

**ECO2607**  
**ECONOMICS OF EDUCATION POLICY (Fall 2024)**

**Mondays 9AM-11AM, GE100**

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Office Hours: Wednesdays 12:30PM – 1:30PM by appointment (other times available – just ask)

This is a graduate course in the economics of education policy and is designed to provide students with a broad understanding of theory and evidence of approaches to improve academic success and long-run well-being. We will cover both classic and emerging topics, mainly from an empirical microeconomic perspective, although the required theoretical foundations will be covered as well. Students will be introduced to a variety of ideas to help them think critically about education policy. The course is taught mainly through discussion of academic papers in the economics of education, and topics include, but are not limited to, education production functions; class size reforms; incentives for educators; the returns to higher education; teacher quality measurement and policy; and applications of behavioral economics in the field. The course also provides a brief review of basic econometric techniques and allows students the opportunity to replicate earlier work or begin their own.

The material covers a lot of what I have been working on in my own research and a lot of what interests me. You'll see below that I have an ambitious agenda to cover education topics from conception to the labor market. I am often motivated as a policy maker and as a parent in understanding what we can do to help foster greater learning, skills, and well-being. Sifting through the research and drawing confident conclusions is surprisingly difficult – but we'll make a stab at it, and I'm looking forward to learning with you along the way.

There is no required textbook. The course relies on discussion of academic papers. To help students understand the empirical analyses in those papers, I recommended the following excellent texts on econometrics:

(Basic) Joshua D. Angrist and Jörn-Steffen Pischke, *Mastering 'Metrics: The Path from Cause to Effect*. Princeton University Press.

(More advanced) Joshua D. Angrist and Jörn-Steffen Pischke, *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.

(Optional/) Michael Lovenheim and Sarah E. Turner, *Economics of Education*. Macmillan Learning.

Preparation for research: Students are *strongly* encouraged to attend the applied micro seminar.

We'll be covering different empirical methods for measuring causal impacts and program evaluations along the way. Some familiarity of these topics is already assumed. Knowledge in working with statistical software and data is also an asset, although I can help with that for your paper.

**Video lectures:** I've worked hard to record all of my lectures for you to watch in succession. You must watch the assigned videos at least before the specified date. Feel free to watch ahead.

**Grading:** Grading will be based on a research paper (40%), a presentation (20%), participation (10%), and an end of term test (30%).

**Participation:** You are also required to attend lecture and be prepared to actively participate based on the readings and lecture material outlined in the schedule. Not attending class, or not participating in discussion if called on will result in a 2 percentage grade reduction in your grade each time.

**Presentation:** Each student is required to present once during class, providing an update to the material covered in the video lectures. I have included several new papers that can be used for these presentations here:

[https://www.dropbox.com/scl/fo/3if8q35a9wt1sj0v1gweh/APaqupZrLAP7PCkj5aUj\\_pQ?rlkey=wkiakoz2r2g0h8ldps20cet4v&dl=0](https://www.dropbox.com/scl/fo/3if8q35a9wt1sj0v1gweh/APaqupZrLAP7PCkj5aUj_pQ?rlkey=wkiakoz2r2g0h8ldps20cet4v&dl=0)

But you are also expected to search for yourself around additional papers (e.g. see EdWorkingPapers, NBER, top education and economics journals)

The presentation should include how these new papers fit with the previous papers, but should emphasize the new papers. Considerable leeway is provided for you to curate and decide what is important and interesting to emphasize.

Presentations should be around 1.0-1.5 hours, with opportunity for ample discussion for other students to participate and relate to earlier videos.

Rubric for marking is:

Slide quality: 5%

Comprehensiveness of new material: 5%

Discussion questions and quality: 5%

Knowledge of topics and economics: 5%

Students sign up on a first come first serve basis, with up to two students per lecture. If there are two students, you must work collaboratively and will receive the same grade. You are encouraged to discuss lecture material and articles in more detail, and incorporate research not discussed in the videos. You are also to lead a discussion on the topic.

**The research paper** may be a first draft of some original work, or Research Data Center proposal. I will also accept a replication study, but it will be graded out of a possible 35 instead of 40. The purpose of the research paper is to get you started thinking about the road to completing empirical research. You must email me before reading week to get your research paper idea approved. Please see me early if you want to discuss topic ideas.

**End of Term Test:** The end of term test will review key concepts and material and ask you to reflect on key policy questions, drawing out your opinion based on the evidence covered in class.

