

INTL 601: Quantitative Research Methods

College of Administrative Sciences and Economics
Department of International Relations
Fall 2013

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Lectures: WE 9:30-12:15am
Location: CASE 124
Office Hours: Tuesday 2-4pm & by appt.

Course Description

Social Sciences, in general, Political Science, in particular, have moved towards the use of multiple methods in their search for understanding, explaining, and making predictions about real world. The debate in recent years has mainly focused on whether quantitative or qualitative methods provide a better picture of reality. I personally believe that it will never be over. Yet, there is a common ground that unites our endeavors: we are all trying to answer empirical questions. And, this is what distinguishes Social Sciences from philosophy, which mainly focuses on answering normative questions, such as “What is justice?”, “What is a good society?”, or “Is democracy an ideal form of government?” We may expect the normative idea that democracy is an ideal form of society or if all states are democratic, we will never witness wars, yet the necessary empirical questions are “*how much democracy is there in a given society? How often did democratic states fight with each other in the past?*” In order to answer these latter form of questions, we need to engage in systematic and theoretically-driven research. Ideally, the type of questions we ask determines the method we need to use rather than the reverse. The approach that “I will never use it, so why learn it” is wrong. In this course, students will acquire some practical knowledge about various quantitative tools used in the study of the social and political phenomena. It will introduce a short review of preliminary topics including measurement and data collection, correlation, probability theory, and will continue with more advanced ones, such as hypothesis testing, estimation and interpretation of the classic linear model and maximum likelihood estimation and diagnostic methods for these estimation methods, and the conditions under which violations of classic assumption lead to alternative models.

Course Objectives

The primary objective of the course is to familiarize students with linear regression technique, estimation methods for limited and categorical dependent variables, duration analysis and selection models. This means that students learn how to sensibly apply each method, do the diagnostics checks, and apply the alternative models that are suitable for the data at hand. I expect the students to develop skills for interpreting the empirical findings in line with the relevant theory. The specific objectives of the course:

- (1) You should acquire the skills necessary to use and apply the statistical techniques taught in the course;
- (2) You should acquire basic skills to run analysis with STATA;
- (3) You should develop the skills to read, understand and critically evaluate an article that uses quantitative methods (these articles could be published at APSR, AJPS, ISQ, IO, JCR, JPR etc.);

(4) You should develop the skills to choose the most suitable technique (determined by the nature of your dependent variable) from among the ones taught throughout the course and be able to distinguish between these techniques;

(5) Most significantly, you should be able to say everything in “ENGLISH” rather than the numbers you see on the STATA output.

Note that the foundation to be acquired in this course is essential for understanding a large extent of scholarly research in various social science disciplines. Make sure that you understand each week’s subject matter prior to moving into next week’s topic. So, do not try to “cram” the material and hesitate to ask questions during the class!

Course Requirements

In addition to attending class and completing the reading assignments, students will complete a few problem sets or applied analysis using the data I provide. In general, assignments are expected to be completed within one week. They will be announced as we move in the semester. As a final product of this course, each of you will complete a technically and substantively detailed research paper. Ideally, the paper should be in publishable quality, at least ready for a conference presentation. You are expected to turn in a paper prospectus outlining the research question and theoretical motivation behind the question on **October 9** in the beginning of the lecture. **The final papers will be due on January 10, 2014** (subject to change). Prior to submitting your final papers, you will be required to present your paper in a **poster session** that will be held in our department. The detailed required content and timeline for the paper is attached to the syllabus.

Homework assignments: 60%

Research paper: 40%

Statistical Software

One of my primary objectives in this class is to make students acquire a good level of literacy in STATA. I will use STATA during the lectures to demonstrate how specific commands are used, data analysis is conducted and the STATA output is interpreted. If necessary, additional tutorials on STATA will be held.

Readings

The following are some useful books on the topics covered in the course. Yet, we will neither cover everything in them, nor limit ourselves to its content. They are rather intended to serve as a reference throughout the semester and your academic career. They are all available in the “reserves” section of Koc University Library except the *Long and Freese* book. You can borrow it from me. The articles listed below are accessible through the library’s website. If you experience problems, let me know. There could be additional readings assigned weekly. These will be announced as we move in the semester.

(1) Damodar Gujarati and Dawn Porter. 2010. *Essentials of Econometrics*. Fourth Edition. New York: McGraw-Hill, Inc.

