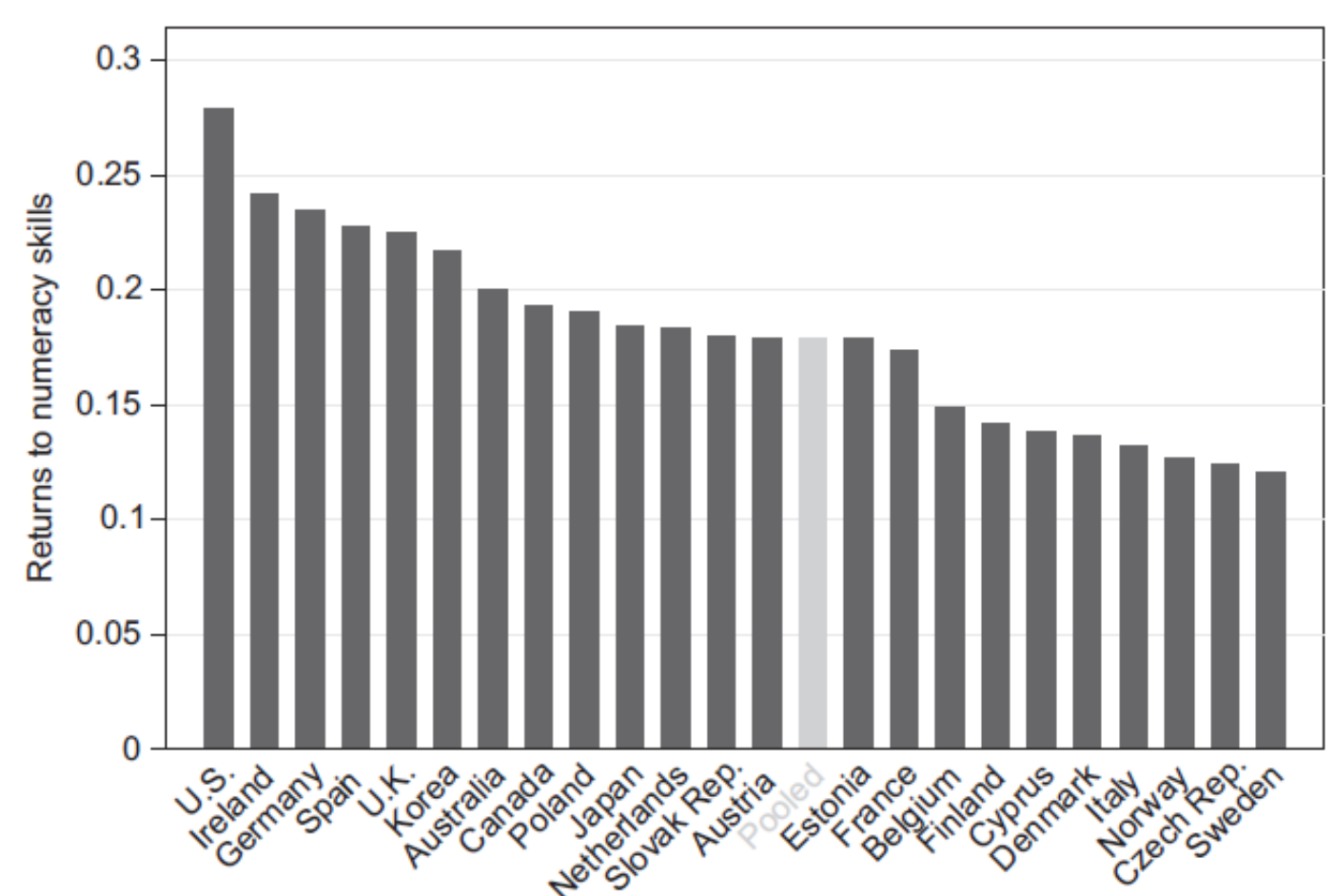


## Returns to Skills around the World

Economists believe that the skills of the population are a key factor in modern economies. But are skills systematically rewarded in the labor market? Do people with high skills actually earn significantly more than those with low skills?

- We use international skill assessment data from the PIAAC survey of adults in 23 countries to measure how skills pay off in the labor market. On average, a one-standard-deviation increase in numeracy skills is associated with an 18 percent wage gain among prime-age workers.
- Countries differ greatly in their returns to skills: Eight countries, including all Nordic countries, have returns between 12 and 15 percent, while six are above 21 percent with the largest return being 28 percent in the United States.



The graph displays the wage effect of a one-standard-deviation increase in numeracy skills by country.  
Data source: PIAAC

- Returns to skills are lower in countries with stricter unemployment protection and a large public sector.

