The background is a dark, textured surface, possibly black or dark grey, covered with scattered pieces of colorful chalk. In the upper left, there are large, messy smudges of purple and pink chalk. In the center, a simple smiley face is drawn with a blue circle for the head and a pink curved line for a smile. Several pieces of chalk in various colors (yellow, blue, pink, green, orange) are scattered around the drawing. On the right side, two more pieces of chalk, one orange and one purple, are visible. The overall scene suggests a creative or educational activity.

# **PROCEEDINGS**

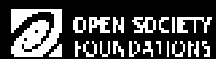
**of the XXIX Meeting  
of the Economics  
of Education Association**

**Zaragoza**  
**July 8-9, 2021**

**María Jesús Mancebón Torrubia**  
**Gregorio Giménez Esteban**  
**José María Gómez Sancho**  
**Javier Valbuena Gómez**  
**Beatriz Barrado Vicente**  
**Adriano Villar Aldonza**  
**(Eds.)**

# AEDE

ASOCIACIÓN  
DE ECONOMÍA  
DE LA EDUCACIÓN



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# PROCEEDINGS

## of the XXIX Meeting of the Economics of Education Association

### Zaragoza

8 - 9 / Julio 2021

**María Jesús Mancebón Torrubia**

**Gregorio Giménez Esteban**

**José María Gómez Sancho**

**Javier Valbuena Gómez**

**Beatriz Barrado Vicente**

**Adriano Villar Aldonza**

**(Eds.)**

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**Chairman:** María Jesús Mancebón Torrubia, University of Zaragoza  
Beatriz Barrado, University of Zaragoza  
Gregorio Giménez Esteban, University of Zaragoza  
José María Gómez Sancho, University of Zaragoza  
Domingo Pérez Ximénez de Embún, University of Zaragoza and AIREF  
Javier Valbuena Gómez, University of Zaragoza  
Adriano Villar Aldonza, University of La Rioja.  
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Sara M. González-Betancor, University of Las Palmas de Gran Canaria  
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Sylke Schnepf, European Commission's Joint Research Centre  
Rosa Simancas Rodríguez, University of Extremadura  
Kristof de Witte, KU Leuven and Maastricht University

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## Presentación

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La Asociación de Economía de la Educación (<http://www.economicsofeducation.com>) fue fundada en Barcelona el 30 de marzo de 1992, con objeto de agrupar a profesionales e investigadores que centren su interés y dedicación en temas relacionados con el campo de la Economía de la Educación. Es una asociación sin ánimo de lucro, de carácter voluntario y sus fines son los siguientes:

- a) Promover y difundir los estudios de Economía de la Educación y formar y perfeccionar expertos en esta materia.
- b) Promover contactos e intercambios profesionales, confrontando los trabajos e investigaciones sobre el tema entre las diversas personas e instituciones interesadas en el mismo, tanto nacionales como de otros países.
- c) Organizar, por sí sola o en colaboración con otras organizaciones o entidades, congresos o reuniones y otras actividades científicas de Economía de la Educación.
- d) Editar publicaciones relacionadas con la materia y mantener o promover la formación de bibliotecas especializadas sobre la misma.
- e) Promover la formación de una base de datos estadísticos homogénea y procurar su mantenimiento y actualización.
- f) Cualquier otra función relacionada con el campo específico de la Economía de la Educación, quedando excluido todo ánimo de lucro.

Desde 1992, las Jornadas de Economía de la Educación han venido celebrándose bajo la dirección de la Asociación de Economía de la Educación (AEDE). En el año 2020, se eligió la Universidad de Zaragoza como sede de las XXIX Jornadas de la AEDE. La pandemia de COVID-19 obligó a cancelar la cita y posponerse a 2021, año en el que las jornadas se llevaron a cabo de forma virtual.

Este libro electrónico contiene los resúmenes de las ponencias presentadas durante la celebración de las XXIX Jornadas de la AEDE.

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## Presentation

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The Economics of Education Association (<http://www.economicsofeducation.com>) was founded in Barcelona on March 30th 1992, with the aim of grouping academics who, together with researchers, directed their efforts primarily to issues related to the Economics of Education. It is a non-profit organization, performed on a voluntary basis and it serves the following purposes:

- a) To promote and disseminate studies of Economics of Education, as well as provide training and retraining of experts.
- b) To encourage professional contacts and exchanges, sharing the work and research on the subject among the various individuals and institutions interested in it, both in Spain and abroad.
- c) To organize -alone or in collaboration with other organizations or entities- conferences or meetings and other scientific activities on economics of education
- d) To publish literature related to the subject and maintain or promote the creation of specialized libraries.
- e) To promote the development of a homogeneous statistical database and ensure it is maintained and updated.
- f) Any other function related to the specific field of Economics of Education, with non-profit purposes.

Since 1992, the Economics of Education Association (AEDE) has annually organized the Economics of Education Meeting. In 2020, the University of Zaragoza was chosen as the venue for the XXIX Meeting of the AEDE. The COVID-19 pandemic forced the appointment to be canceled and postponed to 2021, year in which the sessions were held virtually.

This electronic book contains the summaries of the papers presented during the celebration of the XXIX Meeting of the AEDE.

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## Introducción

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El presente libro de actas recoge los resúmenes de todos los trabajos presentados en ellas. Se trata del segundo libro de actas de estas jornadas tras la decisión de la Asamblea de Socios de 2018 de no continuar editando la colección de Investigaciones de Economía de la Educación, que venía compilando una selección de las comunicaciones presentadas durante las jornadas anuales desde el año 2006.

A las XXIX Jornadas asistieron 95 investigadores, presentándose un total de 85 comunicaciones, de naturaleza tanto teórica como aplicada, distribuidas en 20 sesiones paralelas.

Con respecto al idioma de las presentaciones, 69 fueron en lengua inglesa y 16 en castellano, manteniéndose así la tendencia de internacionalización de las Jornadas de AEDE experimentada durante los últimos años. Aproximadamente el 65% de los investigadores provenían de centros de investigación extranjeros, repartidos entre 26 países de América, Europa, África y Asia.

El profesor Ludger Woessmann (Universidad de Múnich e Instituto de Economía de la Educación del Centro de Economía Laboral IZA) pronunció una conferencia magistral en la que analiza el papel de la tutoría para paliar las desventajas familiares en la adolescencia. La profesora Sandra McNally (Universidad de Surrey) fue la encargada de la segunda conferencia magistral del encuentro, en la que compartió con los asistentes algunas reflexiones sobre la formación profesional de los jóvenes.

Queremos cerrar esta introducción haciendo llegar nuestro agradecimiento al conjunto de personas y entidades que han hecho posible el éxito de las XXIX Jornadas de Economía de la Educación. En primer lugar, a la Universidad de Zaragoza y, más concretamente, a la Facultad de Economía y Empresa y al Departamento de Economía Aplicada por su apoyo organizativo. En segundo lugar, a nuestros principales sponsors, el Instituto de Estudios Fiscales y la Open Society Foundations, por su apoyo financiero. En tercer lugar, al Comité Científico de las Jornadas, por su rigurosidad y puntualidad en el trabajo de evaluación de más de 158 resúmenes y de 118 comunicaciones. En cuarto lugar, a la Junta Directiva de la AEDE, por su acompañamiento y asesoramiento durante la organización y desarrollo de las Jornadas. Finalmente, a mis compañeros del Comité Organizador. Hemos formado un gran equipo, en donde cada uno ha aportado su grano de arena, para que todos y todas hayamos podido disfrutar de estas Jornadas. Sin la colaboración de este equipo estas Jornadas no hubieran sido tan exitosas.

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**María Jesús Mancebón Torrubia**

**Coordinadora del Comité Organizador de las XXVIII Jornadas de AEDE**

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## Introduction

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This book of proceedings gathers the summaries of all the papers presented. This is the second book of proceedings after the decision of the 2018 Members' Assembly not to continue editing the collection called Investigaciones de Economía de la Educación, which had been compiling a selection of the papers presented during the annual meetings since 2006.

The XXIX Meeting was attended by 95 researchers presenting a total of 85 papers, both theoretical and applied in nature, distributed among 24 parallel sessions.

With respect to the language of the presentations, 69 were in English and 16 in Spanish, thus maintaining the trend of internationalization of the AEDE Conference experienced in recent years. Approximately 65% of the researchers came from foreign research centres, spread over 26 countries in America, Europe, Africa and Asia.

Professor Ludger Woessmann (University of Munich and Institute for Economics of Education of the IZA Center for Labor Economics) gave a keynote lecture in which he analyses the role of mentoring in alleviating family disadvantage in adolescence. Professor Sandra McNally (University of Surrey) was in charge of the second keynote lecture of the meeting, in which she shared with the attendees some reflections on vocational education for young people.

We would like to close this introduction by expressing our gratitude to all the people and organisations that have made the success of the XXIX Meeting on the Economics of Education Association possible. Firstly, to the University of Zaragoza, especially to the Faculty of Economics and Business and to the Department of Applied Economics, for their organisational support. Secondly, to our main sponsors, the Instituto de Estudios Fiscales and the Open Society Foundations, for their financial support. Thirdly, to the Scientific Committee of the Conference, for its rigorous and punctual evaluation of more than 158 abstracts and 118 communications. Fourthly, to the AEDE Board of Directors, for their support and advice during the organization and development of the Conference. Finally, to my colleagues of the Organizing Committee. We have formed a great team, where everyone has contributed their grain of sand, so that all of us have been able to enjoy this Conference. Without the collaboration of this team, this Conference would not have been so successful.

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**María Jesús Mancebón Torrubia**

**Chair of the Organizing Committee of the XXVIII AEDE Meeting**

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GEORGE PSACHAROPOULOS  
EMILIANA VEGAS  
VICTORIA COLLIS



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# 1

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## Fracaso escolar y deserción

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## School Failure and Dropouts

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### Returns to higher education and dropouts: a double machine learning approach

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SARAH MCNAMARA  
Zew, Mannheim

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This paper provides estimates of the short-term individual returns to higher education (he) in the United Kingdom (UK) for a cohort of new graduates, focusing on differences in labour market outcomes between those who never attended some form of tertiary education, those who dropped out without completing a qualification, and those who completed their course of study. Thus far, the literature on labour market returns for dropouts is relatively sparse, and most studies focus on the effects of graduation. However, a partial he-experience may be beneficial both to the individual and in terms of public investment in he if participation is rewarded in the labour market even in the absence of a completed qualification. For the purpose of this study i focus on individual returns, and use double machine learning (dml) techniques to compare differences in unemployment rates, occupational status, and hourly wages. I find that, on average, individuals who drop out of he are less likely to be employed than both graduates and those with no he experience, though the difference is more pronounced for males. In terms of wages, male dropouts who are employed command an hourly wage premium of 8%, on average, compared to their peers with no he experience. This wage premium does not exist for female dropouts, whose wages are statistically indistinguishable from those with no he experience. On the other hand, female dropouts have an occupational prestige score similar to their graduate peers, and are more likely to be employed in an occupation with a higher occupational status than otherwise comparable highschool graduates with no tertiary education.

KEYWORDS: university education, higher education, graduation, dropout, returns to education

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## Spain and dropout: a structural problem

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Dropout has been at the core of the education debate in Spain for many decades due to the high dropout rates which this country presents and the high influence that this issue has on later life outcomes. However, most studies fail in analysing this problem due to the endogeneity of the dropout variable when explaining certain outcomes, such as skills or earnings. Because of that, in the present work we study the influence of early dropout on later life outcomes for the Spanish population, i.e. literacy and numerical skills and earnings, employing PIAAC 2012 data and a fuzzy regression discontinuity design. In order to make this identification strategy work, we focus on a transition period from an education law without dropout age limit to another law which obligated students to be 14 years-old to dropout. Our results for the cohort under analysis indicate that dropping out is negatively associated to literacy and numerical skills in approximately 1.5 standard deviations, but it does not have influence future on earnings.

Keywords: dropout; literacy skills; numerical skills; earnings; fuzzy regression discontinuity.

