

Explorative comparative analyses from PIAAC about skill formation and education reform

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agenda

- research questions
- basic approach
- methodology
- results

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2

...based on a study published in German in a broader Austrian research project...

- Lassnigg, Lorenz; Vogtenhuber, Stefan (2014), Das österreichische Modell der Formation von Kompetenzen im Vergleich, in: Statistik Austria (Hrsg.), Schlüsselkompetenzen von Erwachsenen – Vertiefende Analysen der PIAAC-Erhebung 2011/12, Statistik Austria, Wien, S. 49-79.
- Internet (in German):
 - chapter: http://www.equi.at/dateien/lassnigg-vogtenhuber_2014_ko.pdf
 - presentation at conference: <http://www.equi.at/dateien/lassnigg-piaac-wien-pres.pdf>
 - detailed research report: <http://www.equi.at/dateien/IHS-PIAAC.pdf>

research questions

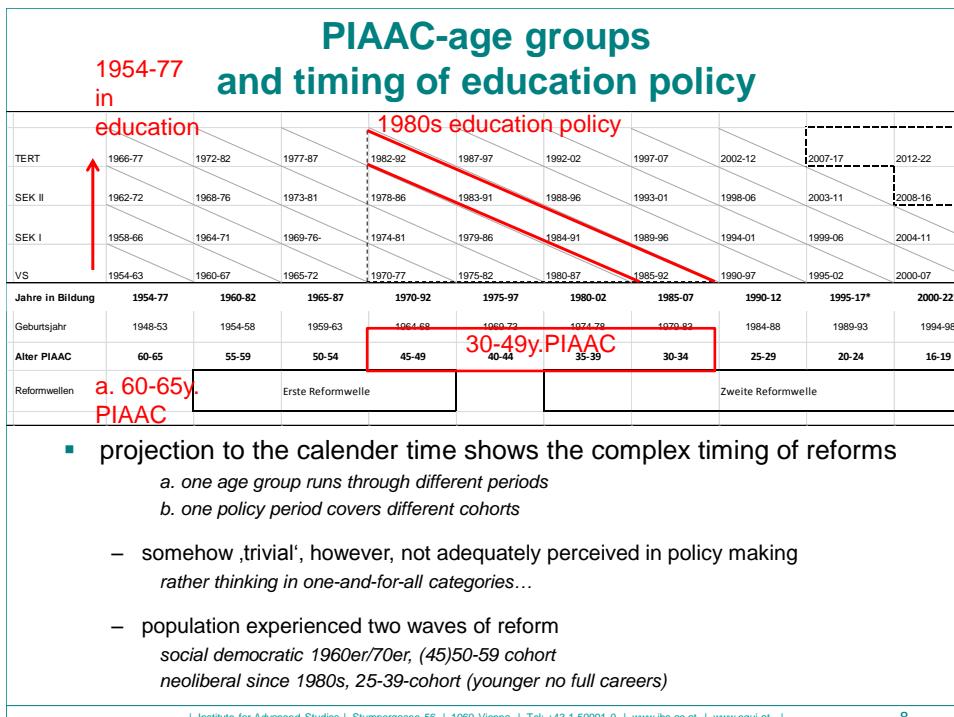
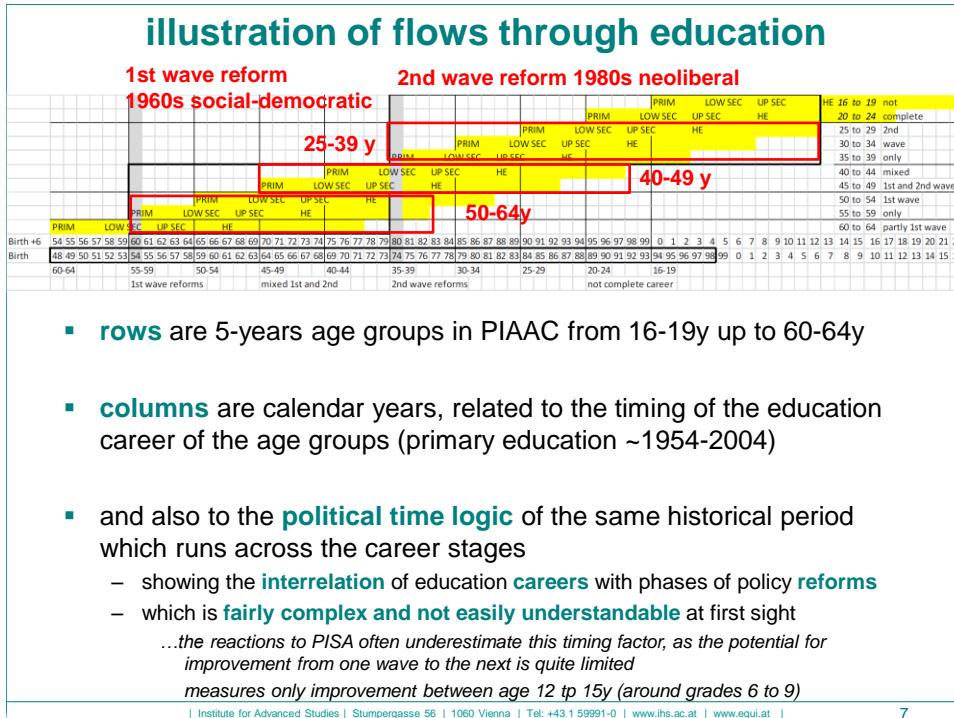
- How are **structural traits of education systems** (differentiation of VET/general education; achievement tracking) related to results to **PIAAC competence scores** (level and distribution)?
 - How do **structures of VET** (early VET or late; proportion of VET in initial education) influence the competence level and distribution?
- Can we trace **signs of past reforms** in different countries in the competences of the adult population through **age specific patterns** of achievement?

basic approach 1

- PIAAC observes competences of 16-65-y **population**...
- ...as a result of overall process of **competence/skills production**...
- ...and can be traced back to **the timing of school careers**...
- ...which is also related to concurrent **political / policy** measures...
 - ...having occurred in parallel to the education careers, and have cumulated to **more or less coherent frameworks/mixtures of institutions and practices**
- ...so certain **age groups** have been exposed at certain **stages of careers** to certain **political periods** (reforms)...
- ...the **question** is, whether we can see signs of these policies in the **age-specific competenc(i)es** measured by PIAAC...
 - ...or at least, how the political process is related to the age specific competenc(i)es

