ECO1400F1H (L0101): Econometrics (MA)

Department of Economics, University of Toronto

Fall 2022

Lectures: Monday 11 am – 1 pm, SS2127
                    Wednesday 11 am – 12 pm, SS1069
Tutorials: Wednesday 12 pm – 1 pm, SS1069

Instructor: Prof. Martin Burda
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Office hours: Thursdays 12 pm – 2 pm, online synchronous (Zoom link on Quercus)

TA: Quinlan Lee, qt.lee@mail.utoronto.ca
Office hours: Wednesdays 9 am – 11 am, GE213
Software TA: Frederik Dufour, frederik.dufour@mail.utoronto.ca
Office hours: contact for appointment

Course Description
Econometrics combines elements of economic theory, statistics, probability theory, and mathematics. The primary objective of the course is to provide students with a solid theoretical and practical foundation for the interpretation of empirical evidence in economics. As such there is a dual focus on econometric theory and "hands-on" experience working with economic data. The centerpiece of the course is an empirical term paper on a topic of the student's choice. At the end of the course, students should be able to conduct their own empirical investigations, and critically evaluate econometric and other statistical evidence.

Prerequisites
Students are expected to have taken ECO1010 or ECO2010 before taking this course.

References
Textbooks:
- Verbeek, M., *A Guide to Modern Econometrics*, 2017, Wiley.
- Koenker, R., *Quantile Regression*, 2010, Cambridge University Press.
  Available online with UofT library login.
Reference text:
- Greene, W. H., *Econometric Analysis*, 8th ed, 2018, Pearson.
References in lecture slides

Software
For empirical exercises and the Term Paper students can choose any software package they like. I recommend the R language for empirical implementation and Overleaf for typesetting.

Course Website

We will be using [Quercus](#) for class communications, problem sets, the accompanying data, outlines of the lectures, etc. It is important that you regularly check the announcements posted there.

Evaluation

The final grade is based on the following:

Task	Weight	(Due) Date
Midterm exam	30%	October 26, 2022
Term Paper	30%	December 8, 2022
Final Exam	30%	Final Exam Period
Problem Sets	10%	As assigned during the semester

The **midterm exam** will be 2 hours, short-answer format. The midterm exam will have duration of 50 minutes and will contain short-answer questions. Students who miss the midterm exam and wish to request a make-up midterm must complete the Absence Declaration on Acorn and must email the instructor with their request within 24 hours of the missed midterm. Consistent with university policy, there is no "make-up" exam for a make-up exam and grade of zero will be applied if the make-up exam is requested but missed. If students wish to appeal a grade, they must provide a written explanation of why they believe their grade is mistaken and submit it to the instructor within one week of the exam being returned to the class.

The **final exam** will take 2 hours, short answer format. The applicable rules and regulations of the Graduate School and the Department of Economics govern its conduct.

Problem sets will be distributed throughout the semester and form the basis of the tutorials. They will consist of both theoretical and software-based problems.

Term Paper will be assigned with detailed guidelines during the semester. It will entail an empirical investigation of a question in economics and a critical reading of relevant articles related to the question. It must be no longer than 15 pages in length (1.5 spacing). Students can work in pairs or alone. The maximum group-size is two.

Disclaimer concerning plagiarism detection tool:

Normally, students will be required to submit their course essays to the University's plagiarism detection tool for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the tool's reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of this tool are described on the Centre for Teaching Support & Innovation [website](#).

Accessibility Needs: If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services as soon as possible: disability.services@utoronto.ca or visit their [website](#).

Tentative Schedule

Week	Day	Date		Topic
1	Mon	Sep	12	1a. Multiple Regression and IV
	Wed	Sep	14	1b. Applications; *Term Paper discussion*
2	Mon	Sep	19	2a. GMM, MLE
	Wed	Sep	21	2b. Applications
3	Mon	Sep	26	3a. Machine Learning and Neural Networks
	Wed	Sep	28	3b. Applications
4	Mon	Oct	3	4a. Regression Trees and Random Forest
	Wed	Oct	5	4b. Applications
5	Mon	Oct	10	*Thanksgiving, U of T closed*
	Wed	Oct	12	5a. Quantile Regression
6	Mon	Oct	17	5b Applications; 6a. Quantile IV and ANN
	Wed	Oct	19	6b. Applications
7	Mon	Oct	24	Q&A
	Wed	Oct	26	*Midterm Exam*
8	Mon	Oct	31	7a. Panel Data 1 (FE, DiD, RE)
	Wed	Nov	2	7b. Applications
	Mon	Nov	7	*Fall Reading Week - no classes*
	Wed	Nov	9	*Fall Reading Week - no classes*
9	Mon	Nov	14	8a. Panel Data 2 (CRE, PIV, PP, PQ)
	Wed	Nov	16	8b. Applications
10	Mon	Nov	21	9a. Dynamic Panel Data
	Wed	Nov	23	9b. Applications
11	Mon	Nov	28	10a. ARMA, Neural Network Autoregression
	Wed	Dec	30	10b. Applications
12	Mon	Dec	5	11a. VAR, Cointegration, VEC
	Wed	Dec	7	11b. Applications
13	Thu	Dec	8	*Review*
Final exam period				*Final Exam*