ELIZABETH SANTORELLA

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EDUCATION

Harvard University *May 2018*
PhD student in economics
Research focus: econometrics, education, and public economics

Harvard University *November 2015*
M.A. in Economics

Massachusetts Institute of Technology *June 2013*
S.B. in Physics & Economics
Physics concentration in computer science
GPA: 4.9 / 5.0

RESEARCH

Multi-Dimensional Teacher Effects

· I estimate the covariance structure of teacher effects on several outcomes: present and future test scores, present and future attendance, and high school graduation. Studying the covariance matrix of teacher effects reveals the magnitude of teacher effects on each outcome and the relationship between teacher effects on different outcomes while sidestepping the need to estimate individual teacher effects.

· Teachers have substantial effects on high school graduation, and on test scores and attendance four years in the future. Students of a teacher who is one standard deviation above average at improving graduation rates are 5 percentage points more likely to graduate high school. Although teacher quality is an important determinant of graduation rates and of future test scores and attendance, long-term effects cannot be predicted well by short-term effects. For example, even if teacher effects on contemporaneous outcomes were perfectly measured, they would only explain about 3% of the variance in teacher effects on high school graduation. My results also suggest that teacher effects on attendance could be an important supplement to score-based measures of teacher value-added. Teachers who improve attendance tend to improve high school graduation rates. However, teacher effects on attendance are only weakly correlated with effects on test scores. I also use Principal Components Analysis to show that the correlation matrix of teacher effects can be well-represented by three easily interpretable components.

Which Value-Added Estimator Works Best and When?

· I survey several popular value-added estimation procedures and study their statistical properties. I discuss conditions under which models are identified, clarify whether estimators are consistent or unbiased, and derive asymptotic, parametric standard errors. I also develop a maximum (quasi-)likelihood estimator. I validate theoretical predictions about bias in Monte Carlo data and check whether estimators give similar answers in real data.

Bureaucrat Value Added: The Effect of Individual Bureaucrats on Local Economic Outcomes in India

In progress

with Jonas Hjort and Gautam Rao

· We use several value-added estimators to study a question relevant to political economy: How much agency do individual bureaucrats have to impact local economic performance? We study high-ranking bureaucrats in the Indian Administrative Service, India's national bureaucracy. These bureaucrats, District Collectors, District Collectors, who are quasi-randomly assigned to manage the bureaucracy of an Indian district and often transfer to different districts in the same state. This setting presents

econometric challenges, since we have relatively few observations and high-dimensional covariates. By randomly permuting bureaucrat names, we show that value-added estimators have strong finite-sample biases in this setting. Point estimates suggest that variance in District Collector quality accounts for substantial variance in project completion and night light intensity. However, randomization inference shows that our estimates are in fact insignificant.

SKILLS

Computer Languages	Python (expert in Numpy and Pandas); Matlab; Stata; R; SQL
Other Skills	Econometrics, machine learning, technical writing, teaching, performance engineering, numerical optimization

EXPERIENCE

QuantCo December 2015 - May 2017
Data Scientist (Part Time) *Cambridge, MA*

· Developed machine learning and econometric algorithms

Harvard Faculty of Arts and Sciences January 2016 - May 2016
Teaching Fellow *Cambridge, MA*

· Prepared materials and taught for two weekly review sessions and held office hours for Economics 2120, Introduction to Applied Econometrics. Most of the students were PhD students in economics, public policy, or health policy taking their second graduate-level econometrics course.

Harvard Kennedy School of Government September 2015 - December 2015
Teaching Fellow *Cambridge, MA*

· Prepared materials and taught for two weekly review sessions, held office hours, and graded exams for API-109, Advanced Microeconomic Analysis I. The students were 80 students in the Master's of Public Administration - International Development program.

MIT February 2013 - May 2013
Microeconomics Tutor *Cambridge, MA*

· Extensively tutored a student whose disabilities prevented him from accessing the standard course materials.

Abdul Latif Jameel Poverty Action Lab (J-PAL) March 2012 - August 2012
Research Assistant *Cambridge, MA*

· Worked with Professor Tavneet Suri and a team of research assistants to clean and analyze data from field experiments in development economics.
· Used Stata extensively.

MIT Sloan School of Business March 2012 - August 2012
Research Assistant *Cambridge, MA*

· Worked with Professor Robert Pindyck to develop models of willingness to pay to mitigate climate change or avoid catastrophic events.
· Used Matlab extensively.

MIT Computer Science and Artificial Intelligence Laboratory May 2011- January 2012
Web Programmer *Cambridge, MA*

· Added features and fixed bugs on the website Course Picker, which helps MIT students select courses.
· Worked with sources to obtain reliable data.

HONORS

2015-2016	Subir Chowdhury Fellowship on Quality & Economics
2015	On third place team, world Econometric Game
2014-2015	Rita Ricardo-Campbell Fellowship in Economics
2013-2014	Harvard University Graduate Student Fellowship
2013	Phi Beta Kappa
2013	Sigma Pi Sigma (physics honor society)