Some insights about VET from Large-Scale-Assessments?

Lorenz Lassnigg
(lassnigg@ihs.ac.at; www.equi.at)

DECOWE CONFERENCE

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Agenda

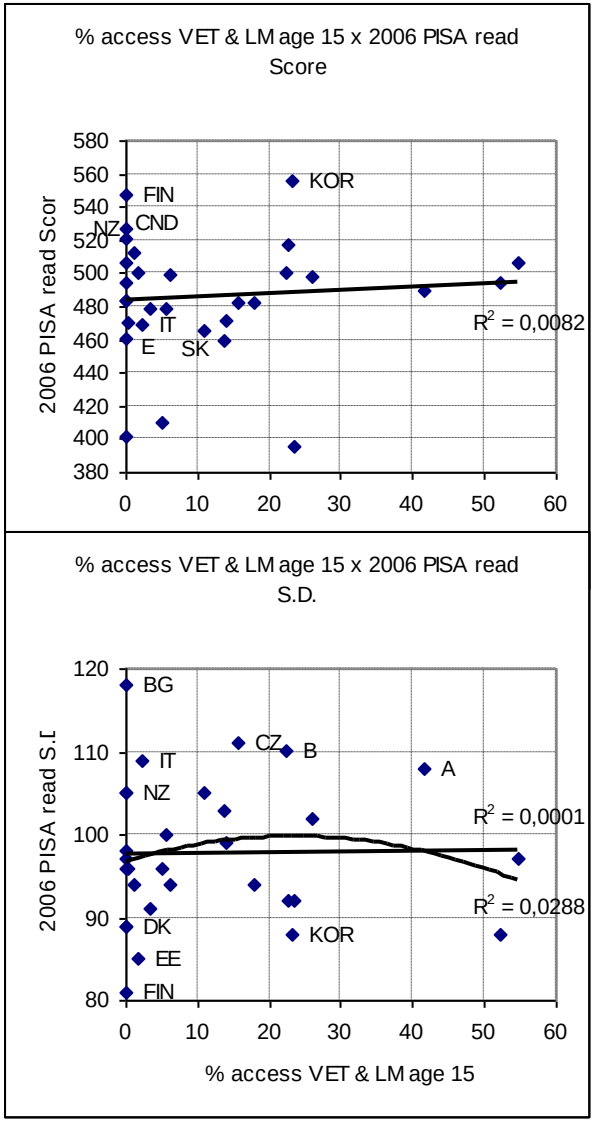
- VET and upper secondary achievement
- VET and primary achievement
- VET and higher education
- Some results about Austrian VET
- Conclusions: complexities and diversities about VET

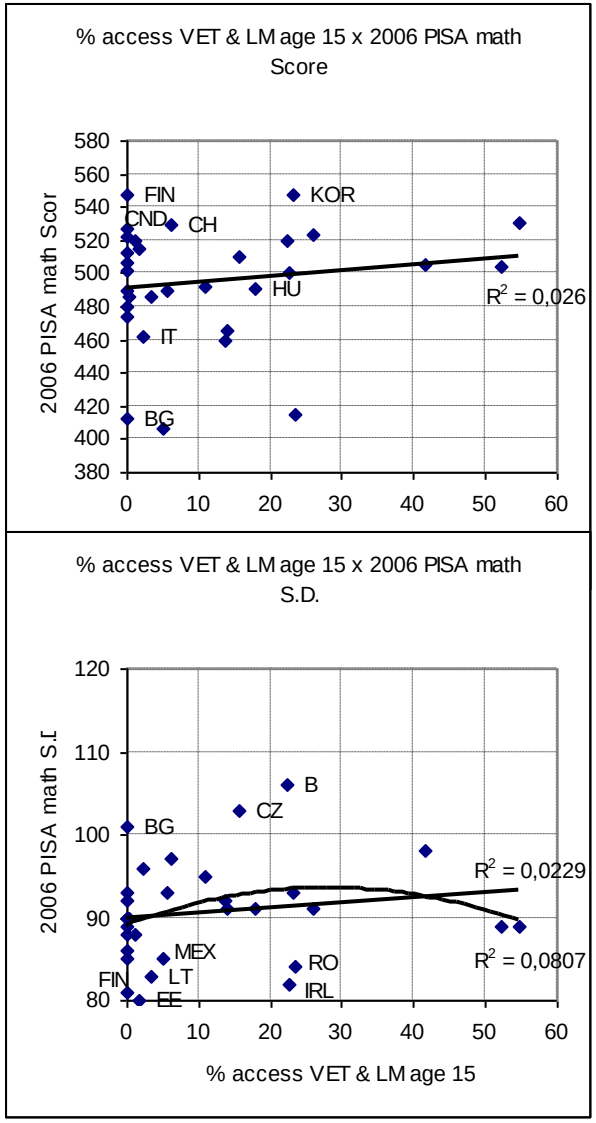
VET and upper secondary achievement

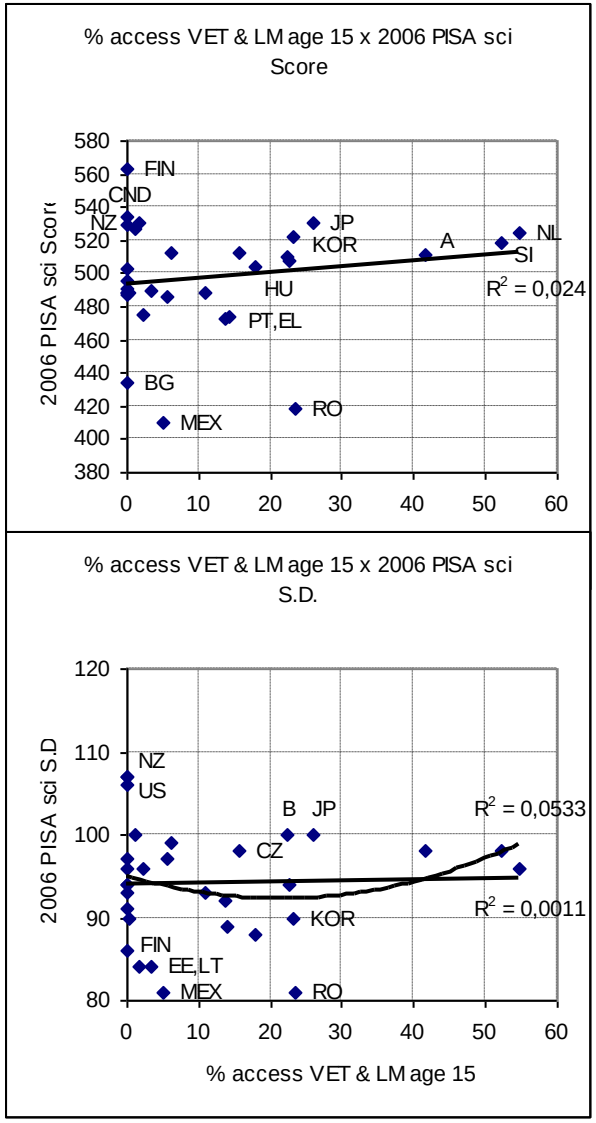
(PISA-Scores, mean, standard deviation; TIMSS)

- Access to VET programmes at age 15
  - Similar picture for reading, math, and science
  - PISA-score-level: medium level achievement for early VET systems
  - much more differentiation (high-low) in systems with low VET attainment (comprehensive structure)
  - No systematic difference of distribution of scores (PISA-standard-deviation)
  - Similar picture for OECD and EU
- VET proportion at upper secondary level (EAG)
  - Rather slight increase of PISA-scores with increase of VET proportion...
  - ...however, also tendency for increase of variation in scores (standard deviation)

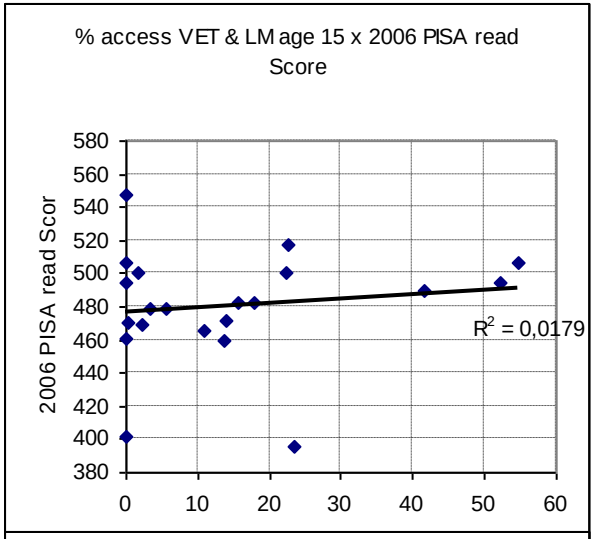
PISA 2006: %VET15 x Scores, Distribution

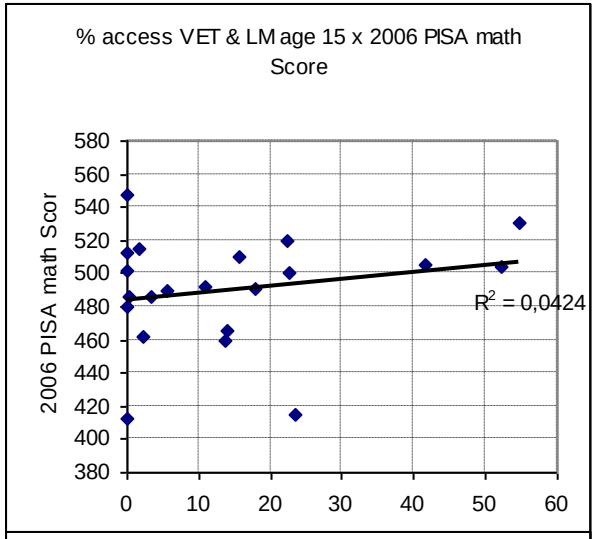


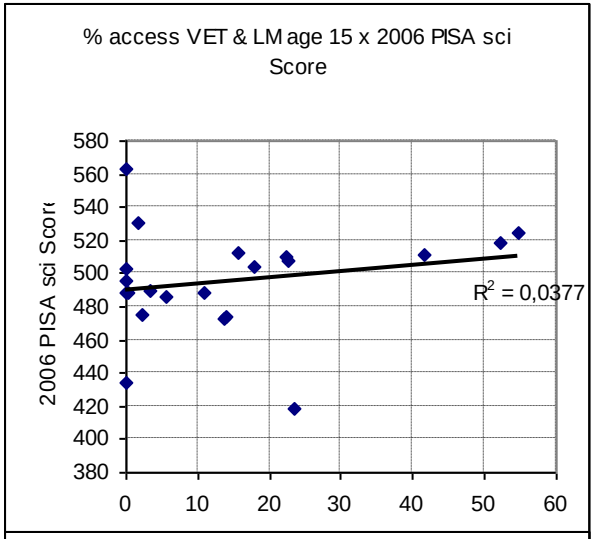


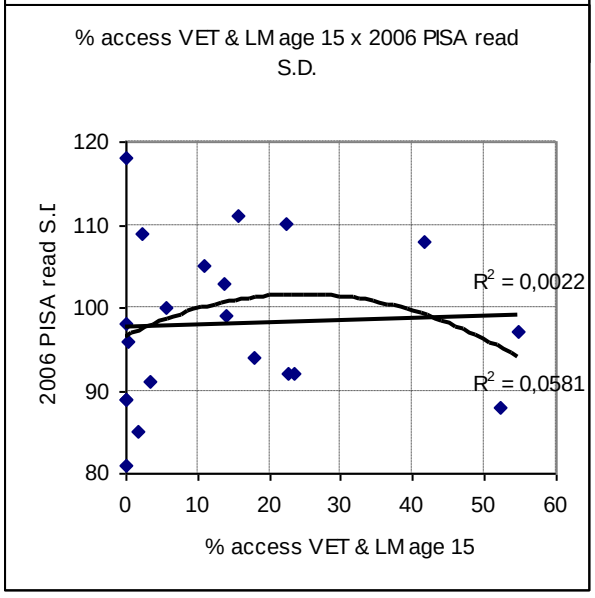


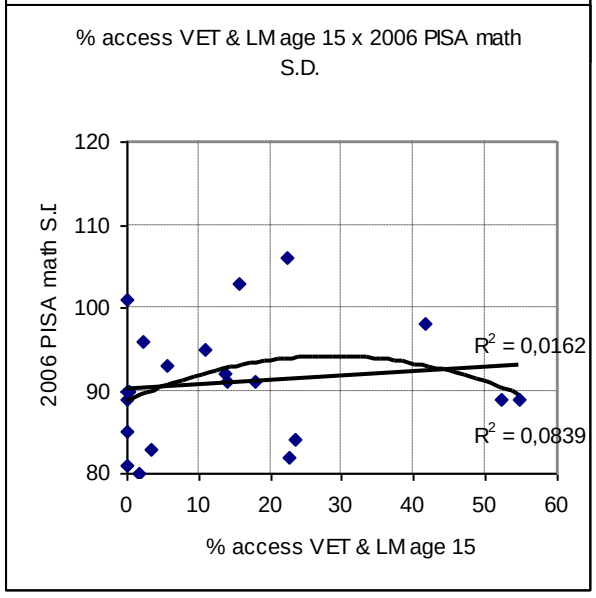
PISA 2006: %VET15 x Scores, Distribution, EU