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## The effect of a compulsory schooling leaving age increase on students' educational paths

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I study the effects of the increase in the compulsory schooling law (csl) leaving age from 15 to 18 years old, that happened in Portugal in 2009, on students' educational paths – namely, graduation probabilities and school track choices. The Portuguese case provides a setting to study its effects on low-achieving students – a group for whom the effects of csl changes should be the highest. The policy determined that students enrolling in the 7th grade (or lower grades) in the academic year of 2009/10 would be subject to the new csl – needing to stay in school until finishing the 12th grade, or turning 18 years old – while those enrolling in the 8th grade (or higher) in the same academic year would still be under the old csl and could leave school when finishing the 9th grade or turning 15 years old. As such, there is a group of students from the same grade-cohort in the academic year of 2008/09 (the year before the policy was implemented) for which their academic achievement in that year (marginally) determined whether they were exposed to the new csl or not. Students enrolled in the 7th grade in 2008/09 that were (marginally) retained had to repeat the 7th grade in the subsequent academic year and were, therefore, exposed to the new csl, while students in the 7th grade in 2008/09 that were (marginally) promoted to the 8th grade still fell under the old csl. Assuming the effect of grade retention versus promotion on outcomes remained constant in the analysis period, I use data from students at this retention margin from other grade-cohorts to isolate the causal effect of the csl from the effect of retention on outcomes. Preliminary results suggest substantial heterogeneity in both compliance with the new csl and other outcomes

KEYWORDS: Compulsory education age, Difference-in-differences, School dropout

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## Primary vs secondary school interventions

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Investments in human capital are complementary over time. This implies that the productivity of later investments is higher, the larger the amount of early investments. However, it also indicates that early investments are not productive if they are not followed up by later investments. Thus, the question of the optimal timing to intervene remains. The aim of this article is to analyze the effectiveness of educational interventions that take place at different ages in an individual's life. To do so, we analyse two programs implemented in public schools in the madrid region in spain: one targeting primary schools and the other targeting secondary schools, which offer remedial education to students with poor performance and from disadvantaged socioeconomic environments at state-funded schools. We find that these interventions have a differential impact for primary versus secondary education: the increase in math scores is higher in primary schools. A plausible explanation is that whereas the impact of the intervention in primary schools persists some time after the school joins the program, the effect in secondary schools is just transitory.

KEYWORDS: primary and secondary school, remedial interventions.

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# 2

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## Mercado de trabajo

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## Labour Market



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## Skill depreciation and the role of continuing education for older workers: securing your job or moving up the career ladder?

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Hard skills do not age well, as shown by high skill-depreciation rates and vintage effects, while—in contrast—soft skills preserve their value over time. This paper examines what role continuous education might play in this context. It analyzes whether the labor-market effects of continuing education for older workers differ depending on the amount of hard and soft skills that workers use in their occupation. To determine how strongly the workers' occupation focuses on hard skills relative to soft skills, we use machine-learning-classified skill information from a large sample of job advertisements. Linking this skill information to continuous education data reveals novel and insightful patterns: the more hard-skill-focused occupations are, the greater are positive employment effects associated with the participation in continuing education, i.e., in these occupations continuous education hedges workers against unemployment risks. In contrast, the more soft-skill-focused occupations are, the greater are positive wage effects associated with continuing education participation, i.e., in these occupations continuous education unlocks upward career options for workers and thereby increases wages.

KEYWORDS: lifelong learning, skill depreciation, labor market returns.

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## IT skills, occupation specificity and job separations

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This paper examines how workers' earnings change after involuntary job separations, depending on the workers' acquired IT skills and the specificity of their occupational training. We expect that IT skills can have opposing effects depending on their type. They can reduce or amplify earnings losses of workers with specific occupational skill bundles. We use information on all skills that workers acquire during their occupational training and categorize them along two independent dimensions. On one hand, we categorize IT skills into (a) generic IT skills useful in any context (e.g., online research) and expert IT skills (e.g., specific programming languages). On the other hand, we look at all skills of an occupation and distinguish between skill bundles that are more specific or less specific compared to the skill bundles that are needed in the overall labor market. We find clearly opposing correlations for IT skills in specific occupations: generic IT skills are positively correlated with earnings after involuntary separations, expert IT are negatively correlated with earnings after involuntary separations for workers in specific occupations.

KEYWORDS: IT skills, human capital specificity, vocational education and training

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## Early labor market outcomes of children in same-sex families: evidence from population data.

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This paper provides first evidence on a large representative sample of early labor market outcomes of children who lived in a same-sex family during childhood. We exploit a unique administrative dataset from the Netherlands, where we observe year by year the address where every child (and parent) lives since birth. By matching household member identifiers with demographics, we are able to distinguish whether the child has lived in a same-sex or a different-sex family while growing. We focus on the population of children born between 1995 and 1999, who are old enough to first approach the labor market. We find no significant differences in labor market performances between children in same-sex families and children in different-sex families, both for the sample of part-time and full-time workers. Our results suggest that children who lived in a same-sex family during childhood are likely to perform just as well as children who grew up in a different-sex family, when entering the labor market.

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## Do reforms aimed at reducing time to graduation work? Evidence from the Italian higher education system

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This paper investigates how time to college completion affects subsequent labor market outcomes. We study a recent reform in which the Italian government consolidated the teaching offer in all universities in an attempt to decrease time to graduation. We use an event study design providing evidence that the reform was successful in reducing the proportion of students graduating late from a second-level degree. We exploit the same identification strategy to investigate the effect on several different labor market outcomes. Finally, we provide evidence that the reform did not cause a shock of the labor market supply. We believe that our findings have implications for the current policy debate as national governments are increasingly investing in public programs explicitly aimed at reducing time to graduation.

KEYWORDS: policy evaluation, graduates, labor outcomes.

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## El éxito de los pilos: un estudio de caso

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Ser Pilo Paga (SPP) fue un programa innovador que permitió el ingreso de un gran número de estudiantes de bajos recursos y buen desempeño a universidades colombianas de excelencia y, en particular, a universidades privadas tradicionalmente de élite. En este documento, se examina el desempeño académico de estos estudiantes y su influencia sobre el resto de la población estudiantil en una universidad privada regional, la Universidad del Norte. El trabajo empírico contó con una base de más de 4.000 estudiantes del Programa SPP que se matricularon en esta universidad. Los resultados muestran que los estudiantes de SPP no se rezagaron respecto a sus compañeros. Además, su presencia tuvo externalidades positivas sobre el desempeño académico de los estudiantes de ingresos más altos.

KEYWORDS: Ser Pilo Paga, desempeño académico, Saber 11, Saber Pro, externalidades

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## Educational trajectories from youth to early adulthood

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In this paper, we study the educational trajectories of students from the most populated Spanish region (Andalusia). The objective is to establish the linkage between educational attainment at age 23-24 and alternative measures of academic performance measured when the students were teenagers. In particular, we analyse the probability of completing compulsory education, vocational training (lower and upper) and higher education (university studies, Master Degree and PhD Programmes). The methodology employed is based on ordered logistic modelling, given the ordinal nature of the dependent variable. Results show that academic performance is significant to explain educational attainment and condition the effect of socioeconomic characteristics on educational decisions. Specifically, 1 standard deviation increase in academic performance raises the likelihood of achieving university over 6.2 percentage points. By contrast, we do not identify a significant effect of non-cognitive outcomes on the demand of post-compulsory education. These results highlight the importance of academic attainment in early stages to determine educational pathways.

KEYWORDS: Educational attainment, socioeconomic background, academic performance

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## Endogamia universitaria en España: exploración de las causas institucionales y de contexto

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Aunque existe una profusa discusión en España sobre la problemática de la endogamia universitaria (y su definición) y las causas que la generan, parece no existir una base amplia de literatura que estudie el fenómeno de manera cuantitativa. Así, en esta comunicación, analizamos los determinantes que influyen en los niveles de endogamia académica en el Sistema Universitario Público Español. Para ello, en primer lugar, se revisan las diferentes maneras de medir la endogamia universitaria en la literatura, tomando para el análisis el indicador más empleado, que hace referencia a aquellos profesores que trabajan en la misma institución universitaria en la que realizaron su tesis doctoral. En segundo lugar, se realiza una revisión de la literatura internacional sobre esta temática, con el fin de identificar los posibles factores desencadenantes que debemos tener en cuenta al diseñar la estrategia de análisis cuantitativo. Esta revisión internacional, supone sin duda un valor añadido de la comunicación, pues sintetiza los aspectos clave del fenómeno para aquellas personas interesadas en esta problemática, tanto desde la perspectiva más académica, como en la esfera de los responsables institucionales y los hacedores de políticas públicas. Finalmente, se plantea un análisis de mínimos cuadrados ordinarios para determinar cuáles son los factores que pueden influir en el nivel de endogamia académica de las universidades españolas, diferenciando entre: factores institucionales – edad de la universidad, tamaño, edad media del profesorado, especialización por áreas de conocimiento (politécnicas, medicina, y ciencias sociales) y las normas de progreso y permanencia del PDI; y factores de contexto: PIB per cápita provincial, ubicación insular y nº de universidades en la Comunidad Autónoma. Los resultados confirman la hipótesis que se produce en otros países: la endogamia académica está más ligada a los sistemas de acumulación de poder del profesorado (chair-holder) que a cualquier otra motivación.

KEYWORDS: endogamia, movilidad académica, sistemas universitarios, política universitaria, gobernanza universitaria, España

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## The economic impact of skills: new evidence from apprenticeship plans

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In many countries, apprenticeships represent an integral part of the employment landscape. However, evidence on the value of apprenticed workers' skills on the labor market is scarce, mostly due to a lack of accurate skill measures. This paper proposes a new, objective measurement of skills exploiting the special institutional setting of the German apprenticeship system. The setting is unique in the sense that skill requirements of apprenticeships are codified in state-approved apprenticeship plans, which are standardized across the whole country. We construct highly-detailed measures of the skill content in apprenticeship occupations by using text data from the apprenticeship plans. We link our occupational skill intensities to extensive labor-market data to investigate the returns to skills developed through the apprenticeship system. Conditional on a large number of controls for ability, non-cognitive skills, and family background, we find that workers who completed an apprenticeship in occupations with higher cognitive, digital, or social skill intensities earn higher wages. In terms of magnitude, a ten percentage point increase in an occupation's digital skill intensity (e.g., corresponding to the distance from a plant mechanic to a technical product designer) is associated with an increase in wages by 14%. We also show that these workers have substantially higher numeracy skills, suggesting that the wage increases are not just driven by the signaling value of completing apprenticeship training in more cognitively, digitally, or socially demanding occupations. Our results indicate that cognitive, digital, and social skills do not only pay off in high-skilled occupations – as shown for cognitive and social skills by Deming and Kahn (2018) in the U.S. – but also in a low- and middle-skilled apprenticeship context.

KEYWORDS: returns to skills, cognitive skills, apprenticeship plans, labor market, earnings.

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## Employers' differential response to immigrants' human capital in Canada

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Most studies investigating poor earnings performance of immigrants implicitly assume that human capital endowments determine actual earnings by which the wage gap can be observed and analyzed. In this study we claim that this assumption is not validated by evidence and that the wage gap should be analyzed by earning potentials rather than actual wages, which are subject to market imperfections. We apply a two-tier stochastic wage frontier, which allows us to separate potential wage earnings from actual wage earnings and identify how much of the observed wage gap between immigrant and native-born workers is attributable to departures from their potential wage earnings as well as to differences in human capital endowments. Using the 2006 population census data, our results suggest that, although the ethnic background associated with specific source countries plays an important role in the observed wage a significant part of the wage gap between foreign-educated and Canadian-educated immigrant (and native-born) workers is not driven by the employers' risk aversion but by differences in human capital endowments and occupational matching quality

KEYWORDS: Risk aversion, return to education, occupational mismatch

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## Natural disasters and human capital: the case of Yogyakarta's earthquake

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Natural disasters are a major threat to human development. The disruptive effects on educational systems may operate through different channels, such as life losses, the destruction of facilities, forced displacement of families, worsened living conditions, among others. Still, little is known on the medium- and long-term effects of these shocks on educational outcomes. In this paper, we assess the impact of the 2006 Yogyakarta earthquake on a set of educational outcomes. We merge data from the U.S. Geological Survey, the Indonesian National Board for Disaster Management, and the Indonesia Family Life Survey in order to link the intensity of the shock, measured through the Modified Mercalli Intensity index, to the personal and family level information for each individual. Using a difference-in-difference framework, we estimate the impact of the earthquake on years of education and the completion rates of different educational levels separately. We find a negative impact of the earthquake on individuals' educational outcomes, these effects being larger for those who were younger at the moment of the earthquake

KEYWORDS: : human capital; human development; natural disasters; education inequalities.

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## Proxying economic activity with daytime satellite imagery: filling data gaps across time and space

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This paper develops a novel procedure for proxying economic activity across time periods and spatial units, for which other data is not available. In developing this proxy, we apply machine-learning techniques to a unique historical time series of daytime satellite imagery dating back to 1984. Compared to night lights intensity, another satellite-based proxy that economists commonly use, our proxy has the advantages of more precisely predicting economic activity over a longer time series and at smaller regional levels. We demonstrate the proxy's usefulness for the example of Germany, where data on economic activity is otherwise unavailable, in particular for the regions belonging to the former German Democratic Republic before reunification. However, our procedure is generalizable to other regions and countries alike, and thus yields great potential for analyzing historical developments, evaluating local policy reforms, and controlling for economic activity at highly disaggregated regional levels in econometric applications

KEYWORDS: Daytime satellite imagery, Landsat, machine learning, economic activity, land cover

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## Human capital and labour market resilience over time: a regional perspective of the Portuguese case

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This paper examines the influence of human capital on labour market resilience in the seven portuguese nuts-2 over the period 1995-2018. We define resilience as the ability of regional employment to recover from a recessionary shock over the business cycle. We use the local projection (lp) methodology applied to a svar model with three variables - employment (alternatively, hours worked, employees with less than 9 years of schooling, with at least 9 and less than 12 years of schooling and with more than 12 years of schooling), human capital (average years of schooling) and real gdp and the output gap as the switching variable for the identification of recession and expansion regimes. An advantage of the lp method in estimating the effects of shocks to human capital is its flexibility in dealing with state/regime dependency. We will thus explore svar specifications that condition the response of the labour market to two scenarios: (a) the shock to human capital occurs during recessions; and (b) the shock to human capital occurs during expansions. The comparison of the employment responses to human capital shocks between the two regimes is informative about the degree of resilience of the labour market. We find evidence of: (i) distinct effects in terms of the sign and amplitude of human capital shocks on regional employment according to the level of educational attainment of the employees; (ii) labour market resilience and jobless recoveries in several regions; and (iii) different regional reactions of human capital to gdp shocks depending on the regime.

