

The long shadow of education policy illustrated by historizing PIAAC results – an exploratory case analysis

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Agenda

- Purpose, approach, methodology (explorative, discussion, comments?)...
 - ...WHAT WOULD HISTORIANS SAY?
 - ...CRITICAL TO SHORT-TERM VIEW BY POLITICIANS, ECONOMISTS
- Recall of **previous study**, comparative tracing back skill formation structures and (potential) impact of big reform periods (selected countries)
 - ...DIVISIVE TRACKING STRUCTURES & VOCATIONAL EDUCATION
 - ...REFORM PERIODS: „PROGRESSIVE“ 1960/70s; „NEOLIBERAL“ 1980/90s
- Glimpse on **current study** about the two PIAAC-waves, focusing on „detailed historizing“ Austrian development, **big changes** in skill production machinery
 - DEMOGRAPHY; RESOURCES; EXPANSION „HIGHER“; MIGRATION/MULTILINGUALISM, TESTING
- Some conclusions...

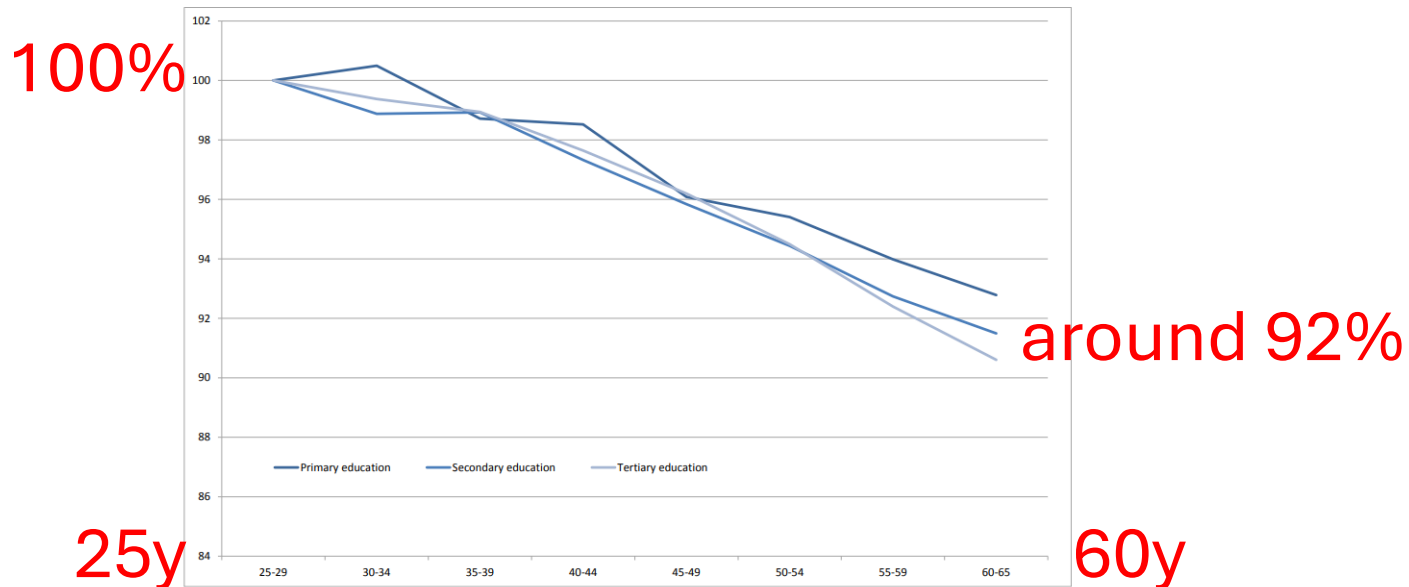
Purpose, approach; (much explorative!)

- „**Historizing**“ skill formation of current population goes directly back to 1950s, thus indicates the **big size of skill production machinery (over decades)**...
 - ...is somehow trivial, but at a second look not so trivial [WHAT WOULD HISTORIANS SAY?]
- ...means (temporally) **tracing back** current competences to **formal education** periods...
 - ...and changing conditions...DEMOGRAPHY; RESOURCES; EXPANSION, etc.
- ...so main traits of education development and policies can be linked to education results in the current population...
 - ...provides special approach for historizing, because historical research „normally“ cannot link development to competences (**THESIS, is this right?**)
- ...**big obstacles** to this approach are (i) changes that occur after formal education (ACE!), (ii) long periods in formal education and intermitting changes, (iii) „pure“ biological ageing effects (see side remark)...

...side remark about „pure ageing effects“ (that would destroy the whole study)

- ...in age-profiles of competences, results seem typically go down with age...
- EXAMPLE I**

Figure 21. Evolution of literacy proficiency by educational attainment



Source: Survey of Adult Skills (PIAAC) (2012), www.oecd.org/site/piaac/publicdataandanalysis.htm.

Source: p.48 in Paccagnella, M. (2017). Age, Ageing and Skills: Results from the Survey of Adult Skills. OECD Education Working Papers No. 132. DOWNLOAD https://www.oecd.org/content/dam/oecd/en/publications/reports/2016/04/age-ageing-and-skills_g17a27bf/5jm0q1n38lvc-en.pdf

