

# IV LEER Workshop on Education Economics

Leuven, March 27-29, 2018

Faculty of Economics and Business



**KU LEUVEN**

LEUVEN ECONOMICS  
OF EDUCATION RESEARCH

## Book of abstracts

This workshop on Education Economics seeks to explore the use of economic and econometric techniques to study educational issues.

The workshop is organized by the research centre *Leuven Economics of Education Research* (LEER) of the Faculty of Economics and Business at KU Leuven.



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2018

Wednesday, March 28

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**Wednesday, March 28****10.05-12.05****Room HOG 02.28****MOOCs - LLL**

Should we be massively open to MOOCs? First evidence on their impact on labour market outcomes  
**Jonatan Castaño-Muñoz and Margarida Rodrigues**

This paper investigates the effect of participation in MOOCs on workers' labour market outcomes, namely on employability and wages. Using a longitudinal dataset of learners from six Spanish MOOCs and applying a differences-in-differences approach, we find evidence that MOOCs improve workers' future employability but not their salary. We find that this positive effect is homogenous in different geographical areas but higher for individuals highly experienced in MOOCs.

Providing MOOCs: A FUN way to enroll students?

**Julien Jacqmin**

This paper assesses whether universities improve their enrollment in traditional programs, taught in-person, by providing for free online courses on a MOOC platform. For this purpose, we collect information about massive open online courses provided on FUN, a MOOC platform hosting courses from mostly French universities, and merge it with enrollment data at the university level. Controlling for various factors, we find that universities who decided to provide MOOCs see the number of newly enrolled students increase by more than 2%. Using data about the characteristics of students enrolled in online and traditional programs as well as about media coverage, we argue that two explanations are intertwined behind this positive relationship. The first relates to the improvement of the information available to students when making their enrollment decision and the second lies in the attention-grabbing event created around MOOCs that can have a persuasive impact on students' decision.

Inequality in Access to Lifelong Learning Decreases Growth. - Evidence from 22 European Countries

**Sofie Cabus**

In the wake of the 2008 financial crisis, capital intensive firms have accelerated investments in R&D in order to survive on a competitive labor market. Lifelong learning increasingly has become a recognized EU-28 education priority in response to these fast-paced technological transformations. This paper investigates whether economic recovery since 2011 has been facilitated by employees' participation in lifelong learning. Additionally, this paper explores the effects of the distribution (by income and education) of lifelong learning participation rates on growth. Data from EU LFS are used for 22 European Countries or 209 regions between 2011 and 2016. From the results it is argued that only inequality in access to lifelong learning by educational attainment decreases economic growth with 0.4 percentage points. Belgium and Germany, in particular, face disproportionately low participation rates and high human capital inequality, at least, according to the rate of investments in R&D.

Assessing the effect of Massive Online Open Courses as remedial courses in higher education

**Tommaso Agasisti, Giovanni Azzzone and Mara Soncin**

The current study aims at addressing the effect of using MOOCs with a specific goal, that of remedial education. Data refer to an Italian technical university, Politecnico di Milano, where a MOOC platform called POK (PoliMi Open Knowledge) have been launched in 2014. The strategy followed in its implementation is "MOOCs to bridge the gaps", with the purpose of creating courses to help students (and other stakeholders) to fill possible knowledge gaps. Hence, the study aims at assessing the effect of completing a MOOC about basic scientific disciplines (i.e. mathematics and physics) on the ability to pass the subsequent discipline related on-campus exam. First-year students enrolled

both in the platform and at the university campus have been considered (N=6,145). The methodology employed is propensity score matching (PSM), where propensity scores are based on students' personal and academic information in order to assess the role of MOOCs as remedial education courses.

## **Room HOG 01.10**

### **Parents and Peers**

#### The Effect of High Achieving Peers on Student Achievement: Evidence from Hungary

**Fritz Schiltz**, Deni Mazrekaj, Daniel Horn, and Kristof De Witte

This paper estimates the impact of high achieving peers on student achievement. We exploit the cherry picking of high achieving students from Grade 6 (Age 12) in traditional general primary schools due to the existence of elite schools. Estimating peer effects at the class level, we instrument the share of students who left a general primary school to enroll into an elite school by the distance from a student's home address to the nearest elite school. Instrumental variable estimates indicate moderate but heterogeneous effects on those left behind in general primary schools.

#### The role of parental education and income in children's aspirations for higher education: a causal estimation

**Tina Rampino**

We evaluate the impact of parental education and household income on 10 to 15 year olds' aspirations for higher education. OLS estimates reveal no maternal education effects but positive paternal education and household income effects. IV estimates of the model, which simultaneously account for endogeneity in parental education and household income, find no significant effects of household income on children's aspirations for higher education but positive, even though very imprecisely identified, paternal education effects. Our findings are important as policy interventions aimed at raising aspirations of poorer students will be different depending on whether educational aspirations are affected by time-invariant factors, such as the home learning environment, or are sensitive to fluctuation in household income.

#### The Evolution of Social Inequalities in the Flemish Education System

**Emilie Franck** and Ides Nicaise

Many education systems are still confronted with persisting social inequalities, the Flemish (Belgium) educational system being one of them as was shown by several PISA reports. However, to date little is known about changes in the degree of social inequality in education. Furthermore, the small body of literature on this topic merely focusses on inequalities based on students' test scores. Other outcomes (such as school well-being) remain to be explored.\nThis study considers these aforementioned gaps in the literature and examines whether social inequalities in students' test scores and school well-being have declined in 2015 compared to 2003. For this purpose, intertemporal multilevel models were applied to data from PISA (2003, 2015).

#### The effect from parental involvement in financial literacy education. Evidence from a randomized experiment.

**Joana Maldonado**, Koen De Clercq and Kristof De Witte

This paper examines the effect of parental involvement on financial literacy achievement. Using a randomized controlled trial at class level, we compare achievement levels of students in a control group (without teaching materials) and three treatment groups. A random baseline group received teaching materials without any parental involvement or homework, in a second treatment group homework without parental involvement was added, while in a third group the homework required parental involvement. The results indicate positive and heterogeneous effects of parental involvement.

**Room HOG 01.85****Performance analysis**

Monitoring the performance of education systems: a new procedure to aggregate the data with Data Envelopment Analyses

**Dovile Stumbriene**, Ana S. Camanho, Audrone Jakaitiene

The purposes of our research are to define a new procedure to aggregate the data on several indicators and to apply it to construct a composite indicator for the education monitoring. We have figured out the properties of the new procedure as high discrimination power, non-zero weights, no prior information and possibility to identify targets and peers for the assessment. Our study uses annual data (2014 and 2015 year) of 29 European countries collected from EUROSTAT and OECD databases. We went through the following five stages for the construction of composite indicators: data treatment, data normalisation, weighting, aggregation and comparison of the results obtained.