KEYWORDS: employment resilience, human capital shocks, local projections, structural vars, nuts2, portugal

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## New information, new interests? The effect of an occupation finder for dual vocational education and training on students' occupational choice

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When making life-defining decisions such as choosing an occupation, individuals should be well-informed. This study analyses the effect of a low-cost, personalised online information intervention on the number of occupations that students considering dual vet choose for work shadowing. Using data from yousty.ch, the largest online platform in switzerland for dual vet positions, i exploit their introduction of an occupation finder – a tool for suggesting occupations matching student's stated preferences – with a fuzzy regression discontinuity design. Findings show that the information intervention broadens the set of considered occupations.

KEYWORDS: choice; occupation; information; dual vocational education and training

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## Does ethnic diversity in schools affect occupational choices?

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This paper analyzes how ethnic diversity of peers in compulsory schooling affects student non-educational outcomes, i.e. labor market outcomes and specifically occupational choices. We argue that the ethnic diversity of the peer group can affect occupational choices in at least two ways. On one hand, ethnic diversity might hinder the development of cognitive skills by creating congestion effects (lazeur, 2001), thereby pulling students away from stem occupations that comparatively require high cognitive skills. On the other hand, ethnic diversity might foster the development of non-cognitive skills (rao, 2019; burn 2012), thereby leading students to sort into occupations such as social-, care-, and health-oriented (sche-oriented) occupations that require comparatively more of these non-cognitive skills. We investigate these hypotheses using novel longitudinal register data on the population of students in switzerland between 2012 and 2016 ("längsschnittanalysen im bildungsbereich"). These data allow us to measure the ethnic diversity of each student's peer group during compulsory schooling. Moreover, for the large subset (roughly two thirds) of students who start vocational education and training after compulsory schooling, we observe their choice of one out of approximately 220 training occupations. We classify occupations as sche-oriented as opposed to stem-oriented according to the isced fields of study classification. For identification, we exploit the population variation in ethnic diversity across cohorts within schools. Our results show that the ethnic diversity of the peer group increases the likelihood of students choosing a sche-oriented occupation. In contrast, we find no reduction in the likelihood of choosing a stem-oriented occupation. Our paper contributes to the ongoing debate on the effects of ethnic diversity in education. While previous research has mainly analyzed short-run, educational outcomes (e.g., test scores), our analysis focuses on longer-run labor market outcomes, i.e. occupational choices with important implications for future labor market outcomes and careers.

KEYWORDS: occupational choices, ethnic diversity.

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# 3

## Eficiencia en Educación

### Efficiency in Education

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## Policy Evaluation and Efficiency: A Systematic Literature Review

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This paper investigates the role of frontier estimation techniques in the policy evaluation literature. Covering all articles in SCOPUS and EBSCOHOST databases up to January 2021, it provides a systematic review of the literature dealing with policy evaluation in the field of efficiency and performance analysis using frontier estimation methodologies. First, we present a detailed overview of the studies investigating the effect of specific policies or reform on the efficiency across different sectors. Second, we describe which techniques have been used for measuring efficiency and to assess policy evaluation. Third, we discuss future lines of research.

KEYWORDS: systematic literature review, policy evaluation, efficiency, DEA

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## Educational efficiency across Spanish regions: A comparative analysis beyond the average achievement

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A quality educational system should be able to improve the average academic achievement among its students and at the same time, to ensure that all of them reach basic educational standards. Hence, an educational system should maximize their students' academic results (efficiency) while minimizing the differences in educational terms among them by compensating the most disadvantaged students (equity). Although both educational dimensions, efficiency and equity, should be simultaneously analyzed, the majority of the existing studies consider these educational targets separately. In this context, this paper aims to include equity measure(s) into the efficiency analysis of the Spanish educational system following a comparative approach. Since the Spanish regional governments (comunidades autónomas) are responsible for the educational process and the management of educational resources, the study of the educational system in Spain has only sense at the regional level. To measure educational efficiency, we apply a recent methodological approach proposed by Aparicio and Santín (2018). This method allows us to estimate and compare the performance of schools from different groups (regions in our case), assuming they use different technology of production. Consequently, we can compare the technical gap between regions, in order to identify the best performers. As an equity measure, we include the number of non-poor in terms of education per a hundred of students (those above the minimum threshold defined by the OCDE). To do this, we use the data provided by the successive PISA reports. The results obtained will bring about, for the first time, a full picture of the regional educational systems considering two key dimensions: efficiency and equity.

KEYWORDS: efficiency, equity, education, cross-regional analysis, Spain, PISA

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## Estimating the causal impact of an intervention on efficiency in a dynamic setting

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The present study assesses the impact on the efficiency of a funding program that aims to foster educational equality. In particular, the paper develops a novel methodology to estimate in a dynamic setting the causal impact of a policy on efficiency. Classical efficiency techniques evaluate multidimensional performance but ignore the endogeneity issues in policy evaluations. We develop an indicator which accounts for the dynamic performance of the observations and for the possible correlation between the treatment status and the efficiency score. Besides, we propose a decomposition of the indicator to disentangle the effect of the policy on the performance of the observations from the effect of the policy on the environmental harshness that the observations have to face. This innovative design allows us to introduce the notion of causality in efficiency studies and to shed light on the mechanisms underlying the inefficiency at the unit and policy level.

KEYWORDS: data envelopment analysis, policy evaluation, causal inference, difference-in-differences, school resources.

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## Multigenerational educational mobility in Europe: evidence from SHARE

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In our research, we empirically quantify persistence of education attainment across multiple generations in different European countries and we test several theories of multigenerational persistence in different institutional contexts. Using survey of health, ageing and retirement (SHARE) data that contain information from 16 European countries about educational attainment of three generations (respondent, spouse of respondent, both parents of respondent and children of respondent). Apart from education we also utilize information about occupation and wealth of respondents, time death of grandfather (the date of death of the grandfather in connection with the age of the grandchildren), which allows us to directly test importance of the actual presence of grandparent in the family.

KEYWORDS: multigenerational mobility, grandfather's effect, inequality in education.

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## An assessment of pupil and school performance in primary public education in Uruguay

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This paper discusses the potential improvements in pupil's academic results and decomposes them into pupil's own effort and school value added for public primary school pupils in Uruguay. Using student level data of 2017, we revisit the multi-frontier technique originally introduced by Silva-Portela and Thannassoulis (2002) and later extended by Thieme et al. (2013). Accordingly, we estimate a robust multilevel non-parametric model including variables related with the students, the schools but also the environment where the schools operate to test the influence of these contextual variables in student's academic performance. We find that on average, pupils miss 19.2% of their potential achievement, mainly driven by their own under-performance. The extent of output students does not obtain because of school effects is mainly explained by suboptimal resource availability at the school level rather than schools' own managerial ability. Besides, the shortfall in school's contribution to efficiency mainly affects those students in the least advantaged socioeconomic contexts and those with lower test scores.

KEYWORDS: educational performance, multilevel metafrontier approach, order-m, primary education

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## Long-term efficiency of public services provision in a context of budget restrictions. An application to the education sector

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This paper proposes an extension of the non-parametric long-term evaluation of efficiency, the conditional panel data DEA model, which takes into account the panel structure of the data and, at the same time, incorporates the role of contextual factors in the estimations. Its application to the education sector for the period analyzed (2009-2014) shows the utility of this method, since it obtains more representative efficiency scores for the complete time-period, is more robust to external shocks, and allows to improve the decision-making process in the allocation of the budget available for the public education sector. The results are clear and present an evolution towards the convergence of the efficiency scores, precisely in a time period when hard budget constraints reduced in a severe way the resources available for public

KEYWORDS: public education, efficiency, DEA, panel data assessment, budget constraints, convergence

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## Efficiency of secondary schools in Ecuador: a value based DEA approach

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This paper uses value-based data envelopment analysis (vbdea) to assess the performance of 159 secondary schools from Ecuador by employing data from the PISA for development programme. The use of the vbdea goes beyond traditional data envelopment analysis (dea) approaches by converting inputs and outputs into value scales. This might be particularly useful not only for handling the preferences of the decision-maker (dm) but also for tackling negative or null data (this can happen e.g. in the case of the socio-economic status index). The vbdea approach converts inputs and outputs into multiple value functions that are then aggregated using a weighted sum (Maut's additive model), which allows each decision-making unit (dmu) to choose the weights associated with these value functions in a way that minimizes the difference of value to the best dmu (min-max regret rule). Besides, the employed methodology also enables performing a robustness analysis of the results obtained to assess how changes in those measures with intra-school variability (i.e. with more than one observation for each school like test scores and the socio-economic status of students), might affect the efficiency scores of schools. The factors considered to perform the efficiency assessment of each school include the teacher student ratio, an index which reflects the quality of basic school infrastructures and instruction resources, and the socio-economic status of students, as inputs, and maths, reading and science scores as outputs. Overall, our findings suggest that the average efficient school has mean scores across all competences above the scores attained by the average national school, but below the OECD average and in the average of Latin American and Caribbean countries. In addition, we have concluded that schools operating with the lowest efficiency scores usually need to make a greater effort to improve results in math when compared to reading and science competences. Finally, schools more often selected as a reference in terms of best practices and which are classified as robust in terms of efficiency are not necessarily performing with high test results.

KEYWORDS: efficiency, Ecuador, DEA, PISA development

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## El rol del conflicto armado en la eficiencia de la calidad educativa

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Este estudio analiza la relación entre el conflicto armado y la eficiencia educativa en 912 municipios de Colombia, a través de los resultados en el examen estandarizado Saber 11 y la aprobación escolar entre los años 2014 y 2018. El principal objetivo es calcular la pérdida potencial de eficiencia en los municipios debido al conflicto armado, para esto se utiliza un enfoque no paramétrico robusto condicional, incorporando el conflicto armado como variable de entorno. Los resultados muestran tres hallazgos. Primero, la vinculación de niños o adolescentes al conflicto armado tiene mayor relevancia en el deterioro de la eficiencia educativa que los homicidios a causa de este. Segundo, tanto el conflicto local como el de los vecinos son significativamente relevantes para el análisis de la problemática. Y tercero, se encuentran ineficiencias en promedio, para los municipios con menor nivel de desarrollo de 4%.

KEYWORDS: Educación, eficiencia, modelo condicional, conflicto armado

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# 4

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## Determinantes del rendimiento educativo

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## Determinants of educational performance

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### Impact of bullying on academic performance. A case study for the community of Madrid.

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Bullying is a problem that affects children and teenagers around the world and its repercussions can endure throughout adult life. Its prevalence is, in part, a product of the lack of information and the paucity of studies which analyse the wide-ranging consequences for the individuals involved. The main objective of this research is to study the incidence of bullying on the academic performance of students in education centres in the Madrid region. The databases used are those of competency tests carried out on all 10th grade students in Madrid during the year 2017. These external assessment tests evaluate Spanish language, English language, mathematics, and geography and history. Along with these tests, the students, their families, their teachers and head teachers complete comprehensive questionnaires. To analyse all these data, we carry out a multilevel methodological approach to identify the quantitative association of bullying with academic performance and to estimate the probability that performance is affected by the level of bullying that exists in the education centres. The results indicate that bullying has a negative impact on all the competencies evaluated, that the probability of a lower academic performance increases in environments where there is bullying and that bullying can affect students with low or high academic achievement in different ways, depending on what competency is evaluated.

KEYWORDS: bullying, cyberbullying, academic performance, case study.

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## Ulling victimization and homicide rates: a cross-national study using PISA data

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School bullying is widely recognised as a public health concern, with severe consequences on students' well-being and educational attainment. Although individual, family, and school factors have been found to be consistently associated with bullying victimization, contextual factors have not been thoroughly examined. The present study examines the connection between crime rates and being bullied in 55 countries. We combined information on homicide rates at the country level with the data on bullying, retrieved from the programme for international student assessment (PISA) 2018 questionnaire. Multilevel regressions in three levels (student, school, and country) were performed. We found that studying in schools situated in countries with higher homicide rates is associated positively and significantly with being bullied at school. Moreover, analysis by gender showed that males are more susceptible to being bullied at any level of homicide. In middle-income countries, the differences between males and females are more pronounced for low levels of crime.

