

Economics 881.25 Human Capital and Economic Development

Class Meetings

Class times	Tuesdays & Thursdays 08:30 - 09:45
Classes begin	12 January 2017
Classes end	28 February 2017
Class location	Social Sciences 327

Instructor

Instructor	Robert Garlick
Email	robert.garlick@duke.edu
Office	Social Sciences 204
Office hours	Tuesdays 13:30 - 15:00 for open office hours http://robertgarlick.youcanbook.me for one-on-one meetings about research or presentations

1 Course Overview

This is a graduate, seminar-style course studying the intersection between development economics and the economics of human capital. The course is aimed primarily at doctoral students in economics who are interested in conducting research in development economics. Much of the material will also be relevant for graduate students interested in applied microeconomic research on human capital topics.

The course will focus on two dimensions of human capital: education and health. Issues around nutrition and fertility will be discussed briefly but will not be a major focus. We will focus on economic topics relevant to low- and middle-income countries and will primarily read papers using data from these countries. We will also read some papers using data from developed countries, focusing on their theoretical or methodological contributions. We will only briefly discuss some macroeconomic aspects of the relationship between human capital and economic development.

The course has three goals:

1. Prepare students to conduct applied microeconomic research at the intersection between development economics and the economics of human capital
2. Review the substantive literature on human capital acquisition and the implications of human capital acquisition in developing countries.
3. Review econometric and statistical tools commonly used in empirical microeconomic research and study how these tools are typically applied.

Where trade-offs need to be made between these goals, we will prioritize preparation for research. In practice, this means that we will sacrifice breadth in favor of depth and largely omit important literatures on fertility and nutrition. We will concentrate on reading relatively recent papers and skip many canonical older papers. Some important recent papers will be skipped in favour of less

influential papers that offer opportunities for interesting methodological discussion. This discussion will emphasize how methods are used in practice and the practical implications of methodological choices. This course is not a substitute for a focused microeconometrics course!

2 Class Structure

Most classes will start with a short, interactive, lecture. This will contextualize the readings within the broader literature and highlight some open questions in the literature. The lectures will not summarize the assigned papers. In most classes, one student will briefly present one of the assigned readings and we will then discuss the readings as a group. I may randomly call on students during the discussion period. This means that class preparation is vital.

3 Course Requirements

There are three course requirements. First, **required readings and class participation**. This involves two concrete requirements. You should post a short set of discussion notes for each of the required readings in the Assignments section of the Sakai course website before each class starts. For each paper, these notes should:

- provide a brief summary (at most 5 sentences per paper);
- discuss why the paper is considered a contribution;
- identify *at least* one limitation the paper (e.g. mismatch between theory and empirical test, poor measure of key variable, problematic interpretation of a key empirical result); and
- suggest *at least* one avenue for future research (e.g. alternative theoretical explanation for the main empirical result, alternative way to empirically test the theory).

These notes should provide a starting point for discussion, not constitute an entire discussion. You should aim for approximately **a half page of writing per paper**. The notes should be clear and concise but do not need to be detailed or eloquent. Once in class, you should be prepared to discuss the readings with the entire class or in small groups. Your discussion notes will obviously be a good starting point for this discussion. These notes will help you to begin building an annotated bibliography of important papers in this literature. Focusing on limitations and extensions will help you to critically engage with papers as you read them, instead of just absorbing the conclusions. I will distribute a sample set of discussion notes after the first class, but you should not treat the format in these notes as a required template.

I will grade each set of discussion notes and participation in each class on a four point scale, where 0 = no notes/participation and 3 = excellent notes/participation. The discussion notes and class discussion are each worth 20% of your grade.

Second, a **presentation of one of the assigned readings or a referee report** on a paper I assign. If you are taking ECON881.25 and not ECON881.26, you must do a presentation rather than a referee report. If you are taking ECON881.25 and ECON881.26, you must do a presentation

in one module and a referee report in the other module. The paper presentation or referee report is worth 20% of the grade. The referee report will be due on **February 12**.

