USC Marshall
School of Business

MOR 604 – Research Methods in Strategy and Organizations

Spring 2018
Section 16796 (9am – 12pm Wednesdays HOH 114)

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Objectives:
Once the research question is established, there are three core steps to effective empirical work:

(1) Establish what relationships are in the data
(2) Interpret those relationships in light of your research objectives
(3) Communicate those relationships as clearly, completely, and convincingly as possible

The main focus of the course will be on methods for establishing causal relationships in field data. This means we will discuss how to establish what relationships exist in the data, when you can interpret these relationships as causal, and how you can convince your audience of your results (without overselling).

Because methods aren't too useful without interesting questions to answer, we will also spend time developing our "taste" for what constitutes a quality empirical research paper. The ultimate goal is for you to leave prepared to undertake your own empirical research.

We will also think carefully about the interaction between empirical design and theory, especially the importance of careful theoretical thinking for empirical research.

Preparation and Prerequisites: This course is designed to complement a graduate sequence in econometrics, but it should be accessible to students with basic knowledge of statistics and probability. We will focus on intuition and understanding how statistical models relate to the underlying data (and theory). Still, there will be technical material in readings, discussions, and assignments.

Grading:
Class participation: 10%
Class Discussant 1: 10%
Class Discussant 2: 10%
Research paper proposal: 5% (due Jan 31)
Replication exercise 1: 10%
Replication exercise 2: 10%
Research paper class presentation: 20% (April 25)
Research paper extended abstract: 25% (due Apr 30)

Class participation: Attendance is mandatory. Class discussion is a critical component of the seminar. You will be expected to complete the readings assigned before class and come to class with comments and questions.

Class discussant: Discuss assigned class readings market with *. No written report required. I will circulate a sign-up sheet during the first day of class.

Research paper (individual or group): Individually or in a group of no more than two, select a research paper topic of your choice. We'll work on it throughout the duration of the course to exemplify the concepts learned. At the end of the course, you will present your project in front of the class. You will also submit a written extended abstract of maximum 10 double-spaced pages of text plus tables, figures and references. It is possible that some projects require lengthy data collection. In that case, you should at least know what the data are like and how you can obtain the data so that the paper can be as specific as possible about the implementation.

Class Structure: Most sessions we will spend time on: 1) Listening to the class discussants' report, 2) Lecture plus reviewing the assigned readings (all of them) and 3) Discussing your projects in light of session learnings. Two sessions are dedicated to replicating empirical papers. Read the paper to be replicated in advance. **Note: All readings are required. The * marks readings assigned to class discussants, but everybody must reading everything.**

Books:

Required:

1) Angrist, Joshua D., Pischke, Jörn-Steffen. 2009. Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press: Princeton NJ.
2) Angrist, Joshua D., Pischke, Jörn-Steffen. 2014. Mastering 'Metrics: The Path from Cause to Effect. Princeton University Press: Princeton NJ.

Other books, not required for this class, but good references for anyone doing empirical work:

3) Wooldridge, J. 2010. Econometric Analysis of Cross Section and Panel Data (Second Edition). MIT Press.
4) Greene, William .2008. Econometric Analysis 6th edition. Prentice Hall.
5) Imbens, W. Guido, Rubin, B. Donald. 2015. Causal Inference for Statistics, Social and Biomedical Sciences: An Introduction. Cambridge University Press

	Date	**Topic**
1	January 10	Getting Started
2	January 17	Causal effects: Why do we care and why so hard to establish? (I)
3	January 24	Project proposal
4	January 31	Causal effects: Why do we care and why so hard to establish? (II)
5	February 7	Difference-in-Differences (I)
6	February 14	Difference-in-Differences (II)
7	February 21	Replication exercise
8	February 28	Instrumental variables
9	March 7	Matching
March Break (March 11-18)		
10	March 21	Regression Discontinuity
11	March 28	Quantile regression; Event studies
12	April 4	Replication exercise
13	April 11	Continuous, discrete and binary dependent variables
14	April 18	Testing
15	April 25	Project Presentations

Week 1 (January 10): Getting started
Course goals
Syllabus
Getting started:

1) Data structure: Panel, Cross section; Unit of analysis
2) How to read (and write) an empirical paper (e.g., research question, data structure/unit of analysis, estimating equation(s); main effect, contingency, mechanism; robustness, falsification tests)

Week 2 (January 17): Causal effects: Why do we care and why so hard to establish? (I)
Theory: What is identification?

1) *MM Chapter 1
2) MHE Chapters 1 and 2
3) Heckman, J. 2000. Causal Parameters and Policy Analysis in Economics: A Twentieth Century Retrospective. *Quarterly Journal of Economics*, 115: 45-97.

