PP6706 Quantitative Methods for Public Policy Research
January – May 2017

Faculty:

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Lecture: Wed   9:00 AM – 12:00 PM   SR 3-4

Course Overview:

Doctoral students in public policy are required to engage with primary or secondary quantitative data to produce research as well as provide insight into policy impacts. This module will provide students with an econometric toolkit that will enable them to develop sound analytical models to answer their policy research questions. It is also meant to lay the foundation for students to gain more advanced econometrics skills.

In addition to concepts, the module will equip students with skills to analyze data using a statistical software platform. The module will be taught using Stata.

Further, as researchers, students must be able to understand and critique quantitative analyses published in academic journals. This module will therefore also emphasize on critical evaluation and replication of models published in top-tier journals.

Required texts:

Wooldridge, Jeffrey M. 2016. *Introductory Econometrics: A Modern Approach*. 6th Edition. Cengage Learning. [JW]

Recommended texts:

Hamilton, Lawrence C. 2013. *Statistics with Stata Version 12*. Cengage Learning. [LH]

Learning Outcomes:

At the end of the module:

- Students will gain an understanding of key regression techniques, quasi-experimental techniques, and simulation
- Students will be able to build and analyze their own models using statistical computing
- Students will be able to critically evaluate the robustness of published quantitative policy research

Preparation and pre-requisites:

Students are expected to be familiar with the basic statistical concepts listed below:
1. Probability, probability distribution, and central limit theorem
2. Descriptive statistics
3. Estimation and confidence intervals
4. Hypothesis testing
5. Chi-square test

Recommended texts for basic statistics are:

Weiss, Neil A. 2012. *Introductory Statistics* (9th edition). Pearson Education. [Parts I through IV: Chapters 1 through 13]
Stock, James H. and Watson, Mark M. 2012. *Introduction to Econometrics* (3rd edition). Pearson Education. [Part 1: Chapters 1 through 3]

Teaching method:

Each 3-hour class will cover concepts and applications. In addition, there will be several lab sessions wherein students can discuss questions as well as get more exposure to Stata.

Lab sessions:

Lab sessions are aimed at building skills of the students in the use and application of the statistical software Stata. The computer labs are equipped with Stata v.12 and students can practice and do the homeworks in the lab. If you prefer to purchase your own copy, the information can be found at http://www.stata.com/order/new/edu/gradplans/. It is recommended that you purchase Stata/IC (intercooled) or above as "Small Stata" does not have the computational ability required for the exercises. There are several online resources to help familiarize yourself with Stata. Some of the recommended ones are:

http://www.ats.ucla.edu/stat/stata/
http://www.lse.ac.uk/methodology/tutorials/Stata/home.aspx

Expectations from Students:

This course will require students to put in considerable amount of time and commitment into grasping the concepts as well as picking up statistical computing skills. It is the responsibility of the students to review the preparatory material, attend all classes and lab sessions, do the readings for each week, and attend the tutorials if additional assistance is required.

Assessments:

Due dates for the assignments are *not negotiable*. All assignments *due by 11:59pm* on specified due date. Late submissions will receive a deduction of 5% for each additional day after the deadline. All assignments are individual.

Component	% Grade
Assignment	20%

Final-exam	40%	
Research paper	25%	
Presentation	5%	
Class participation/Homework	10%	
Total	100%	

Weekly Sessions and Readings:

Note: Students must review material marked as required readings. Supplementary readings are highly encouraged.

PART I: Applied Regression Techniques

Week 1 (Jan 11): Introduction and Simple Linear Regression

Required readings: JW – Chapters 1 and 2

Week 2 (Jan 18): Multiple Regression Analysis: Estimation

Required readings: JW – Chapter 3

Bernheim, B. Douglas, Jonathan Meer and Neva K. Novarro. 2016. "Do Consumers Exploit Commitment Opportunities? Evidence from Natural Experiments Involving Liquor Consumption." *American Economic Journal: Economic Policy*, 8(4): 41-69.

Knight, Brian. 2013. "State Gun Policy and Cross-State Externalities: Evidence from Crime Gun Tracing." *American Economic Journal: Economic Policy*, 5(4): 200-229.

Homework: Chapter 2: C2 & C4

Week 3 (Jan 25): Multiple Regression Analysis: Inference & Further Issues

Required readings: JW – Chapter 4 and 6

Supplementary readings: JW – Chapters 5 and 8

Lab Session: 10:30am to 12:00pm.

Homework: Chapter 3: C2 & C8

Week 4 (Feb 1): Advanced Panel Data Methods

Required readings: JW – Chapters 13 and 14

Malesky, E., Nguyen, C., and Tran, A. (2014) The Impact of Recentralization on Public Services: A Difference-in-Differences Analysis of the Abolition of Elected Councils in Vietnam. *American Political Science Review*, 108(1): 144-168.

De Silva, Dakshina G., Robert P. McComb, Young-Kyu Moh, Anita R. Schiller and Andres J. Vargas. (2010). The Effect of Migration on Wages: Evidence from a Natural Experiment. *American Economic Review*, 100(2): 321-26.

Week 5 (Feb 8): Instrumental Variables Estimation and Two Stage Least Squares

Required readings: JW – Chapter 15

Dobbie, W. and Fryer, R G. (2011) Are High-Quality Schools Enough to Increase Achievement among the Poor? Evidence from the Harlem Children's Zone. *American Economic Journal: Applied Economics*, 3(3): 158-187.