The test will be mostly essay format.

## Replication study (as an option to your paper study)

Comment on, replicate, and extend a piece of econometric research in the economics of education policy literature. The paper must imply a causal identification strategy (e.g. one of Angrist and Pischke's 'Furious Five'). Data from papers published in many journals are available on authors' web sites, or on a centralized journal web site.

A. Your critique should address the following questions:

1. What was the purpose of the research? What questions were asked and what hypotheses were tested? Why are these questions of economic interest? What are the most imp. findings in the paper?

2. How does this paper fit into the relevant literature? What were the findings at the time the paper was written? What was the contribution of this particular paper? What has been done on this topic since this paper was published?

3. What data were used? Are they reliable or relevant? Are they rich enough to give meaningful answers to the key questions motivating the paper? What would constitute an ideal data set?

4. How was the research conducted? Do the techniques used make sense for this problem and do they appear to have been correctly implemented? What assumptions are needed to draw inferences about causation from the results presented in the paper?

B. Replication/extension

1. Identify the main findings and use the authors' data to replicate these results (if possible). Summarize your results in a table. Discuss why you think your results differ from the authors' (if they do).

2. Extend the work in some way. Do this by either (a) estimating alternative interesting specifications that the author might have tried or that would shed further light on the issues raised in the paper, or (b) collecting new data and producing results for this new sample.

Here are some SUGGESTED places to look for papers with data appendices (there are many others):

<https://www.icpsr.umich.edu/web/pages/ICPSR/>

<https://www.aeaweb.org/journals/> (browse through recent papers with data appendices)

<https://www.economics.ca/cpages/cje-home> (browse through recent papers with data appendices)

[https://www.aeaweb.org/rfe/showCat.php?cat\\_id=9](https://www.aeaweb.org/rfe/showCat.php?cat_id=9)

<https://dataverse.harvard.edu/dataverse/restat>

<https://www.socialscienceregistry.org/>

<http://jhr.uwpress.org/>

<https://economics.mit.edu/faculty/angrist/data1/data>

<http://qed.econ.queensu.ca/jae/>

Other sources for obtaining raw data:

<https://data.utoronto.ca/>

<http://datacentre.chass.utoronto.ca/>

<https://ipums.org/>

<https://www.icpsr.umich.edu/web/pages/>

<https://crdcn.org/data>

## **ECONOMICS of Education Policy: Expected Lecture Schedule**

### **General Calendar**

#### **Before Sept 9**

##### 0 Introduction

- 0.1 introduction
- 0.2 internal validity
- 0.3 effect sizes
- 0.4 external validity

#### **Before Sept 16**

##### 1 Intergenerational Mobility

- 1.1 intergenerational mobility
- 1.2 estimates of intergenerational mobility
- 1.3 cross-regional comparisons
- 1.4 explaining cross country differences
- 1.5 sibling correlations
- 1.6 education intergenerational mobility

##### 2 Achievement Gaps

- 2.1 differences by SES
- 2.2 IQ trends over time
- 2.3 test score inequality over time

#### **Before Sept 23**

##### 3 Genomics

- 3.1 genomics introduction
- 3.2 estimating heritability
- 3.3 twin studies
- 3.4 adoption studies
- 3.5 snp studies

#### **Before Sept 30**

##### 4 In Utero Health

- 4.1 in utero introduction
- 4.2 birthweight twin studies
- 4.3 influenza shocks
- 4.4 other in utero shocks
- 4.5 interactions btw in utero and ses
- 4.6 policies to help in utero shocks

#### **Before Oct 7**

##### 5 Early Childhood

- 5.1 introduction
- 5.2 economic models of parenting
- 5.3 early brain development

- 5.4 toxic stress
- 5.5 perry preschool and abc
- 5.6 parent differences by ses
- 5.7 home visiting programs
- 5.8 home visiting in developing countries
- 5.9 other interventions
- 5.10 headstart & Quebec preschool
- 5.11 Duncan diaries
- 5.13 nature nurture redeux

### **Before Oct 21**

#### 6 Teachers

- 6.1 teacher value added
- 6.2 long-run effects
- 6.3 value added to other outcomes
- 6.4 what makes high/low va teachers?
- 6.5 teacher policies