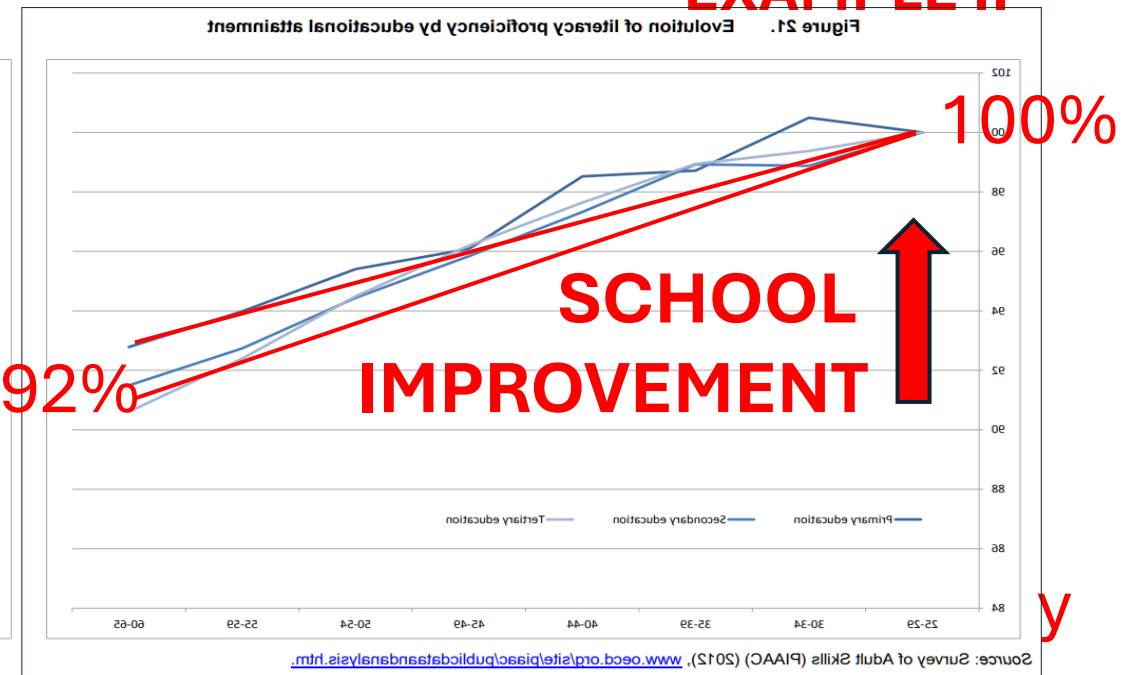
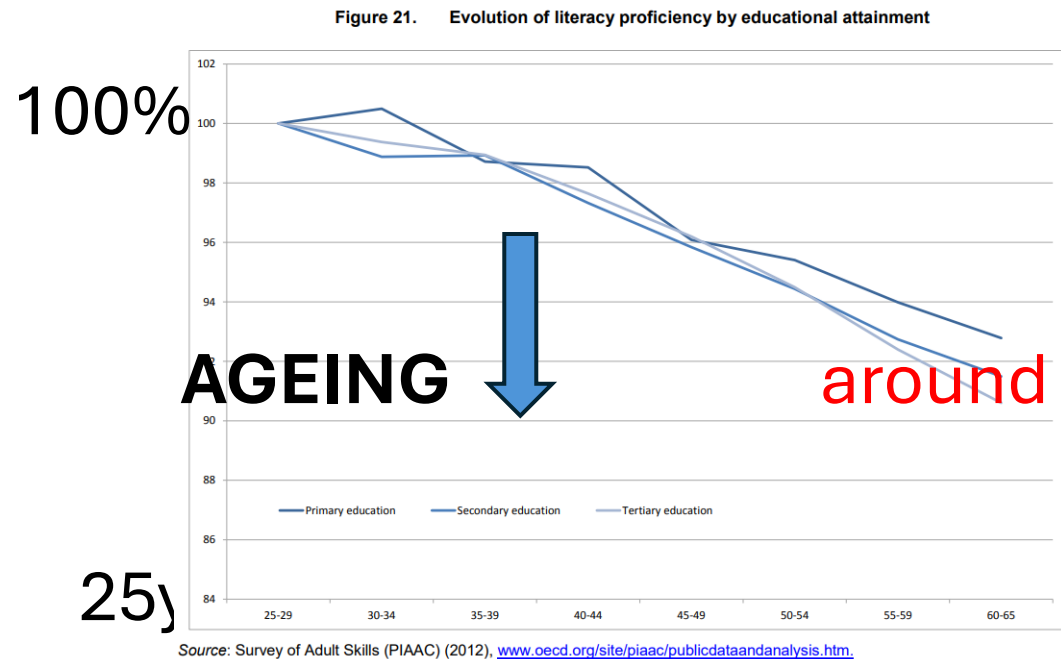
...side remark about „pure ageing effects“ (that would destroy the whole study)

- ...in age-profiles of competences, results seem typically go down with age...
- ...so research was fascinated by identifying the „pure ageing effect“ on competences over the life course (by cross-sectional studies interpreted as longitudinal) without finding much effect...
- ...however, more recent, better studies identify **negligable pure ageing effects** (e.g., Hanushek, 2025; also other approaches)...
- ...so, the opposite alternative hypothesis, that the downward age profile might be reversed toward **an upward age profile**, based on better education of younger cohorts, was virtually not considered/tested

...side remark about „pure ageing effects“
(that would destroy the whole study)

- ...in age-profiles of competences, results seem typically go down with age...

EXAMPLE II



Source: p.48 in Paccagnella, M. (2017). Age, Ageing and Skills: Results from the Survey of Adult Skills. OECD Education Working Papers No. 132. DOWNLOAD https://www.oecd.org/content/dam/oecd/en/publications/reports/2016/04/age-ageing-and-skills_g17a27bf/5jm0q1n38lvc-en.pdf