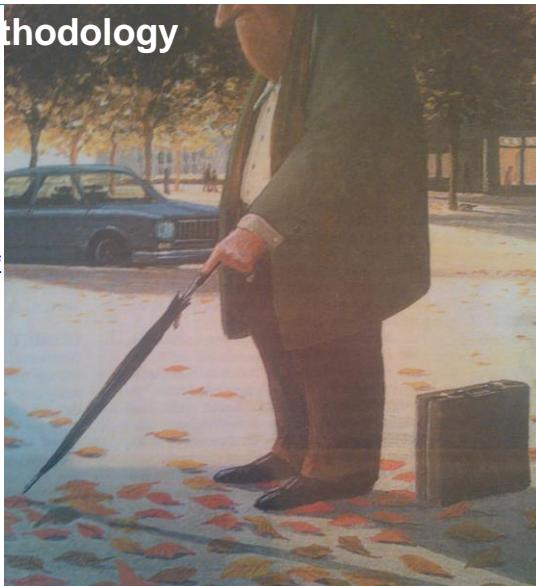
basic approach 2

- ...we can also ask, whether certain **current educational structures** are related to the **current competenc(i)es** (cross-section)...
- ...having in mind that these structures **have evolved** in a certain (path-dependent) way through the competence formation processes of the observed population...
- ...in this cross-sectional perspective the politics/policies exert their **cumulative influence**...
 - ...here constellations **without much reform** can be compared with constellations that have mainly performed the **1st reform wave** of the 1960s or the **2nd wave** from the 1980s, or **both**
- problem in the data: **adult learning** has **not been observed** in a sufficient way (only participation in year before measurement)...
 - ...however, so far the effects of AL have **not been proven to be substantial** in their own right (rather the initial stage has much stronger effects)



methodology

counting...
 detailed research report:
<http://www.equi.at/dateien/IHS-PIAAC.pdf>



Mr Klüter counts up to 4000 leaves per hour, provided it remains windless...
Herr Klüter zählt bis zu 4000 Blätter in der Stunde, vorausgesetzt, es bleibt windstill.

methodology

- The methodology includes the following steps:
 - (1) relating age structure of the population to flow through education
 - (2) analysis of structural traits: 'tracking' in selected systems
 - Finland, Sweden, Denmark // U.K., Canada, US // Netherlands, Germany, Austria
 - (3) cross-sectional analysis: structural patterns & obs.competences
 - mean and/or median; 95/5 and 75/25-percentil-ratios;
 - (4) analysis of the timeline of reforms
 - (5) exploring age specific patterns of competenc(i)es & reforms
 - level and distribution
- so far mainly at the level of descriptive cross-tabulations or trend-analyses
 - will be further developed through modeling and confirmatory approaches

results

results

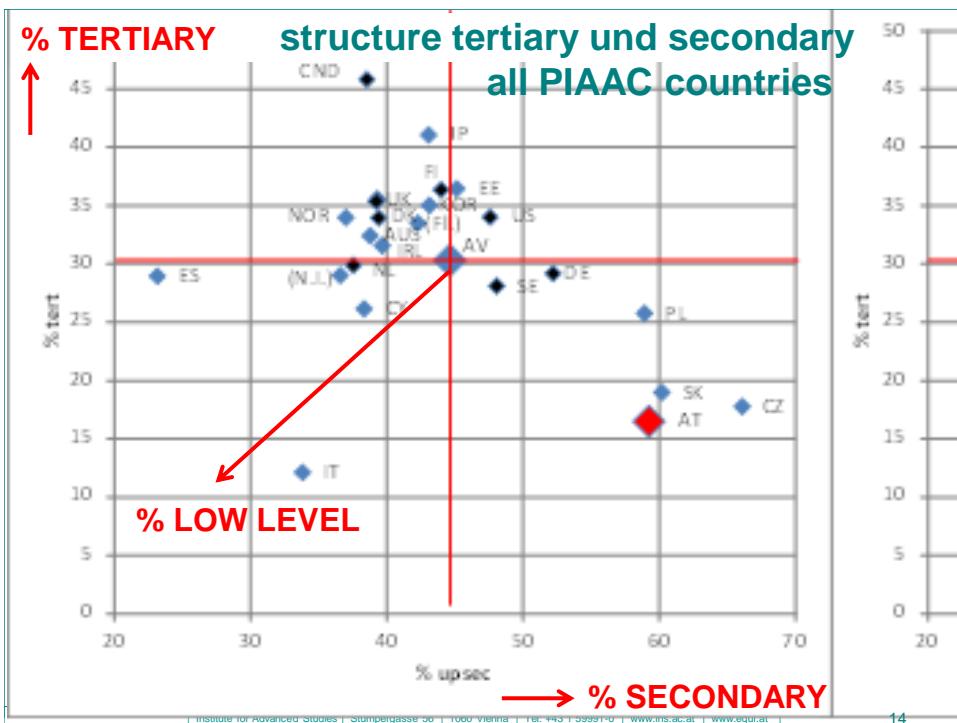
- **already shown:** uncovering of patterns, of how education reforms translate into the competency/e/ or skills formation process of the population
 - time dependent and complicated pattern of 'translation process'
- exceptional/unique structure of Austrian education
- PISA indicators about differentiation at level of individual schools are misleading, because they do not catch the differentiation between schools
 - a classification that takes into account both forms shows, that - against expectations - the differentiated vocational systems are not correlated with a greater degree of inequalities of the competences in the population
- analysis of the reform policies shows only for Finland a very consequent long term reform process that is correlated to the competence profiles; the US on the other extreme do not show any positive results related to their reform policies since the 1980s.

exceptional/unique structure of Austrian education

- Slide 15, panel left above:
AT ,outlier concerning participation
 - with Slovak and Czech Republic
 - high upper secondary, low tertiary, medium prop.low-level education
- Slide 15, panel right below:
high proportion of VET within upper secondary education
 - with Czech Republic, Poland and Germany