- (2) J. Scott Long and Jeremy Freese. 2006. *Regression Models for Categorical Dependent Variables Using Stata*. StataCorp LP. College Station, Texas.
- (3) Wooldridge, J. M. (2002) *Econometric Analysis of Cross Section and Panel Data*. MIT Press.
- (4) William H. Greene. (2003). *Econometric Analysis (Fifth Edition)*. Pearson Education, New Jersey.
- (5) J. Scott Long. (1997). *Regression Models for Categorical and Limited Dependent Variables*. Sage Publications, London.
- (6) Janet M. Box-Steffenmeier and Bradford S. Jones. (2004). *Event History Modeling*. Cambridge University Press, New York.

Tentative Course Schedule

The schedule below is tentative because it is hard to predict in advance how much time we will spend on each topic depending on how fast we will be able to proceed. We may add to or drop from the list of readings.

Week 1. Sep 18: Some Preliminaries

What is Statistics?
 Correlation and Interpretation
 Statistical Inference
 Linear Models & Ordinary Least Squares Assumption

J. Scott Long. (1997). Chapter 1&2

Week 2. Sep 25: Hypothesis Testing & Multiple Regression

Readings: Gujarati and Porter, Chapters 3 & 4
 John Oneal & Bruce Russett. 2005. Rule of Three, Let It Be? When More Really Is Better. *CMPS*, 22: 293-310.
 Carol Ember & Melvil Ember. 1994. War, Socialization, and Interpersonal Violence: A Cross-Cultural Study. *Journal of Conflict Resolution*. 38(4): 620-646.

Week 3. Oct 2: Diagnostics and Violations of Main Assumptions in Regression Models, Multicollinearity and Heteroscedasticity

Reading: Gujarati and Porter, Chapter 7, 8&9

Week 4. Oct 9: Categorical Dependent Variable Models, MLE, Binary Choice Models

Readings: J. Scott Long. (1997). Ch 3.& 4
 Scott Long & Jeremy Freese. 2006, Ch 4.
 Beck, Katz & Tucker. 1998. Taking Time Seriously. *AJPS*, 1260-1288.

Pevehouse, Jon C. 2002. Democracy from the Outside-In? *International Organizations and Democratization*. International Organization, Volume 56, Number 3, pp. 515-549

Week 5. Oct 16: NO CLASS MEETING - SACRIFICE HOLIDAY

Week 6. Oct 23: MLE and Ordinal Outcomes, Ordered Logit and Ordered Probit, GoLogit

Readings: J. Scott Long. (1997). Ch 5
Long and Freese, Ch 5

Week 7. Oct 30: Nominal Outcomes and Multinomial Logit

Readings: J. Scott Long. (1997). Ch 6
Long & Freese Ch6

Week 8. Nov 6: Count Outcomes: regression models for counts, poisson and negative binomial

Readings: J. Scott Long. (1997). Ch 8
Long & Freese. Ch 8

Week 9. Nov 13: Models for Panel Data (Time-Series & Cross-sectional): Fixed Effects

Readings: Greene, Econometric Analysis, Chapter 13
Silje Aslaksen. 2010. Oil and democracy: More than a cross-country correlation? *Journal of Peace Research*, vol. 47, 4: pp. 421-431.
Karl De Rouen & David Sobek. 2004. The Dynamics of Civil War Duration. *Journal of Peace Research*, May 2004; vol. 41, 3: pp. 303-320.

Week 10. Nov 20: Models for Panel Data (Time-Series & Cross-sectional): Random and Between Effects

Readings: Greene, Econometric Analysis, Chapter 13
James Lebovic & Eric Voeten. 2009. The Cost of Shame: International Organizations and Foreign Aid in the Punishing of Human Rights Violators. *Journal of Peace Research*, vol. 46, 1: pp. 79-97.

Week 11. Nov 27: Event History Models

Readings: Box-Steffensmeier, Jan and Bradford Jones. 2004. *Event History Modeling*. Cambridge University Press. Chapters 1 & 2
Box-Steffensmeier, Janet M. and Brad Jones. 1997. "Time is of the Essence: Event History Models in Political Science." *American Journal of Political Science* 41(October): 1414-1461.

Week 12. Dec 4: Cox's Proportional Hazards Model

Readings: Chapter 4, Box-Steffensmeier & Jones
Bienen, Henry and Nicolas van de Walle. 1992. "A Proportional Hazard Model of Leadership Duration." *Journal of Politics* 54(August): 685-717.

Week 13. Dec 11: In-Class Presentations of Papers**Week 14. Dec 18: Tobit, Heckman, and Other Selection Models**

Readings: Cameron and Trivedi, Chapter 16

Von Stein, "Do Treaties Constrain or Screen? Selection Bias and Treaty Compliance."

APSR 99(4): 611-622.

Week 15. Dec 25: Poster Session

Papers due on Jan 10, 2014 @ 5pm.