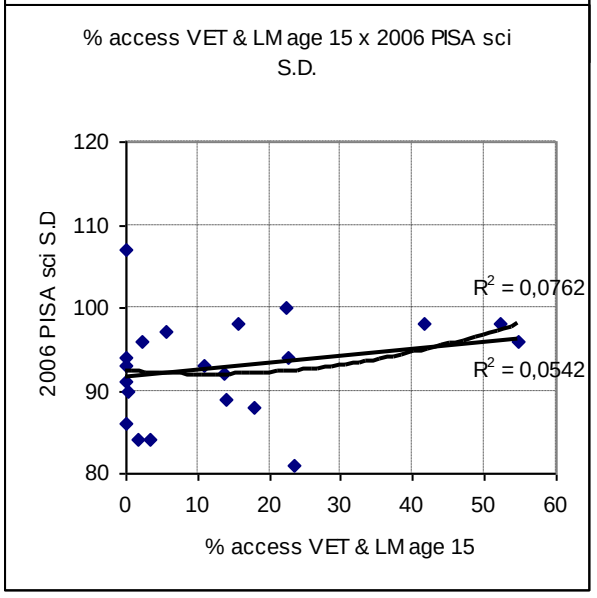




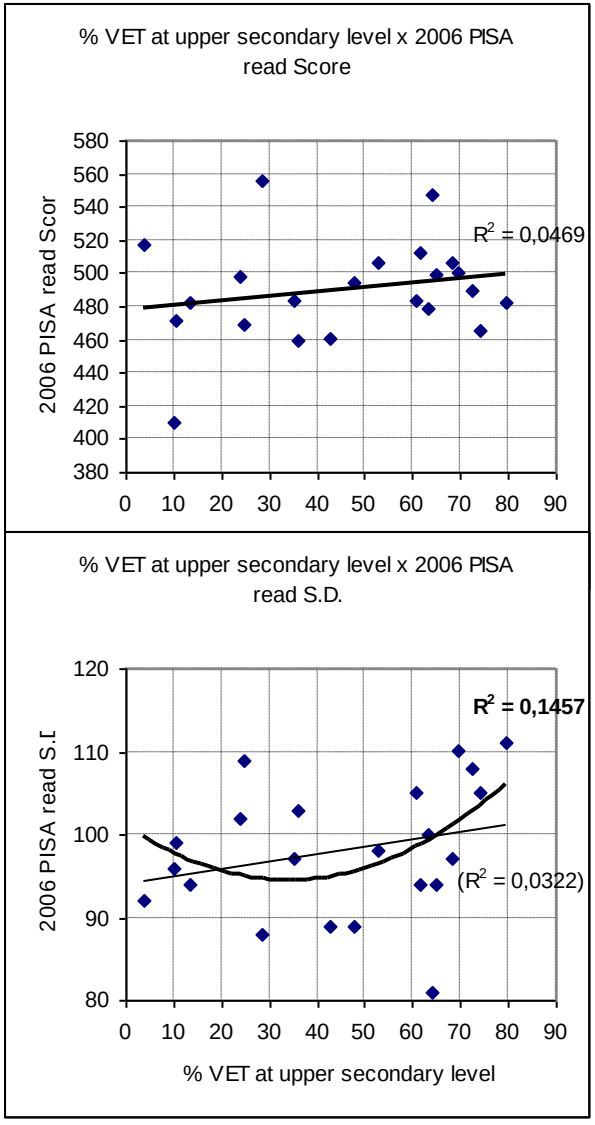


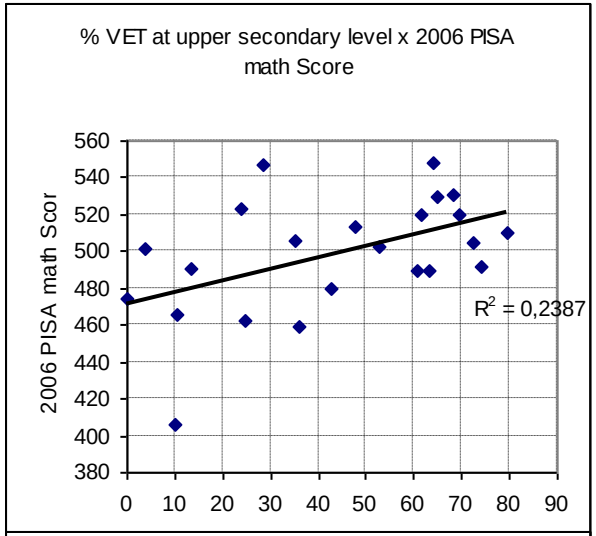


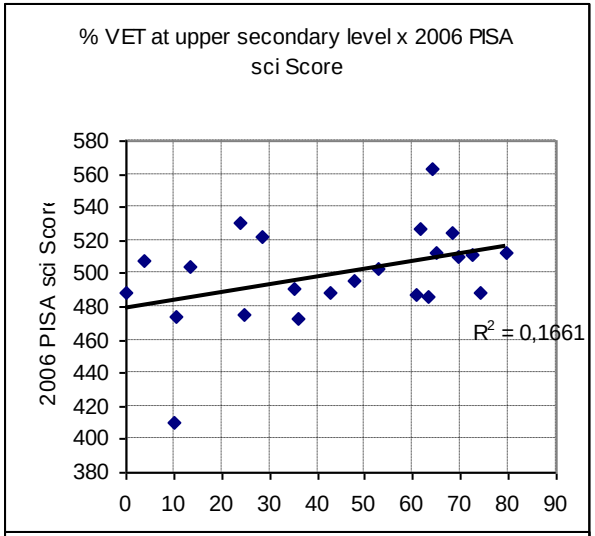


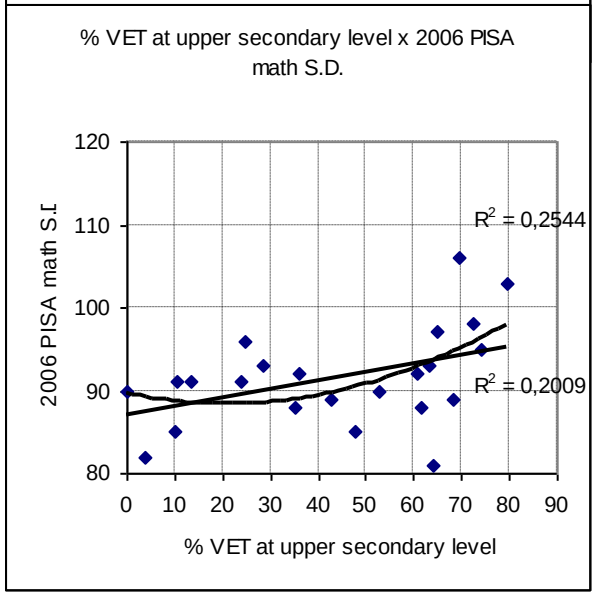


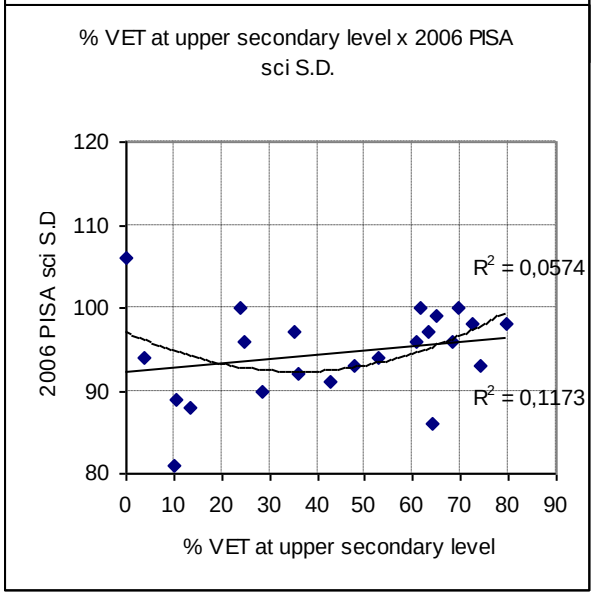
PISA/EAG 2006: %VETups x Scores, Distrib.











VET and upper secondary achievement
(PISA-Scores, mean, standard deviation; TIMSS)

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  - much more differentiation (high-low) in systems with low VET attainment (comprehensive structure)
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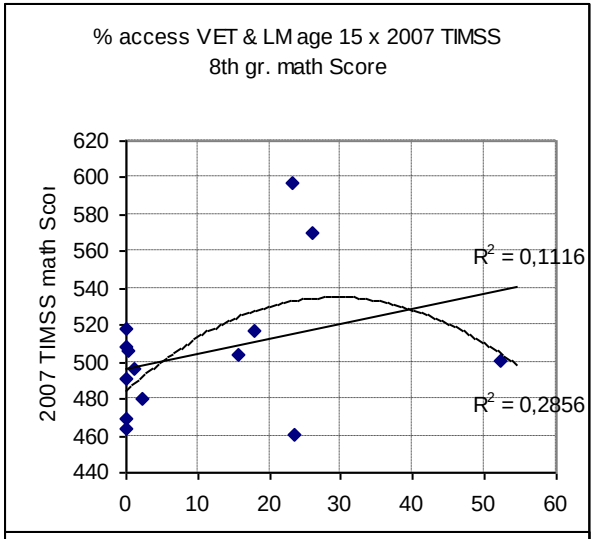
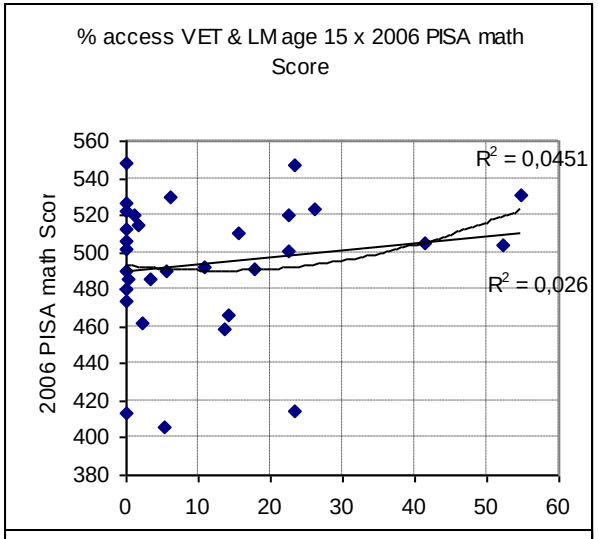
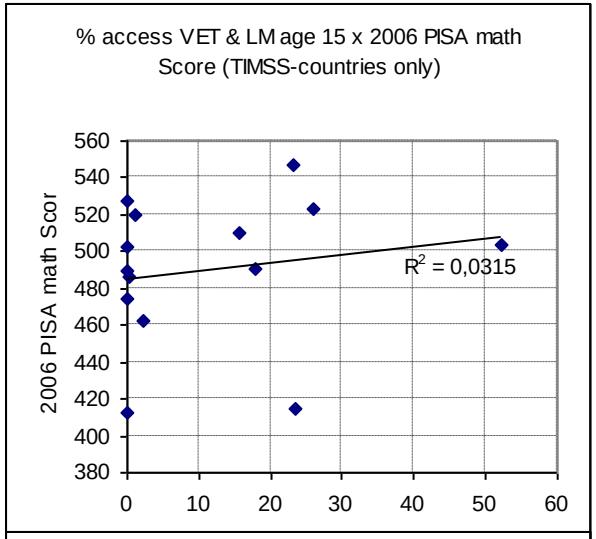
  - Similar picture for OECD and EU
- VET proportion at upper secondary level (EAG)
  - Rather slight increase of PISA-scores with increase of VET proportion...
  - ...however, also tendency for increase of variation in scores (standard deviation)
- Comparison to TIMSS at grade 8
  - shows similar results to PISA for VET programmes at age 15...
  - ...however, clear differences for VET proportion at upper secondary level

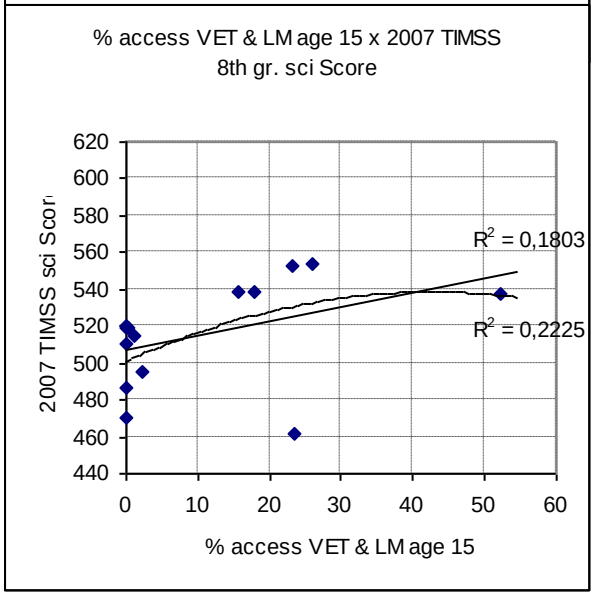
    (partly due to selection of countries, however, difference between data remains)

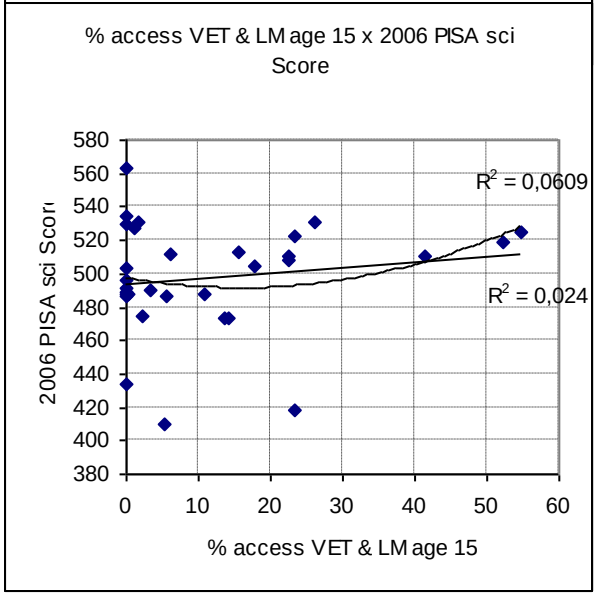
TIMSS‘07 & PISA‘06: %VET15, math, sci sco.

