

Introduction to Econometrics

Business School, Nanjing University

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Course Website	Course Web	Time:	Monday 9 : 00-12 : 00 am

Course Description

This course introduces students to modern causal inference methods for analyzing data in economics and other social sciences. The goal is to help student develop a solid theoretical background in introductory level econometrics, the ability to implement modern techniques and to critique empirical studies in economics and other social sciences. Specifically, we will learn **six** modern econometric research design techniques that aim to credibly estimate causal effects:

- Randomized Trials
- Regression
- Decomposition
- Instrumental Variables
- Regression Discontinuity Designs
- Differences-in-Differences

At the end, students mastering tools will use at least one of them to finish an empirical research project.

Evaluation

- 出勤率 (Participation) (10%)
- 作业 (Homework) (10%)
- 期中考试 (Middle-term) (30%)
- 期末考试 (Final exam) (30%)
- 研究计划 (Group project) (20%)

Textbooks

Econometrics

- James H. Stock and Mark W. Watson, *Introduction to Econometrics*, 3rd Edition, Addison-Wesley, 2012.
- Jeffrey M. Wooldridge, *Introductory Econometrics: A Modern Approach*, 5th Edition, South-Western College, 2013.
- Joshua Angrist and Jorn-Steffen Pischke, *Mastering 'Metrics: The Path from Cause to Effect*, Princeton press, 2015.
- Joshua Angrist and Jorn-Steffen Pischke, *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton press, 2008.

Computing Softwares : Stata and R

- 任意一本关于 Stata 或者 R 操作的中文书

Additional Readings

- Steven D. Levitt and Stephen J. Dubner, *Freakonomics: A Rogue Economist Explores the Hidden Side of Everything*, 2005. (中译本《魔鬼经济学》斯蒂夫·列维特和斯蒂芬·都伯纳著, 广东经济出版社, 2006 年 1 月。)
- Steven D. Levitt and Stephen J. Dubner, *SuperFreakonomics: Global Cooling, Patriotic Prostitutes, and Why Suicide Bombers Should Buy Life Insurance*, 2009. (中译本,《超爆魔鬼经济学》, 斯蒂夫·列维特和斯蒂芬·都伯纳著, 中信出版社, 2010 年 1 月。)
- Ian Ayres, *Super Crunchers: Why Thinking-By-Numbers is the New Way To Be Smart*, 2007. (中译本《超级数字天才》, 伊恩·艾瑞斯著, 中国青年出版社, 2008 年 1 月。)
- Raymond Fisman and Edward Miguel, *Economic Gangster : Corruption, Violence and the Poverty of Nations*, 2008. (中译本《经济黑帮: 腐败、暴力的黑帮经济学》, 中信出版社, 2010 年 8 月)
- Abhijit V. Banerjee & Esther Duflo, *Poor Economics A Radical Rethinking of the Way to Fight Global Poverty*, 2011.(中译本:《贫穷的本质: 我们为什么摆脱不了贫穷》, 中信出版社。)
- Angus Deaton, *The Great Escape: Health, Wealth, and the Origins of Inequality*, 2015.(中译本:《逃离不平等: 健康、财富及不平等的起源》, 中信出版社。)
- Thomas Davenport & Jeanne Harris, *Competing On Analytics: The New Science of Winning*, Harvard Business School Press, 2007.(中译本《数据分析竞争法——企业赢之道》, 商务印书馆, 2009 年 8 月)
- 涂子沛,《大数据: 正在到来的数据革命, 以及它如何改变政府、商业与我们的生活》, 广西师范大学出版社, 2012 年 7 月。

Schedule

Week	Topic	Date	
1	Introduction	9/4	
2	Causal Inference and Experimental Method(I)	9/11	
3	Causal Inference and Experimental Method(II)	9/18	
4	Regression(I)	9/25	
5	<i>National Day(No Class)</i>	10/2	
6	Regression(II)	10/9	
7	Regression(III)	10/16	
8	Regression(IV)	10/23	
9	Regression(V)	10/30	
10	<i>Mid-term Exam</i>	11/6	
11	Decomposition(I)	11/13	
12	Decomposition(II)	11/20	
13	Instrumental Variable(I)	11/27	
14	Instrumental Variable(II)	12/4	
15	Regression Discontinuity(I)	12/11	
16	Regression Discontinuity(II)	12/18	
17	Difference in Differences(I)	12/25	
18	Difference in Differences(II)	1/2	
19	<i>Final Exam</i>	TBA	

Outline

(Preliminary, to be adjusted possibly)

0.1 Introduction

- What the course is about? What is the benefit if we learn it? How to learn it?