KEYWORDS: perceived employability; national values; training practices, human capital.

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## ¿En qué medida beneficia un estilo de enseñanza moderno a mi hijo? ¿Por qué sus profesores actúan así? Evidencia empírica a partir de PISA 2018

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El auge de las prácticas dirigidas a promover la activación cognitiva y la participación activa dentro del aula en detrimento de otras técnicas más tradicionales en los últimos años es el epicentro de un debate que gira en torno a la efectividad de las mismas y que se encuentra en pleno apogeo. Es por ello que, con este trabajo, se ha tratado de arrojar un poco más de luz sobre este tema analizando empíricamente las causas y consecuencias de este tipo de estrategias más modernas para el caso español a partir de la información contenida en PISA 2018. Respecto a las causas, y a partir de los resultados obtenidos mediante un modelo logit con efectos fijos, se observa que la probabilidad de que un profesor se considere moderno disminuye si el centro es público o si emplea habitualmente estrategias consideradas más clásicas, entre otros resultados. Empleando esta información, y haciendo uso de las técnicas del propensity score analysis, la segunda parte del trabajo centra su atención en analizar el efecto que este tipo de estrategias educativas tienen sobre los resultados obtenidos por los alumnos en matemáticas y ciencias y, como novedad, analiza también su efecto sobre habilidades no cognitivas tales como la motivación, la cooperación, el espectro autista y el miedo al fracaso escolar.

KEYWORDS: estilo de enseñanza moderno; PISA 2018, propensity score matching; habilidades sociales.

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## Crime around schools and violence inside. A case study using PISA data

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We combined information on crime rates and socioeconomic characteristics at the district level with the data on peer physical victimization, school climate and characteristics of student-teacher relationships, retrieved from the programme for international student assessment (PISA) questionnaire. We focused on the case study of Costa Rica, where 6,866 adolescents were surveyed, with an average age of 15 years, attending 205 schools, located in 154 districts. In the estimated probit model, the introduction of a variable representing districts' social development and of fixed effects, at school and district levels, helped us to deal with unobserved heterogeneity. We found that attending schools situated in districts with higher homicide rates and cocaine confiscations increase the probability of suffering victimization by peer physical aggression at school, while attending schools with high economic, social and cultural status, that offer sports activities for students and which were situated in the districts with a high level of social development, decrease the possibility of peer physical victimization. These results suggest that interventions beyond school level are needed to ensure the safety of students inside of schools and thus effective preventive programs should address crime at the neighborhood level.

KEYWORDS: : community crime; victimization; adolescents; Costa R

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## Are books children's best friends? Impacts of access to book corners and reading diaries on literacy scores and self-control: evidence from a field experiment in Nan, Thailand

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This paper uses the randomised control trial to evaluate whether providing children's books to rural Thai primary schools can improve students' scores and self-control traits. We randomly divide randomly chosen schools into three groups. Schools in the first treatment group receive the same set of books covering general tales to science books for children. Schools in the second treatment group get the tailor-made companion reading diaries, in addition. The two treatments help distinguish our two hypotheses, namely resource constraint and lack of incentive. We find that controlling for pretest scores, older students in the first treatment schools enjoy statistically significant higher scores than the control group, and weaker students benefit more. Reading diaries only complement stronger students at the younger ages. Post-evaluation interview with the teachers helps elucidate that while children in the first group take pleasure in reading at their own choice, with the reading diaries to complete children in the second group feel that those books act like an extra set of textbooks and enjoy reading less. In addition, having to complete the reading diaries may reduce time spent on usual homework. As such, improving access to children's books alone without additional incentive mechanism can help improve scores. They potentially expose students to more enjoyable reading and analytical practice complementary to what they learn in classrooms.

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## The effect of after school tuition on students' national university entrance exam performance in Iran

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In Iran, primary, secondary, and higher education are offered freely by the government to create equality of opportunity. Besides being free, public universities generally offer higher quality than private institutions. High demand for the limited number of seats in public universities has resulted in an extremely competitive university entrance exam called *concour*. In 2017, 930,000 candidates took *concour* to win 133,000 university seats. Students often engage in intensive test preparation during high school to ace in *concour*. Private tutoring and mock exams are two common strategies used at this stage. To the extent that paid services matter for *concour* performance equality of opportunity would be eroded. Instead of being a mechanism for allocating students based on academic preparation and ability, *concour* becomes an ordeal that only the well-endowed families could endure. In this paper, we empirically examine the effect of after-school education on *concour* performance using an internet-based survey. In 2017 we texted personalized invitations to the survey to 130,000 students who took *concour* in 2010. As a result, we collected 6,000 completed surveys that provide information on family background, education, and occupation of these individuals. We combine the survey with administrative information on *concour* rank and high school GPA. This is a unique dataset in Iran and could be used to shed light on the relationships between family background, educational background, private tutoring, *concour* performance, and labor market outcomes. Primary results show that after controlling for a whole host of variables, private tutoring, mock exams, and prep books have significant effects on *concour* rank. If we increase the number of private tutoring sessions by one standard deviation, the *concour* rank will decrease by 0.03 standard deviation. Furthermore, students who take mock exams and use prep books compared to those who do not, respectively get 0.08 and 0.09 standard deviation lower ranks. Overall, in this paper we find strong evidence that equal opportunity is largely a myth due to the intensive competition in *concour*. Poor families have limited access to higher education, and this limitation affects students' future income.

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## All together now? The expansion of comprehensive schooling in Germany

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While Germany has historically relied on a rather strict ability tracking of students after four years of primary school, there has been an expansion of comprehensive schooling which varies significantly among the German states. In this paper, we exploit school reforms in three federal states between 2006 and 2010 to assess the impact of comprehensive learning from a multi-faceted perspective. We first analyze the effects of comprehensive schooling on student achievement, measured by test scores in grade nine, and educational attainment. The second set of outcomes examines the effect of comprehensive schooling on non-cognitive skills and pro-social behavior. In a last step, the paper embarks on the question whether comprehensive schooling leads to more intergenerational mobility. We find that students in comprehensive schools performed better in grade nine test scores. In addition, comprehensive schooling increases educational attainment by 0.2 school years, while lowering the correlation between students' educational attainment and the educational attainment of their parents. Although the effects on pro-social behavior are less clear (albeit positive), our results show that comprehensive learning can improve both equity and efficiency of school systems.

KEYWORDS: Comprehensive schooling, ability tracking, peer effects.

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## La competencia científica en países en desarrollo: determinantes y relación con el medioambiente

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En el año 2015, la Asamblea General de las Naciones Unidas asumió la Agenda 2030 con el objetivo de garantizar una vida sostenible, pacífica, próspera y justa, estableciendo 17 Objetivos de Desarrollo Sostenible (ODS) (UNESCO, 2017). Según dicha declaración, para transitar por el camino del desarrollo sostenible, es necesaria una transformación profunda en la forma de pensar y actuar. Es necesario que las personas tengan competencias científicas, esto es, no sólo conocimientos en ciencias, sino también habilidades, valores y actitudes hacia la ciencia, que les permitan contribuir hacia los objetivos planteados. Todo esto, que se conoce como Educación para el Desarrollo Sostenible (EDS), es crucial para conseguir los ODS. Ahora bien, las competencias científicas no dependen exclusivamente de lo que los estudiantes aprenden en el sistema educativo formal de sus países. También dependen de otros factores del entorno en el que se ubican. Esta investigación tiene como objetivo identificar los factores que determinan la competencia científica de los estudiantes en países en desarrollo, prestando especial atención al capital social y cultural y a las condiciones medioambientales del entorno en el que se ubican. Para ello usamos los datos aportados por PISA-D en los países participantes: Camboya, Ecuador, Guatemala, Honduras, Paraguay y Senegal (OECD, 2018b), y se usa la metodología de modelos lineales multinivel. Los resultados permiten concluir que el logro en la competencia científica depende también del capital social y cultural de la familia del estudiante y del capital cultural y social de las escuelas. A mayor puntuación en estos capitales mayor será el logro en ciencias.

KEYWORDS: Competencia cc; ODS; PISA-D; Multinivel

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## Dime con quién estudias y te diré cómo te va: efectos de pares en el desempeño académico universitario

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En este documento se analiza el efecto del desempeño académico de los pares y la composición del curso por origen socioeconómico en el logro académico de los estudiantes de una universidad privada colombiana entre 2008 y 2019. Las estimaciones por mínimos cuadrados ordinarios y multinivel soportan la existencia de efectos pares significativos. En particular, se encuentra un efecto positivo del desempeño de los pares sobre la nota en Cálculo I, sobretodo, de los pares de desempeño medio y alto, y un efecto nulo del nivel socioeconómico en Cálculo I, pero significativo en Competencias Comunicativas I, aunque con un impacto limitado. Al introducir heterogeneidades, se evidencia que los estudiantes perciben un mayor beneficio de mejoras en el rendimiento de los pares que se encuentran en su misma categoría de desempeño o nivel socioeconómico. Estos resultados proporcionan evidencia de la existencia, dirección y magnitud de los efectos de pares en educación superior en Colombia. Adicionalmente, sugieren que la característica más relevante de los compañeros de clase es su desempeño académico y no su origen socioeconómico.

KEYWORDS: efectos de pares, desempeño académico, nivel socioeconómico, modelo lineal, modelo multinivel o jerárquico, heterogeneidad.

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## Características de los hogares y elección escolar: ¿existen diferencias según localización geográfica? Evidencia para argentina

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La segregación del alumnado por nivel socioeconómico es una de las principales fuentes de inequidad en los logros de los estudiantes al concluir la escolarización básica en argentina. Si bien la misma está presente tanto en el interior del sector de gestión estatal como en el de gestión privada, la distribución desigual de los alumnos entre ambos sectores es de gran relevancia. En ese marco, el objetivo de este trabajo es estudiar los determinantes de la elección del tipo de gestión escolar en el nivel secundario argentino. Asimismo, dadas las diferencias en la participación del sector privado por provincias, se busca especialmente comparar dichos determinantes entre estas con el fin de detectar si hay discrepancias vinculadas a la localización geográfica. Para ello, se utilizan datos del operativo de evaluación aprender 2017 para el nivel educativo medio llevado a cabo por la, en aquel entonces, secretaria de evaluación educativa perteneciente al ministerio de educación y deportes de la nación; y se estima un modelo econométrico de regresión logística. Se halla evidencia a favor de que, más allá del ingreso o poder adquisitivo, diversas características sociales, económicas y culturales de los hogares se vinculan con la elección escolar de sus miembros. Además, se observa que dichas relaciones no son totalmente homogéneas entre las provincias argentinas. Estos resultados pueden ser un interesante y útil insumo a la hora de diseñar políticas tendientes a aumentar la equidad educativa

KEYWORDS: Equidad Educativa; Segregación Escolar; Tipo De Gestión; Escuela Secundaria; Provincias Argentinas.

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## Análisis del efecto espacial en el rendimiento escolar en Chile: una mirada a la desigualdad

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Chile es un país que ha avanzado fuertemente en cobertura y escolarización. Aun así, existen diferencias importantes a nivel geográfico que relevan la inequidad en la calidad de la educación que recibe la población, lo que produce desigualdad al largo plazo. La presente investigación tiene por objetivo determinar la influencia del contexto geográfico en el logro académico de los estudiantes de educación básica en Chile, considerando la segregación de grupos socioeconómicos, étnicos e inmigrantes. La metodología propuesta corresponde a la estimación de modelos de econometría espacial, específicamente: un análisis de la dependencia espacial con el índice de morán, pruebas de new-gi y estimaciones de autocorrelación espacial sustantiva y residual. Los datos utilizados corresponden a las pruebas estandarizadas del sistema de medición de la calidad de la educación (simce) de 4.030 establecimientos educativos para el período 2014 al 2017. Los resultados demuestran la existencia de dependencia espacial en el logro escolar tanto en lectura como en matemática, los principales efectos indirectos del espacio en las pruebas se generan por la concentración de grupos indígenas e inmigrantes y el clima escolar, a su vez, la segregación por ingreso de los hogares contribuye a explicar las brechas geográficas. Además, se evidencia una alta desigualdad espacial en la calidad de la educación medida en las pruebas simce.

KEYWORDS: rendimiento escolar, efecto vecindario, efecto espacial, concentración de grupos, segregación escolar.

