

Economics 7710/ Nutritional Science 6850

Microeconomics of Development: Applications to Health, Nutrition, and Education

Fall 2015

Professor David E. Sahn

Course description: This seminar will explore recent empirical research and focus on the microeconomics of development. The topics covered are health, nutrition, and education, with an emphasis on models of behavior of households and individuals, as well as the impact of social programs. While we will briefly review underlying theory, and econometric techniques, the course will attempt to bridge the gap between theory and practice, addressing issues such as model identification, functional form, and estimation techniques to control for endogeneity and heterogeneity. A key objective of the class will be to focus on the merits and limitations of randomized control trials (experiments) and non-experimental and econometric methods used to evaluate social interventions, as well as to understand behavioral and structural relationships. We will also discuss the various types of household surveys that are employed for these purposes.

The course will be run like a seminar, rather than a lecture course, in order to encourage active participation of all students. Students are expected to do, and be ready to discuss, all the assigned readings. For each meeting, students will be (randomly) assigned to lead a discussion, in which all the other students are expected to actively participate. Those leading the session will be expected to prepare a short and critical evaluation of the papers, usually of 3–5 pages, in outline or annotated form. These reviews will cover central issues related to the strengths and weaknesses of the paper, and their effectiveness in addressing underlying concerns of causation, identification, internal and external validity, and so forth.

Students will also conduct a replication assignment. The replication assignment will involve selecting a published empirical paper in a refereed economics social science journal. Please read the following article by Gary King to help motivate your work: <https://gking.harvard.edu/files/gking/files/replication.pdf>. You are encouraged to choose a paper that is consistent with your own research interests, but that broadly is related to health, nutrition, education, or other issues related to human capital accumulation and poverty alleviation. (With special permission, students will be allowed to prepare an original empirical research paper, which defines a problem and uses household survey data to model the impact of a policy or program consistent with the focus of the course.)

In order to perform the assignment, you will need to arrange access to the data set. You should first try to find the data set on-line. If you are not able to do so, you can

contact the author(s). Many, if not most major journals now require access to the data as a condition for publication of a paper. You will then try to replicate the analysis in the journal article. My expectation is that you will be able to closely replicate the results. If not, you need to discuss in detail your findings and why you think that you are not able to replicate the results. It is certainly possible that you will find errors in the work of others. This may be due to mistakes of the researchers, for example, in coding—or worse, purposeful manipulation of the data and results. There have been a series of such cases in recent years that have come to great prominence in the social sciences, where traditionally replication has been given far too little importance.

A second part of the assignment is to conduct a variant on the original paper to extend the analysis by, for example, adding additional covariates or changing the dependent variable. For example, if the paper is looking at birth-weight outcomes of an intervention program, and the data set has other health measures, such as anthropometrics, you could estimate a similar model using height-for-age as the outcome measure. Or similarly, if the analysis looks at the impact of a program on children 6 to 36 months of age, you may focus on the impact on other age groups or explore impact by gender or urban–rural location. Alternatively, you may change the econometric model or estimation technique. For example, if the model is an OLS that looks at the age of first birth, you may want to use a hazard model instead. I understand that your extension or the original paper may not yield new and exciting results that would potentially contribute to the literature, but, you should again discuss the innovations you tried and the findings.

The paper should be around 8 to 10 single-spaced pages, 12-point typeface with standard margins. Tables, figures, and references, will be additional pages. Your paper will be reviewed and graded by me, and also by two other students who will serve as referees to carefully review your paper, both for substance and form. These reviews should include identifying grammatical errors, typos, etc., in addition to critiquing in detail what has been done and even proposing new extensions of the work. Based on your peers' detailed referee reports of the draft, you should prepare a point-by-point response and revise the paper accordingly; in turn, the referee will assess the quality of your point-by-point rebuttal and the revised paper. If you do not agree with the referee on any point, and you do not address one or more suggestions, you should clearly state why. For those of you unaccustomed to writing and preparing referee's reports, or responding to them, I will provide examples.

