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Title: Research Methodology in Economics
Course No.: DI653
Instructor: Dr Rashmi Barua, Assistant Professor, CITD, Jawaharlal Nehru University

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Credits: 2
Level: PhD

Course Objective

This advanced quantitative course is designed to provide a formal exposure to research students/scholars to recent statistical and econometric approaches to applied microeconomics. The goal of the course is to make students understand and apply different statistical methods and research designs that are essential for applied microeconomics and policy research in economics.

Course Outline

The course will focus on drawing causal inference, i.e. what methods can be designed to address research questions that concern the causal impact of some explanatory variable (such as a change in law, an intervention, a policy tool) on an outcome (e.g., wages, education, crime). It will cover a range of empirical approaches, including experiments (both randomized and natural), propensity score matching, fixed effects estimation, difference-in-differences, instrumental variable estimation, regression discontinuity designs, quantile regressions, and recent non-parametric approaches. Applications will be drawn from labor economics, development economics, education and economics of institutions.

Prerequisites

In addition to introductory statistics and probability, the course assumes a good knowledge of introductory microeconomics and econometrics. Students are also expected to be reasonably proficient in the statistical software STATA.

Reading Material

The following is a list of recommended textbooks for this course. In addition, research papers will also be used heavily for the teaching of the course. Relevant research papers will be provided during the course.
- Cahuc, Pierre and Andre Zylberberg (2004), Labor Economics, MIT Press.
- Angrist and Pischke (2009), Mostly Harmless Econometrics, Princeton University Press.
- Handbook of Labor Economics (relevant volumes)
- Handbook of Economics of Education (relevant volumes)

Course Evaluation
- Term paper on a preassigned topic 40%
- Stata Assignment 20%
- Final Exam 20%

Preliminary Schedule

1. **Introduction**

Overview of the course, course requirements and review of statistical concepts useful for causal inference

2. **Potential Outcome Model**

The idea of Counterfactuals, treatment effects, identification problem

3. **Randomized controlled Trials**

Implementing RCTs in practice, randomization bias, choosing the level of randomization, power calculation, measuring and controlling for externalities/spillovers

4. **Causal effects under selection of observables**

Propensity score matching, non-parametric regressions and minimum biased estimators

5. **Panel Data Models and Differences-in-Differences**

Fixed effect estimation, differences in differences and parallel trend assumptions, Goodman-Bacon Decomposition

6. **Instrumental Variables**

Instrumental variables in practice, Local Average Treatment Effects, IV in randomized experiments

7. **Regression Discontinuity Design**

Sharp and Fuzzy Designs, Identification, Estimation, Falsification Checks

8. **Quantile Regressions**