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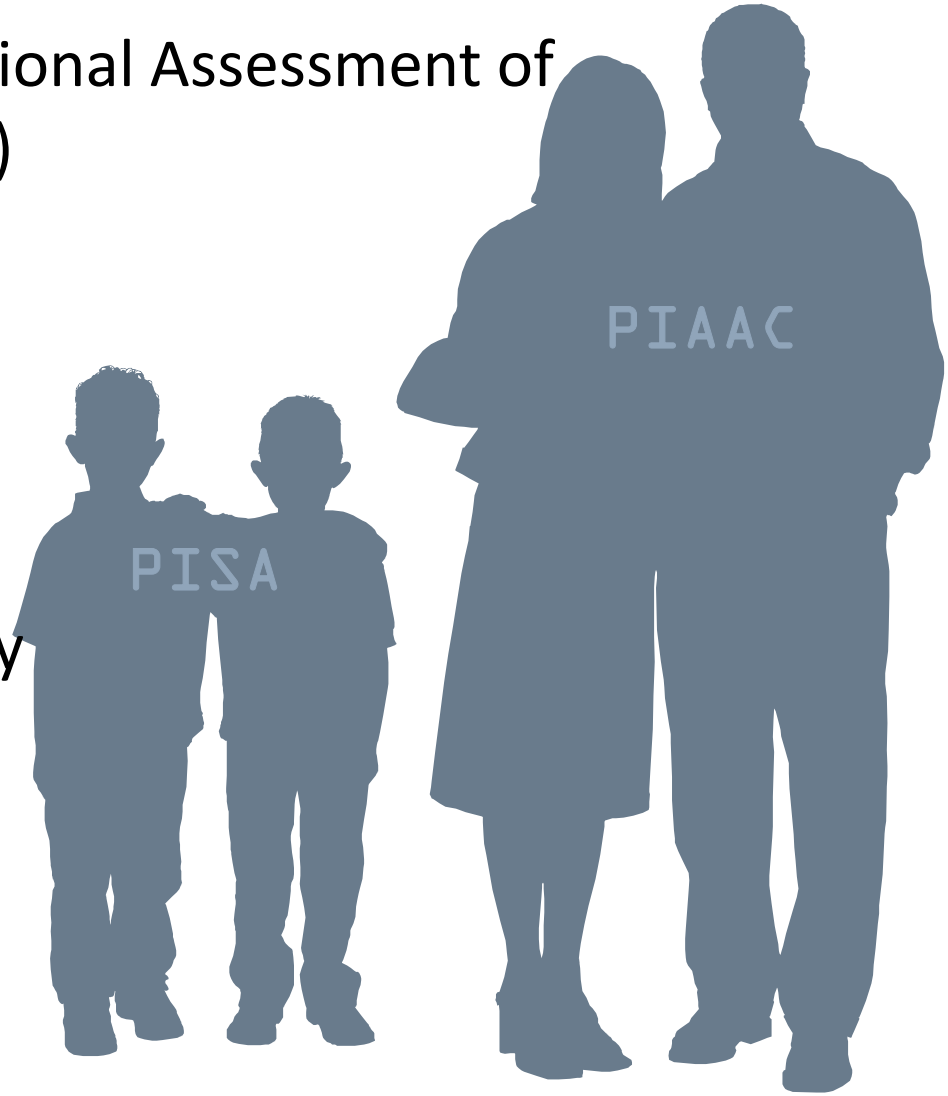
Returns to Skills around the World: Evidence from PIAAC

PIAAC: Overview

- Programme for the International Assessment of Adult Competencies (PIAAC)
- “PISA for adults”
- Initiated by the OECD
- 24 participating countries
- Individuals aged 16-65
- At least N=5,000 per country
- Total costs: €100 mn.