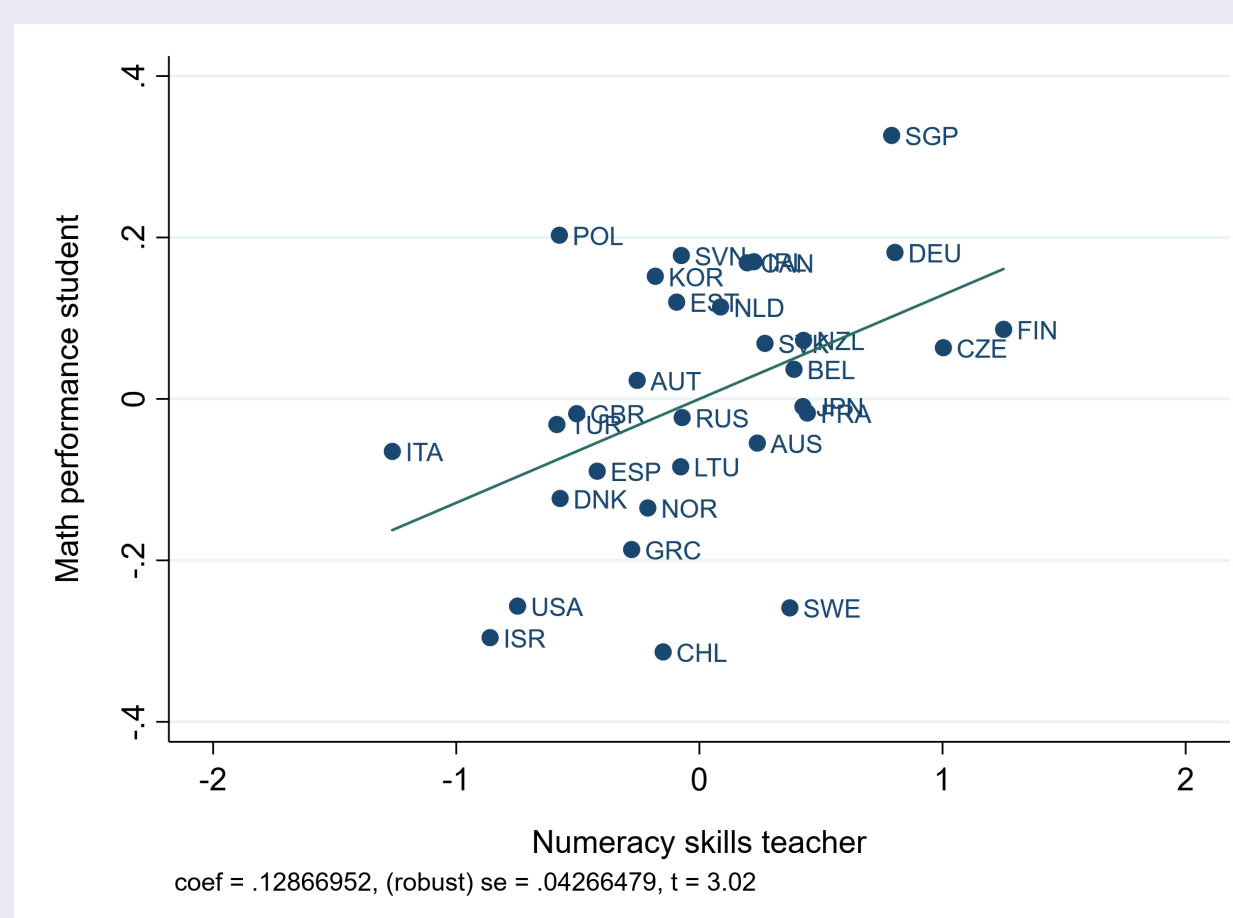
Eric A. Hanushek & Guido Schwerdt & Simon Wiederhold & Ludger Woessmann (2015), "Returns to Skills around the World: Evidence from PIAAC", European Economic Review, 73, 103–130. Received the European Economic Review Best Paper Award.

Skills pay off. But how do we acquire them in the first place?

## The Value of Smarter Teachers

Student performance in math and reading varies substantially around the world. Can this be explained by international differences in teacher skills?

- In a sample of 31 developed countries, we find that better teacher skills are related to higher student achievement. If each country brought its average teacher skill up to the average in Finland, the country with the most skilled teachers, the dispersion in average PISA scores would be reduced by one-quarter.



