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Leibniz Institute  
for the Social Sciences



## Validity and comparability of the educational attainment measure in OECD's PIAAC study

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## Outline

- Motivation and research question
- Data and methods
- Education measures tested
- Empirical results
- Summary and recommendations

## Motivation

- Prior research showed variable degree of validity and comparability regarding cross-national education measures
- Valid and comparable measurement of educational attainment particularly crucial for surveys focusing on education, such as PIAAC
- We can support the decision with empirical evidence on validity and comparability
- Learn about countries not previously tested

## Research questions

- Using PIAAC Cycle 1 data (2012), how valid and comparable are the provided harmonized education variables?
- How well do alternative ways of coding educational attainment predict skills?
- What can we learn for PIAAC Cycle 2 (2022)?

## Data

- OECD's Programme for the International Assessment of Adult Competencies (PIAAC)
  - 2011/2012 (round 1): 24 countries
  - 2014/2015 (round 2): 8 countries
- Skills measured using direct adaptive testing and scoring resulting in 10 'plausible values' per skill
  - Used here: literacy skills
- Complex sampling methods used

## Methods

- Comparative construct validation. Here:
- Predict literacy skills by educational attainment (linear regression model)
- Compare predictive power ( $aR^2$ ) of various dummy-coded harmonized education variables relative to benchmark (country-specific measure)
- Stata ado “repest” takes plausible values in measures of skills and complex sampling into account

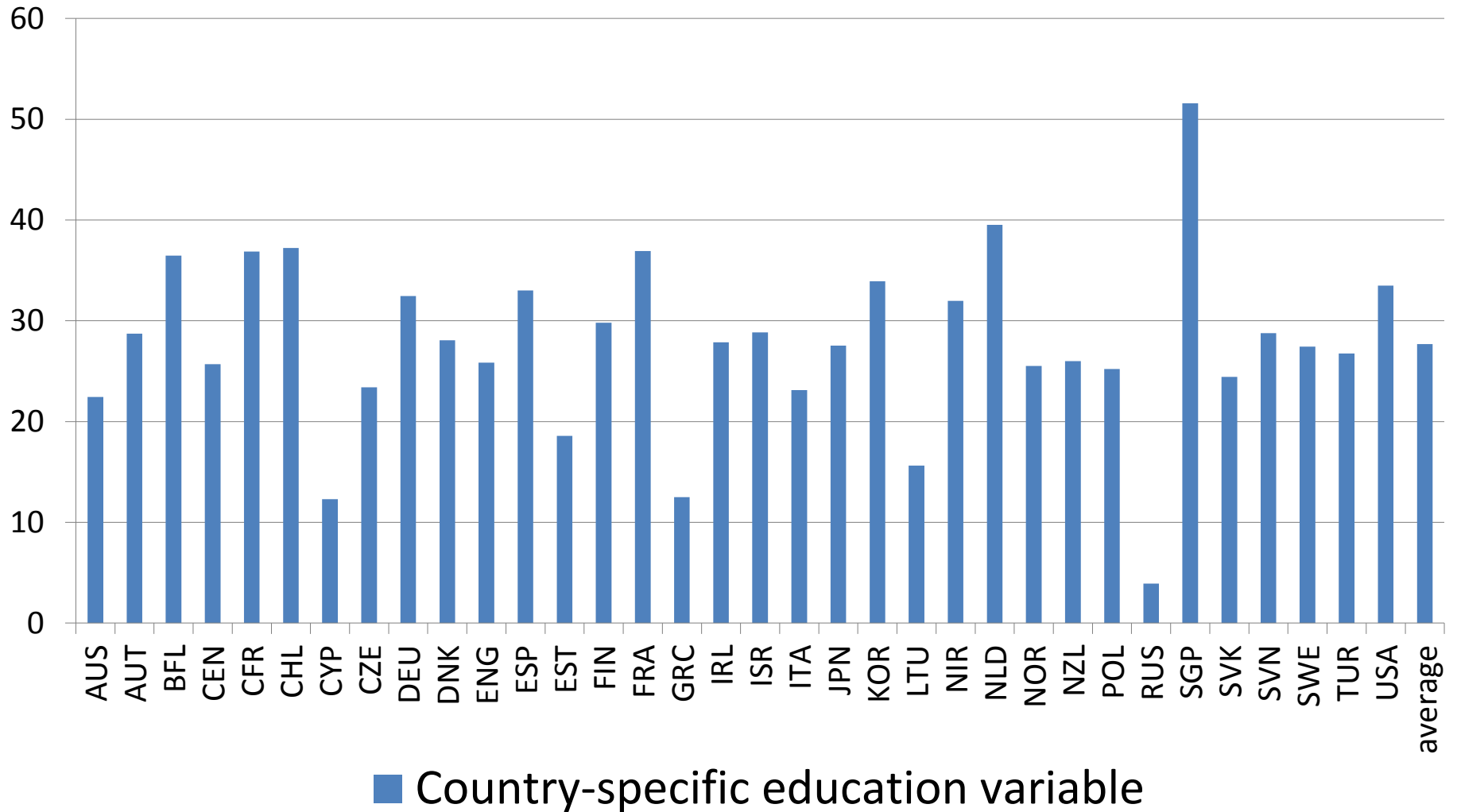
## Education measures tested

- B\_Q01a: detailed, close to ISCED 97 coding employed in EU-LFS <2013, added distinctions in tertiary education anticipating ISCED 2011 (14 categories)
- ISCED 2011 main levels (9 categories)
- ISCED 1997 main levels (7 categories)
- ISCED 1997 0-2, 3-4 and 5-6 aggregated (“low, medium, high”, 3 categories)
- Theoretical years of education (yrsqual)
- ES-ISCED (European Survey version of ISCED) using information on vocational orientation (8 categories)