The presentation will mimic a conference discussion. The readings marked [Present] are eligible for presentation. This presentation should last 15-25 minutes. You should prepare at most 15 slides that (i) very briefly summarize the paper's main contribution, findings, and methods; (ii) explain any technical components of the paper in detail; (iii) discuss at least one substantive limitation of the paper in detail; and (iv) suggest how this limitation might be addressed. You may discuss multiple limitations rather than focusing on only one. However, I do not want you to present a list of multiple short, superficial critiques. **I strongly encourage you to meet with me during office hours before you present the paper.** I will send out an email at the beginning of the course with information about signing up for paper presentations.

The referee report should briefly summarize the paper ($\leq 1/2$ a page), evaluate the paper's contribution (or lack thereof), and evaluate the methods used to answer the paper's main research questions. This evaluation may discuss any theoretical model or conceptual framework, data, empirical methods, or interpretation of results.

Third, a **take-home exam**. This will include some formal analysis of an economic model, data analysis, and open-ended responses to the analysis. Group work is permitted but each student should write and submit their own code and own answers. You may use any software package but I will only provide feedback on code written for R or Stata. The take-home exam is worth 40% of the grade and is due on **26 February**. It will be distributed approximately three weeks before the due date.

4 Development Economics at Duke

I strongly encourage you to regularly attend seminar series. Reading published papers shows you the end product of months or years of research. Seeing seminars shows you the slightly messier work in progress and generally gives more insight into how research is actually done.

The Labor and Development seminar is held on Wednesdays from 15:15 - 16:45 in Social Sciences 111. This seminar features visiting faculty from a range of other institutions. If you are interested in meeting with a particular speaker, email me at least one week in advance and I will try to reserve a slot for you to meet with them. The International Population Health and Development workshop is held on Fridays from 12:00 - 13:00 in Social Sciences 111. IPHD is a forum for Duke, UNC and NC State students and faculty who are interested in population health and development to present their own work in progress. The Labor/Development seminar series will generally feature more polished presentations from more senior researchers. The IPHD seminar series will generally feature early stage work by students and junior faculty. You will get different insights from each series and I recommend attending both regularly.

Students who plan to specialize in development economics should also register for the IPHD workshop, which is cross-listed as Econ 911.11 and PubPol 911.1.

There are a range of other seminar series and workshops offered in the economics department that may be relevant to your research development. If you plan to work at the intersection of development and another field, I recommend attending the seminars for both fields.

You should try and actively engage with these seminars. That can mean asking questions but it can also mean writing down questions and ideas sparked by the seminar and discussing these later with other students. At this point in your career, it may be useful to come out of every seminar with a short list of research possibilities sparked by the presentation. If the speaker uses one empirical method or dataset to test a theory, how else could you do this? If the speaker presents one theoretical explanation for an empirical pattern, what other type of model might explain it? As this class meets soon after the IPHD workshops, we may sometimes discuss the seminar in class.

5 Development Economics Research

You should keep up-to-date on current research being conducted in your field(s) of interest. Current working papers in development economics are often posted at the National Bureau of Economic Research and the Bureau for Research and Economic Analysis of Development.

I encourage you to submit research papers to conferences as soon as you (and your advisors) think they're ready for public viewing. These can be a good opportunity to practice presenting to unfamiliar audiences and to see what research is taking place outside Duke. There is a list of general and subfield-specific development economics conferences on the BREAD website.

6 Schedule and Readings

6.0 Background

There is no required course textbook. I strongly recommend these references for background reading:

- Joshua Angrist and Jörn-Steffen Pischke (2009). *Mostly Harmless Econometrics*. Princeton University Press
- Pranab Bardhan and Christopher Udry (1990). *Development Microeconomics*. Oxford University Press

The first book is an accessible introduction to many of the econometric methods used in empirical microeconomics. It doesn't provide enough detail to adapt or extend these methods but it's a good starting point. The second book is now somewhat dated but is still an excellent example of the style of microeconomic modeling that can be used in development work.

An undergraduate textbook in development economics may also be useful for this course. I generally turn first to Debraj Ray's *Development Economics*. Gérard Roland's *Development Economics*, and Michael Todaro and Stephen Smith's *Economic Development* are also helpful references.

