

Tracking, vocational education (VET) and the quality-inequality nexus – results about policy choices in structures of skills formation

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...warning...

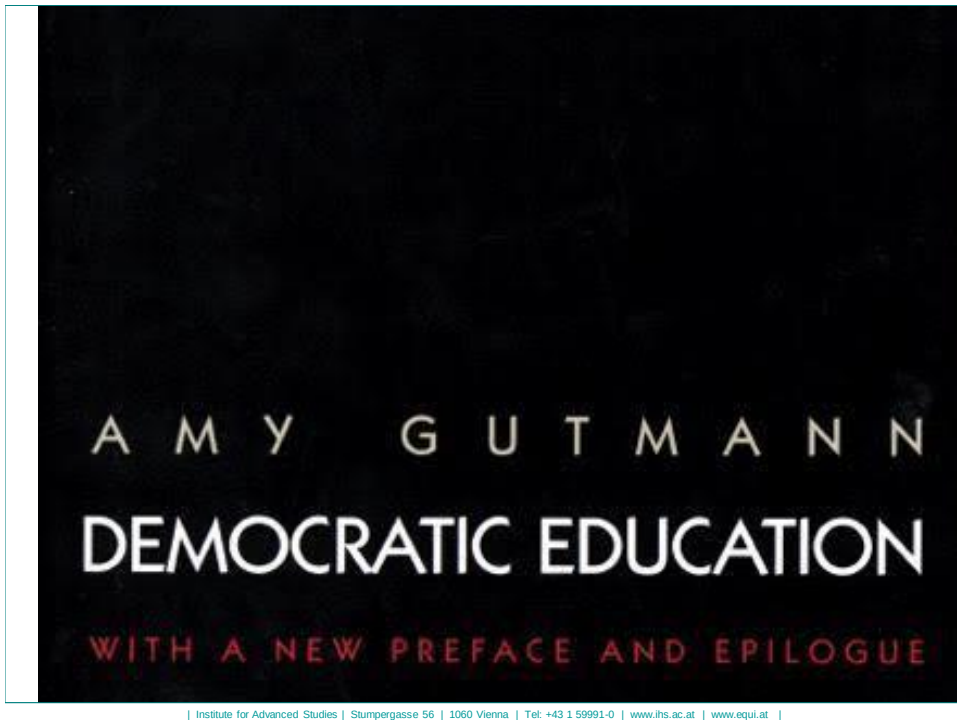


Umberto Eco:

**‘People are tired of simple things. They want
to be challenged’**



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agenda

- introduction, motivation
- research questions
- basic approach
- methodology
- results

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introduction, motivation

...based on a study 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>

...motivation of study...

- ...starting point was the **Austrian structure**, **early tracked** from age 10 to an academic and a mass school, followed by **strong VET** at age 14/15, and small but growing higher education...
 - ...Structure **heavily criticised** in terms of equity, because of high degree of reproduction of parental background...

...and...
 - ...**highly praised** because of its 'collective skills system' and low youth unemployment...
- ...thus we wanted to compare the **results of the skills formation process** based on this structure with results based on **alternative structures**, using the welfare regimes...
- ...and to understand **how politics and policies** might influence these results...

research questions

research questions

- ...main issue is combination of ,tracking' and vocational education (VET) at secondary level, and relationship to tertiary education
 - **tracking**: structuring of distribution of programmes, and allocation to programmes
- ...and how this combination relates to achievement and in_equality
- stylised models for skills formation, understood as types of combinations...

lower secondary		upper secondary		tertiary
comprehensive	+	late or no VET	+	selective, differentiated
tracked	+	strong early VET	+	secondary entitlements

- available research mostly analyses these dimensions separately, and VET is not considered...

research questions (cont.)

- Focus on **in-equality**, but also competence **levels**...
- ...competing expectations about tracking and skills formation results
 - **comprehensive structure** and **tertiarisation** would structurally reduce (-) inequality, **VET** would carry risk to increase inequality (+)
implicitly it is expected, and also claimed, that tertiary participation would increase competence levels
- vs.
- [advocates of VET]: **tertiarisation** would strengthen ,meritocratic competition' and increase inequality with bias towards ,academic learning' and risk to put parts of of young people (the ,practically interested') at disadvantage
[by the way: very little emphasis on the distinction of ,practical' / ,theoretical' interest/competence/intelligence...]

research questions (cont.)

STRUCTURES: CROSSECTIONAL COMPARISON, all countries

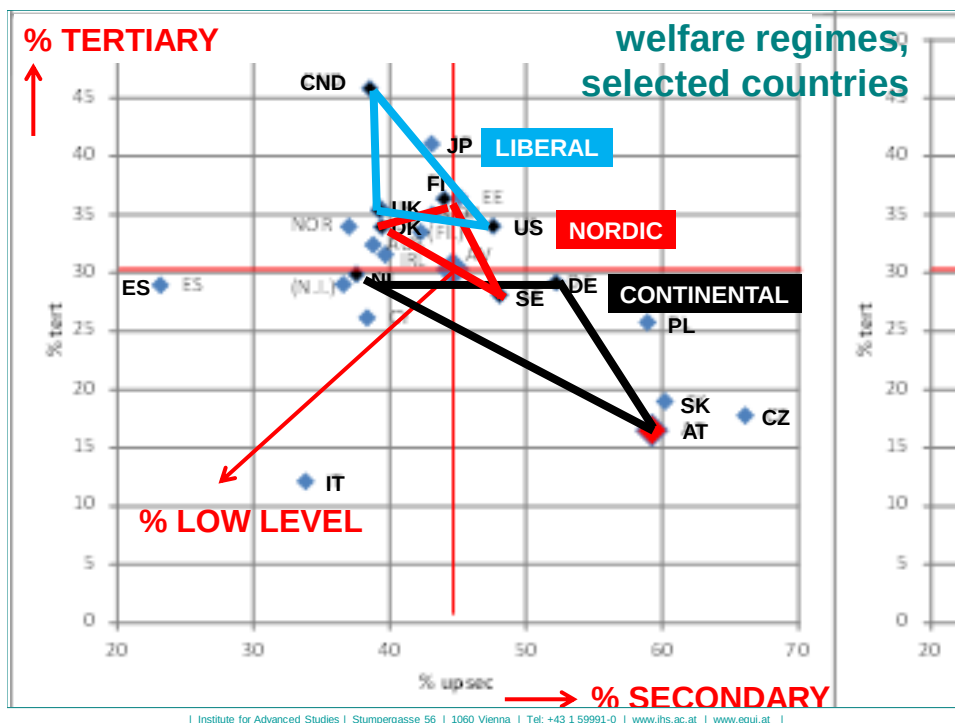
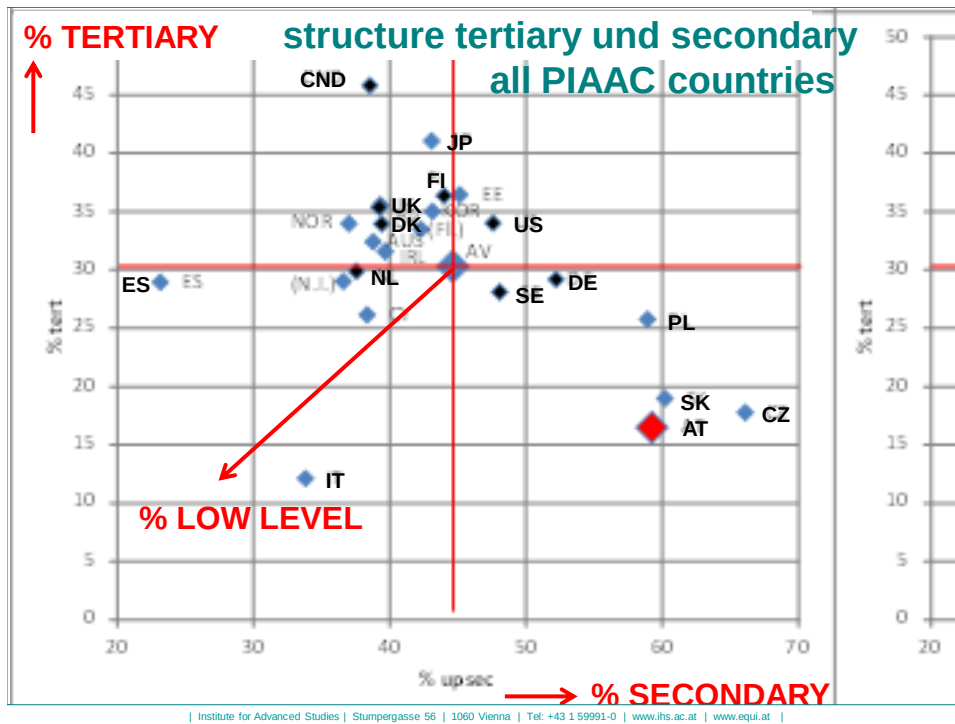
- how are **structural traits of education systems** (differentiation of VET/general education; achievement tracking) related to results of **PIAAC measurement** (competence level and distribution)?
 - how do **tracking structures** (open tracking between school types, covert tracking within comprehensive structures) influence the PIAAC measures?

