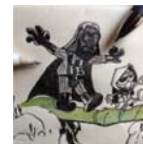


## ENV 851/PPS 827 Environment and Development Economics

W 3:05 - 4:20, Sanford 03



### Overview

Developing countries tend to be more dependent on natural resources and to have higher pollution levels than developed countries. They also tend to have lower institutional capacity and fewer financial resources. The latter characteristics create challenges for improving the management of natural resources and combating pollution. Economic analysis can help meet these challenges by providing more sophisticated explanations of the causes of environmental degradation than superficial ones such as overpopulation or excessive consumption. It can also help determine whether prospective policies succeed in aligning the private incentives of individuals, households, and firms with social goals to improve natural resource management and environmental quality. Unfortunately data is scarce, and rigorous analyses are still scarcer. You will learn to consume, if not produce, these data and analyses.

PPS827/ENV851 is a 1.5 credit seminar that *surveys selected* resource and environmental issues in developing countries. It emphasizes the use of *economic principles to understand* these issues and to *formulate effective policy responses* to them. We will cover material that is *more empirical than theoretical*. The course has theoretical content, but it deals with *theory more qualitatively than mathematically*. Essentially, it provides an opportunity to learn how economic theory taught in other courses, especially ENV520 and PPS810/811, can be applied to environmental and natural resource in developing countries. About three-fourths of the *readings employ regressions and more advanced econometric methods*. Knowledge of statistical methods at the level of ENV710 and PPS812 is necessary to understand those readings. The overall objective of the course are three fold: (1) to *familiarize* students with key portions of the *literature on environment and development economics*, (2) to *foster students' abilities to critically read* this literature, and (3) to improve use of *basic statistical methods* underlying this literature by *practicing*.

### Instructor

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Office hours: Mon 1:30-2:30, Tue 2:30-3:30 (check first)

### Format

The course is a discussion-oriented seminar. Students are responsible for reading all the assigned papers carefully before class. Although a subset of you will lead the discussions and blog, any one of you can be called on randomly to present their views on the readings. I do not expect all students will understand all the material in all the readings based solely on their own reading before class. I do expect, however, that all students will make an effort to understand the readings before class, and that in so doing they will form views about the material they do understand and will identify the material they do not understand. The purpose of the class sessions is to discuss and evaluate students' views and to make sense of any confusing or unclear parts of the readings.

### Readings

There are two readings (sometimes a third review paper) for all class sessions that are required. All readings will be posted in the "Resources/READINGS" section of Sakai. Additionally, a ready source of readings on this topic is a journal titled *Environment & Development Economics* (EDE) by Cambridge University Press (<http://journals.cambridge.org/action/displayJournal?jid=EDE>).

### Requirements

1. Come to class **prepared to discuss** the assigned readings. Discussion implies stating your opinion, referencing it, and supporting it. Your participation should help move discussion to greater depth, crystallize an idea, show

original thinking and/or motivate others to think differently. Additionally, you are expected to contribute to at least one group assignment - the review blog.

2. **Write a blog** entry and **co-lead** a class discussion. Preparation for this must involve two things:
  - a. On the day of the class itself, you will **lead** the discussion by first reviewing the paper, posing your questions and calling on your classmates to respond to your questions. Be sure to comment on the policy implications, including any specific advice for decision makers. Your discussion should last 25-30 minutes or so, and will be bracketed on either side by my introduction to the topic [5-10 min], and a review of the statistical procedures at the end [5-10 min]. The discussion leaders should meet with me on Tuesday afternoon to review their discussion summary and questions.
  - b. Write a **blog**, summarizing the reading and posing discussion questions, once (or twice, depending on the final class size). (*You may not blog on the paper you are presenting/leading – you should blog on a paper that someone else is presenting/leading.*) Using the blog-tool in Sakai, submit a 500 word blog entry on the readings for the class **1 day (4pm) prior** to the class. A blog entry should include a brief summary of key points, a complete characterization of the empirics – data sources, size, estimation strategy, results, policy implications, and things you didn't know or disagreed with. Try to find and draw on papers published in EDE in the last 5-10, related to the topic. The entry should also include on one *key phrase* and provide a brief (2-3 sentences 'Wikipedia' like) definition and example. Each student must submit a blog for the class to which you are assigned.<sup>†</sup> Your classmates will have access to the material and can offer further reactions on the blog-site and in-class.
3. Complete three empirical 'environmental and development economics' analyses using Stata that correspond to the main estimation approaches – OLS, panel (FE), IV, matching – discussed in class.
  - a. You will be given approximately 10 days to complete the assignment with data we provide.
  - b. These assignments will be provided approximately at the end of each month.
  - c. Your answers will be in the form of an annotated Stata log file, clearly showing the final commands and Stata output and deleting any trial-error experiments that you may have run.
4. **There are no exams, quizzes, presentations, projects or term papers.**

