.W.J. Granger. 1991. *Long Run Economic Relationships: Readings in Cointegration*. New York: Oxford University Press.
 Hall, S.G. 1989. "Maximum Likelihood Estimation of Cointegration Vectors: An Example of the Johansen Procedure." *Oxford Bulletin of Economics and Statistics* 51(2): 213-218.

- Johansen, Soren. 1988. "Statistical Analysis of Cointegration Vectors." *Journal of Economic Dynamics and Control* 12(2-3): 231-254.
- Krause, George A. 1997. "Voters, Information Heterogeneity, and the Dynamics of Aggregate Economic Expectations." *American Journal of Political Science* 41(4): 1170-1200.
- Smith, Renee. 1993. "Error Correction, Attractors and Cointegration." *Political Analysis* 4(1): 249-254.
- Williams, John. 1992. "What Goes Around Comes Around: Unit Root Tests and Cointegration." *Political Analysis* 4(1): 229-236.

October 21st Vector Autoregression (VAR)

Required Reading

Enders, Chapter 5 (pages 264-310)

McGinnis, Michael D. and John T. Williams. 1989. "Change and Stability in Superpower Rivalry." *American Political Science Review* 83(4): 1101-1123.

Recommended Reading

Cromwell et al (1994), pages 56-67

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* 42(4): 1289-1327.

Freeman, John T., Tse-min Lin, and John Williams. 1989. "Vector Autoregression and the Study of Politics." *American Journal of Political Science* 33(4): 842-877.

Goldstein, Joshua S. and John R. Freeman. 1990. *Three Way Street: Strategic Reciprocity in World Politics*. Chicago, IL: University of Chicago Press.

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

Granger (1991), Chapters 8, 10 (Sims, Todd)

Hendry, David F. and Jean-Francois Richard. 1982. "On the Formulation of Empirical Models in Dynamic Econometrics." *Journal of Econometrics* 20(1): 3-33.

McGinnis, Michael D. and John T. Williams. 2001. *Compound Dilemmas: Democracy, Collective Action, and Superpower Rivalry*. Ann Arbor, MI: University of Michigan Press.

Stock, James H. and Mark W. Watson. 2001. "Vector Autoregressions." *Journal of Economic Perspectives* 15(4): 101-115.

Williams, John T. 1990. "The Political Manipulation of Macroeconomic Policy." *American Political Science Review* 84(3): 767-796.

Williams, John T. 1992. "Dynamic Change, Specification Uncertainty, and Bayesian Vector Autoregression Analysis." *Political Analysis* 4(1): 97-125.

Williams, John T. and Brian K. Collins. 1997. "The Political Economy of Corporate Taxation." *American Journal of Political Science* 41(1): 208-244.

October 28th Bayesian Vector Autoregression (BVAR)

Required Reading

Brandt, Patrick T. and John R. Freeman. 2005. "Advances in Bayesian Time Series Modeling and the Study of Politics: Theory Testing, Forecasting, and Policy Analysis." *Political*

Analysis 14(1): 1-36.

- Brandt, Patrick T., Michael Colaresi, and John R. Freeman. 2008. "The Dynamics of Reciprocity, Accountability, and Credibility." *Journal of Conflict Resolution* 52(3): 343-374.
- Litterman, Robert B. 1986. "Forecasting with Bayesian Vector Autoregressions: Five Years of Experience." *Journal of Business and Economic Statistics* 4(1): 25-38.

Recommended Reading

- Bauwens, Luc, Michel Lubrano, and Jean-Francois Richard. 1999. *Bayesian Inference in Dynamic Econometric Models*. Oxford: Oxford University Press.
- Brandt, Patrick T. and John T. Williams. 2007. *Modeling Multiple Time Series*. Beverly Hills, CA: Sage.
- Kadane, Joseph B., Ngai Hang Chan and Lara J. Wolfson. 1996. "Priors for Unit Root Models." *Journal of Econometrics* 75(1): 99-111.
- Sims, Christopher A. and Tao Zha. 1998. "Bayesian Methods for Dynamic Multivariate Models." *International Economic Review* 39(4): 949-968.