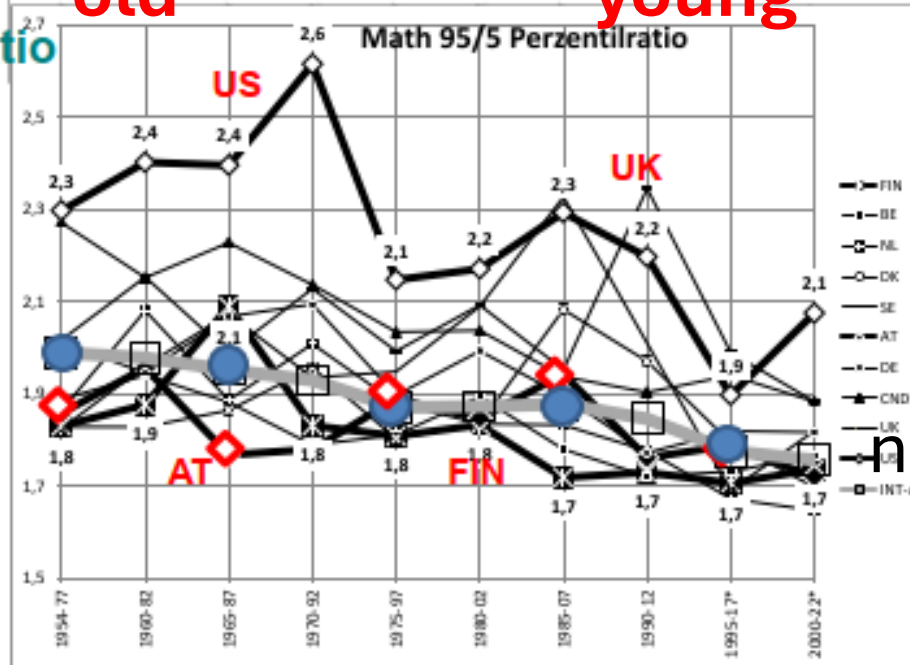
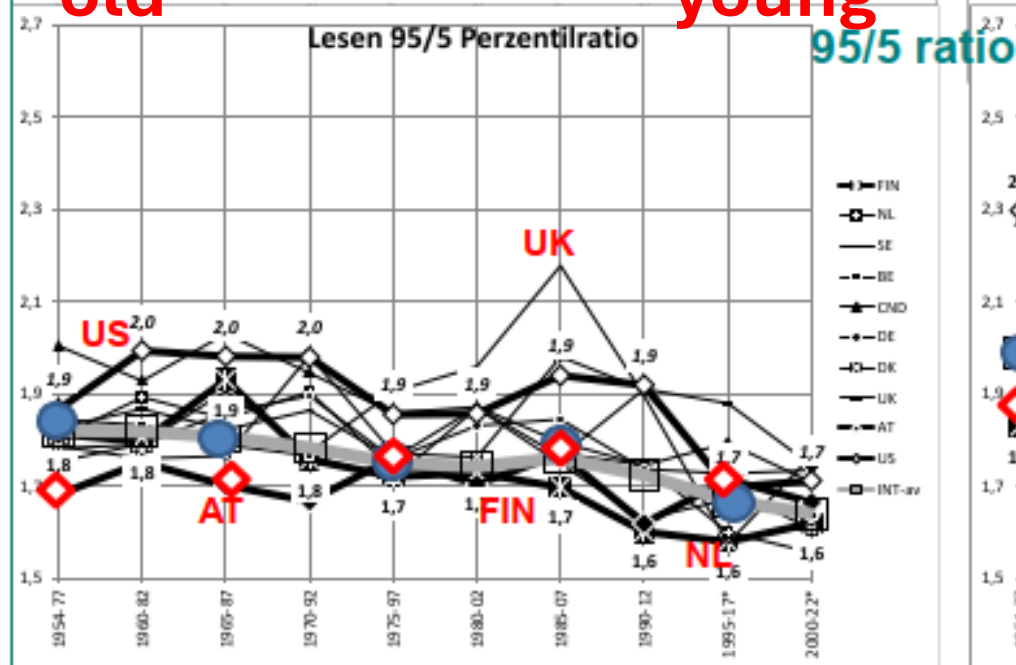
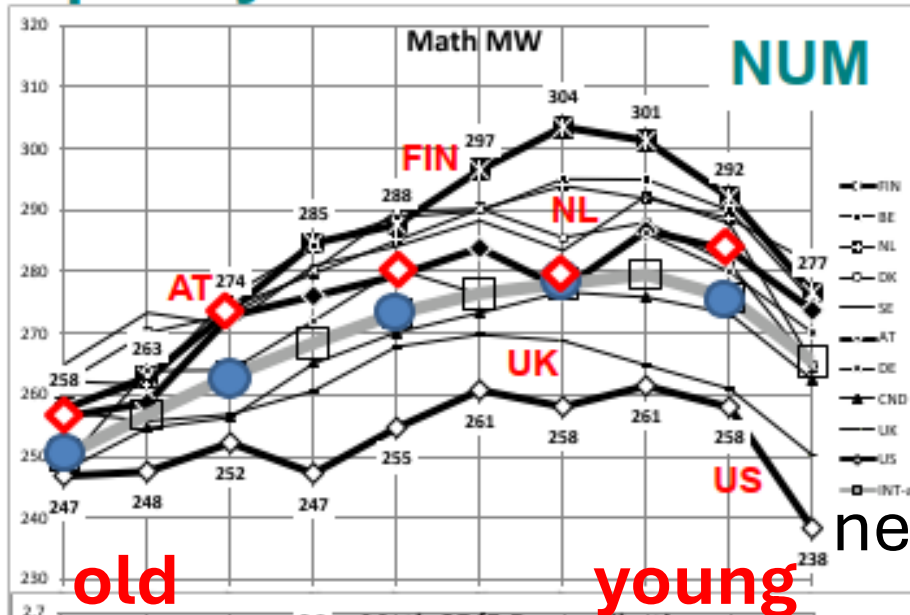
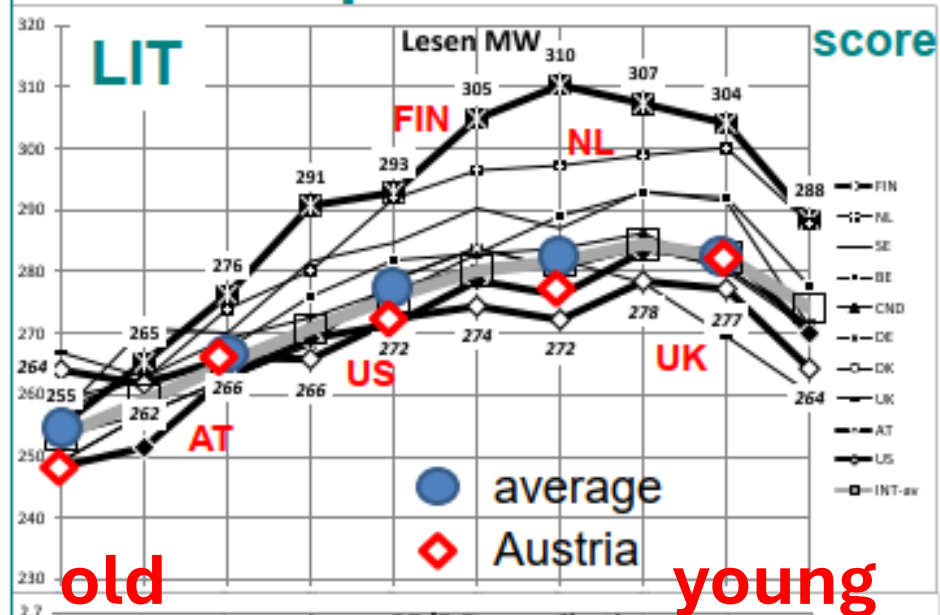
...recall of previous study (PIAAC I)

- ...comparative study, analysing two aspects of skill formation in relation to PIAAC competences,
 - system differentiation (tracking) in combination with VET provision, cross-section of tracking variables (using PISA country information about school differentiation and PIAAC qualification structures)
 - tracing competences of selected countries according to welfare models (NORDIC, CONTINENTAL, LIBERAL) by age-groups, back to the two basic reform periods (progressive 1960/70s, and neoliberal 1980/90s).
- ...results of the cross-sectional analysis were complex configurations of skill formation structures
 - mainly unexpected results of tracked school systems in combination with higher education on competence scores and distribution, with VET not contributing to inequality and lowering scores, however, higher education not systematically increasing scores and contributing to selectivity and inequality

...previous study cont.

- ...the „quasi-longitudinal“ analysis of selected countries (NORD FIN, SE, DK; CONT AT, DE, BE; LIB UK, US, CAN) gave mixed results, groupings not much consistent
- FIN exceptional positive
- neoliberal reform period not improved scores, partly increased inequality, progressive reform no consistent results
SEE ILLUSTRATION NEXT