### **Before Nov 4**

#### 7 Schools

- 7.1 schools that parents value
- 7.2 school spending
- 7.3 class size
- 7.4 selective schools
- 7.5 charter schools
- 7.6 tutoring
- 7.7 pedagogy
- 7.8 takeaways

### **Before Nov 11**

#### 8 Peer Effects

- 8.1 peer effects
- 8.2 rank effects
- 8.3 social influences

### **Before Nov 18**

#### 9 Neighborhoods

- 9.1 neighborhood effects
- 9.2 moving neighborhoods
- 9.3 mto revisited
- 9.4 neighborhoods vs schools
- 9.5 takeaways

### **Before Nov 25**

#### 10 Behavioral Barriers

- 10.1 introduction
- 10.2 shoving

10.3 nudging

11 Culture

11.1 culture

**Before Dec 2**

12 Higher Education

12.1 returns to college

12.2 signaling

12.3 financial barriers

12.4 policy limitations

**Before Dec 3**

13 Adulthood

13.1 future of work

13.2 monopsony and luck

13.3 skills for happiness

13.4 course takeaways

**TBD:** End of Course Test

## Sample Background Reading

**NOTE: MY SLIDES CONTAIN LINKS TO MOST OF THE RELEVANT PAPERS. YOU WILL NEED UTORONTO LIBRARY ACCESS. I WILL TRY TO SUGGEST WHAT TO FOCUS ON. IT IS IMPORTANT TO SUPPLEMENT YOUR NOTES WITH THIS READING. IT'S UP TO YOU TO KEEP UP. GET EXCITED, DIVE IN.**

### **I. Intergenerational Mobility and Introduction**

Angrist (2004). "American Education Research Changes Tack," Oxford Review of Economic Policy

Kraft (2018). "Interpreting Effect Sizes of Education Interventions," Working Paper

Chetty et al (2017). "The Fading American Dream: Trends in Absolute Income Mobility Since 1940," Science

Connolly et al. (2019). "Intergenerational Mobility Between and Within Canada and the United States," Journal of Labor Economics

Reardon (2011). "The Widening Academic Achievement Gap Between the Rich and the Poor: New Evidence and Possible Explanations," in *Wither Opportunity? Rising Inequality, Schools, and Children's Life Chances*.

### **II. Genes**

Benjamin et al (2012). "The Promises and Pitfalls of Genoeconomics," Annual Review of Economics.

Kong et al (2018). "The Nature of Nurture," Science

Plug and Vijverberg "Schooling, Family Background, and Adoption: Is It Nature or Is It Nurture," Journal of Political Economy

### **III. Infants**

Almond et al. (2018). "Childhood Circumstances and Adult Outcomes: Act II," Journal of Economic Literature

Figlio et al (2014). "The Effects of Poor Neonatal health on Children's Cognitive Development," American Economic Review

Almond (2006). "Is the 1918 Influenza Pandemic Over? Long-Term Effects of In Utero Influenza Exposure in the Post-1940 U.S. Population," Journal of Political Economy

Oreopoulos et al (2008). "Short-, Medium-, and Long-Term Consequences of Poor Infant Health: An Analysis Using Siblings and Twins," Journal of Human Resources

### **III.B Family Composition**

Breining et al (forthcoming). “Birth Order and Delinquency: Evidence from Denmark and Florida,” Journal of Labor Economics

Argys and Averett (2009). “The Effect of Family Size on Education: New Evidence from China’s One-Child Policy,” Journal of Demographic Economics

Black et al (2005). “The More the Merrier? The Effect of Family Size and Birth Order on Children’s Education,” Quarterly Journal of Economics

Angrist et al (2010). “Multiple Experiments for the Causal Link Between the Quantity and Quality of Children,” Journal of Labor Economics

### **IV. Parents**

Doepke et al (2019). “The Economics of Parenting,” NBER Working Paper

Shonkoff (2010). “Building a New Biodevelopmental Framework to guide the Future of Early Childhood Policy,” Child Development

Anderson (2012). “Multiple Inference and Gender Differences in the Effects of Early Intervention: A reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects,” Journal of the American Statistical Association.

Heckman and Karapakula (2019). “The Perry Preschoolers at Late Midlife: A Study in Design-Specific Inference,” NBER Working Paper

Baker et al (2019). “The Long-Run Impacts of a Universal Child Care Program,” American Economic Journal: Economic Policy

### **V. Teachers**

**Chetty et al (2014). “Measuring the Impacts of Teachers I: Evaluating Bias in Teacher Value-Added Estimates,” American Economic Review**

**Chetty et al (2014). “Measuring the Impacts of Teachers II: Evaluating Bias in Teacher Value-Added Estimates,” American Economic Review**

Teacher value added

What makes a good teacher?

