

POLI 7964 Pooled Cross-Sectional Time Series

Fall 2011

Basic Information

Class meets: Thursdays, 1:40-4:30 Prescott Hall

Instructor: Dr. Heather Ondercin

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Office Phone: 578-2535.

Office hours: Tuesday 1:30-4:00 pm and by appointment.

E-mail is an effective way to reach me, I check my messages several times a day. If my office hours don't work for you, talk to me and we can make an appointment. Never hesitate to talk to me if you have a problem, comment, or concern.

Prerequisites: POLI 7962 and POLI 7963 or the equivalent classes in another department. At a minimum students need to have a basic understanding of Ordinary Least Squares and the BLUE assumptions. Additionally, students should have a basic understanding of the statistical software package STATA.

Course Description

This course is designed as an introduction to models used for data that varies both across units and across time. Examples include modeling attitudes of the same individual over time, budgets of countries over time, whether a country more or less likely to fight under a democratic or a non-democratic government.

Objectives of the Course

- Develop good practices for executing social science research.
- Think critically about how best to analyze the unique features of a data generating process and various data structures.
- Develop a set of skills that will serve as a basis that will allow students to learn new methods when necessary for future research.

Much of the literature on pooled cross-sectional time series is highly technical and jargon filled. The first half of the course is designed to help you better understand the more technical material later in the course. We will start with a brief overview of mathematical topics that will be useful for reading and understanding material later in the class. This will include mathematical notation, analytic geometry, linear (matrix) algebra, and OLS estimated using matrix algebra. We will also do a quick review of OLS estimation and the BLUE properties

associated with OLS. Finally, we will do a quick introduction to time series. Please note that this is not a time-series class. We will only spend one week talking specifically about time series; rather than the semester length treatment necessary for a true introductory time series course. In the second half of the class we will tackle multiple types of models for data that vary across both space and time. We begin this discussion with models developed for continuous dependent variables such as fixed-effect, random effects, gls-based models, and models with lagged dependent variables. The final type of models we will consider are those developed for binary dependent variables.

This class takes both a technical and applied approach to the study of methods. Each class will consist of lecture, discussion, and applied activities. The lectures will be a combination of the theoretical and technical components underlying the models and application of the methods to social science research. The term lecture can actually be misleading. I think that the best way for us learn methods is to have a discussion about them. So I encourage questions and conversations about the material we are covering during lectures. We will apply our technical knowledge to the subject matter in two ways. This class does not have a lab section associated with it, so we will devote part of each class to a “Lab” session. In these sessions we will cover general topics about STATA, model specification and presentation of data. We will also go over specific commands related to the models that we discussed in lecture. We will also hold discussions about the methods used in applied research articles. Expectations regarding these discussions are detailed below.

This class is mainly designed for political science students. That is not to say that scholars in other disciplines may not encounter similar data structures and methodological issues; rather, the specific topics and examples we cover will be those that are most familiar to political scientists.

Class Policies And Expectations

Students are expected to come to class prepared and ready to learn. Students should complete the required readings before the class they are assigned for. While I have tried to select assessable readings, some will be challenging and may need to be read multiple times. I recommend that you read the material before class and then again after class. I can guarantee you every time you read the articles you will get something more out of them.

If you are experiencing problems of any sort please talk to me as early as possible. Everyone learns in different ways and has different strengths and weaknesses. I try to develop class activities and ways to assess your progress that accommodate these various learning styles. With that said there may be parts of this class that you will find challenging. If you come and talk with me we can work on those issues to ensure your success in the class. However, if you wait until the day before the exam or an assignment is due it will be too late. So please talk to me as soon as you begin to experience problems.

Shut your cell phones off before coming to class. It is disturbing to me and your fellow students. I reserve the right to confiscate phones if this becomes a problem. The use of laptops are allowed (actually encouraged) during the lab sessions. The use of laptops during the rest of the class is highly discouraged. It will be difficult to take notes on a laptop during lecture and discussion.

All students are expected to work independently on all assignments. Group and collaborative work is not permitted unless specific instructions are given. Proper citations must be used to acknowledge any ideas, concepts, theories, organizational formats, and writing that is not your own. If you are not clear on how to properly give credit to others, please see me before turning in any assignment. All students are required to read and be familiar with the Code of Student Conduct found at www.lsu.edu/judicialaffairs as well as all other university policies and procedures. If you have questions about what constitutes plagiarism see: <http://www.lib.lsu.edu/instruction/plagiarism/html>. I take this issue very seriously and will check all things turned into me for signs of plagiarism.