Countries participating in PIAAC Round I

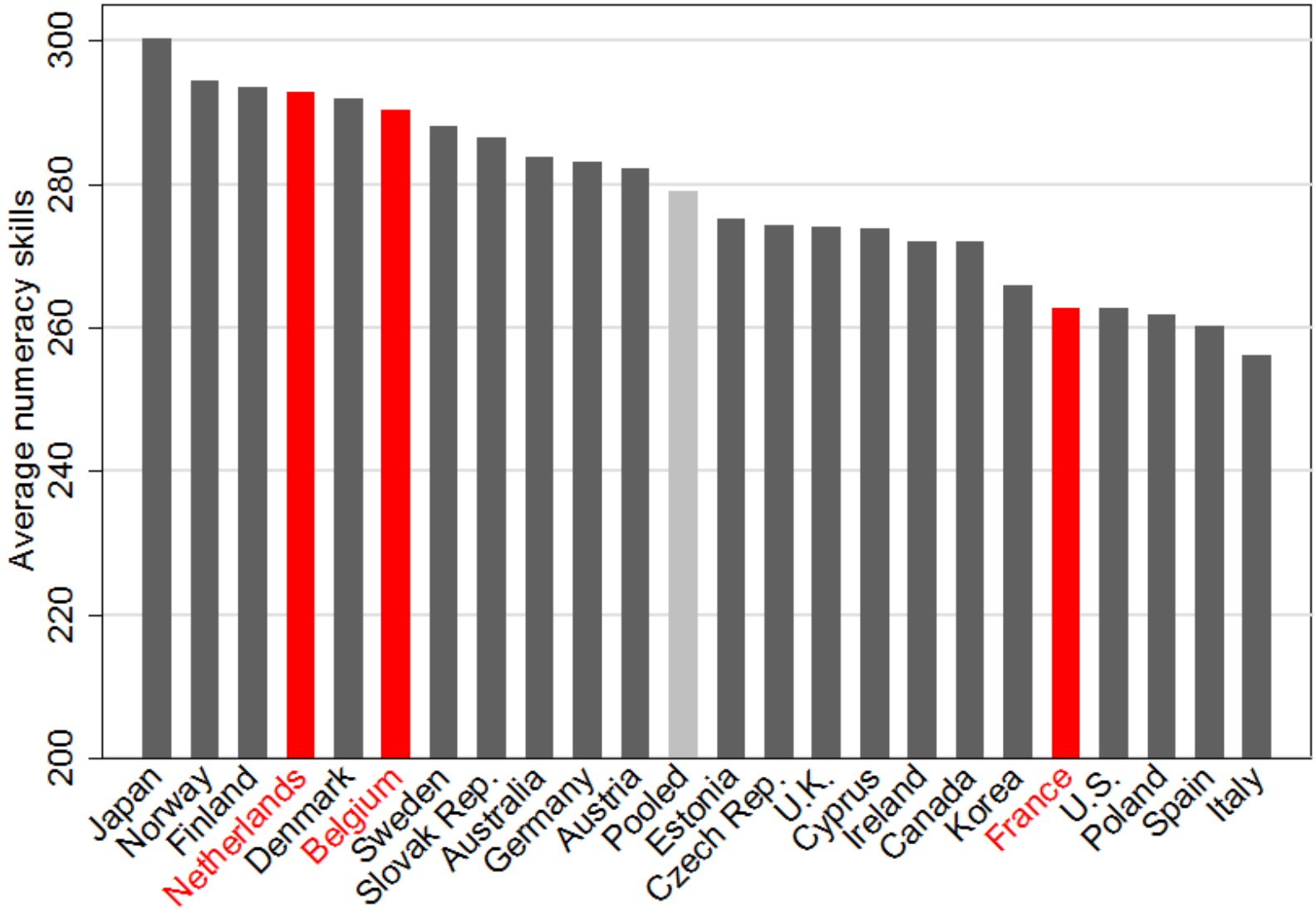
Australia, Austria, Canada, Cyprus, Czech Republic, Denmark, England/N. Ireland (UK), Estonia, Finland, Flanders (Belgium), France, Germany, Ireland, Italy, Japan, Korea, Netherlands, Norway, Poland, Russian Federation, Slovak Republic, Spain, Sweden, United States

Returns to Skills around the World

- How do individuals' skills relate to productivity and labor-market outcomes in modern knowledge-based economies?
- Existing evidence on returns to education almost exclusively based on **years of schooling** (ever since Mincer 1974)
  - Such quantity-based measure ignores inherent differences between education systems across countries:
  - "For example, a year of schooling in Papua New Guinea is assumed to create the same increase in productive human capital as a year of schooling in Japan." (Hanushek/Woessmann JEL 2008, p. 629)
- Existing evidence on returns to cognitive **skills** surprisingly limited
- **PIAAC** dramatically changes ability to understand **how economies value skills**