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## Desarrollo de las competencias financieras: un análisis para los países participantes en PISA 2018

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Las crisis económicas de los últimos veinte años, no solo han afectado el crecimiento y desarrollo económico de muchos países en el mundo, también han tenido un gran componente financiero. De acuerdo con la literatura, ello se debe, en parte, al analfabetismo financiero que, en general, padecen tanto los jóvenes como la población adulta. Por ello, el presente trabajo indaga sobre cuáles son las dimensiones asociadas al aprendizaje, que determinan el desarrollo de competencias financieras, en los países que participaron en PISA Financiero del año 2018, estimando la Función de Producción Educativa, a través de Mínimos Cuadrados Ordinarios, controlando por cluster de escuela. Además, se identifican si existen o no diferencias significativas entre los países desarrollados y las economías emergentes, con base en la descomposición de Oaxaca-Blinder. Por último, se cuantifica la contribución relativa de dichas dimensiones, a la heterogeneidad en los resultados obtenidos por los estudiantes en PISA-Financiero, aplicando la técnica de descomposición de Shorrocks-Shapley. Los resultados obtenidos aquí, muestran que tanto el capital cultural como el social, son dimensiones asociadas al aprendizaje, que determinan el desarrollo de las competencias financieras. Además, se encontraron diferencias significativas entre los países desarrollados y las economías emergentes, explicadas en mayor medida por las diferencias en dotaciones familiares, culturales y sociales, donde los estudiantes de países desarrollados hacen un mejor uso de dichas diferencias. Por último, la heterogeneidad en los resultados de PISA-Financiero 2018, se dan por la mayor contribución relativa que hacen el capital cultural y el social.

KEYWORDS: Competencias financieras, Capital cultural y social, Oaxaca-Blinder, Shorrocks-Shapley, PISA financiero, países desarrollados y economías emergentes.

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# 5

## Función productiva de la educación

## Educational Production Function

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### Behavioral barriers and the socioeconomic gap in child care enrollment

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Child care is an essential tool to support child development and to mitigate educational inequality early in life. While children from families with lower socioeconomic status (ses) tend to benefit more from child care, their enrollment rates are substantially lower. We investigate whether alleviating behavioral barriers in the early child care application process reduces this ses gap. In a randomized controlled trial with more than 600 families with infant children in Germany, we implement a behavioral intervention that provides parents with information about child care and application assistance. Nine months after the intervention, treated lower-ses families are 21 percentage points more likely to apply for a child care slot, and 16 percentage points more likely to be enrolled in child care. The treatment has no effect on higher-ses families. In consequence, it closes the ses gap in application probability entirely, and halves the ses gap in enrollment. Treatment effects are particularly strong for families who plan to enroll their child at relatively young age and for parents who believe that returns to child care with respect to child development are high. Analyses of supply-side constraints indicate that treatment effects are concentrated in areas with high competition for child care slots. In sum, we demonstrate that the socioeconomic gap in child care enrollment is substantially determined by behavioral barriers, implying that policies aimed at mitigating these barriers may foster equality of opportunity early on.

KEYWORDS: child care, early childhood, behavioral barriers, information, educational inequality, randomized controlled trial

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## Learning losses and educational inequalities in Europe: Mapping the potential consequences of the Covid-19 Crisis

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It is widely discussed, that the pandemic has impacted on educational inequalities across the world. However, in contrast to data on health or unemployment, data on education outcomes are not timely. Hence, we have extremely limited knowledge about the actual impact of the pandemic on learning outcomes at the national and the cross-national level. As it might take years to get new comparative evidence on the actual extent of the problem, this paper uses the latest international student assessment data from before the pandemic, the Trends in International Maths and Science Study (TIMSS) 2019 data, and applies simple descriptive analysis, regressions and logical deductions to map potential consequences of the Covid-19 crisis across Europe. We obtain the relative trajectories of children's learning loss and its unequal distribution from information on home and school resources, importance of these resources for learning outcomes and countries' school closure duration policies and compare Covid-19 related risk of learning loss between European countries. Results based on 4th graders' school achievements indicate that throughout Europe educational inequalities between and within countries are likely to increase substantially. Some European countries are highly likely to face already an education crisis.

Keywords: educational inequalities; Covid-19; Europe; learning loss

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## Regional disparities in socioeconomic based achievement gaps

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We use administrative data on education and the labour market to characterise the distribution of socioeconomic -based achievement gaps in mainland Portugal. First, we evaluate the students' probability of achieving a passing score, a good score or a very good score conditional on where they live and on their socioeconomic background, measured by a socioeconomic index. Second, we describe several spatial patterns in se-based achievement gaps. third, we explore factors associated with the regional disparities in se-based achievement gaps. Municipalities with higher income inequality, more school segregation and better labour market indicators have, on average, higher se-based achievement gaps.

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## Peer effects in entrepreneurship education. experimental evidence on the role of cooperative learning.

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The present paper examines the role of peers in entrepreneurship education. In particular, we study whether cooperative learning enhances the effectiveness of a computer-assisted entrepreneurship education programme as compared to individual learning. We provide causal evidence based on a randomised field experiment with 1,071 students in 45 Flemish secondary schools. While the entrepreneurship education programme has no impact on the non-cognitive entrepreneurial outcomes of the average student, we find a significant positive (short-term) effect on entrepreneurship knowledge. Interestingly, this effect cannot be attributed to the cooperative learning component of the programme. The average outcomes of students working in pairs in the programme are not significantly different from those of students working alone. Using data on a large set of student and peer characteristics, we do observe some heterogeneous peer effects, suggesting that specific pair compositions can influence the effects of cooperative learning.

KEYWORDS: entrepreneurship education, field experiment, cooperative learning, peer effects, peer differences

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## The role of expectations on peers in educational choices

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This paper aims to estimate peers' influence on an academic decision, namely the choice of a high school track in Italy. I use multiple waves of a survey to collect beliefs about expected high school characteristics and future outcomes, and gather information about friends' network structure. I use expectations about friends' future high school choices to detect an influence on own choice. I solve for the reflection problem by exploiting the architecture of the reconstructed network, i.e. I instrument the expectations about friends' future choices using excluded peers (friends of friends) and I estimate a multinomial logit model of high school track choice. I find that expectations about friends' future choices matter more for the choice than expectations related to school-specific outcomes, such as the probability of liking the subjects taught at a certain school and the expected effort.

KEYWORDS: peer effects, network, expectations, beliefs, high school choice, survey data, multinomial logit.

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## The outflow of high-ability students from class and its long-term impact on their peers

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Early tracking school system is considered as a trigger of broadening inequalities in education. On the other hand, more homogenous class composition resulted from the outflow of high-achieving students in ability tracking seems to improve efficiency of teaching and learning process. However, literature on peer effects is not consistent in this point. This paper contributes to the discussion about the efficiency issues of ability tracking and examine the effect of the outflow of high-ability students after primary education on the long-term educational outcomes and behavior of their peers. Exploiting the 2009 school reform in slovakia that postponed the early tracking by one year, we show week long-run effect on peer's math scores and late arrivals to school, but more persistent positive effects on out-of-school learning.

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## Students with special needs do not affect their peers' outcomes in The Netherlands

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Does the presence of students with special educational needs (sen) in the netherlands affect the academic achievement of their peers? We examine this question in the context of increasing international evidence for negative peer effects. This paper identifies five groups with sen: disruptive peers with and without medication, peers with emotional problems, peers with youth care and peers under supervision order. We use panel data from 2015 untill 2020 on all dutch students leaving primary and secondary education and estimate complementary student-fixed and school-fixed effect models to isolate the effect of sen peers on students without sen. The estimates are unambiguously consistent across the different definitions of sen students: no significant effects of having sen peers are found. The point estimates are precise and the coefficients are generally insignificant and inconsistent in sign. We apply a conceptual framework for learning from null results to establish if we can interpret thisresult as a true null finding. To check for potential differential or non-linear effects, we first estimate the model with one and with two, three, four and five or more sen students instead of the actual number. Second, we check if the average between a positive effect on high- and negative on low-achieving students explains the null result. We address concerns about unobserved factors in the cohort quality, such as sen students being referred to special education more easily, by applying a neighbourhood fixed effects strategy. The results are robust to several ways of modelling the relation between academic achievement of non-sen students and peers with sen. Alternative mechanism that could explain the results in the dutch context are discussed and include other outcome measures such as teachers' work stress or choices in the school curriculum.

KEYWORDS: inclusive education; special needs; peers; achievement; learning from null results

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## Can Becker's model explain the effect of religion and religiosity on the educational outcomes of English adolescents?

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Using becker's human capital model this paper explains how variations in both religious affiliation and religiosity affect educational outcomes of english adolescents using social capital as a moderating mechanism. Using the longitudinal study of young people in england, the primary finding is that being a more religiously involved adolescent and having strong beliefs in the importance of religion is consistently and favourably associated with most social capital forms available to him/her and has consistent favourable influence on the adolescent's both cognitive and affective outcome. However, although social capital does not mediate such effects, social trust is the main mechanism that have a significant effect on these outcomes.

KEYWORDS: Becker's human capital model, educational outcomes, religion, religiosity, social capital.

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## Comparison of computer and paper based exam results: empirical evidence from PISA 2015

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Computer-based exams have started to be widely used with the development of technology, TOEFL that measures english proficiency, sat, which is used in university admissions in the united states, program for international students assessment (PISA) are examples of that kind of exam. in order to complete a computer-based exam. The participant is expected to have a certain level of computer literacy, such as typing a text or using a mouse. besides, reading a text from a paper or a computer may require different cognitive processes, therefore for the participant who is not accustomed to this situation, it can be a disadvantage to taking the computer-based exam. In such a case, the score obtained from a computer-based exam will not just reflect the knowledge level of the participant on the topic that the exam administrator would like to measure; it also demonstrates the computer experience. if this kind of problem creates biased exam scores for some groups, especially on high-stakes exams, it will lead to allocative inefficiency. In this paper, we investigate the differential effect of the computer-based exams on the performance of turkish students by exploiting the PISA data set and the fact that PISA is conducted as a computer-based exam for the first time in 2015. By using this change in the structure of the PISA exam and the differences-in-differences method, we find that the computer-based exam has a negative effect on student's math science and reading scores.

KEYWORDS: PISA, mode effects, computer-based assessment.

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## Pupil well-being in Danish primary and lower secondary schools

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Since 2014, the danish ministry of education has conducted yearly national well-being surveys for children of all ages in public school. The ministry introduced the survey as a tool for schools to monitor well-being of their pupils, to make informed adjustments of their own related practices, and to inform education policy at the municipal level. This paper studies the characteristics of the social well-being segment of the survey. we document that low school social well-being correlates meaningfully with standard measures of disadvantage at the pupil and parental level, just as teacher characteristics and classroom composition are additional important predictors of well-being. We also show that school social well-being exhibits high degrees of persistence over time, regardless of whether or not we control for a wide range of background characteristics. We finally show that high school social well-being is positively associated with academic performance and negatively associated with absence from school, though estimates are not large in size.

KEYWORDS: social well-being, background characteristics, academic performance, absence.

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# 6

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## Política educativa

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## Education Policy

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### The design of incentives for teachers to work with vulnerable students in Costa Rica

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Designing incentives to attract the best teachers to low-performing schools becomes a fundamental objective in terms of educational equity. We carried out a discrete choice experiment (DCE) in 2019 with a representative sample of 400 teachers distributed in 52 schools in the central region of Costa Rica, aiming to encourage them to work at schools located in regions that concentrate students at risk of exclusion. This is the first DCE designed for this purpose. The findings suggest that pecuniary incentives are the most effective measures that increase the probability of teachers accepting contracts in disadvantaged locations. Furthermore, non-pecuniary incentives (working with highly qualified peers, direct access to supervisors of educational programs, and provision of material resources) are found to be important complements in the design of incentive packages. The possibility of combining incentives is especially relevant in educational systems in developing countries facing high internal inequalities and strong financial constraints.

KEYWORDS: educational equity, teachers recruitment and retention, incentives, wages, discrete choice experiment.

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## Does test-based teacher recruitment work in the developing world? Experimental evidence from Ecuador

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Since 2007, the ecuadorian government has required teacher candidates to pass national skill and content knowledge tests before they are allowed to participate in merit-based selection competitions for tenured positions at public schools in an attempt to raise teacher quality. We evaluate the impact of this policy using linked administrative teacher information to data from a unique experimental study where almost 15,000 kindergarten children were randomly assigned to their teachers in the 2012-2013 school year in ecuador. We find positive and significant effects of test-screened tenured teachers of at least a 0.105 standard deviation for language and a 0.085 standard deviation for math, which persist even after controlling for teacher education, experience, cognitive ability, personality traits and classroom practices.

KEYWORDS: teacher quality, education policy evaluation, latin america.