These references will be useful for the econometric methods covered in this course:

- Joshua Angrist and Alan Krueger (1999). “Empirical Strategies in Labor Economics”. In: *Handbook of Labor Economics Volume 3A*. ed. by Orley Ashenfelter and David Card. Elsevier, pp. 1277–1366
- Colin Cameron and Pravin Trivedi (2005). *Microeconometrics: Methods and Applications*. Cambridge University Press
- Angus Deaton (1997). *The Analysis of Household Surveys: A Microeconomic Approach to Development Policy*. Johns Hopkins University Press (can be downloaded from the World Bank website)
- James Heckman and Edward Vytlacil (2007a). “Econometric Evaluation of Social Programs Part I: Causal Models, Structural Models and Econometric Policy Evaluation”. In: *Handbook of Econometrics Volume 6*. Ed. by James Heckman and Edward Leamer. Elsevier, pp. 4779–4874
- James Heckman and Edward Vytlacil (2007b). “Econometric Evaluation of Social Programs, Part II: Using the Marginal Treatment Effect to Organize Alternative Econometric Estimators to Evaluate Social Programs, and to Forecast their Effects in New Environments”. In: *Handbook of Econometrics Volume 6*. Ed. by James Heckman and Edward Leamer. Elsevier, pp. 4875–5143
- Guido Imbens and Jeffrey Wooldridge (2009). “Recent Developments in the Econometrics of Program Evaluation”. In: *Journal of Economic Literature* 47.1, pp. 5–86
- Jeffrey Wooldridge (2010). *Econometric Analysis of Cross Section and Panel Data*. The MIT Press

I will assign specific methods-orientated readings in some weeks as well. Cameron and Trivedi’s book is quite terse but is very clear and probably the broadest textbook treatment of modern empirical microeconomic methods. Wooldridge’s book covers a narrower range of topics in more detail. Deaton’s book is now a bit dated in some areas but covers some topics omitted from Cameron and Trivedi’s book and has great applications. The review papers by Angrist & Krueger and by Imbens & Wooldridge are much briefer but are very good short introductions to “reduced-form” empirical methods. The two handbook chapters by Heckman & Vytlacil are considerably denser and more technical readings but should be very useful for students interested in doing more high-tech empirical work.

These fairly non-technical readings should be useful reading for students who plan to specialize in development economics, although there is substantial overlap in the content they cover:

- “Agenda for Development Economics” symposium in the 2008 *Journal of Economic Perspectives*, volume 24, number 3.
- Abhijit Banerjee, Pranab Bardhan, et al. (2005). “New Directions in Development Economics: Theory or Empirics?” In: *Economic and Political Weekly*
- Abhijit Banerjee and Esther Duflo (2007). “The Economic Lives of the Poor”. In: *Journal of Economic Perspectives* 21.1, pp. 141–168

- Abhijit Banerjee and Esther Duflo (2011). *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. Public Affairs
- Angus Deaton (2010). “Instruments, Randomization, and Learning about Development”. In: *Journal of Economic Literature* 48.2, pp. 424–455
- Esther Duflo, Rachel Glennester, and Michael Kremer (2007). “Using Randomization in Development Economics Research: A Toolkit”. In: *Handbook of Development Economics Volume 4*. Ed. by Paul Schultz and John Strauss. Elsevier, pp. 3895–3962
- Jessica Cohen and William Easterly, eds. (2009). *What Works in Development? Thinking Big and Thinking Small*. The Brookings Institution
- William Easterly (2002). *The Elusive Quest for Growth: Economists’ Adventures and Misadventures in the Tropics*. The MIT Press
- Amartya Sen (2000). *Development as Freedom*. Anchor

These references explore the ongoing debate about the role of theory in empirical microeconomics:

- Joshua Angrist and Alan Krueger (2001). “Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments”. In: *Journal of Economic Perspectives* 15.4, pp. 69–85
- “Taking the Con out of Economics” symposium in the 2010 *Journal of Economic Perspectives*, volume 24, number 2.
- James Heckman (2010). “Building Bridges between Structural and Program Evaluation Approaches to Evaluating Policy”. In: *Journal of Economic Literature* 48.2, pp. 356–398
- James Heckman and Sergio Urzua (2010). “Comparing IV with Structural Models: What Simple IV Can and Cannot Identify”. In: *Journal of Econometrics* 156.1, pp. 27–37
- Guido Imbens (2010). “Better LATE Than Nothing: Some Comments on Deaton (2009) and Heckman and Urzua (2009)”. In: *Journal of Economic Literature* 48.2, pp. 399–423
- Michael Keane (2010). “Structural vs. atheoretic approaches to econometrics”. In: *Journal of Econometrics* 156.1, pp. 3–20

The course is organized around three topic areas: human capital demand, human capital supply, and spillovers. All required readings are posted on the Sakai course website.

