IPHD 7007 Introduction to Causal Inference

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NATIONAL TSING HUA UNIVERSITY

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Instructor: Eric S. Lin

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Course Description:
This is a topic course on causal inference for iPhD student in Kinmen. It is well-known that the endogeneity issue is a tough issue when researchers attempt to uncover the causal effect of a certain policy. In this course we will discuss popular econometric or statistic methods which are utilized in policy analysis. Those methods include a panel data analysis (static and dynamic, linear and non-linear), instrumental variables, propensity score matching, differences-in-differences, and regression discontinuity design.

The ultimate goal of this course is to motivate PhD students focusing on policy evaluation to conduct a high quality policy research and to employ our introduced empirical methods. This evidence-based and data-driven process is crucial for policy makers. Thereby, it will be compulsory for students to initiate a new project related to their thesis, survey the literature, collect data, summarize basic statistics, estimate the specified model, test certain hypothesis, conduct sensitivity analysis, discuss empirical findings, propose policy suggestions, present the process regularly in class, and lastly end up with writing a formal article (ready for submission if possible).

Prerequisites:
Not necessary but statistics or equivalent graduate level econometrics is recommended

Required Reading:

I will prepare my own lecture notes for some issues but the following books or articles are useful for your consultation.

- [Required Reading] Angrist, J. and Pischke J., 2014, *Mastering 'Metrics: The Path from Cause to Effect.*

- Angrist, J. and Pischke J., 2009, *Mostly Harmless Econometrics: An Empiricist's Companion.*

- Angrist, J. and A. Krueger, 1999, *Empirical strategies in labor economics*, In O. Ashenfelter and D. Card, editors, Handbook of Labor Economics, volume 3, pages 1277–1366. Elsevier Science.

- Duflo. E., 2001, Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment. *The American Economic Review*, 91(4):795–813.

- Morgan, Stephen L. and Winship Chris, 2015, *Counterfactuals and Causal Inference : Methods and Principles for Social Research.*

- Stock, J. H. and M. W. Watson, 2011, *Introduction to Econometrics*, 3rd edition, Addison-Wesley.

- Wooldridge, J. M., 2013, *Introductory Econometrics: A modern approach*, 5th edition, South-Western.

References:

We will offer more references as the course progresses.

Software: You are welcome to use any econometric packages such as *STATA, or R.*

Grading: The final grade depends on regular (weekly or bi-weekly) in-class presentations, participation and quality of the final paper.

Presentation	60%
Participation	10%
Final Paper	30%