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Formal education in PIAAC Cycle 2: Challenges and opportunities

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Formal education

- THE central background variable in the PIAAC background questionnaire (BQ)
- Important mediator in the intergenerational transmission of (dis-)advantage since related to:
 - social background (inequality of opportunity)
 - cognitive skills (skill formation)
 - social/economic outcomes (inequality of outcomes)
- Measurement quality of crucial importance!

Outline

- a) Conceptual innovations: Deepening understanding of the role of formal education in skill formation and effects of skills
 1. Innovation in concepts covered
 2. Innovation in degree of differentiation
- b) Methodological innovation in dealing with two challenges in measuring formal education in PIAAC
 1. Innovation in cross-national coding framework
 2. Innovation in development of nationally adapted education measures
 3. Innovation in resulting comparable education variables

a) Conceptual innovations

1. Formal education in PIAAC

Main concept:

- educational attainment (highest educational qualification obtained) - EDA

Secondary concepts:

- educational enrolment (educational qualification currently pursued) - EDE
- incomplete education (last educational qualification pursued but not obtained) - EDI
- education required to get current/last job - EGC/EGL
- **NEW: educational pathway (all educational qualifications obtained before highest qualification) - EP**

Innovation 1: educational pathways I

- Development of measure requested by BPC, analytic interest across countries
- Aim: better understand processes of skill formation across countries and role of education systems in sorting people into the labor market
- Status quo: Little comparative knowledge on effects of pathways on attainment, skills, and other outcomes

Innovation 1: educational pathways II

- Development supported by OECD expert group 2016-2017, but not covered in mixed-methods pretest 2018 (development was still ongoing)
- FT version validated in FT data analyses
- Revised MS measure (placed right after question on highest qualification obtained):

“Which other qualifications on this card did you obtain before your highest qualification?

Please start at the top and name all that apply.”

Innovation 2: increased differentiation

- Cycle 1 coding scheme: 12 categories plus 2 nfs codes, based on ISCED 1997
 - ▶ no reflection of tracks in lower secondary education
 - ▶ no reflection of programme orientation (general, vocational) even though highly relevant distinction for inequality of opportunity, skill formation, and outcomes
- Cycle 2 coding scheme: 23 categories plus 6 nfs codes, based on ISCED 2011

ISCED 2011-A

1 st digit	Label	2 nd digit: mostly orientation	3 rd digit: mostly access
0	Less than primary education	1=never attended education 2=some pre-primary education 3=some primary education	0
1	Primary education	0	0
2	Lower secondary education	4=general, 5=vocational	2=partial completion 3=no access 4=access to 3 (at level 2) or 5/6/7 (at level 3)
3	Upper secondary education		3=no access 4=access to 5/6/7
4	Post-secondary non-tertiary education		0
5	Short-cycle tertiary education	4=academic, 5=professional, 6=unspecified	0
6	Bachelor level education		0
7	Master level education		0
8	Doctoral level education		0

PIAAC Cycle 1 (ISCED 97+), B_Q01a

Code	Label
1	No formal qualification or below ISCED 1
2	ISCED 1
3	ISCED 2
4	ISCED 3C shorter than 2 years
7	ISCED 3 (without distinction A-B-C, 2y+)
5	ISCED 3C 2 years or more
6	ISCED 3A-B
10	ISCED 4 (without distinction A-B-C)
8	ISCED 4C
9	ISCED 4A-B
11	ISCED 5B
12	ISCED 5A, bachelor degree
13	ISCED 5A, master degree
14	ISCED 6

b) Methodological innovation

Two challenges

Comparability across
participating countries:

Differences between...

- educational systems
- understanding of
concepts to be
measured

Comparability over time
(between C1 and C2):

Changes in...

- educational systems
- tools for rendering
education data
comparable, such as
ISCED and ISCED
mappings

Solution: harmonization approach

1. Develop *cross-national coding framework* with internationally defined education categories
2. Design *nationally adapted education measures* in such a way that comparable data (across countries and over time) can be derived in data processing
3. Produce comparable education variables (output)

→ “Ex-ante-output-harmonization”

➤ No change of general approach compared to Cycle 1

1. Cross-national coding framework

- Based on ISCED 2011-A

1 st digit	Label	2 nd digit: mostly orientation	3 rd digit: mostly access
0	Less than primary education	1=never attended education 2=some pre-primary education 3=some primary education	0
1	Primary education	0	0
2	Lower secondary education	4=general, 5=vocational	2=partial completion 3=no access 4=access to 3 (at level 2) or 5/6/7 (at level 3)
3	Upper secondary education		
4	Post-secondary non-tertiary education		3=no access 4=access to 5/6/7
5	Short-cycle tertiary education		0
6	Bachelor level education	4=academic, 5=professional, 6=unspecified	0
7	Master level education		0
8	Doctoral level education		0