→ We estimate **earnings returns to cognitive skills** for 23 countries

Numeracy Skills by Country



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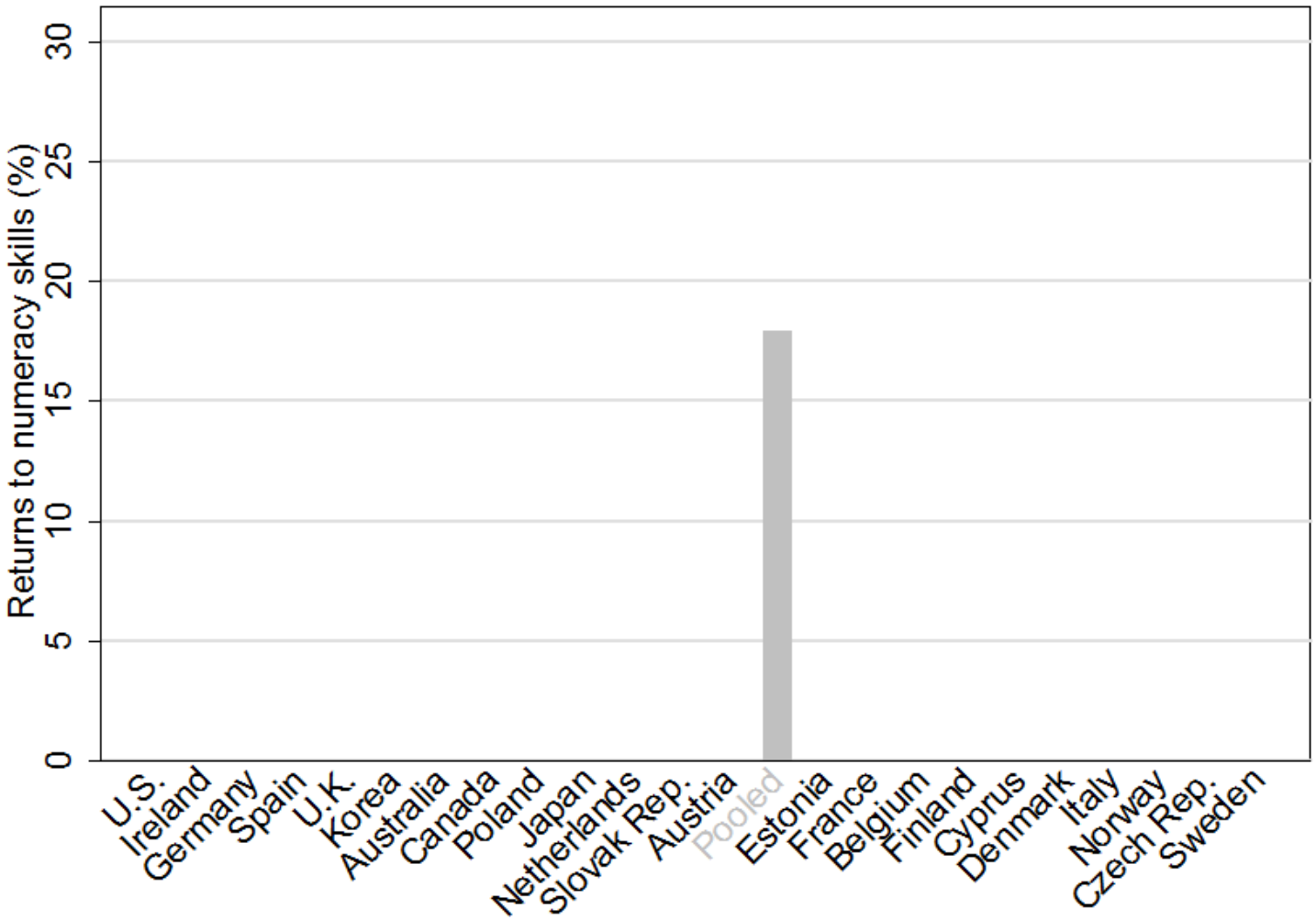
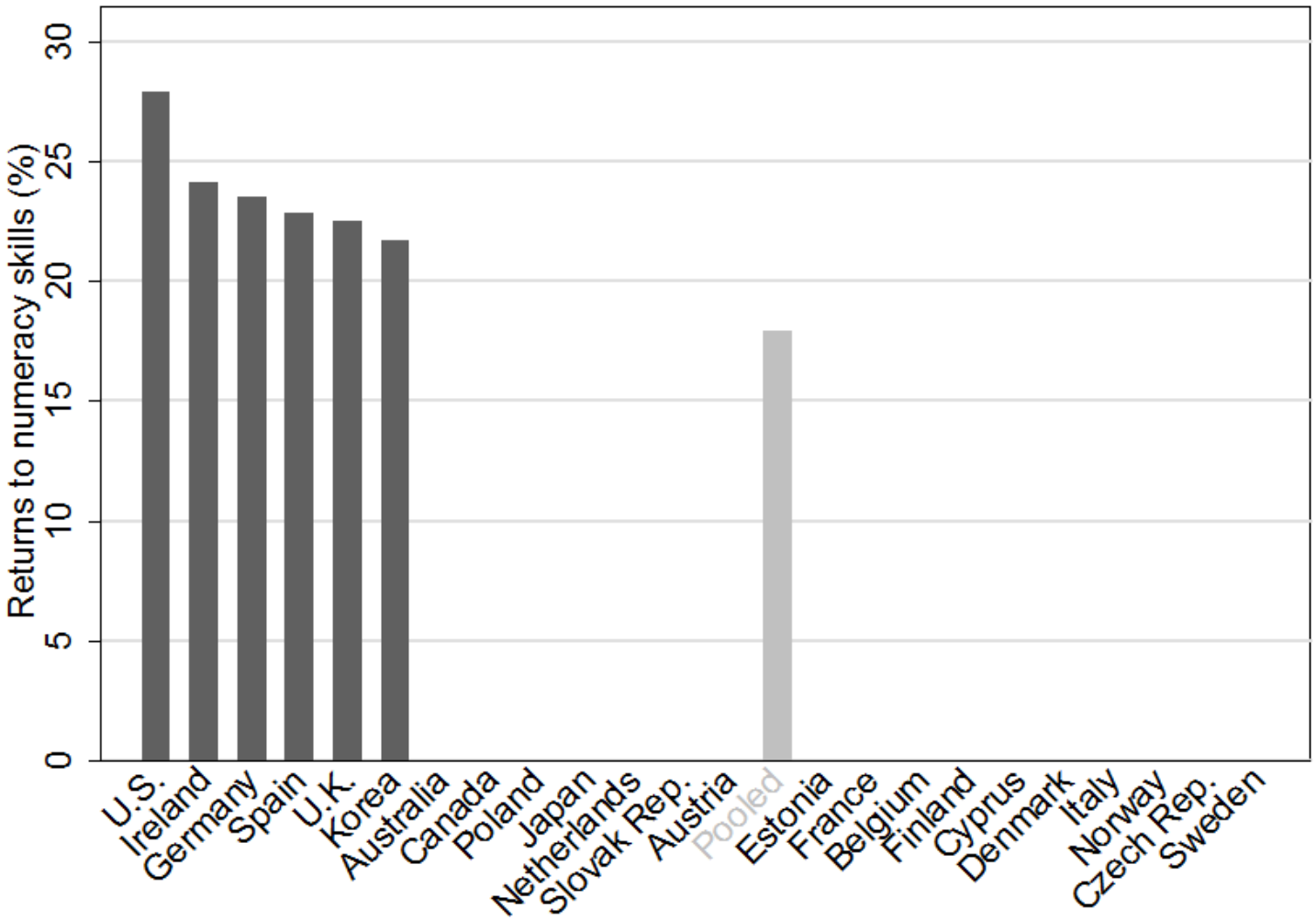


