SPS 3rd term workshop 2012-2013

Causal Inference

6 June 2013 (12:00-18:00)
7 June 2013 (9:00-15:00)

Instructor: Elias Dinas (University of Nottingham, School of Politics and IR)

Organised by Fabrizio Bernardi (together with Carolina Zuccotti & Chiara Comolli)

Seminar Room 2, Badia Fiesolana

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This is a two-days course that will introduce students to an authoritative framework of causal inference in social sciences. The objective is to learn how statistical methods can help us to draw causal claims about phenomena of interest. By the end of the course, students will be in position to 1) critically read and evaluate statements about causal relationships based on some analysis of data; 2) apply a variety of design-based easy-to-implement methods that will help them draw causal inferences in their own research.

Either explicitly or implicitly, the goal of most empirical research is to interpret causally the co-occurrence of interesting phenomena. Addressing causality, however, has been notoriously difficult without the luxury of experimental data. This course will introduce you to methods that allow you to make convincing causal claims without working with experimental data. We will look at three such designs: a) instrumental variables; b) regression discontinuity design; and c) difference-in-difference estimation. All these designs will be presented through the potential outcomes framework, which constitutes the most widely acclaimed framework to discuss about causality.

You can only learn statistics by doing statistics. This is why this module includes a laboratory component, where you will learn to apply these techniques to the analysis of discipline specific data. Your coursework assignment will also be based on the need to actually implement these methods with real data. The data and all the instructions will be given to you. Thus, your goal will be to apply one of the methods you will have learnt on these data to answer questions about whether some variable X caused some other variable Y. Educational Aims:

This module aims to give students:

(a) an understanding of the methods of causal inference, using topics and datasets from the empirical literature of the students’ discipline, and
(b) a familiarity with software to implement the estimation based on these techniques. Most analyses will be based on STATA, a widely used package,
which is very convenient for data management, statistical analyses and data visualisation. Learning Outcomes:

If you aspire to make causal claims in your own research or if you are interested in assessing other people’s causal claims, you will find this module very interesting.

If you want to write a term paper for this workshop, please send a copy by email to the seminar's professor as well as to the organizing secretary. Once the paper is approved, she will update your credit award in your academic records. The deadline for submission is: 14 June 2013.

Data:
Throughout the course, we will use various different data sets that will help us see how each of these designs works. All these data sets will become available to the participants through dropbox.

Day 1 – 06/07/2013 (12:00-18:00)
- Motivation, examples, discussion. We will see examples of the “fundamental problem of causal inference.” Introduction to the potential outcomes framework. We will derive the causal quantities of interest (ATE, ATT, ATC). Reappraisal of the regression equation using the insights from the potential outcomes framework.
- Instrumental variables: using a running example, we will delve into identification, estimation and applications.

Day 2 – 07/07/2013 (9:00-15:00)
- Difference-in-Differences estimation: Motivation, examples, identification, estimation, Examples, what can go wrong and what to do about it.
- Hands-on practice in the lab. Introduction to the code and examples in STATA. We will see code for IVs, sharp and fuzzy RDDs and the difference-in-differences estimator.

Readings:

Specific articles and handouts will be distributed in the class.