Teacher accountability

Teacher-student interactions

### **VI. Schools**

What do parents value in schools?

Evidence of effective schools (charter schools, elite and gifted schools, management)

School choice

Class size

### **VII. Peers**

Evidence of peer effects, peer pressure

Class rank

Heterogeneous effects

### **VIII. Neighborhoods**

Neighborhood effects on education and labor market outcomes

Underlying mechanisms and heterogeneity (neighborhoods or schools?)

### **IX. Students**

The importance of non-cognitive abilities and personalities

Student behavioral biases and consequences

Behavioral and Social-psychology interventions

Comprehensive student support programs

### **X. Colleges**

Returns to years of college (and school in general)

Returns to field of study

Returns to selective colleges

Returns to type of degree (vocational versus general skill training)

Financial aid policy

Remediation policy

Application assistance

Within college efforts to improve academic outcomes

How much of college is a signal?

### **XI. Jobs**

Employer demand for skills

Changing labor market (automation, AI, and robots)

Internships

Graduating in a recession

### **XII. Well-being**

Non-financial benefits to education

Policy recommendations

### Some examples of experimental Methods to identify causal effects

Schweinhart, L. J., Montie, J., Xiang, Z., Barnett, W. S., Belfield, C. R., & Nores, M. (2005). *Lifetime effects: The HighScope Perry Preschool study through age 40*. (Monographs of the HighScope Educational Research Foundation, 14). Ypsilanti, MI: HighScope Press. (<http://www.highscope.org>)

Anderson, Michael, "Multiple Inference and Gender Differences in the Effects of Early Intervention: A Reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects." 2008. *Journal of the American Statistical Association*. 103(484): pp. 1481-1495.

E. Duflo, R. Glennerster, and M. Kremer. (2006), "Using Randomization in Development Economics Research: A Toolkit," NBER Technical WP No. 333, December.

J. Angrist. (2003) Treatment Effect Heterogeneity in Theory and Practice,@ NBER WP 9708.

Angrist, Joshua D., and Jörn-Steffen Pischke. 2010. "The Credibility Revolution in Empirical Economics: How Better Research Design Is Taking the Con out of Econometrics." *Journal of Economic Perspectives*, 24(2): 3–30.

Nevo, Aviv, and Michael D. Whinston. 2010. "Taking the Dogma out of Econometrics: Structural Modeling and Credible Inference." *Journal of Economic Perspectives*, 24(2): 69–82.

Imbens, Guido (2009) "Better late than nothing: Some comments on Deaton (2009) and Heckman and urzua (2009)," NBER Working Paper #14896

## **1. The Education Production Function**

- LT Chapters 7 and 9

### Theory

- Cunha, Flavio, and James Heckman (2007). "The Technology of Skill Formation." *American Economic Review* 97 (2).
- Todd, Petra, and Kenneth Wolpin (2003). "On the Specification and Estimation of the Production Function for Cognitive Achievement." *The Economic Journal* 113 (485).

### Empirical Measurement

- Carrell, Scott E. Bruce I. Sacerdote, James E. West (2013). "From Natural Variation to Optimal Policy? The Importance of Endogenous Peer Group Formation." *Econometrica*, Vol. 81, No. 3, 855–882.
- Ding, Weili and Steven F Lehrer (2010). "Estimating Treatment Effects from Contaminated Multiperiod Education Experiments: The Dynamic Impacts of Class Size Reductions," *The Review of Economics and Statistics*, MIT Press, vol. 92(1), pages 31-42

- Jackson, C. Kirabo, Rucker C. Johnson, and Claudia Persico (2016). “The Effects of School Spending on Educational and Economic Outcomes: Evidence from School Finance Reforms.” *Quarterly Journal of Economics* 131 (1).
- Johnson, Rucker C. and C. Kirabo Jackson (2018). “Reducing Inequality Through Dynamic Complementarity: Evidence from Head Start and Public School Spending.” National Bureau of Economic Research Working Paper No. 23489
- Gilraine, Michael (2018). “School Accountability and the Dynamics of Human Capital Formation.” New York University Working Paper.
- Malamud, Ofer, Cristian Pop-Eleches, and Miguel Urquiola (2016). “Interactions Between Family and School Environments: Evidence on Dynamic Complementarities?” National Bureau of Economic Research Working Paper No. 22112
- Pop-Eleches, Cristian, and Miguel Urquiola. 2013. "Going to a Better School: Effects and Behavioral Responses." *American Economic Review*, 103 (4): 1289-1324.