The graph depicts the increase in student performance in math (measured in standard deviations) for a one-standard-deviation increase in teacher numeracy skills.  
Data source: PIAAC

- Two systematic factors help to explain the differences in teacher skills across countries: First, the competition in the labor market for female talent, and second, the premium paid to teachers compared to other workers in the economy (given their cognitive skills and experience).
- In related work, we show that the result that smarter teachers lead to smarter students also carries over to Sub-Saharan Africa, the region with the lowest-performing students worldwide.

Eric A. Hanushek & Marc Poppiunik & Simon Wiederhold, (2019), "The Value of Smarter Teachers: International Evidence on Teacher Cognitive Skills and Student Performance", J. Human Resources, 54, 857–899; and, "Do Smarter Teachers Make Smarter Students?", Education Next, 19, 56–64. Jan Bietenbeck & Marc Poppiunik & Simon Wiederhold (2018), Africa's Skill Tragedy: Does Teachers' Lack of Knowledge Lead to Low Student Performance? J. Human Resources, 53, 553–579.

## Migration and Skills

Millions of people around the world are migrants. How come they decided to leave their home country? To provide an answer to this question, we examine the largest migration flow in the world—Mexican migration to the United States.

- How can skills be measured in a comparable way across countries? By combining two different task surveys—the US O\*NET and the Mexican CONOCER—we obtain a cross-national measure of cognitive and manual skills that allows to rank Mexican and U.S. workers on the same scale.
- Using these novel skill measures, we show that Mexican migrants have higher manual skills and lower cognitive skills compared to non-migrants.
- The decision to migrate depends on economic incentives: Returns to manual (cognitive) skills for Mexicans are higher (lower) in the U.S. than in Mexico. Thus, individuals choose the country that offers the highest reward to their skills.
- Strikingly, it is differences in occupational skills and not in education or age that are the main drivers of migration.

Alexander Patt & Jens Ruhose & Simon Wiederhold & Miguel Flores (2017), "International Emigrant Selection on Occupational Skills", CESifo Working Paper No. 6527, Winner of CESifo Young Affiliate Award.

## What Are We Working On?



Prof. Dr. Simon Wiederhold, Alexander Patt, Katharina Hartinger, Christina Langer

Macroeconomics is a broad field. Research at our chair is just as broad and diverse. Occasionally, it even crosses the border to microeconomics, social psychology and related disciplines.

The one topic that ties our research together is our interest in human capital and, more specifically, cognitive skills. Here are some questions we investigate in our research:

- How are skills rewarded in the labor market and how do returns to skills differ across countries?
- What makes teachers effective? Do their skills matter?
- Do skills matter for migration?
- What is the role of early childcare to support skill development?
- What are cultural determinants of skills and other economic outcomes?
- Which skills are required in modern labor markets and do universities develop them?

To tackle these questions, we use international skill assessment data, carefully construct measures, rely on modern machine learning techniques and run our own experiments.

## Experiments

### Field experiment on early childcare

- Economic research shows that children from disadvantaged backgrounds start childcare at later ages, although these children would benefit most from enrollment into childcare.
- We experimentally investigate the effects of information provision and application assistance on childcare applications, enrollment, child development, and parental labor-market outcomes.

Henning Hermes & Philipp Lergetporer & Frauke Peter & Simon Wiederhold, "Information Kids", Work in Progress.