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## High-stake exams change teacher grading standards: evidence from a policy reform

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The introduction of high-stake standardized exams has been shown to be strongly associated with improvements in an average performance in international standardized assessments (bergbauer et al., 2018) as well as with proficiency in mathematics and reading (jacob, 2005). Despite legitimate concerns with the incentives to teach to the exam and the limited set of skills under evaluation, the fact that idiosyncratic grading biases tend to vanish through the application of blind, anonymous evaluation mechanisms have ensured their validity and continuity in multiple education systems (oecd, 2013). By means of a difference-in-difference approach, we exploit a policy reform that introduced high-stakes exams at the end of the 6th grade in portuguese and mathematics, in portugal, for a short period of 4 years. We study how the introduction of these high-stake exams changed teacher grading standards and teacher scores distribution. We find that teachers in courses covered by external high-stakes exams tend to give a significantly higher percentage of failing scores and a significantly lower percentage of higher scores, an effect which shows to be stronger for mathematics and not homogeneous for male and female students.

KEYWORDS: student assessment, teacher scores, student achievement, school accountability.

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## How to elicit and cease herding behaviour? On the effectiveness of a warning message as a debiasing technique

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Existing literature has shown that financial knowledge is not always translated into sound financial decision-making, and that this may be due to cognitive biases affecting rational decision-making. Whereas traditional economics assumes that individuals make decisions independently of others, behavioural economists have shown that humans tend to follow the crowd (i.e., exhibit herding bias). However, the literature is silent on how convincing the information on the decisions of the crowd needs to be to elicit herding bias and on whether herding can be reduced (i.e., debiased) by presenting a warning message. This paper addresses both questions in the contexts of buying disability insurance and undertaking retirement planning. In particular, we conducted a randomised controlled trial (rct) on a website providing independent financial literacy education to the Belgian public. A peer information intervention was employed, with 768 respondents randomly assigned to peer information. The results indicate that the odds of choosing the herded option in the experimental condition were significantly higher (i.e., 88%) than in the control condition intervention, which implies that the intervention successfully elicited herding bias. They also demonstrate that increasing the strength of the peer information increases people's tendency to follow the crowd, and that herding occurs when respondents are informed that at least 50% of other people made a particular decision. The results further show that the presentation of a warning message that raises awareness of the influence of herding bias on the financial decision-making process, was not sufficient to debias behaviour. In conclusion, these findings confirm that peer information affects rational decision-making, and indicate that more intense debiasing strategies – preferably integrated into both school-based and non-school based financial literacy education initiatives- are required to overcome herding.

KEYWORDS: cognitive bias, debiasing, financial literacy education, herding bias, randomised controlled trial.

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## Not just words! Effects of encouragement on students' exam grades and non-cognitive skills - lessons from a large-scale randomized field experiment

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We carried out a large-scale, pre-registered randomized field experiment with a cross-over design involving all students at the university of Szeged in Hungary. Our intervention consisted of an automated message of encouragement that treated students received before their exam via two channels (e-mail and text message). Control students did not receive the message. In our primary analysis, we have assessed how the treatment influenced students' performance by comparing treated and control students' exam grades obtained from the university's registry data. In our secondary analysis, we have analysed the treatment effect on students' test anxiety, self-confidence and intention to do well on the exam by collecting endline survey data from treated and control students via an online questionnaire before the students' exam. In the whole sample, we have not found an average treatment effect on students' exam grades. Initially more able treated students, however, gained higher endline exam grades. In the subsample of those who answered the endline survey, we have experimentally confirmed that the treatment increased students' self-confidence and intentions to do well on the exam. The sporadic treatment heterogeneity in the secondary outcomes speaks for a homogeneous treatment effect in the secondary outcomes.

KEYWORDS: field experiment, message of encouragement, exam grades, self-confidence, intention, test anxiety.

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## Reaching the next level. On the effectiveness of a gamified online course material to improve financial literacy and reduce the myopic bias in insurance and investment decisions

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Using a randomized experiment, this paper examines the effectiveness of gamified online course material in improving financial literacy and reducing the bias 'myopia' from behavioural economics. financial illiteracy affects considerably the decision-making of individuals, leading to sub-optimal outcomes and lower financial welfare in the society. One of the most common approaches to improve the financial literacy is financial education. although financial education has been shown to improve financial knowledge, the gains to financial behaviour are limited with few evidences of long-lasting effects in the society. One of the possible reasons behind this is the existence of behavioural and cognitive biases, which have also been linked to poorer decision. One of the particular biases that has been linked to sub-optimal decisions is myopia, which impacted the financial well-being in decisions across sectors such as investments, insurance and pensions. In a large scale randomized controlled trial among secondary school students in the flemish region of belgium, we test the effectiveness of course materials that explicitly mitigate the impact of similar cognitive biases, teaching children about insurance and investment decisions. We measure the effectiveness of the materials using baseline without financial education classes, and three intervention groups: one with a regular class about financial education and two other groups that received a modified version of the class which also teach children about the myopic bias in addition to financial education. The results suggest that the intervention groups had significant better results for both the financial literacy and myopic post-tests in comparison to the baseline condition.

KEYWORDS: financial literacy, gamified online learning, behavioural finance, debiasing, myopic bias.

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## Single-sex schooling, gender and education achievement: evidence using PISA data in Ireland

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The educational advantages of single-sex schooling continue to be a source of policy debate. Previous empirical evidence suggests a positive impact of single-sex schooling on education achievement as well as a role in reducing gender gaps in stem related outcomes. In this context, this study utilises the 2018 pisa data for ireland to examine both the impact of single-sex education on mathematics, reading and science literacy performance for boys and girls respectively, as well as differences across gender in these outcomes. The effect of single-sex schooling on outcomes is typically problematic to examine, as in most countries single-sex schools are selective and the numbers attending them are relatively small. In ireland, a high proportion of secondary school children (almost one third of the population) attend a single-sex school. also, these schools are largely state-funded and non-selective, differing mainly in composition compared to mixed sex schools. for this reason, the irish educational system provides an interesting setting for exploring the effects of single-sex schooling. We find significant raw gaps in reading, science and maths scores between females in single-sex and mixed-sex schools and in maths scores for males across the same school types. However, after controlling for a rich set of individual, parental and school level factors we find that, on average, there is no significant difference in performance for girls that attend single-sex schools compared to their mixed-schooling peers in any of the three achievement scores. For males, we find that those attending a single-sex school perform significantly better in maths. From a distributional perspective, we find that attending a single-sex school increases the probability of being in the top end of the distribution for maths literacy for males. following on from this, our results provide evidence that single-sex schooling increases gender gaps in maths and reading.

KEYWORDS: PISA 2018, single-sex schooling, gender gaps, ireland.

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# 7

## Educación superior

## Higher Education

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### The impact of grit and motivation on university grades in South Africa

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Many South African university students either do not complete their degrees or take a prolonged time to meet the minimum degree requirements, with significant cost implications. Identifying drivers of academic success is an important starting point in designing policies and programs to improve student outcomes. To this end, we assess grit and intrinsic motivation as possible predictors of academic success, where motivation type is coded using text analysis of open-ended responses. We also investigate interactions between these traits. In line with existing literature, mostly in the USA and Canada, our results show that higher levels of grit predict higher grades in South Africa. We further note intrinsic motivation as a significant predictor of grit levels. Our findings suggest that grade outcomes might be improved either by focusing directly on building grittiness in students; or by improving grit indirectly through increasing intrinsic motivation

KEYWORDS: Grit, motivation, higher education

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## Racial quotas in higher education and pre-college academic performance: evidence from Brazil

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The effects of affirmative action on the incentives to human capital accumulation are ambiguous from a theoretical perspective and the scarce empirical evidence on the matter provides mixed results. In this paper, we address this issue by investigating the impacts of Brazil's Law of Quotas on the students' performance in the college entrance exam, the ENEM. The law established that a specific share of places in Brazilian federal universities should be filled by non-white students from public high schools. We employ a difference-in-differences approach in order to estimate the effects of the implementation of these quotas on the ENEM scores and provide causal evidence that the law fostered incentives to pre-college human capital accumulation. Moreover, the effects of the quotas were greater in more quantitative-intensive subjects but were not different by gender or parental education, and these impacts increased throughout the first years after the law's implementation.

KEYWORDS: Racial quotas, Higher education, Equality of opportunity, Academic performance, Difference-in-differences,

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## Are universities important for explaining unequal participation in international student mobility? A comparison between Germany, Hungary, Italy and the UK

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International student mobility (ISM) prepares young people for the challenges of global and multicultural environments. However, disadvantaged students have lower participation rates in mobility schemes and, hence, benefit less from their positive impacts on career progression. Therefore, policymakers aim to make mobility programs more inclusive. Nevertheless, it is far from clear how policy design can achieve this aim. This study investigates factors driving inequality in international student mobility uptake. It goes beyond existing research by not only focusing on individual choices but also on university characteristics, such as university segregation, excellence, and student support. In addition, this study is novel in comparing rich graduate survey and administrative data merged with university-level European Tertiary Education Register (ETER) data across four European countries. Multilevel regression results show consistently across all countries that disadvantaged students not only lose out on mobility experiences due to their background but also due to being clustered in universities with fewer mobility opportunities. University support and excellence, while important for explaining mobility uptake, do not appear to mitigate unequal uptake in any of the countries examined. To reduce inequality in ISM, intergovernmental policies should aim to distribute grants and mobility opportunities more equally across all universities, independent of their student composition. Existing country differences in terms of other individual- and university-level explanatory factors indicate that countryspecific settings of ISM need to be considered for mitigating unequal ISM uptake

KEYWORDS: international student mobility, Erasmus+, unequal uptake, inequality, segregation, student support, university excellence, Germany, Hungary, Italy, UK

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## Procrastination and grades: can students be nudged towards better outcomes?

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The relationship between procrastination and academic performance has been investigated in a number of studies, with some mixed findings. We use a large sample (n=17,241) of timed submissions of online assessments across a number of undergraduate economics courses to investigate this relationship. Our data support the commonly found negative relationship between procrastination and grades. We control for a series of measures of student effort in the course, and note that the negative procrastination-grade relationship is robust to these controls. To address the negative impact of procrastination, we tested two "nudges" to encourage students to submit earlier: a communication about social norms relating to submission times; and an information nudge pointing out the average grade difference between early and late submitters. Although neither of our nudges was successful in generating earlier submission times on average, we noted heterogeneity in the responses to the nudges, with approximately a third of students reducing their procrastination in response to the information nudge. Most of the students who did reduce procrastination saw some increase in their course grades.

KEYWORDS: procrastination, higher education, nudges

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## Investigating the effects of a mindfulness meditation program on academic performance

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We test the effects of a well-known 8-week mindfulness meditation course that has been shown to improve mental health on the academic performance of university students. While the intervention improved students' mental health (stress, anxiety, and depression), cognitive skills (focus and concentration) and non-cognitive skills (self-control, conscientiousness, and neuroticism), it surprisingly decreased academic performance. Exploratory analysis suggests that the negative effect on performance is driven by students whose mental health at baseline was relatively good, while students with worse mental health saw the largest improvements to their mental health at no cost to their performance. Furthermore, suggestive evidence on self-reported behaviors implies that the intervention increased health-promoting behaviors, some of which may compete with studying.

KEYWORDS: performance, mental health, education, meditation, field experiment

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## The effect of studying abroad on students' academic outcomes: evidence from administrative data on Erasmus applications

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The Erasmus+ programme is one of the most popular policies financed by the European Union. It provides international mobility grants to higher education students while staying enrolled at their home university. This paper provides novel evidence on the effect of participating in the programme on students' academic outcomes, using rich administrative data from one of the largest public universities in Italy. We rely on a fuzzy Regression Discontinuity Design, since the selection of applicants to Erasmus mobility programmes depends on a continuous score assigned during the application process. Our results show that Erasmus mobility abroad does not delay graduation at the home university. In addition, results show a small but significant positive impact on undergraduates' final degree mark. Investigating possible heterogeneous effects, we find that Erasmus mobility improves graduation results mostly for graduates in scientific and technical fields (STEM) and for students who apply for the Erasmus grant during the first year of their studies. Finally, graduation results tend to be better for students who visit foreign universities of relatively lower quality compared with their home university and for those who stay abroad for more than six months. The paper discusses possible mechanisms that could potentially explain these findings

KEYWORDS: Erasmus+ programme, international student mobility, university, administrative data, Regression Discontinuity Design

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## Diferencias regionales, institucionales y por áreas de estudio en la deserción de educación superior en Colombia: un análisis multi-nivel

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El sistema de educación superior colombiano es complejo. Consta de cuatro tipos de instituciones que a su vez ofrecen diferentes niveles de programas educativos, los cuales varían tanto en la categoría de formación otorgada (técnico, tecnológico o universitario) como en costos de matrícula y calidad. Adicionalmente, existen grandes brechas regionales e inequidades, evidenciadas en la limitada o nula oferta existente en algunos lugares del país, así como en los jóvenes menos favorecidos que suelen ser excluidos del sistema, ya sea porque no acceden o porque son quienes con mayor dificultad completan sus estudios superiores, truncando las expectativas de vida y acrecentando la pérdida de recursos. En este contexto, y teniendo en cuenta que la deserción educativa suele estar asociada a factores de índole socioeconómico, financiero, académico, institucional o personal, el presente estudio analiza si los apoyos financieros y académicos, la institución, el área de estudio y la región influyen en la deserción en educación superior y de qué manera. Utilizando datos generados por el sistema para la prevención de la deserción de la educación superior – spadies, se estiman modelos de regresión de efectos mixtos probit multinivel, cuyos resultados muestran que aspectos como el nivel educativo de la madre, el desempeño académico y los apoyos académicos y financieros están significativamente asociados con la deserción. En general, los hallazgos sugieren diferencias entre regiones, áreas de estudio e instituciones. Se discuten implicaciones de política pública frente a condiciones de eficiencia y equidad en la educación superior en Colombia.