## 2. Class Size Reforms

- LT Chapter 9 (Section 9.2)
- Angrist, Joshua, and Victor Lavy (1999). “Using Maimonides’ Rule to Estimate the Effect of Class Size on Scholastic Achievement.” *The Quarterly Journal of Economics* 114 (2).
- Gilraine, Michael (2017). “Multiple Treatments from a Single Discontinuity: An Application to Class Size.” New York University Working Paper.
- Gilraine, Michael, Hugh Macartney, Robert McMillan. 2018. “Education Reform in General Equilibrium: Evidence from California’s Class Size Reduction” National Bureau of Economic Research Working Paper No. 24191
- Hoxby, C.M. 2000. “The effects of class size on student achievement: New evidence from population variation.” *The Quarterly Journal of Economics*, 115(4), pp.1239-1285.
- Jepsen, Christopher and Steven Rivkin (2009), “Class Size Reduction and Student Achievement: The Potential Tradeoff between Teacher Quality and Class Size,” *Journal of Human Resources*, 44(1): 223-250.
- Krueger, Alan (1999). “Experimental Estimates of Education Production Functions.” *The Quarterly Journal of Economics* 114 (2).
- Sims, David (2008), “A Strategic Response to Class Size Reduction: Combination Classes and Student Achievement in California,” *Journal of Policy Analysis and Management*, 27(3): 457-478.

## 3. Teacher Quality: Estimation and Policy

- LT Chapter 9 (Section 9.3)

## Estimation

- Bacher-Hicks, Andrew, Thomas J. Kane, and Douglas O. Staiger. 2014. "Validating Teacher Effect Estimates Using Changes in Teacher Assignments in Los Angeles." NBER Working Paper No. 20657. Cambridge, MA.
- Chetty, Raj, John Friedman, and Jonah Rockoff (2014). "Measuring the Impacts of Teachers I: Evaluating Bias in Teacher Value-Added Estimates." *American Economic Review* 104 (9).
- Chetty, Raj, John Friedman, and Jonah Rockoff (2014). "Measuring the Impacts of Teachers II: Teacher Value-Added and Student Outcomes in Adulthood." *American Economic Review* 104 (9).
- Jackson, Kirabo C., and Elias Bruegmann. 2009. "Teaching Students and Teaching Each Other: The Importance of Peer Learning for Teachers." *American Economic Journal: Applied Economics*. 1(4): 85-108.
- Jackson, Kirabo C. 2013. "Match Quality, Worker Productivity, and Worker Mobility: Direct Evidence From Teachers." *Review of Economics and Statistics*. 95: 1096-1116.
- Kane T. and D. Staiger (2008). "Estimating Teacher Impacts on Student Achievement: An Experimental Evaluation" NBER Working Paper 14607.
- Kane, Thomas J., Daniel F. McCaffrey, Trey Miller, and Douglas O. Staiger. 2013. "Have We Identified Effective Teachers? Validating Measures of Effective Teaching Using Random Assignment." Report Prepared for the Measuring Effective Teaching Project.
- Ost, Ben. 2014. "How Do Teachers Improve? The Relative Importance of Specific and General Human Capital." *American Economic Journal: Applied Economics*. 6(2): 127-151.
- Rothstein, Jesse (2010). "Teacher Quality in Education Production: Tracking, Decay and Achievement." *Quarterly Journal of Economics* 125 (1).

## Policy

- Biasi, Barbara (2017). "The Labor Market for Teachers Under Different Pay Schemes." NBER Working Paper no. 24813
- Dee, Thomas S., and James Wyckoff (2015). "Incentives, selection, and teacher performance: Evidence from IMPACT." *Journal of Policy Analysis and Management* 34.2: 267-297.
- Jackson, C. Kirabo, Jonah E. Rockoff, Douglas O. Staiger (2014). "Teacher Effects and Teacher-Related Policies," *Annual Review of Economics* 2014 6:1, 801-825
- Kane, Thomas J. and Douglas O. Staiger. 2014. "Making Decisions with Imprecise Performance Measures: The Relationship Between Annual Student Achievement Gains and a Teacher's Career Value Added" Chapter 5 in Kane, T.J., Kerr, K.A. and Pianta, eds, *Designing teacher evaluation systems: New guidance from the Measures of Effective Teaching project*. San Francisco: Jossey-

Bass.