Non-parametric mixed-effects models for unsupervised classification of Italian schools

**Chiara Masci**

This study proposes an Expectation-Maximization algorithm for non-parametric mixed-effects models (NPEM algorithm) and applies it to the INVALSI data of 2013/2014 as a tool for unsupervised clustering of Italian schools. The dataset of interest reports information about 8,946 students, that are nested within 586 schools, attending grade 8 in 2013/2014. The main statistical novelties introduced by NPEM algorithm, when applied to hierarchical data, are twofold: first NPEM allows the covariates to be group specific; second, it assumes the random effects to be distributed according to a discrete distribution  $P^*$  with an (a priori) unknown number of support points. In doing so, it induces an automatic clustering of the grouping factor at higher level of hierarchy, enabling the identification of latent groups of schools that differ in their effect on student achievements. The clustering may then be exploited through the use of school level features.

Complementarities among Education Levels in Determining Firms' Productivity

**Thomas Bolli** and Filippo Pusterlay

This paper uses Swiss firm-level panel data to estimate complementarities among workers with different education levels in determining firms' productivity. We subdivide labour into four groups: lower educated workers, workers having vocational education or training, workers with a tertiary non-academic education, and workers with an academic degree. To account for possible endogeneity we exploit within-firm variation and employ a recent structural estimation technique, which considers intermediate inputs as a proxy for unobserved productivity shocks. Our results suggest that trained workers are complementary to all other labour inputs, with the only exception of workers with an academic degree.

Relative value provided by different higher education providers. A Quasi-experiment.

**Hannah White**

Understanding the relative value provided by different higher education providers is critical for both public accountability and informed student choice. The HELGA project uses linked UK administrative data to develop and evaluate a value-added measure of students' skills suitable for making comparisons between institutions. Our approach addresses two sources of selection bias by students and institutions which cause non-random assignment of students to institutions and may occur on both observable and unobservable characteristics. We draw upon a novel dataset that allows us to observe students' applications, offers, study choices, outcomes, and individual characteristics. The data enable us to identify groups of students who are quasi-randomly assigned to different institutions. This allows us to overcome the selection problems and yields unbiased estimates of the value-added of each institution. We will present a discussion of the matching methodology and our provisional findings.

**Room HOG 02.10****Inequality**

Cast into Castes? Targeting persistent Caste-based inequalities with Affirmative Action

**Arpita Bhattacharjee**

This paper analyzes Affirmative Action in higher education to investigate the presence of pull effects - if making college access easier through a quota of reserved seats can incentivize students to continue enrollment in school. In 2006, the central government in India implemented a 27 % quota for a disadvantaged caste-group, the Other Backward Classes (OBC), in all central government funded colleges. I use a difference-in-difference strategy to find a direct effect of the policy on high-school completion - a differential increase of 4.1 % points in high-school completion rate for the OBC as compared to the other disadvantaged caste group unaffected by the policy (Scheduled Castes). Using an instrumental variable (IV) strategy wherein I instrument increased access to college with this exogenous policy shock, I find that 10 % points increase in college enrollment rate increases enrollment rates in school by 5-7 % points for 13-17 year olds.

School and Labour Market Outcomes among Students of Same-Sex Households

**Deni Mazrekaj, Kristof De Witte and Sofie Cabus**

This article estimates the effect of living in a same-sex household on children's school and labour market outcomes. Using a unique administrative panel dataset from the Netherlands, the first country to legalize same-sex marriage, we find that children in same-sex households endure significant difficulties compared to their peers who live in opposite-sex households. More specifically, children in same-sex households are 4 percent less likely to obtain a high school diploma and 6.5 percent less likely to enroll into higher education than their peers in opposite-sex households. As an underlying mechanism, we observe that children mostly come into same-sex households due to divorce of a homosexual parent with a heterosexual partner. Once this is accounted for, no significant differences remain.

The effect of the refugee ratio in Dutch primary schools on educational outcomes of refugees and native children

**Cécile Magnée**

This paper uses Dutch administrative data to look at the effect of immigrant ratio on the educational outcomes of both immigrant and native students. Once immigrants enter the Netherlands they are randomly placed in a shelter location and sent to the nearest school. We can use this random placement in the first year after arrival to tackle the endogeneity problem of selection into certain areas by calculating an immigrant ratio per primary school. Descriptive results show how the availability of placement data relates to various immigrant characteristics. Preliminary regression results of immigrant ratio on final test scores and teacher track recommendations show that immigrants score higher and receive higher track recommendations when they are placed at schools with lower immigrant ratios. These results have clear policy implications, implying that policy makers should lobby for a more dispersed placement of immigrants children over schools.

Employment effects of language training for unemployed immigrants

**Julia Lang**

Language proficiency in the host country's language is an important factor for a successful labor market integration of immigrants. In this study we analyze the effects of a language training program for professional purposes on the employment opportunities of the participants. We apply an instrumental variable approach and exploit differences in the local training intensities to deal with the problem of unobserved language skills in the data. Our results show that not taking into account endogeneity of language training leads to an underestimation of the effects. Bivariate probit estimates show that language training increases the employment probability of individuals with migration background by about seven percentage points two years after program start.

**2**

**Wednesday, March 28**  
**14.05-16.05**

**Room HOG 02.28****Higher education**

The impact of pricing strategies of Hungarian universities on student choice – calculating the return on investment of tuition fees based on possible income

**Laszlo Horvath**

Investment in Higher Education is a significant decision for students and their families, one with increased risks (Avram, 2012). As Higher Education is effected by globalization, the processes of massification and internationalization change the landscape of market for post-secondary education (Halász, 2012). With the rise of national and global rankings, measurement of different aspects of higher education institutions is becoming more and more important, which in turn, is also a tool for informing potential customers (Fábris, 2017). Nevertheless student choice is a complex and multi-faceted issue, one which is influenced by many factors (e.g.: individual determinants, environmental determinants, characteristics of high-school and higher educational institutions) (Vrontis, Thrassou & Melanthiou, 2007). Around 2009 Hungarian HEIs started to gather data on graduates on a national level. As of today, there are enough data available to analyze the characteristics of graduates of different Bachelor level study programmes. One important variable would be the average monthly income of graduates which could be a signal factor for the labour market relevance and value of a specific study programme.

With this new information available, the question arises: how this information changes the pricing strategies of Hungarian HEIs and how this information influences student choice? In order to answer these questions we have gathered data on all Bachelor study programmes where the number of graduates are higher than 100 (to have a reliable group to base the information on) and collected the following information: number of institutions offering the study programme, tuition fee for fee-paying students (which could vary between and within universities), number of students who selected the study programme at the first place in the specific university, number of student who selected the study programme at the first place in the specific university, number of study points (academic achievement) that makes the student eligible for enrolment and number of enrolled students in the specific university. Our hypothesis is that universities are slow to respond to this information and only private HEIs are differentiating their tuition fees based on their labor market relevance. Another hypothesis is that students are still more influenced by the reputation of an HEI and geographical proximity than the possible return on their investment. Also, we will give an overall picture of the pricing strategies and competition between Hungarian HEIs and the value of different study programmes considering the return on tuition fees by possible income with the given degree.