Students with disabilities: Reasonable accommodations will be made for any student with documented disabilities to ensure that the student is able to participate in class to the best of their abilities. If you anticipate needing any type of accommodation in this course or have questions about physical access, please tell the instructor as soon as possible. Reasonable accommodations will be made for all students with disabilities, but it is the student's responsibility to inform the instructor early in the term. It is also the student's responsibility to register with the disability service office on campus. Do not wait until just before an exam to decide you want to inform the instructor of a learning disability; any accommodations for disabilities must be arranged well in advance.

If you did not attend the first day of class and/or added the class late, all class policies apply equally to you. It is your responsible to find out any information gone over during the class periods you missed. Deadlines **will not** be adjusted on an individual basis.

Grading

Table 1: Assignments and Due Dates

	Points Available	Due Dates
Participation	15	everyday
Homework	45	See outline below
Poster	20	December 1 st
Paper	20	December 7 th
Total	100	

Participation

You will not get much out of this class if you are a passive observer. You should come to class

having read the material and prepared to discuss the different topics. You should always be thinking about how this relates to your research questions and interests. In addition to being an active participant in class, part of the participation grade will be based on presentations of applied readings. Throughout the reading list you will find application readings for some of the topics. You are to select an application reading to read and write a two page summary of the reading and then present the methods and findings. The summaries will be do in class for the day they are listed on the syllabus. While the theory of the paper should be addressed in the summary, the majority of the summary should be about the methods in the paper. You are expected to be an expert on the article you selected for the discussion about the article that day. I will choose someone for each article to start off the discussion. Just because you are not chosen you are still not off the hook. You will be expected to ask questions and contribute to the conversation.

Homework

It is impossible to learn methods just by reading and talking about them. As a result we will have a series of homework assignments due throughout the class. The homeworks are noted in the course outline below. Homeworks are due by 4 p.m. the Wednesday after they are assigned. After the first two homework assignments, all homework assignments should be typed. I expect there to be considerable detail and discussion for each of the homeworks. Think of them as the results section of an empirical research paper, but on methods steroids. Your homework should have both technical discussions of the methodical issues and plain language that an average reviewer would be able to understand. Results should be presented in tables and figures. Do not copy and paste your STATA output as your results table. Along with the written portion of your homework turn in your do file associated with the analysis.

Poster and Paper

You will be asked to apply the skills that you have acquired throughout the semester by completing a final research paper and poster. The topic of the research paper and poster is up to you, should be related to your substantive area of research, and incorporate the methods used this semester.

Poster sessions are becoming more common at social science conferences. As part of the class we will hold our own mini-poster session during the final class period. We will open the poster session up to all the faculty and graduate students in the Political Science Department. Your grade will be based on the content of the poster and your ability to answer questions of those attending the poster session. Details about poster size and tips on how to create a good poster will be forthcoming.

The paper should be a complete research paper, including a theory and literature review. Your method and results section should be highly detailed. Including figures, graphs, and references, the paper should be 20-30 pages typed, double spaced. Papers should be e-mailed to me as a pdf. You should also include all do files associated with the paper. Papers are

due on December 10th by noon. Late papers will be reduced one letter grade for every 30 minutes it is late.

Table 2: Grade Distribution

A	100 – 90
B	89 – 80
C	79 – 70
D	69 – 60
F	59 and below

Required Texts

- Gill, Jeff. 2006. *Essential Mathematics for Political and Social Research* Cambridge: Cambridge University Press.
- Wooldreige, Jeffrey M. 2000. *Introductory Econometrics A Modern Approach* South-Western College Publishing Thomson Learning.

Required Software

Students should have access to a copy of STATA version 10 or higher. You can get discounted version of STATA through the University. There are minor differences between the versions of STATA, so if you end up with one different than what we use in the class we can probably figure out the differences as we go.

Recommended and Supplementer Texts

- Wooldridge, Jeffery. 2010. *Econometric Analysis of Cross Section and Panel Data*. 2nd Edition. Cambridge, MA: MIT Press.
- Hsiao, Cheng. 2003. *The Analysis of Panel Data* 2nd. Edition. New York: Cambridge University Press.
- Cameron, A. Colin, and Pravin K. Trivedi. 2005. *Microeconometrics: Methods and Applications* New York: Cambridge University Press.
- Greene, William H. 2011. *Econometric Analysis*. 7th Edition. Upper Saddle River, New Jersey. Prentice Hall.

Tentative Course Outline¹

Thursday, August 25th Overview of Class; Good STATA Practices; Start Math Review Readings:

¹Any changes to this schedule will be announced verbally in class. It is the student's responsibility to note changes and adhere to the new schedule.