REFORMS: COMPARISON AGE-GROUPS REPRESENTING TIME, selected countries, according to welfare regimes (Nordic, Liberal, Continental)

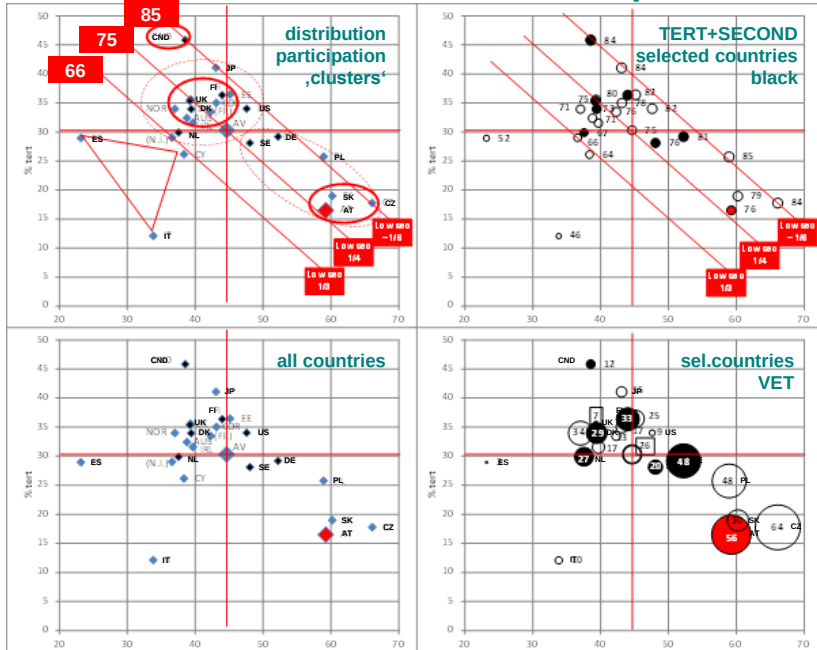
- Can we trace **signs of past reforms** in different countries in the competences of the adult population through **age specific patterns** of achievement (PIAAC measurement)?
 - How does **educational policy time** translate into results among population?
- Selection of countries: [reference AUSTRIA]
 - Nordic: DK, FIN, SWE*
 - Liberal: CAN, UK, US*
 - Continental: (BE), DE, NL and AT*

...structure of attainment another typology based on attainment...

- %tertiary level
- %secondary level total
 - and proportion of vocational education
- %lower than secondary

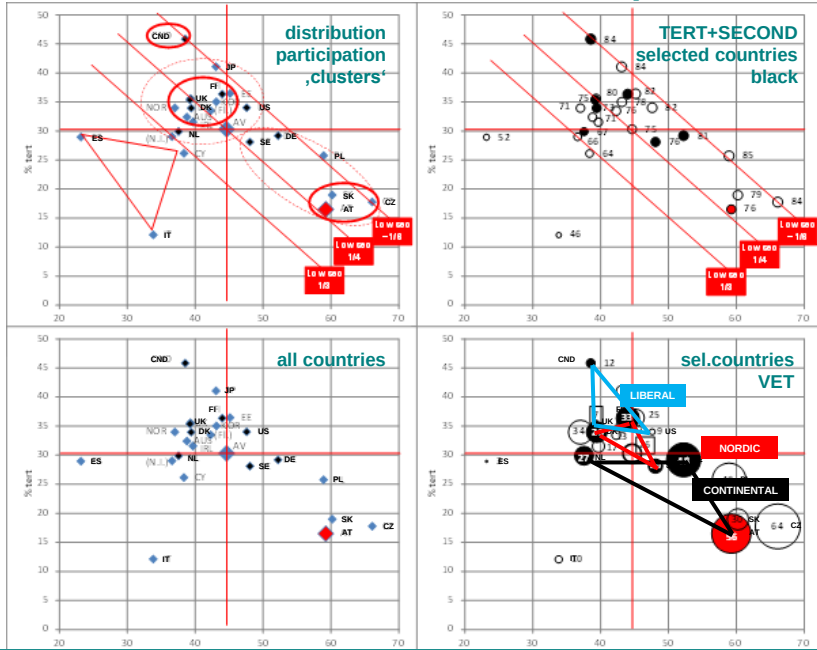


structures: Austria exceptional



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structures: Austria exceptional



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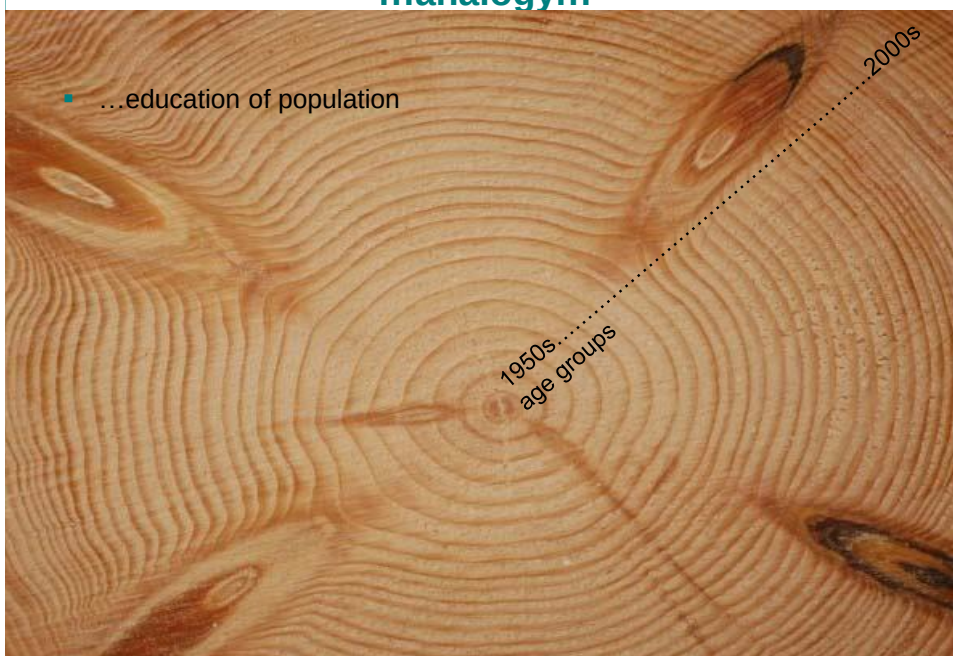
basic approach

basic approach

- PIAAC observes competences of 16-65-y **population**...
- ...and thus reflects results from the **whole skills formation process**, including VET and tertiary education...
- ...and also results of **politics/policy and reforms** between the 1950s and the 1980s/90s
- however, the approach **poses basic questions** about
 - how structures and policies/politics actually contributed to the current competences, and
 - how we can make sense out of this exercise for understanding politics;
 - background assumption: **symmetry** between
 - tracing back** and
 - future logics** of politics/policies
 - means that the problems we see in tracing back are prevalent in current politics for the future (but mostly we don't look at them...)

...analogy...

