# Ad hoc question Nr. 01/2016:
# "Relevant Topics in Current Economics of Education Discussions"

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This ad hoc question gives an overview of topics that are currently debated in the field of Economics of Education. Each topic is briefly introduced and backed up with key references.

### 1. Interplay of education and non-monetary or social benefits

One topic that has continuously increased in scope is the interplay of education and non-monetary or social benefits. Crime, health, marriage decisions, political and social participation and income inequality might all be indirectly affected by the level of education both at the individual and the macro level.
There are three topics that specifically arise from this broader topic:

#### *a. Estimates of the social returns to education*

One specific subtopic of the interplay of education and non-monetary or social benefits is the advancement of estimates of the social returns to education, as those reported by the OECD (2015) which allows including non-monetary, non-production external effects of education, as already established in Lochner (2011) and Oreopoulos and Salvanes (2011).

#### *b. Education and the marriage market*

Individual education affects monetary and non-monetary returns not only because it affects the probability of locating a good job, but also because it increases the probability of locating a good partner in the marriage market (Kaufmann et al., 2013). One by-product of the expansion of higher education in recent years has been increased assortative mating and a higher percentage of "power couples" – or couples where both partners have higher education – who typically locate in cities and have relatively high household earnings. Theoretical

research investigating the increase in assortative mating and its implications for the distribution of income includes work by Chiappori et al. (2009). Less has been done at the empirical level. In their leading research, Costa and Kahn (2000) have documented the increase of "power couples" in the United States, and their concentration in big cities. Skilled professionals are increasingly bundled with an equally skilled spouse. They co-locate in large cities. The presence of large numbers of highly skilled workers within a concentrated geographic area may in turn provide positive growth externalities. Smaller cities may instead experience outflows of skilled labor and therefore become poorer. The rise of power couples and their concentration in large cities may therefore be a source of increasing income disparities among households as well as among different areas of the same country.

Chiappori, Pierre-André, Sonia Oreffice, and Climent Quintana (2009). "Fatter Attraction: Anthropometic and socioeconomic characteristics in the marriage market." FEDEA Working Papers 2009-34.

Costa, Dora L. and Matthew E. Kahn (2000). "Power Couples: Changes in the locational choice of the college educated, 1940-1990." *The Quarterly Journal of Economics*, 115 (4): 1287-1315.

Kaufmann, Katja M., Matthias Messner, and Alex Solis (2013). "Returns to elite education in the marriage market: Evidence from Chile." IGIER Working Paper Series No. 489.

Lochner, Lance (2011). "Nonproduction Benefits of Education: Crime, Health, and Good Citizenship", Chapter 2 in Handbook of the Economics of Education Volume 4, by Eric A Hanushek), Stephen J. Machin and Ludger Woessmann, eds. Elsevier.

OECD (2015). Education at a Glance. Paris: OECD.

Oreopoulos, Philip and Kjell G. Salvanes (2011). "Priceless: The Nonpecuniary Benefits of Schooling," *Journal of Economic Perspectives*, 25 (2): 159–184.

## 2. Single-sex schools

There is an ongoing policy debate on single-sex schools. Should boys be taught separately? A UK Department of Education and Skills study provides a positive answer. The European Association of single-sex education (www.easse.org) argues that the American standard of co-educational education needs to be challenged, particularly for girls. According to a recent BBC report, parents often want boys in co-educational schools but reckon girls do better in single-sex establishments.

Lavy, Victor, and Analia Schlosser (2011). "Mechanisms and impacts of gender peer effects at school." *American Economic Journal: Applied Economics*, 1-33.

Lee, S., Leslie J. Turner, S. Woo, and K. Kim (2014). "All or nothing? The impact of school and classroom gender composition on effort and academic achievement." NBER Working Paper No. 20722.

Link, Susanne (2012). "Single-sex schooling and student performance : Quasi-experimental evidence from South Korea." Ifo Working Paper No. 146.