competence level &-inequality sel.countries



Left LIT
Right NUM
old-to young

SCORE

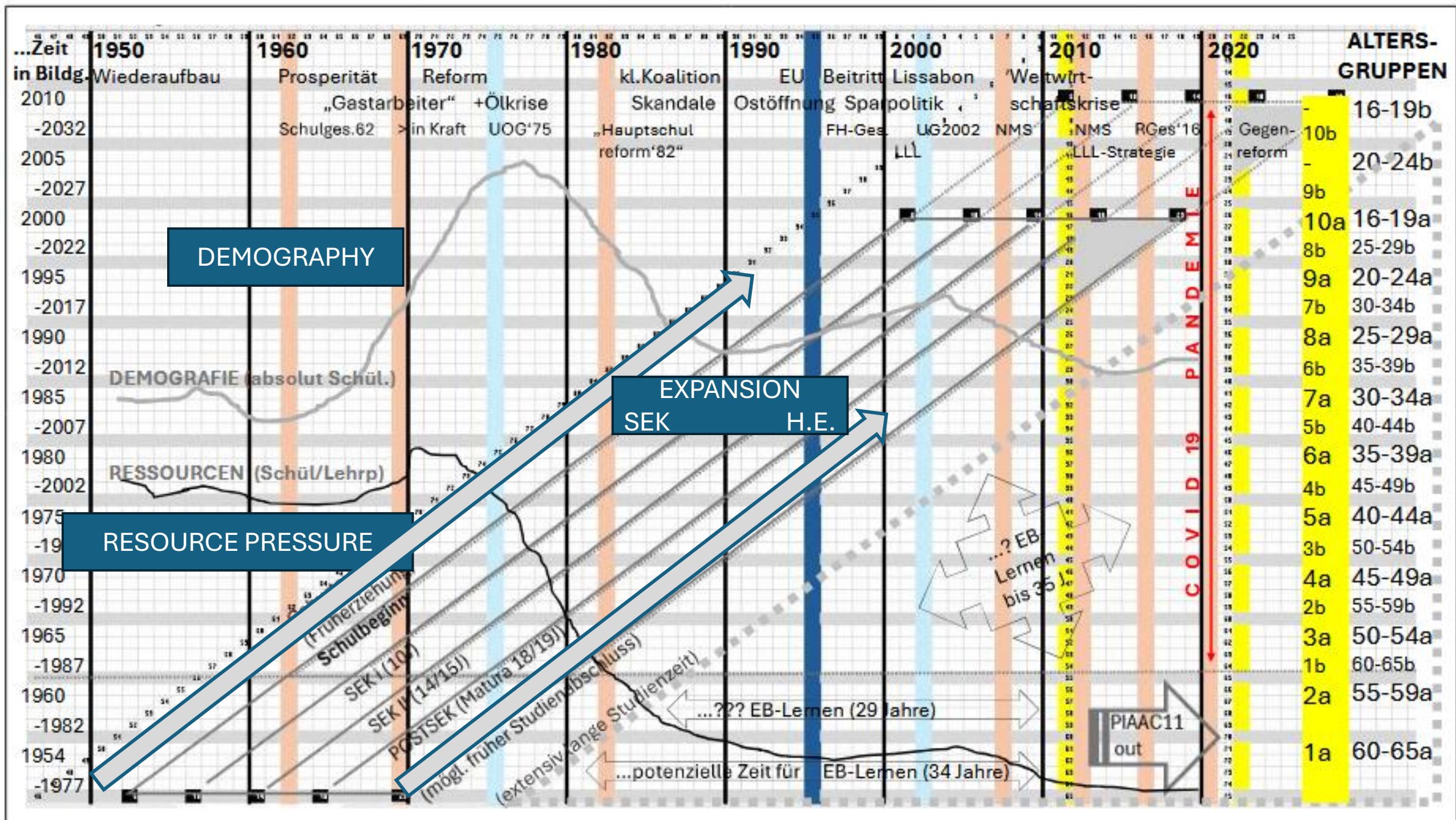
FIN highest
neolib no improve

95/5-PERC RATIO

FIN low
neolib partly incr

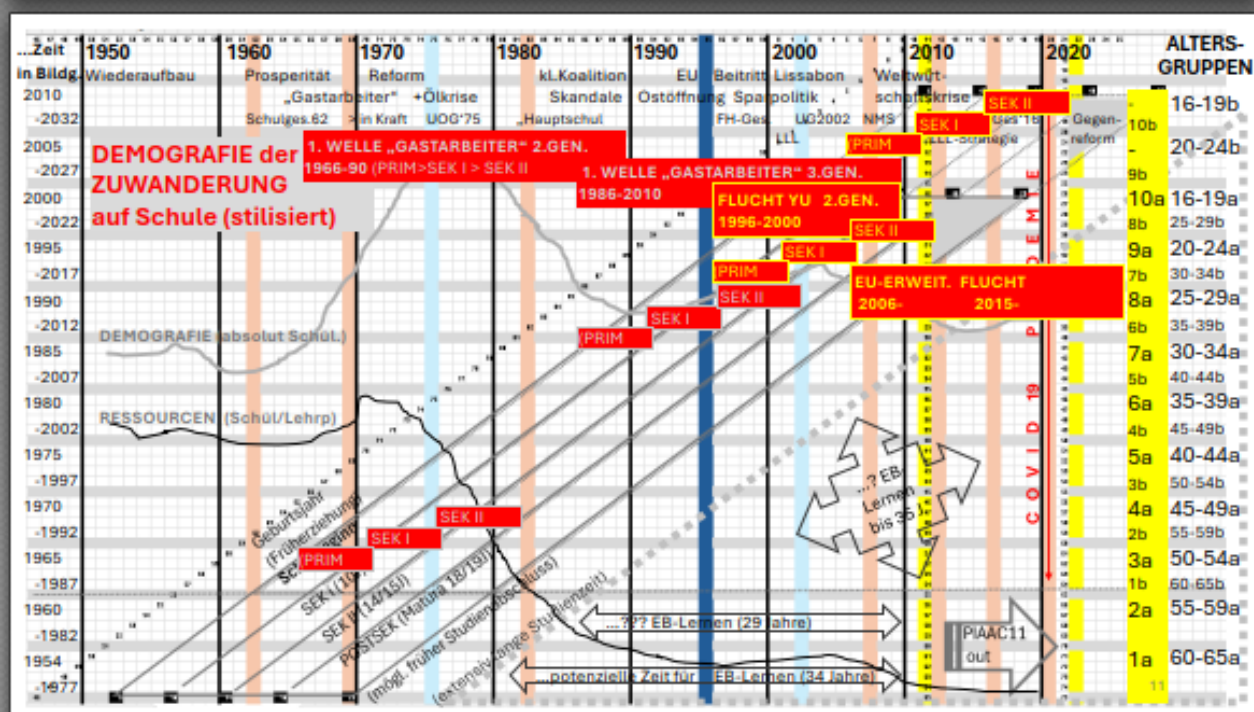
...glimpse on current study (PIAAC II)

- ...more detailed look at AUSTRIA as example; PIAAC age groups are backward projected to the time-scale of careers in formal education, **oldest group started in 1950s, youngest in 2000-10...**
- ...main changes over the time-span are ordered to the PIAAC age groups' education careers, and development is interpreted in detail
 - REFORMS,
 - DEMOGRAPHY;
 - RESOURCES;
 - EXPANSION OF „HIGHER“ LEARNIG;
 - MIGRATION/MULTILINGUALISM,
 - TESTING-POLICY
- ...PIAAC indicators are calculated two-fold (age groups, quasi cohorts)