Notes: Coefficient estimates on numeracy score (standardized to std. dev. 1 within each country) in a regression of log gross hourly wage on numeracy, gender, and a quadratic polynomial in actual work experience, sample of full-time employees aged 35-54. Replicates baseline model from Table 2. *Data source:* PIAAC.

Returns to Skills around the World



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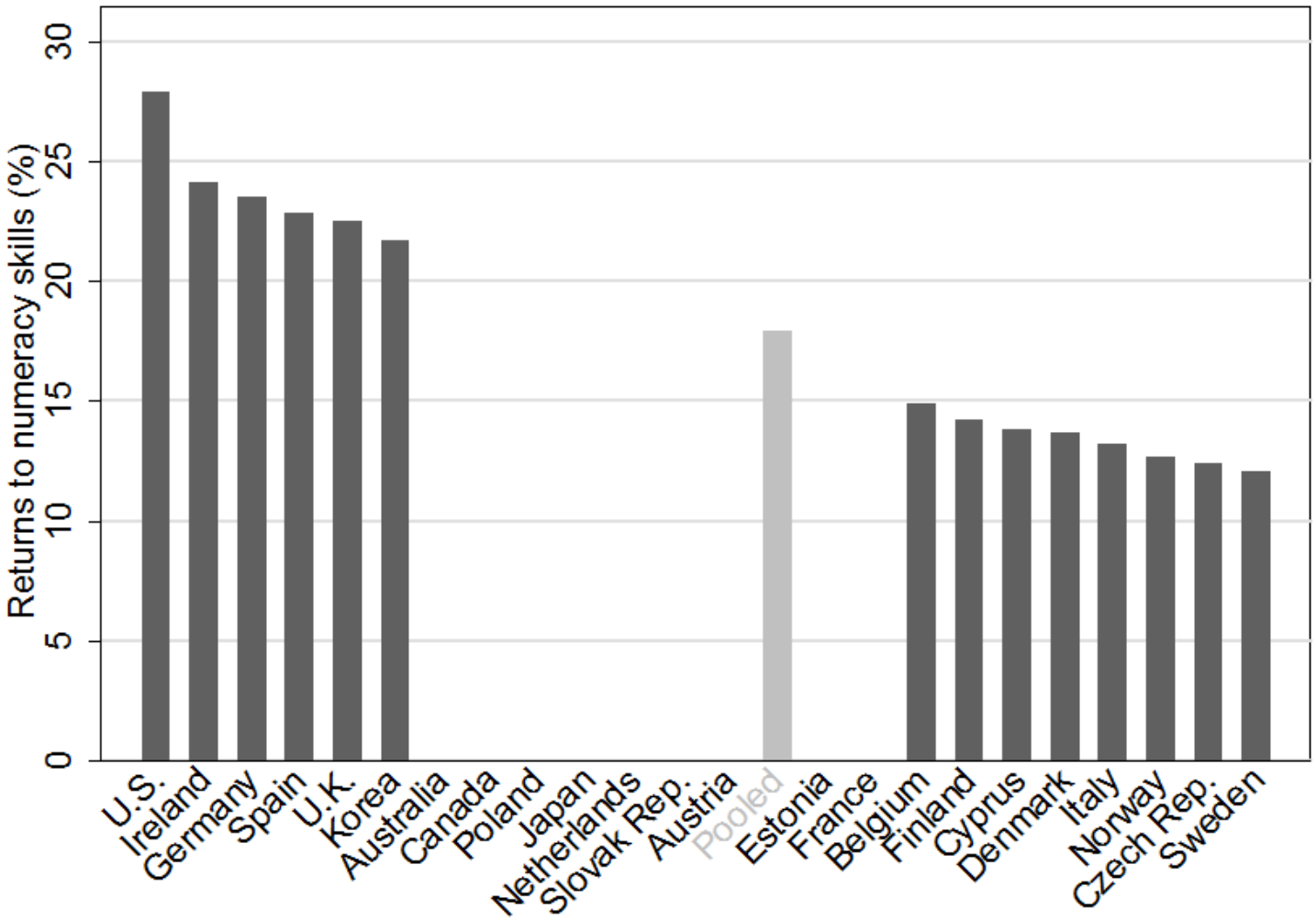