Probability and Statistics Review

- Stock and Watson (2012), Chapter 2-3.
- Wooldridge (2013): Appendix A, B & C.

0.2 Causal Inference in Social Science and Randomized Experiment(I)

- Angrist and Pischke (2014): Chapter 1
- Angrist and Pischke (2008): Chapter 1-2
- Stock and Watson (2012): Chapter 1 & 13

Probability and Statistics Review

- Stock and Watson (2012), Chapter 2-3.
- Wooldridge (2013): Appendix A, B & C.

0.3 Causal Inference in Social Science and Randomized Experiment(II)

- Angrist and Pischke (2014): Chapter 1
- Angrist and Pischke (2008): Chapter 1-2
- Stock and Watson (2012): Chapter 1 & 13

Probability and Statistics Review

- Stock and Watson (2012): Chapter 2-3.
- Wooldridge (2013): Appendix A, B & C.

0.4 Regression (I): Simple OLS

- Stock and Watson (2012): Chapter 4-5, 17
- Wooldridge (2013): Chapter 2
- Angrist and Pischke (2014):Chapter 2
- Angrist and Pischke (2008): Chapter 3

0.5 NO CLASS

0.6 Regression (II)- Multiple OLS

- Stock and Watson (2012): Chapter 6-7
- Wooldridge (2013): Chapter 3,
- Angrist and Pischke (2008): Chapter 3
- Angrist and Pischke (2014): Chapter 2

0.7 Regression Review (III): Multiple OLS

- Stock and Watson (2012): Chapter 6-7
- Wooldridge (2013): Chapter 4-5

0.8 Regression Review (IV): Heteroskedasticity

- Stock and Watson (2012): Chapter 8-9
- Wooldridge (2013): Chapter 6-8

0.9 Regression Review (V): Binary Dependent Variables

- Stock and Watson (2012): Chapter 11
- Wooldridge (2013): Chapter 9 & 17

0.10 Mid-term Exam

0.11 Inequality Decomposition(I)

- Fortin, Lemieux and Firpo(2010), “Decomposition Method”in the Handbook of Labor Economics , Vol(4).

0.12 Inequality Decomposition(II)

- Fortin, Lemieux and Firpo(2010), “Decomposition Method”in the Handbook of Labor Economics , Vol(4).

0.13 Instrumental Variables (I)

- Stock andWatson (2012): Chapter 12
- Wooldridge (2013): Chapter 15
- Angrist and Pischke (2014): Chapter 3
- Angrist and Pischke (2008): Chapter 4

0.14 Instrumental Variables (II)

- Stock andWatson (2012): Chapter 12
- Wooldridge (2013): Chapter 15
- Angrist and Pischke (2014): Chapter 3
- Angrist and Pischke (2008): Chapter 4

0.15 Regression Discontinuity (I)

- Angrist and Pischke (2008): Chapter 4
- Angrist and Pischke (2014): Chapter 4
- Guido W. Imbens and Thomas Lemieux (2007), “Regression discontinuity designs: A guide to practice”, Journal of Econometrics, 142(2), pp.615-635.

0.16 Regression Discontinuity (II)

- Angrist and Pischke (2008): Chapter 4
- Angrist and Pischke (2014): Chapter 4
- Guido W. Imbens and Thomas Lemieux (2007), “Regression discontinuity designs: A guide to practice”, Journal of Econometrics, 142(2), pp.615-635.

0.17 Difference in Differences (I)

- Angrist and Pischke (2014): Chapter 5
- Angrist and Pischke (2008): Chapter 5
- Stock andWatson (2012): Chapter 10
- Wooldridge (2013): Chapter 13

0.18 Difference in Differences (II)

- Angrist and Pischke (2014): Chapter 5
- Angrist and Pischke (2008): Chapter 5
- Stock and Watson (2012): Chapter 10
- Wooldridge (2013): Chapter 13

0.19 Final Exam