- Lovenheim, Michael and Scott Imberman (2016). "Does the Market Value Value-Added? Evidence from Housing Prices after Public Release of Teacher Value-Added" *Journal of Urban Economics*, 91.
- Macartney, Hugh, Robert McMillan, and Uros Petronijevic (2018). "Teacher Performance and Accountability Incentives" NBER Working Paper No. 24747.
- Rothstein, Jesse (2015). "Teacher Quality Policy When Supply Matters," *American Economic Review*, 105(1): 100-130
- Pope, Nolan G. (2018). "The Effect of Teacher Ratings on Teacher Performance" University of Maryland working paper.

#### 4. School Choice

- LT Chapter 10

##### Parental Valuation of School Quality

- Bayer, Patrick, Fernando Ferreira, and Robert McMillan. "A Unified Framework for Measuring Preferences for Schools and Neighborhoods" *Journal of Political Economy* (2007) 115(4): 588-638.
- Black, S. (1999). Do Better Schools Matter? Parental Valuation of Elementary Education. *Quarterly Journal of Economics*, 114 (2): 577-99.
- Brian, Jacob, and Lars Lefgren (2007), "What Do Parents Value in Education? An Empirical Investigation of Parents Revealed Preferences for Teachers," *Quarterly Journal of Economics*, 122(4): 1603-1637.

##### School Choice Among Traditional Public Schools

- Cullen, Julie Berry, Brian Jacob, and Steven Levitt. 2006. "The Effect of School Choice on Participants: Evidence from Randomized Lotteries." *Econometrica*, 74(5): 1191-1230.
- Deming, D., Hastings, J., Kane, T., & Staiger, D. (2014). School Choice, School Quality, and Postsecondary Attainment. *The American Economic Review*, 104(3), 991-1013.
- Hastings, Justine S., and Jeffrey M. Weinstein (2008). "Information, School Choice, and Academic Achievement: Evidence from Two Experiments." *The Quarterly Journal of Economics*: 1373-1414.

##### ***Competition Among Traditional Public Schools***

- Clark, Damon (2009), "The Performance and Competitive Effects of School Autonomy," *Journal of Political Economy*, 117(4): 745-783.
- Hoxby, C.M., "Does Competition among Public Schools Benefit Students and Taxpayers?" *American Economic Review*, vol. 90(5): 1209-38, 2000.

- Hoxby, Caroline M. 2003b. "School Choice and School Productivity. Could School Choice Be a Tide that Lifts All Boats?" Chapter 8 in Caroline M. Hoxby, eds, *The Economics of School Choice*. University of Chicago Press.
- J. Rothstein, "Does Competition Among Public Schools Benefit Students and Taxpayers? Comment on Hoxby (2000)" *American Economic Review*, 97(5), December 2007, 2026-2037.

#### Public-Private School Interactions

- Dinerstein, Michael, and Troy Smith (2015). "Quantifying the Supply Response of Private Schools to Public Policies." University of Chicago Working paper.
- Hsieh, Chang-Tai and Miguel Urquiola (2006), "The Effects of Generalized School Choice on Achievement and Stratification: Evidence from Chile's Voucher Program," *Journal of Public Economics*, 90(8): 1477-1503.
- Neilson, Christopher (2014), "Targeted Vouchers, Competition Among Schools, and the Academic Achievement of Poor Students," mimeo.
- Urquiola, M. (2016). "Competition Among Schools: Traditional Public and Private Schools" In *Handbook of the Economics of Education Vol. 5*, E. Hanushek, S. Machin, and L. Woessmann (Ed) Elsevier: Amsterdam.