### Are we all precious snowflakes?

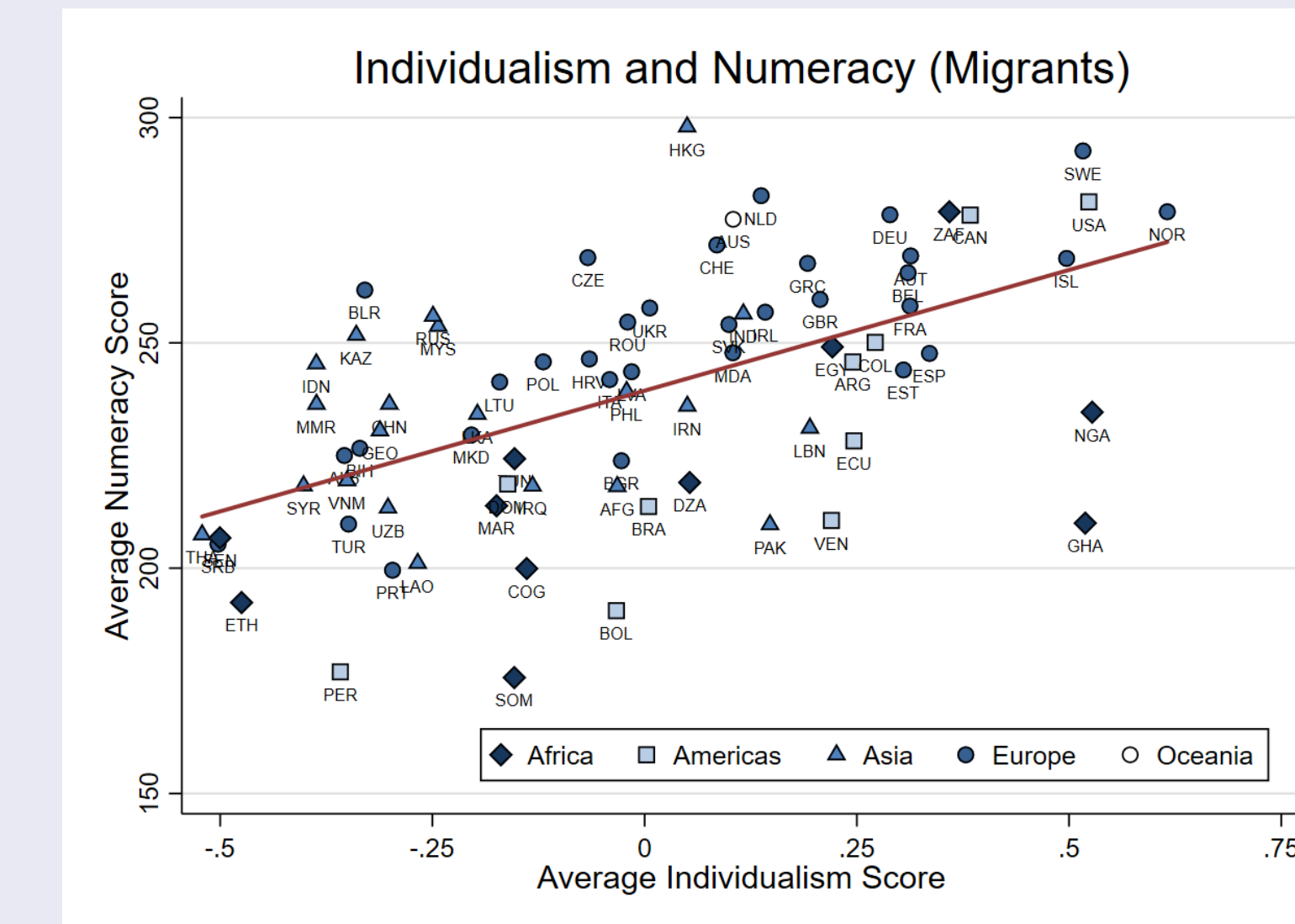
- In an experiment in the Ingolstadt Experimental Studies Lab (INES), we analyze the role of individualism as one main, culturally shaped part of our identity in various economic games.
- Will uniqueness-focused individualists behave uniquely in a lab setting? First evidence from a pilot study suggests that individualism does affect the choice of strategy in a game involving tasks that are unknown to the participant ex ante.

Katharina Hartinger, "Are We All Precious Snowflakes? Individualism and Economic Decision-Making in the Lab", Work in Progress.

## Culture and Skills

Little is known about the role of culture in economic decision-making. We are the first to investigate the effect of individualism—one main dimension of culture—on cognitive skill development.

- To analyze the relationship between individualism and skills, we construct a novel individualism index at the personal level and relate it to international adult skill data.
- Individualists value uniqueness, freedom and intellectual challenge. This is mirrored in our finding that individualism and cognitive skills are strongly positively related: If individualism increases by one-standard-deviation, cognitive skills increase by 20–30 percent of a standard deviation.



The graph shows the relationship between average individualism and average numeracy skills (aggregated at the level of migrants' birth countries).  
Data source: PIAAC