I will discuss the paper more in the first class and answer your questions.

The replication assignment (or empirical paper) will comprise 40% of the final grade. Twenty percent of the grade will be based on each of the following: your referee reports, on how well you lead the assigned discussions, and on class participation when not leading the discussion.

Key dates include **September 15** when a prospectus on the replication assignment (or research topic) is due. This should include a discussion of the paper to be replicated, a confirmation that the data is available and has been looked at and is in a format that will allow for doing the exercise. A preliminary progress report is due on **October 15**, which should at least present summary statistics, including means, standard deviations, and basic cross tabulations on the variables to be used in the model. This should include replicating descriptive statistics found in the published paper. Additionally, the progress report should include a discussion and justification for you extension of the research, and what that model will look like. A final draft is due on **November 15**. At that time, I will distribute the drafts to peer referees that I will randomly select to review each paper. Referees are responsible for preparing their reports by **November 27**. The final revised paper is due on **December 7**, at which time I will return the paper to the peer referees who will review again and assign a final grade due on **December 16**.

A preliminary reading list is found below. More details on how to organize the in-class presentations will be posted on the class blackboard site, including the questions and issues to be addressed for each paper reviewed.

Please note that before we begin our discussion of specific empirical research papers and methods, we will devote the first two class to a more general discussion on experimental versus non-experimental techniques. This will be organized as a debate-style discussion, again where I will provide prompts in advance on the blackboard site that will be debated by students in the class.

Students who have limited or no experience with STATA, SAS, or similar software will be expected to find appropriate assistance from CISER or other resources on campus, including other students.

Meeting Time and Location: Monday 1:25 p.m.-3:55 p.m.

Office Hours: Professor Sahn will hold office hours by appointment in B16 MVR Hall.

Course Website: <http://blackboard.cornell.edu>

I. EVALUATING SOCIAL PROGRAMS — EXPERIMENTAL VS. STRUCTURAL MODELS

Duflo, Esther, Rachel Glennerster, and Michael Kremer. 2008. "Using randomization in development economics research: A toolkit." In Schultz, T., and John Strauss, eds., *Handbook of Development Economics, Vol. 4*. Amsterdam: North Holland, Chapter 61, pp. 3895–3962.

Ravallion, Martin. 2008. "Evaluating anti-poverty programs." In Schultz, T., and John Strauss, eds., *Handbook of Development Economics, Vol. 4*. Amsterdam: North Holland, Chapter 59, pp. 3787–3846.

Deaton, Angus. 2010. "Instruments, randomization, and learning about development." *Journal of Economic Literature* 48 (2): pp. 424–455.

Heckman, James J. 2010. "Building bridges between structural and program evaluation approaches to evaluating policy." *Journal of Economic Literature* 48 (2): pp. 356–398.

Easterly, William. 2009. "Can the West save Africa?," *Journal of Economic Literature* 47 (2): pp. 373–447.

II. HEALTH AND NUTRITION

Background Reading:

Thomas, Duncan, and John Strauss. 2008. "Health over the life course." In Schultz, T., and John Strauss, eds., *Handbook of Development Economics, Vol. 4*. Amsterdam: North Holland, Chapter 54, pp. 3375–3474.

Case Studies:

A. IN UTERO AND PERI-NATAL PERIOD

Almond, D. 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* 114 (4): pp. 672–712.

Field, Erica, Omar Robles, and Maximo Torero. 2009. "Iodine deficiency and schooling attainment in Tanzania." *American Economic Journal: Applied Economics* 1 (4): pp. 140–169.

B. HEALTH AND NUTRITION

Kremer, Michael, and Edward Miguel. 2004. "Worms: Identifying Impacts on education and health in the presence of treatment externalities." *Econometrica* 72 (1): pp. 159–217.

Alderman, Harold, John Hoddinott, and Bill Kinsey. 2006. "Long term consequences of early childhood malnutrition." *Oxford Economic Papers* 58 (3): pp. 450-474.