### Prerequisites

Statistics at the level of ENV 710 or PPS 812 and Economics at the level of ENV 520 or PPS 810 is strongly recommended.

### Grading

Letter grades will be given and will be based 25% on class participation, 50% on blogs and leading class discussion, 25% on the empirical assignments.

### Honor Code

All activities of students, including those in this course, are governed by the Duke Community Standard, which states: *"Duke University is a community dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, respect, and accountability. Citizens of this community commit to reflect upon and uphold these principles in all academic and nonacademic endeavors, and to protect and promote a culture of integrity.*

*Students affirm their commitment to uphold the values of the Duke University community by pledging: To uphold the Duke Community Standard:*

- *I will not lie, cheat, or steal in my academic endeavors;*
- *I will conduct myself honorably in all my endeavors; and*
- *I will act if the Standard is compromised.*

Students will be expected to uphold the Standard in these ways.

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<sup>†</sup> I am prepared to make the assignment for everyone, unless someone really cares about the specific topic they wish to write on. If so, please scan the draft schedule to identify the topic as soon as possible and email me.

Date	Topics and readings
Jan 20	Course introductions
Jan 27	<p><b>EDE: Valuation &amp; Evaluation</b></p> <p>Dasgupta, P. 2010. The place of nature in economic development. <i>Handbook of Development Economics</i>. Chapter 74.</p> <p>Pattanayak, S.K., 2009. Rough guide to impact evaluation of environmental &amp; development programs. SANDEE Working Paper 40. <a href="http://www.sandeeonline.org/uploads/documents/publication/847_PUB_Working_Paper_40.pdf">http://www.sandeeonline.org/uploads/documents/publication/847_PUB_Working_Paper_40.pdf</a></p>
Feb 3	<p><b>Resource curse</b></p> <p>Sachs, JD &amp; Warner, AM, 2001.<sup>1</sup> "The curse of natural resources," <i>European Economic Review</i> 45(4-6): 827-83</p> <p>Nunn, N and D. Puga. 2012. "Ruggedness: The Blessing of Bad Geography in Africa". <i>Review of Economics and Statistics</i> 94(1): 20-36.</p>
Feb 10	<p><b>New Economic Geography?</b></p> <p>Timmins, C. 2005. Estimable Equilibrium Models of Locational Sorting and Their Role in Development Economics. <i>Journal of Economic Geography</i>.</p> <p>Hsiang, S, KC Meng, 2015. Tropical Economics. <i>American Economic Review</i> 105(5): 257–261</p> <p>Hsiang, S, AS Jina. 2015. Geography, Depreciation, &amp; Growth. <i>American Economic Review</i> 105(5): 252-256</p>
Feb 17	<p><b>Natural Disasters &amp; Ecosystem Services</b></p> <p>Bohra-Mishra, P., Oppenheimer, M. and Hsiang, S.M., 2014. Nonlinear permanent migration response to climatic variations but minimal response to disasters. <i>Proceedings of the National Academy of Sciences</i>.</p> <p>Das, S. &amp; JR Vincent. 2009. Mangroves protected villages and reduced death toll during Indian super cyclone. <i>Proceedings of the National Academy of Sciences</i>. 106 (18): 7357-7360.</p>
Feb 24	<p><b>Biodiversity conservation policies</b></p> <p>Ferraro, PJ, MM Hanauer, DA Miteva, J Nelson, SK Pattanayak, C Nolte, KRE Sims. 2015. Estimating the impacts of conservation on ecosystem services by integrating ecosystem service modeling and impact evaluation. <i>Proceedings of the National Academy of Sciences</i>. 112 (24) 7420-7425</p> <p>Arriagada, R., PJ Ferraro, E Sills, SK Pattanayak, and S Cordero. 2012. Do payments for environmental services reduce deforestation? A farm level evaluation from Costa Rica. <i>Land Economics</i>. 88 (2): 382–399.</p>
Mar 2	<p><b>Direct (PES) and Indirect (ICDP) conservation measures</b></p> <p>Alix-Garcia, J., McIntosh, C., Sims, K.R. and Welch, J.R., 2013. The ecological footprint of poverty alleviation: evidence from Mexico's Oportunidades program. <i>Review of Economics and Statistics</i>, 95(2), pp.417-435.</p> <p>Weber, J., E Sills, SC Bauch, and SK Pattanayak. 2011. Do ICDPs work? An empirical evaluation of forest-based microenterprises in the Brazilian Amazon. <i>Land Economics</i>. 87 (4): 645–681.</p>

