



CENTRE FOR EDUCATION ECONOMICS

**CfEE Research Digest  
2017/18 (4)**

*Editor: Gabriel Heller-Sahlgren*



**Table of Contents**

<b>Editor's Pick.....</b>	<b>3</b>
<b>Effects of Policy and Practice - Developed World.....</b>	<b>6</b>
<b>Effects of Policy and Practice - Developing World.....</b>	<b>8</b>
<b>General Education .....</b>	<b>10</b>



## Editor's Pick

### **Double for Nothing? Experimental Evidence on an Unconditional Teacher Salary Increase in Indonesia?**

*By: Joppe de Ree, Karthik Muralidharan, Menno Pradhan, and Halsey Rogers*

**Quarterly Journal of Economics (forthcoming)**

**Published version**

**Manuscript version (free)**

The effects of unconditional funding increases in state education have been the subject of intense debate for decades. Pundits often point to zero or negative correlations between funding and performance as evidence suggesting that “funding doesn’t matter”. However, such correlations do not reflect causal relationships. Indeed, they mostly tell us that governments tend to spend more money on poorly-performing schools or schools with larger proportions of children from disadvantaged backgrounds. The strongest **research** in the economics of education does in fact suggest that funding **matters** quite a lot, at least for children from poor backgrounds.

Still, such research tells us little about the types of funding interventions that work and the types that do not. One argument consistently raised in the debate is that we must raise salaries for teachers in order to attract and retain more motivated and intelligent individuals, who are seen as fundamental for raising performance. Many also argue that such salary increases should be unconditional rather than conditional on teachers’ performance.

But unconditional salary increases do not just potentially attract more capable individuals into the teacher profession – they also reward already existing teachers. Large salary increases for existing teachers may very well raise their motivation and productivity as well, for example because it allows them to decrease their time spent in second jobs and increase effort in their main job. Higher salaries may also simply induce teachers to work harder as a way to show gratitude, while also potentially make it easier to demand professionalism and accountability to school management.

Yet salary increases also carry large costs, which could potentially be better spent on other interventions. Whether or not unconditional increases in teacher salaries generate higher performance among existing teachers is therefore important analyse rigorously.

In this paper, the authors provide evidence in this respect from a randomised experiment in Indonesia. The experiment was conducted in the context of a



reform that permanently doubled the regular pay for teachers who went through a certification program, moving their salaries from the 50<sup>th</sup> to the 90<sup>th</sup> percentile of the university-graduate salary distribution. These teachers already had generous benefits and high job security and few people quit the profession before the reform.

Since access to the certification programme was gradually rolled out, with priority given to experienced teachers, the researchers worked with the government to allow all eligible teachers in 120 randomly selected state schools to access the certification programme and therefore immediately increase their salaries by 100%. On the other hand, teachers in 240 control schools had to wait for their turn in the gradual rolled-out process.

The results first of all show that treatment raised the share of teachers who had been certified and received the salary increase by 29/24 percentage points after two/three years. Among those who were not certified at baseline, the figure was 54/45 percentage points. In other words, the experiment considerably raised the share of certified teachers, who immediately saw a doubling of their salaries.

The results also show that measures of teacher welfare increased substantially. After three years, teachers in treatment schools were more satisfied with their income and were less likely to report financial stress as well as to hold a second job.

However, these improvements in teacher welfare had no impact whatsoever on teacher effort. Teachers in the treatment schools scored no better on tests measuring their subject knowledge and they did not have higher attendance than teachers in control schools. In other words, there was little evidence that teachers worked harder as a result of getting a higher salary.

And most importantly, the intervention had no impact at all on pupil outcomes in mathematics, language, and science. The estimates are very close to zero and are sufficiently precise so that the authors can rule out effects even as small as the equivalent of 5 PISA points. They also find no evidence of heterogeneous effects depending on whether schools were low or high performing before the experiment. Using the experiment as a way to study the impact of teacher certification itself, they similarly find no effects of such certification. Given that the overall cost of the reform was 5% of the national budget, these are disappointing results indeed.