**Who is Learning? A Field Experiment Comparing Three Different Incentive Schemes in the Same Educational Setting**

**Cristina Bellés-Obrero**

We conduct an RCT at a distance learning university to compare three monetary incentive schemes with different performance targets for students. The first treatment (Threshold) provides a reward for students who achieve a grade threshold, the second (Top percentile) for students in the top of their class, and the third (Improvement) for those that improve their expected grade. As students do not interact personally, the setting is particularly advantageous as it avoids possible spillovers. We find no average effects for incentives but there are interactions between types of students and incentive treatments. Interestingly, incentives foster students' strategic behavior that is triggered by the way performance is measured.

Segmentation of demand in the higher education market in Colombia using data mining techniques

**Frederick Andrés Mendoza Lozano**

In a scenario of significant growth in the market of higher education programs in Colombia, a model based on data mining techniques is proposed to characterize it using public data. It is concluded that the private higher education system reproduces social inequalities as it constraints the access to the high-quality offer by means of costs and also recruiting the best students. This modeling strategy also creates a helpful tool for the management of the programs portfolio in higher education institutions based on the socio-economic profile of the first semester students.

Efficiency of the Universities Participating in Russian Excellence Initiative "Project 5-100"

**Ekaterina Shibanova**, Mikhail Lisyutkin, Daria Platonova, Tommaso Agasisti

This study is aimed to assess the effects of participating in the Russian Excellence Initiative (Exclnt) on universities' efficiency. The Exclnt in Russia started in 2012 (so-called 5-top-100 Project) as a part of World Class universities movement. 15 universities were selected on a competitive basis in 2013, and have been receiving additional funding each year. Our study addresses the following research question: does the participation in the Exclnt (particularly 5-top-100 Project) make universities more efficient? The Exclnt's, their aims and their results are much-debated (Salmi 2009, 2016) but the evidence of how universities change their performance and efficiency due to participation in Exclnt is limited. Several studies examine research productivity changes using difference-in-difference and prosperity score matching (PSM) models. Only few studies assess the effects of Exclnt through evaluation of universities' efficiency. They examine effects of Exclnt on efficiency of universities using DEA, the Malmquist index and its decomposition. One study compare 'participants' and 'non-participants' of the Exclnt.

**Room HOG 01.10**

**Skills and norms**

Do social norms influence the private provision of vocational education?

**Andreas Kuhn, Jürg Schweri** and Stefan Wolter

A substantive fraction of Swiss training firms is willing to incur net training costs. One explanation is that firms act in accordance with the norms they are faced with in the local labor market. We ask whether the norm towards the private, rather than the public, provision of public goods influences the probability that a firm is willing to offer apprenticeship positions. We find that the training incidence is higher in communities with a stronger norm towards the private, rather than the public, provision of public goods, which we measure using local results from national-level votes on the role of the state in the apprenticeship system. This finding turns out to be robust to robustness checks and to an instrumental-variable strategy.

Perceived Nepotism and Schooling Outcomes

**Marcello Perez-Alvarez** and Holger Strulik

This paper suggests perceived nepotism as an important barrier to the development of cognitive skills as schooling outcomes. We argue that students in countries that perceive labor markets to be nepotistic experience a weaker economic motive to invest in human capital. We develop a theoretical model that links nepotism to schooling outcomes. We test the central prediction of the model by relating the PISA scores to an indicator for perceived nepotism at the country level. The findings show that, on average, an increase in one SD of the nepotism indicator decreases the PISA reading scores by 0.21 SD. The analysis implies that recruitment practices in labor markets strongly shape individual's efforts to accumulate human capital.

Linguistic skills and the intergenerational transmission of language

**Ramon Caminal, Lorenzo Cappellari** and **Antonio Di Paolo**

This paper studies the pattern of intergenerational transmission of languages in a bilingual society.

We consider the case of Catalonia, where while all Catalan speakers are bilingual, only a fraction of Spanish speakers are fully proficient in Catalan. In this environment, transmission decisions are far from trivial. We exploit the natural experiment generated by a language-in-education policy of 1983, which introduced Catalan as medium of instruction (together with Spanish) in Catalan schools, to achieve identification. The results indicate that the increase in proficiency in Catalan among Spanish speakers induced by the reform raised their propensity to transmit Catalan to their offspring.

Grade expectations: rationality and overconfidence

Jan R. Magnus and **Anatoly A. Peresetsky**

Measuring (over)confidence is not easy. Our approach is to consider students' forecasts of their next exam grades. Part of a student's grade expectation is based on the student's previous academic achievements; what remains can be interpreted as (over)confidence. We use a sample of about 500 second-year undergraduate students enrolled in a statistics course in Moscow. Our models allow us to estimate overconfidence quantitatively. Using these models we find that students' expectations are not rational and that most students are overconfident, in agreement with the general literature. Less obvious is that overconfidence helps: given the same academic achievement students with larger confidence obtain higher exam grades. Female students are less overconfident than male students, their forecasts are more rational, and they are also faster learners in the sense that they adjust their expectations more rapidly.

## Room HOG 01.85

### Organisation

Scale, school, school board

**Thomas Niaounakis** and Jos Blank

Dutch school boards (equivalent to US school districts) are administrative, governing bodies that may govern up to as many as thirty public schools. The average school board has increased sharply in size over the past decade, sparking public debate over whether their size should become regulated. In this paper, we analyze the relation between cost and both school board and school size (measured by enrolment). Earlier studies in the Netherlands have predominantly focused solely on the relation between school board size and cost. The objective of the paper is to analyze to what extent scale economies arise at the school level or at the board level, and to determine, from a cost perspective, if a maximum school board or school size can be substantiated.

Does Reducing the Length of School Cycles Affect Women's Fertility and Child Health? Quasi-Experimental Evidence from Ghana

**Prince Boakye Frimpong**

This paper exploits the exogenous variation in maternal years of schooling as a result of a comprehensive educational reform that reduced the length of school cycles in Ghana to identify the effect of female education on fertility and child health. I focus on women with equivalent educational attainment for which the reform ultimately affected school cycles' durations to identify these effects. I find a sharp decline of 0.27 and 1.07 years for the affected women in basic and secondary school, respectively. Despite this discontinuous change in schooling induced by the policy, I find that maternal years of schooling (whether basic or secondary) have no effect on fertility and children's low birth weight, and long and short term malnutrition. However, there appears to be some evidence of a positive effect in terms of reducing the probability of child mortality for women with basic education.

Testing claims that the Glen Grey Act (1894) led to higher black school enrolment and attendance

**Debra Shepherd**

This paper aims to investigate the effects that the Glen Grey Act of 1894 had on black education in the Cape Colony's Transkeian Territories. The establishment of Glen Grey District Councils in 1895,

1899 and 1903 was a means to recompense Africans for the franchise restrictions of the Glen Grey Act, giving Africans part administrative authority over territories in the Transkei, Tembuland and Pondoland. Funds raised by the council were used for schooling and district development. Several school principals and inspectors in the 1908 Select Committee on Native Education hearings claimed that districts with council status had higher enrolment and attendance. We employ data for the 1893-1909 period and difference-in-difference estimation to determine the effects of councils on these schooling indicators. In contrast to existing literature, the results indicate that Glen Grey council districts show higher enrolment and attendance, highlighting issues of co-payment and demand for education.