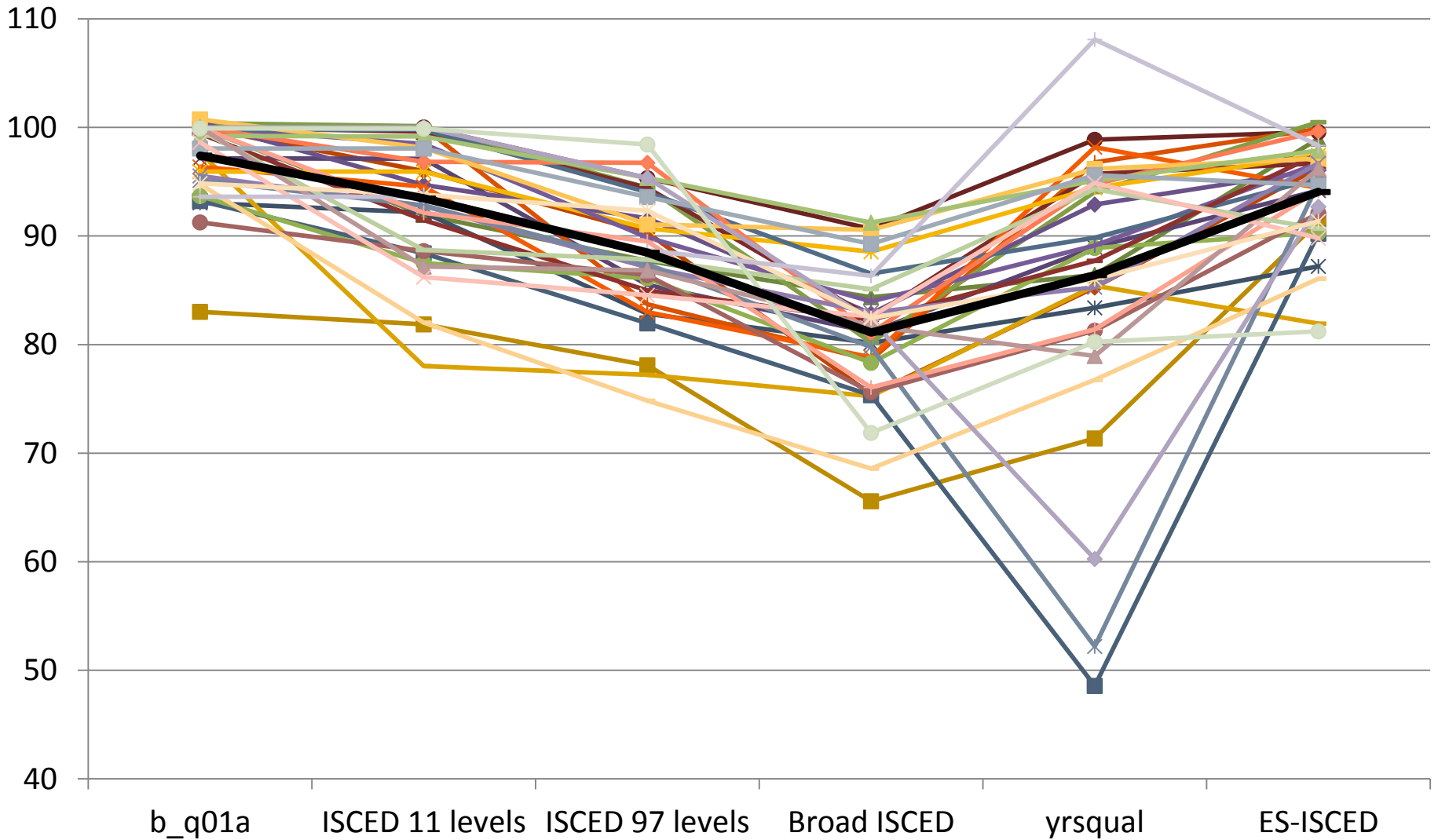
# Empirical results



# Predictive power (aR<sup>2</sup>) of benchmark measure



# Performance of harmonized variables



## Further results from close country inspection

- Many countries employ instruments matching B\_Q01a 1:1 (no aggregation necessary) although educational systems more differentiated
  - Performance of B\_Q01a overestimated?
- Aggregating ISCED 0 and 1 has negative effects in Turkey (likely the same would be found for developing countries)
- ISCED 2, 3A/B and 5B quite heterogeneous in many countries in terms of skill when distinction possible
- Aggregating ISCED 5A long and 6 ok mostly

## Summary and recommendations

- B\_Q01a works quite well empirically.
  - Theoretically, distinctions made maybe not most interesting ones
  - Detailed harmonization saves information and thus validity, also serving comparability
  - But demands of harmonized variable affected instruments in PIAAC – they shouldn't!
- For data analyses, ISCED 2011 main levels (9 categories) or ES-ISCED (8 levels) most suitable
  - Choose depending on theoretical arguments
  - Caution regarding quality of national measures already though
- Theoretical years of education work very differently across countries

Thank you!

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