Overall, therefore, the results suggest that large and unconditional increases in teacher salaries appear to be an ineffective and inefficient way to raise effort and performance among existing teachers. This does not mean that raising teacher salaries wouldn't be useful in the longer term, if such a policy induces more talented individuals to enter teaching and raise performance. Yet since the yearly flow of individuals entering the teacher pool is small, any such gains would not materialise for a long time and are unlikely to make up for current wasteful



spending. Therefore, if the goal is to attract talented individuals into teaching, it would seem more prudent to trial new salary policies that target more capable individuals specifically, rather than merely handing over more money all existing and future teachers unconditionally.



## Effects of Policy and Practice – Developed World

### **Higher Education Funding Reforms: A Comprehensive Analysis of Educational and Labour Market Outcomes in England**

*By: Ghazala Azmat and Stefania Simion*

**IZA Discussion Paper No. 11083 (October 2017)**

**Published version (free)**

This paper investigates the impact of changes in the funding of higher education in England on students' choices and outcomes. Over the last two decades – through three major reforms in 1998, 2006 and 2012 – undergraduate university education in public universities moved from being free to students and state funded to charging substantial tuition fees to all students. This was done in conjunction with the government offering generous means-tested maintenance grants and loans. Using detailed longitudinal micro-data that follows all students attending state schools in England (more than 90 percent of all school-aged children) from lower education to higher education, we document the socio-economic distributional effects of the 2006 and 2012 policy reforms on a comprehensive set of outcomes, including enrolment, relocation decisions, selection of institution, program of study, and performance within university. For a subset of students, we track them after completing higher education, allowing us to study the labour market effects of the policy reforms. Despite the substantial higher education funding reforms, they do not find large aggregate effect on student enrolment or on other margins. Moreover, the small negative impacts found on the enrolment were largely borne on those in higher parts of the wealth distribution – reducing the enrolment gap across socio-economic groups.

### **General versus Vocational Education: Lessons from a Quasi-experiment in Croatia**

*By: Ivan Zilic*

**Economics of Education Review (February 2018)**

**Published version**

**Working paper version (free)**

This paper identifies the causal effect an educational reform implemented in Croatia in 1975/76 and 1977/78 had on educational and labour market outcomes. High-school education was split into two phases which resulted in reduced tracking, extended general curriculum for students attending vocational



training, and an attachment of a vocational context to general high-school programs. Exploiting the rules on elementary school entry and timing of the reform, the authors use a regression discontinuity design and pooled Labour Force Surveys 2000–2012 to analyse the effect of the reform on educational attainment and labour market outcomes. They observe heterogeneity of the effects of the reform across gender, as for males we find that the probability of completing high school as well as the probability of completing university education decreased, while for females we do not observe any adverse effects. The authors explain this heterogeneity via different selection into schooling for males and females. The reform did not positively affect individuals' labour market prospects; therefore, the authors conclude that the observed general-vocational wage differential is mainly driven by self-selection into the type of high school.

### **What's in a Teacher Test? Assessing the Relationship between Teacher Test Scores and Student Secondary STEM Achievement**

*By: Dan Goldhaber, Trevor Gratz, and Roddy Theobald*

**Economics of Education Review (December 2017)**

**Published version (free)**

**Working paper version (free)**

The authors investigate the relationship between teacher licensure test scores and student test achievement and high school course-taking. They focus on three subject/grade combinations—middle school math, ninth-grade algebra and geometry, and ninth-grade biology – and find evidence that a teacher's basic skills test scores are modestly predictive of student achievement in middle school math and highly predictive of student achievement in high school biology. A teacher's subject-specific licensure test scores are a consistent and statistically significant predictor of student achievement only in high school biology. Finally, they find little evidence that students assigned to middle school teachers with higher basic-skills test scores are more likely to take advanced math and science courses in high school.



