ECO351H1S: Special Topics – Applied Regression

Winter 2017, L0101

Department of Economics, University of Toronto

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Office hours: Tuesday 12:30-1:30, Max Gluskin House (GE) #323
Lecture/Tutorial: Thursday 10:10am-1pm, CR 103

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Office hours: TBA

Course Description & Learning Objectives

This course will introduce applications of the statistical methods learned in prerequisite courses, specifically multiple regression. We will focus on how multiple regression can be used to answer causal questions. You will learn the implications of, and how to interpret, different model specifications and strategies for achieving results that can be considered causal. In the process, you will read and critically evaluate existing research. To further our understanding, we will use the software program Stata to run statistical analyses.

The broad goal of the course is to provide you with the tools to better understand claims based on statistical evidence that you may encounter in the media, on-line, or in academic articles. For students wishing to go down this route, the course will provide you with the tools to make steps towards undertaking your own independent research projects.

The format of the course will include traditional lectures and seminar-style discussions. There are 5 main learning objectives for this course. By the end of this course, you will be able to:

1. Identify the difficulties faced when using observational data vis-à-vis experimental data.
2. Present and interpret multiple regression results.
3. Critically evaluate research claims based on multiple regression analyses.
4. Critique the benefits and limitations of the differences-in-differences research design in various settings.
5. Use the software Stata at a basic level.

Prerequisites

Prerequisites: ECO200Y1/ECO204Y1/ECO206Y1, ECO220Y1/ECO227Y1/(STA220H1, STA255H1)/(STA257H1, STA261H1)

Exclusions: None

Course Requirements and Grading

Students are expected to come to class on time and be prepared to discuss any required readings and to both ask and to answer questions. Please ask questions during class if something is not clear to you. Your overall course grade will be determined based on your performance on the following:

	Weight
Problem Sets	**30%**
Midterm & Final Exams	**70%**

- **Problem Sets** – There will be 3 problem sets consisting primarily of exercises using Stata. Each problem set will comprise 10% of your course mark. Detailed submission instructions will be provided with each assignment.

- **Exams** – The midterm exam is scheduled for Thursday February 16, 2017 during our regularly scheduled meeting time. The cumulative three-hour final exam will be scheduled during the spring exam period by the university. The exam on which you perform best will receive a 40% weight, and the other exam will cover the remaining 30% of your course mark.

Any request to have term work regraded must come within 1 week of it being returned. Submit your request formally via email to the instructor (also CC the TA) with a detailed justification for your request. If granted, it is possible that a regrade can result in a lower score.

I understand that unforeseen events happen and that ECO351 is only one slice of your life over these 12+ weeks. For this reason, problem sets will be posted well in advance. Do not leave your work until just before the due date in the case that unforeseen events require your time. A partially completed submission is better than no submission at all. As an undergraduate engineering student at the University of Pennsylvania, the lab manager had a sign posted on his office door saying:

$$\text{"}A\ failure\ to\ plan\ on\ your\ part, does\ not\ constitute\ an\ emergency\ on\ my\ part.\text{"}$$

I think this is apt. I will gladly make accommodations for students who find themselves in a bind through no fault of their own, but I will have little sympathy for students who need leniency due to procrastination and/or a failure to account for the possibility that unforeseen adverse events may arise affecting your schedule.

If you need further accommodations due to extended health/family issues, contact the College Registrar.

Website

Course information including the syllabus, problem sets, and additional readings will be posted on Portal. Be sure you can access the course via portal and let me know after the first class if you cannot.

Course Readings

The required text will be supplemented by excerpts from other textbooks and recent academic journal articles which will be posted to Portal. Additional readings/videos may be assigned throughout the course of the semester and will be posted to Portal.

- **Required Textbook –** Please purchase a copy of this book.

  Mastering 'Metrics, by Josh Angrist & Jörn-Steffen Pischke
  (hereafter **MM**).

- **Illustrative Articles –** See the reading list posted on Portal. Don't worry, you won't need to read & understand the entirety of every articles. These are the source material for discussions and you will be asked questions about these articles in the problem sets and exams. Selections cover a wide variety of topics, and use datasets from Canada, China, Brazil, and the United States.

  More papers may be added depending on student interests or if I find any newly published research articles that would be appropriate for our course.

- **Supplementary References** – Purely for background reading or alternative presentations of the material. Any required passages will be photocopied and posted on Portal.

  Business Statistics 3rd Canadian Ed. for ECO220Y, by Sharpe et al.
  (hereafter **BS**)

  Introductory Econometrics: A Modern Approach 4th, 5th, or 6th Ed., by Jeffrey Wooldridge.
  (hereafter **IE**)

  Research Methods in Practice 2nd Ed,, by Dahlia K. Remler & Gregg G. Van Ryzin.
  (hereafter **RMiP**)

  Methods Matter, by Richard J. Murnane & John B. Willett.

Electronc Communication

For questions about the course please contact me via email. I will respond to emails within two business days. This means that an email received on a non-holiday-weekend Friday at 4pm, may not receive a reply until the following Tuesday at 4pm. For certain questions, I will direct you to material on the course website, or ask you to see me in person. Include **ECO 351** in the subject of your email message or you may not get a response.

