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 ($\text{aR}^2$) 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 ($aR^2$) of benchmark measure

Country-specific education variable
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!