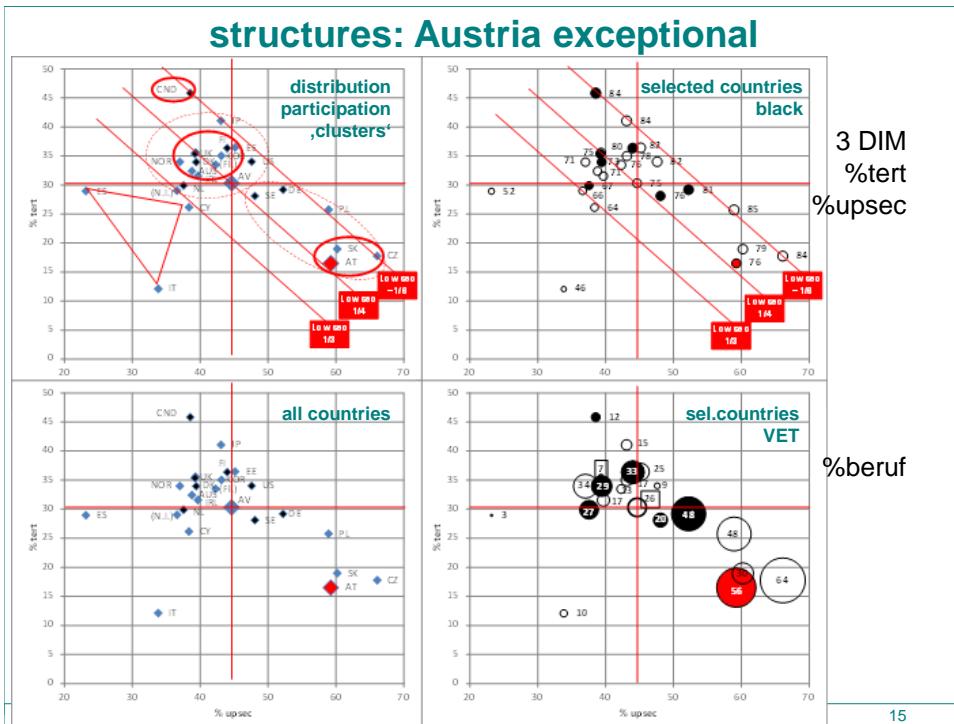
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13



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14

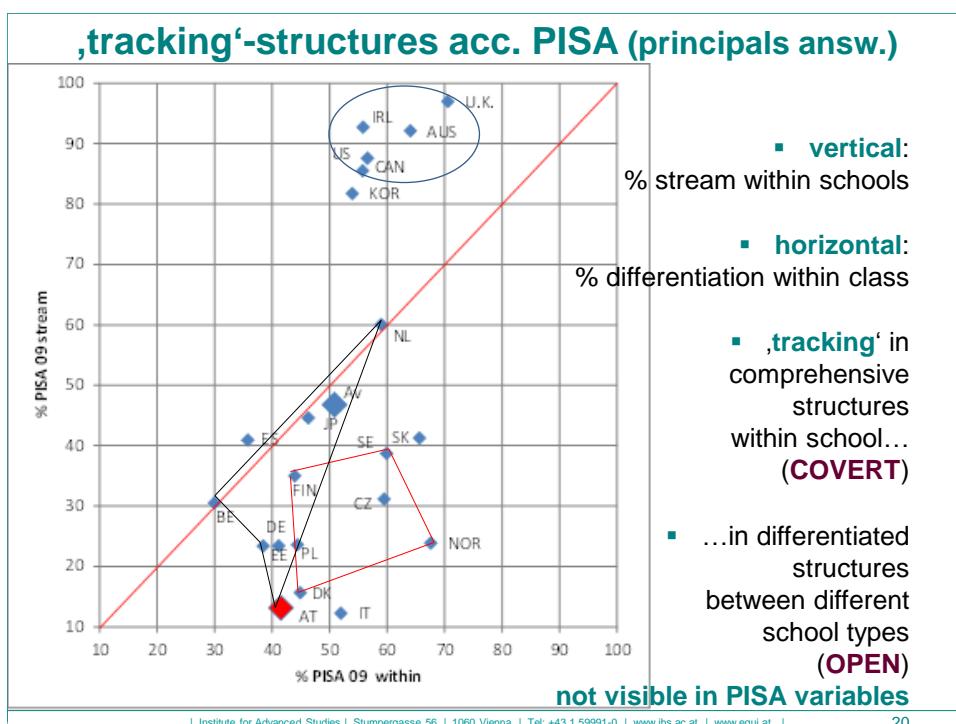
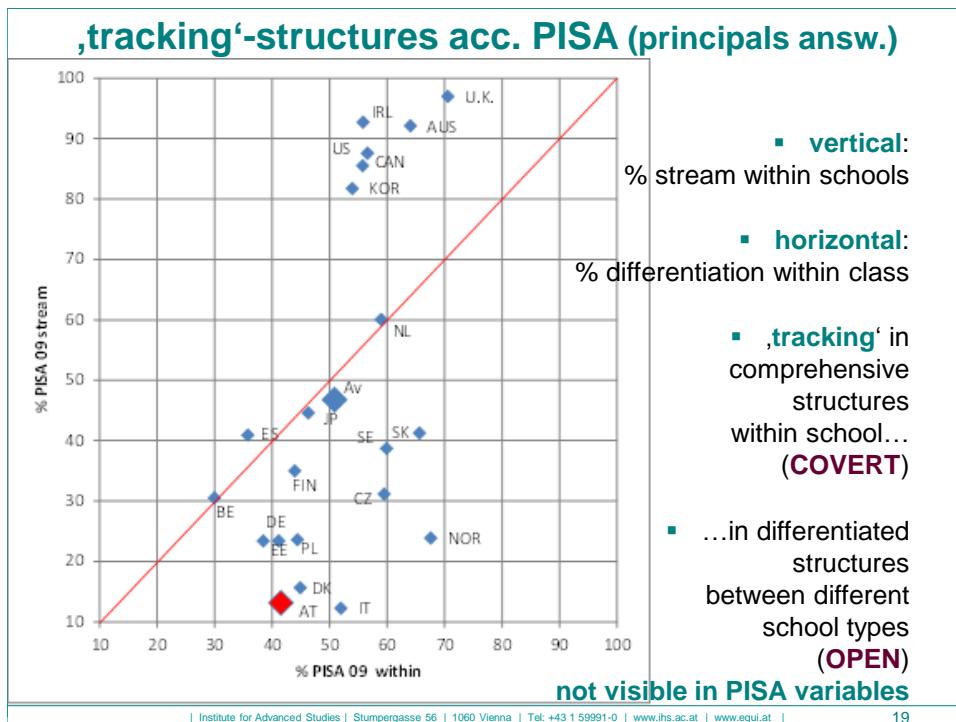