6.1 Introduction

This class is a general overview of a research into human capital and economic development, and an in-depth discussion of one article that integrates several different approaches to studying this topic.

Required readings for January 12:

- Todd Schoellman (2012). “Education Quality and Development Accounting”. In: *Review of Economic Studies* 79.1, pp. 388–417

Background and extension readings:

- Daron Acemoglu and Simon Johnson (2009). “Disease and Development: The Effect of Life Expectancy on Economic Growth”. In: *Journal of Political Economy* 115.6, pp. 925–985. Also see the comment by Bloom, Canning & Fink and the rejoinder by Acemoglu & Johnson, both published in the JPE in 2014.
- Hoyt Bleakley (2010). “Health, Human Capital, and Development”. In: *Annual Review of Economics* 2, pp. 283–310
- Mark Bills and Peter Klenow (2000). “Does Schooling Cause Growth?” In: *American Economic Review* 90.5, pp. 1160–1183
- Deon Filmer (2014). “Schooling and Learning: Understanding Inequalities and What To Do About Them”. World Bank Policy Research Talk. Available online [here](#)
- Paul Glewwe and Michael Kremer (2006). “Schools, Teachers and Education Outcomes in Developing Countries”. In: *Handbook of the Economics of Education, Volume 2*. Ed. by Eric Hanushek and Finis Welch. Elsevier, pp. 945–1017
- Eric Hanushek et al. (2015). “Returns to Skills around the World: Evidence from PIAAC”. in: *European Economic Review* forthcoming
- Michael Kremer and Alaka Holla (2009). “Improving Education in the Developing World: What Have We Learned from Randomized Evaluations?” In: *Annual Review of Economics* 1, pp. 513–542
- Mark Rosenzweig (2010). “Microeconomic Approaches to Development: Schooling, Learning, and Growth”. In: *Journal of Economic Perspectives* 24.3, pp. 81–96
- John Strauss and Duncan Thomas (1998). “Health, Nutrition, and Economic Development”. In: *Journal of Economic Literature* 36.2, pp. 766–817
- John Strauss and Duncan Thomas (2008). “Health over the Life Course”. In: *Handbook of Development Economics Volume 4*. Ed. by Paul Schultz and John Strauss. Elsevier, pp. 3375–3474

6.2 Human Capital Demand

This section studies how human capital investment decisions respond to prices of education and healthcare. We start with a simple framework where households make human capital investment decisions facing a given price schedule, abstracting away from behavioral factors and from market and government failures. These investments can occur at multiple margins, including school participation, study effort conditional on school participation, purchase of health products, and use of health products. We begin by studying how price sensitive investment decisions are and what this implies for policy design (Jan 17, 19). This section will also briefly discuss definitions and

interpretations of treatment effects. We then study investment decisions in the context of market returns to human capital, including a discussion of instrumental variables estimators (Jan 24). We then explore some behavioral factors that influence investment decisions and potentially lead to suboptimal investments (Jan 26). Many human capital investment decisions are made by parents on behalf of their children, so we turn next to early-life factors that influence human capital acquisition (Jan 31) and consider how parents optimize over investments in children (Feb 2).