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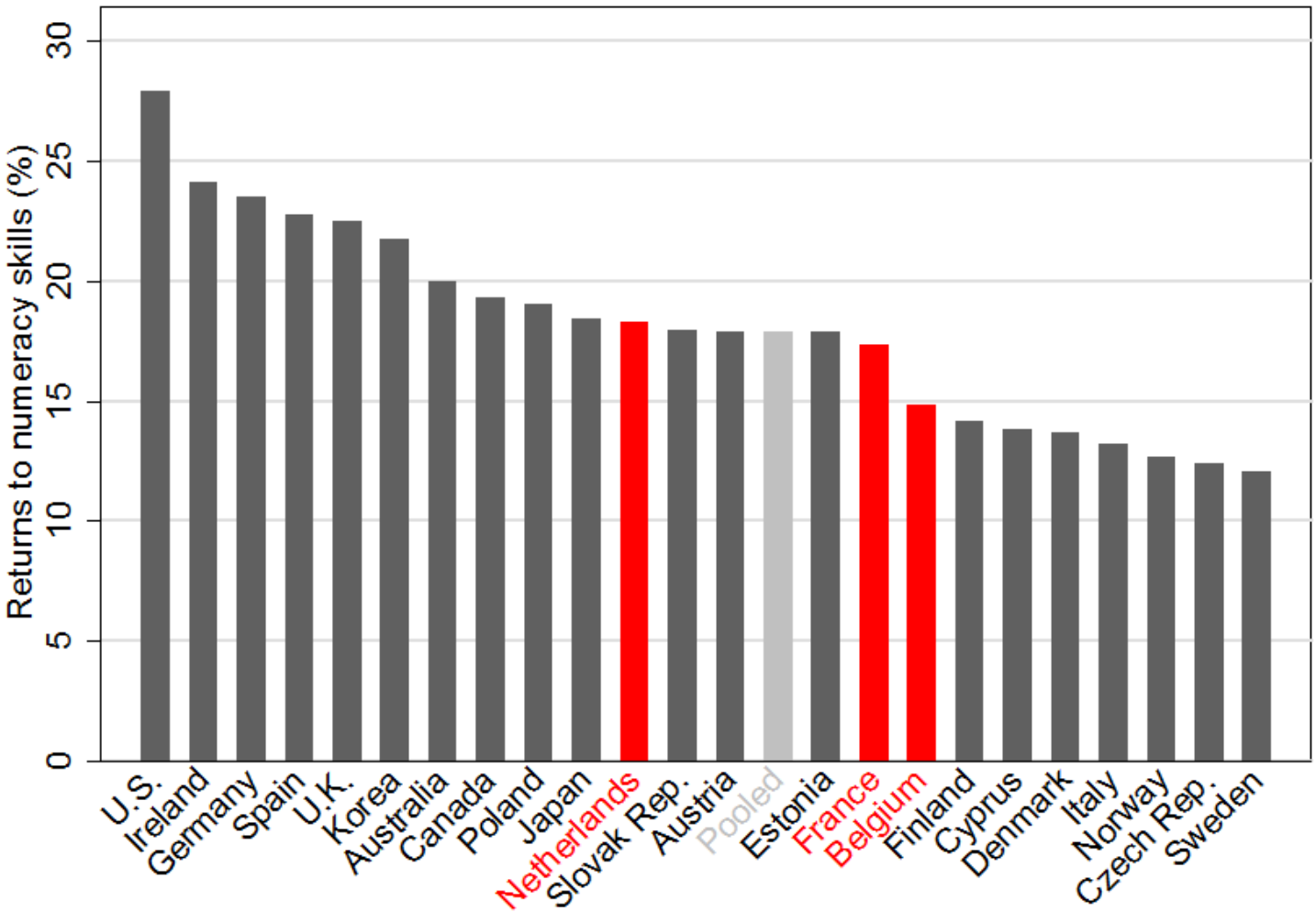