## 3. Remedial programs

A key concern of academics and policymakers in many advanced nations is the effectiveness of remedial programs in both high school and higher education. Remedial education is designed to provide students with those competencies and skills that are regarded as necessary to be prepared for their course of study and which students still do not have. In this context, remedial programs target students who are found to be academically under-prepared. There are many aspects in which these programs differ: timing, length, curriculum, evaluation system, etc. One of the challenges in evaluating the effectiveness of these programs is related to endogeneity. That is, selection into remedial education may be driven by characteristics that cannot be observed by researchers, leading to a possible downward bias in the estimated impact of remedial

programs on students' achievement. There is a growing body of research available that relies on a rigorous methodology in order to address these issues. Overall, there is mixed evidence over the impact of these programs which calls for a careful investigation.

Lavy, V. and Schlosser, A. (2005). "Targeted remedial education for under-performing teenagers: Costs and benefits". *Journal of Labor Economics*. 23(4): 839-874.

Bettinger E. P. and B. Terry Long (2009). "Addressing the needs of under-prepared students in higher education: Does college remediation work?". *Journal of Human Resources*. 44: 736–771.

Bailey T., D.W. Jeong, and S.-W. Cho (2010). "Referral, enrollment, and completion in developmental education sequences in community colleges". *Economics of Education Review*. 29(2): 255–270.

## 4. Public opinion and the acceptance and feasibility of educational reforms

A topic of recent interest is the relationship between public opinion and the acceptance and feasibility of educational reforms. Against this background, the Ifo Center for the Economics of Education has carried out a second Ifo Education Survey in 2015, a representative survey of public opinion on education topics in Germany (Woessmann et al. 2015). Besides investigating the opinion of the German population on aspects of the educational system ranging from early childhood education to higher education, the aim of the survey is to investigate how information provision might influence the public opinion. This is achieved by survey experiments, i.e. participants are provided with different information on a specific topic and then asked the same question on this topic. Comparing the answers of the groups receiving different information on the topic allows measuring how providing the population with certain information can influence the public opinion. This allows taking information-based decisions.

Topics of particular recent interest include public opinion on university tuition fees and their dependence on people's information and on income contingency and the effect of

information on public support for education spending. The survey allows drawing conclusions about the readiness for reforms in Germany.

Further surveys have been carried out in the United States (Peterson et al. 2014) and Switzerland (see e.g. Cattaneo and Wolter 2009). Combining data on the German and the American survey allows comparing how information and institutional context affects public beliefs in the two countries (Henderson et al. 2015).

Within the framework of an ERC Starting Grant, the research group of Marius R. Busemeyer at the University of Konstanz conducted a survey on individual-level attitudes and preferences towards social investments and passive social transfers in eight European countries, finding strong evidence for citizens' dislike of trade-offs. There are several papers evolving around this survey that are currently in the making, but not yet published in journals yet. Busemeyer (e.g., 2015) has also conducted several studies on public opinion on education reform in many countries based on data from different international values surveys.


Busemeyer, Marius R. (2015). *Skills and inequality: The political economy of education and training reforms in western welfare states*. Cambridge University Press.

Cattaeneo, M. Alejandra and Stefan Wolter (2009). "Are the elderly a threat to educational expenditures?" *European Journal of Political Economy*. 25(2): 225-236.

Henderson, Michael B., Philipp Lergetporer, Paul E. Peterson, Katharina Werner, Martin R. West, and Ludger Woessmann (2015). "Is Seeing Believing? How Americans and Germans think about their schools." Ifo Working Paper No. 202.

Peterson, Paul E., Michael Henderson and Martin R. West (2014). *Teachers versus the Public: What Americans think about schools and how to fix them*. Brookings Institution Press.