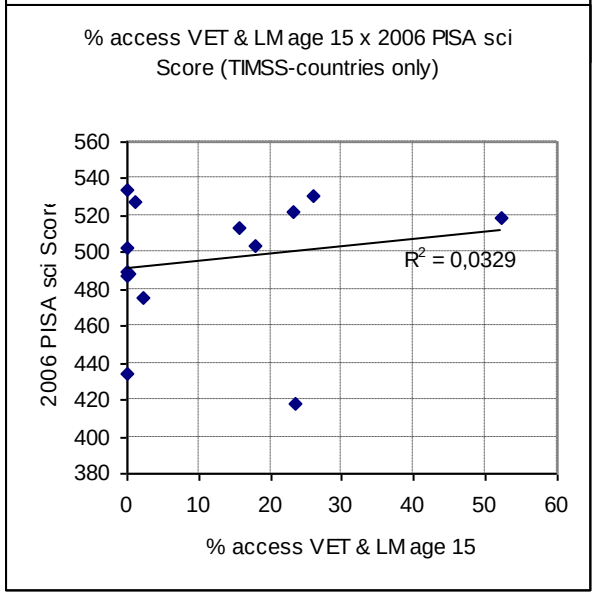




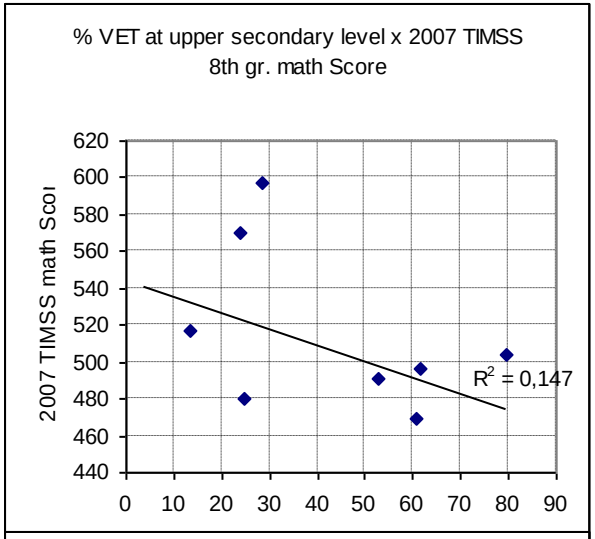


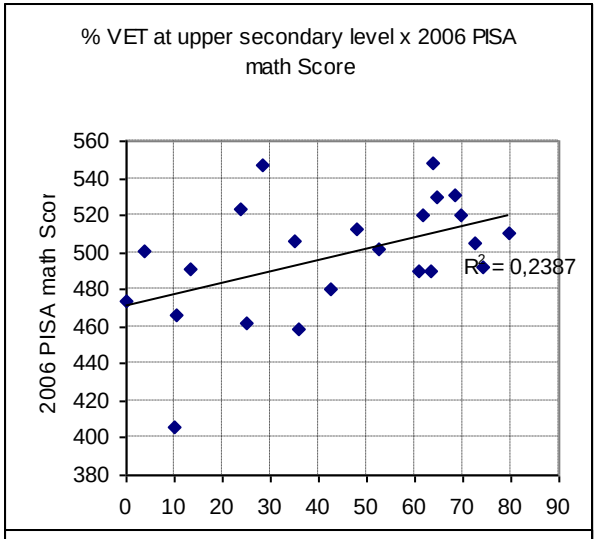


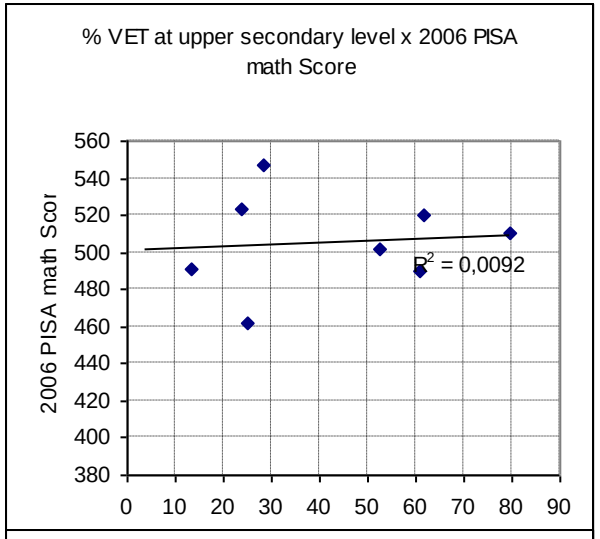


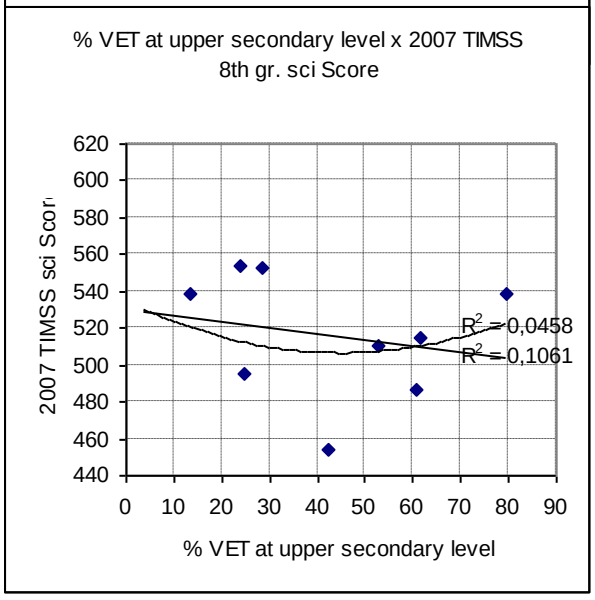


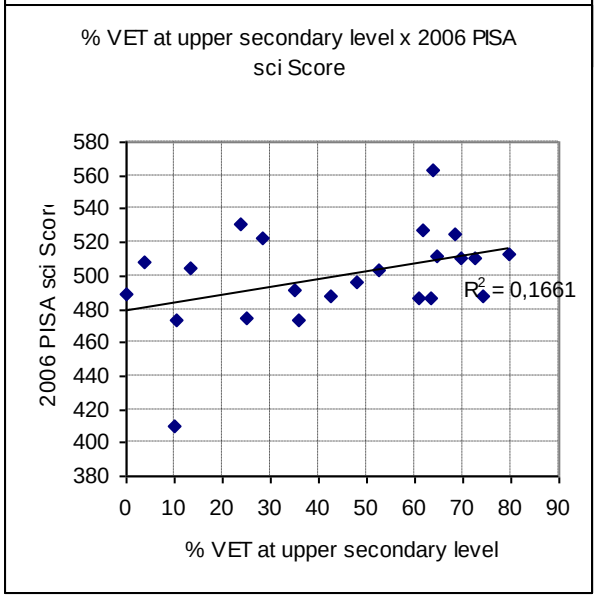
TIMSS‘07 & PISA‘06: %VETups, math, sci sc.

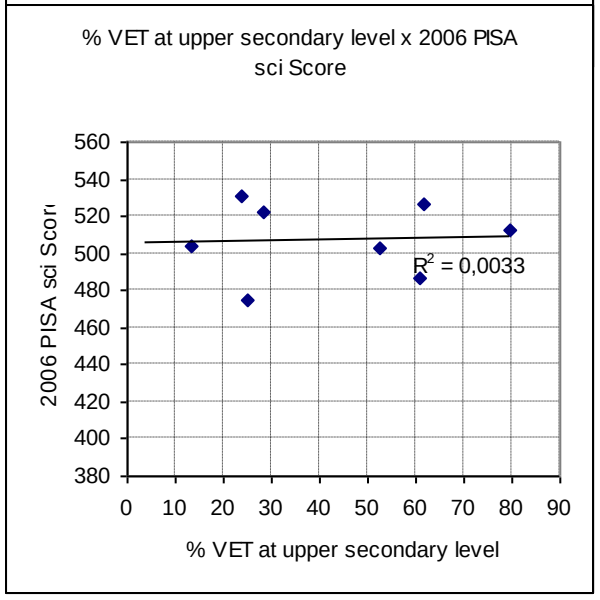








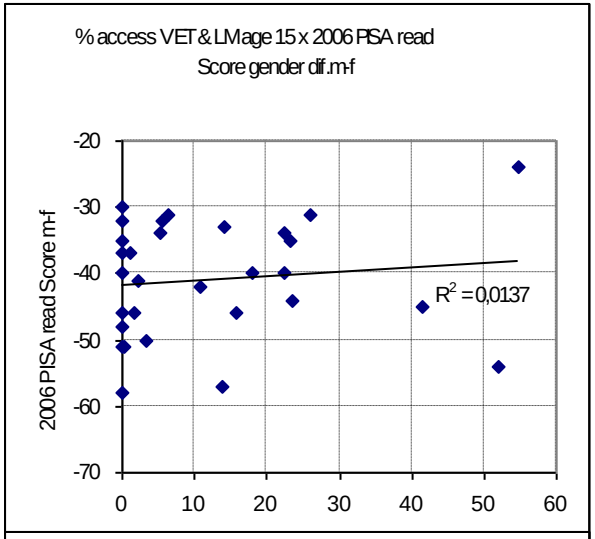


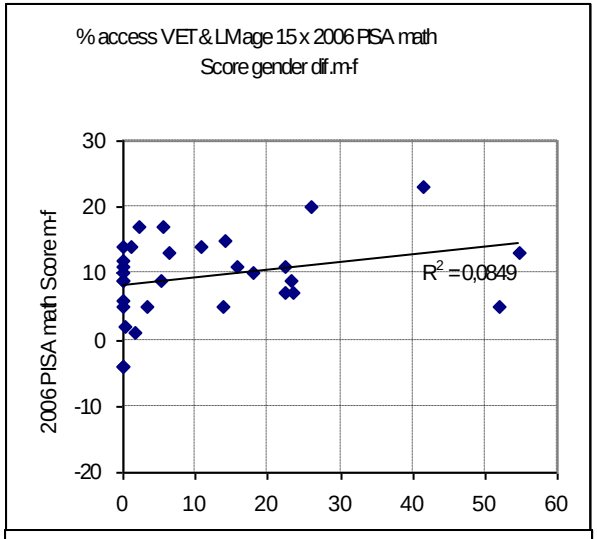


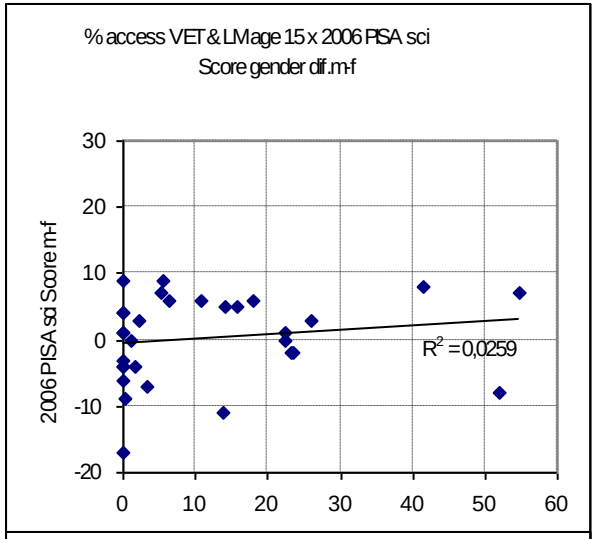
VET and upper secondary achievement
(PISA-Scores, gender, percentiles)

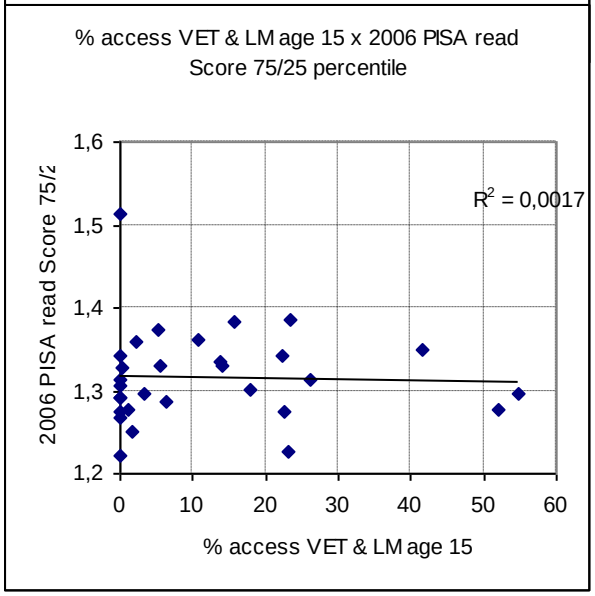
- No difference with VET proportion at age 15 and upper secondary level

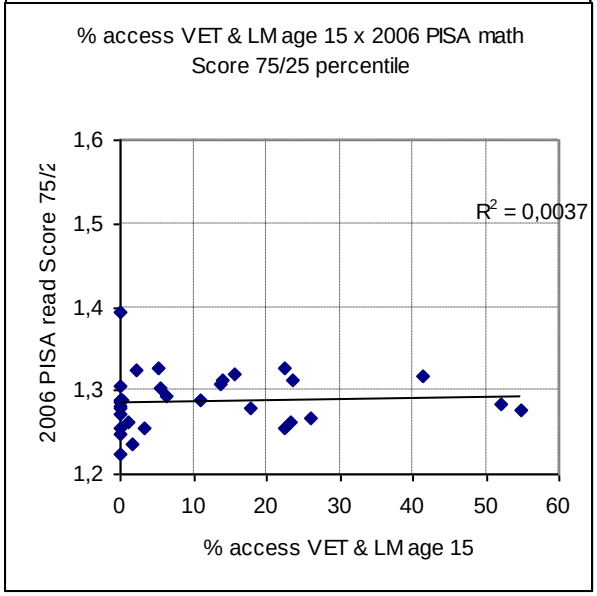
PISA 2006: %VET15 x gender, achievement diff.