<sup>1</sup> Based on a more well known JD Sachs and AM Warner, 1995. "Natural resource abundance and economic growth" (NBER Working Paper No. 5398).

Topics and readings	
Date	
Mar 9	<p><b>Household energy, Global climate</b></p> <p>Miller, G. and AM Mobarak. 2013. Gender Differences in Preferences, Intra-Household Externalities, and Low Demand for Improved Cookstoves. <a href="#">Stanford Working Paper</a></p> <p>Jeuland, MA, SK Pattanayak and JS TanSoo. 2014. Preference heterogeneity and adoption of environmental health improvements: Evidence from a cookstove promotion experiment.</p>
Mar 23	<p><b>Environmental Kuznets Curve</b></p> <p>Blackman, A. 2010. Alternative Pollution Control Policies in Developing Countries. <i>Review of Environmental Economics &amp; Policy</i>.</p> <p>Greenstone, M. &amp; R. Hanna. 2012. Environmental Regulations, Air and Water Pollution, and Infant Mortality in India. <i>American Economic Review</i>. 104(10): 3038-72 *</p> <p>Dasgupta, S. B. Laplante, H Wang and D. Wheeler. 2002. Confronting the Environmental Kuznets Curve. <i>Journal of Economic Perspectives</i> 16(1): 147-168.</p>
Mar 30	<p><b>Economics of Environmental Epigenetics</b></p> <p>Rangel, M. and TS Vogl. 2016. The Dirty Side of Clean Fuel: Agricultural Fires and Child Health in Brazil. Working Paper.</p> <p>Maccini, S, and D. Yang. 2009. "Under the Weather: Health, Schooling, and Economic Consequences of Early-life Rainfall." <i>American Economic Review</i>. 99 (3): 1006-1026.</p>
Apr 6	<p><b>Controlling Pollution (China)</b></p> <p>Mu, Q., &amp; Zhang, J. (2014). Air pollution and defensive expenditures: Evidence from particulate-filtering facemasks. <i>Available at SSRN 2518032</i>.</p> <p>Ebenstein, A. 2012. The consequences of industrialization: Evidence from water pollution and digestive cancers in China. <i>Review of Economics and Statistics</i>. 94 (1), 186-201</p>
Apr 13	<p><b>REDD+ -climate change, forest carbon sequestration, impacts</b></p> <p>Sills, E., Jagger, P., Lawlor, K., Miteva, D.A., Pattanayak, S.K., Sunderlin, W., 2015. Building the evidence base for reducing emissions from deforestation and forest degradation: Evaluating the livelihood impacts of forest conservation interventions.</p> <p>Sharma, BP, SK Pattanayak, M Nepal, P Shyamsundar and BS Karky. 2015. REDD+ Impacts: Evidence from Nepal. 2015. <a href="#">Working Paper No. 95-15</a>. SANDEE-ICIMOD, Kathmandu, Nepal.</p>
Apr 20	<p><b>Water &amp; Sanitation</b></p> <p>Meeks, R. 2015. "Water Works: The Economic Impact of Water Infrastructure."</p> <p>Orgill, J, MA Jeuland, J Albert, and N Cutler. 2016. Coping with irregular water supplies: A comparison of contingent valuation and averting expenditure estimates.</p>

