POLSC 901: Advanced Research Methods-II Spring 2012
Kansas State University
Waters 230/Leavenworth Tuesday 3:30-6:20 PM

Sabri Ciftci	Office Hours:
Email: ciftci@ksu.edu	Wednesday: 9:00 – 11:00 am
phone: 785 532 3514	Thursday: 9:00 – 10.30 am

Course Description and Goals

This course is designed to introduce graduate students the primary tool of empirical analysis in political science --Regression Analysis. We will focus on ordinary least squares (OLS) estimation and learn how social scientists empirically test hypotheses and make predictions. The level of mathematical treatment is minimal and limited to Algebraic expressions. While we will learn about certain formulas, no derivations or proofs are required. We will spend more time on theoretical foundations and applications of OLS Regression. Throughout the course we will cover two-variable regression, multiple regression, regression assumptions, and model specifications. A basic introduction to non-linear and time-series cross-sectional models will be provided towards the end of the semester.

I have specified two important goals for this course. With the completion of this course you should gain the skills necessary to conduct your own quantitative research project. Second, I expect you to be critical consumers of quantitative political science research. For those of you who want to take the next step and apply more advanced statistical techniques, this course should provide a foundation.

Prerequisites

The prerequisites for the course include any elementary statistics course or equivalent. I assume that you are familiar with basic concepts of research and statistics. These include the elements of scientific research, hypothesis testing, and univariate statistics (measures of central tendency, Chi2 analysis, t-test etc.). I will provide a quick review of these concepts during the first two weeks. If you are not familiar with these concepts, you should review an introductory statistics or research methods book (You may use #1 and #8 in the "recommended books list" for this purpose).

Requirements

Required Books

1. Gujarati, Damador. 2003. Basic Econometrics 4th ed.. New York: McGraw-Hill. ISBN 978-0-073375-77-9
2. Kennedy, Peter. 2003. A Guide to Econometrics 5th ed. Cambridge: MIT Press. ISBN 0-262-61183-X

Recommended Books

1. Thomas H. Wonnacott and Ronald J. Wonnacott, Introductory Statistics, 5th Edition, Wiley
2. Jeffrey Wooldridge, Introductory Econometrics: A Modern Approach
3. Baum, Christopher F. 2006. An Introduction to Modern Econometrics Using Stata. College Station: Stata Press. 1-59718-013-0.
4. Berry, William and Mitchell Sanders. 2000. Understanding Multivariate Regression. Boulder: Westview Press. ISBN 0-8133-9971-8.
5. Tarling, Roger. 2009. Statistical Modeling for Social Researchers: Principles and Practices New York: Routledge. 978-0-415-448406.
6. Greene, William. 2003. Econometric Analysis 5th ed. New York: Pearson. 0-13513-245-2
7. Scott Long. 1997. Regression Models for Categorical and Limited Dependent Variables. Sage. 978-0803973749.
8. Pollock, Philip H. 2005. The Essentials of Political Analysis, 2nd ed. Washington, DC:CQ Press.
9. Pollock, Philip H. 2006. A Stata Companion to Political Analysis. Washington, DC: CQ Press.
10. Thomas Dietz, Introduction to Social Statistics: The Logic of Statistical Reasoning, 2009, Wiley-Blackwell

The required books are available at the university bookstore. You may also choose to purchase them online. While, the content of these textbooks is not different in essence, it is always useful to be exposed to multiple texts to obtain a better understanding of the material. Some of the recommended books

cover advanced statistical models that may be of use in your future research. Articles required for the course are available through K-State online or on e-reserves.

We will also use STATA, a powerful and flexible statistical software package used by many quantitative political scientists. You can obtain a copy for six months through the college with a special price or you may purchase your own edition with more capabilities. I will share the details about obtaining a copy in the class.

Assessment

Attendance is required and essential for your success in this course. The nature of the material presented in this course requires you to complete the readings in advance and be well-prepared. The course components are as follows:

Weekly Assignments (30%): There will be weekly assignments about running OLS regression, regression assumptions, and applied research. In most of these assignments, you will use STATA.

Exams (35%): There will be one in-class midterm and one take-home final exam. These exams will include questions about theoretical foundations of OLS and regression applications. The in-class exam will be weighed by 15% and the take-home exam by 20%.

Poster (25%): Choose a research question in your area of interest, apply a multivariate OLS regression and report your results in poster format. Your poster should include a research question, a short theoretical discussion (preferably a story with a causal mechanism), at least one hypothesis, your research design, results, and a conclusion. In addition, you should submit your do files, log files, additional analysis etc. in one zipped folder alongside with your poster. You can give me an electronic copy of your poster or submit a print copy. If you prefer to submit a color print copy, consider that there is a cost associated with that. I will show some examples of posters in class. Posters constitute a large segment of political science conferences. Many scholars and especially students choose to present their research in poster format.