- ...education of population

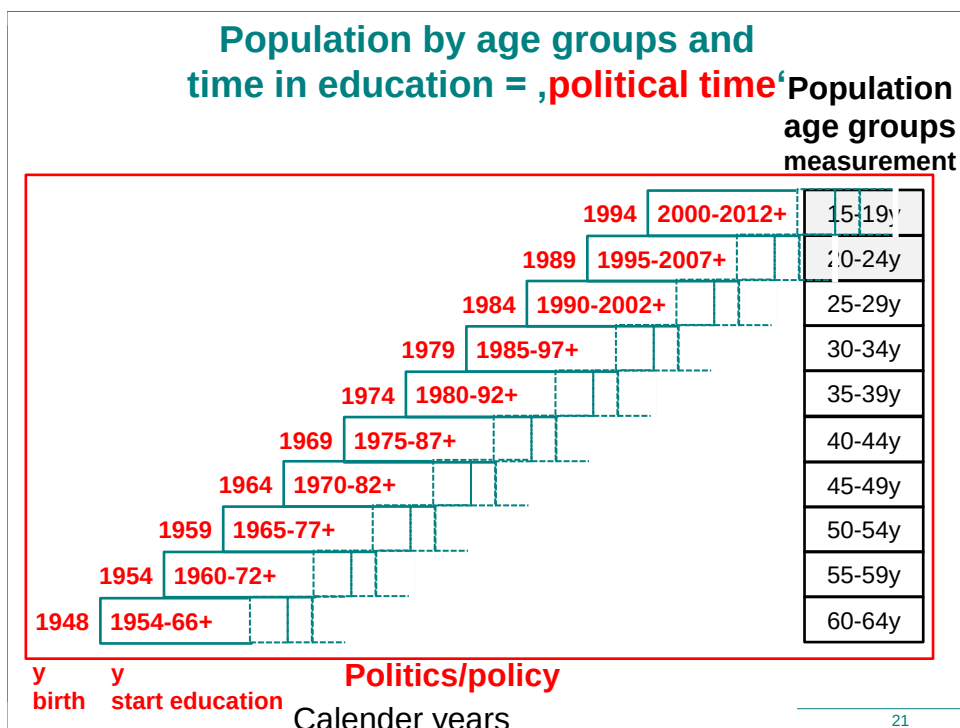


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**Population by age groups and
time in education = ,political time‘**

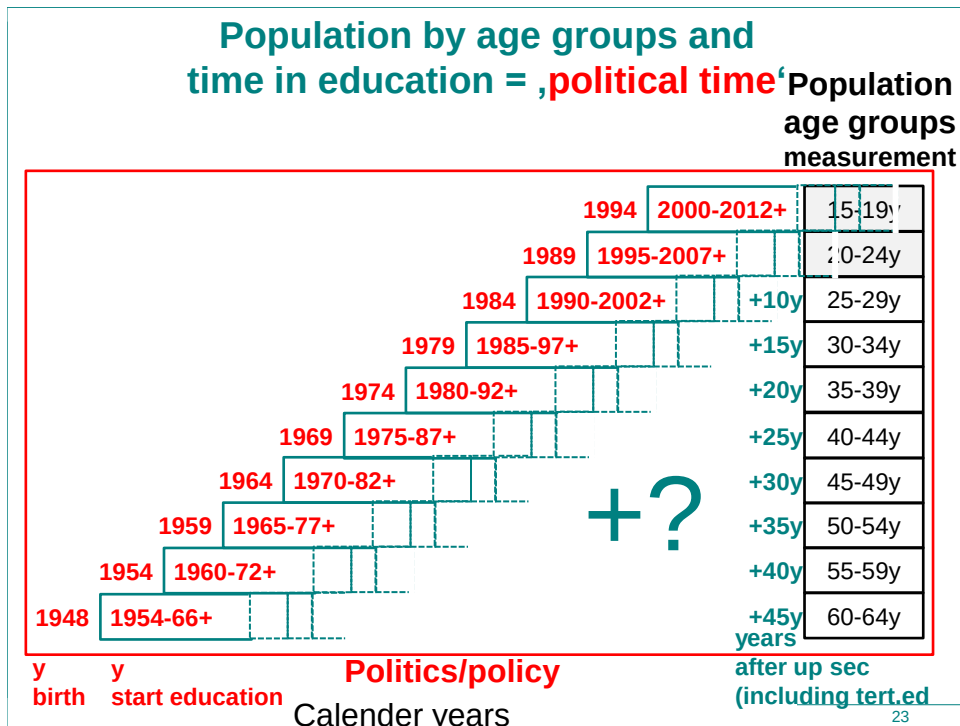
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...big question mark

- ...what goes on after initial/formal education?
- ...strong arguments: **not so much...**
 - MATTHEW EFFECT
 - cumulation argument
 - not much about effects



timing of policies & competence formation

- very complicated structures/relationships ...
- ...and long-term and blurred effects of policies...

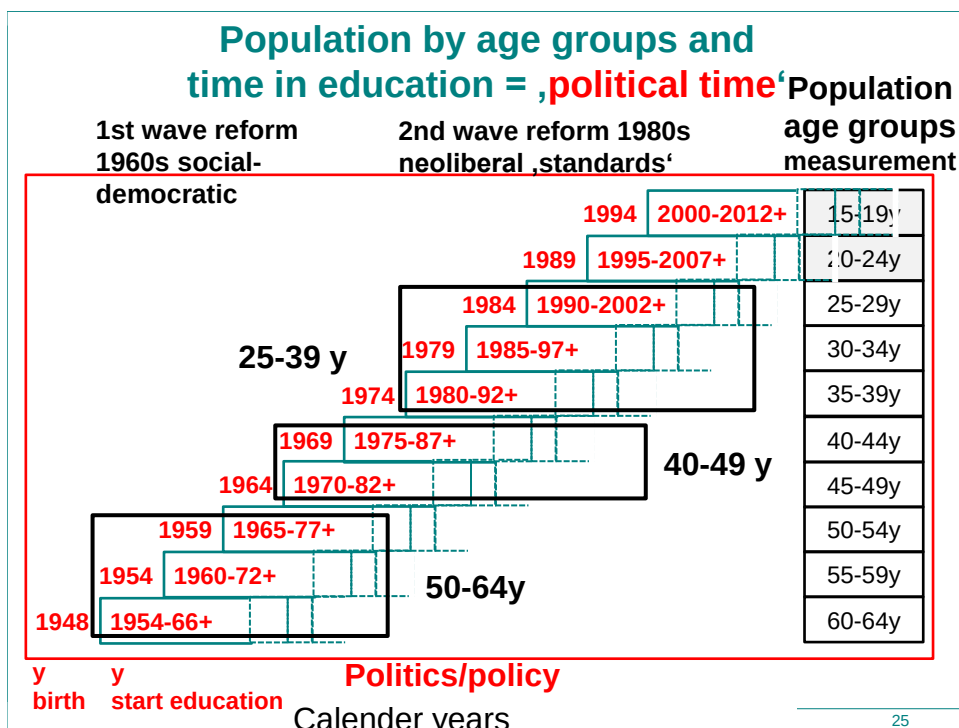
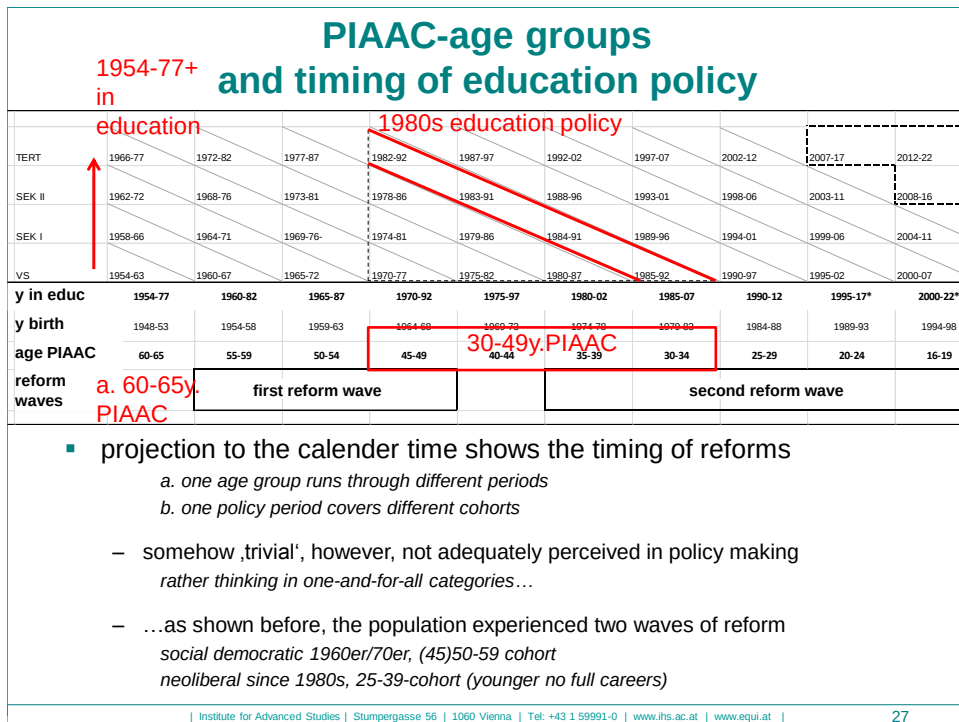


illustration of flows through education shows...

