

Econometrics

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Course Objective:

This will be an introductory course in econometrics. It will build on the concepts of statistical inference with the aim to apply them to data and enable understanding of economic relationships. The course will have both a theoretical and an application-based part. The theory will involve understanding the method of least squares estimation and the application part will involve data visualization and analyses using STATA computing software.

What do we learn in this course?

The crux of econometrics is to be able to test hypothesis about a population using a sample. We begin by building on our understanding of a population and a sample and the basics of hypothesis testing. The course then moves onto the methods of estimation to understand causal relationships between variables. These methods are not just restricted to economics but are also relevant to the study of political science, sociology and public policy in general. The emphasis will be on inferring causality throughout the course. By the end of this course you should be able to understand and apply the taught econometric methods to test a relevant hypothesis of interest using data, interpret the results and draw appropriate conclusions.

Prerequisites

Statistics; Hard Work

Calculus and algebra will be used in the theory.

Textbooks and Articles

Jeffrey M. Wooldridge [JMW], *Introductory Econometrics: A Modern Approach*, 4th or 5th edition

Cameron, A.C. and Trivedi, P.K [CT]. *Microeconometrics using Stata*, 2nd ed., Stata Press, 2010

Evaluation

Home-assignments: 20%

Class quizzes: 20%

Mid-term: 30%

Final: 30%

Homework problems will generally be assigned from Wooldridge. Homework assessments will be submitted individually. Group discussions are allowed but plagiarism will be dealt with a fail grade on the assessment. For STATA based assessments, printouts/word/pdf outputs should be accompanied with proper explanations and do/log file must be uploaded as per instructions. Assignments must be submitted in time. Late submission will not be graded. The quizzes will not be announced and no make-up will be allowed for missed quizzes.

Tutorials will be held by the Teaching Assistant for one hour per week from week 2. The time and location will be announced later.

Attendance:

Attendance will not be used as an eligibility to sit for exams and will not count towards any assessment but is highly encouraged. Class participation is also recommended. This course forms the basis for electives that follow in the coming semesters and conceptual gaps that remain will snowball later.

Course Outline

Chapter 1-7 of JMW will form the core of this course. Below is topic wise course outline.

1. Review of Statistics: Random variables, Joint distribution, Probability Distributions, Sampling, Estimation, Hypothesis Testing
Appendix A, B and C [JMW]

2. Nature of Econometrics:

Chapter 1 [JMW] and Chapter 1 [Mastering Metrics by Joshua Angrist and Jörn Steffen Pischke, this will be circulated]

3. Simple Regression Model: Estimation, Inference

Chapter 1 and 2 [JMW]

4. Multiple Regression Model: Estimation, Inference

Chapter 3 (exclude appendix 3A), 4, and 6(exclude prediction interval and prediction error, Appendix 6A) [JMW]

5. Dummy Variables in a Regression Model

Chapter 7 (exclude testing for difference in Regression functions across Groups and section 7.5) [JMW]