**cross-sectional (cumulative) structures:
,tracking' and PIAAC competences**

cross-sectional (cumulative) structures: 'tracking' and PIAAC competences

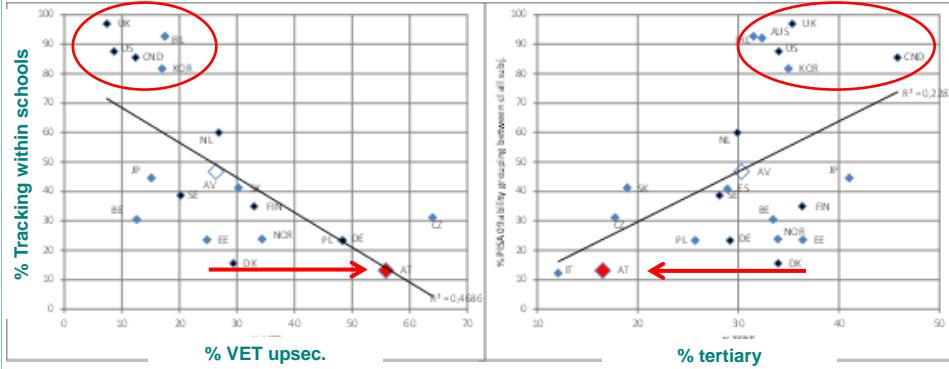
- a. classification of tracking structures based on information from PISA (2009, 12) about differentiation within schools ('covert' tracking):
 - amount of streaming (diff. within schools)
 - amount of setting (diff. within class)
- b. tracking of different school types, not covered by PISA-variables ('open' tracking)
 - > these countries display low level of tracking at PISA variables
- question: how is tracking related to competency/e levels and distribution?

a. classification



....covert' tracking related to tertiarisation and vocationalism...

- ...in countries with high level of ,covert' tracking
 - VET participation is low
 - tertiary participation is high
- ...Austria reverse



b. tracking and competency/e levels and distribution

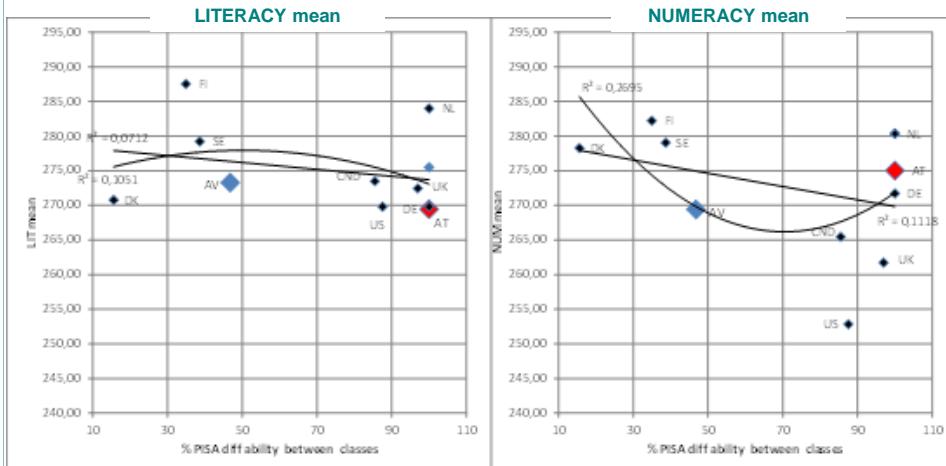
- ...both classifications of tracking (,covert' and ,open') compared...
- ...to competency/e indicators
 - level: test scores
 - distribution: 95/5 percentile
- ...complex relationships between educational structure and competenc(i)es...

structure & competency/e LEVEL y-axis x-axis-variable tracking



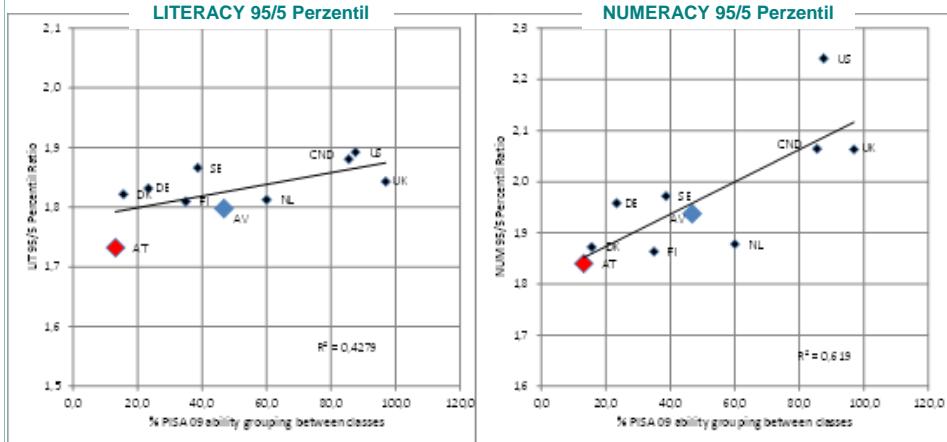
- tracking only within schools (PISA): only ,COVERT' tracking
- reading no linear relationship (medium tracking, higher score > .4); numeracy negative (more ,covert' tracking, lower score > .5 to .7)

structure & competency/eLEVEL y-axis x-axis-variable tracking



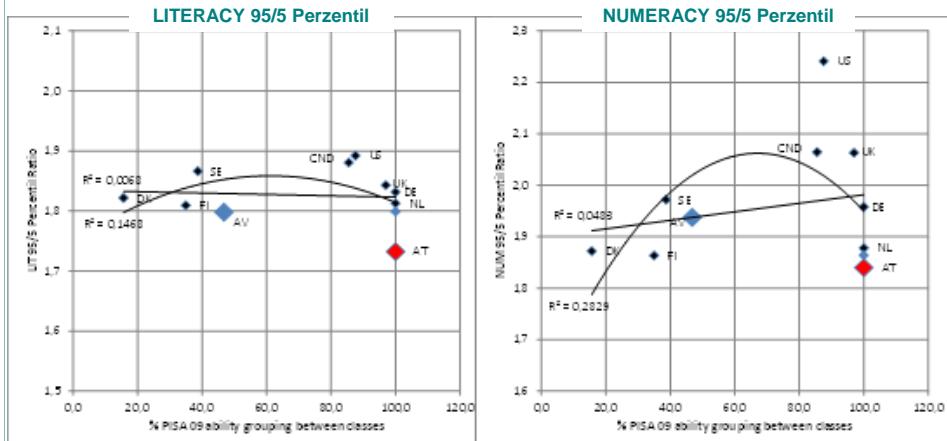
- combined tracking PISA and institutional (,covert' and ,open')
- reading: less relationship, not more 0 to .1
- numeracy: also less relationship .1 to .3 > both against expectation