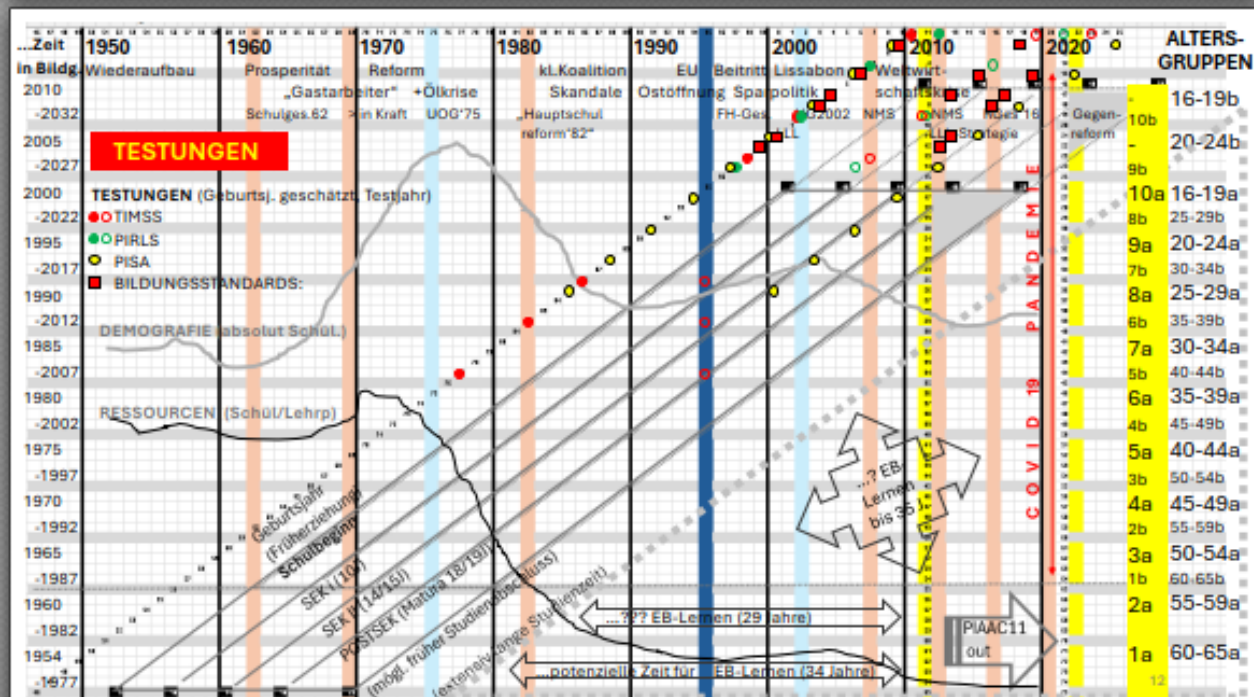
MIGRATION AND MULTILINGUALISM

...started early, expanded in younger cohorts



TESTING/STANDARDISATION POLICY („GERM“)

...late development multiplies only in youngest groups

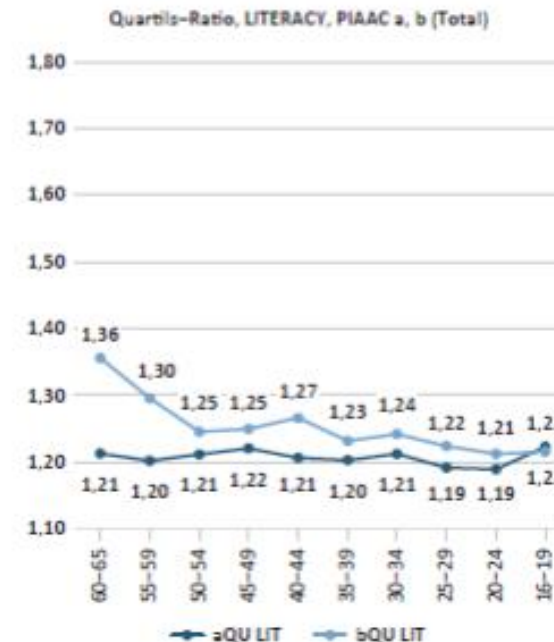
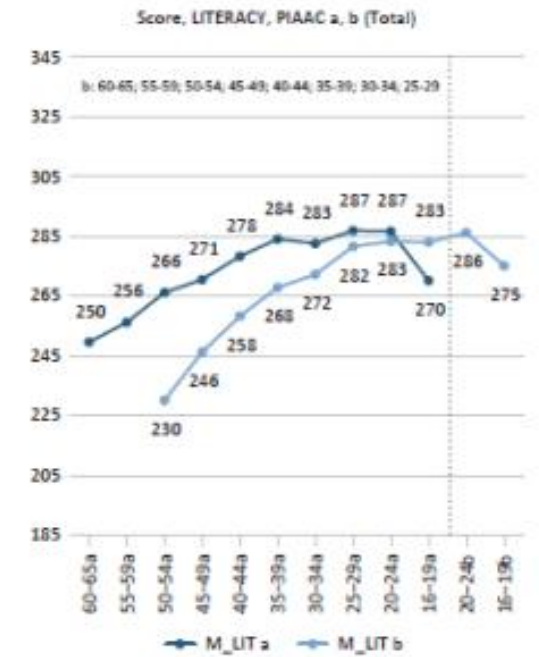
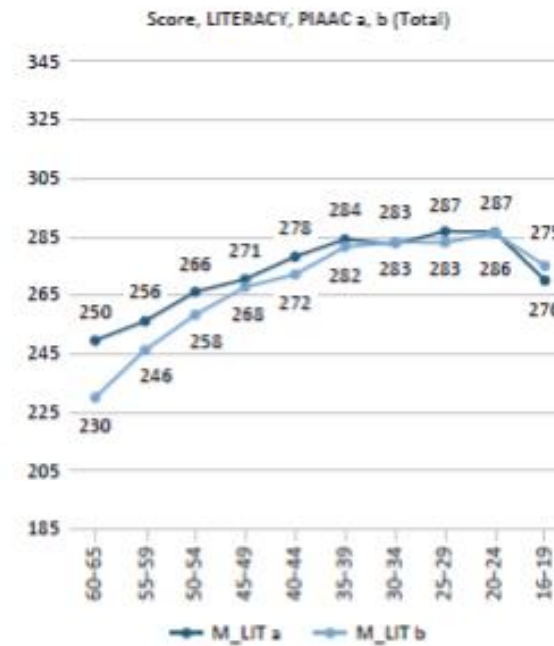


PIAAC I and II data analysis (descriptive)