## Effects of Policy and Practice – Developing World

### **Abolishing User Fees, Fertility Choice, and Educational Attainment**

*By: Takahiro Ito and Shinsuke Tanaka*

**Journal of Development Economics (January 2018)**

**Published version (free)**

**Working paper (free)**

This study examines the effect of abolishing user fees from the maternal and child health (MCH) services on child quantity and quality in South Africa in the post-apartheid era. Exploiting exogenous variation in exposure to the policy effect, the authors find that the policy resulted in lower fertility in households and greater educational attainment of children a decade later. The absence of the effects among children not subject to the policy eliminates channels through heterogeneous pre-existing trends or unobserved concurrent changes. The important policy implications are (i) the theoretical predictions of the child quantity-quality trade-off model characterize reproductive behaviour among parents in developing countries; and (ii) MCH policy serves as a motivating force underlying the demographic transition and human capital development.

### **Severe Air Pollution and School Absences: Longitudinal Data on Expatriates in North China**

*By: Haoming Liu and Alberto Salvo*

**IZA Discussion Paper No. No. 11134**

**Published version (free)**

Little is known about how children of high-income expatriate families, often from rich nations, adapt to temporary residence in a severely polluted city of the developing world. The authors use a six-year panel of 6,500 students at three international schools in a major city in north China to estimate how fluctuation in ambient PM<sub>2.5</sub> over the preceding fortnight impacts daily absences. Their preferred estimates are based on the exclusion restriction that absences respond to atmospheric ventilation such as thermal inversions only through ventilation's effect on particle levels. A large and rare 100 to 200  $\mu\text{g}/\text{m}^3$  shift in average PM<sub>2.5</sub> in the prior week raises the incidence of absences by 1 percentage point, about one-quarter of the sample mean. They find stronger responses for US/Canada nationals than among Chinese nationals, and among students who generally miss school the most. Overall responses are modest compared to the



effect on absences from more moderate in-sample variation in pollution estimated for the US using aggregate data. Using school absence patterns as a window into short-run health and behaviour, the study suggests that high-income families find ways to adapt, likely by moving life indoors, even if temporary residence in north China comes at the expense of long-term health.



## General Education

### **The Effect of Education and School Quality on Female Crime**

*By: Javier Cano-Urbina and Lance Lochner*

**NBER Working Paper No. 24061**

**Published version**

**Working paper version (free)**

This paper estimates the effects of educational attainment and school quality on crime among American women. Using changes in compulsory schooling laws as instruments, the authors estimate significant effects of schooling attainment on the probability of incarceration using Census data from 1960-1980. Using data from the 1960-90 Uniform Crime Reports, they also estimate that increases in average schooling levels reduce arrest rates for violent and property crime but not white collar crime. The results suggest small and mixed direct effects of school quality (as measured by pupil-teacher ratios, term length, and teacher salaries) on incarceration and arrests. Finally, the authors show that the effects of education on crime for women are unlikely to be due to changes in labour market opportunities and may be more related to changes in marital opportunities and family formation.

### **Spill-overs in Education Choice**

*By: Juanna Schrøter Joensen and Helena Skyt Nielsen*

**IZA Discussion Paper No. 1139 (November 2017)**

**Published version (free)**

This paper examines how skills are shaped by social interactions in families. The authors show that older siblings causally affect younger sibling's education choices and early career earnings. They focus on critical course choices in high school and overcome the identification challenges of estimating spill-over effects in education by exploiting exogenous variation in choice sets stemming from a pilot program. The pilot induced an essentially random subset of older siblings to choose advanced math-science at a lower cost, while not directly affecting the course choices of younger siblings. They find that younger siblings are 2-3 percentage points more likely to choose math-science if their older sibling unexpectedly could choose math-science at a lower cost. They argue that the main influence of the pilot program on the younger siblings may be attributed to the social influence of the older sibling. Spill-overs are strongest among closely spaced siblings, in particular brothers, and they have a lasting impact on the



career out-comes of younger brothers. The authors argue that competition is likely one of the driving forces behind younger siblings conforming to their older siblings' choices.