- Nagler, Jonathan. 1995. "Coding Style and Good Computing Practices." *The Political Methodologist*. 6(2):2-9. This is available in pdf format online at <http://polmeth.wustl.edu/>. Select The Political Methodologist and the correct volume.
- Chapter 1 Wooldreige, Jeffrey M. 2000. *Introductory Econometrics A Modern Approach* South-Western College Publishing Thomson Learning.

Thursday, September 1st APSA – No class but do the readings and homework on your own. Readings:

- Chapters 1-4. Gill, Jeff. 2006. *Essential Mathematics for Political and Social Research* Cambridge: Cambridge University Press.

Supplemental Readings:

- Appendix A and D. Wooldreige, Jeffrey M. 2000. *Introductory Econometrics A Modern Approach* South-Western College Publishing Thomson Learning.
- Nanboodiri, Krishnan. 1984. *Matrix Algebra An Introduction* Thousands Oaks, CA: Sage Press.

Thursday, September 8th OLS in Matrix and Review of OLS Readings:

- Section 11.10 Wackerly, Dennis D., William Mendenhall II, and Richard L. Scheaffer. *Mathematical Statistics with Applications* 6th edition. Duxbury Thomason Learning.
- Chapters 2, 3 & 4. Wooldreige, Jeffrey M. 2000. *Introductory Econometrics A Modern Approach* South-Western College Publishing Thomson Learning.

Supplemental Reading

- Chapter 2-3 Greene, William H. 2011. *Econometric Analysis*. 7th Edition. Upper Saddle River, New Jersey. Prentice Hall.

Thursday, September 15th OLS Review

Readings

- Chapters 5, 6, & 8. Wooldreige, Jeffrey M. 2000. *Introductory Econometrics A Modern Approach* South-Western College Publishing Thomson Learning.

Supplemental Readings:

- Chapter 4-5 Greene, William H. 2011. *Econometric Analysis*. 7th Edition. Upper Saddle River, New Jersey. Prentice Hall.

Thursday, September 22nd Time Series Readings

- Chapters 10, 11 and 12. Wooldreige, Jeffrey M. 2000. *Introductory Econometrics A Modern Approach* South-Western College Publishing Thomson Learning.

Supplemental Readings:

- Chapters 18. Wooldridge, Jeffrey M. 2000. *Introductory Econometrics A Modern Approach* South-Western College Publishing Thomson Learning.

Thursday, September 29th Overview of Pooled Cross Sectional Time Series

Reading:

- Chapter 13 Wooldridge, Jeffrey, 2000. *Introductory Econometrics A Modern Approach* South-Western College Publishing Thomson Learning.
- Beck, Nathaniel. 2006. "Time-Series Cross-Section Methods" in *Oxford Handbook of Political Methodology*. <http://www.nyu.edu/gsas/dept/politics/faculty/beck/beck.pdf>.
- Bartels, Larry M. 1996. "Pooling Disparate Observations." *American Journal of Political Science* 40(August): 905-42.

Supplemental Readings:

- Bartels, Larry. 1999 "Panel Effect in the American National Election Studies." *Political Analysis* 8(Winter):1-20.
- Gurland, John and Jayaram Sethuraman. 1995 "How Pooling Failure Data May Reverse Increasing Failure Rates." *Journal of the American Statistical Association* 90(December): 1416-23.
- Wilson, Sven and Daniel Butler. 2007. "A Lot More to Do: The Sensitivity of Time-Series Cross-Section Analyses to Simple Alternative Specifications." *Political Analysis* 15(2) :101-123.
- Hsiao, Cheng. 2003. *Analysis of Panel Data*, Chapter 1 and Chapter 2.
- Nuamah, Nicholas N.N.N. 1986. "Pooling Cross Section and Time Series Data." *The Statistician* 35:345-351.
- Greene, William H. 2003. *Econometric Analysis*, 5th edition, sections 13.1-13.2.

Thursday, October 6th Unit Heterogeneity: Fixed- and Random Effects Models

- Stimson, James. 1985. "Regression in Space and Time: A Statistical Essay." *American Journal of Political Science* 29:914-947.
- Green, Donald P., Soo Yeon Kim, and David H. Yoon. 2001. "Dirty Pool." *International Organization*: 441-468.
- Beck, Nathaniel and Jonathan N. Katz. 2001. "Throwing out the Baby with the Bath Water: A Comment on Green, Kim, and Yoon." *International Organization*: pp. 487-495

- Chapter 14 Wooldridge, Jeffrey, 2000. *Introductory Econometrics A Modern Approach* South-Western College Publishing Thomson Learning.