Software

Complex regression analysis is facilitated by the use of statistical computer software. We will use a program called Stata. This is the software that I use almost exclusively when conducting empirical research. There are several versions of Stata. For our purposes, you will need Stata IC, version 12 or higher. Do NOT buy Small Stata. You can buy a six-month license of Stata 14 IC directly from StataCorp for $75 USD at: https://www.stata.com/order/new/edu/gradplans/student-pricing/.

Stata is available on a few computers in specialized labs on campus.[1] Access may or may not be available to you, please check with the appropriate administrators. Several resources for learning to use Stata include:

Official:	http://www.stata.com/support/documentation/
Tutorials:	http://www.ats.ucla.edu/stat/stata/modules/
	http://data.princeton.edu/stata/
Forum:	http://www.statalist.org/forums/
General:	http://www.google.com/

For saving your work, I suggest using an online file hosting service (i.e. Dropbox). Due to the ubiquity of such services, a lost flash drive or crashed computer will not be an acceptable excuse for late work. See the instructor or TA before the second class if you are not familiar with these services.

It is highly recommended that you bring your laptop to class when there is a Stata tutorial or a discussion of papers scheduled. The TA will be demonstrating how to use Stata and it will be much easier for you to follow along if you bring your computer (with Stata installed) to class. When we are discussing papers it can help to have the document in front of you.

[1] MDL Computer Lab, 5-053 Robarts Library; Mini-Data Analysis Lab, OISE Tech Lounge

Policies on Missed Exams:

A grade of zero will be given to students who do not write the exam, unless an appropriate and convincing note is received within one week of the missed test (explaining why the test was missed).

- Accommodations for missed exams will only be made based on legitimate medical reasons or acute emergencies.
- An email notice must be sent to me *on the day of the exam*.
- Original legitimate supporting documents of absence are required (within one week). Scanned, copied, or emailed documents will not be accepted.
- When a student misses the exam for medical reasons, he or she shall provide an original copy of a fully completed University of Toronto official "Verification of Student Illness or Injury" form. The certificate needs to be completed by a qualified medical doctor whose OHIP number must be provided. You can download the form from http://www.illnessverification.utoronto.ca.
- It is by the University policy that there are no “make-up exams” for “make-up exams”

Academic Integrity

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student’s individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto’s Code of Behaviour on Academic Matters (www.governingcouncil.utoronto.ca/policies/behaveac.htm) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else’s ideas or words without appropriate acknowledgement. This includes *verbatim* copying of any lecture notes distributed by the instructor.
- Submitting your own work in more than one course without the permission of the instructor.
- Making up sources or facts.
- Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:

- Using or possessing unauthorized aids.
- Looking at someone else’s answers during an exam or test.
- Misrepresenting your identity.

In academic work:

- Falsifying institutional documents or grades.

- Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see http://academicintegrity.utoronto.ca/).You are responsible for upholding the academic integrity of this course, and for abiding by the Faculty of Arts & Science.

Rules & Regulations, and Policies are available here:

- http://www.artsci.utoronto.ca/osai
- http://calendar.artsci.utoronto.ca/Rules_&_Regulations.html.

Accessibility & Accommodations

The University provides academic accommodations for students with disabilities in accordance with the terms of the Ontario Human Rights Code. This occurs through a collaborative process that acknowledges a collective obligation to develop an accessible learning environment that both meets the needs of students and preserves the essential academic requirements of the University's courses and programs. For more information on services and resources available to instructors and students, please contact Tanya Lewis, Director, Director of Academic Success and Accessibility Services, at (416) 978-6268; tanya.lewis@utoronto.ca.

Accessibility services:

- http://studentlife.utoronto.ca/as/

Accommodations for Religious Observances:

- http://www.viceprovoststudents.utoronto.ca/publicationsandpolicies/guidelines/religiousobservances.htm

Schedule

While we will cover the topics in the order shown, the exact dates may change if we get ahead or fall behind schedule. I strongly recommend familiarizing yourself with the readings noted prior to their scheduled lecture date.

	Date	Topic	Readings	Due
1	5-Jan-2017	Causation & Regression Review	BS Chapter 20: 20.1-20.4 IE Chapter 3: 3.1-3.3,3.6	
2	12-Jan-2017	Random Assignment	MM Chapter 1	
3	19-Jan-2017	Random Assignment	MM Chapter 1	
4	26-Jan-2017	Random Assignment	Randomization Papers	
5	2-Feb-2017	Multiple Regression	MM Chapter 2	**PS1 Due**
6	9-Feb-2017	Multiple Regression	MM Chapter 2	
7	16-Feb-2017	**Midterm Exam**		
	23-Feb-2017	**Reading Week - No Lecture/Tutorial**		
8	2-Mar-2017	Multiple Regression	Multiple Regression Papers	
9	9-Mar-2017	Natural/Quasi Experiments Differences-in-differences	RMiP Chapter 15 (Excluding Instrumental Variables)	**PS2 Due**
10	16-Mar-2017	Differences-in-differences	MM Chapter 5 Diff-Diff Papers	
11	23-Mar-2017	Differences-in-differences	Diff-Diff Papers	
12	30-Mar-2017	TBD - Continue Diff-Diff or Sharp RD & Fixed Effects	Bonus Papers	**PS3 Due**
	April	**Final Exam - Date TBA**		