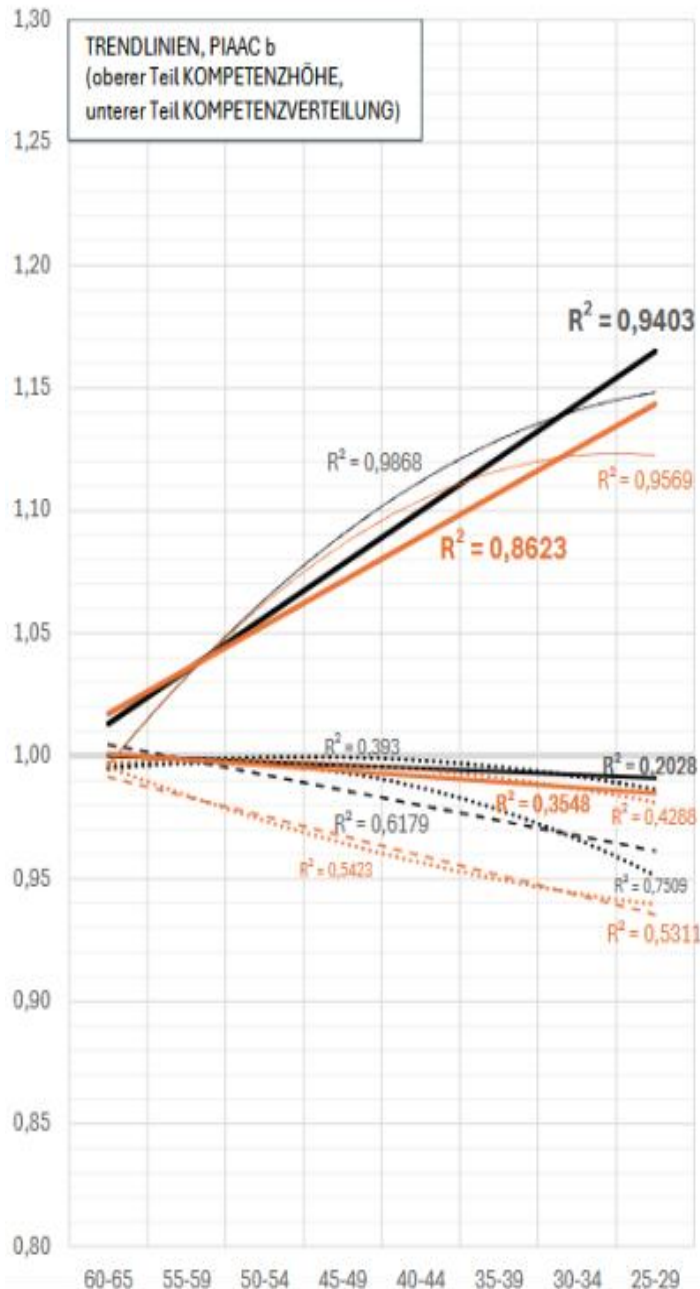
- Two versions: age groups and quasi-cohorts
- Overall population, and breakdown by national education categories completed: COMPULSORY, APPRENTICESHIP, UPPER SECONDARY ACAD, VOCATIONAL, HIGHER EDUCATION
- Indicators: literacy and numeracy, MEAN SCORE, QUARTILE RATIO, 95/5-RATIO

Results illustrative, PIAAC I, II, age, cohort

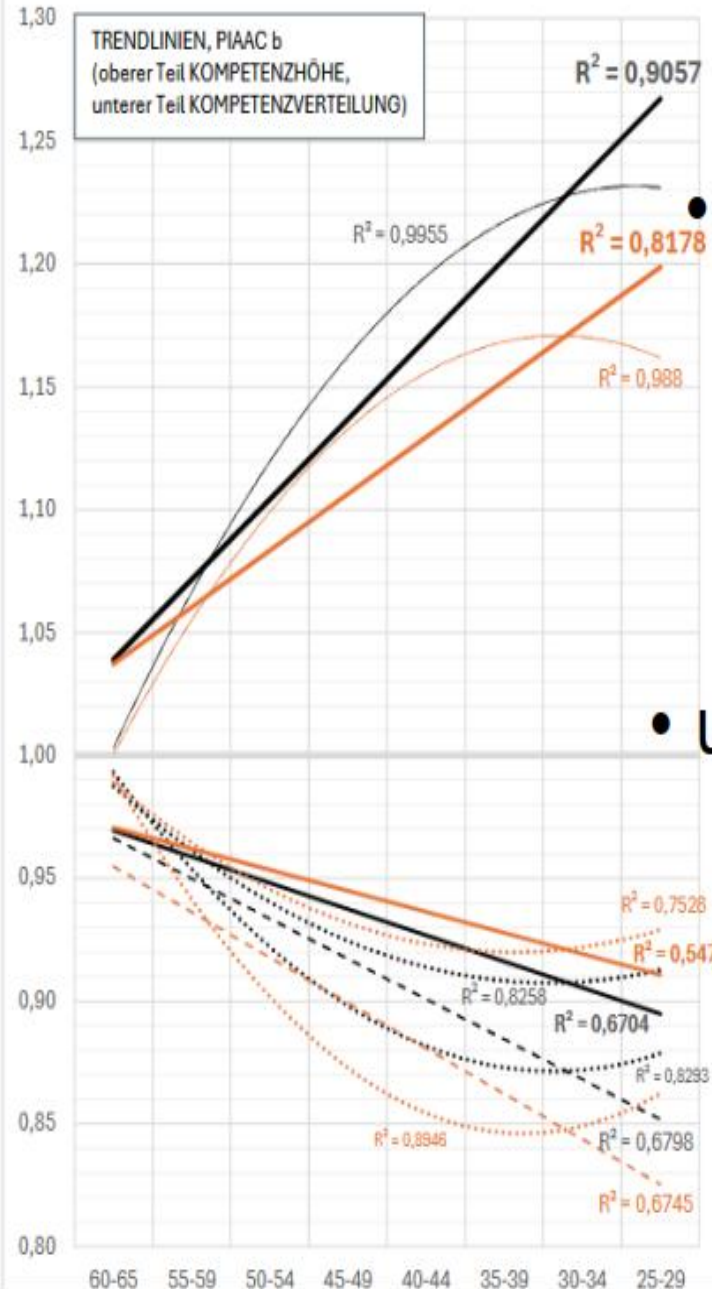
- Scores go down among the elderly (not young)
- Inequality goes up between surveys, among oldest groups markedly not within surveys (from older to younger groups)