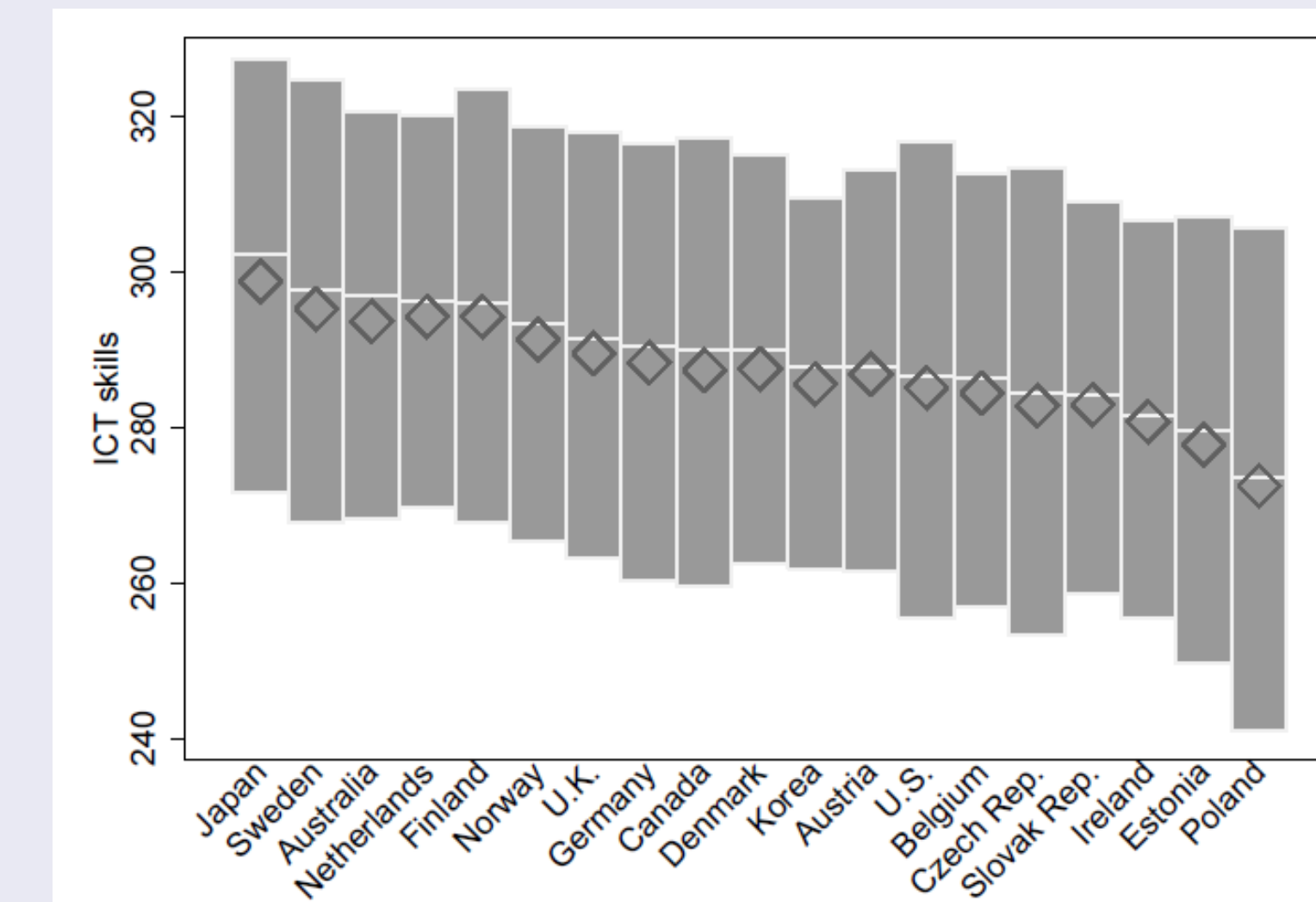
- Individualists are less likely to be unemployed and earn 18 percent higher wages for a one-standard-deviation increase in individualism. Opening the black box of culture, we find that individualists receive substantially more on-the-job training, through which their skills increase.

Katharina Hartinger & Sven Resnjanskij & Simon Wiederhold (2019), "Individualism and Cognitive Skills—International Evidence from a Large-Scale Skill Assessment", Work in Progress.

## The Role of Digital Skills in Modern Labor Markets

The online world is becoming a bigger part of everything we do. But how central is mastering information and communication technology (ICT) in modern labor markets? We use unique data from the PIAAC survey on ICT skills tested in 19 countries to provide an answer to this question.

- International differences in ICT skills are substantial. Respondents in Japan, Sweden, Australia, and the Netherlands have the highest average skills; respondents in the former communist countries and Ireland rank lowest. The difference in ICT skills between Japan and Poland is similar to the difference between IT professionals and an average worker.



The graph depicts ICT skills by country, showing mean (diamond), median (thin white bar), and interquartile range of the ICT skills distribution.  
Data source: PIAAC

- Better ICT skills are systematically related to higher wages: A one-standard-deviation increase in ICT skills leads to a 24% increase in wages in the international sample and to an even stronger 31% increase in Germany.
- Wage effects of ICT skills can mainly be explained by occupational selection: Workers with higher ICT skills are able to get jobs that are difficult to automate, benefitting from the wage premia these jobs pay.

Oliver Falck & Alexandra Heimisch & Simon Wiederhold (2016), "Returns to ICT Skills", CESifo Working Paper No. 5720.

Questions of migration and culture are closely linked in many discussions of public interest.

Can we detect further economic effects of culture in laboratory experiments?