You may use datasets that are readily available or choose to collect your own data for the analysis. However, given the workload involved in data collection, I recommend you use a readily available data set. There are many datasets available online or through K-State libraries. Some examples are Quality of Governance, Correlates of War, Polity, International Military Intervention, Failed States Index, OECD Economic Indicators, World Values Survey, and many more. You should take the availability of data into account before deciding on your research question. Replication of existing research is acceptable as long as you get hold of the authors and obtain their data.

Applications (10%): Early in the semester, each student will sign up to discuss two articles using OLS regression. For each paper, students should type a 2-3 page discussion summarizing the methods, data, variable construction, the model and its application, and possible problems.

Course Outline

Week 1 &2 (Jan 17 &Jan 24): Research Design, Making Sense of Data, Univariate Statistics

Gujarati, Appendix A

Read the following topics from an introductory statistics book of your choice (I recommend Thomas H. Wonnacott and Ronald J. Wonnacott, Introductory Statistics, 5th Edition, Wiley; Pollock, Philip H. 2005. The Essentials of Political Analysis, 2nd ed. Washington, DC:CQ Press OR Thomas Dietz, Introduction to Social Statistics: The Logic of Statistical Reasoning, 2009, Wiley-Blackwell)

- Univariate statistics (mean, median, mode, variance etc.)
- Sample and population, sampling distribution
- Normal and standard normal distribution
- Hypothesis testing.

Week 3 (Jan 31 & Feb 2) Two Variable Regression

Kennedy, Chapter 1 & 2

Gujarati, Introduction, Chapter 1 &2

******Due, Feb 2: Names of articles to be used for "applications" assignment. Pick one from the list (articles posted in course website) and choose one of your own preference.******

Week 4 &5 (Feb7 & Feb 15): Classical Linear Regression and Extensions

****** First Progress Report for Poster Project is Due Feb 7*** (In one or two pages, specify the research question, dependent and independent variables, the data source you will use etc***.)***

Kennedy, Chapter 3

Gujarati, Chapter3 &4 and 6&7

Week 6 (Feb 21): Interval Estimation, Hypotheses Testing, Specification

Kennedy, Chapter 4 & 5

Gujarati, Chapter 5 &8

Week 7 (Feb 28):

In class exam

Week 8 (Mar 6): OLS Assumptions and Violations

Specification Error and Non-zero expected disturbances

Kennedy, Chapter 6 & 7

Gujarati, Chapter 13 (pp. 468-481)

****** Second Progress Report for Poster Project is Due March 6 (in 2-3 pages show the progress you have made. At this point, I expect you will complete the brief literature review, formulated the hypotheses, did some preliminary analysis and started to create your variables******

Week 9 (Mar 13): OLS Assumptions and Violations

No Autocorrelation and Homoscedasticity

Kennedy, Chapter 8; *Gujarati,* Chapter 11 & 12

******STUDENT HOLIDAY MARCH 19-MARCH 23*******

Week 10 (Mar 27): OLS Assumptions and Violations

Stochastic Error Terms

Kennedy, Chapter 9 & 10

Gujarati, Chapter 13 (pp. 482-512)

******Due: First application assignment. (submit a print copy or use the digital drop box)******

Week 11 (Apr 3): OLS Assumptions and Violations

No Multicollinearity

Kennedy, Chapter 12

Gujarati, Chapter 10

Robust Estimation

Kennedy, Chapter 21

Week 12 (April 10): Regression with dummy variables

Kennedy, Chapter 15 (PP. 232-235)

Gujarati, Chapter 9 (PP. 275-288)

******Due: Second application assignment (submit a print copy or use the digital drop box)******

Week 13 (April 17): Interaction Terms

Kennedy, Chapter 15(PP. 235-237)

Gujarati, Chapter 9 (PP. 288-290)

Thomas Brambor, William Roberts Clark, and Matt Golder, Understanding Interaction Models: Improving Empirical Analyses, *Political Analysis* (Winter 2006) 14 (1): 63-82 (Available through K-state online).

Frazier, Patricia A.; Tix, Andrew P.; Barron, Kenneth E, Testing Moderator and Mediator Effects in Counseling Psychology Research*, Journal of Counseling Psychology*, Vol 51(1), Jan 2004, 115-134 (Available through K-state online).

Week 14 (April 24): Introduction to Models with limited and categorical dependent variables and Time series and cross sectional design

Kennedy, Chapter 4 & 5

Gujarati, Chapter 5 &8

Week 15 (May 1):

This week is reserved if we are unable to finish the material by April 24.

******Poster Project Due April 24*****

Week 16 (May 8)

*****Final Exam due May 9 (No exceptions).**