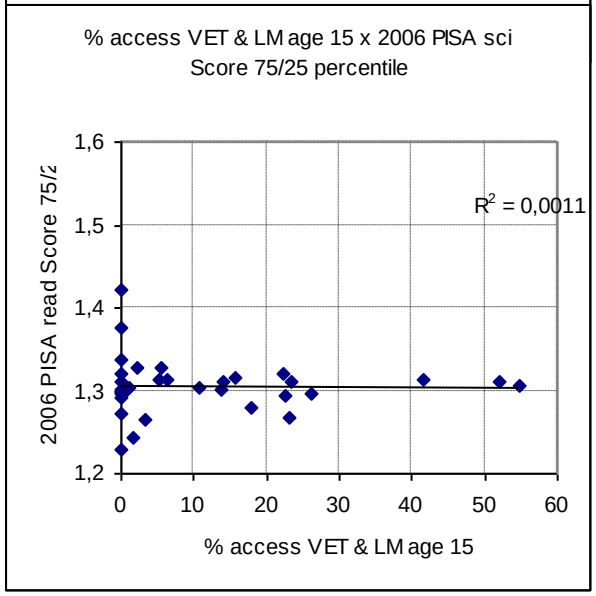












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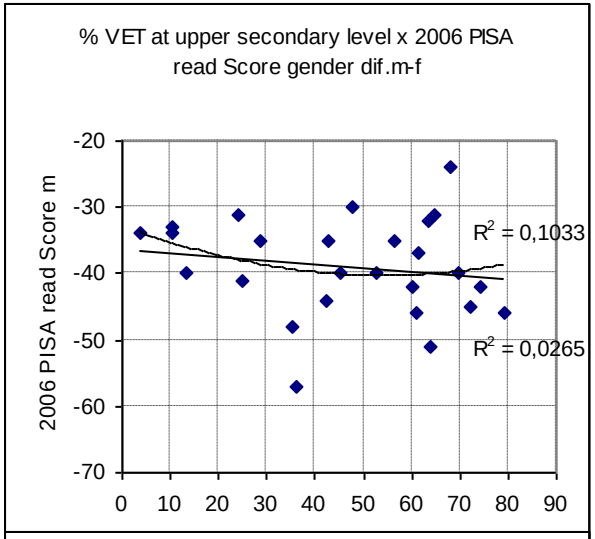
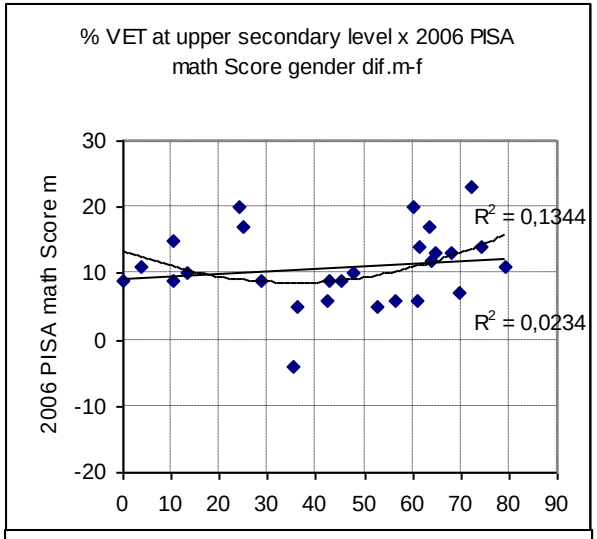
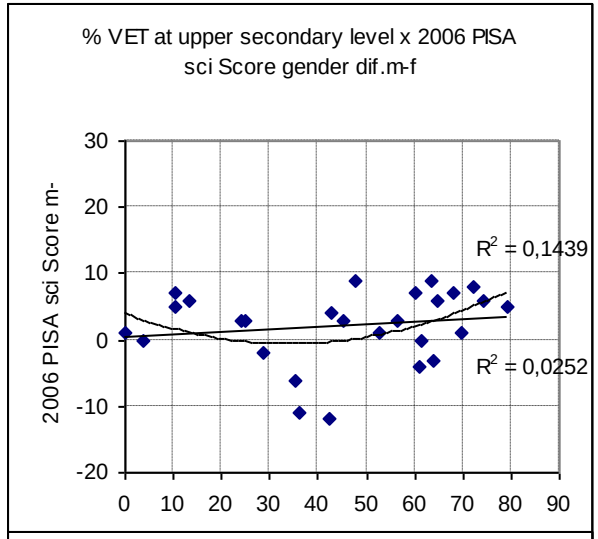
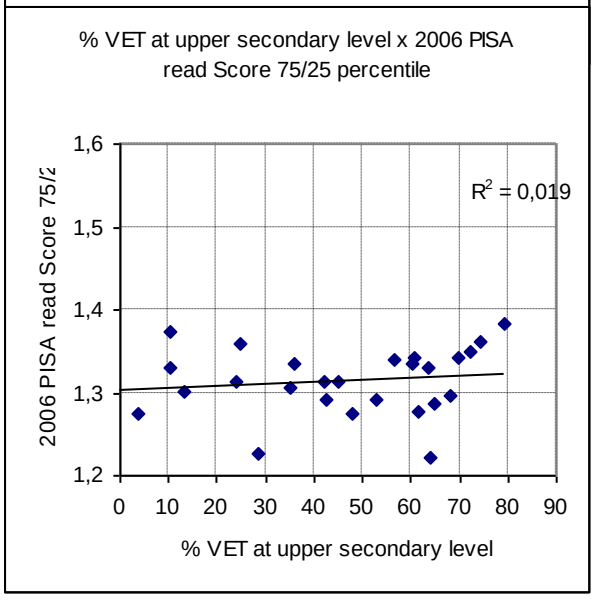
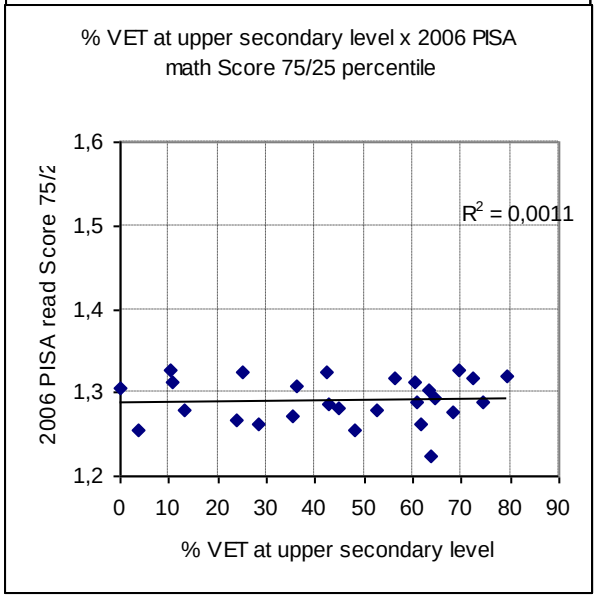
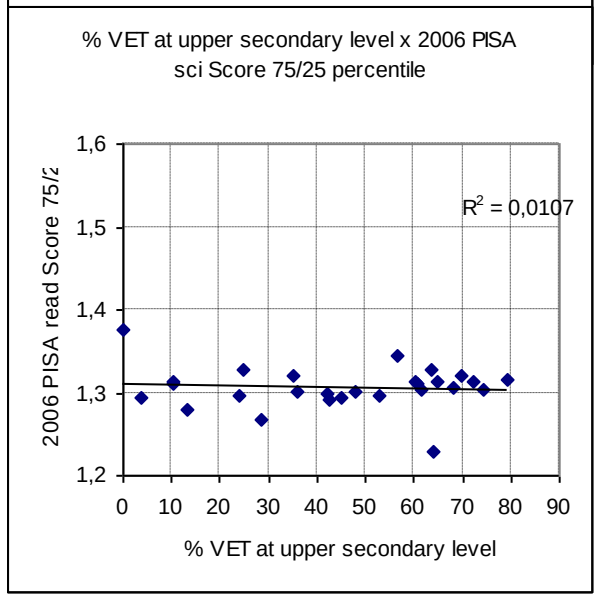










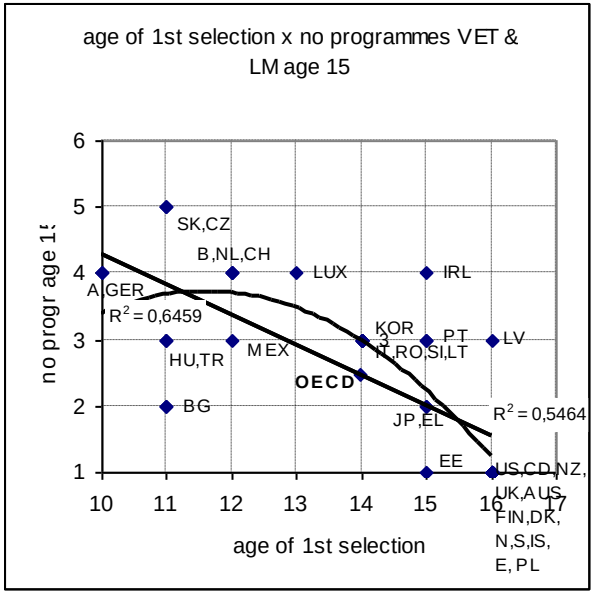


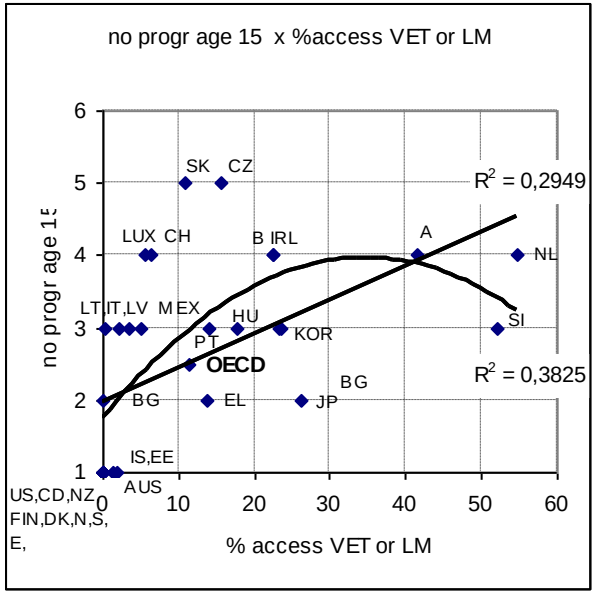
PISA 2006: Structural Traits of ET-systems I
(share of VET at age 15, programmes, and selection)

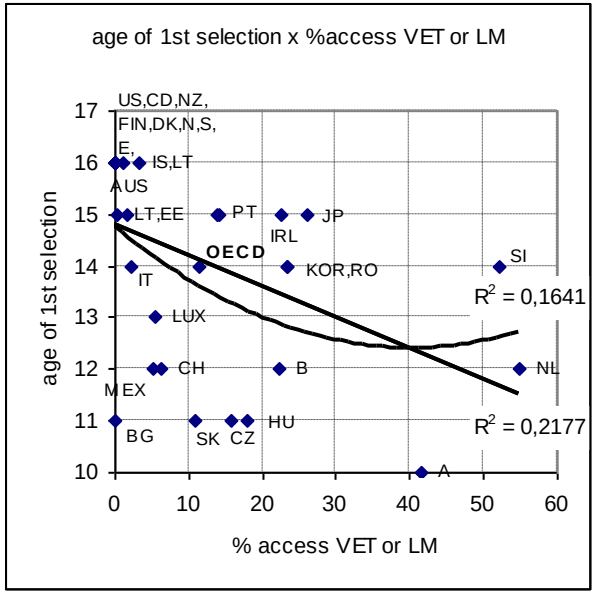
- the more programmes, the earlier selection occurs
- the more VET, the more programmes are available

  however, also some systems with low VET are strongly differentiated
- the more VET, the earlier the 1st selection point occurs

  however, also with low VET early selection occurs







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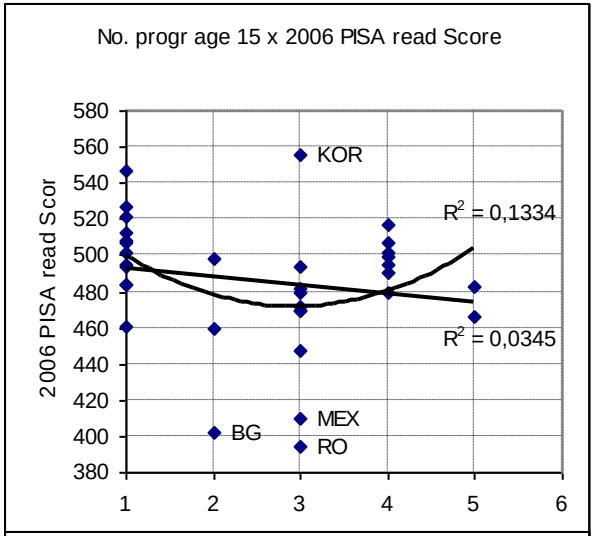
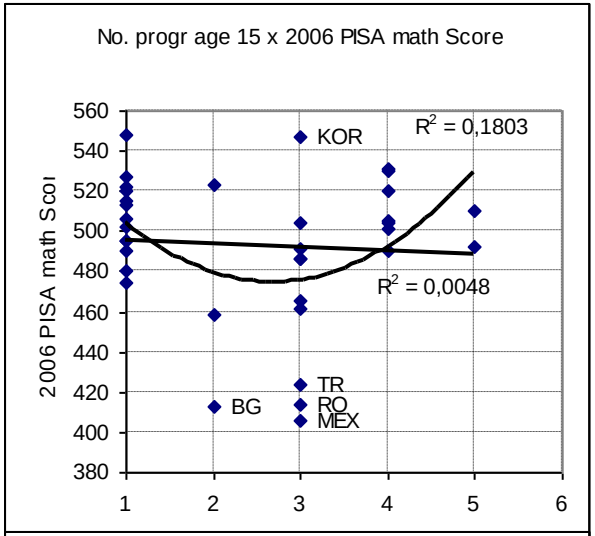
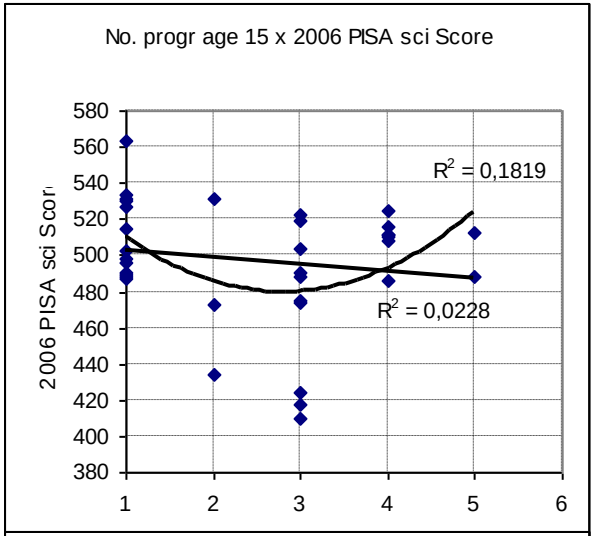
- the more VET, the earlier the 1st selection point occurs