Chalfin, A. (2015). The Long-Run Effect of Mexican Immigration on Crime in US Cities: Evidence from Variation in Mexican Fertility Rates. *The American Economic Review*, *105*(5), 220-225.

Supplementary readings:

Murray, M. (2006) Avoiding Invalid Instruments and Coping with Weak Instruments. *Journal of Economic Perspectives*, 20(4): 111-132.

Homework: Chapter 14: C12 & C14

Week 6 (Feb 15): Limited Dependent Variable Models and Sample Selection Corrections

Required readings: JW – Chapter 17

Fullerton A. (2009) A Conceptual Framework for Ordered Logistic Regression Models. *Sociological Methods & Research*, 38(2): 306-347.

Supplementary readings:
Pampel, Fred C. (2000) *Logistic Regression*. Thousand Oaks, CA: SAGE Publications. [eBook available at NUS Libraries]

Homework: Chapter 15: C2 & C12

Lab Session: 10:30am to 12:00pm.

RECESS WEEK (Sat, 18 Feb 2017 ~ Sun, 26 Feb 2017)

PART II: Applied Time-Series Analysis

Week 7 (Mar 1): Review of Part I: Practice problems

Required readings:

Practice problems

Week 8 (Mar 8): Time Series Analysis: An Introduction

Required readings:
JW – Chapter 10
Krupp, C and Pollard P. (1996) Market Responses to Antidumping Laws: Some Evidence from the U.S. Chemical Industry. *The Canadian Journal of Economics*, 29(1): 199-227.
Fair, Ray C. (1996) Econometrics and Presidential Elections." *Journal of Economic Perspectives,* 10(3): 89-102.

Week 9 (Mar 15): Basic Regression Analysis with Time Series Data

Required readings:
JW – Chapters 11, 18 (18.1-18.3)
Whittington, Leslie A., James Alm, and H. Elizabeth Peters. (1990) Fertility and the Personal Exemption: Implicit Pronatalist Policy in the United States. *American Economic Review,* 80(3): 545-556.
Crump, Richard, Gopi Shah Goda, and Kevin J. Mumford. (2011) Fertility and the Personal Exemption: Comment. *American Economic Review*, 101(4): 1616-1628.
Granger, C., B. Huang and C. Yang. (2000) Bivariate Causality Between Stock Prices and Exchange Rates in Asian Countries. *The Quarterly Review of Economics and Finance*, 40(3): 337-354.

Supplementary readings:
Ashley, R. Granger, C.W.J. and R. Schmalensee. (1980) Advertising and Aggregate Consumption: An Analysis of Causality. *Econometrica,* 48, 1149-1168.

Week 10 (Mar 22): Co-integration methods and Vector Error Correction (VEC) Models

Required readings:
JW – Chapter 18 (18.4-18.5)
Zou Gaolu and Chau K.W. (2006) "Short- and long-run effects between oil consumption and economic growth in China". *Energy Policy* 34 (2006), 3644–3655.
Asteriou D. and Agiomirgianakis G.M. (2001) "Human capital and economic growth: Time series evidence from Greece". *Journal of Policy Modeling* 23(2001) 481–489.

Supplementary readings:
Kolodzeij, M & Kaufmann R. (2014) Oil Demand Shocks Reconsidered: A Cointegrated Vector Autoregression. *Energy Economics*, 41(1): 33-40.

Week 11 (Apr 29): Forecasting

Required readings:
Lim. C. and McAleer M. (2002) Time series forecasts of international travel demand for Australia. *Tourism Management*, 23(4): 389-396.
Ediger VS. and Akar S. (2007) ARIMA forecasting of primary energy demand by fuel in Turkey. *Energy Policy*, 35(3): 1701-1708.

Supplementary readings:
Kwan, A. and Cotsomitis J. (2006) The Usefulness of Consumer Confidence in Forecasting Household Spending in Canada: A National and Regional Analysis. *Economic Inquiry*, 44(1): 185-97.

Week 12 (Apr 5): Conducting empirical policy analysis

Required readings:
JW – Chapter 19

In this final session, we will address FAQs by public policy students such as:
- How to write a high quality empirical policy paper?
- What is mixed methods analysis?
- Is it necessary to do fancy econometric modelling to write a good policy paper?

Supplementary readings:
Wang, W. (2015) Exploring the Determinants of Network Effectiveness: The Case of Neighborhood Governance Networks in Beijing. *Journal of Public Administration Research and Theory*, doi:10.1093/jopart/muv017.
Piketty, Thomas and Saez, Emmanuel. (2014) Inequality in the Long Run. *Science*, 344(6186): 838-843. [plus supplementary material]

Week 13 (Apr 12): Presentation of Research Paper

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FINAL NOTE - LKY SPP PLAGIARISM WARNING FOR CLASS ASSIGNMENTS

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"The LKY School's Academic Code of Conduct lists academic integrity as one of six important values. According to this Code, we have agreed to 'make every effort to understand what counts as plagiarism and why this is wrong'. To avoid giving the impression that you are passing off other people's work as your own, you will need to acknowledge conscientiously the sources of information, ideas, and arguments used in your paper. For this purpose, you may use either the Harvard or Chicago citation styles. More information can be found here http://libguides.nus.edu.sg/whycite.