Keywords: deserción, inequidad, probit multi-nivel, Colombia.

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## Does the Erasmus program contribute to the achievement of the SDGs? Knowledge, skills and attitudes in a context of international student mobility

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International student mobility programs at universities provide a unique opportunity to learn a wide range of competences, understood as the combination of knowledge, skills and attitudes (ksas). Many of these competences are essential for achieving the sustainable development goals (sdgs) and building a more sustainable society. This communication links the ksas acquired during an international mobility experience with the "key competencies for sustainability" defined by unesco, and subsequently with the sdgs. This theoretical framework is used to analyse institutional initiatives to support mobility students in the development of ksas, allowing to identify which sdgs are being prioritized within the erasmus program in different institutions. This analysis of institutional initiatives is complemented by in-depth personal interviews with erasmus students (outgoing and returning) carried out in the framework of several discussion groups in spain, belgium and greece, in order to know the ksas that students consider having acquired during their mobility experience, as well as those in which students need more support for their development. The results show different types of institutional support in the development of ksas for outgoing and incoming students, but none for those who return, reducing the possibility of consolidating the mobility learning outcomes and their translation to the students' context of origin. The ksas most addressed by the initiatives analysed show a strong link with sdg 4 (quality education) and sdg 8 (decent work and economic growth) and are aligned with the results of the discussion groups. However, greater institutional support seems necessary for key ksas in the development of the sdgs, such as equity, equality or european identity

KEYWORDS: Erasmus, Sustainable Development Goals, soft competences, knowledge, skills, attitudes

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## Educación y emprendimiento: nuevas oportunidades en tiempos de crisis

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Las crisis son momentos claves en los que la educación se convierte en factor estratégico en el ámbito empresarial, no sólo en términos de resiliencia sino incluso en la generación de oportunidades de empleo. En relación a las iniciativas emprendedoras, el enfoque más común viene determinado por la perspectiva individualista, utilizando enfoques económicos y psicológicos a nivel micro, y se centra en explicar por qué algunas personas se disponen a emprender más que otras, en circunstancias similares. Algunos trabajos desarrollados en la última crisis de 2008 constataron que el nivel educativo tiene un efecto positivo sobre las intenciones de creación y de crecimiento de las empresas, su potencial exportador y en definitiva los aspectos que podrían indicar un emprendimiento exitoso. En este sentido, el stock de capital humano, propiedad o gestionado por el empresario, se convierte en un recurso valioso, escaso y difícil de imitar que sirve para implementar acciones estratégicas enfocadas a obtener mejores resultados que los competidores. En este trabajo analizamos el capital humano de los emprendedores, medido tanto como nivel educativo formal, como aquellos conocimientos que los emprendedores señalan como clave para llevar a cabo sus iniciativas. Analizaremos las ventajas que este capital humano supone en términos de creación de empresas, resiliencia en tiempo de crisis, dificultades en la generación de nuevas empresas, acceso a redes, etc. Este análisis se realizará empleando una muestra de 4.000 personas de las 17 CCAA españolas entrevistadas en septiembre de 2020 y que constituyen la aps del proyecto gem-españa.

KEYWORDS: educación, capital humano, emprendimiento

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## Evaluación del impacto de la empleabilidad en la satisfacción de los graduados con los estudios universitarios en España

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El objetivo del trabajo es analizar el impacto de diversos indicadores relativos a la inserción laboral de los titulados en la satisfacción que, de forma retrospectiva, revelan sobre los estudios universitarios en general y la carrera cursada en particular. Los indicadores de inserción laboral analizados informan de la situación laboral del titulado entre 4 y 5 años después de finalizar los estudios y son los siguientes: el desempleo, el desajuste educativo horizontal y vertical, los bajos salarios y la temporalidad. La fuente de información estadística utilizada en este trabajo comprende las dos primeras oleadas de la encuesta de inserción laboral de titulados universitarios (eilu) elaborada por el instituto nacional de estadística (ine) en los años 2014 y 2019. La metodología utilizada en el trabajo es el estimador ponderado por probabilidad inversa, que permite estimar efectos de tratamiento con datos observacionales. El objetivo del análisis es proporcionar una evidencia menos sesgada del impacto de los indicadores de inserción laboral en la satisfacción de los universitarios españoles. Los resultados del análisis empírico indican que las dificultades de inserción laboral de los titulados tienen un impacto significativo sobre su insatisfacción con la experiencia universitaria. En particular, el desempleo, el desajuste educativo (horizontal y vertical) y la percepción de unos bajos salarios aumentan de forma significativa la probabilidad de que los titulados manifiesten que, en el caso de que tuviesen que volver a empezar, no volverían a cursar estudios universitarios o no cursarían la misma titulación

KEYWORDS: satisfacción, estudiantes, educación superior, efectos de tratamiento, inserción laboral, empleabilidad

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# 8

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## Educación y género

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## Education and Gender

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### Peer evaluations: exploring the effect of gender pairs

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Peer grading is widely used to evaluate low-stakes assignments in secondary and higher education settings. Additionally, peer evaluations are pervasive in the workplace, which affects hiring and promotion decisions. We conduct a peer grading experiment in a large, introductory course at a comprehensive research university. Peer graders are randomly assigned to evaluate several short essay assignments, and peer graders are incentivized to match the instructor-assigned grades as closely as possible while using a clear and structures rubric. We compare these peer-assigned to instructor-assigned grades. We find that peer graders assign lower scores than instructors, and that female peer graders assign lower scores than their male counterparts, even when incentivized to match the instructor's grade. Even though female graders do not appear to give any lower grades to their female peers under such incentives, these results suggest that peer evaluations may cause a systematic gender bias. In real-world settings, because females are more likely to be evaluated by female peers due to gender segregation in educational, occupational, and sectoral choices, they may inherently face a tougher reviewer.

KEYWORDS: peer evaluation, peer grading, gender bias.

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## Social Norms And Gender-Typical Occupational Choices

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The authors analyze the relationship between social gender norms and the occupational choices of adolescents by combining information about regional voting results from a popular vote on gender equality with job application data from a large job board for Vocational Education and Training apprenticeships. Results show that men in regions with stronger traditional social gender norms are significantly more likely to apply for gender-typical occupations and less likely to apply for gender-atypical occupations. This relationship does not hold for women, suggesting that today men align their occupational choices more strongly with social gender norms than women. Additional analyses also reveal that the social gender norms in an individual's region are related to the costs an individual is willing to bear for commuting to a training firm offering a job in a gender-typical or gender-atypical occupation. The results underscore the importance of policies that take social gender norms into account and that encourage not only women—as in the past—but also men to make non-traditional occupational choices

KEYWORDS: social norms; occupational choice; occupational gender segregation

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## On the influence of gender on non-cognitive skills

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Non-cognitive skills, also known as soft skills, have received relatively little attention as compared to cognitive skills ("hard skills") in the literature to date, mainly due to the difficulties to measure the former. In this research work we take a step forward to go deeper into the estimate of the factors affecting the noncognitive skills in the particular case of Spain. Specifically, we will use a multiobjective programming methodological approach to evaluate the extent to which the students' outcomes, in terms of non-cognitive skills, are conditioned by the gender of the student. Overall, the results obtained highlight the trade-off between different soft skills, which are mainly conditioned by student's gender

KEYWORDS: Soft skills, econometric analysis, multiple objective interval programming.

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## Desigualdades de género en conocimientos económicos y financieros: un estudio internacional a partir de los resultados PISA-2018

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El presente trabajo identifica las causas que dan origen a las desigualdades de género en el nivel de conocimiento de temas relacionados con la economía y las finanzas, para los países y/o economías que participaron de las pruebas PISA del año 2018. Además, calcula el peso relativo que tiene el género sobre la heterogeneidad en los resultados de estas pruebas. Para ello, se estimó la Función de Producción Educativa por grupos [hombres y mujeres], a través del método de Mínimos Cuadrados en Dos Etapas y, posteriormente, se emplearon las técnicas de Oaxaca-Blinder y de Shorrocks-Shapley. Los resultados obtenidos aquí encontraron desigualdades de género significativas en favor de las mujeres para Bulgaria e Indonesia, es decir, las mujeres, en promedio, tienen un mayor conocimiento en temas económicos y financieros. Estas desigualdades son causadas por las diferencias en dotaciones, específicamente, a las diferencias observadas en las características medias individuales entre hombres y mujeres. En el caso de Canadá, Estados Unidos y Rusia los hombres obtienen un mayor desempeño en PISA-Financiero 2018, respecto a las mujeres, debido solo a los factores inobservables que no son atribuibles a las características individuales, familiares o escolares. En Chile, las brechas siguen a favor de los hombres, pero a diferencia de los anteriores países, se dan por factores inobservables de las características individuales. Para Estonia, Italia, Polonia, Portugal y Tartaristán los hombres siguen teniendo un mejor desempeño, pero el efecto dotaciones explica en mayor medida esta desigualdad, donde las características inobservadas de la familia originan estas diferencias [Estonia, Italia y Portugal] y las características individuales [Polonia y Tartaristán]. Por último, se estimó que las características individuales determinan, en promedio, el 28,27% de la variabilidad en los resultados de PISA-Financiero 2018, donde el género se constituye como el input con mayor peso dentro de estas características [11,1% en promedio].

KEYWORDS: Desigualdades de género, Competencias financieras, Oaxaca-Blinder, Shorrocks-Shapley, PISA financiero.

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## Addressing the gender gap in adult skills in Spain

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Gender differences in cognitive skills have been found since students' early childhood and seem to prevail during adulthood. Previous works of research link higher levels of skills to lower unemployment, higher earnings, and more active participation in society. The state of gender differences in adult skills in Spain has been constrained by the lack of large-scale data. Therefore, in this study we use data from the Survey of Adult Skills (PIAAC) for Spain to analyse this issue. We employ a reweighted Oaxaca-Blinder decomposition with two aims. First, we examine the presence of literacy and numeracy gender gaps among Spanish adults and, second, we study how gender differences in the determinants of skills might contribute to the gender gap in skills across three age groups (16 to 35, 36 to 45, and 46 to 64). Contrary to previous results, we do not find gender differences in literacy after dividing the adults into age groups. However, the gender gap in numeracy remains across all age groups. With the results of our decomposition, we show evidence that the greater returns to higher education levels are essential to narrow the numeracy gender gap. Additionally, working in non-manual occupations provide women aged 46 to 64 with key advantages. Finally, although the youngest and the oldest groups of women benefited from their participation in adult education, their advantages are offset by those of men. We suggest the introduction of policies to extend women's participation in job-related adult education and, drawing on previous research, to focus on girls' expectations about pursuing higher education levels

KEYWORDS: adult skills, education, gender gap, PIAAC, reweighted decomposition

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## Estimación de las diferencias por género en la demanda de educación universitaria en Colombia

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El objetivo de este documento es analizar las diferencias por género en la demanda de educación universitaria en Colombia desde el año 2000 hasta el 2015. El análisis se basa en los modelos de elección discreta probit multinomiales que son estimados de forma robusta y a los cuales se les incorpora la corrección del sesgo de selección muestral para garantizar la consistencia y la eficiencia de los estimadores. Los datos utilizados provienen de la Encuesta de Hogares de Colombia (ENH, ECH, GEIH) realizada por el Departamento Administrativo Nacional de Estadísticas (DANE) para el periodo entre los años 2000 y 2015. Los principales resultados muestran: primero, que la probabilidad de las mujeres de demandar educación universitaria en Colombia es aproximadamente de 28,73 por ciento superior a la de los hombres. Segundo, que ser mujer aumenta en promedio la probabilidad de demandar educación universitaria en 4,1 puntos porcentuales con respecto a los hombres. Otros resultados muestran un sesgo de selección muestral y diferencias que generan una brecha en la igualdad de oportunidades educativas en la demanda de educación universitaria, ya que factores como la educación de los padres, la composición del hogar y los ingresos familiares afectan a hombres y a mujeres de forma diferente

KEYWORDS: Educación, demanda de educación, género

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# 9

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## TICs y e-learning

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## TICs and e-learning



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## Can ICT help us to improve education? Causal effects of the use of ICT on academic performance in Madrid (Spain)

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The growing presence of Information and Communication Technologies (ICTs) in schools makes it necessary to analyze the effect of the use of these innovative tools in the students' learning process for guiding educational policy decisions. This research aims to investigate what effect the use of ICT resources to carry out projects or do exercises in class has on academic performance. For that purpose, we use census data from the individualized evaluations carried out in the Community of Madrid (Spain) at the end of the 2016-2017 school year in the fourth year of secondary education. Using these data, we apply quasi experimental techniques to establish causality between the use of ICT and the academic performance of students, as well as to distinguish whether these effects differ across quantile of performance. Our results show that greater use of ICT in the classroom is associated with better academic performance in English, social and civic competence, and academic mathematics. We also find that the magnitude of the positive effect of the use of ICT is different across percentiles of academic achievement. Based on these results we point out hypotheses on possible explanations and emphasize the need for further research.