Supplemental Readings:

- Wooldridge, Jeffrey M. 2002. *Econometric Analysis of Cross Section and Panel Data*, chapter 10.
- Cameron and Trivedi, Chapter 21
- Greene, William H. 2003. *Econometric Analysis*, 5th edition, sections 13.3-13.4.
- Beck, Nathaniel and Jonathan Katz. 2004. "Time-Series-Cross-Section Data: Cross-Sectional Issues." Unpublished Manuscript.
- Hsiao, Cheng. 2003. *The Analysis of Panel Data*, Chapter 3.

Application Reading (choose 1):

- Zahariadis, Nikolaos. 1997. "Why State Subsidies? Evidence from European Community Countries 1981-1986." *International Studies Quarterly*, 41(2):341-354.
- Radcliff, Benjamin and Patricia Davis. 2000. "Labor Organization and Electoral Participation in Industrial Democracies." *American Journal of Political Science* 44(1): 132-141.
- Smith, Mark A. 2001. "The Contingent Effects of Ballot Initiatives and Candidate Races on Turnout." *American Journal of Political Science* 45(3): 700-706.
- Wood, B. Dan. 1998. "The Dynamics of Senatorial Representation, 1952-1991." *The Journal of Politics*, 60(3):705-736.

Thursday, October 13th Fall Break

Thursday, October 20th Random, Fixed-Effects, and other topics.

- 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.
- Bafumi, Joseph. and Andrew. Gelman. 2006. "Fitting Multilevel Models When Predictors and Group Effects Correlate." Presented at the Annual Meeting of the MPSA, Chicago, IL. http://polmeth.wustl.edu/media/Paper/Bafumi_Gelman_Midwest06.pdf
- Honaker, James and Gary King. 2010. "What to Do about Missing Values in Time-Series Cross-Section Data." *American Journal of Political Science* 54: 561-581.

Supplemental Readings:

- Bartels, Brandon. 2009. “Beyond ‘Fixed versus Random Effects’: A Framework for Improving Substantive and Statistical Analysis of Panel, TSCS, and Multilevel Data.” Unpublished Manuscript. <http://brandonlbartels.googlepages.com/research>
- Finkel, Steven E., and Edward N. Muller. 1998. “Rational Choice and the Dynamics of Political Action: Evaluating Alternative Models with Panel Data” *American Political Science Review*. 92(March): 37-50.
- Neuhaus, J.M. and J.D. Kalbfleisch. 1998. “Between – and Within – Cluster Covariate Effects in the Analysis of Clustered Data.” *Biometrics* 54:638-45.
- *Political Analysis* 19(2), Spring 2011. Multiple articles on fixed effects with time-invariant variables.

Thursday, October 27th Dynamic Issues in Time-Series Cross-Sectional Data Readings:

- Beck, Nathaniel and Jonathan Katz. 2009. “Modeling Dynamics in Time-Series–Cross-Section Political Economy Data.” Unpublished Manuscript. http://www.nyu.edu/gsas/dept/politics/faculty/beck/dynamics_0505.pdf
- Achen, Christopher. 2000. “Why Lagged Dependent Variables Can Suppress the Explanatory Power of Other Independent Variables.” Unpublished Manuscript. <http://polmeth.wustl.edu/workingpapers.php>
- Keele, Luke and Nathan J. Kelly. 2006. “Dynamic Models for Dynamic Theories: The Ins and Outs of Lagged Dependent Variables.” *Political Analysis* 14:186-205.

Supplemental Readings:

- Cameron and Trivedi, Chapter 22
- Hsiao, Cheng. 2003. *Analysis of Panel Data*, Chapter 4, sections 1 through 5.
- Greene, William H. 2003. *Econometric Analysis*, 5th edition, sections 13.6-13.7.
- Wawro, Gregory. 2002. “Estimating Dynamic Panel Data Models in Political Science.” *Political Analysis* 10(Winter):25-48.
- Anderson. T.W. and C. Hsiao. 1982. “Formulating and Estimation of Dynamic Models Using Panel Data.” *Journal of Econometrics* 18:47-82.

Application reading (choose 1):

- Beck, Nathaniel. 1991. “Comparing Dynamic Specifications: The Case of Presidential Approval” *Political Analysis* 3:51-87.

- Abramson, Paul R., Susan Ellis and Ronald Inglehart. 1997. “The Economics of Politics in Comparative Perspective Revisited.” *Political Behavior* 19(2): 41-59.
- Green, Donald P., David H. Yoon. 2002. “Reconciling Individual and Aggregate Evidence Concerning Partisan Stability: Applying Time-Series models to Panel Survey Data.” *Political Analysis* 10:1-24.