Are we different because we went on exchange? The impact of participation in international student exchange programs on labor market outcomes

#### **Wytse Joosten**

This paper examines the impact of participation in international student exchange programs on labor market outcomes, one year after graduation. Using OLS and IV regressions, we find a negative impact on labor market participation. Further investigation reveals that this outcome is driven by the fact that students who went on exchange tend to enroll for further, other studies rather than seeking employment or pursuing a Ph.D.. Among full-time employed students we observe a positive correlation between international exchange and gross monthly salary, but when taking potential endogeneity into account, the results turn insignificant.

#### **Room HOG 02.10**

##### **Health**

Is there a Link between Body Mass Index, Students' Expectations and Cognitive Achievement?

**Luis Diaz-Serrano** and Alexandrina P. Stoyanova

One of the most consistent links in the health and education literature is that education prevents from the risk of overweight. There are two alternative explanations. The mainstream view is that behind this link there is a causation mechanism: more educated individuals have a healthier lifestyle. A more recent and alternative explanation is that the BMI-education gradient hides a selection mechanism, which makes adolescents with high BMI are less likely to attend higher education. In this paper we test for the selection mechanism using a unique dataset gleaned from a survey carried out to 100 Catalan schools. Our IV estimates indicates that teenagers with higher BMI have lower academic aspirations and are less likely to attend high school, which is quite indicative of the intentions to go to college. We also find that students with higher BMI not only exhibit a lower cognitive achievement but also they are more likely of being diagnosed a learning handicap.

The effect of sugar-sweetened drinks on classroom behavior and cognition. A double blinded randomized controlled trial.

**Fritz Schiltz** and Kristof De Witte

It is a widely held belief that after drinking sugar-sweetened beverages, a 'sugar rush' improves performance, followed by a 'sugar crash' diminishing performance. In an education context, this relationship could suggest an important role for nutrition to influence student performance. To test this suggestion, we set up a randomized field experiment with 399 preschool children (average age 5.03 years) in 25 classes. Children are randomized within classes into treatment (sugar-sweetened beverage) and control (artificially sweetened drink) groups. Cognition and behavior is tested both before and after treatment in a double-blind manner.

Smartphone Use and Academic Performance: Correlation or Causal Relationship?

**Simon Amez**, Stijn Baert, Matteo Claeskens, Lieven De Marez, Thomas Daman, Arno Maeckelberghe, Eddy Omey, and Sunčica Vujić

After a decade of correlational research, this study is the first to measure the causal impact of

(general) smartphone use on educational performance. To this end, we merge survey data on general smartphone use, exogenous predictors of this use, and other drivers of academic success with the exam scores of first-year students at two Belgian universities. The resulting data are analysed with instrumental variable estimation techniques. A one-standard-deviation increase in daily smartphone use yields a decrease in average exam scores of about one point (out of 20). When relying on ordinary least squares estimations, the magnitude of this effect is substantially underestimated.

#### Ranking Societies behind a Veil of Ignorance

Francesco Andreoli, Nicolas Gravel, **Edward Levavasseur**

This paper develops a new and novel criterion for Equality of Opportunity, and then implements it empirically to compare how education systems in different countries tend to widen inequality of opportunity. By considering the philosophical exercise proposed by John Rawls (1971), of analysing societies behind a veil of ignorance as a question of decision theory, we are able to draw parallels between Ambiguity aversion and Inequality of Opportunity. This leads us to construct one of the first Equality of Opportunity Zonoids: an ethically robust and implementable criterion with which to compare societies on the basis of their Equality of Opportunity. In the final section of this paper we apply this criterion to TIMSS and PISA data, in order to study the varying pace at which different education systems increase inequality of opportunity, as children from different backgrounds move up the grade years.

**3**

**Wednesday, March 28**

**16.35-18.35**

#### Room HOG 02.28

##### Teacher

Teachers and Principals' perceptions of leadership results and styles: Results from a questionnaire applied to a sample of Portuguese schools

**Maria Conceição Andrade Silva, Rosário Serrão & Ilídia Cabral**

The objective of this paper is to disclose some results from the application of this questionnaire and in concrete to analyze how leadership styles relate to and predict leadership results (satisfaction, effectiveness and extra-effort) from both teachers' and Principals' perceptions. Three multiple regression models were undertaken, one for each leadership result considering as independent variables a number of constructs of Transformational, Transactional and Laissez-Faire Leadership styles, and socio-demographic variables. The comparison between the teachers and the Principals' samples, shows some dissimilarities in perceptions. For example, (i) teachers appear to consider leadership styles as highly important in explaining leadership results, but in the Principals sample this was not verified; (ii) teachers tend to consider the Constructive dimension (rewards achievement) from Transactional Leadership, as one of the most significant predictors for leadership results, but this dimension was not a significant predictor of results for Principals; (iii) on the contrary, Principals' tend to consider that a Corrective dimension of leadership (monitoring of mistakes) has the highest impact on leadership results (especially on satisfaction) – something that teachers perceptions do not corroborate. Our results provide insight about the disconnection between teachers and Principals' perceptions on how leadership styles and behaviors affect the perceived results of leadership.

Teacher quality, alternative hiring policy and student outcomes: Evidence from India

**Madhuri Agarwal, Ana Balcao Reis**

Recent research on teacher quality has highlighted the failure of specific characteristics like

qualification in identifying effective teachers. This study explores the issue of teacher hiring by making use of a policy change in government schools in India. Faced with acute teacher shortages many developing countries have shifted to alternative processes of hiring contract teachers with less entry requirements and lower salaries as a substitute to the traditional civil service regular teachers. The objective is to identify the difference in the quality of the two types of teachers in terms of student learning outcomes. Using value added approach based on a survey of 214 elementary schools in the rural region of India, it was found that there is no significant difference in the performance of the two kinds of teachers. Only when heterogeneous effects are included female teachers are most effective in improving the performance of female students compared to male teachers.

The Effectiveness of Repeated Formative Assessment by using Clicker Devices in STEM Education – Evidence from a Randomized Experiment in Physics Education

**François Molin** and Sofie Cabus

The effectiveness of frequently repeated formative assessment with clicker-based technology is evaluated in a study by using a randomized experiment in physics education in Dutch secondary education. For treated students the repeated formative assessment is operationalized through quizzing at the end of each physics lecture. Control students received traditional physics education. Findings from multi-level regressions indicate that repeated formative assessment by using clickers significantly improves academic performance on physics with nearly 0.5 points, while, at the same time, it reduces anxiety for physics with 0.38 points. Furthermore, a negligible mediation effect of anxiety for physics on academic performance is observed.

The effect of teacher training programs on financial literacy education. Evidence from a randomized controlled trial.