Required readings for January 17:

- Paul Schultz (2004). “School Subsidies for the Poor: Evaluating the Mexican PROGRESA Poverty Program”. In: *Journal of Development Economics* 74.1, pp. 199–250
- Sarah Baird, Craig McIntosh, and Berk Ozler (2011). “Cash or Condition? Evidence from a Cash Transfer Experiment”. In: *Quarterly Journal of Economics* 126.4, pp. 1709–1753

Required readings for January 19:

- Present** Petra Todd and Kenneth Wolpin (2006). “Assessing the Impact of a School Subsidy Program in Mexico: Using a Social Experiment to Validate a Dynamic Behavioral Model of Child Schooling and Fertility”. In: *American Economic Review* 96.5, pp. 1384–1417
- Orazio Attanasio, Costas Meghir, and Ana Santiago (2012). “Education Choices in Mexico: Using a Structural Model and a Randomized Experiment to Evaluate PROGRESA”. in: *Review of Economic Studies* 79.1, pp. 37–66 [Don’t read this in detail - just be prepared to discuss how the research design in this paper relates to the Todd/Wolpin paper. No discussion notes needed.]

Required readings for January 24:

- Present** Esther Duflo (2001). “Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment”. In: *American Economic Review* 91.4, pp. 795–813
- Briefly review sections 4.1, 4.5, and 4.5 of Joshua Angrist and Jörn-Steffen Pischke (2009). *Mostly Harmless Econometrics*. Princeton University Press [Briefly read sections 4.1, 4.4, and 4.5. Skip the other sections. No discussion notes needed.]

Required readings for January 26:

- Present** Pascaline Dupas (2014). “Short-Run Subsidies and Long-Run Adoption of New Health Products: Evidence From a Field Experiment”. In: *Econometrica* 82.1, pp. 197–228
- Robert Jensen (2010). “The (Perceived) Returns to Education and the Demand for Schooling”. In: *Quarterly Journal of Economics* 125.2, pp. 515–548

Required readings for January 31:

Present Sharon Maccini and Dean Yang (2009). “Under the Weather: Health, Schooling, and Economic Consequences of Early-Life Rainfall”. In: *American Economic Review* 99.3, pp. 1006–1026

Required readings for February 2:

Present Rebecca Dizon-Ross (2014). “Parents’ Perceptions and Children’s Education: Experimental Evidence from Malawi”. Working paper, Stanford University

- Mark Rosenzweig and Junsen Zhang (2009). “Do Population Control Policies Induce More Human Capital Investment? Twins, Birth Weight and China’s “One-Child” Policy”. In: *Review of Economic Studies* 76.3, pp. 1149–1174

Background and extension readings for this section:

- Richard Akresh et al. (2012). *Child Labor, Schooling, and Child Ability*. Working Paper 5965. World Bank Policy Research
- Douglas Almond (2006). “Is the 1918 Influenza Pandemic Over? Long-Term Effects of In Utero Influenza Exposure in the Post-1940 U.S. Population”. In: *Journal of Political Economy* 114.4, pp. 672–712
- Tahir Andrabi, Jishnu Das, and Asim Ijaz Khwaja (2012). “What Did You Do All Day? Maternal Education and Child Outcomes”. In: *Journal of Human Resources* 47.4, pp. 873–912
- Nava Ashraf, James Berry, and Jesse Shapiro (2010). “Can Higher Prices Stimulate Product Use? Evidence from a Field Experiment in Zambia”. In: *American Economic Review* 100.5, pp. 2383–2413
- Felipe Barrera-Osorio et al. (2011). “Improving the Design of Conditional Cash Transfer Programs: Evidence from a Randomized Education Experiment in Colombia,” in: *American Economic Journal: Applied Economics* 3.2, pp. 167–195
- Jere R. Behrman et al. (1999). “Women’s Schooling, Home Teaching, and Economic Growth”. In: *Journal of Political Economy* 107.4, pp. 682–715
- Martin Browning, Pierre-André Chiappori, and Yoram Weiss (2014). *Economics of the Family*. Cambridge University Press
- Pascaline Dupas (2011b). “Health Behavior in Developing Countries”. In: *Annual Review of Economics* 3, pp. 425–449
- Pascaline Dupas (2011a). “Do Teenagers Respond to HIV Risk Information? Evidence from a Field Experiment in Kenya”. In: *American Economic Journal: Applied Economics* 3.1, pp. 1–34
- Erica Field and Attila Ambrus (2008). “Early Marriage, Age of Menarche, and Female Schooling Attainment in Bangladesh”. In: *Journal of Political Economy* 116.5, pp. 881–930