structure & competency/e INEQUALITY y-axis x-axis-variable tracking



- tracking only within schools (PISA): only ,COVERT' tracking
- reading slight and numeracy stronger positive relationship .4 to .6

structure & competency/e INEQUALITY y-axis x-axis-variable tracking



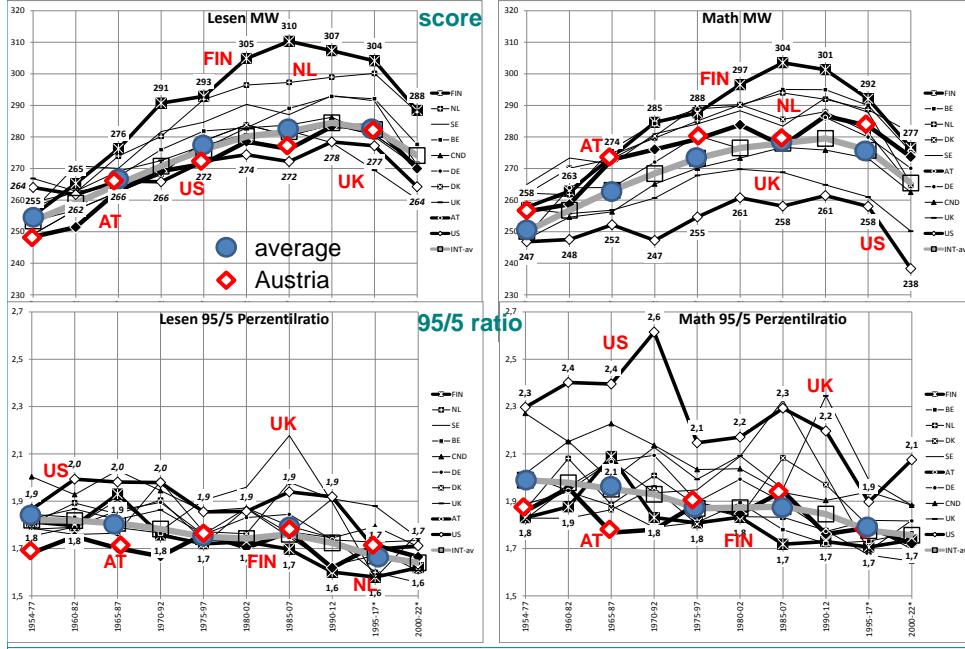
- combined tracking PISA and institutional (,covert' and ,open')
- reading (0 to .1) and numeracy (0 to .2) weakening of relationship
- OVERALL: no support for widely held expectation that openly tracked systems increase inequality of competenc(i)es (and scores)

reform history and competenc(i)es

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27

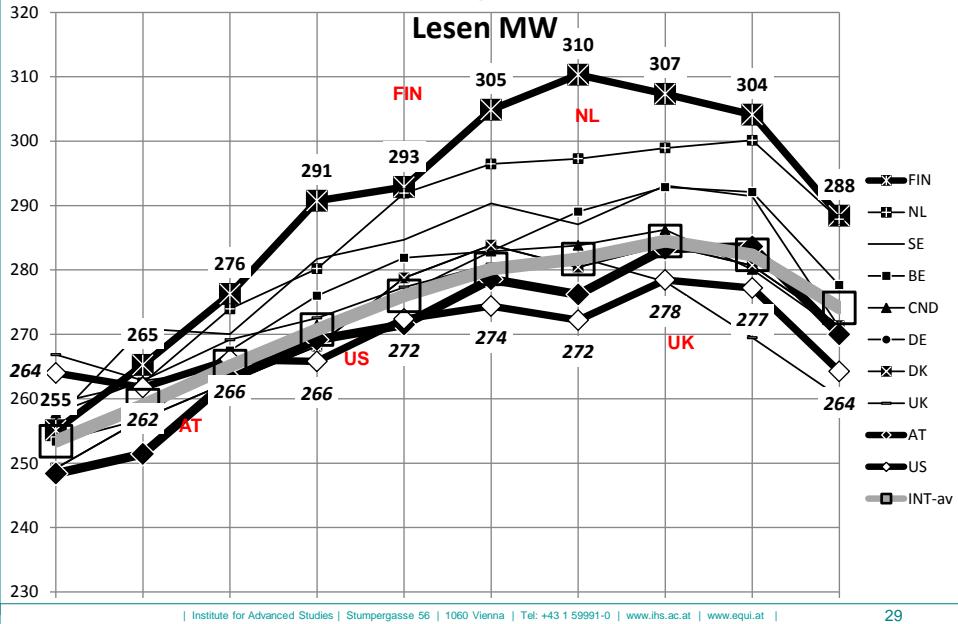
Competency/e level &-inequality sel.countries



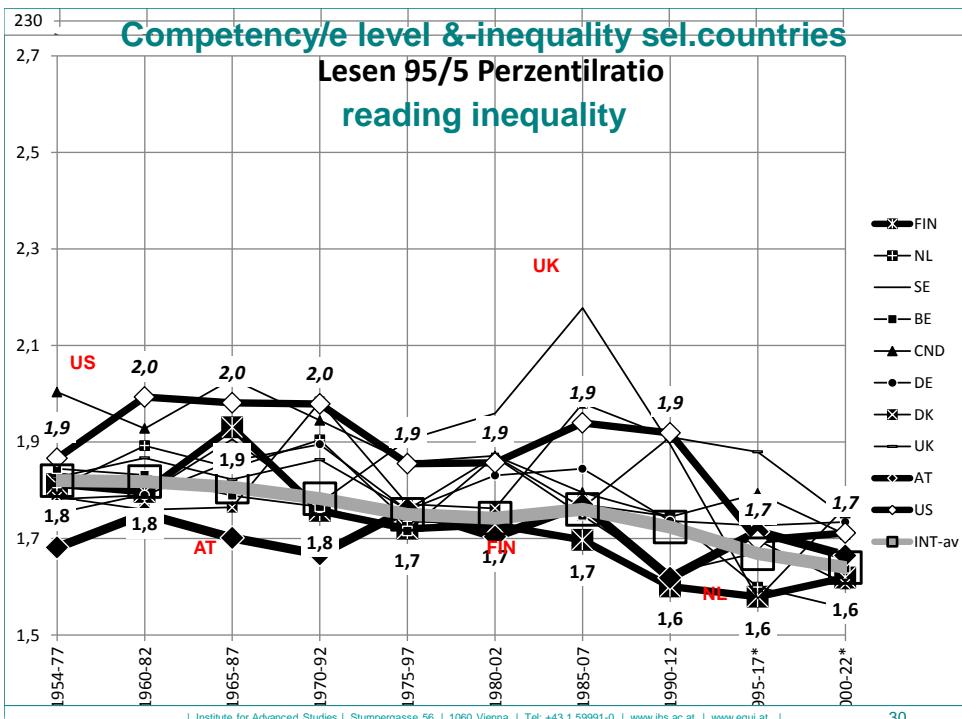
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28