Woessmann, Ludger, Philipp Lergetporer, Franziska Kugler, Laura Oestreich und Katharina Werner (2015). Deutsche sind zu grundlegenden Bildungsreformen bereit – Ergebnisse des ifo Bildungsbarometers 2015. *ifo Schnelldienst* 68 (17): 29-50. www.cesifo-group.de/bildungsbarometer

## 5. International mobility of students and scientists

An important topic in higher education is the international mobility of students and scientists, which could include a particular focus on the international mobility of student entrepreneurs, including the performance of graduates from European universities in IPOs in the United States.

Even though this topic attracts interest, the current literature provides too little substance to expand it to an analytical report at the current stage.

## 6. Research funding schemes for universities

Another interesting topic evolving around higher education is the evaluations of research funding schemes for universities.

This topic has attracted interest both from the public as well as from the academic field as the need to evaluate the impact of universities on societies has grown as universities rely on public funding and at the same time the availability of data has been increasing. The challenge here is to link publicly available data to private data on university characteristics.

A proposal on this topic has been prepared by Reinhilde Veugelers and sent to the Commission on February 1. The analytical report would aim at providing a review of the recent academic studies performed to assess the impact of research funding at universities.

## 7. Long run effects of school resources

A topic of intensive recent research is the long run effects of school resources. Meta studies on the effect of school resources on short term school outcomes such as test scores have shown that increasing school resources does not automatically raise student outcomes. The evidence on long run effects of school resources, however, is mixed.

School interventions are usually evaluated on short run outcomes such as test scores. However, policy makers should mainly be interested in long run outcomes such as performance in the labor market. Interventions most likely affect students in a complex and multi-dimensional way, including cognitive skills and individual character that most compellingly can be evaluated on long term outcomes. Labor market performance depends on a variety of skills and behaviors. The intensive literature on the effect of more resources in schools used to be based on short-run effects. Recently, some studies have been able to investigate long-run effects. Combining the insight from short-run and long-run analyses, it is a potential to get deeper insight on whether more resources work, the credibility of short-run analyses, and mechanisms through which resources have a positive or no effect. While short run effects are analyzed for several European countries in the literature in the past, the studies on long run effects include, to the best of our knowledge, only studies from the US, Sweden and Norway with most of the evidence focusing on the US.

Chetty, R., J. N. Friedman, N. Hilger, E. Saez, E. W. Schanzenbach and D. Yagan (2011). "How does your kindergarten classroom affect your earnings? Evidence from project STAR." *Quarterly Journal of Economics* 126, 1593-1660.

Fredriksson, P., H. Oosterbeek and B. Öckert (2013). "Long term effects of class size." *Quarterly Journal of Economics* 128, 249-285.

Falch, T., A. M. J. Sandsør, and B. Strøm (2015). "Do smaller classes always improve students' long run outcomes?" Working Paper No. 3/2015, Department of Economics, Norwegian University of Science and Technology.

## 8. Recruiting and retaining high-quality teachers

The quality of the teaching force and its relation to the teacher labor market continues to be an important topic in the economics of education in Europe. Related to this year's work, a possible report could focus on recruiting and retaining high-quality teachers in

Europe. Direct evidence from Europe, however, is very scarce, which is why conclusions would be mainly drawn from US evidence.

Chingos, Matthew M., Paul E. Peterson (2011). “It’s easier to pick a good teacher than to train one: Familiar and new results on the correlates of teacher effectiveness.” *Economics of Education Review* 30 (3): 449-465.

Harris, Douglas N., Tim R. Sass (2011). “Teacher training, teacher quality and student achievement.” *Journal of Public Economics* 95 (7-8): 798-812.

## 9. School leadership

Similarly, the topic of school leadership, i.e. the role of principals and the management of schools, is another topic that might be of interest when trying to understand what makes schools successful. Here, the labor market of principals could be investigated, similar to the one of teachers. As for teacher recruitment, empirical evidence exclusively focuses on the US and cross-country comparisons.