- Hanan Jacoby (2002). “Is There an Intrahousehold Flypaper Effect? Evidence from a School Feeding Programme”. In: *The Economic Journal* 112, pp. 196–221
- Michael Kremer, Edward Miguel, and Rebecca Thornton (2009). “Incentives to Learn”. In: *Review of Economics and Statistics* 91.3, pp. 437–456
- Jessica Leight (2014). “Sibling Rivalry: Endowment and Intrahousehold Allocation in Gansu Province, China”. Working paper, Williams College
- Paul Schultz (2004). “School Subsidies for the Poor: Evaluating the Mexican PROGRESA Poverty Program”. In: *Journal of Development Economics* 74.1, pp. 199–250
- Duncan Thomas et al. (2004). “Education during a crisis”. In: *Journal of Development Economics* 74.1, pp. 53–85
- Petra Todd and Kenneth Wolpin (2010). “Structural Estimation and Policy Evaluation in Developing Countries”. In: *Annual Review of Economics* 2, pp. 21–50

6.3 Human Capital Supply and Resource Provision

We now switch attention to the supply side of human capital acquisition. We begin with a largely technocratic human capital production function approach, exploring how human capital outcomes respond to (arguably) exogenous inputs. We will focus on education and study the effects of changes in resources (e.g. class size, learning materials, teacher characteristics) on student participation and learning outcomes (Feb 7, 9). We then examine potential market failures in human capital supply, looking separately at education (Feb 14) and healthcare (Feb 16). Public sector human capital provision is a common response to the possibility of market failure in private sector provision but there are political economy challenges associated with public sector provision (Feb 21).

Required readings for February 7:

- Petra Todd and Kenneth Wolpin (2003). “On the Specification and Estimation of the Production Function for Cognitive Achievement”. In: *The Economic Journal* 113, F3–F33
- Paul Glewwe, Michael Kremer, et al. (2004). “Retrospective vs. prospective analyses of school inputs: the case of flip charts in Kenya”. In: *Journal of Development Economics* 74.1, pp. 251–268 [Focus on sections 3-5. No discussion notes required.]

Required readings for February 9:

- Adrienne Lucas and Isaac Mbiti (2014). “Effects of School Quality on Student Achievement: Discontinuity Evidence from Kenya”. In: *American Economic Journal: Applied Economics* 3.6, pp. 234–263

Present Christian Pop-Eleches and Miguel Urquiola (2013). “Going to a Better School: Effects and Behavioral Responses”. In: *American Economic Review* 103.4, pp. 1289–1324

Required readings for February 14:

- Present** Tahir Andrabi, Jishnu Das, and Asim Khwaja (2014). “Report Cards: The Impact of Providing School and Child Test Scores on Educational Markets”. Working paper, Pomona College
- Lant Pritchett (2013). *The Rebirth of Education: Schooling Ain't Learning*. Washington, DC: Center for Global Development [No discussion notes required. Skim this quickly and focus on understanding the measurement issues.]

Required readings for February 16:

- Present** Jishnu Das, Alaka Holla, et al. (2016). “Quality and Accountability in Health Care Delivery: Audit-Study Evidence from Primary Care in India”. In: *American Economic Review* 106.12, pp. 3765–3799
- Jishnu Das, Jeffrey Hammer, and Kenneth Leonard (2008). “The Quality of Medical Advice in Low-Income Countries”. In: *Journal of Economic Perspectives* 22.2, pp. 93–114 [No discussion notes required. Skim this quickly.]

Required readings for February 21:

- Natalie Bau and Jishnu Das (2014). “The Misallocation of Pay and Productivity in the Public Sector: Evidence From the Labor Market for Teachers”. Working paper, University of Toronto
- Present** Martina Bjorkman and Jakob Svensson (2009). “Power to the People: Evidence from a Randomized Field Experiment on Community-Based Monitoring in Uganda”. In: *Quarterly Journal of Economics* 124.2, pp. 735–769

Background and extension readings for this section:

- Joshua Angrist and Victor Lavy (1999). “Using Maimonides’ Rule to Estimate the Effect of Class Size on Scholastic Achievement”. In: *Quarterly Journal of Economics* 114.2, pp. 533–575
- Joshua Angrist, Eric Bettinger, et al. (2002). “Vouchers for Private Schooling in Colombia: Evidence from a Randomized Natural Experiment”. In: *American Economic Review* 92.5, pp. 1535–1558. There are multiple follow-up papers on the long-term consequences of this experiment.
- Abhijit Banerjee, Esther Duflo, and Rachel Glennester (2007). “Putting a Band-Aid on a Corpse: Incentives for Nurses in the Indian Public Health Care System”. In: *Journal of the European Economic Association* 6, pp. 487–500
- Abhijit Banerjee, Lakshmi Iyer, and Rohini Somanathan (2007). “Public Action for Public Goods”. In: *Handbook of Development Economics Volume 4*. Ed. by Paul Schultz and John Strauss. Elsevier, pp. 3117–3154
- Abigail Barr et al. (2012). “Information and collective action in community monitoring of schools: Field and lab experimental evidence from Uganda”. Working paper, University of Nottingham

- Nazmul Chaudhury et al. (2006). “Missing in Action: Teacher and Health Worker Absence in Developing Countries”. In: *Journal of Economic Perspectives* 20.1, pp. 91–116
- Gabriella Conti and Rita Ginja (2014). “Evaluating a Universal Health Insurance Program: Evidence from Mexico”. Working paper, University College London
- Esther Duflo, Rema Hanna, and Stephen Ryan (2012). “Incentives Work: Getting Teachers to Come to School”. In: *American Economic Review* 102.4, pp. 1241–1278
- Esther Duflo, Pascaline Dupas, and Michael Kremer (2014). “School Governance, Teacher Incentives, and Pupil-Teacher Ratios: Experimental Evidence from Kenyan Primary Schools”. In: *Journal of Public Economics* Forthcoming
- Benjamin Feigenberg (2014). “Priced Out: Aggregate Income Shocks and School Pricing in the Chilean Voucher Market”. In: Working paper, University of Illinois at Chicago
- Sebastian Galiani, Paul Gertler, and Ernesto Schargrotsky (2005). “Water for Life: The Impact of the Privatization of Water Services on Child Mortality”. In: *Journal of Political Economy* 113.1, pp. 83–120
- Paul Glewwe, Nauman Ilias, and Michael Kremer (2010). “Teacher Incentives”. In: *American Economic Journal: Applied Economics* 2.3, pp. 205–27
- Paul Glewwe, ed. (2014). *Education Policy in Developing Countries*. University of Chicago Press
- Paul Glewwe and Michael Kremer (2006). “Schools, Teachers and Education Outcomes in Developing Countries”. In: *Handbook of the Economics of Education, Volume 2*. Ed. by Eric Hanushek and Finis Welch. Elsevier, pp. 945–1017
- Chang-Tai Hsieh and Miguel Urquiola (2006). “The Effects of Generalized School Choice on Achievement and Stratification: Evidence from Chile’s Voucher Program”. In: *Journal of Public Economics* 90.8-9, pp. 1477–1503
- Michael Kremer and Alaka Holla (2009). “Improving Education in the Developing World: What Have We Learned from Randomized Evaluations?” In: *Annual Review of Economics* 1, pp. 513–542
- Kenneth Leonard (2007). “The cost of imperfect agency in health care: Evidence from rural Cameroun”. In: *Journal of Development Economics* 88.2, pp. 282–291
- Leigh Linden (2008). “Complement or Substitute? The Effect of Technology on Student Achievement in India”. Working paper, UT Austin
- Adrienne Lucas and Isaac Mbiti (2012). “Access, Sorting and Achievement: The Short-Run Effects of Free Primary Education in Kenya”. In: *American Economic Journal: Applied Economics* 4.4, pp. 226–253
- Karthik Muralidharan and Venkatesh Sundararaman (2013). “Contract Teachers : Experimental Evidence from India”. Working paper, UC San Diego