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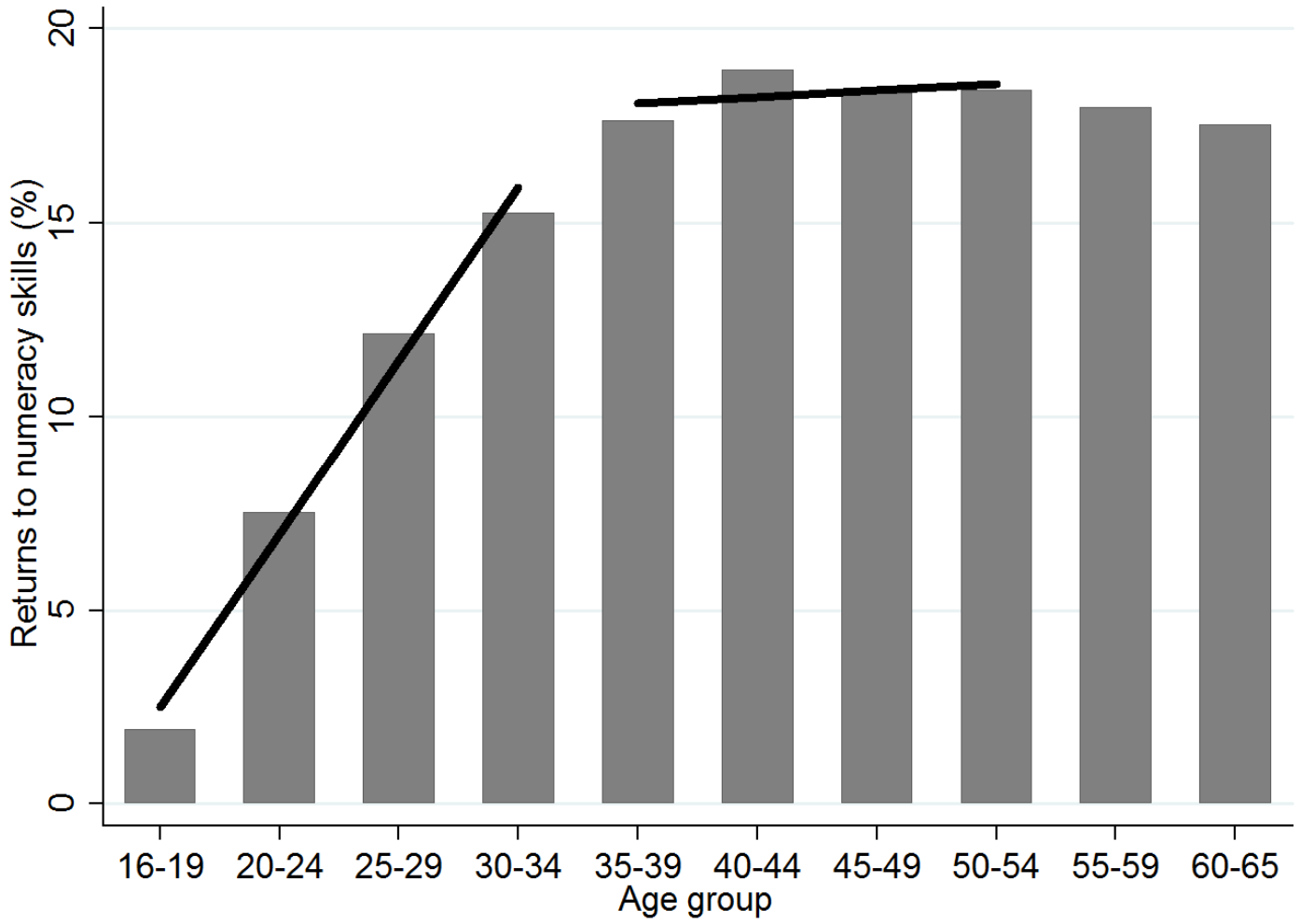
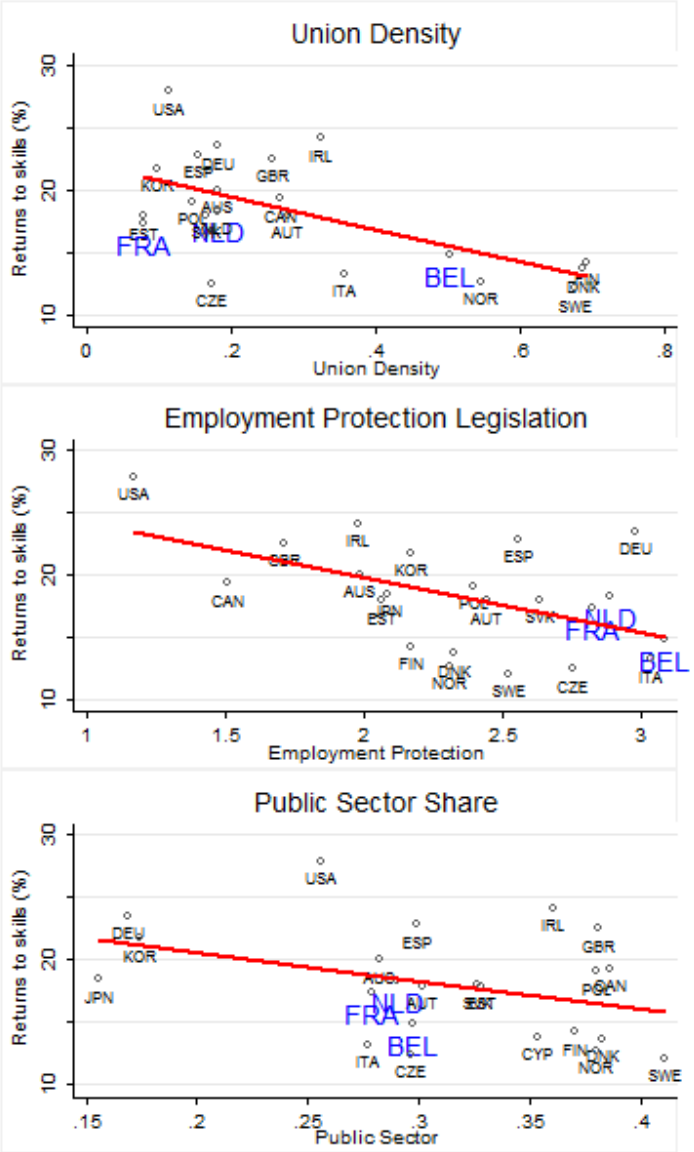
Returns to Skills by Age Group