In practice

1) *Azoulay, P., Graff Zivin, J, Wang, J. 2010. Superstar Extinction. *Quarterly Journal of Economics*, 125(2): 549-589

Week 3 (January 24): Develop project proposals

Week 4 (January 31): Causal effects: Why do we care and why so hard to establish? (II)
Theory: Regression fundamentals

1) *MM Chapter 2
2) MHE Chapter 3 (Only 3.2 (all subsections) and 3.4.3)

In practice

Field experiments

1) *Bertrand, M., Mullainathan, S. 2004. Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination. *American Economic Review*, 94(4): 991–1013.

Describing interesting data

2) Jones, B. F., Wuchty, S, Uzzi, B. 2008. Multi-University Research Teams: Shifting Impact, Geography, and Stratification in Science. *Science*, 322: 1259-1262.

Week 5 (February 7): Difference-in-differences (I)
Theory: Difference-in-differences fundamentals

1) *MM Chapter 5 (Only 5.1 (all subsections))
2) Bertrand, M., Duflo, E. Mullainathan, S. 2004. How Much Should We Trust Differences-in Differences Estimates?. *Quarterly Journal of Economics*, 119: 249-76. (Only the introduction is required)
3) Donald, S., Lang, K. 2007. Inference with Difference in Differences and Other Panel Data. *Review of Economics and Statistics*, 2: 221-233.

In practice

1) *Agrawal, A., Goldfarb, A. 2008. Restructuring Research: Communication Costs and the Democratization of University Innovation. *American Economic Review*, 98(4), 1578-1590.

Week 6 (February 14): Difference-in-differences (II)
Theory: Difference-in-differences, fixed effects, lagged variables and controls

1) *MHE Chapter 5

2) Navarro, S. 2007. Control Functions in *The New Palgrave Dictionary of Economics*

In practice

1) Stern, S. 2004. Do Scientists Pay to Be Scientists?. *Management Science* 50(6), 835-853.
2) *Furman, J., Stern, S. 2011. Climbing Atop the Shoulders of Giants: The Impact of Institutions on Cumulative Research. *American Economic Review* 101(5): 1933-1963

Week 7 (February 21): Paper replication exercise

Class exercise; data will be provided in class. Bring your laptop.

Empirical paper TBD

Week 8 (February 28): Instrumental variables

Theory: IV design (including 2SLS), Language of treatment effects

1) *MM Chapter 3
2) Imbens, Guido W., and Jeffrey M. Wooldridge. 2009. "Recent Developments in the Econometrics of Program Evaluation." Journal of Economic Literature, 47(1): 5–86.
(Pay closer attention to sections 2.1, 2.2, 3.1, 5.1, 5.3, 5.4, 5.5, 6.3, 6.4, and 6.5)

In practice

1) *Angrist, Joshua D. 1990. "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records." *American Economic Review* 80(3), 313-336.

Week 9 (March 7): Matching

Theory:

1) MHE 3.3
2) Todd, P. (2006), "Matching Estimators"
3) Iacus, King, and Porro (2011). "Causal Inference without Balance Checking: Coarsened Exact Matching" Political Analysis. (Skip section 5)

In practice

1) Thompson, P., and M. Fox-Kean (2005): "Patent citations and the geography of knowledge spillovers: a reassessment" American Economic Review, 95(1): 450-460.

   This paper is a rebuttal of Jaffe, A., M. Trajtenberg and R. Henderson (1993), "Geographic Knowledge Spillovers as Evidenced by Patent Citations" Quarterly Journal of Economics, 108(3):577-98. It may be useful to skim this original paper for a better understanding of the original study.
2) Levine, D. I., & Toffel, M. W. (2010). Quality management and job quality: How the ISO 9001 standard for quality management systems affects employees and employers. Management Science, 56(6), 978-996. (including the online appendix)
3) Azoulay, P., Stuart, T., & Wang, Y. (2013). Matthew: Effect or fable?. Management Science, 60(1), 92-109.

(March 11-18: March Break)

Week 10 (March 21): Regression Discontinuity

Theory: Sharp RD, Fuzzy RD

1) *MHE Chapter 6
2) MM Chapter 4

In practice

1) Busse, Meghan, Jorge Silva-Risso, and Florian Zettelmeyer. 2006. "$1,000 Cash Back: The Pass-Through of Auto Manufacturer Promotions." *American Economic Review*, 96(4): 1253–1270.
2) *Fehder, Dan. 2015. "Startup Accelerators and Ecosystems: Complements or Substitutes?" (job market paper)

Week 11 (March 28): Quantile regression, Event studies

Theory

Event studies

1) *MacKinlay, A. C. (1997) "Event Studies in Economics and Finance" *Journal of Economic Literature*, 35, 13-39.