Rivera, Juan A., Daniela Sotres-Alvarez, Jean-Pierre Habicht, Teresa Shamah, Salvador Villalpando. 2004. "Impact of the Mexican Program for Education, Health, and Nutrition (Progresa) on rates of growth and anemia in infants and young children: A randomized effectiveness study." *JAMA* 291 (21): pp. 2563–2570.

C. REPRODUCTIVE HEALTH

Joshi, Shareen, and T. Paul Schultz. 2007. "Family planning as an investment in development and female human capital: Evaluating the long-run consequences in Matlab, Bangladesh," Center Discussion Paper #951, Economic Growth Center, Yale University, New Haven, CT.

Field, Erica, and Attila Ambrus. 2008. "Early marriage, age of menarche, and female schooling attainment in Bangladesh." *Journal of Political Economy* 116 (5): pp. 881–930.

Glick, Peter, Alessandra Marini, and David E. Sahn. 2007. "Estimating the consequences of unintended fertility for child health and education in Romania: An analysis using twins data." *Oxford Bulletin of Economics and Statistics* 69 (5): pp. 667–691.

Herrera, Catalina, and David E. Sahn. 2015. "The impact of early childbearing on schooling and cognitive skills among young women in Madagascar," Cornell Food and Nutrition Policy Program Working Paper No. 247 (under review by *American Economic Review: Applied Economics*.)

D. HIV/AIDS

Thornton, Rebecca. 2008. "The demand for and impact of learning HIV status: Evidence from a field experiment." *American Economic Review* 98 (5): pp. 1829–1863.

Dupas, Pascaline, 2011. "Do teenagers respond to HIV risk information? Evidence from a field experiment in Kenya." *American Economic Journal: Applied Economics* 3 (1): pp. 1–34.

Oster, Emily. 2006. "HIV and sexual behavior change: Why not Africa?" *Journal of Health Economics* 31 (1): pp. 35–49.

Thirumurthy, H., and J. Graff Zivin. 2012. "Health and labor supply in the context of HIV/AIDS: the long-run economic impacts of antiretroviral therapy." *Economic Development and Cultural Change* 61 (1): pp. 73–96.

Glick, Peter, and David E. Sahn. 2008. "Are Africans practicing safer sex? Evidence from Demographic and Health Surveys for eight countries." *Economic Development and Cultural Change* 56 (2): pp. 397–439.

III. IMPACT OF HEALTH ON PRODUCTIVITY

Background Reading:

Strauss, John, and Duncan Thomas, 1998. "Health, nutrition, and economic development." *Journal of Economic Literature* 36 (2): pp. 766–817.

Case Studies:

Case, Anne, and Christina Paxson. 2008. "Stature and status: Height, ability and labor market outcomes." *Journal of Political Economy* 116 (3): pp. 499–532.

Thomas, Duncan, Elizabeth Frankenberg, Jed Friedman, Jean-Pierre Habicht, Mohammed Hakimi, Nicholas Ingwersen, Jaswadi, Nathan Jones, Christopher McKelvey, Gretel Pelto, Bondan Sikoki, Teresa Seeman, James P. Smith, Cecep Sumantri, Wayan Suriastini, and Siswanto Wilopo. 2006. "Causal effect of health on labor market outcomes: Experimental evidence." California Center for Population Research On-Line Working Paper Series CCPR-070-06, California Center for Population Research, Los Angeles, CA.

Thomas, Duncan, and John Strauss. 1997. "Health and wages: Evidence on men and women in urban Brazil." *Journal of Econometrics* 77 (1): pp. 159–185.

IV. INTRAHOUSEHOLD DECISION-MAKING

Thomas, Duncan. 1990. "Intrahousehold resource allocation: An inferential approach." *Journal of Human Resources* 25 (4): pp. 635–664.

Duflo, Esther. 2003. "Grandmothers and granddaughters: Old-age pensions and intrahousehold allocations in South Africa." *World Bank Economic Review* 17 (1): pp. 1–25.