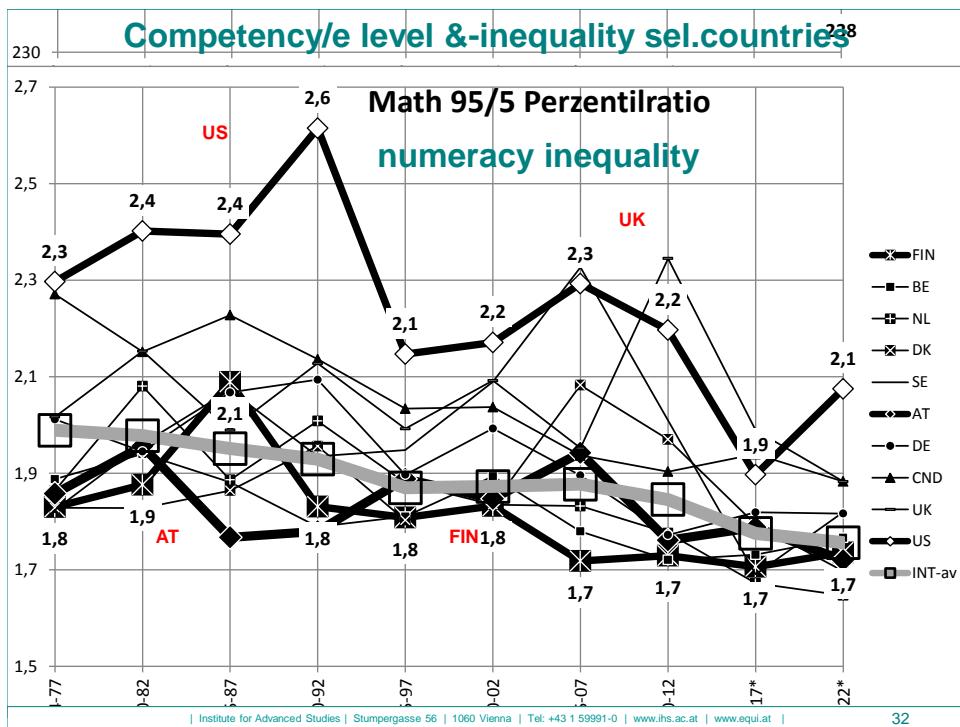
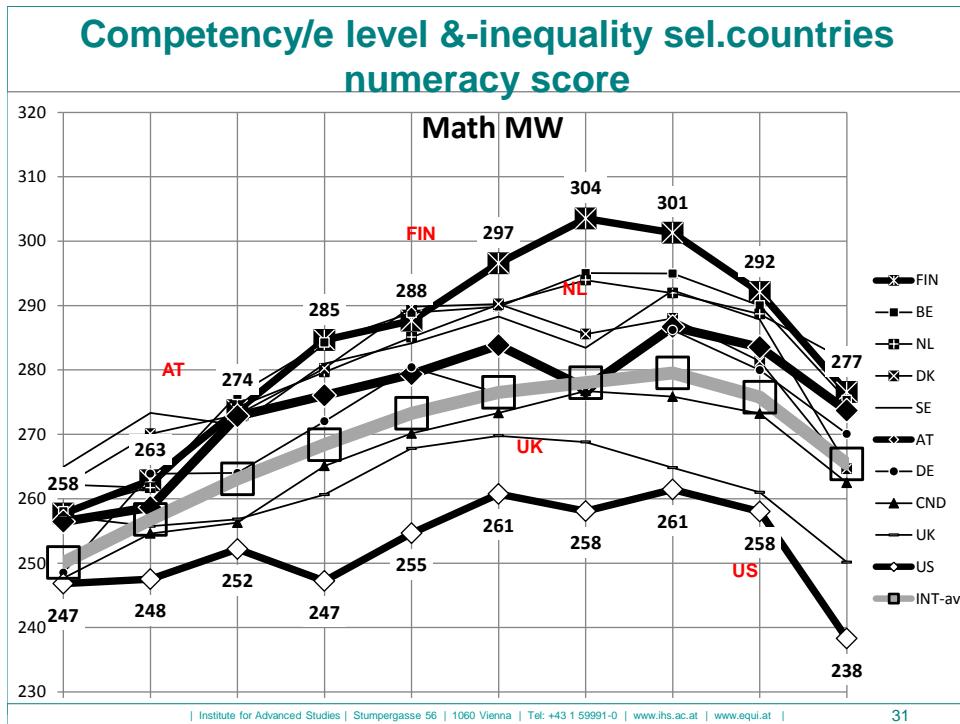
Competency/e level &-inequality sel.countries reading score