**Boukje Compen**, Wouter Schelfhout, Koen De Clercq and Kristof De Witte

We investigate whether teacher professional development (TPD), by means of a digital learning environment, could contribute to increased financial literacy levels of teachers and 13-15 year old students in the Flemish region of Belgium. Participating schools received innovative material focused on payment methods. Randomization was performed on the school level, and two treatment groups were compared with a control group. In both treatment groups, teachers were granted access to the learning environment, in addition to receiving a teacher guide with instructions. The treatment groups differed in whether a facilitator was present who encouraged teacher participation. Teachers in the control group solely received the teacher guide. We hypothesize that online TPD (OTPD) results in stronger increases in financial literacy scores of teachers and students, compared to the control condition. Further, since we expect that OTPD with facilitator results in more teacher engagement than OTPD without facilitator, we hypothesize that OTPD with facilitator results in stronger increases in financial literacy scores of teachers and students, compared to the control condition and the OTPD without facilitator condition. Amongst others, the analyses consist of pre-post test comparisons, evaluation of the digital learning environment's user statistics and logfiles, and in-class observations. Preliminary results are discussed.

## Room HOG 01.10

### Vocational education

The transition from vocational secondary education to professional higher education in the Netherlands  
Sofie J. Cabus, Kristof De Witte and **Koen Declercq**

We analyze the transition from vocational secondary education to professional higher education in the Netherlands. Professional higher education institutions tend to specialize and offer only a limited number of study programs at one location. We use a discrete choice approach and model the choice between the several study programs and locations of higher education institutions. We find that

distance influences the decision where and what to study. We use the model to simulate the impact of counterfactual policies on total enrollment in professional higher education and on the decision where and what to study. We assess how the supply of professional higher education institutions within a region affects enrollment. We consider a policy that increases the supply of STEM programs in vocational higher education by forcing all institutions to offer programs in STEM, and assess whether such a policy can increase enrollment in STEM programs.

**Student access to apprenticeships: An investigation of student characteristics and underlying mechanisms. Evidence from two survey experiments**

Stijn Baert, **Ilse Tobback**, Dieter Verhaest

Easing the transition from school to work, vocational education has gained attention of policy makers and researchers in many European countries. Various researchers have investigated the impact of vocational education and more specifically apprenticeships on labour market outcomes. However, the access of students to apprenticeships remains largely unexplored. To the best of our knowledge, only three studies have investigated student access to apprenticeships or internships. In this paper, we contribute to the existing literature by carrying out a vignette study in the Belgian (Flemish) labour market. Using a survey experiment, we are able to identify the crucial individual-level characteristics affecting the employers' willingness to select a student for an apprenticeship (and possibly later employment). Furthermore, the method allows us to uncover the underlying mechanisms, namely human capital theory and signaling or screening theory, driving the employers' decision.

**Employers' Preferences for IT-retrainees: Evidence from a Discrete Choice Experiment**

**Melvin Vooren**, Carla Haelermans, Wim Groot, Henriette Maassen van den Brink

This paper gives the results of a Discrete Choice Experiment (DCE) of the competencies of potential IT-retrainees. We propose to employers seven pairs of hypothetical candidates that differ on six observable skill characteristics. The results of this experiment reveal the marginal rates of substitution (MRS) of each of these skills in monetary terms. Candidates with a master's degree are valued higher than candidates with a bachelor's degree. Candidates that possess a degree in an exact field are valued higher than candidates from other disciplines. Programming experience from previous jobs is the most highly valued characteristic for an IT-retrainee. In monetary terms, it seems that employers value this previous programming experience at 39 per cent of additional starting wage. The most high-valued soft skill is listening skills, which are valued at 35 per cent of additional starting wage.

**Vocational Education Programs and First Labour Market Outcomes: a Dynamic Approach**

**Brecht Neyt**, Dieter Verhaest, and Stijn Baert

This study examines the impact of three part-time Vocational Education and Training (VET) programs on six labour market outcomes. Our contribution to the literature is threefold. First, by using unique Belgian panel data, a dynamic discrete choice model is estimated to control for unobservable differences between students in and out of part-time VET programs. Second, we distinguish between the programs' direct effects (conditional on educational achievement) and indirect effects (via educational achievement). Third, we directly compare the three part-time VET programs with each other. We find evidence for a trade-off between short term advantages and long term disadvantages in the labour market, but this only for certain part-time VET programs.

## Room HOG 01.85

### Gender

The effect of differentiated instruction and group composition in education. Evidence from a randomized controlled trial.

**Kaat Iterbeke**, Koen De Clercq and Kristof De Witte

Using a large scale randomized experiment at class level, this paper examines the effect of grouping

and differentiated instruction on in-class performance in financial education of high school children in eighth grade. Classes are randomly assigned to a control group (no financial literacy education) and a treatment group. The treatment group receives an intense four-hour financial education course which runs independently of the teacher, and where students work together in teams of two. This paper examines the impact of the group formation as we analyse the effect of heterogeneous group formation (treatment 1), homogenous group formation (treatment 2) and homogenous group formation with differentiated instruction (treatment 3). Preliminary results indicate that the group formation has significant effect on learning outcomes.

#### School and Labour Market Outcomes among Students of Same-Sex Households

**Deni Mazrekaj, Kristof De Witte and Sofie Cabus**

This article estimates the effect of living in a same-sex household on children's school and labour market outcomes. Using a unique administrative panel dataset from the Netherlands, the first country to legalize same-sex marriage, we find that children in same-sex households endure significant difficulties compared to their peers who live in opposite-sex households. More specifically, children in same-sex households are 4 percent less likely to obtain a high school diploma and 6.5 percent less likely to enroll into higher education than their peers in opposite-sex households. As an underlying mechanism, we observe that children mostly come into same-sex households due to divorce of a homosexual parent with a heterosexual partner. Once this is accounted for, no significant differences remain.

#### Gender Differences to Relative Performance Feedback: A Field Experiment in Education

**José María Cabrera and Alejandro Cid**

Individuals care about both their absolute performance and their performance relative to others. We analyze the effect of providing relative performance feedback using a field experiment with university students. Untreated students misplace themselves in the grade distribution. Poor performing students over report their placement (they say that they have a better position in the classroom ranking than they actually have). Good students under place themselves: they report that they don't perform as well as they actually do. We experimentally change the information that treated students have, so they know exactly how they perform relative to their peers. We find that the information feedback has asymmetric effects for men and women.

#### A Structural Equation Modeling Analysis of Gender, Self-concept and Mathematics and Science Performance of Grade 9 Students in South Africa

**Debra Shepherd**

The widely studied concept of stereotype threat has been shown to reduce the performance of individuals who belong to negatively stereotyped groups, and is particularly pronounced for individuals who are more strongly identified with the domain, e.g. girls who perform well in math and science. This study makes use of the TIMSS 2011 and 2015 South African data to analyse the link between self-concept, motivation and performance of grade 9 learners in math and science. Fixed-effects and structural equation modeling is used to understand the links between these latent constructs and student performance. SEM analysis reveals that the 'effect' of gender on performance operates through its positive relationship with self-concept; that is, the indirect effect of gender is greater than its direct effect on performance. Findings further indicate that the gender composition of the classroom, teacher gender and training moderate the self-concept-performance relationship.