November 4th ARCH, GARCH, and Time Varying Parameters

Required Reading

Enders, Chapter 3

- Leblang, David and Bumba Mukherjee. 2004. "Presidential Elections and the Stock Market: Comparing Markov-Switching and Fractionally Integrated GARCH Models of Volatility." *Political Analysis* 12(3): 296-322.
- Beck, Nathaniel. 1983. "Time-Varying Parameter Regression Models." *American Journal of Political Science* 27(3): 557-600.
- Mitchell, Sara McLaughlin, Scott Gates and Håvard Hegre. 1999. "Evolution in Democracy-War Dynamics." *Journal of Conflict Resolution* 43(6): 771-792.

Recommended Reading

- Beck, Nathaniel. 1989. "Estimating Dynamic Models Using Kalman Filtering." *Political Analysis* 1(1): 121-156.
- Box, George and Douglas Pierce. 1970. "Distribution of Residual Autocorrelations in Autoregressive-integrated Moving Average Time Series Models." *Journal of the American Statistical Association* 65(332): 1509-1526.
- Brehm, John and Paul Gronke. 2002. "History, Heterogeneity, and Presidential Approval: A Modified ARCH Approach." *Electoral Studies* 21(3): 425-452.
- Chow, Gregory. 1960. "Tests of Equality between Sets of Coefficients in Two Linear Regressions." *Econometrica* 28(3): 591-605.
- Cromwell et al (1994), pages 70-71
- Dufour, Jean-Marie. 1982. "Recursive Stability Analysis of Linear Regression Relationships." *Journal of Econometrics* 19(1): 31-76.
- Engle, Robert F. 1982. "Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of United Kingdom Inflation." *Econometrica* 50(4): 987-1007.
- Engle, Robert F. 2001. "The Use of ARCH/GARCH Models in Applied Econometrics." *Journal of Economic Perspectives* 15(4): 157-168.

- Hansen, Bruce E. 2001. "The New Econometrics of Structural Change: Dating Breaks in U.S. Labor Productivity." *Journal of Economic Perspectives* 15(4): 117-128.
- Hansen, Bruce E. 1992. "Testing for Parameter Instability in Linear Models." *Journal of Policy Modeling* 14(4): 517-533.
- Harvey (1989, 1993)
- Hays, Judith C., John R. Freeman, and Hans Nesseth. 2003. "Exchange Rate Volatility and Democratization in Emerging Market Countries." *International Studies Quarterly* 47(2): 203-288.
- 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.
- Maddala, G.S. and In-Moo Kim. 2000. *Unit Roots, Cointegration, and Structural Change*. New York: Cambridge University Press.
- Maestas, Cherie and Robert R. Preuhs. 2000. "Modeling Volatility in Political Time Series." *Electoral Studies* 19(1): 95-110.
- Western, Bruce and Meredith Kleykamp. 2004. "A Bayesian Change Point Model for Historical Time Series Analysis." *Political Analysis* 12(4): 354-374.
- White, Halbert. 1980. "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity." *Econometrica* 48(4): 817-838.
- Wood, B. Dan. 2000. "Weak Theories and Parameter Instability: Using Flexible Least Squares to Take Time-Varying Relationships Seriously." *American Journal of Political Science* 44(3): 603-618.

November 11th Dynamic Approaches to Time Series Modeling

Required Reading

- Beck, Nathaniel. 1991. "Comparing Dynamic Specifications: The Case of Presidential Approval." *Political Analysis* 3(1): 51-87.
- De Boef, Suzanna and Luke Keele. 2008. "Taking Time Seriously." *American Journal of Political Science* 52(1): 184-200.
- Keele, Luke and Nathan J. Kelly. 2006. "Dynamic Models for Dynamic Theories: the Ins and Outs of Lagged Dependent Variables." *Political Analysis* 14(2): 186-205.