- ...the timing of the education careers of the age groups (primary education starting ~1954-2004)
- and also the **political time logic** of the same historical period which runs across the career stages
 - showing the **interrelation** of education **careers** with phases of policy **reforms**
 - which is **fairly complicated and not easily understandable** at first sight

*...the reactions to PISA often underestimate this timing factor, as the potential for improvement from one wave to the next is quite limited
[measures only improvement achieved between age 12 tp 15y (around grades 6 to 9) however, is taken as a proxy for the whole system]*



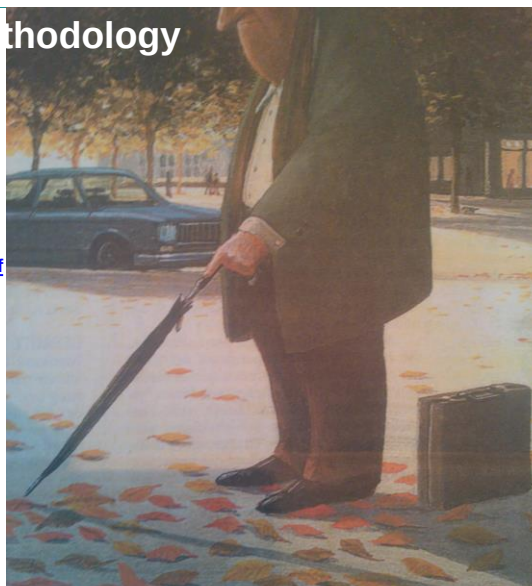
methodology

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 cross-section

two parts

- ...**crossection**
quite simple (so far)
 - median or mean scores in literacy and numeracy
 - distribution measured by 95/5 and 75/25 decile- and quartile-ratios
- (1) analysis of structural traits: 'tracking' in selected systems
 - Finland, Sweden, Denmark // U.K., Canada, US // Netherlands, Germany, Austria
- (2) cross-sectional analysis: structural patterns & obs.competences
 - mean and/or median; 95/5 and 75/25-percentil-ratios;
- all PIAAC-countries and
- selected countries by welfare regimes liberal, nordic, continental

methodology

reform-dynamics

- **...reform-dynamics**
 - more complex approach including the following steps:
- (1) relating age structure of the population to flow through education
- (2) analysis of the timeline of reforms
- (3) exploring age specific patterns of competences & 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 cross-section

- [structure of attainment (already shown)]
- classification, identification of tracking
- tracking and competence (levels, distribution)
- tertiarisation and competence levels

classification of tracking

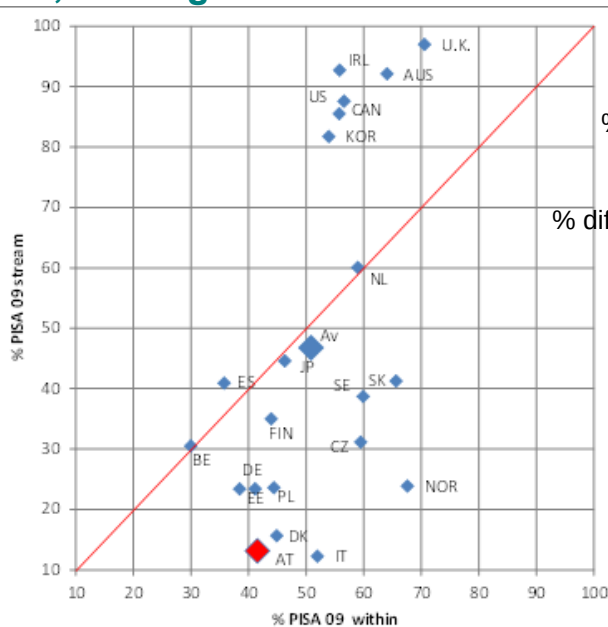
cross-sectional (cumulative) structures: ,tracking' and PIAAC competences

- 1 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)
- 2 traditional tracking of different school types (,between schools'), not covered by PISA-variables (**,open' tracking**)
 - > these countries display low level of tracking at PISA (,within school') variables
- question: how are both forms of tracking related to competence levels and distribution?
 - inequality
- **,mainstream' expectations:**
 - (1) ,conservative': *open tracking should increase scores*
 - (2) ,progressive': *open tracking should increase inequality*

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,tracking'-structures acc. PISA (principals answ.)



▪ **vertical:**
% stream within schools

▪ **horizontal:**
% differentiation within class

▪ **,tracking' in comprehensive structures within school... (COVERT)**

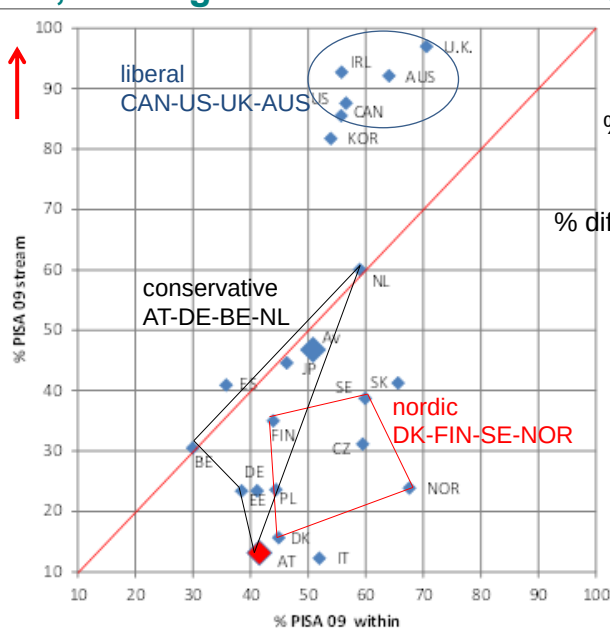
▪ ...in differentiated structures between different school types (OPEN)

not visible in PISA variables

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‘tracking’-structures acc. PISA (principals answ.)



vertical:
% stream within schools

horizontal:
% differentiation within class

‘tracking’ in
comprehensive
structures
within school...
(COVERT)

...in differentiated
structures
between different
school types
(OPEN)

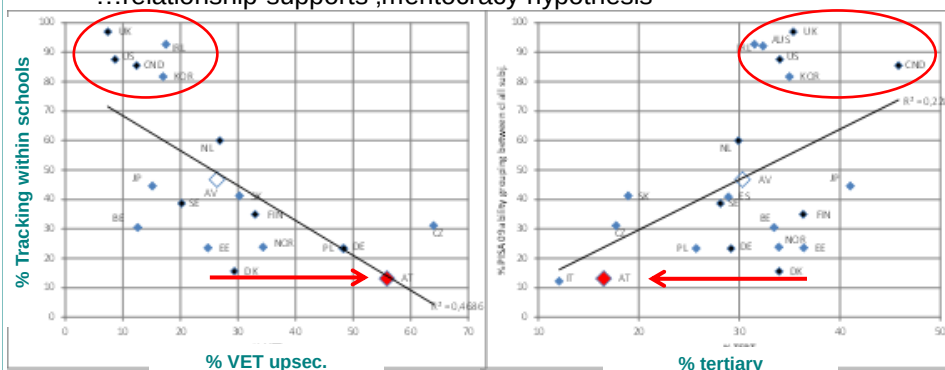
not visible in PISA variables

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...,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
- ...relationship supports ‘meritocracy hypothesis’



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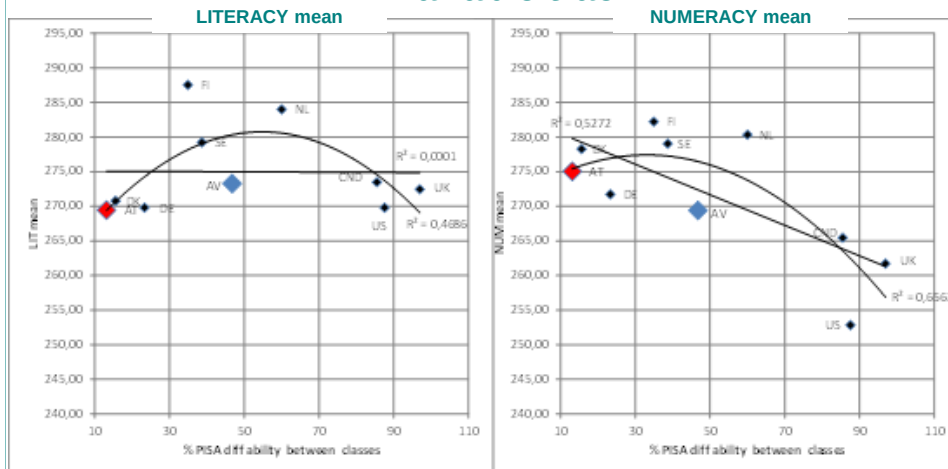
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tracking and competence (levels, distribution)

tracking and competence (levels, distribution)