**Room HOG 02.10****Educational choice**

Evaluating the Stability of School Performance Estimates for School Choice: Evidence for Italian Primary Schools

**Tommaso Agasisti and Veronica Minaya**

Using administrative data, this paper explores the stability of performance estimates for Italian primary schools. We first construct school performance metrics using standardized tests scores and quarterly teacher assessments. We then explore how sensitive school ratings are to the choice of performance metric and the use of different models to account for compositional differences. We also assess both cross-sectional differences in performance across schools and the persistence of these differences across cohorts. We find that even though school performance estimates are very highly correlated across models, controlling for compositional differences matters for school choice. School performance estimates are unstable across metrics, and correlations across cohorts decline over time. We conclude that before using this kind of school performance estimates for school choice, more data and research is needed to provide evidence on the sources of instability.

Freedom of school choice vs diversity

**Thomas Wouters**

School segregation is an issue in many school systems. Schools often vary widely in terms of their socio-economic and ethnic composition. The objective to make schools diverse, i.e. to make them reflect to some extent the composition of the school's environment, seems at odds with freedom of school choice. In this paper, we explore the trade-off between freedom (respecting preferences) and diversity (desegregation). In doing so, we consider the mechanism design literature, to understand which mechanisms are possible (or implied) at a specific point in the trade-off between freedom and diversity.

The Role of Unanticipated Labour Market Conditions in Graduates' Regret of Study Choice

**Melline Somers and Didier Fouarge**

Almost one in four Dutch vocational education graduates indicate shortly after graduation that they rather would have chosen a different field of study. This paper examines the extent to which the discrepancy between labour market conditions at the time of study choice and the actual labour market conditions faced upon labour market entry relates to regret of the field-of-study choice among graduates from vocational education. We show that regret among male graduates is positively and significantly related to unfavourable changes in labour market conditions: a 1%-point higher discrepancy between the field-specific unemployment rate when choosing a study programme and the unemployment rate at labour market entry is associated with an 18.4%-point greater likelihood of reporting regret. For females, we do not find such a relation. Our findings suggest that mid-term labour market forecasts by field of study provide relevant information that potentially could improve educational choices.

The causal effect of high school peers on educational aspirations of English youth

**Konstantina Maragkou**

I investigate whether the aspirations of individuals in Year 9 and 11 of school are influenced by their peers. To overcome the possible endogeneity I instrumented each individual's high school peers with their primary school peers who did not attend the same primary or high school as the individual. These "peers of peers" probably affected the peers through attendance in the same primary school but have likely never met the individual and therefore cannot have any direct effect on the individual's aspirations. Peer effects are measured through peers' achievements, socio-economic background and own aspirations. The findings identify positive and significant peer effects in some of the individuals' aspirations.

2018

Thursday, March 29

**4****Thursday, March 29  
9.50-11.50****Room HOG 02.28****Performance**

Class setting and children's non-cognitive outcomes

**Emily McDool**

Setting is a form of ability grouping which involves dividing pupils in the same cohort into classes according to ability in a specific subject. This paper provides the first evidence of setting on non-cognitive outcomes when adopting a nationally representative sample of primary aged pupils, using Millennium Cohort Study data. Fixed effects and instrumental variables methodologies are adopted to overcome potential unobserved heterogeneity and endogeneity. Setting is found to negatively impact non-cognitive outcomes, as measured by the Strengths and Difficulties Questionnaire; this effect is driven by boys. Little evidence is found for a significant impact of lowest set placement on non-cognitive outcomes.

Students' performance in higher education

**Pedro Luis Silva, Dino Alves and Luis Catela Nunes**

This paper analyses the determinants of success of undergraduate students. We use information on previous achievement and socio-economic characteristics to predict educational success at higher education as measured by a number of different outcomes. In our analysis we account for the selection problems that are likely to occur given that the students in our sample are those that were admitted and enrolled at a top school in economics and management. As main result we find that the high school average score is a stronger predictor of students' performance than the national mathematics' exam score. We also identified factors that can explain the students' dropout.

Evaluation of students' performance at lower secondary education. An empirical analysis using TIMSS and PISA data.

**Grazia Graziosi, Tommaso Agasisti, Kristof De Witte and Francesco Pauli**

Lower secondary school is a key stage of educational path since it gives the best opportunity to strengthen basic skills and to protect students against the risk of lack of competences and educational failure in the transition between primary and upper secondary school. Preteen students go through a complex shift in their social, physical and intellectual development, as they leave childhood behind and prepare for adult responsibilities. These years are a critical point for maturation as children's roles in school and society change (OECD, 2011). The present paper aims to investigate the net impact of lower secondary education on the level of literacy in mathematics, using the international assessment of educational systems provided by TIMSS in 2007 and PISA in 2012, across OECD countries and partner.

Analysing the determinants of Higher Education Systems' performance in a multidimensional perspective – a Structural Equation Modelling approach

**Tommaso Agasisti and Alice Bertoletti**

RQ1: Which are the determinants of HES performance, and how are they interrelated with each other  
 RQ2: How the relationships between the performance measures of HE systems and its determinants varied over time, in the period considered (1995-2015)?

**Room HOG 01.10****Choice and Advice**

## The Determinants of Education Advice

Didier Fouarge, **Bart de Koning** and Annemarie Künn-Nelen

Choosing a study programme is a complex process in which the prospective student's preferences, aptitudes, but also the labour market prospects play an important role. Rarely does a student make the choice entirely on his or her own, however, as peers and parents often provide advice. In this paper, we study the determinants of education advice by presenting a hypothetical choice scenario to Dutch intermediate vocational education graduates. In this scenario, respondents are asked to advise a prospective student between two study programmes that differ on a number of attributes. The hypothetical choice scenario allows us to strictly control the environment and have respondents make multiple choices, making causal inference feasible. We show that how well the prospective student's preferences match with the study programme is the most important determinant of the advice given. The likelihood of finding a job comes second, followed by the match with aptitudes and the growth possibilities after graduation. We also show that advice depends on the way in which the advisor made his or her own study programme choice: respondents are more sensitive to attributes they considered in their own decision. Lastly, we show that employed advisors' sensitivity to labour market information depends on how satisfied they are in their jobs. We find that those less satisfied are less inclined to advise study programmes with bad prospects.

## Performance at school and performance at university: what is the link?

**Daphne Nicolitsas**

This paper is concerned with trying to assess the high school preparation of economics students. More specifically the paper attempts to answer the following questions: First, are maths or verbal skills more important for the academic performance of economics students. Second, we want to find the impact that the introduction of the threshold for admission had on high school and university performance of students enrolled at University. Finally, we investigate the impact on time to degree of the restriction on the length of studies.

## Do Personal Computers Increase University Participation?

**Likun Mao**

This paper returns to the issue and uses a large longitudinal dataset in the UK to provide new evidence on the impact of home computer investment on one important educational outcome, university attendance. We find that students who received a personal computer between age 15 and 17 have a three percentage point higher probability of studying for a university degree at age 18 or 19, conditional on a variety of individual and family controls. Regarding possible mechanisms, we find that educative behaviour such as doing homework on home pc explains around 16 percent of the treatment effect. Playing computer games hardly affects the estimates, suggesting little offsetting impact.