ALL a

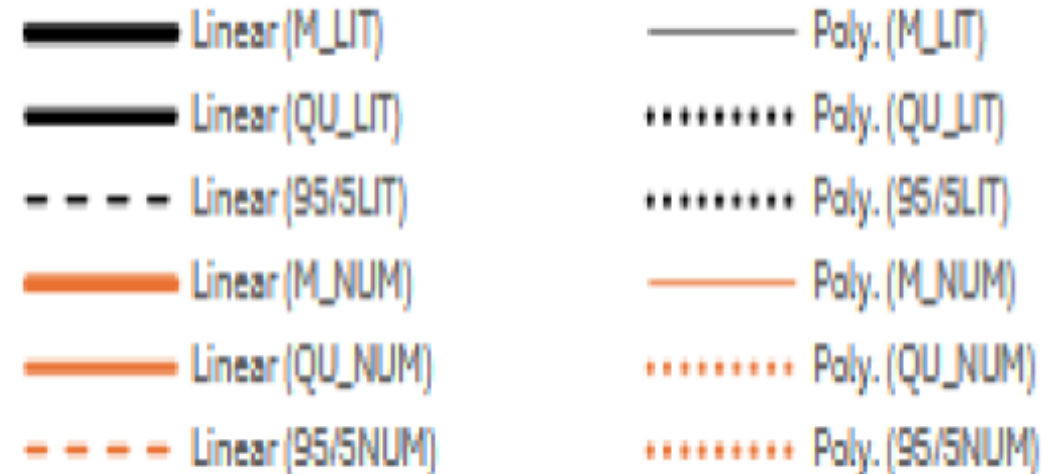


ALL b

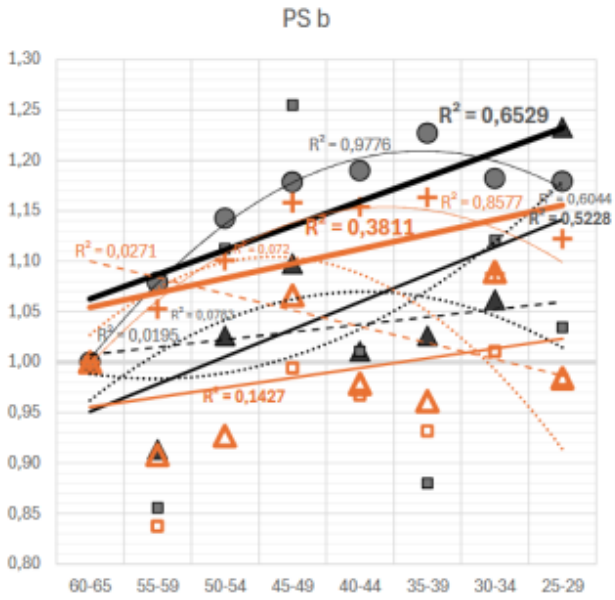
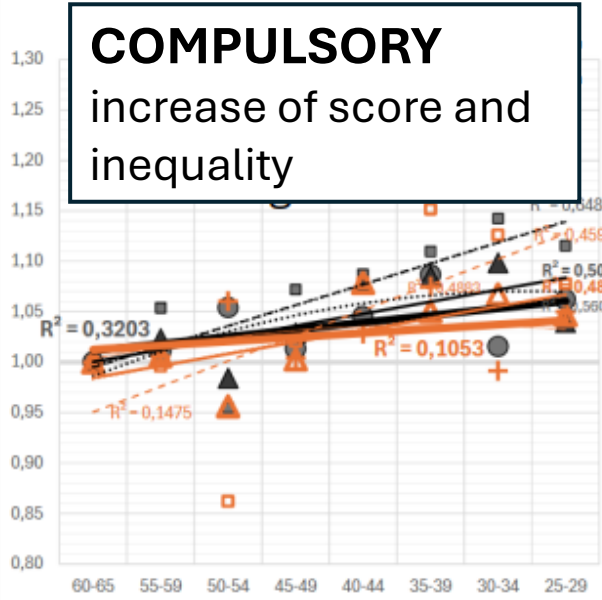


Indicators, indices trendlines

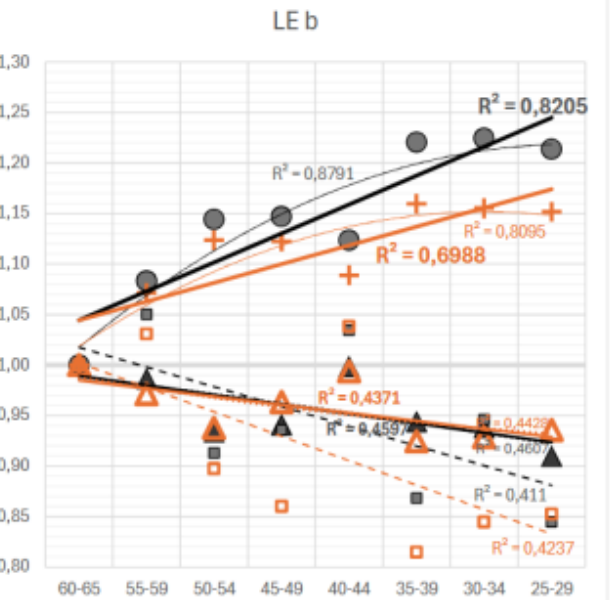
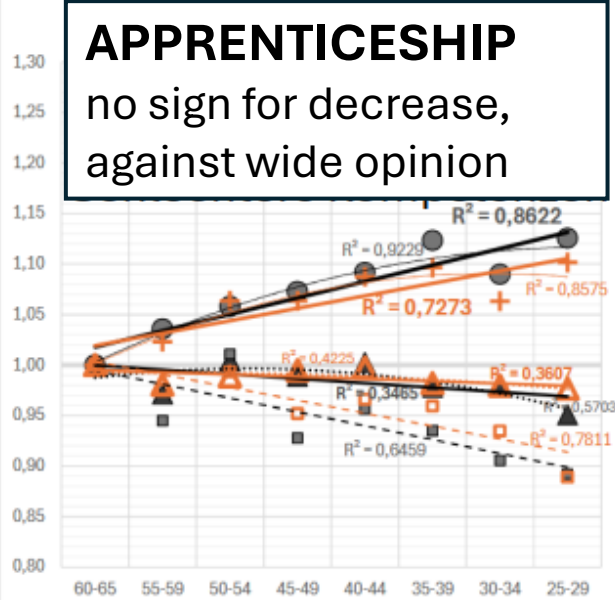
- Left PIAAC I, right II
- black LIT, brown NUM
- above scores, below ratios



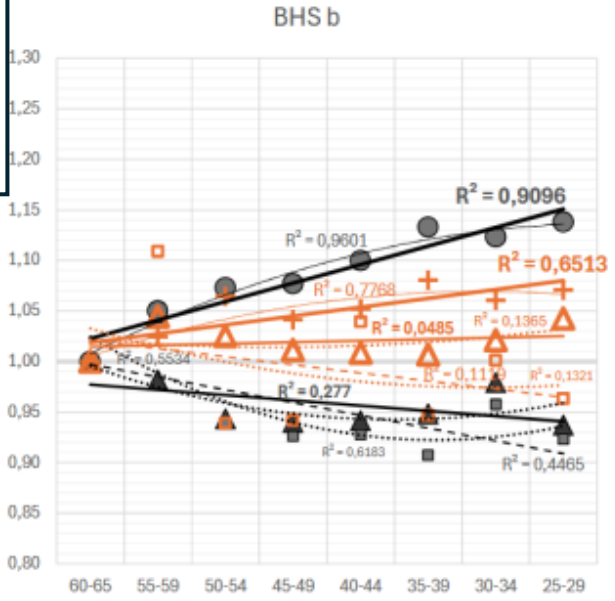
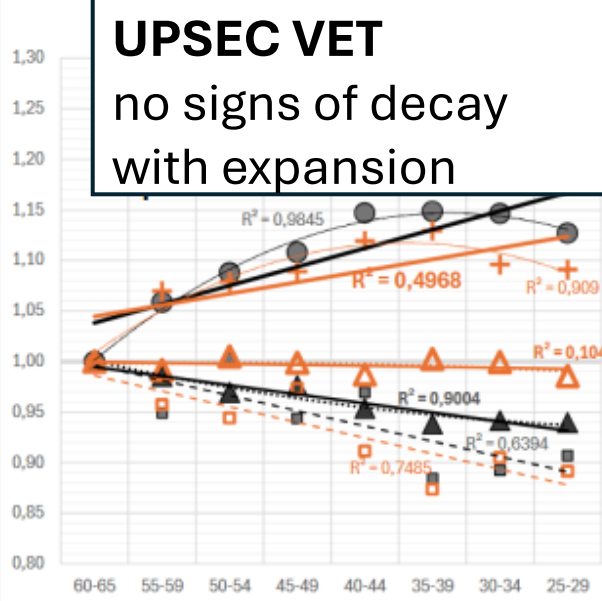
PS a und b