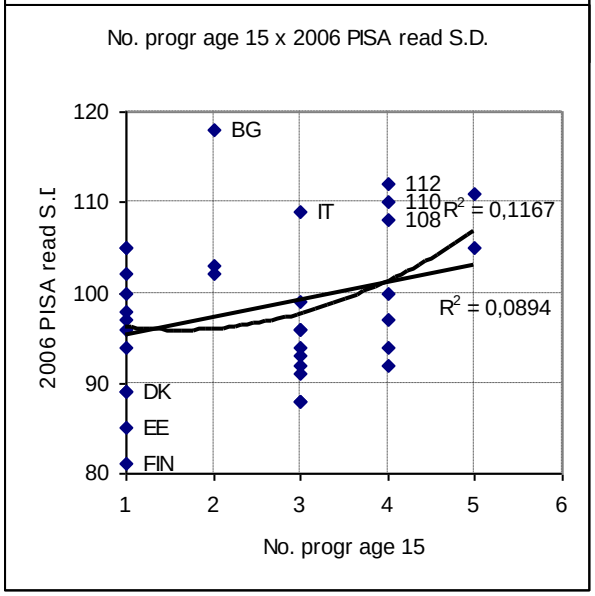
  however, also with low VET early selection occurs
- the more programmes, the more variation in achievement, however, rather non-linear relation to achievement level
- less achievement and more variation with earlier selection

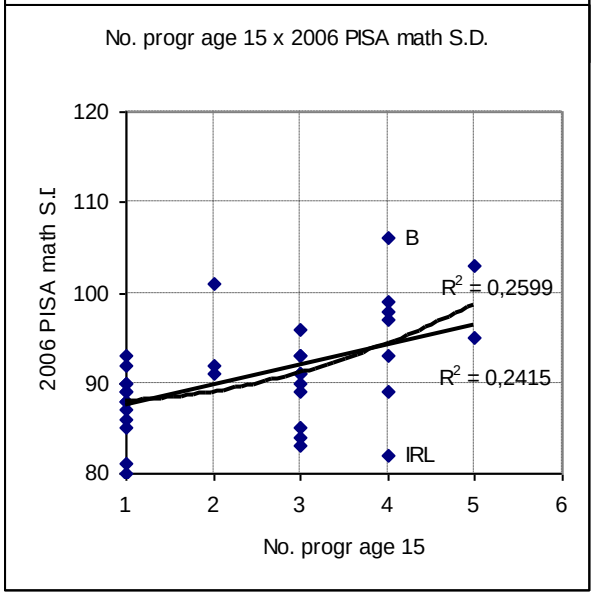
PISA 2006: No.progr.15y. x Scores, Distribution

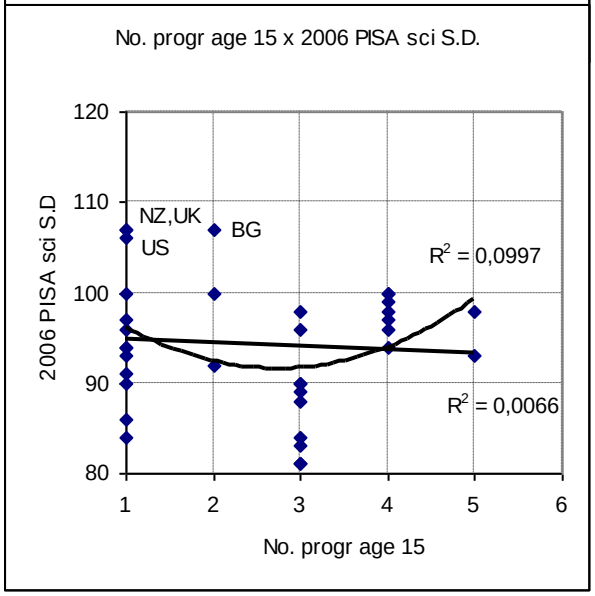




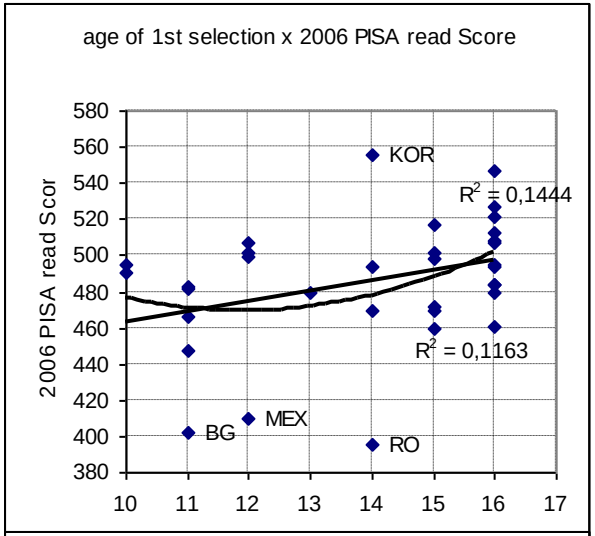


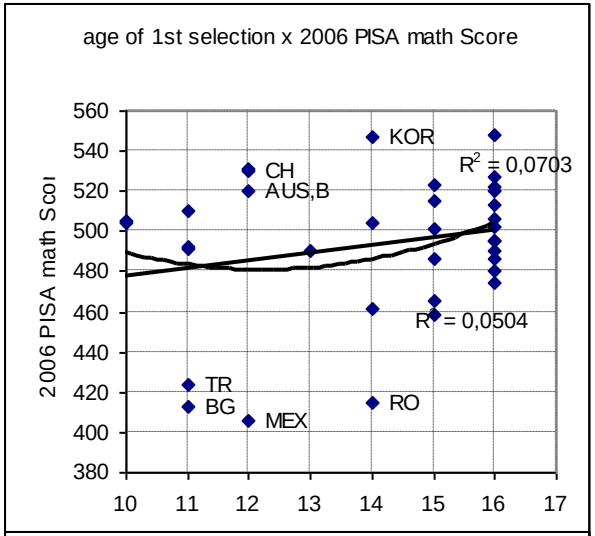


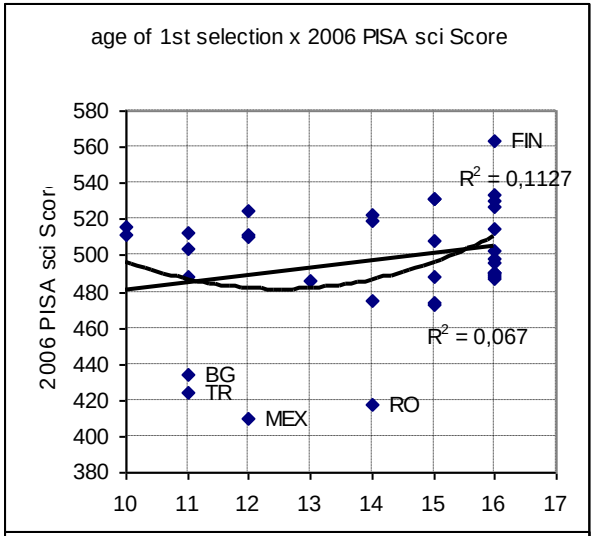


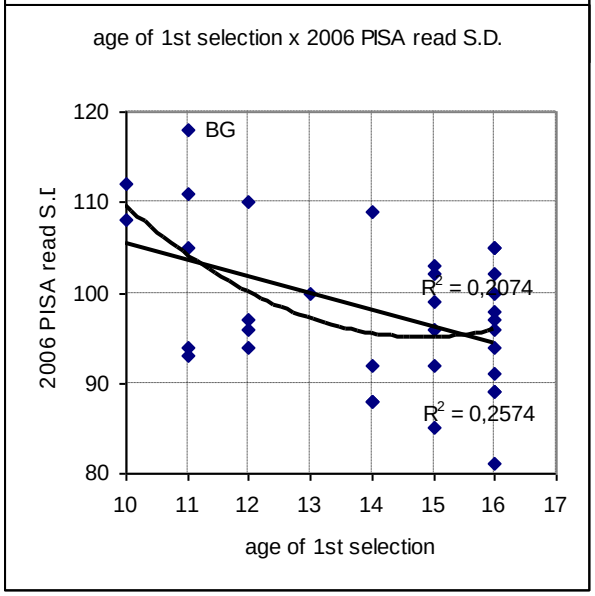


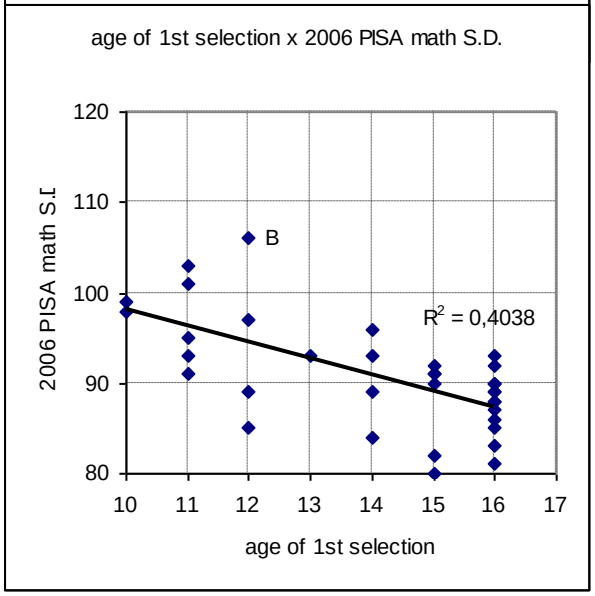
PISA 2006: 1st selection x Scores, Distribution

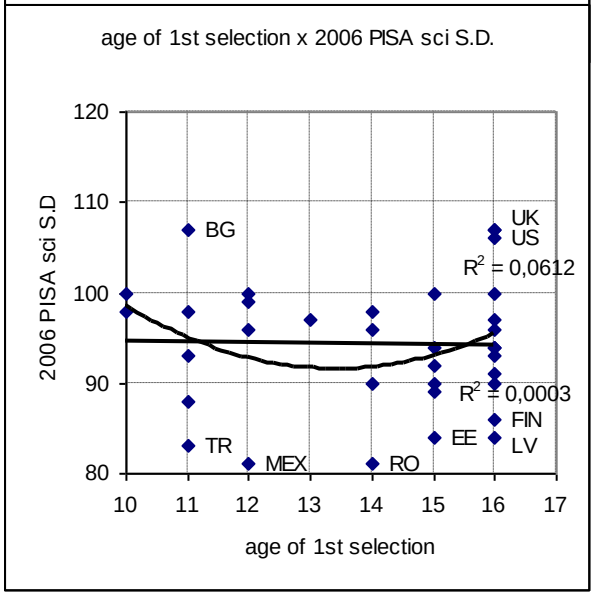












PISA 2006: A first classification of VET structures

1: one programme, 1st selection 16, no VET at 15

AUS, CND, NZ, UK, US

DK, FIN, IS, N, S

PL, E, LV

2: 1st selection 13-15, low VET at 15 (below 20%)

EL, IT, PT, LUX, EE, LT

3: 1st selection 13-15, medium VET at 15 (20-40%)

IRL, JP, KOR, RO

4: 1st selection 10-12, low VET

CZ, HU, SK, BG, MEX, TR

5: 1st selection 10-12, medium VET

B, GER, CH

6: high VET

A, NL, SI

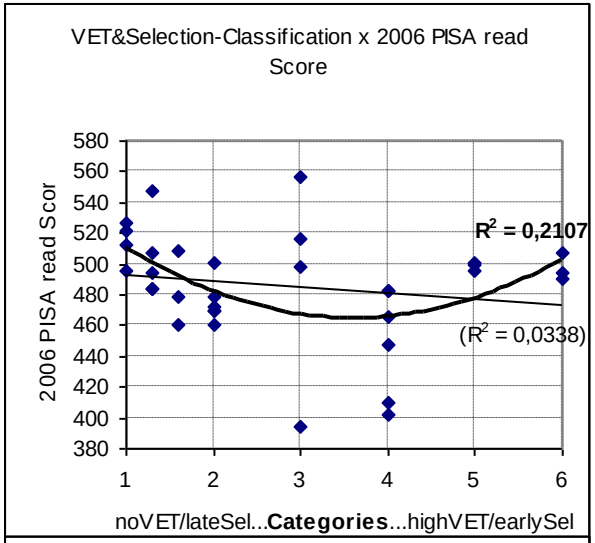
PISA 2006: A first classification of VET structures

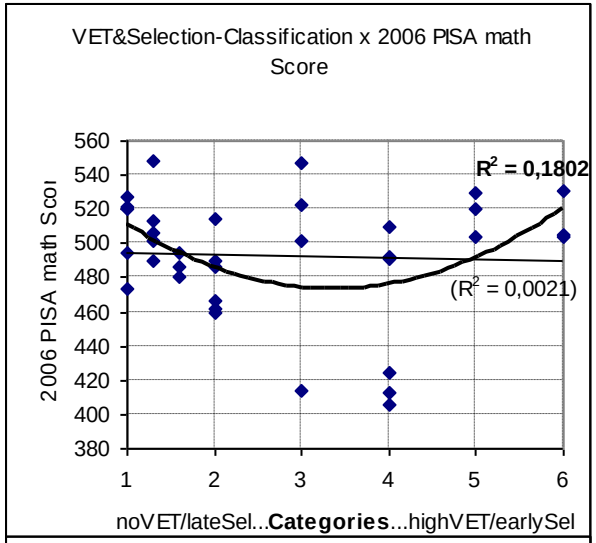
- With the classification based on VET at age 15 we see
  - a tendency of higher means for comprehensive systems **and** for early VET systems

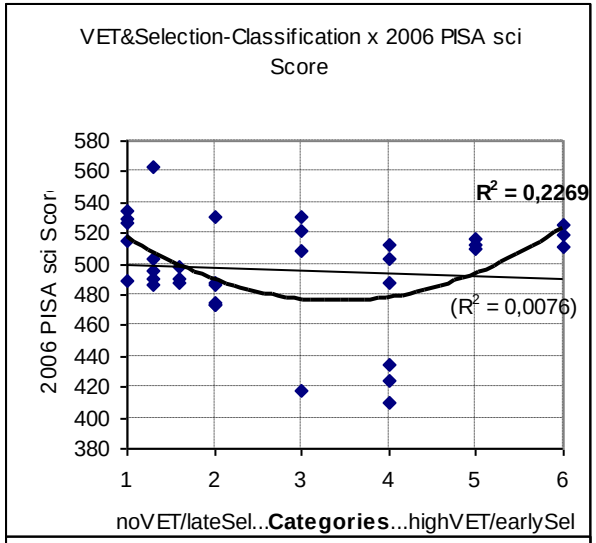
    however, the intermediate categories (3 and 4 with medium and low VET) are rather heterogenous
  - a tendency of an increase of variation of scores with increase of VET