Quantile regression

2) *MHE Chapter 7

In practice

1) *Oxley, Joanne, Rachelle C. Sampson and Brian Silverman. 2009. "Arms Race or Détente? How Inter-firm Alliance Announcements Change the Stock Market Valuation of Rivals." *Management Science* 55(8): 1321-37
2) Goldberg, Pinelopi. 1996. "Dealer Price Discrimination in New Car Purchases: Evidence from the Consumer Expenditure Survey," *Journal of Political Economy*.

Week 12 (April 4): Paper replication exercise

Class exercise; data will be provided in class. Bring your laptop.

Empirical paper TBD

Week 13 (April 11): Continuous, discrete and binary dependent variables

Theory

Continuous and discrete dependent variables (OLS and Poisson)

1) *MHE Chapter 3 (Only 3.1 (all subsections))
2) Santos Silva, J. M. C. and Silvana Tenreyro. 2006. "The Log of Gravity." *Review of Economics and Statistics* 88(4): 641-658.
3) *Hausman, Jerry, Hall, Bronwyn H & Griliches, Zvi, 1984. "Econometric Models for Count Data with an Application to the Patents-R&D Relationship," *Econometrica*, 52(4): 909-38.

Binary dependent variables (Probit, Logit, Tobit)

4) *MHE Chapter 3 (Only 3.4.2) and Chapter 4 (Only 4.6.3)
5) Angrist, Joshua D. 2001. "Estimation of Limited Dependent Variable Models with Dummy Endogenous Regressors: Simple Strategies for Empirical Practice" *Journal of Business and Economic Statistics* 19(1), 2-16.

Interaction terms

(Interpreting interaction terms in linear models)

6) Brambor, Thomas, WR Clark, M Golder. 2006. "Understanding Interaction Models: Improving Empirical Analysis" Political Analysis 14:63-82
(Calculating interaction terms in nonlinear models)
7) Ai, Chunrong, and Edward C. Norton. 2003. "Interaction Terms in Logit and Probit." Economics Letters 80, 123-129.
8) Zelner BA. 2009. Using Simulation to Interpret Results From Logit, Probit, and Other Nonlinear Models. Strategic Management Journal 30(12): 1335-1348

In practice

Count data

1) *Azoulay, P., Graff Zivin, J, Wang, J. 2010. Superstar Extinction. *Quarterly Journal of Economics*, 125(2): 549-589

Binary Dependent Variables

2) *Agrawal, Ajay, and Avi Goldfarb. 2008. "Restructuring Research: Communication Costs and the Democratization of University Innovation." *American Economic Review* 98(4), 1578-1590.

3) Forbes, Silke Januszewski, and Mara Lederman. 2009. "Adaptation and Vertical Integration in the Airline Industry." *American Economic Review*, 99(5): 1831–49.

Week 14 (April 18): Testing

Theory

Economic vs. statistical significance

1) McCloskey D, Ziliak S T. (1996). "The Standard Error of Regressions." *Journal of Economic Literature* 34(1): 97-114.

Random effects and Hausman tests

2) Hausman, Jerry A., and William E. Taylor. 1981. Panel Data and Unobservable Individual Effects. *Econometrica* 49(6), 1377-1398.

In practice

Economic vs. statistical significance

1) Milyo, J., and J. Waldfogel. 1999. "The Effect of Price Advertising on Prices: Evidence in the Wake of 44 Liquormart," *American Economic Review* 89: 1081-96
2) Kuhn, *P.*, Skuterud, M. (2004), "Internet job search and unemployment durations", *American Economic Review*, 94(1), 218-32.
3) Kyle, Margaret, and Anita McGahan. 2012. Investments in Pharmaceuticals Before and After TRIPS. *Review of Economics and Statistics* 94(4):1157-1172

Random effects and Hausman tests

4) Evans, William N., and Ioannis N. Kessides. 1993. "Localized Market Power in the U.S. Airline Industry." *Review of Economics and Statistics* 75(1), 66-75.

Fit, R-squared, and explanation vs. prediction

5) Athey, Susan and Scott Stern. 2002. "The Impact of Information Technology on Emergency Health Care Outcomes," *RAND Journal of Economics*, 33(3): 399-432.
6) Donohue, John J. III, and Stephen D. Levitt. 2001. "The Impact of Legalized Abortion on Crime." *Quarterly Journal of Economics* 116(2): 379-420.

Week 15 (April 25): Project presentation