- Karthik Muralidharan and Venkatesh Sundararaman (2014). “The Aggregate Effect of School Choice: Evidence from a Two-stage Experiment in India”. Working paper, UC San Diego
- Derek Neal (2011). “The Design of Performance Pay in Education”. In: *Handbook of the Economics of Education Volume 4*. Ed. by Eric Hanushek, Stephen Machin, and Ludger Woessmann. Elsevier, pp. 495–550
- Ritva Reinikka and Jakob Svensson (2011). “The Power of Information in Public Services: Evidence from Education in Uganda”. In: *Journal of Public Economics* 95.7-8, pp. 956–966
- Rebecca Thornton et al. (2010). “Social Security Health Insurance for the Informal Sector in Nicaragua: A Randomized Evaluation”. In: *Health Economics* 19, pp. 181–206
- Micaela Tincani (2014). *School Vouchers and the Joint Sorting of Students and Teachers*. Working paper 2014-012. Human Capital and Economic Opportunity Global Working Group
- Miguel Urquiola and Eric Verhoogen (2009). “Class-Size Caps, Sorting, and the Regression-Discontinuity Design”. In: *American Economic Review* 99.1, pp. 179–215
- Sophie Witter et al. (2012). *Paying for performance to improve the delivery of health interventions in low- and middle-income countries*. Tech. rep. 2. Cochrane Database of Systematic Reviews
- World Bank (2014). *RBFA Smarter Approach to Delivering More and Better Reproductive, Maternal, Newborn, and Child Health Services*. Available online here

6.4 Human Capital Spillovers

We conclude by studying spillovers or peer effects in human capital acquisition. We both document the existence of these spillovers and examine whether these spillovers lead to sub-optimally low levels of human capital investment. We also discuss econometric methods for identifying spillovers or identifying other parameters of interest in the presence of spillovers.

Required readings for February 23:

- Peer effects and spillovers notes on my website. [No discussion notes required.]

Present Edward Miguel and Michael Kremer (2004). “Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities”. In: *Econometrica* 72.1, pp. 159–217

Required readings for February 28:

- Ester Duflo, Pascaline Dupas, and Michael Kremer (2011). “Peer Effects, Teacher Incentives, and the Impact of Tracking: Evidence from a Randomized Evaluation in Kenya”. In: *American Economic Review* 101.5, pp. 1739–1774

Present Andrew Foster and Mark Rosenzweig (1995). “Learning by Doing and Learning from Others: Human Capital and Technical Change in Agriculture”. In: *Journal of Political Economy* 103.6, pp. 1176–1209

Background and extension readings:

- Daron Acemoglu and Joshua Angrist (2000). “How Large Are Human Capital Externalities? Evidence from Compulsory Schooling Laws”. In: *NBER Macroeconomics Annual* 15, pp. 9–59
- Oriana Bandiera and Imran Rasul (2006). “Social Networks and Technology Adoption in Northern Mozambique”. In: *Economic Journal* 116, pp. 869–902
- Debopam Bhattacharya and Pascaline Dupas (2012). “Inferring Welfare Maximizing Treatment Assignment Under Budget Constraints”. In: *Journal of Econometrics* 167, pp. 168–196
- Jessica Cohen and Pascaline Dupas (2010). “Free Distribution or Cost-sharing? Evidence from a Randomized Malaria Prevention Experiment”. In: *Quarterly Journal of Economics* 125.1, pp. 1–45
- Margherita Comola and Silvia Prina (2014). “Do Interventions Change the Network? A Dynamic Peer Effect Model Accounting for Network Changes”. Working paper, Paris School of Economics
- Paul Goldsmith-Pinkham and Guido Imbens (2013). “Social Networks and the Identification of Peer Effects”. In: *Journal of Business and Economic Statistics* 31.3, pp. 253–264. Also see the comments by Bramoullé, Graham, Jackson, Manski, Sacerdote, and Kline & Tamer in the same issue.
- Matthew Jackson (2009). “Networks and Economic Behavior”. In: *Annual Review of Economics* 1, pp. 489–513
- Michael Kremer and Edward Miguel (2007). “The Illusion of Sustainability”. In: *Quarterly Journal of Economics* 122.3, pp. 1007–1065
- Bruce Sacerdote (2011). “Peer Effects in Education: How Might They Work, How Big Are They and How Much Do We Know Thus Far?” In: *Handbook of the Economics of Education Volume 3*. Ed. by Eric Hanushek, Stephen Machin, and Ludger Woessmann. Elsevier, pp. 249–277