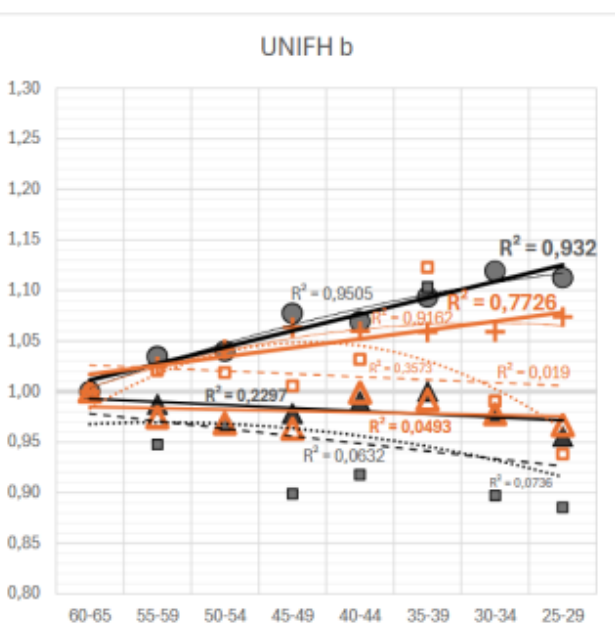
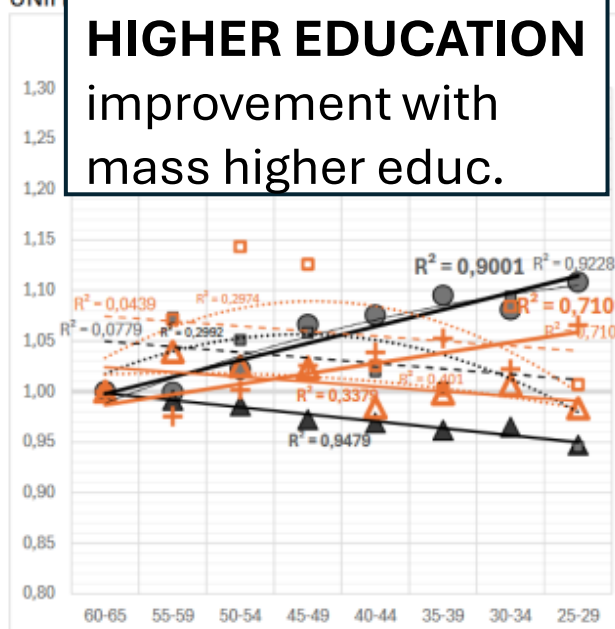
LE a und b



BHS a und b



UNIF a und b



...conclusions...

- big (long term) skill production machinery, initial education policy does not influence current skills, ACE most important, however, not much used (Matthew-Effect)
- big changes in environment and policy, however, no direct effects in competences visible, rather smooth long-term improvement
- some negative influence across all sectors from slight neoliberal shift (and reform of reform of reform of compulsory school) during 1980s
- expansion of higher learning does not bring decay in competences
- against widespread belief, the „selected-out“ applicants for apprenticeship do not show decrease in competences

Some references

CURRENT STUDY:

Lassnigg, Lorenz and Vogtenhuber, Stefan (2025) Demografie, Bildungspolitik und Kompetenzen der Bevölkerung: Explorative altersspezifische Auswertungen von PIAAC. In: PIAAC: Grundkompetenzen von Erwachsenen 2022/23. Expert:innenbericht. Statistik Austria, pp. 54-101. DOWNLOAD:

<https://www.statistik.at/services/tools/serviceangebote/publikationen/detail/2300>

Lassnigg, Lorenz and Vogtenhuber, Stefan (2025) *Demografie, Bildungspolitik und Kompetenzen der Bevölkerung. Explorative altersspezifische Auswertungen von PIAAC Kompetenzen für Österreich*. [Research Report] 173 p.

DOWNLOAD: <https://irihs.ihs.ac.at/id/eprint/7329/> [extended version]

PREVIOUS STUDY:

Lassnigg, L., Vogtenhuber, S. (2014) Das österreichische Modell der Formation von Kompetenzen im Vergleich. In: Statistik Austria, (Hg.) Schlüsselkompetenzen von Erwachsenen Vertiefende Analysen der PIAAC-Erhebung 2011/12 (S. 49-79). Wien: Statistik Austria. Online: https://irihs.ihs.ac.at/id/eprint/3058/1/lassnigg-vogtenhuber_2014_kompetenz-formation-im-vergleich.pdf; short engl. preprint version <http://www.equi.at/dateien/piaac-madrid-draft.pdf>

AGEING

Hanushek, Eric (2025, April 8) Use It or Lose It! How Age Affects Cognitive Skills. Opinion. Online:

https://www.the74million.org/article/use-it-or-lose-it-how-age-affects-cognitive-skills/?_hsenc=p2ANqtz-9-7P3X8K6N2PpDlw4HrAQsl5x2T-87XT7gS_cC2d8SutTDAd1oOOJmz-qCKKxTvl1dCmSsvpvLodVMB8jQzX_mIYY6w&_hsmi=355803522

ANNEX 1 pure age component

„The pure age component that we derive provides a different perspective on the impacts of aging populations. Overall, our results are not consistent with a view that a natural law dictates an inevitable decline in these skills with age. Potential cognitive declines only occur at later ages and are not inevitable with usage of skills.“ (Hanushek et al., 2025, p. 7)

„... historical situations such as school structure and curriculum may differ for different cohorts, and this could in principle affect not just later skill levels but also their changes at different ages. This impact of historical factors is both more speculative and more difficult to test.“ (Hanushek et al., 2025, S. 9)

Hanushek, E. A., Kinne, L., Witthöft, F. & Woessmann, L. (2025). Age and cognitive skills: Use it or lose it. Science Advances 11(10). <https://hanushek.stanford.edu/publications/age-and-cognitive-skills-use-it-or-lose-it>