## Persistency in Teachers' Grading Biases and Effect on Longer Term Outcomes: University Admission Exams and Choice of Field of Study

**Victor Lavy and Rigissa Megalokonomou**

Recent research focus on what shapes gender differences in academic achievements and in university field of study. In this paper we focus on how teachers' gender role attitudes and stereotypes influence the gender gap by affecting the environment at school. We explore the extent to which teachers' gender bias in high school influences students' academic performance in high-stake exams that determine admission to universities and on students' choice of university field of study. We use data from large number of high schools in Greece and measure teachers' bias as the difference between a student's school exam score in 11th and in 12th grade and her national exam score. We then define a teachers' bias measure at the class level by the difference between boy's and girl's average gap between the school score and the national score.

**Room HOG 01.74****Impact evaluation**

A sporting chance: on the impact of sports participation on subsequent earnings

**Geraint Johnes**

Matching methods are used to conduct a causal analysis of the impact of participation in sporting activities while at university on subsequent earnings once graduated and in employment. The analysis employs an innovative longitudinal dataset, Futuretrack, which follows UK students from upper secondary education through higher education and on to the labour market. The results indicate a positive causal effect of sports participation on earnings of around 5 per cent.

The Impact of a Personal Development Plan Program on Students' Skills, Performance and Behaviour. Evidence from a Randomized Evaluation

**Lenka Fiala, P. Dalton, E. van der Heijden, and D. van Soest**

We study the impact of a personal development program for freshmen at a university. This program consists of regular mentoring sessions, workshops, and assignments to help students organize their time, learn new skills, and reflect on their own plans. We show that this program is effective in improving students' academic performance, but it does not have spillovers to other, personal domains. We also identify the channels through which the program succeeds: the participants set more goals, adjust their expectations and beliefs about reaching these goals, and report feeling more in charge of their success (in contrast to being subject to God, or destiny).

School, Church and Media: Differences in student achievement in civic education in bilingual school system of Estonia

**Kaire Poder, Triin Lauri and Anu Toots**

Estonian students are ranked very high in international comparisons (i.e. PISA reading, mathematics and science scores and civic education scores), a significant difference between the achievement scores of Estonian- and Russian-language communities exist. We show that 30 % of the variance of students can be explained by the school language, while the formal rules in schools (school level variables) do not affect much of the outcomes. Despite of the fact that trust in classical media channels is low in both sides of the language divide, trust in media channels is especially low among Russian school students and this has an effect on their scores. Similarly but other way round acts the religious belonging variable. Thus we speculate that civic knowledge gap of Russian language school students is neither explained by individual level "classical" factors such as parental background nor school level factors. Instead, by attitudinal factors like trust and media and religious attainment.

The legacy of the fallen empires and regional differences in educational outcomes. Assessing the effects of historical partitions on student achievement using RDD and PSM.

**Mikołaj Herbst and Piotr Wójcik**

A growing body of research shows that the historical legacy may affect today's socio-economic performance of regions because of some persistent institutional setting, inherited from the times when borders configuration was different from the present one. We attempt to assess the effect of 19th century partition of Poland on the present regional divergence in educational outcomes using the RD design. We find out that there is a significant and positive effect of the former Austrian partition on the student achievements. The observed effect cannot be explained by different level of the present educational inputs. Building up on the hypotheses formulated in some earlier studies we elaborate on the institutional legacy as the main explanatory factor for the persistent differences in the educational performance using a self-designed survey of parents.

**Room HOG 00.85****Elementary education**

## The Effects of Early Childhood Education and Care Quality on Children's Non-cognitive Skills

**Georg Camehl**

This paper investigates the causal effects of ECEC-quality on children's non-cognitive skills in Germany. The analyses are based on the National Educational Panel Study (NEPS), a nationally representative study with a focus on educational outcomes. Children's outcomes are assessed when the child is around five years old. I use within-center quality variation of ECEC-groups to identify the causal effects of ECEC-quality on child non-cognitive skills. In the German context, assignment into groups with different quality levels generates plausibly exogenous variation in ECEC-quality. This study provides evidence of a beneficial effect of educational and play materials available in the group on social skills as measured by the strengths and difficulties questionnaire (SDQ). This result is of considerable interest to policy makers, as these structural features are relatively easy to improve compared to other quality aspects such as interactions between teachers and children.

## Effect of Corporal Punishment on Early Childhood Outcomes

**Abhradeep Maiti** and Debarshi Indra

In this paper we explore the impact of corporal punishment on young children's academic outcome. Even if corporal punishment in schools is banned in a developing country such as, India, the law may not be adequately enforced. Several arguments have been proposed against the use of corporal punishment in schools. It is argued that corporal punishment produces bad outcomes in both the short run and the long run. Instead of instilling good behavioral traits in children, corporal punishment leads to more delinquent behavior. Corporal punishment in schools does not make students more attentive or motivated. However, so far there is no comprehensive empirical study that shows how the application of corporal punishment at schools affects children. Using a dataset from India, we show that corporal punishment in schools has a significantly negative impact on children's academic performance. To tackle the problem of endogeneity, we use an instrumental variables method.

## Assessing the Performance of Indian States in the Provisions of Elementary Education: What DISE Data Reveals?

**Sunil Kumar**

Based on the data provided with District Information System of Education (DISE), the study aims to assess the performance of Indian states in the provision of primary and upper-primary education. We use the DEA-based sequential bootstrapped meta-frontier approach with undesirable output. The novel feature of this approach is that it provides the bias-corrected efficiency scores for individual states considering the heterogeneity and undesirable output. The empirical results reveal wide variations in the educational development efficiency levels across Indian states. The general category states are found to be closer to the meta-frontier; and the inefficiency primarily stems from not operating closer to the meta-frontier rather than due to relative inefficiency (i.e., inefficiency relative to the group frontier). The results of bootstrapped truncated regression suggest that the variations in efficiency levels are explained by infrastructural and school-specific variables.

**Room HOG 00.74****Disadvantaged students**

## The longer-term effect of spring schools on grade retention in Dutch secondary education: A regression discontinuity approach

**Carla Haelermans**, Joris Ghysels and Mélanie Monfrance

This paper evaluates the effectiveness of spring schools as an instrument to reduce grade retention in Dutch secondary education. A spring school is an intensive remedial teaching intervention during

regular holiday periods in spring break intended to avert grade retention. We use school rules regarding grade retention as assignment variables in a fuzzy regression discontinuity design on a large dataset of students. We evaluate whether participation in the spring school effectively reduces a students' likelihood of repeating a grade and whether they obtain adequate marks in the following school year. For longer term effects, we analyse grade retention again, more than one year after participation. We find evidence that spring schools reduce grade retention, but we only find these effects for girls, both in the short and in the longer run.

#### Identifying vulnerable groups. An application to financial literacy

**Kenneth De Beckker**, Kristof De Witte and Geert Van Campenhout

Targeted policy interventions are more effective than one size fits all initiatives. This paper proposes the use of k-means cluster analysis to identify vulnerable groups with respect to financial literacy. Using a sample of 12 countries, we distinguish 4 groups and examine their socio-economic characteristics. The results suggest that individuals in the most vulnerable groups are on average, single, low-educated, unemployed and earn a low income. This contrast with those in the strongest group: individuals with the highest financial knowledge, financial behaviour and financial attitudes scores are on average highly-educated males who live together with a partner. Financially speaking they earn a high income and hold several financial products. Applying the insights from this paper on a national scale will not only lead to more effective but also to more efficient policy initiatives to improve financial literacy.

