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Time and Location
Thursday 9:00-12:00, General Purpose Building 270935

Office Hours
By appointment.

Overview
This course is prepared for master and Ph.D. students intending to conduct economics analysis using STATA. There are three purposes for this course. The first is to provide an introduction of National Health Insurance Data (NHID). The second is to provide an introduction of modern econometrics techniques on the cross-section and panel data, including difference-in-difference (DID), instrumental variable method (IV), Propensity Score Matching Method (PSM) and regression discontinuity method (RD). Finally, we show how these methods can be implemented using STATA (http://www.stata.com), a program for statistics, graphics, and data management.

Prerequisite
Students are required to take master level Econometrics. In addition, knowledge of statistical software (e.g. SAS, STATA) would be very helpful.

Textbooks
There is no textbook for this course; however, the following three books are helpful for understanding the backgrounds of health systems of the United States and Taiwan.

- Christopher F. Baum, An Introduction to Modern Econometrics Using Stata, Stata Press (2006)
Grading

There will be 4-5 quizzes that students are expected to work independently. There will be a final report which students are expected to work in groups; the details will be decided in the first class. Grading will be as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Quizzes</td>
<td>40%</td>
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<tr>
<td>Report</td>
<td>60%</td>
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Course Outline

The first half of this course is to introduce NHID, and use STATA to select, clean, organize, and describe the data. The second part employs a research example to discusses some of modern techniques in the fields of micro-econometrics, including DID, IV and RD.

- Introduction of National Health Insurance Data
  - NHID sample file

- Managing the data
  - Convert raw data into STATA format data
  - Describe the data
  - Groups and subgroups the data
  - Changing the data
  - Data cleaning
  - Summarize the data
  - Combine the data

- Regression Analysis
  - Multiple Regression I (SW 6): Omitted variable bias, Multiple regression model.
  - Assessing Regression Studies (SW 9): Internal and external validity, Threats to internal validity.
  - Panel Data (SW 10): Fixed effects regression, Random effects regression.

- Questions and Experiments
  - Experiments and Quasi-Experiments (SW 13):Quasi-experiments, Average treatment effect.
  - MHE, Chapters 1 and 2
  - DID (difference-in-difference) estimator.

- Difference in Difference Estimator
• Instrumental Variables Method
  – Instrumental Variables Regression (SW 12): General IV regression model, Checking instrument validity, Where do IV come from?
  – Instrumental Variable Models with heterogeneous potential outcomes (MHE Chapters 4.4-4.5)
  – NBER Summer Institute: Lecture Notes of Applied Econometrics on Instrumental Variables with Treatment Effect Heterogeneity: Local Average Treatment Effects

• Propensity Score Matching Method
  – NBER Summer Institute: Lecture Notes of Applied Econometrics on Matching Estimator

• Regression Discontinuity Method
  – MHE, Chapters 6
  – NBER Summer Institute: Lecture Notes of Regression Discontinuity Designs