- ...both classifications of tracking (‘covert’ and ‘open’) compared...
- ...to competence indicators (level and distribution)
 - level: test scores
 - distribution: 95/5 percentile
- ...complex relationships between educational structure and competences...
- [...illustration for selected countries, other variants robust picture]

structure & competence LEVEL y-axis x-axis-variable tracking

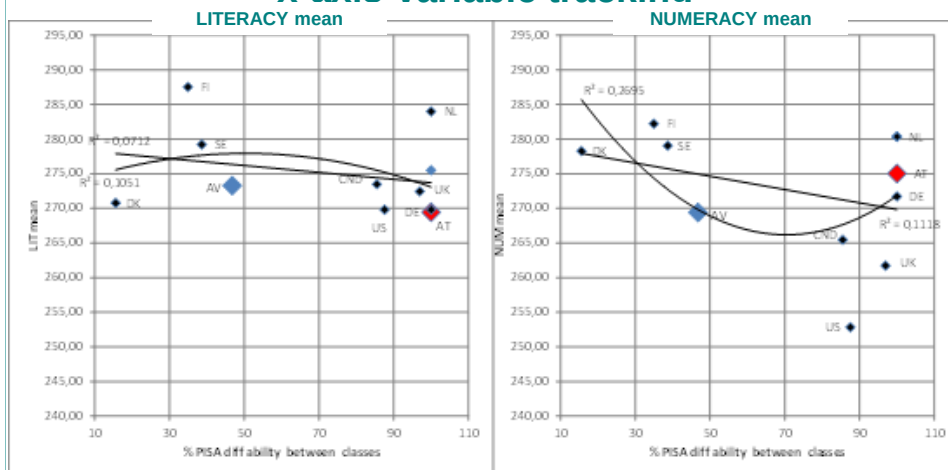
1st

- 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)

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structure & competence LEVEL y-axis x-axis-variable tracking

2nd

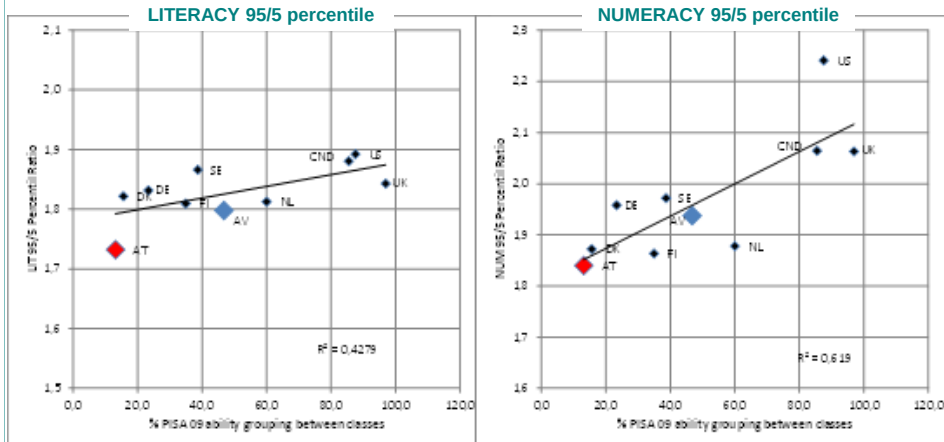
- combined tracking PISA and institutional (**,covert' and ,open'**)
- reading: less relationship, not more 0 to .1
- numeracy: also less relationship .1 to .3 > both against expectation

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structure & competence INEQUALITY y-axis 1st

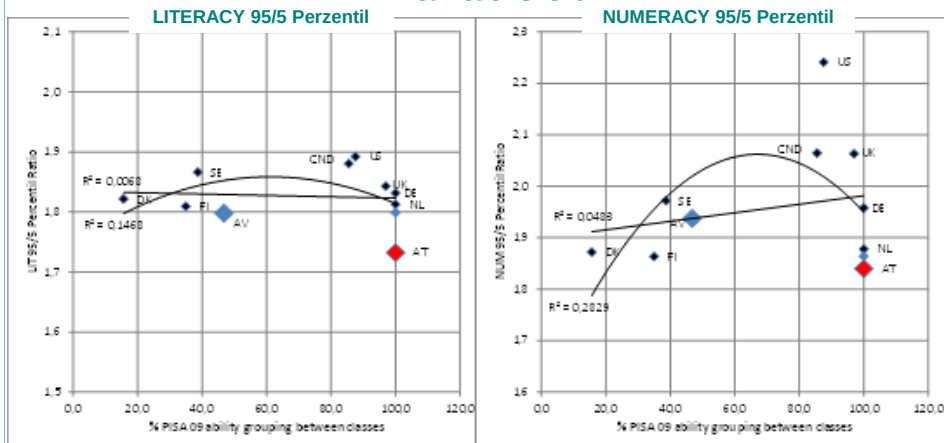
x-axis-variable tracking



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

structure & competence INEQUALITY y-axis 2nd

x-axis-variable tracking

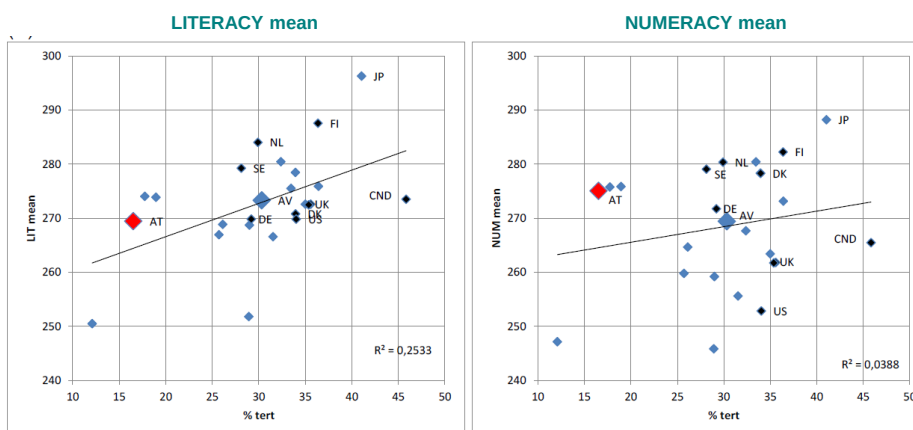


- combined tracking PISA and institutional (**,covert' and ,open'**)
- reading (0 to .1) and numeracy (0 to .2) weakening of relationship
- OVERALL:** no support for widely held expectation that openly tracked systems increase inequality of competences (and scores)

tertiarisation and competence levels

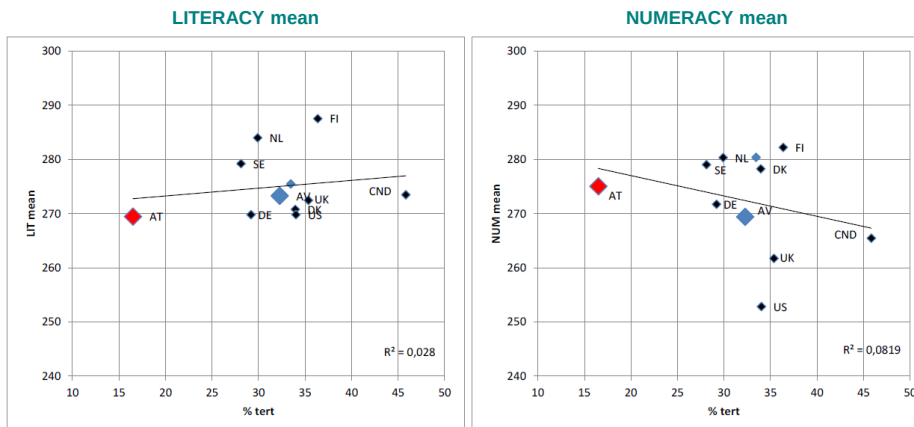
- tertiarisation does not increase overall competence levels