Dercon, Stefan, and Pramila Krishnan. 2000. "In sickness and in health: Risk sharing within households in rural Ethiopia." *Journal of Political Economy* 108 (4): pp. 688–727.

Jacoby, Hanan. 2002. "Is there an intra-household 'flypaper effect'? Evidence from a school feeding program." *Economic Journal* 117 (476): pp. 196–221.

V. IMPACT OF HEALTH AND NUTRITION ON EDUCATION AND SCHOOLING

Background Reading:

Glewwe, Paul, and Edward Miguel. 2008. "The impact of child health and nutrition on education in developing countries." In Schultz, T., and John Strauss, eds., *Handbook of Development Economics, Vol. 4*. Amsterdam: North Holland, Chapter 56, pp. 3561–3606.

Case Studies

Maluccio, John, John Hoddinott, Jere R. Behrman, Reynaldo Martorell, Agnes R. Quisumbing, and Aryeh D. Stein. 2009. "The impact of improving nutrition during early childhood on education among Guatemalan adults." *Economic Journal* 119 (537): pp. 734-763.

Case, Anne, and Cally Ardington. 2006. "The impact of parental death on school outcomes: Longitudinal evidence from South Africa." *Demography* 43 (3): pp. 401-420.

Glewwe, Paul, Hanan Jacoby, and Elizabeth King. 2001. "Early childhood nutrition and academic achievement: A longitudinal analysis." *Journal of Public Economics* 81(3): pp. 345–368.

VI. EDUCATION OUTCOMES

Background Reading:

Glewwe, Paul, and Michael Kremer. 2008. "Schools, teachers, and education outcomes in developing countries." In Hanushek, Eric, and Finis Welch, eds., *Handbook of the Economics of Education, Vol. 2*. Amsterdam: North Holland, Chapter 16, pp. 945–1017.

Case Studies:

Glick, Peter, and David Sahn. 2010. "Early academic performance, grade repetition, and school attainment in Senegal: A panel data analysis." *World Bank Economic Review* 24(1): pp. 93–120.

Glick, Peter, and David Sahn. 2009. "Cognitive skills among children in Senegal: Disentangling the roles of schooling and family background." *Economics of Education Review* 28 (2): pp. 178–188.

Glewwe, Paul, Michael Kremer, and Sylvie Moulin. 2007. "Many children left behind? Textbooks and test scores in Kenya." *American Economic Journal: Applied Economics* 1 (1): pp. 112–135.

Urquiola, Miguel. 2006. "Identifying class size effects: Evidence from rural Bolivia." *Review of Economics and Statistics* 88 (1): pp. 171–177.

Attanasio, Orazio P., Meghir, Costas, and Ana Santiago. 2012. "Education choices in Mexico: Using a structural model and a randomized experiment to evaluate PROGRESA." *Review of Economic Studies* 79 (1): pp. 37–66.

Angrist, J., and V. Lavy. 1999. "Using Maimonides' Rule to estimate the effect of class size on scholastic achievement." *Quarterly Journal of Economics* 114 (2): pp. 533–575.

Todd, P., and K. Wolpin. 2006. "Assessing the impact of a school subsidy program in Mexico: Using experimental data to validate a dynamic behavioral model of child schooling." *American Economic Review* 96 (5): pp. 1384–1417.

Duflo, E. 2001. "Schooling and labor market consequences of school construction in Indonesia: Evidence from an unusual policy experiment." *American Economic Review* 91 (4): pp. 795–813.

VII. MULTIDIMENSIONAL POVERTY

Alkire, S., and J. Foster. 2011. "Counting and multidimensional poverty measurement." *Journal of Public Economics* 95 (7–8): pp. 476–487.

Ravallion, Martin. 2012. "Mashup indices of development." *World Bank Research Observer* 27(1): 1–32.

Duclos, Jean-Yves, David E. Sahn, and Stephen D. Younger. 2006. "Robust multidimensional poverty comparisons." *The Economic Journal* 116 (514): pp. 943–968.