Notes: Coefficient estimates on numeracy score (standardized to std. dev. 1 within each country) for indicated 5-year age groups in a regression of log gross hourly wage on numeracy, gender, a quadratic polynomial in actual work experience, and country fixed effects, sample of full-time employees pooling all countries. Slopes of solid lines reflect average change in returns by age groups (separately estimated for ages 16-34 and 35-54). *Data source:* PIAAC.

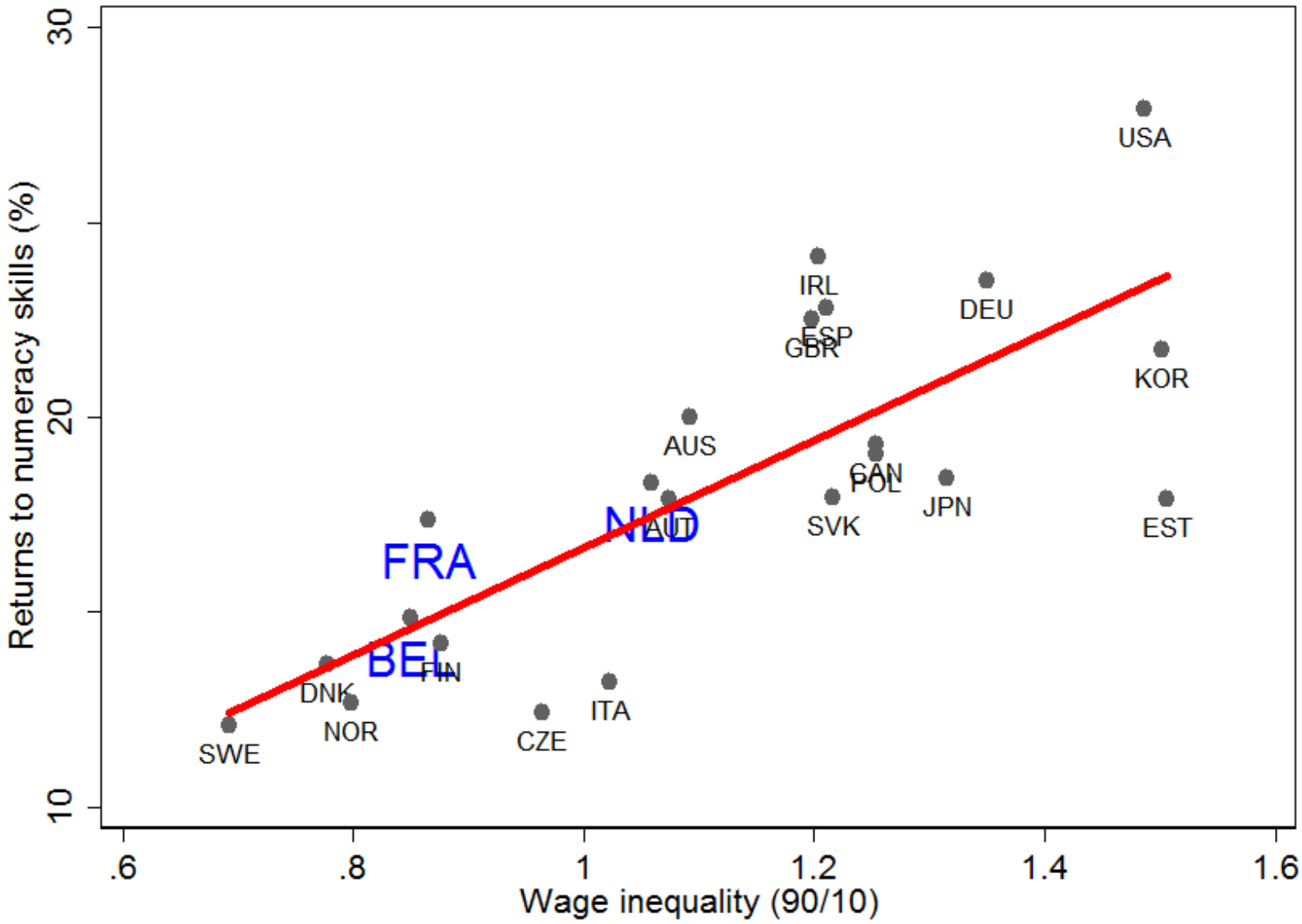
What Accounts for Cross-Country Differences in Returns to Skills?



Simulation: How Would Returns to Skills Change with Other Institutions?