tertiary participation and scores, all countries



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

tertiary participation and scores, sel.countries

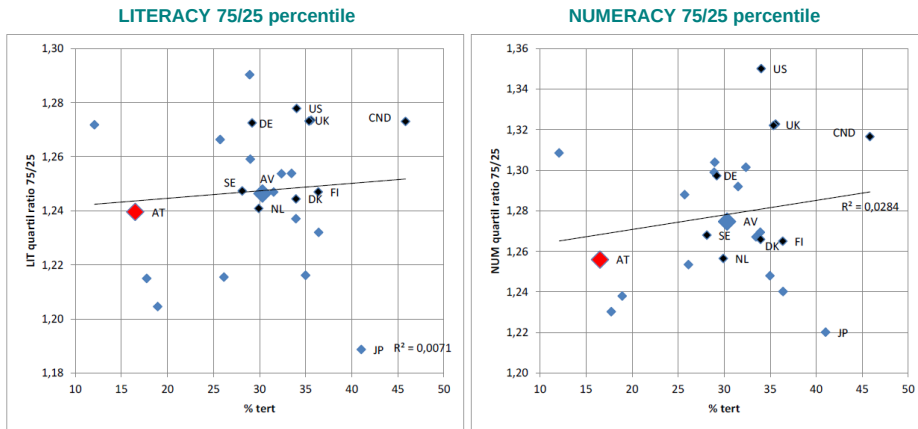


- no corr. in selected countries

tertiarisation and inequality

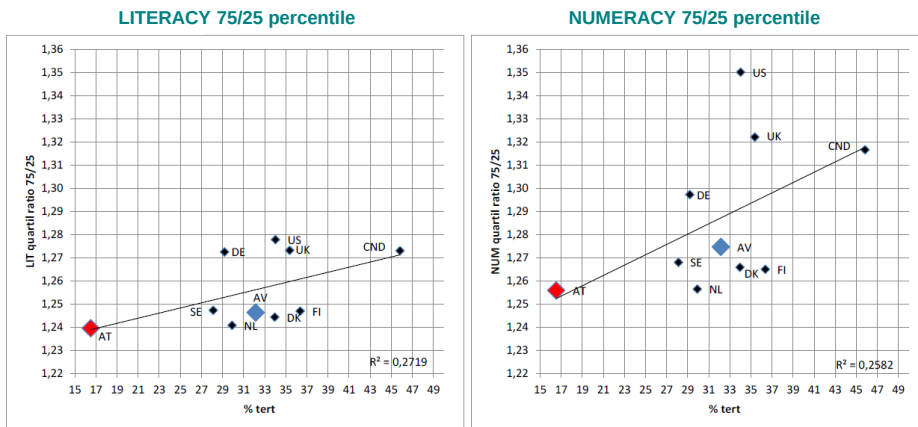
- tertiarisation does not reduce inequality (partly rather increases)
 - 75/25 percentile ratio

tertiary participation and inequality, all countr.



- 75/25 ratio no corr.

tertiary participation and inequality, sel.countr.

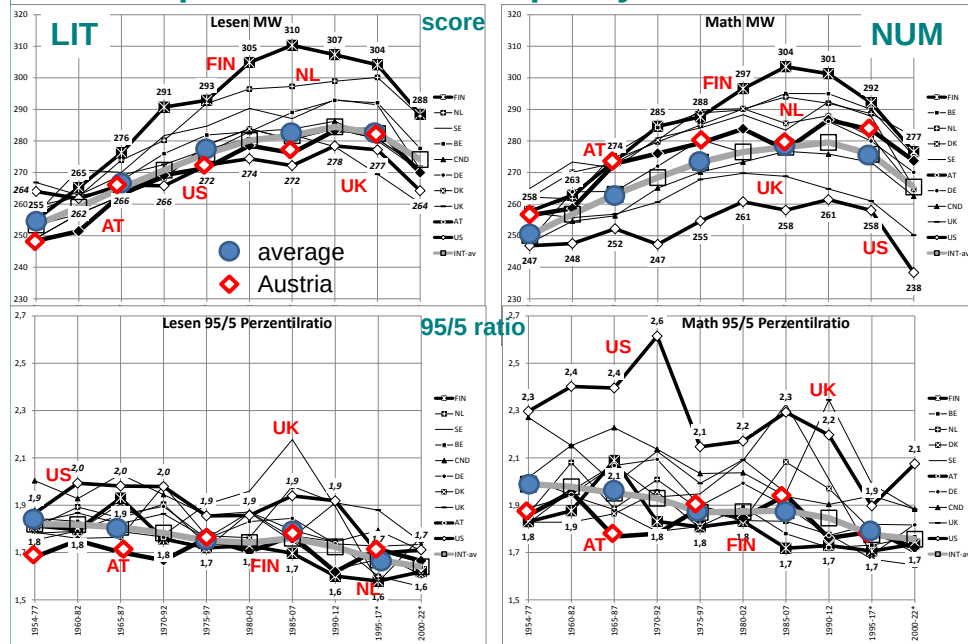


- 75/25 ratio positive corr., stronger in numeracy

reform dynamic and competences (level and distribution)

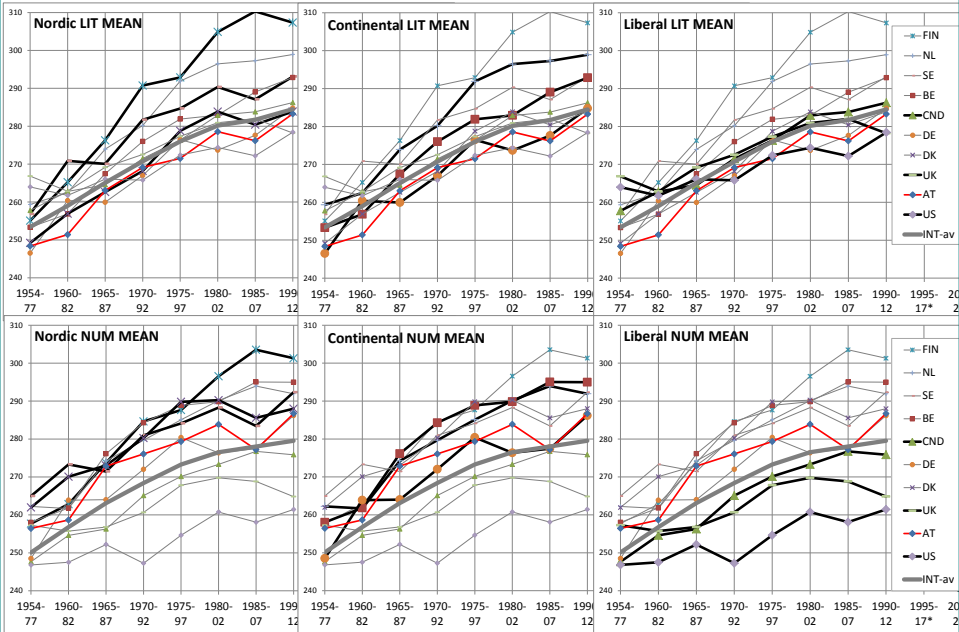
- ...overview
- ...and separate view on welfare regimes
 - only age groups fully through education...