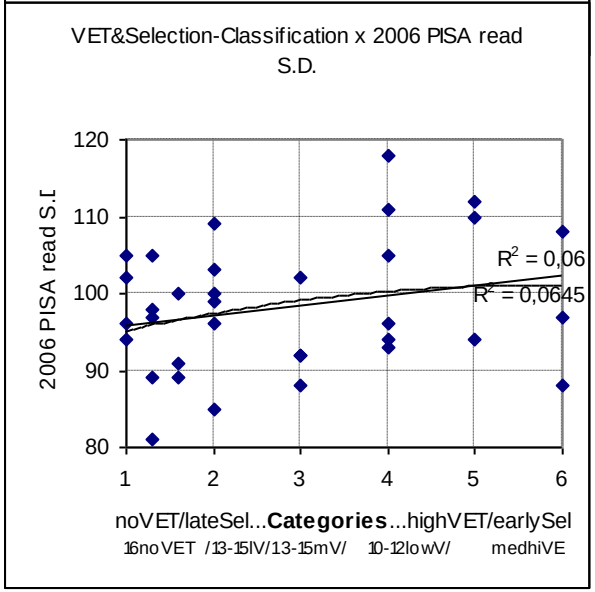
    at least in reading and math, less so in science

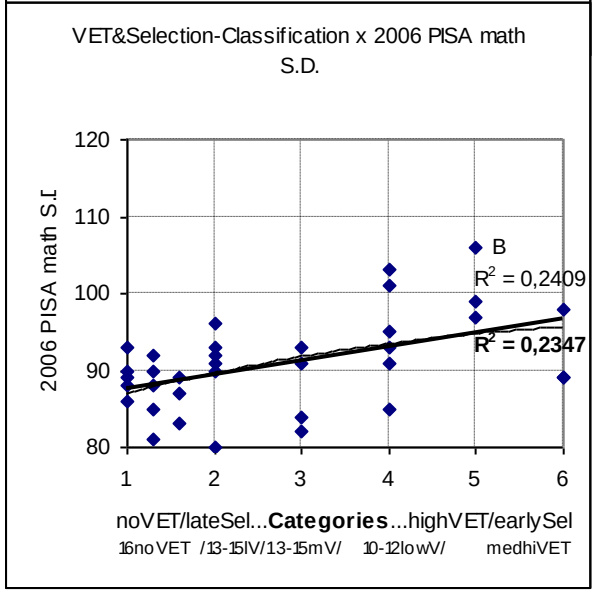
PISA 2006: Categories I x Scores, Distribution

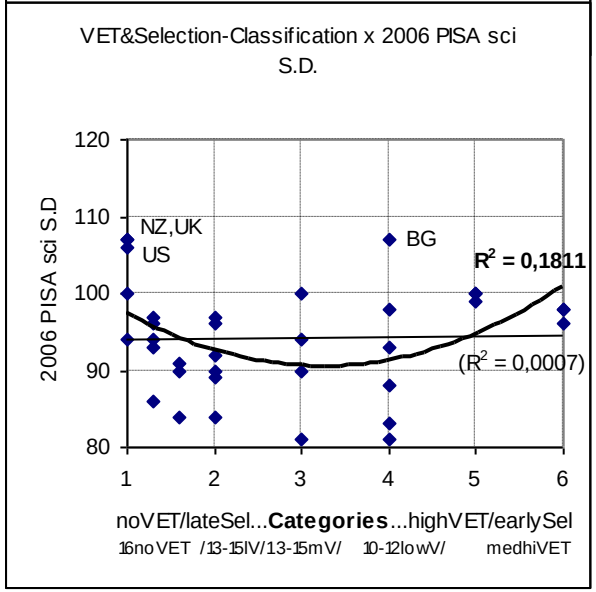






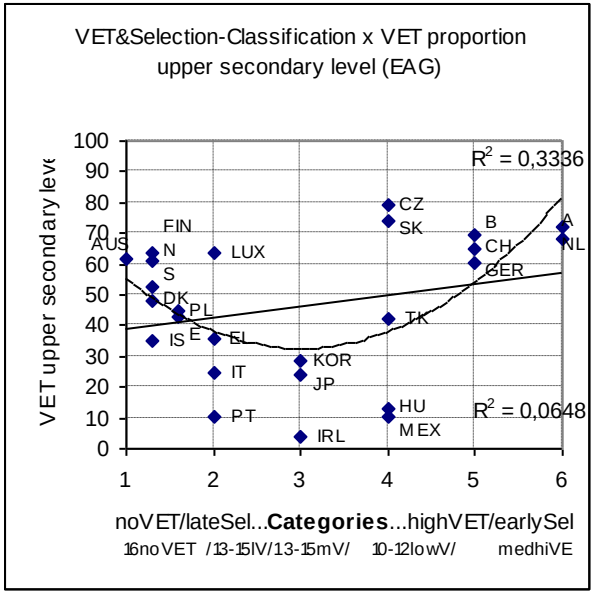


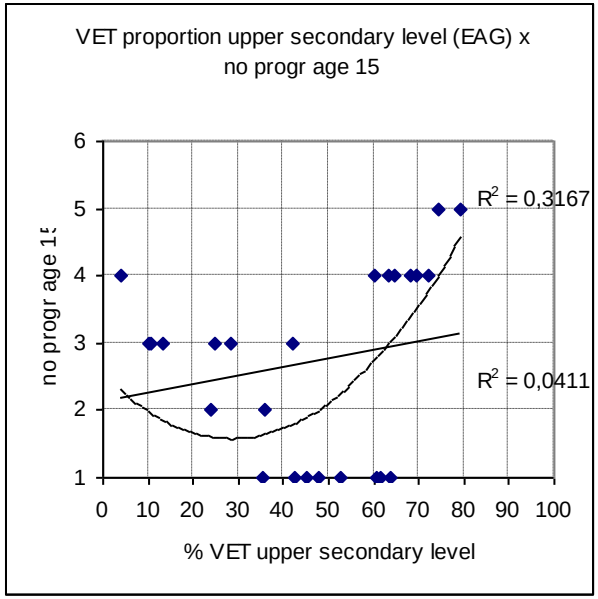


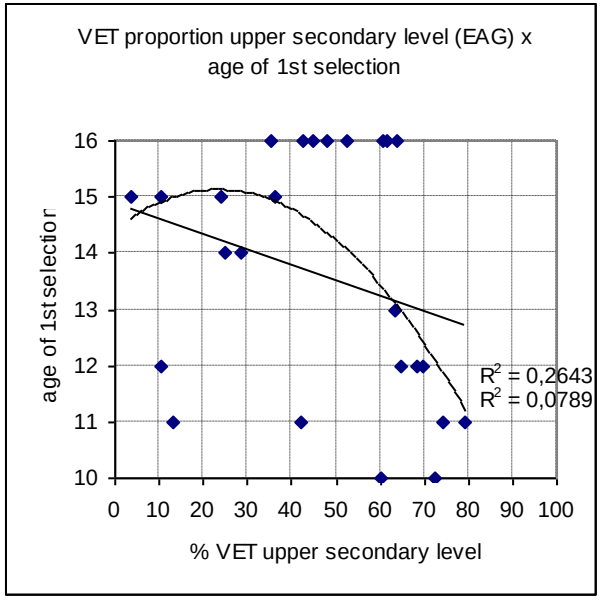


PISA 2006: Structural Traits of ET-systems II (share of VET at age 15, programmes, and selection)

- ...all comprehensive systems with late selection move to medium/high VET
- ...all systems with early selection into VET remain in high VET
- ...all but one systems with high early programme differentiation move to high VET







PISA & EAG 2006: A second classification of VET structures

1: early selection and low/medium VET

HU, MEX, TR

2: late selection and low/medium VET

EL, IRL, IT, JP, KOR, PT

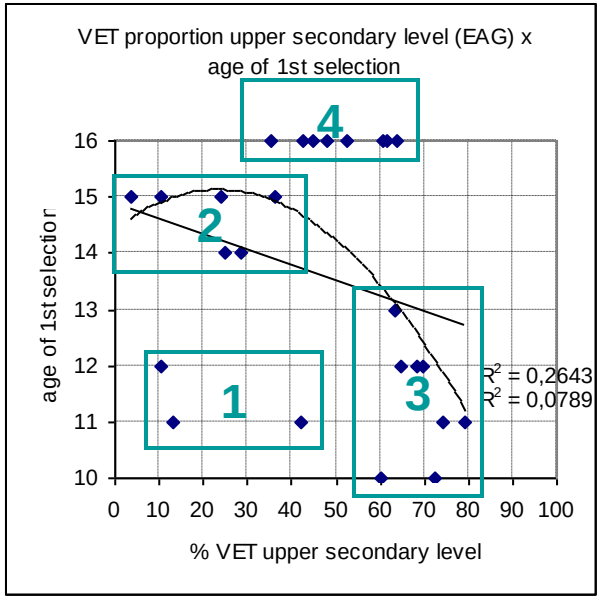
3: early selection and high VET

A, B, CZ, GER, LUX, NL, SK, CH

4: late selection and medium/high VET

AUS, DK, FIN, IS, N, PL, E, S

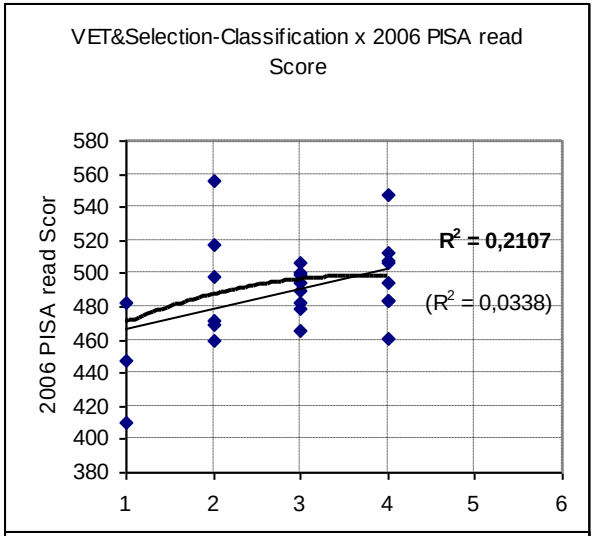
NOTE: the anglo-saxon countries, and some new member states are missing in the EAG-classification

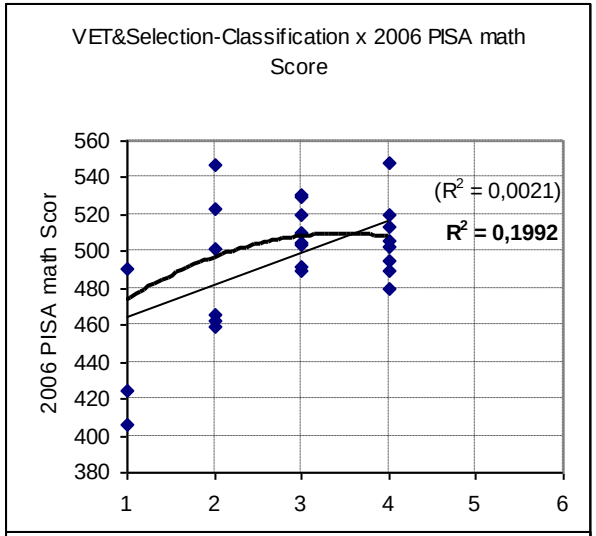


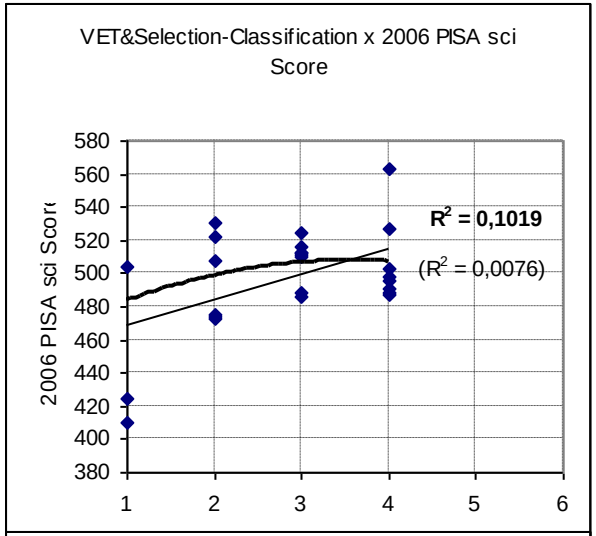
PISA & EAG 2006: A second classification of VET structures

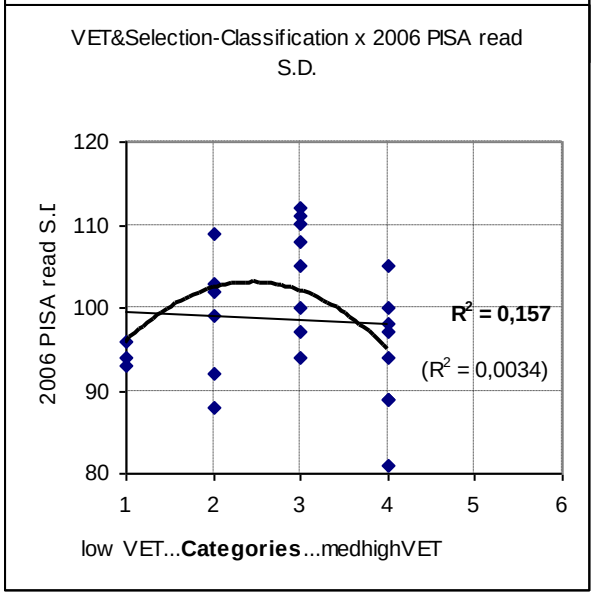
- The second classification shows
  - that the two types of VET structures show similar results with mean scores
    with some more variation in the comprehensive type (4)
  - and that the variation of achievement is rather higher in the early VET structure (3)
    with some differences between reading, math, and science

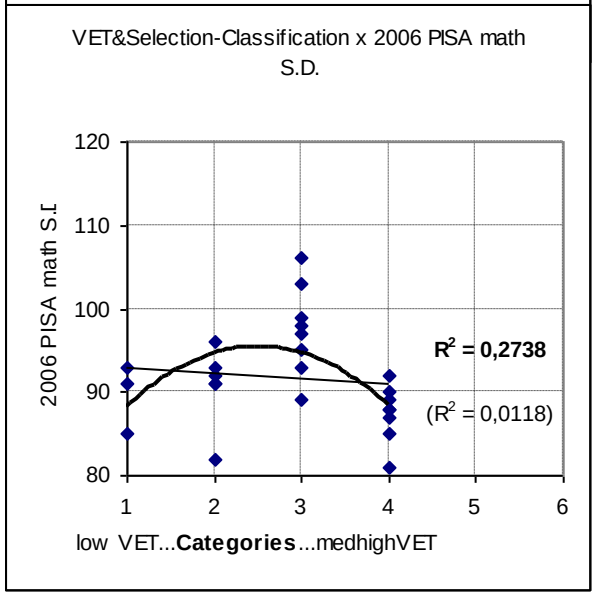
PISA/EAG 2006: Categories II x Scores, Distr.