KEYWORDS: ICT, academic performance, secondary education.

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## Subject-related ICT use and educational outcomes: the role of the countries' income level

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Non-cognitive skills, also known as soft skills, have received relatively little attention as compared to cognitive skills ("hard skills") in the literature to date, mainly due to the difficulties to measure the former. In this research work we take a step forward to go deeper into the estimate of the factors affecting the noncognitive skills in the particular case of Spain. Specifically, we will use a multiobjective programming methodological approach to evaluate the extent to which the students' outcomes, in terms of non-cognitive skills, are conditioned by the gender of the student. Overall, the results obtained highlight the trade-off between different soft skills, which are mainly conditioned by student's gender

KEYWORDS: ICT use, academic performance, country income, applications in subject areas, secondary education

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## Desigualdad digital en el hogar. un análisis para España, Finlandia, Italia y Polonia.

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La crisis de la COVID-19 ha tenido un efecto drástico en las familias y en los sistemas educativos. La digitalización forzosa de la enseñanza en todos los niveles educativos, tras el confinamiento provocado por la crisis sanitaria, ha puesto de manifiesto el problema social de la desigualdad digital en el hogar. En este artículo se examina el papel del entorno social -medido por el SES-, así como el de los centros educativos, en dicha desigualdad. Se propone un enfoque multidimensional para la desigualdad digital en el hogar, que incorpora tres dimensiones: acceso, frecuencia y calidad del uso de las TIC. Mediante la estimación de modelos de ecuaciones estructurales, con datos de PISA (2018) para España, Finlandia, Italia y Polonia, se analiza la influencia -tanto del SES, como de la integración de las TIC en las escuelas- sobre cada una de las tres dimensiones de desigualdad digital. Los resultados confirman que el acceso a las TIC en el hogar está influido en mayor medida por el SES de las familias que por la integración de las TIC en la escuela. En cuanto a la frecuencia y la calidad del uso de las TIC en el hogar, la relación se invierte, ya que ambas están más influidas por la integración de las TIC en la escuela. Por tanto, la integración de las TIC en la escuela se evidencia como una posible medida compensatoria de las desigualdades sociales del alumnado que puede contribuir a la reducción de la desigualdad digital en el hogar.

KEYWORDS: Desigualdad digital; aprendizaje on-line; entorno socioeconómico; ecuaciones estructurales; TIC; PISA

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# 10

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## La enseñanza en educación

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## Teaching in education

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## The effect of same-race teachers on student performance: effectiveness of student-teacher communication

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This paper examines possible explanations behind the positive effects of same-race teachers, combining the insights from the literature on racial interactions and teacher effectiveness. Using the random assignment of teachers and comprehensive information on student perceptions of teaching practices from the Measures of Effective Teaching (MET) longitudinal database, I find that same-race teachers enhance the effectiveness of communication with Afro-American students, which translates into Math test scores gains. The complementarity between the exposure to a same-race teacher and teacher-student communication suggests that increasing returns to communication is one of the possible mechanisms through which the effect of a same-race teacher operates. However, there is no evidence on the complementarity between the exposure to a same-race teacher and two other mechanisms, including teacher expectations and student beliefs. The findings suggest that training non-minority teachers using a culturally relevant pedagogy may improve the performance of disadvantaged minority students in the short-term by complementing the diversification of the teacher labor force

KEYWORDS: same-race teacher, teacher-student communication, teacher expectations, student beliefs

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## Teacher gender and student achievement: more male teachers in primary schools?

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This paper investigates the relationship between teacher gender and student achievement in primary schools (grades 1-6). The empirical strategy exploits unique registry and survey data that provide variation in teacher gender within students and across subjects. The findings indicate that boys attained significantly higher academic achievement when taught by a male teacher compared to a female teacher. The paper discusses possible policy implications based on a study of a random subsample exposed to co-teachers for 10 lessons per week that shows that boys benefitted when a male co-teacher, compared to a female co-teacher, was introduced into classes taught by female teachers. These results are of importance to education policy because boys lag behind girls in various educational outcomes (OECD 2015, 2019) and the gender composition of their teachers is a malleable school resource.

KEYWORDS: Teacher quality; teacher gender; gender gap; test scores; teacher-student interactions; within-student variation

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## Parental involvement for left-behind children: can online feedback from teachers help? Experimental evidence from rural China

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Parental involvement is vital for children's education, but migrant worker parents, absent from their children for months, face severe obstacles. We designed experiments to "build family bridges" based on an improved teacher-student feedback system, sharing the results with parents in a disadvantaged area of central China, where half the pupils are "left-behind". Two terms of our biweekly feedbacks for 3rd graders increased test scores by about 0.1 standard deviations. Further communicating results to parents had especially strong effects for left-behind children, about 0.4 standard deviations. The effect was maintained even 30 months later. Programs need careful organization but cost only \$3-\$5 per student/year.

KEYWORDS: Student feedback; parental education investment; cost-effective teaching; randomized controlled trial; rural China; left-behind children

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## Teacher effects in Germany: evidence from primary school

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The value-added to student achievement model has become a key tool for estimating the effects of individual teachers not only on students' short-term academic success but also on later-life outcomes. We use data from the German National Educational Panel Study (NEPS) to estimate teacher value-added to mathematical and language competence development in primary school. We estimate our teacher value-added model with fixed as well as random effects. Both model specifications apply empirical Bayes shrinkage to adjust the teacher value-added estimates by their level of precision. Our results show substantial teacher effects on math and language competence development in the first grades of primary school. One standard deviation increase in teacher value-added is associated with at least 12 percent of a standard deviation increase in student mathematical competence score, and at least 14 percent of a standard deviation increase in language competence score, over a year of instruction. In addition, we find that none of the teacher characteristics typically used in teacher recruitment processes significantly explain teacher value-added to student competence development. Parental assessment of teacher quality is the only indicator associated to teacher value-added to language competence.

KEYWORDS: teacher value-added, teacher effects, Germany

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# 11

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## Desajuste educativo

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## Educational mismatch

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### Migration and over education in the labor market of Venezuelans in Colombia

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Using the Great Integrated Household Survey database (GEIH) 2018, this article analyzes the labor market situation of the Colombian population compared to the Venezuelan migrant population. We study a cohort that migrated five years ago and a cohort that migrated one year ago. Results show a greater overeducation for Venezuelans who arrived in the first migration wave than for Venezuelans who arrived in the second migration wave. Undereducation was found for Venezuelans who arrived more recently. When including migration into ORU models (overeducation, required education, undereducation) it is necessary to use a different approach as overeducation or undereducation will also depend on the type of migration people have been exposed to, forced migration or voluntary migration. The ORU econometric models allow to characterize the Venezuelan workforce compared to the Colombian workforce in 2018.

KEYWORDS: Migration, Education and Inequality, Geographic Labor Mobility, Immigrant Workers

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## Educational and skills mismatches: unravelling their effects on wages across Europe

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This paper is among the firsts to investigate the impact of overeducation and overskilling on workers' wages using a unique pan-European database covering twenty-eight countries for the year 2014, namely the CEDEFOP's European Skills and Jobs (ESJ) survey. Overall, the results suggest a wage penalty associated with overeducation. When interacting educational mismatch with skills mismatch into apparent overeducation and genuine overeducation, the results suggest that the highest wage penalty is reached for workers that are both overeducated and overskilled.

KEYWORDS: Educational mismatch; Skills mismatch; Wages; European survey

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## Overeducation: persistent or transitory phenomenon? Evidence from Spain

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Overeducation, defined as having more schooling than what is necessary for the job, is a labor market phenomenon that has special incidence in Spain. In principle, overeducation needs not be a problem if it is transitory but when it becomes persistent. It can have several negative effects in the economy. This paper investigates the persistence of overeducation by exploiting data from the Spain's Continuous Sample of Employment Histories (Muestra Continua de Vidas Laborales or MCVL, in Spanish) by applying duration models. Controlling for observable characteristics, I find evidence for the hypothesis that overeducation is indeed a persistent phenomenon in Spain. Further research will be carried out to address for unobserved heterogeneity

KEYWORDS: Overeducation, Human Capital, Persistence, Spain

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## Educational mismatch in recent university graduates. The role of labour mobility

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This article analyses patterns of persistence in educational mismatch in the early career of university graduates in Spain, with particular attention to the mediating role of job mobility. We contrast whether educational mismatch acts as a stepping-stone towards better occupational matches or as a trap where graduates may get stuck for a long time. Our results show persistence in educational mismatches during four years following graduation, supporting the trap hypothesis. Job mobility driven by initial mismatch partially corrects mismatch persistence (stepping stone hypothesis) as long as it is not featured by intensive job rotation; otherwise, the quality of later job matches will be scarred by job mobility. Interestingly, vertical and horizontal mismatch are equally persistent, but for different reasons: vertical mismatch in the first graduate job scars ulterior employability and boots mobility across employers, aggravating job mismatches if too intense. Meanwhile, persistence in horizontal mismatch relates to the lack of incentives for “corrective” mobility across employers, since compensating job features retain graduates in their horizontally mismatched jobs. Differences in persistence patterns between graduates in vertical and horizontal mismatch reflect several features of the Spanish labour market: segmentation, high levels of job turnover and youth unemployment.

KEYWORDS: university graduates; overeducation; horizontal education mismatch; stepping-stone; entrapment.

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# 12

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## Retornos educativos

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## Returns to education

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### Noncognitive skills in training curricula and heterogeneous wage returns

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For noncognitive skills, economics research has focused primarily on social skills as one element. Another important, largely unexplored element is self-competence, the ability to act responsibly for oneself. So far, economics-of-education studies have not yet comprehensively analyzed (a) how elements of non-cognitive skills such as self-competence in training curricula relate to wage returns and (b) at which level implementing self-competence is the most valuable. Using occupational training curricula texts as a data source, we apply advanced machine-learning methods to identify the level of self-competence that students acquire during a training program. We use swiss vocational training and education (vet) programs and their training curricula, because they provide very detailed descriptions of skills that vet students—approximately 70% of a cohort of swiss labor market entrants—have to acquire. We combine our skills measures with labor market data of vet graduates and empirically investigate both self-competence and its potential heterogeneous returns. Moreover, we also examine potential heterogeneous complementary returns between self-competence and the level of cognitive skills requirements of an occupation. We find positive wage returns to self-competence showing the importance of this non-cognitive skills element on the labor market. However, the returns to self-competence are heterogeneous: a medium level of self-competence in an occupational training curriculum has the strongest wage returns compared with low or high levels. Furthermore, we find heterogeneous complementary returns between self-competence and cognitive requirement levels: Only in occupations with high cognitive requirements, a high self-competence level also has positive wage returns.

KEYWORDS: noncognitive skills, human capital, text as data, curricula content analyses, vocational education and training.

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## What drives social returns to education? A meta-analysis

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Education can generate important externalities that contribute towards economic growth and convergence. In this paper, we study the drivers of such externalities by conducting the first meta-analysis of the social returns to education literature. We analyse over 1,000 estimates from 31 articles published since 1993 that cover 15 countries. Our results indicate that: 1) spillovers slow down with economic development; 2) tertiary schooling and schooling dispersion increase spillovers; 3) spillovers are smaller under fixed-effects and iv estimators but larger when measured at the firm level; and 4) there is publication bias (but not citation bias).

KEYWORDS: returns to education; education externalities

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## Lost wages : the covid-19 cost of school closures

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Social distancing requirements associated with covid-19 have led to school closures. In April, 192 countries had closed all schools and universities, affecting more than 90 percent of the world's learners: over 1.5 billion children and young people. Closures are expected to reduce schooling and lead to future losses in earnings. Starting from the assumption that every additional year of schooling translates to 8 percent in future earnings. This paper estimates and confirms the loss in marginal future earnings on the basis of a four-month shutdown. The authors also estimated the losses by level of education. The findings show that the school closures reduce future earnings. It is also likely that students from low-income countries will be affected most, where the earning losses will be devastating. These estimates are conservative, assuming closures end after four months, with schools re-opening in the new academic year, and that school quality will not suffer.

KEYWORDS: education, earnings, COVID-19.

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# ECONOMICS OF EDUCATION ASSOCIATION (AEDE)

XXIX Meeting

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