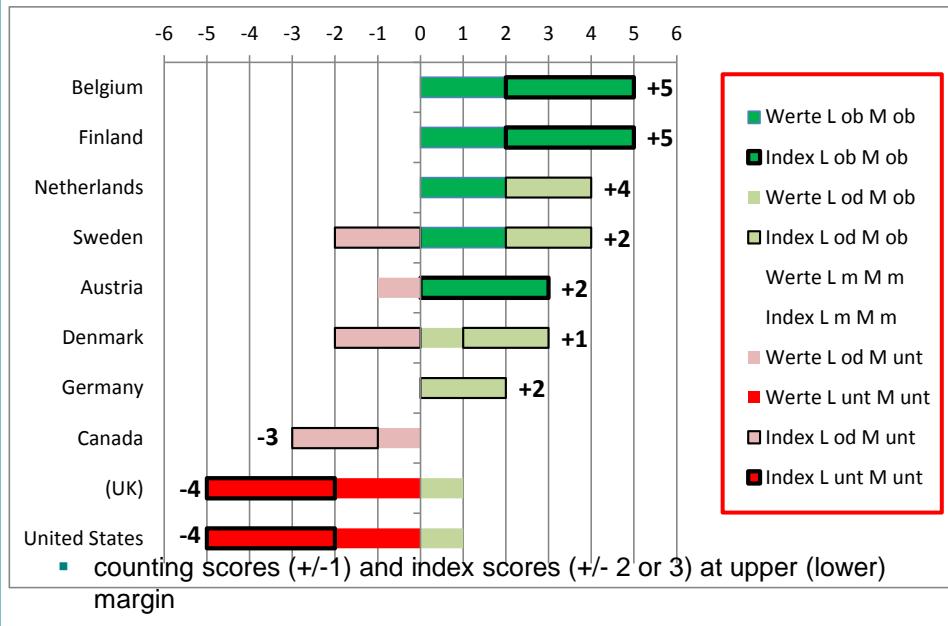
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attempt of 'ranking' sel.countries



verbal interpretation (German)

KOMPETENZWERTE		
Hohe Werte und positive Entwicklung (Finnland, Belgien, Niederlande)	Gemischt mittlere Werte und Entwicklung (Schweden, Österreich, Deutschland, Dänemark)	Niedrige Werte und ungünstige Entwicklung (Vereinigtes Königreich (England, Nordirland), USA, Kanada)
<p>▪ Scores</p> <ul style="list-style-type: none"> - In E auf b Ungle - in F die e reduz - UK, US, CAN unsatisfactory 		<p>eiden ngert,</p> <p>greich eiden eit mit</p>

KOMPETENZWERTE		
Gemischt mittlere Werte und Entwicklung (Schweden, Österreich, Deutschland, Dänemark)		
Hohe Werte und positive Entwicklung (Finnland, Belgien, Niederlande)		Niedrige Werte und ungünstige Entwicklung (Vereinigtes Königreich (England, Nordirland), USA, Kanada)
KOMPETENZVERTEILUNG		
<p>▪ In Belgien und den Niederlanden ist auf beiden Indikatoren eine geringe Ungleichheit weiter reduziert worden.</p> <p>- in Finland ist bei beiden Indikatoren die eher geringe Ungleichheit leicht reduziert worden</p> <ul style="list-style-type: none"> ▪ BE, NL, FIN small inequ.further reduced ▪ DK, SE, AT, DE complex ▪ US, CAN high inequ reduced, but still high UK high not reduced 	<p>▪ In Dänemark ist bei der Quartilsratio die eher geringe Ungleichheit leicht reduziert worden, bei der 95/5 Percentilratio gibt es sehr starke Schwankungen nach oben und nach unten bei geringer Gesamtveränderung im Trend</p> <p>- Schweden liegt bei der Quartilsratio ohne größere Veränderung im Mittelfeld, zeigt bei 95/5 Percentilratio sehr starke Schwankungen nach oben und nach unten bei geringer Gesamtveränderung im Trend</p> <p>- in Österreich ist die Ungleichheit auf beiden Indikatoren eher gering, hat sich aber nicht reduziert</p> <p>- Deutschland hat bei der Quartilsratio eine hohe Ungleichheit mit sehr geringer Veränderung, bei der 95/5 Percentilratio eine eher geringe Ungleichheit, die sich in mittlerem Maß reduziert</p>	<p>- USA und Kanada haben auf beiden Indikatoren die Ungleichheit verringert, sie bleibt aber hoch</p> <p>- Das Vereinigte Königreich (England, Nordirland) hat bei beiden Indikatoren eine hohe Ungleichheit mit sehr geringer Veränderung</p>

summary

- Austria exceptional structure, high tracking, high upper secondary education and high VET
- comprehensive structures include ‚covert‘ tracking, there seems to be a relationship between tertiary education and tertiary education, and of VET with ‚open‘ tracking
- selected countries: Finland exceptionally positiv, Nordic countries different; ‚liberal‘ countries negativ, ‚continental‘ countries also different (NL, BE good; DE, AT mixed, medium)
- marked ‚openly‘ differentiated systems as well as VET provide similar scores and inequality as low differentiated comprehensive systems (unfavourable: ‚covertly‘ differentiated comprehensive systems