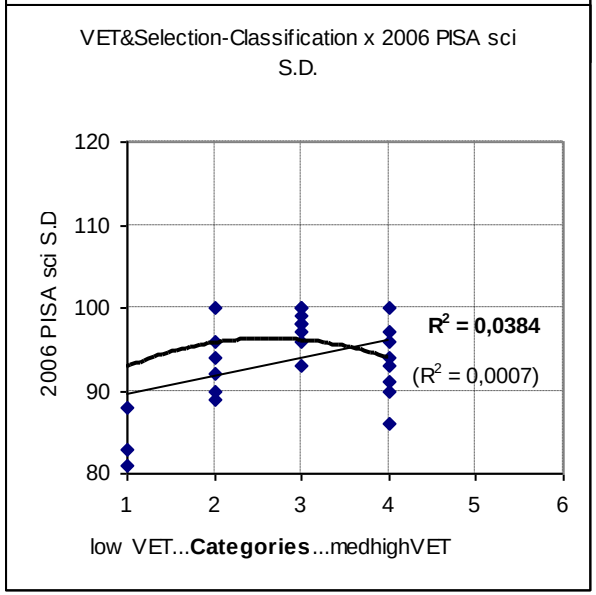












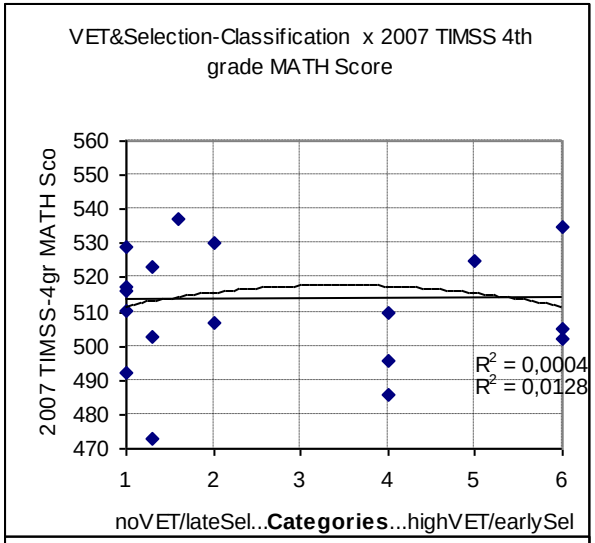
Agenda

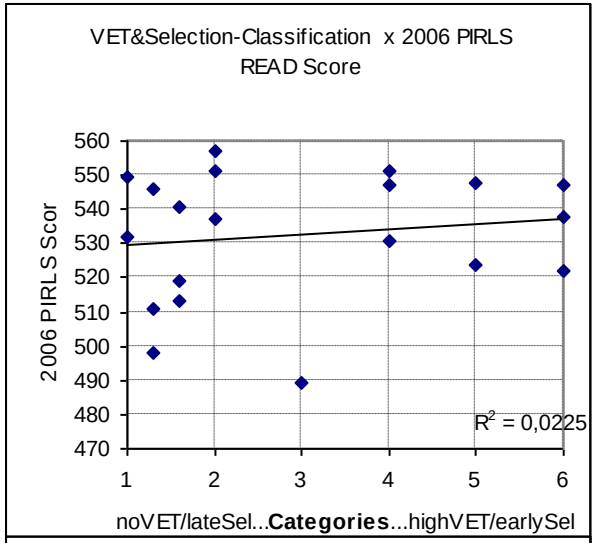
- VET and upper secondary achievement
- VET and primary achievement
- VET and higher education
- Some results about Austrian VET
- Conclusions: complexities and diversities about VET

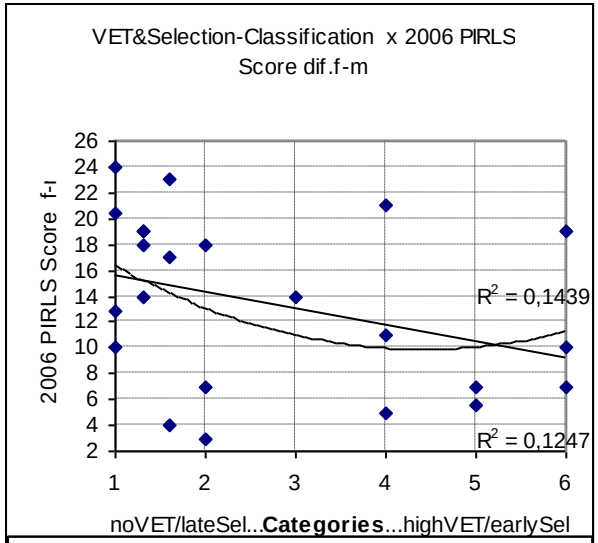
VET and primary achievement: „Backward-influence?“

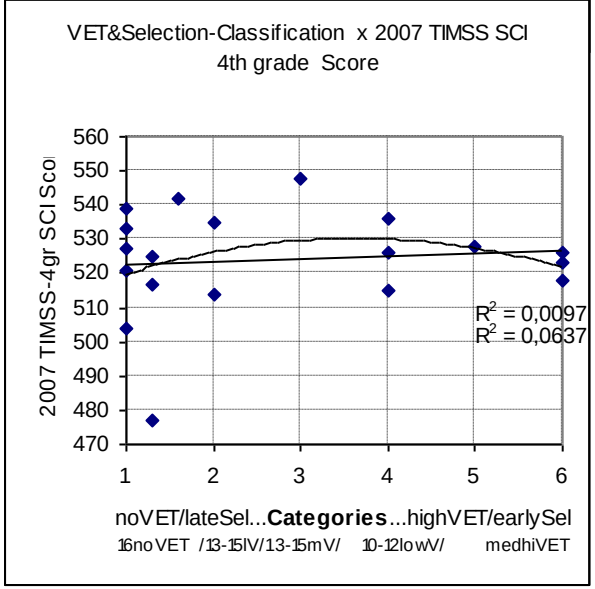
- Question: Do the selective structures related to VET influence the achievement at the primary level?
- PIRLS-reading and TIMSS-math-science assessments at primary level can be analysed
- Results indicate that this kind of „backward-influence“ does not hold:
  - there is no relation from the categories to achievement levels and distributions in primary education
  - the systems without VET show much more variation than systems with VET

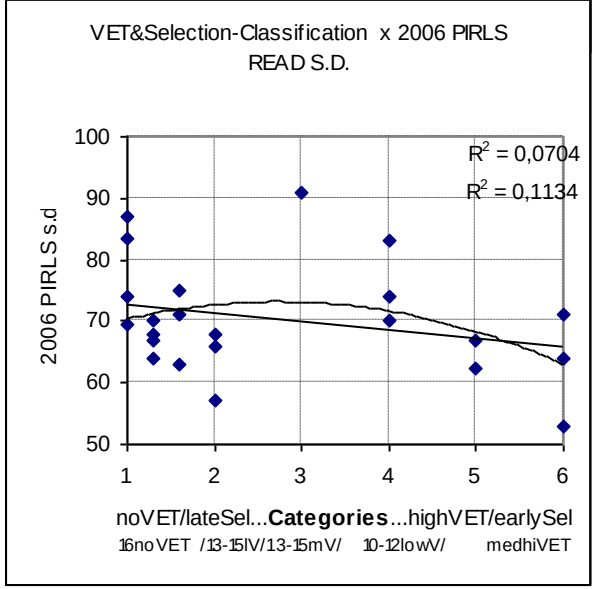
TIMSS 2007 & PIRLS 2006: Primary level I

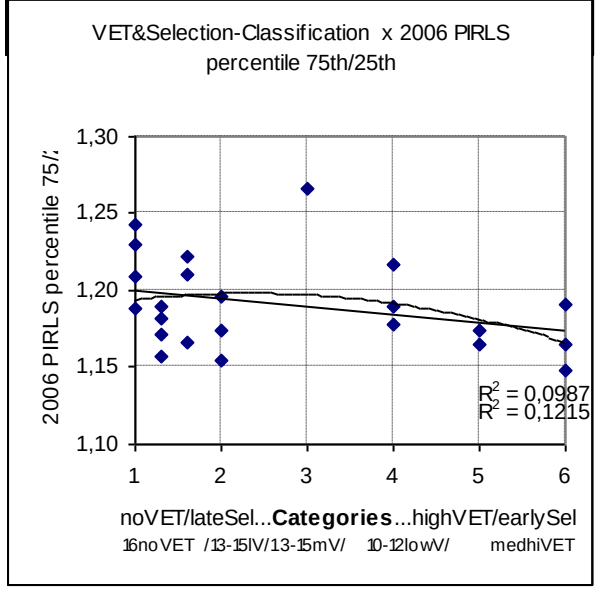






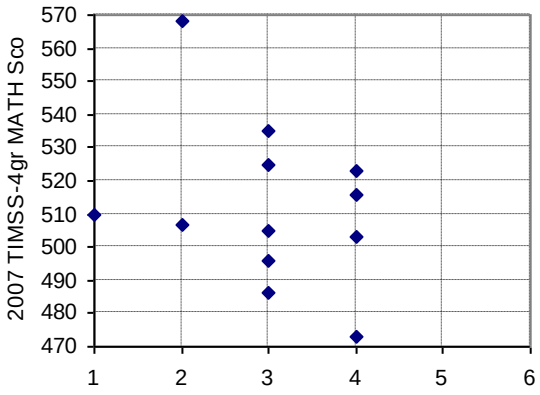




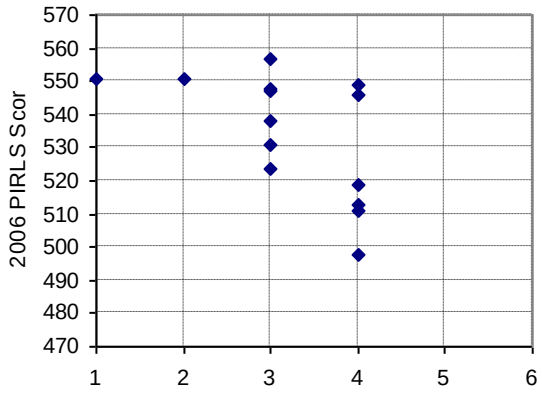


TIMSS 2007 & PIRLS 2006: Primary level II

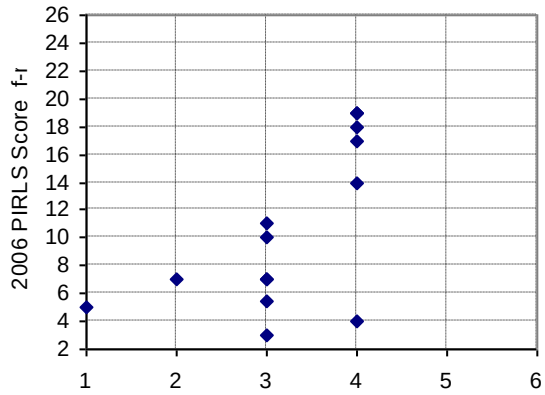
VET&Selection-Classification x 2007 TIMSS 4th grade MATH Score



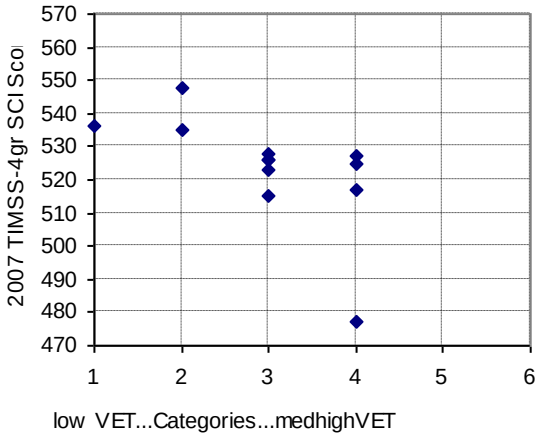
VET&Selection-Classification x 2006 PIRLS READ Score



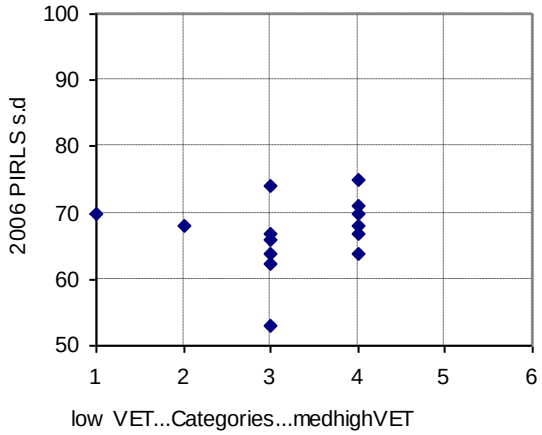
VET&Selection-Classification x 2006 PIRLS Score dif.f-m



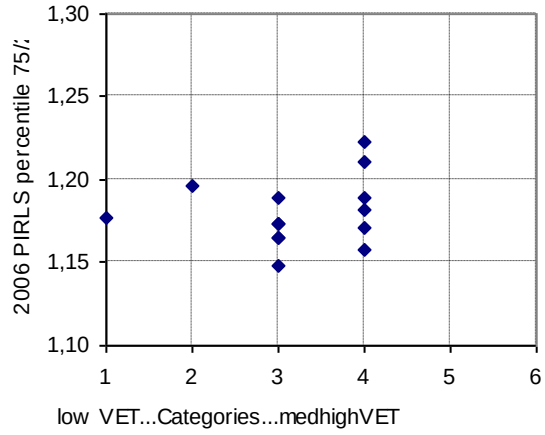
VET&Selection-Classification x 2007 TIMSS SCI 4th grade Score



VET&Selection-Classification x 2006 PIRLS READ S.D.