Bloom, Nicholas, Renata Lemos, Raffaella Sadun, and John Van Reenen. 2015. "Does management matter in schools?" *Economic Journal*. 125(584). 647-674.

Branch, Gregory F., Eric A. Hanushek, and Steven G. Rivkin (2012). "Estimating the effect of leaders on public sector productivity: The case of school principals." NBER Working Paper 17803.

Clark, Damon, Paco Martorell and Jonah Rockoff (2009). “School principals and school performance.” CALDER Working Paper 38. National Center for Analysis of Longitudinal Data in Education Research.

Grimsson, Jason, Susanna Loeb, and Haihme Mitani (2015). “Principal time management skills: explaining patterns in principals' time use, job stress, and perceived effectiveness.” *Journal of Educational Administration*. 53(6). 773-793.

Grimsson, Jason, Demetra Kalogrides and Susanna Loeb (2015). "Using student test scores to measure principal performance." *Education Evaluation and Policy Analysis*. 37(1). 3-28.

Jacob, Brian A. (2011). "Do principals fire the worst teachers?" *Educational Evaluation and Policy Analysis*. 33(4): 403-434.

Jacob, Brian A. and Lefgren, Lars (2008). "Principals as agents: Subjective performance assessment in education." *Journal of Labor Economics*. 26(1): 101-136.

## 10. Instruction Time

Another topic which increasingly attracts interest is instruction time. Connected for example to the debate on the introduction of G8 in Germany which reduced the length of upper-track secondary school from nine to eight years and at the same time increased instruction time per week during secondary school, this topic serves a more general interest beyond this specific reform evaluation.

A cross-country study by Lavy (2015) using PISA 2006 test scores gives insights on the different effects of instruction time in the OECD and Eastern European countries as compared to developing countries. This result is backed up by a study of Rivkin and Schiman (2015) who use a different identification strategy weakening concerns about possible remaining biases from subject-specific unobserved factors that might correlate with instruction time and with achievement.

Andrietti (2015) investigates the German G8 reform in a framework that exploits the differing implementation times across German states. His results suggest that an increase in weekly instruction time by one hour in both 8th and 9th grade increased achievement in the different subjects by between 2 and 3 percent of a standard deviation. Many additional studies have by now investigated different effects of this reform.

A couple of studies such as Schneeweis (2011) and Ammermueller (2013) have also shown that additional instruction time is related to smaller achievement gaps between different socio-economic groups, including migrant and native students.

Ammermueller, Andreas (2013). “Institutional features of schooling systems and educational inequality: cross-country evidence from PIRLS and PISA”. *German Economic Review*. 14(2). 190-213.

Andrietti, Vincenzo (2015). “The causal effects of increased learning intensity on student achievement: evidence from a natural experiment.” UC3M Working Paper Economic Series 15-06.

Carlsson, Magnus, Gordon B. Dahl, Björn Öckert, and Dan-Olof Rooth. 2014. "The effect of schooling on cognitive skills." *Review of Economics and Statistics* 97 (3): 533-547.

Lavy, Victor (2015). "Do differences in schools’ instruction time explain international achievement gaps? Evidence from developed and developing countries." *Economic Journal* 125 (588): F397-F424.

Schneeweis, Nicole (2011): “Educational institutions and the integration of migrants.” *Journal of Population Economics* 24: 1281-1308.

Steven G. Rivkin and Jeffrey C. Schiman (2015). “Instruction time, classroom quality, and academic achievement.” *Economic Journal* 125 (588): F425-F448.

## 11. The future of vocational education

Vocational education (VET) is highly valued in European policy circles, see for instance the Bruges Communiquè and the Copenhagen Declaration. VET is expected to play an important role in achieving two Europe 2020 headline targets set in the education field:

a) reducing the rate of early school leavers from education to less than 10 percent

b) increasing the share of 30 to 40 years old having completed tertiary or equivalent education to at least 40 percent

This emphasis on vocational studies is not shared by all. In the United States vocational education as a separate track in secondary schools has been largely eliminated, mainly because the specific skills provided by these schools are expected to become obsolete very quickly in a world characterized by rapid and continuous innovation.