Thursday, November 5rd More Dynamics Readings:

- Lebo, Matthew and Christopher Weber. “A Solution to the Repeated Cross Sectional Design” Working paper.
- Beck, Nathaniel and Jonathan Katz. 1995. “What to Do (And Not to Do) With Time-Series Cross-Section Data.” *American Political Science Review* 89(September):634-647.
- Beck, Nathaniel and Jonathan Katz. 1996. “Nuisance vs. Substance: Specifying and Estimating Time-Series Cross-Section Models.” *Political Analysis* 6:1-36.
- 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.

Supplemental Readings:

- Beck, Nathaniel. 2001. “Time-Series Cross-Section Data: What Have We Learned in the Past Few Years?” *Annual Review of Political Science* 4:271-93.
- Wilson, Seven E. and Daniel M. Butler. 2004 “A Lot More to Do: The Promise and Peril of Panel Data in Political Science.” *Political Analysis* 15(2): 101-124.
- Kristensen, Ida Pagter and Gregory Wawro. “Lagging the Dog? The Robustness of Panel Corrected Standard Errors in the Presence of Serial Correlation and Observation Specific Effects.” Unpublished Manuscript.
- Greene, William H. 2003. *Econometric Analysis*, 5th edition, sections 13.8-13.9.

Application Reading (Choose 1):

- Blais, Andre, Donald Blake, and Stephane Dion. 1996 “Do Parties Make a Difference: A Reappraisal.” *American Journal of Political Science* 40:514-20.
- Burkhart, Ross E. and Michael S. Lewis-Beck. 1994. “Comparative Democracy: The Economic Development Thesis.” *The American Political Science Review*. 88(4):903-910.

- 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.
- Radcliff, Benjamin, and Patricia Davis. 2000. “Labor Organization and Electoral Participation in Industrial Democracies.” *American Journal of Political Science* 44(1): 132-141.
- Smith, Mark A. 2001. “The Contingent Effects of Ballot Initiatives and Candidate Races on Turnout” *American Journal of Political Science* 45(3):700-706.

Thursday, November 10th Non-Continuous Response Variables Readings:

- 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.
- Carter, David B. and Curtis S. Signorino. 2010. “Back to the Future: Modeling Time Dependence in Binary Data.” *Political Analysis* 18(3): 271-292.
 - Beck, Nathaniel. 2010. “Time is Not A Theoretical Variable” *Political Analysis* 18(3):293-294.
 - Carter, David B. and Curtis S. Signorino. 2010. “Reply to ‘Time is Not A Theoretical Variable’” *Political Analysis* 18(3): 295-296.

Recommended Readings:

- Cameron and Trivedi Chapter 23
- Hsiao, Cheng. 2003. *Analysis of Panel Data*, Chapter 7.
- Cameron, Colin and Pravin K. Trivedi. 1998. *Regression Analysis of Count Data*. New York: Cambridge University Press. Chapter 9.
- Ballinger, Gary A. 2004. “Using Generalized Estimating Equations for Longitudinal Data Analysis.” *Organizational Research Methods* 7:127-50.
- Neuhaus, J. M., J. D. Kalbfleisch and W. W. Hauck. 1991. “A Comparison of Cluster Specific and Population-Averaged Approaches for Analyzing Correlated Binary Data.” *International Statistical Review* 59(1):25-35.
- Wawro, Gregory. 2001. “A Panel Probit Analysis of Campaign Contributions and Roll Call Votes.” *American Journal of Political Science* 45(July):563-

Application Reading (choose 1):

- Bennett, D. Scott and Allan C. Stam. 2000. "Research Design and Estimator Choices in the Analysis of Interstate Dyads: When Decisions Matter." *Journal of Conflict Resolution* 44(5):653-685.
- King, Gary and Langche Zeng. 2001. "Explaining Rare Events in International Relations," *International Organization*, Vol. 55, No. 3: Pp. 693-715.
- Caldeira, Gergory A., John R. Wright, and Christopher Zorn. 1999. "Strategic Voting and Gatekeeping in the Supreme Court." *Journal of Law, Economics, and Organization* 15(3): 549-72.
- Leeds, Brett Ashley and David R. Davis. 1997. "Domestic Political Vulnerability and International Disputes" *Journal of Conflict Resolution* 41(December): 814-34.
- Rezaghian, Rose. 2004. "Financing the Civil War: The Confederacy's Financial Strategy." Yale ICF Working Paper No. 04-45.

Thursday, November 17th Paper/Poster Work Day.

Thursday, November 24th Thanksgiving Break

Thursday, December 1st

- Poster Session

December 7th Final papers due at noon.