November 18th Pooled Time Series

Required Reading

- Beck, Nathaniel and Jonathan N. Katz. 1995. "What to Do (and Not to Do) with Times-Series-Cross-Section Data." *American Political Science Review* 89(3): 634-647.
- 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.
- Green, Donald P., Soo Yeon Kim, and David H. Yoon. 2001. "Dirty Pool." *International Organization* 55(2): 441-468.
- Stimson, James A. 1985. "Regression in Space and Time: A Statistical Essay." *American Journal of Political Science* 29(4): 914-945.

Recommended Reading

- Beck, Nathaniel. 2001. "Time-Series-Cross-Section Data: What Have We Learned in the Past

- Few Years?" *Annual Review of Political Science* 4: 271-293.
- Beck, Nathaniel and Jonathan N. Katz. 1996. "Nuisance vs. Substance: Specifying and Estimating Time-Series-Cross-Section Models." *Political Analysis* 6(1): 1-36.
- Beck, Nathaniel and Jonathan N. Katz. 2001. "Throwing Out the Baby With the Bath Water: A Comment on Green, Kim, and Yoon." *International Organization* 55(2): 487-495.
- Finkel, Steven. 1995. *Causal Analysis With Panel Data*. Beverly Hills: Sage.
- Holbrook, Thomas M. 1991. "Presidential Elections in Space and Time." *American Journal of Political Science* 35(1): 91-109.
- Hsiao, Cheng. 1986. *Analysis of Panel Data*. New York: Cambridge University Press.
- Kerr, Brinck and Kenneth R. Mladenka. 1994. "Does Politics Matter? A Time-Series Analysis of Minority Employment Patterns." *American Journal of Political Science* 38(4): 918-943.
- King, Gary. 2001. "Proper Nouns and Methodological Propriety: Pooling Dyads in International Relations Data." *International Organization* 55(2): 497-507.
- Pindyck, Robert S. and Daniel Rubinfeld. 1981. *Econometric Models and Economic Forecasts*. New York: McGraw-Hill.
- Pollins, Brian. 1989. "Does Trade Still Follow the Flag?" *American Political Science Review* 83(2): 465-480.
- Sayrs (1989)
- Wooldridge, Jeffrey M. 2002. *Econometric Analysis of Cross Section and Panel Data*. MIT Press.
- Zorn, Christopher J.W. 2001. "Estimating Between- and Within-Cluster Covariate Effects, with an Application to Models of International Disputes." *International Interactions* 27(4): 433-445.

November 25th NO CLASS, THANKSGIVING BREAK

December 2nd Pooled Time Series

Required Reading

- Shor, Boris, Joseph Baufumi, and Luke Keele. 2007. "A Bayesian Multilevel Modeling Approach to Time-Series Cross-Section Data." *Political Analysis* 15(2): 165-181.
- Wawro, Gregory. 2002. "Estimating Dynamic Panel Data Models in Political Science." *Political Analysis* 10(1): 25-48.
- Zorn, Christopher J.W. 2001. "Generalized Estimating Equation Models for Correlated Data: A Review with Applications." *American Journal of Political Science* 45(2): 470-490.

Recommended Reading

- Fording, Richard C. 1997. "The Conditional Effect of Violence as a Political Tactic: Mass Insurgency, Welfare Generosity, and Electoral Context in the American States." *American Journal of Political Science* 41(1): 1-29.
- Green, Donald P. and David H. Yoon. 2002. "Reconciling Individual and Aggregate Evidence Concerning Partisan Stability: Applying Time-Series Models to Panel Survey Data." *Political Analysis* 10(1): 1-24.
- Political Analysis*, Volume 15, Number 2
- Wawro, Gregory. 2001. "A Panel Probit Analysis of Campaign Contributions and Roll Call Votes." *American Journal of Political Science* 45(3): 563-379.