What are the private and social benefits of VET? Is this a valuable investment for young individuals?

Hanushek, Eric A., Guido Schwerdt, Ludger Woessmann, and Lei Zhang (2016). "General education, vocational education and labor market outcomes over the life-cycle." *Journal of Human Resources*, forthcoming.

Ann Huff Stevens, Michal Kurlaender, and Michel Grosz (2015). "Career technical education and labor market outcomes: Evidence from California community colleges," NBER Working Papers 21137.

Giorgio Brunello and Lorenzo Rocco, 2015. "The effects of vocational education on adult skills and wages: What can we learn from PIAAC?" OECD Social, Employment and Migration Working Papers 168.

## 12. Use of experimental designs in education

Using randomized controlled trials (RCTs) to evaluate different policies has increased and allows detecting causal relationships and effectively evaluating policy reforms. Studies using RCTs have tackled the class size question, the effectiveness of adult education vouchers on labor market success and whether financial incentives can increase learning achievements.

EENEE already published an Analytical Report on "Randomized Controlled Experiments in Education" which was written by Adrien Bouguen und Marc Gurgand. The field is developing quickly which might allow drawing conclusions from new evidence in this field.

Angrist, Joshua, D., Philip Oreopoulos, Tyler Williams (2014). "When opportunity knocks, who answers? New evidence on college achievement awards." *Journal of Human Resources* 49 (3): 572-610.

Chetty, Raj, J.N. Friedman, N. Hilger, E. Saez, D. Whitmore Schanzenbach, D. Yagan (2011). "How does your kindergarten classroom affect your earnings? Evidence from project STAR." *Quarterly Journal of Economics* 126 (4): 1593-1660.

Bettinger, Eric, Rachel Baker (2014). "The effects of student coaching in college: An evaluation of a randomized experiment in student mentoring." *Educational Evaluation and Policy Analysis* 36 (1): 3-19.

Fryer, Roland G. Jr., Will Dobbie (2015). "The medium-term impacts of high-achieving charter schools." *Journal of Political Economy*, forthcoming.

Schwerdt, Guido, Dolores Messer, Ludger Woessmann, Stefan C. Wolter (2012). „The impact of an adult education voucher program: evidence from a randomized field experiment." *Journal of Public Economics* 96 (7-8): 569-583.

## 13. Effects of computer and ICT use on educational outcomes

Schools and families spend a substantial amount of money on computers, software, Internet connections, and other technology for educational purposes. Most countries in Europe have high rates of computer access in schools, and the use of technology is ubiquitous in the educational systems. In addition to school level investment in technology, central governments frequently play an active role in providing or subsidizing investment in computer and Internet access. Families also spend a substantial amount of money on computers, software, and Internet connections each year.

A better understanding of how computer technology affects educational outcomes is critical because it sheds light on whether such technology is an important input in the educational production process and whether disparities in access will translate into educational inequality. An increasing economic literature studies the impacts of computers, the Internet, and software such as computer assisted instruction on

educational outcomes. The literature focuses on two primary contexts in which technology may be used for educational purposes, namely classroom use in schools and home use by students.

The findings from the rapidly growing empirical literature on the effects of computers, the Internet and computer assisted instruction are mixed. The implications from these findings suggest that we should not expect large positive (or negative) impacts from ICT investments in schools or computers at home.


Bulman, George, Robert W. Fairlie (2016). Technology and Education: Computers, Software, and the Internet. In: *Handbook of the Economics of Education, Vol. 5*, edited by Eric A. Hanushek, Steven Machin, Ludger Woessmann. Amsterdam: North Holland, forthcoming. http://people.ucsc.edu/~gbulman/tech_jan_2015.pdf

Barrow, Lisa, Lisa Markman, Cecilia Elena Rouse (2009). Technology's edge: The educational benefits of computer-aided instruction. *American Economic Journal: Economic Policy* 1 (1): 52-74.