The End



Material

- www.equi.at/dateien/IHS-PIAAC.pdf

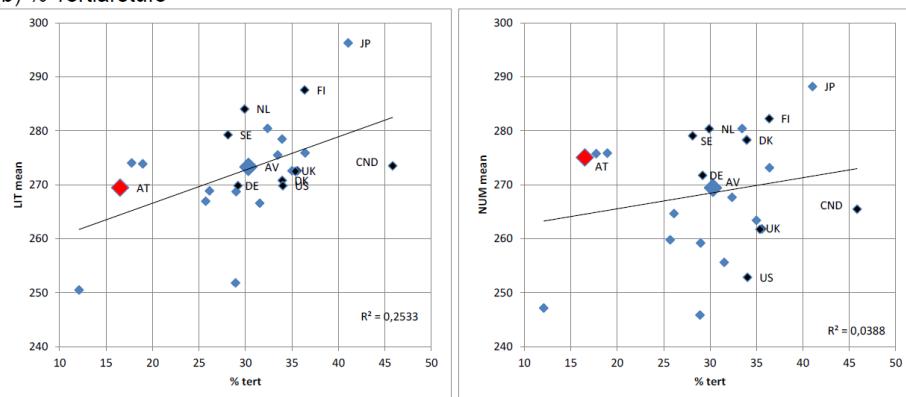


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39

tertiary participation and scores, all countries

(b) % Tertiärstufe



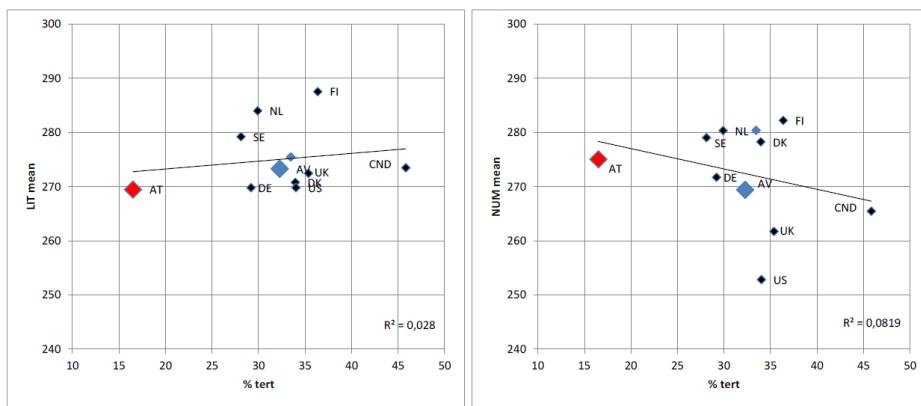
Korrelation wesentlich bestimmt durch Ausreißer (unten Italien, oben Japan, ohne die beiden Länder: R^2 LIT .04)

- Corr. determined by outliers: below IT, above JP, literacy corr. reduced to .04 if these outliers are eliminated

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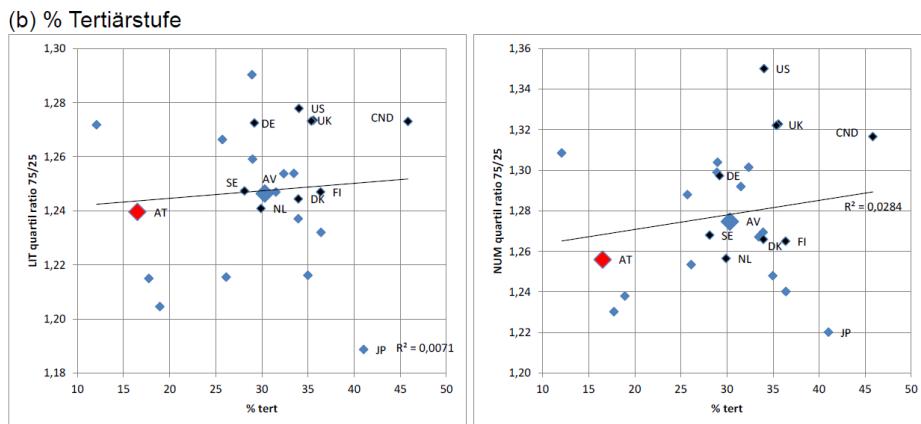
40

tertiary participation and scores, sel.countries



- no corr. in selected countries

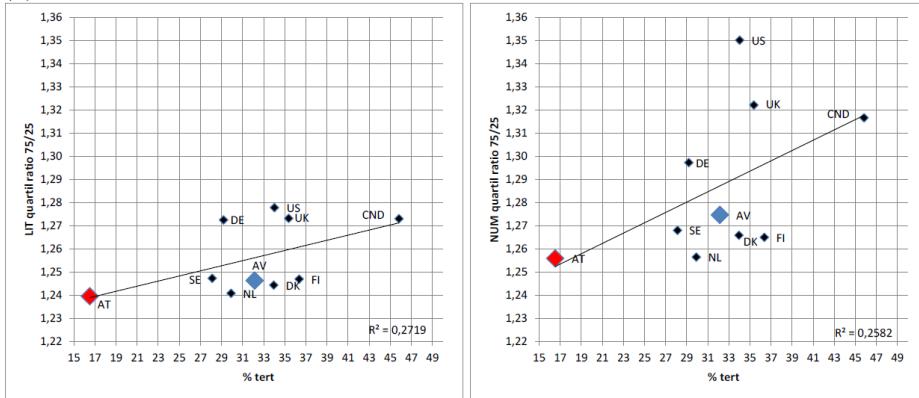
tertiary participation and inequality, all countr.



- 75/25 ratio no corr.

tertiary participation and inequality, sel.countr.

(b) % Tertiärstufe

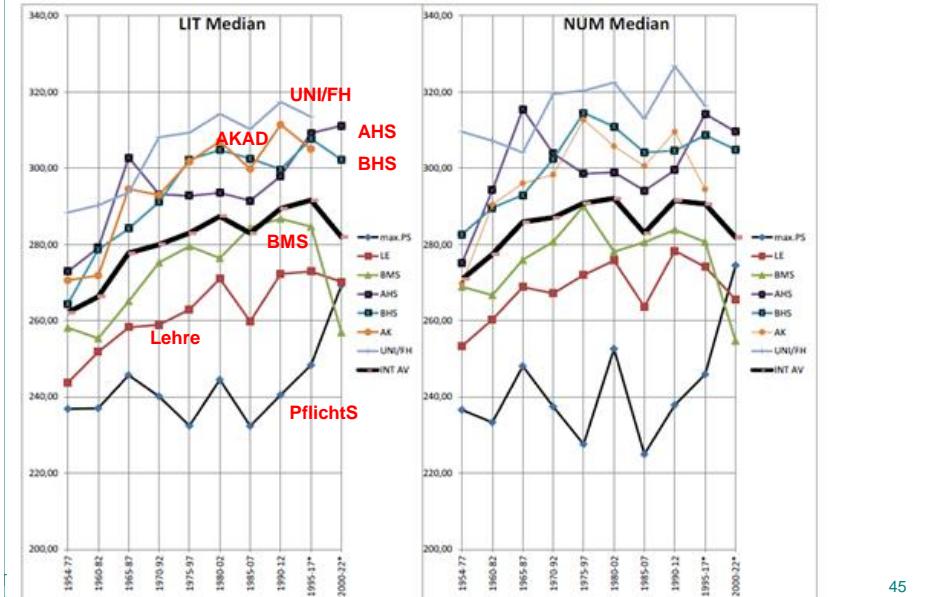


- 75/25 ratio positive corr., stronger in numeracy

competenc(i)es by education credentials in Austria

- UNI/FH TERT (Univ. + Fachhochschule/Polytechnic)
- Akademie TERT, non-university
- AHS ACADEMIC upper secondary
- BHS VET colleges, higher level
- BMS VET schools, medium level
- Lehre/BS APPRENTICESHIP
- Pflichtschule COMPULSORY SCHOOL (lower secondary)

Entwicklung der Kompetenzwerte nach Bildungsabschlüssen, Lesen und Mathematik nach Altersgruppen in bildungspolitischer Zeit
Austria: scores by education credentials



45