competence level & inequality sel.countries

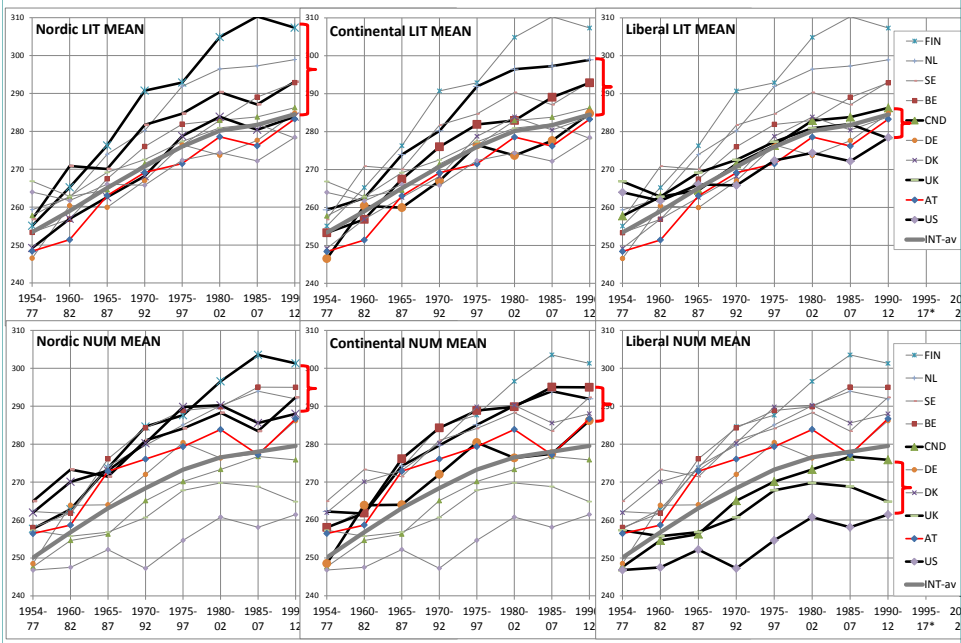


...selected countries by welfare types SCORES

Mean Score LIT_(above) & NUM_(below) by age groups

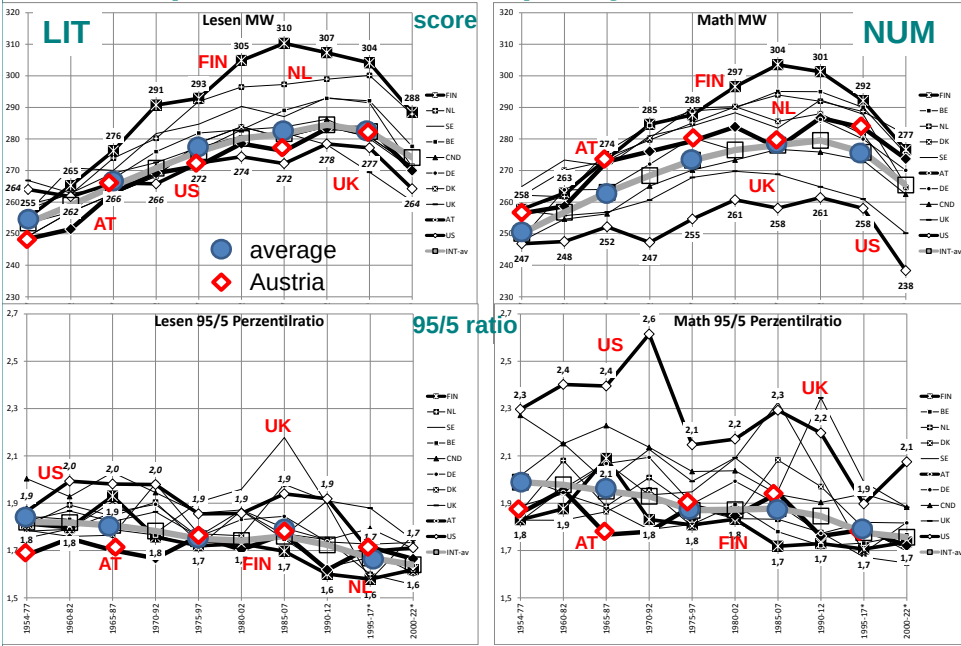


Mean Score LIT_(above) & NUM_(below) by age groups



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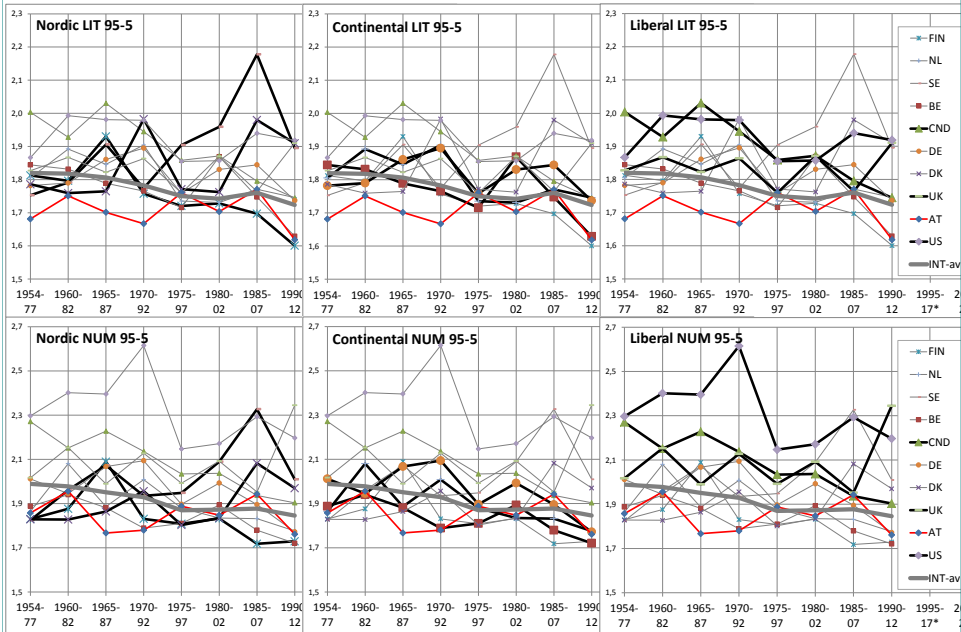
competence level &-inequality sel.countries



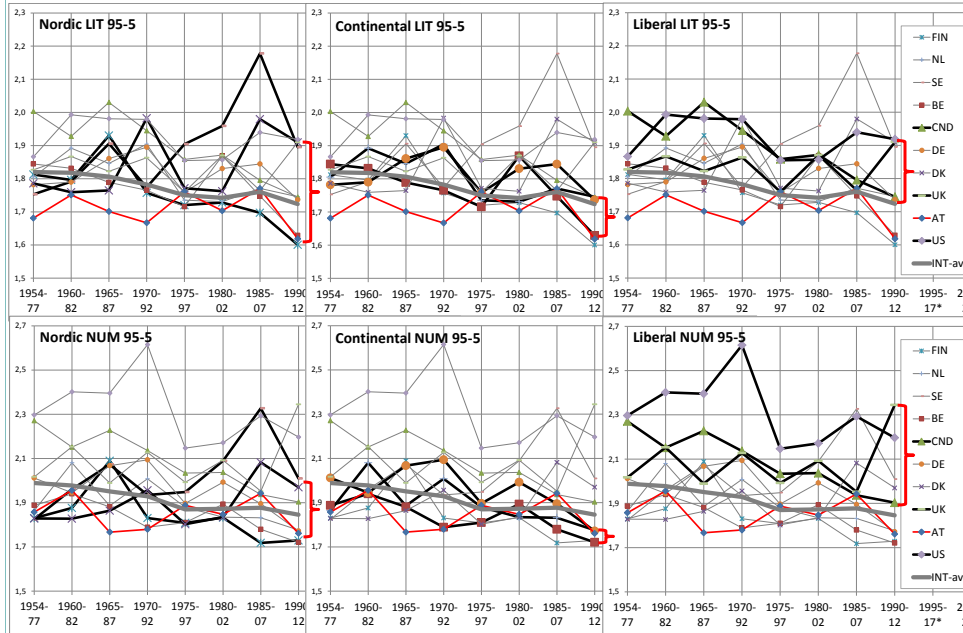
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...selected countries by welfare types
INEQUALITY 1 (95/5 percentile)