Official ISCED 2011		PIAAC Cycle 2	
ISCED-A	Label	PIAAC-A	Short label
010, 020, 030	Less than primary education	1000	ISCED 0
100	Primary education	1100	ISCED 1
200	Lower secondary education, sufficient for level completion	1200	ISCED 2 comp/nfs
		1204	ISCED 2 pre/voc
		1245	ISCED 2 acad
		1294	voc ISCED 3 short
254	Vocational upper secondary education, insufficient for (partial) level completion	1294	voc ISCED 3 short
244	General upper secondary education, insufficient for (partial) level completion	1295	gen ISCED 3 short
300	Upper secondary education	2300	ISCED 3 nfs
352	Vocational upper secondary education, partial level completion, without direct access to tertiary education	2324	voc ISCED 3 access 3
342	General upper secondary education, partial level completion, without direct access to tertiary education	2325	gen ISCED 3 access 3
353	Vocational upper secondary education, level completion, without direct access to tertiary education	2334	voc ISCED 3 access 3/4
343	General upper secondary education, level completion, without direct access to tertiary education	2335	gen ISCED 3 access 3/4
354	Vocational upper secondary education, level completion, with direct access to tertiary education	2344	voc ISCED 3 access 3/4
344	General upper secondary education, level completion, with direct access to tertiary education	2345	gen ISCED 3 access 5/6/7
400	Post-secondary non-tertiary education	2400	ISCED 4 nfs
453	Vocational post-secondary non-tertiary education, level completion, without direct access to tertiary education	2434	voc ISCED 4 access 4
443	General post-secondary non-tertiary education, level completion, without direct access to tertiary education	2435	gen ISCED 4 access 4
454	Vocational post-secondary non-tertiary education, level completion, with direct access to tertiary education	2444	voc ISCED 4 access 5/6/7
444	General post-secondary non-tertiary education, level completion, with direct access to tertiary education	2445	gen ISCED 4 access 5/6/7
560	Short-cycle tertiary education	3500	ISCED 5 nfs
550	Vocational short-cycle tertiary education	3504	voc ISCED 5
540	General short-cycle tertiary education	3505	gen ISCED 5
660	Bachelor's or equivalent level	3600	ISCED 6 nfs
650	Professional Bachelor's or equivalent level	3604	prof ISCED 6
640	Academic Bachelor's or equivalent level	3605	acad ISCED 6
760	Master's or equivalent level	3700	ISCED 7 nfs
750	Professional Master's or equivalent level	3704	prof ISCED 7
740	Academic Master's or equivalent level	3705	acad ISCED 7
800	Doctoral or equivalent level	3800	ISCED 8

possibility to derive official ISCED 2011 codes

4-digit coding scheme related to ISCED 2011:

1. broad level
2. main level
3. destination
4. orientation

PIAAC Cycle 1 (ISCED 97+), B_Q01a		PIAAC Cycle 2	
Code	Label	PIAAC-A	Short label
1	No formal qualification or below ISCED 1	1000	ISCED 0
2	ISCED 1	1100	ISCED 1
3	ISCED 2	1200	ISCED 2 comp/nfs
		1204	ISCED 2 pre/voc
		1245	ISCED 2 acad
4	ISCED 3C shorter than 2 years	1294	voc ISCED 3 short
		1295	gen ISCED 3 short
7	ISCED 3 (without distinction A-B-C, 2y+)	2300	ISCED 3 nfs
5	ISCED 3C 2 years or more	2324	voc ISCED 3 access 3
		2325	gen ISCED 3 access 3
		2334	voc ISCED 3 access 3/4
		2335	gen ISCED 3 access 3/4
6	ISCED 3A-B	2344	voc ISCED 3 access 5/6/7
		2345	gen ISCED 3 access 5/6/7
10	ISCED 4 (without distinction A-B-C)	2400	ISCED 4 nfs
8	ISCED 4C	2434	voc ISCED 4 access 4
		2435	gen ISCED 4 access 4
9	ISCED 4A-B	2444	voc ISCED 4 access 5/6/7
		2445	gen ISCED 4 access 5/6/7
11	ISCED 5B	3500	ISCED 5 nfs
		3504	voc ISCED 5
		3505	gen ISCED 5
12	ISCED 5A, bachelor degree	3600	ISCED 6 nfs
		3604	prof ISCED 6
		3605	acad ISCED 6
13	ISCED 5A, master degree	3700	ISCED 7 nfs
		3704	prof ISCED 7
		3705	acad ISCED 7
14	ISCED 6	3800	ISCED 8

possibility to use cycle 1 coding scheme with cycle 2 data for longitudinal comparisons

2. Nationally adapted education measures

1. Documentation of international coding scheme and development process in harmonization guidelines
2. Education consultation template pre-filled by consortium with cycle 1 national education categories
3. Discussed and agreed in consultation process between country and consortium

➤ Innovation compared to cycle 1

3. Comparable education variables I

Specification of derived education variables, from detailed to less detailed coding schemes:

- 4 digit PIAAC cycle 2 coding scheme
- PIAAC cycle 1 coding scheme (and DVs?)
- Official ISCED 2011 in various versions of aggregation, including 1st digit main level (0 ‘less than primary’ to 8 ‘doctoral level’)
- For each concept related to formal education
- Too many formal education variables! TBD for MS.

3. Comparable education variables II

- Since educational pathway consists of a series of dummy variables ('check all that apply' approach), specific derived variables needed, aggregating information across educational career
- Indicators developed and validated with FT data:
 - Which track respondent completed at ISCED level 2 in case of a tracked lower secondary education system
 - Whether respondents completed
 - any vocational/professional education
 - crucial academic/general qualifications (especially university entrance qualification at ISCED level 3)
 - the optional ISCED level 4as part of their pathway

Summary and a critical note

- PIAAC Cycle 2 formal education variables
 - substantially increase analysis potential compared to cycle 1
 - added differentiation in detailed coding scheme
 - added concept of educational pathways
 - will still be broadly comparable to cycle 1 data
 - may have higher international comparability
- However, PIAAC cannot solve problems resulting from weaknesses of official ISCED mappings
 - Some doubts on validity of ISCED mappings (how individual countries apply ISCED criteria to national qualifications)
 - ISCED mapping of specific qualifications may have changed between cycle 1 and cycle 2
 - ▶ Both cross-country and longitudinal comparability thus limited to some degree

Thank you for your attention!

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