#### Charter Schools

##### ***Lottery-Based Studies***

- Abdulkadiroglu, Atila, Joshua Angrist, Susan Dynarski, Thomas Kane, and Parag Pathak (2011). "Accountability and Flexibility in Public Schools: Evidence from Boston's Charters and Pilots." *Quarterly Journal of Economics* 126 (2).
- Angrist, Joshua D., Parag A. Pathak, and Christopher R. Walters. 2013. "Explaining Charter School Effectiveness." *American Economic Journal: Applied Economics*, 5(4): 1-27.
- Dobbie, Will, and Roland Fryer (2013). "Getting Beneath the Veil of Effective Schools: Evidence from New York City." *American Economic Journal: Applied Economics* 5 (4).
- Dobbie, Will, and Roland Fryer (2015). "The Medium-Term Impacts of High-Achieving Charter Schools." *Journal of Political Economy* 123 (5).

##### ***Going Beyond Lotteries***

- Abdulkadiroglu, Atila, Joshua Angrist, Peter Hull, and Parag Pathak (2016). "Charters Without Lotteries: Testing Takeovers in New Orleans and Boston." *American Economic Review* 106 (7).
- Chabrier, Julia, Sarah Cohodes, and Philip Oreopoulos. (2016). "What Can We Learn from Charter School Lotteries?" *Journal of Economic Perspectives*, 30 (3): 57-84.
- Fryer, Roland G. Injecting Charter School Best Practices into Traditional Public Schools: Evidence

From Field Experiments (2014). *Quarterly Journal of Economics*. 2014;129 (3) :1355-1407.

### ***Studies Based on Observational Data***

- Baude, Patrick L., Marcus Casey, Eric A. Hanushek, and Steven G. Rivkin (2014). "The Evolution of Charter School Quality" NBER Working Paper No. 20645
- Booker, Kevin, et al. "The Effects of Charter High Schools on Educational Attainment." *Journal of Labor Economics* 29.2 (2011): 377-415.
- Imberman, Scott A. 2011. "Achievement And Behavior In Charter Schools: Drawing A More Complete Picture." *The Review of Economics and Statistics*, 93(2): 416-435.
- Ladd, H.F., C.T. Clotfelter and J.B. Holbein (2015), "The growing segmentation of the charter school sector in North Carolina," NBER Working Paper No. 21078

### ***Competition with Traditional Public Schools***

- Jackson, C. Kirabo (2012), "School Competition and Teacher Quality: Evidence from Charter School Entry in North Carolina," *Journal of Public Economics*, 96(5-6): 431-438.
- Jinnai Yusuke (2014). "Direct and Indirect Impact of Charter Schools' Entry on Traditional Public Schools: New Evidence from North Carolina." *Economics Letters*, 124 (3): 452-456
- Imberman, Scott A. 2011. "The Effect of Charter Schools on Achievement and Behavior of Public School Students." *Journal of Public Economics*, 95(7/8): 850-863.

## **5. Human Capital and The Returns to Education**

- LT Chapters 4, 5, and 6.
- Card, David (1999). "The Causal Effect of Education on Earnings." *Handbook of Labor Economics*, Volume 3A.
- Card, David (2001). "Estimating the Return to Schooling: Progress on Some Persistent Econometric Problems." *Econometrica* 69 (5).
- Oreopoulos, Philip, and Kjell G. Salvanes. 2011. "Priceless: The Nonpecuniary Benefits of Schooling." *Journal of Economic Perspectives*, 25 (1): 159-84.

### **K-12 Education**

- Angrist, Joshua D., and Alan B. Krueger (1991). "Does Compulsory School Attendance Affect Schooling and Earnings?" *The Quarterly Journal of Economics*, vol. 106, no. 4, pp. 979–1014.
- Card, D., & Krueger, A. (1992). Does School Quality Matter? Returns to Education and the Characteristics of Public Schools in the United States. *Journal of Political Economy*, 100(1), 1-40.
- Clark, Damon, and Paco Martorell (2014). "The signaling value of a high school diploma." *Journal*

*of Political Economy* 122.2: 282-318.

- Chetty, Raj, John Friedman, Nathaniel Hilger, Emmanuel Saez, Diane Schanzenbach, and Danny Yagan (2011). “How Does Your Kindergarten Classroom Affect Your Earnings? Evidence from Project STAR.” *Quarterly Journal of Economics* 126 (4).
- Oreopoulos, Philip 2006. “Estimating Average and Local Average Treatment Effects of Education When Compulsory Schooling Laws Really Matter” *American Economic Review*, Vol. 96, No. 1 pp. 152-175

### Higher-Education

- Massimo Anelli (2016). “The returns to elite college education: a quasi-experimental analysis” Bocconi University Working Paper.
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