#### Mismatched workers, job search and quit intention: a structural equation model approach

**Zainizam Zakariya**, Noor Al Huda Abdul Karim, Noor Fazlin Mohamed Noor

This article explores the effects of job mismatches on quit intention in Malaysia mediated through on-the-job search behavior. Using Co-Workers Externalities Survey (CWES), between 19% and 45% of the total 2,479 respondents were classified as being mismatched in their jobs. Meanwhile, 1/3 of workers were actively looking for a job and over half of the respondents had intention to leave their jobs. Using SEM, we found the effect of job mismatches on quit intention were all negatives but the effects of the mismatches on job search behavior were all positives. The results suggest that although the job mismatched workers tend to look for another job while on working, they are unlikely to leave their jobs than that of well-matched.

#### School bullying and accountability in education policy: Evidence from Japan

Shun-ichiro Bessho, **Atsuyoshi Morozumi** and Ryuichi Tanaka

This paper examines the role of accountability of policymakers in the acknowledgement of school bullying. Using the differential timing of a recent institutional reform in cities and towns within Tokyo, Japan, we show that when education policymakers are made more accountable, the number of bullying recognised (and dealt with subsequently) increases significantly. This is consistent with the hypothesis that when bullying is a key social issue the public cares about, policymakers under increased accountability pressure make more effort to grasp the state of school bullying.

### Room HOG 01.85

#### Investment

#### Financing Education Abroad: A Developing Country Perspective

**Gega Todua**

This paper establishes stylized facts on existing government-funded scholarship and loan programs in developing countries that support education abroad. We find that scholarship programs more frequently select students based on merit criteria, target graduate study level, and require recipients to return than loan programs do. We build a two-country student migration model to explain these facts. Our model suggests that the explanation for these facts can be students' uncertainty about their own ability and the risk of failure at their studies abroad.

The effect of additional resources for disadvantaged students: Evidence from a conditional efficiency model

Kristof De Witte, Mike Smet and **Giovanna D'Inverno**

Inequalities in educational and lifelong learning opportunities prevent individuals from reaching their full potential and their personal satisfaction. To reduce the impact of disadvantaged backgrounds on educational achievement, many policies have been promoted. Among them, the Flemish Community of Belgium offers an interesting setting given the inequality level experienced by its educational system. Specifically, the Flemish Ministry of Education enacted a program to provide additional funding to schools with a significant proportion of disadvantaged students. These additional resources are allocated according to an exogenous cut-off. We exploit this information to evaluate the effect of additional funding for disadvantaged students on educational outcomes by using a conditional efficiency analysis. Particular attention is devoted to the impact of socio-economic background variables. Our analysis relies on administrative data on students in secondary education in Flanders.

Do households consume more when they invest in education?

Carmen Ainaa and **Daniela Sonedda**

We exploit the exogenous variation generated by a university reform to investigate whether and to what extent non-durable consumption responds to changes in children's years of schooling. On average, one more year of education increases household non-durable consumption by 0.30 log points. Our findings suggest that education is a production rather than a normal consumption good producing potential life-time income gains in terms of both higher income and lower probability of negative income shocks. Through this mechanism, an exogenous shock in the offspring's years of schooling raises overall non-durable consumption instead of exclusively affecting the composition of the consumption bundle.

Mark rank influence on students' educational expectations and attitudes in Italian classrooms

**Emanuele Fedeli**

On a daily basis, teachers assign marks to evaluate students' academic trajectories. These feedbacks reflect individual performance, participation, effort, behavior, and subjective preferences of teachers. We argue that teachers' grading produces a hierarchy with consequences on students' outcomes, once individual ability is controlled. Focusing on 10° grade of Italian educational system and adopting classroom fixed-effect and a within students across subjects placebo strategy, we identify that classroom hierarchy is related, positively, with attitudes toward mathematics and intention to invest in tertiary education but, negatively, with attitudes toward dropout. Furthermore, we show that peer pressure of rank is stronger for girls than boys and it varies across track's "prestige". Robust checks and falsification tests confirm the findings.

**Room HOG 02.10**

**Higher education**

Is Well Begun Half Done? Evidence from Educational Production Functions of University Students

**Carmen Aina**, Lorenzo Cappellari, Marco Francesconi

We focus on the role played by a student's first-year performance in determining his/her success in the university career by analysing four individual outcomes stratified by pre- and post-reform regime (i.e. probability of graduating, of graduating with top marks, within the minimum period, with top marks and within the minimum period). Production function estimates suggest that first year inputs (i.e. portion of exams passed and average mark of the exams) are powerful predictors of the ultimate success of the undergraduates. Results also show complementarity between the measures of quantity and of quality, and no evidence of catching up in students' performance over their careers. Finally, changes in the rules of progression from one year to the next can considerably reduce the risk of graduating not on time.

The transient and persistent efficiency of Italian and German universities: a stochastic frontier analysis.

**Tommaso Agasisti** and Sabine Gralka

Despite measures on the European level to increase the compatibility between the HE sectors of the member states, the recent literature exposes variations in their efficiencies. To gain insights into these differences we split the efficiency term according to the two management levels each university is confronted with. Utilizing a recent advancement in the method to measure efficiency, we separate short-term (transient) and long-term (persistent) efficiency, while controlling for unobserved institution specific heterogeneity. While the first term reflects the efficiency of the individual universities working within the country, the second term echoes the influence of the country specific overall HE structure. The cross-country comparison displays if the overall efficiency difference between countries is related to individual performance of their universities or their HE structure. This allows more purposeful policy recommendation and expands the literature regarding the efficiency of universities in a fundamental way. Choosing Italy and Germany as two important illustrative examples we can take advantage of a novel dataset including characteristics of institutions in both countries for an exceptional long period of time from 2001 to 2011. We show that the Italian universities exhibit a higher overall efficiency value than their German counterparts. With the individual universities working at the upper bound of efficiency in both countries, the overall inefficiency as well as the gap between the countries is caused by persistent, structural inefficiency. To expedite a true European Area of Higher Education future measures should hence aim at the country specific structure, not solely at affecting the activities of single universities.

Does the efficiency of higher education institutions matter for regional economic development?

**Egorov A.**, Zinchenko D. , Leshukov O.

The goal of this research is to estimate the overall economic performance of regional higher education systems in Russia and their contribution to regional economic growth. The methodology of research also allows to justify several important hypotheses about territory accessibility of higher education, and about importance of higher education in the regions with different structure of gross regional product in order to formulate policy recommendation for development of regional networks of HEIs.

The Effect of the Language of Instruction on Academic Performance

**Juliana Bernhofer** and Mirco Tonin

With the growing international mobility of students, it is becoming more and more common to study in a language other than the native one. The aim of this study is to use the unique features of a comprehensive and unique dataset provided by the Free University of Bozen-Bolzano to explore the impact of the language of instruction on students' performance, as measured by their grade.