Notes: The graph shows predicted returns to skills assuming counterfactual institutions. Returns are predicted for each country assuming the maximum (red bar) and the minimum (blue bar) level of the respective institution across all countries. *Union Density*: share of wage and salary earners who are trade union members. *Employment Protection Legislation*: composite indicator measuring strictness of employment protection for individual and collective dismissals. *Public Sector Share*: share of workers employed in the public sector. The country with the lowest (highest) value is Estonia (Finland) for union density; the United States (Belgium) for employment protection legislation; and Japan (Sweden) for public sector share.

Returns to Skills and Wage Inequality

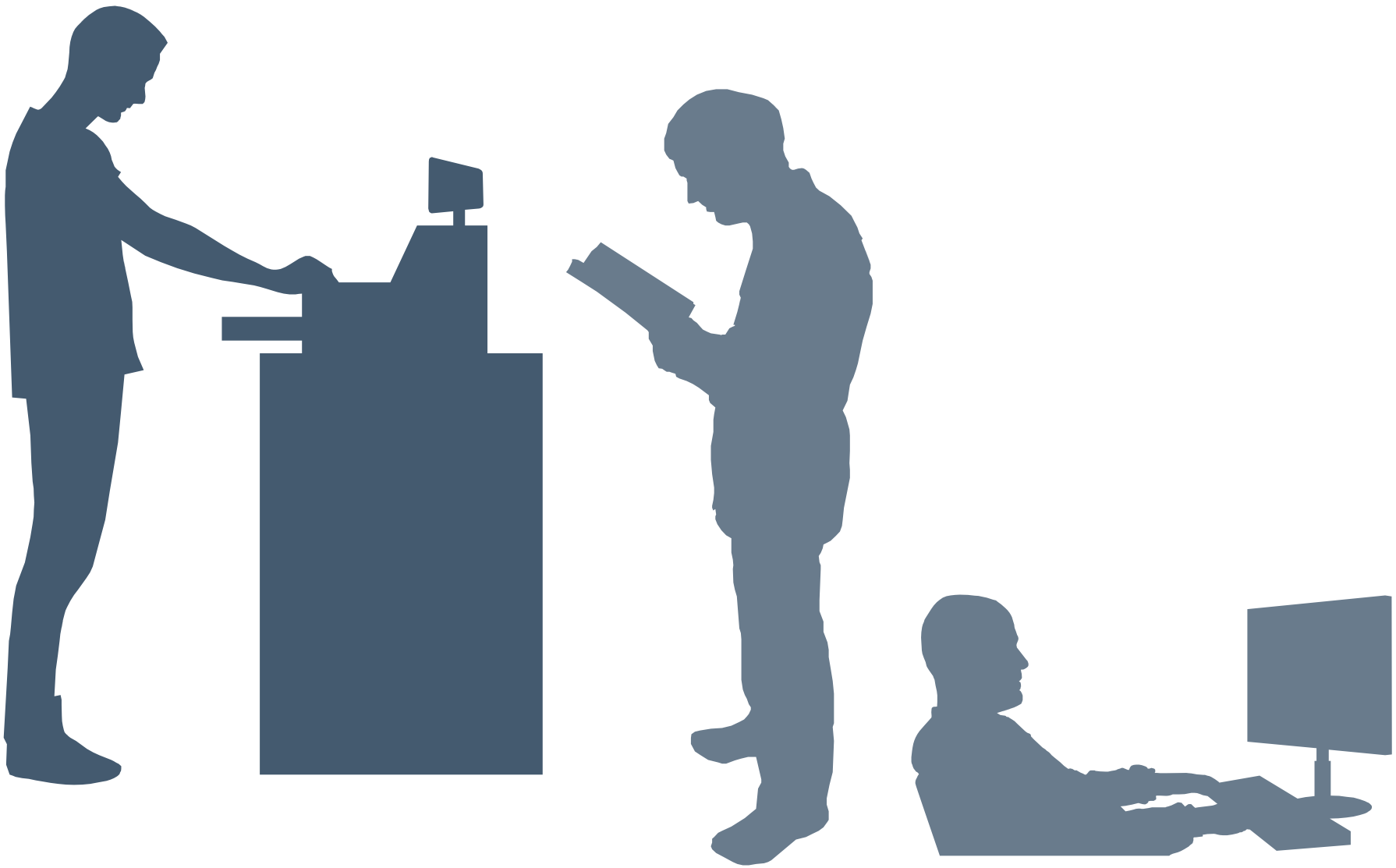


Returns to Skills around the World

- Higher cognitive **skills systematically related to higher wages** in all 23 PIAAC countries
  - An increase in numeracy skills by one out of five proficiency levels is associated with increased hourly wages averaging almost 18 percent across countries
- Substantial **heterogeneity** in returns to skills across countries
- Focus on **early-career** earnings leads to **underestimating** lifetime returns to skills by about one quarter
- Returns to skills **systematically lower** in countries with higher union density, stricter employment protection, and larger public-sector shares
- Returns to skills are **systematically higher** in countries with higher wage inequality

Literature

This presentation is based on:

Eric A. Hanushek, Guido Schwerdt, Simon Wiederhold, Ludger Woessmann (2015): “Returns to Skills around the World: Evidence from PIAAC.” European Economic Review, Vol. 73, pp. 103-130.

Thank you for your attention!