Faber, Benjamin, Rosa Sanchis-Guarner, Felix Weinhardt (2015). ICT and Education: Evidence from Student Home Addresses. NBER Working Paper 21306.

Fairlie, Robert W., Rebecca A. London (2012). The Effects of Home Computers on Educational Outcomes: Evidence from a Field Experiment with Community College Students. *Economic Journal* 122 (561): 727-753.

Fairlie, Robert W., Jonathan Robinson (2013). Experimental Evidence on the Effects of Home Computers on Academic Achievement among Schoolchildren. *American Economic Journal: Applied Economics* 5 (3): 211-240.

Falck, Oliver, Constantin Mang, Ludger Woessmann (2015). Virtually No Effect? Different Uses of Classroom Computers and their Effect on Student Achievement. CESifo Working Paper 5266.

Malamud, Ofer, Cristian Pop-Eleches (2011). Home Computer Use and the Development of Human Capital. *Quarterly Journal of Economics* 126 (2): 987-1027.

## 14. The Use of Nudges and other Behavioral Approaches in Education

Behavioral economics attempts to integrate insights from psychology, neuroscience, and sociology in order to better predict individual outcomes and develop more effective policy. While the field has been successfully applied to many areas, education has, so far, received less attention – a surprising oversight, given the field's key interest in long-run decision-making and the propensity of youth to make poor long-run decisions. An emerging literature has started to investigate the behavioral economics of education. It often relates to questions about why youth and their parents might not always take full advantage of education opportunities. Behavioral barriers may be preventing some students from improving their long-run welfare. Recent but rapidly growing efforts are aimed to develop policies that mitigate these barriers, some of which have been examined in experimental settings.


Lavecchia, Adam M., Heidi Liu, Philip Oreopoulos (2016). Behavioral Economics of Education: Progress and Possibilities. In: *Handbook of the Economics of Education*, Vol. 5, edited by Eric A. Hanushek, Steven Machin, Ludger Woessmann. Amsterdam: North Holland, forthcoming. http://www.nber.org/papers/w20609

Angrist, Joshua, D., Philip Oreopoulos, Tyler Williams (2014). When Opportunity Knocks, Who Answers? New Evidence on College Achievement Awards. *Journal of Human Resources* 49 (3): 572-610.

Avvisati, Francesco, Marc Gurgand, Nina Guyon, Eric Maurin (2014). Getting Parents Involved: A Field Experiment in Deprived Schools. *Review of Economic Studies* 81 (1): 57-83.

Bettinger, Eric, Rachel Baker (2014). The Effects of Student Coaching in College: An Evaluation of a Randomized Experiment in Student Mentoring. *Educational Evaluation and Policy Analysis* 36 (1): 3-19.

Bettinger, Eric P., Bridget Terry Long, Philip Oreopoulos, Lisa Sanbonmatsu (2012). The Role of Application Assistance and Information in College Decisions: Results from the H&R Block Fafsa Experiment. *Quarterly Journal of Economics* 127 (3): 1205-1242.

Castleman, Benjamin L., Lindsay C. Page (2015). Summer Nudging: Can Personalized Text Messages and Peer Mentor Outreach Increase College Going among Low-income High School Graduates? *Journal of Economic Behavior and Organization* 115: 144-160.

Hastings, Justine S., Jeffrey M. Weinstein (2008). Information, School Choice, and Academic Achievement: Evidence from Two Experiments. *Quarterly Journal of Economics* 123 (4): 1373-1414.

Hoxby, Caroline M., Sarah Turner (2013). Expanding College Opportunities for High-Achieving, Low Income Students. SIEPR Discussion Paper 12-014. Stanford University: Stanford Institute for Economic Policy Research.