95/5 Perc. LIT_(above) & NUM_(below) by age groups



95/5 Perc. LIT_(above) & NUM_(below) by age groups

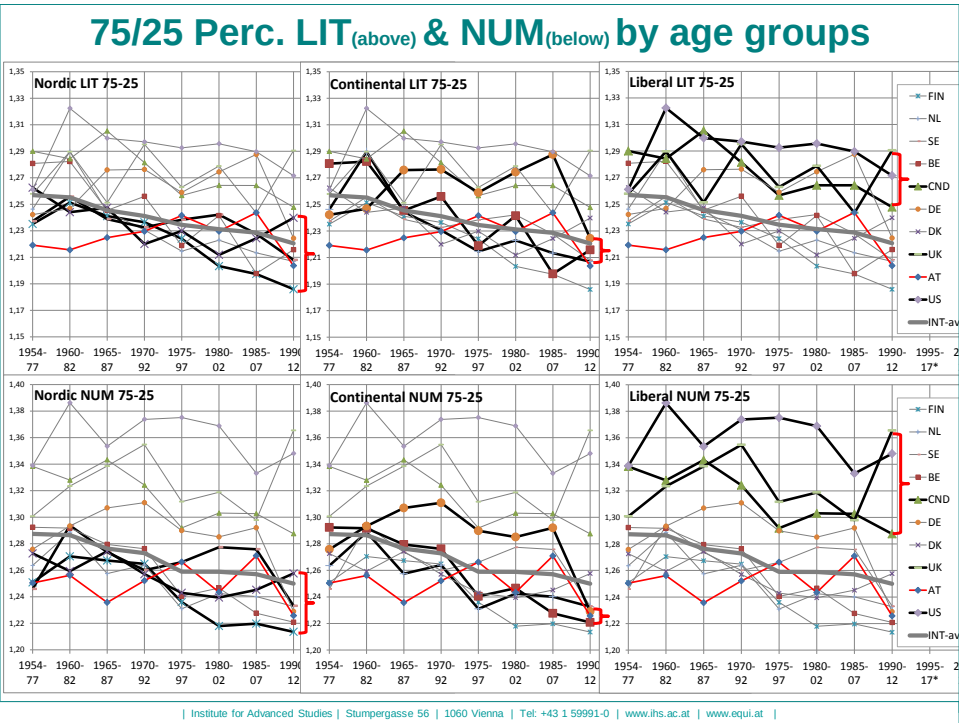
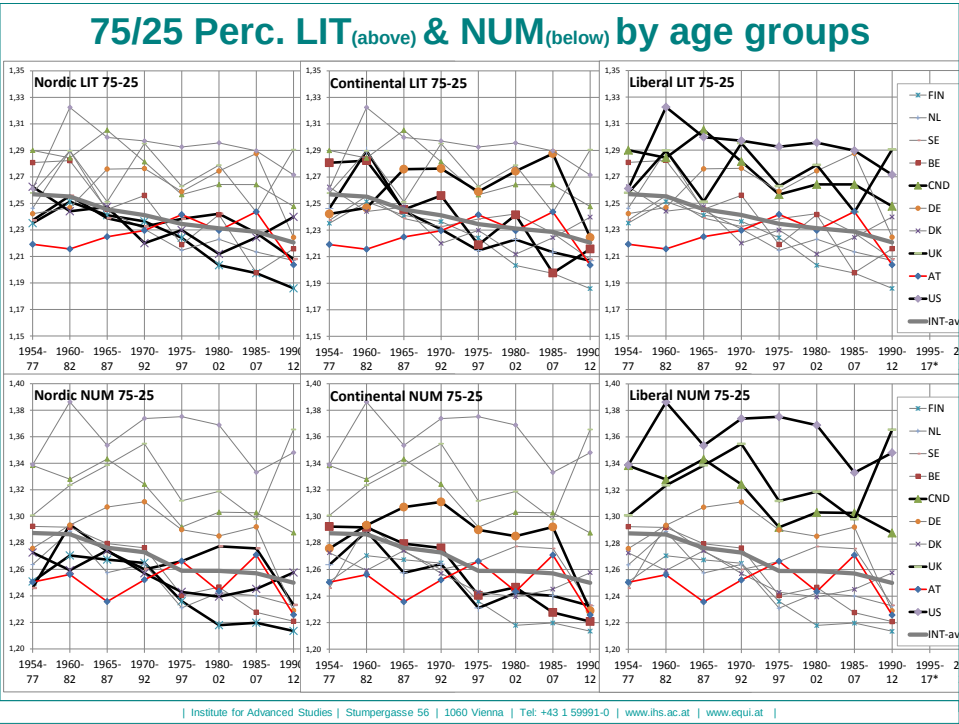


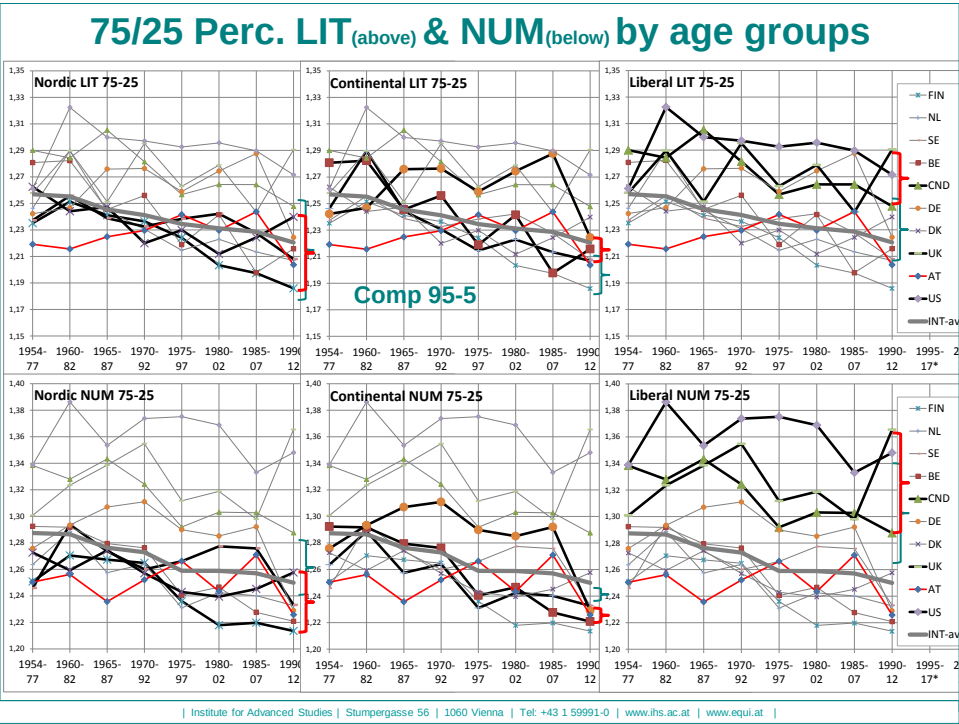
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...selected countries by welfare types INEQUALITY 2 (75/25 percentile)

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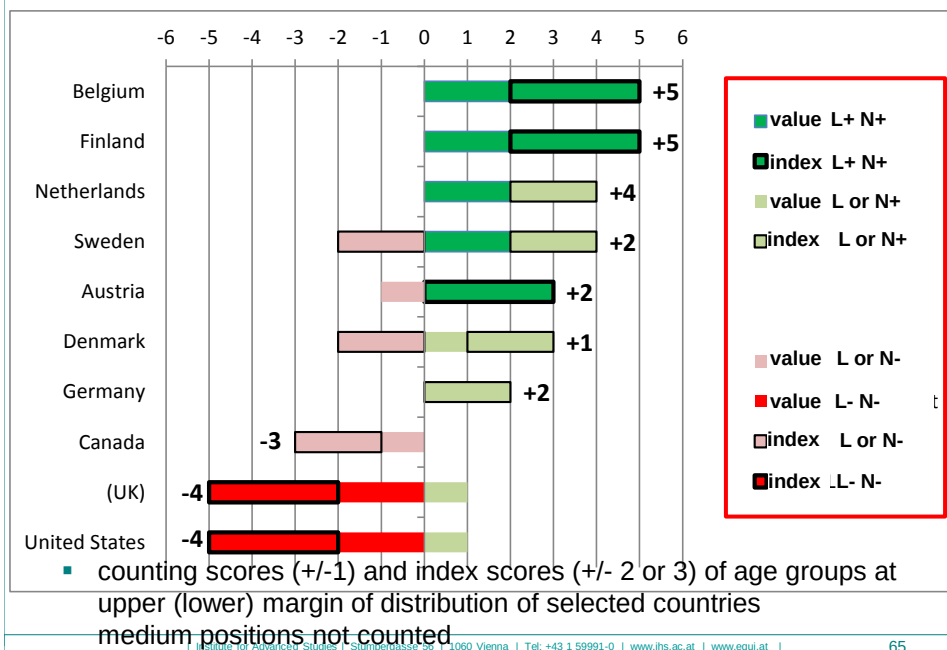
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...stylised performance (scores)

attempt of ,ranking' sel.countries



summary

- **PISA tracking variables misleading**, as traditional tracking between schools is not displayed, ,openly tracked' countries appear with low levels of tracking (within schools)
- **cross-section**: comprehensive structures include ,**covert' tracking**, there seems to be a relationship between tertiary education and ,covert tracking', and between VET and ,**open' tracking**
- **selected countries**: Finland exceptionally positiv, Nordic countries different; ,liberal' countries negativ, ,continental' countries also different (NL, BE good; DE, AT mixed, medium)
- ,**openly' differentiated systems** including VET provide similar scores and degrees of inequality as **low differentiated comprehensive systems** (unfavourable: ,covertly' differentiated comprehensive systems)

...stylised policy related conclusions are...

- (1) Finland is much too exceptional to be taken as benchmark,
- (2) tracking increases inequality but tertiarisation does not reduce it,
- (3) overt tracking combined with VET does not increase inequality more than hidden tracking in comprehensive systems,
- (4) increasing tertiarisation seems to have backward effects towards increasing tracking and selectivity,
- (5) **the current recipes of the second wave of reform ('GERM') do not produce encouraging results** in terms of competence levels and inequality...
 - ...somehow the picture points against what the very sophisticated econometric models suggest...

Material

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

