

# University of Pennsylvania

## ECN 712: Empirical Methods for Counterfactual Analysis

### Fall 2019

**Instructor:** Francesco Agostinelli

**Office:** 604 (The Ronald O. Perelman Center for Political Science and Economics)

**Email:** [fagostin@upenn.edu](mailto:fagostin@upenn.edu)

**Time and Location:** Monday and Wednesday at 10:30am-12:00pm, PCPSE 225

**My Office hours:** Please send me an email and we can schedule a meeting.

#### Course Description:

Almost any field in Economics is interested in analyzing what happens to outcomes or behaviors of the economic unit of interest (e.g.: individuals, households, firms, etc.) as a result of a change in a counterfactual conditional. In economic theory, the comparison of an economic outcome before and after a change in some underlying exogenous parameter is called comparative statics. In applied economics, the effect of a change in an exogenous variable on an economic outcomes is called causal effect. However, the ability for theoretical and empirical works to be mutually and reciprocally informative about counterfactual analysis faces one main challenge: what theory-based and empirical works define as exogenous is not equivalent. In one case, exogeneity is an assumption about a variable that is part of a modelled economic theory. In the other case, exogeneity is a statistical property about the distribution of the un-modelled and unobserved component of the analysis.

In the first part of the class, we will study how to consistently combine theory-based and empirical methods in order to apply counterfactual analysis to policy-relevant questions. This process consists of combining the evaluation of existing policies (“reduced-form” methods) to inform the identification of economic models used for the analysis of policies that have never been in place before (counterfactual).

In the second part of the class, students are required to present their research ideas. There is no restrictions in terms of topics or fields. Although, my suggestions for all young scholars like you is to focus on ambitious and policy-relevant questions (we can learn something from the previous job market “stars” <https://www.restud.com/wp-content/uploads/2019/06/May-Meeting-speakers.pdf> ). We will discuss in class how to organize your presentations throughout the course.

**Useful material:** In addition to my slides, I list here some relevant resources by topics:

#### 1. Computational Methods

- a. Judd: Numerical Methods in Economics
- b. Train: Discrete Choice Methods with Simulation
- c. Adda and Cooper: Dynamic Economics
- d. Stachurski: Economic Dynamics: Theory and Computation (more Macro, plus Sargent and Stachurski Lectures in Quantitative Economics: <https://lectures.quantecon.org>)

## **2. Causal Inference**

- a. Angrist and Pischke: Mostly Harmless Econometrics
- b. Morgan and Winship: Counterfactuals and Causal Inference
- c. Imbens and Rubin: Causal Inference for Statistics, Social, and Biomedical Sciences

## **3. Presentation and Writing Skills**

- a. Presentation Tips by Berthold Herrendorf (ASU):  
<https://sites.google.com/site/bertholdherrendorf/>
- b. Writing Tips by John Cochrane (Chicago):  
[https://faculty.chicagobooth.edu/john.cochrane/research/papers/phd\\_paper\\_writing.pdf](https://faculty.chicagobooth.edu/john.cochrane/research/papers/phd_paper_writing.pdf)