VET&Selection-Classification x 2006 PIRLS percentile 75th/25th



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VET and higher education (HE)

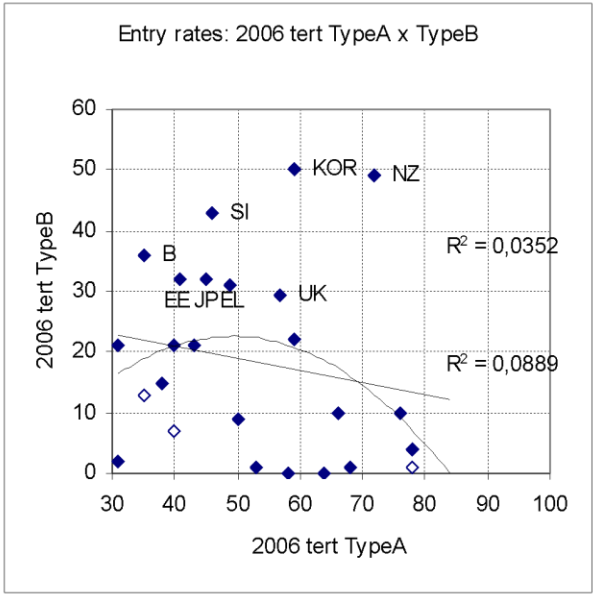
- Lack of data in comparative datasets about this relationship: Only entry rates for HE Types A,B,C available

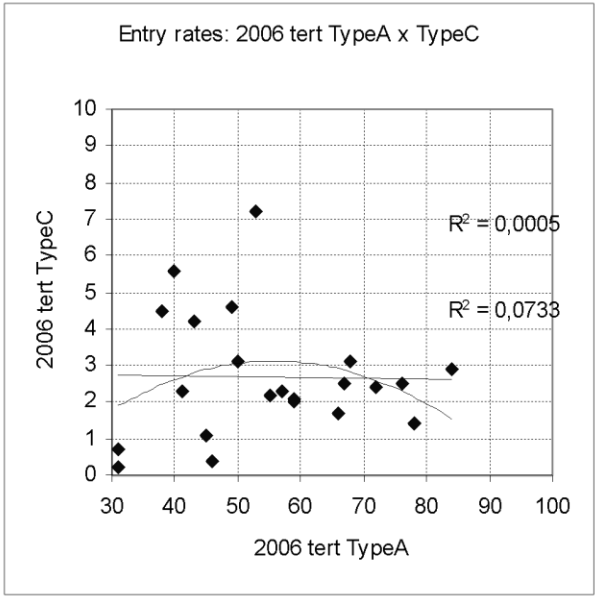
  no accession rates from VET

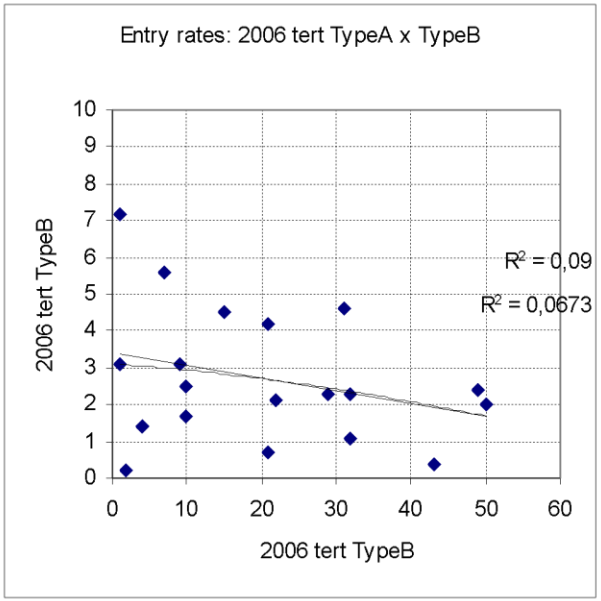
- Structures:
  - Relation between HE Types A, B, C
  - Relation between VET and HE
- PISA Scores and HE entry rates

EAG 2006: Relation between HE Types A, B, C (entry rates)

- Overall weak relation between HE types, however, some indications
  - High rates Type A mostly low rates Type B
  - High rates Type A mostly low rates Type C
  - Type B and C unrelated



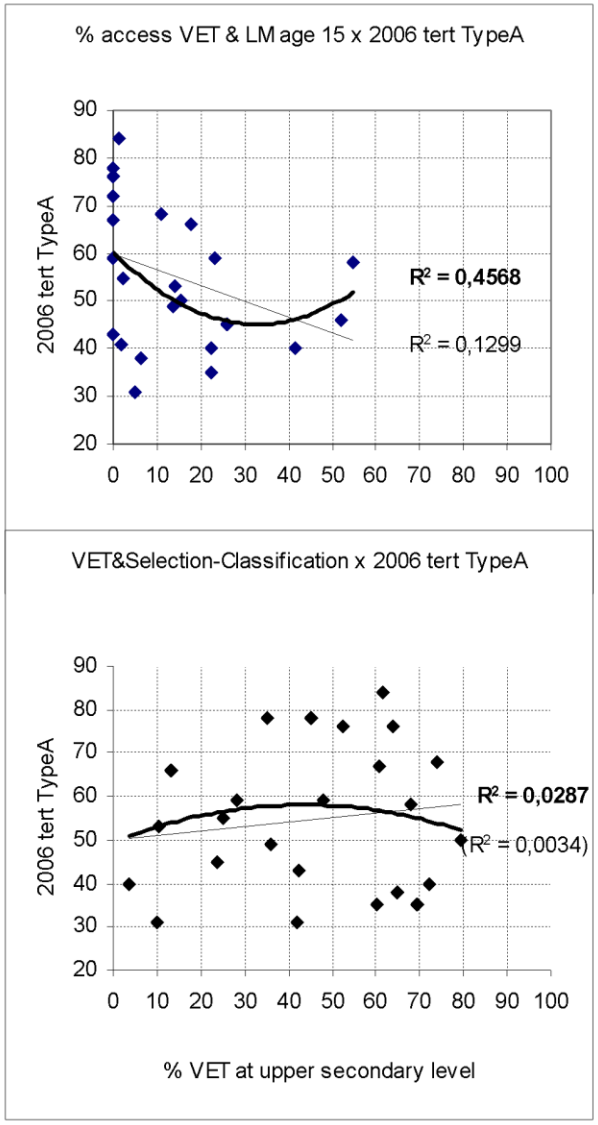


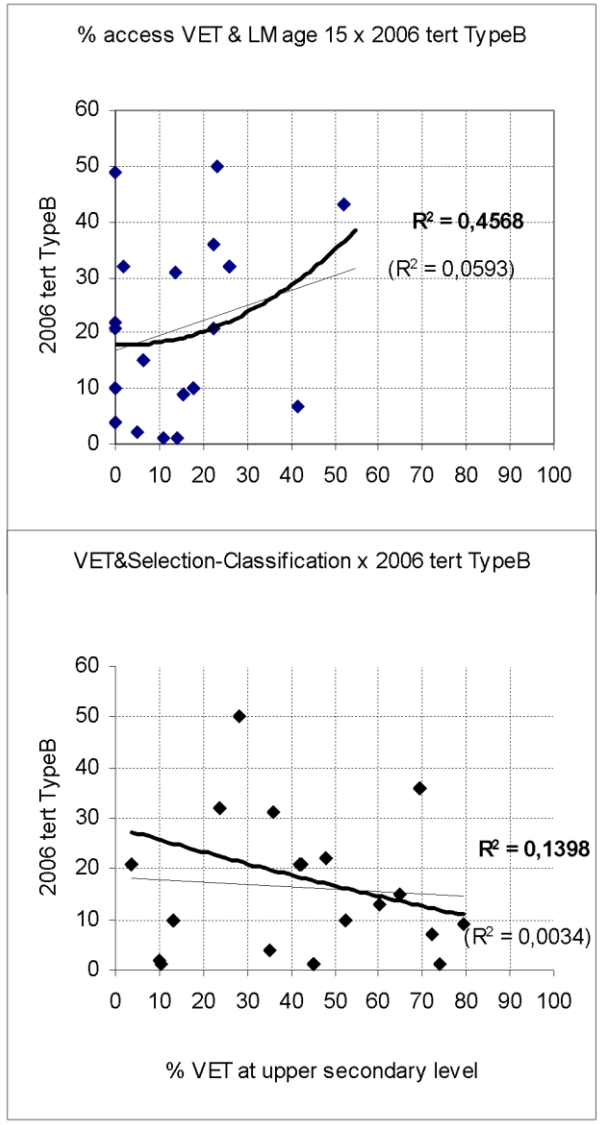


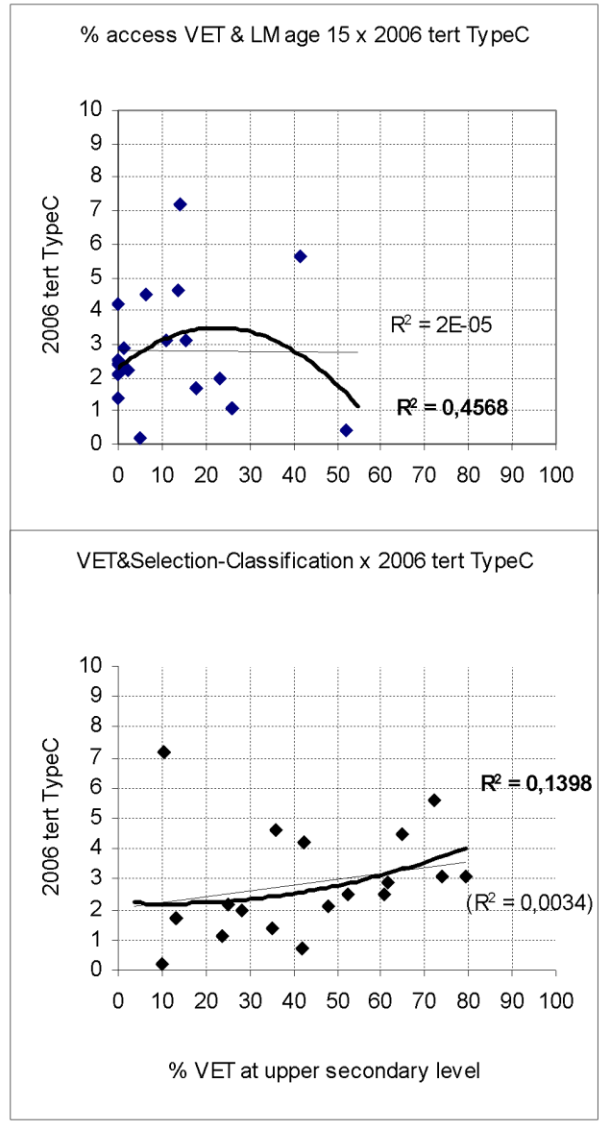
EAG 2006, PISA 2006: Relation VET and HE (VET age 15, upper sec.level; HE entry rates)

- Overall: the (frequent) assumption of a substitutive relation between VET and HE does not hold
- Different patterns with VET at different points of observation
- VET at 15:
  - Low VET high variation of Type A and B, medium level of Type C
- VET at upper secondary level:
  - High VET often corresponds with high rates of HE Type A
  - also positive relation of VET to HE Type C
  - however, substitution with HE Type B
- VET classifications: no strong patterns, however some hints
  - Comprehensive VET systems:show slightly higher rates of HE Type A than early VET systems, however the latter also show high rates
  - the early VET systems show higher rates of Type C

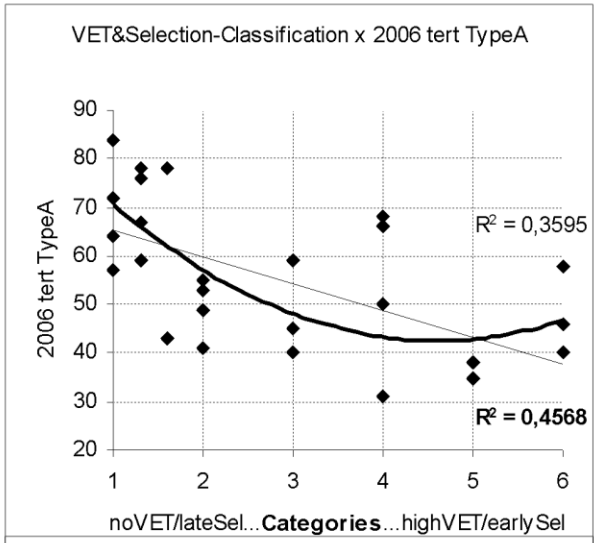
EAG 2006, PISA 2006: Relation %VET & %HE

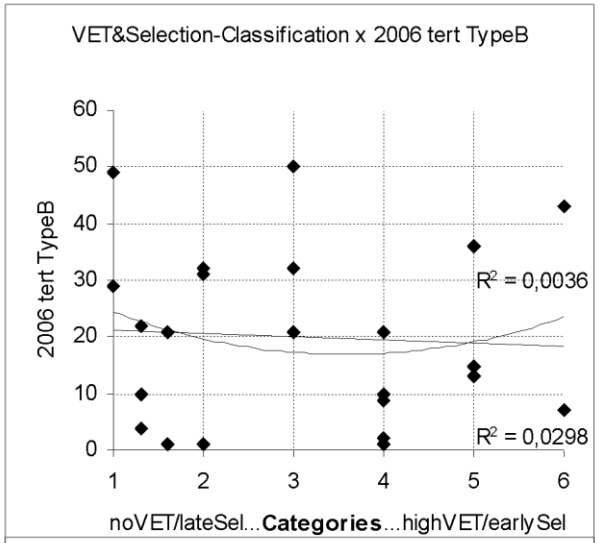


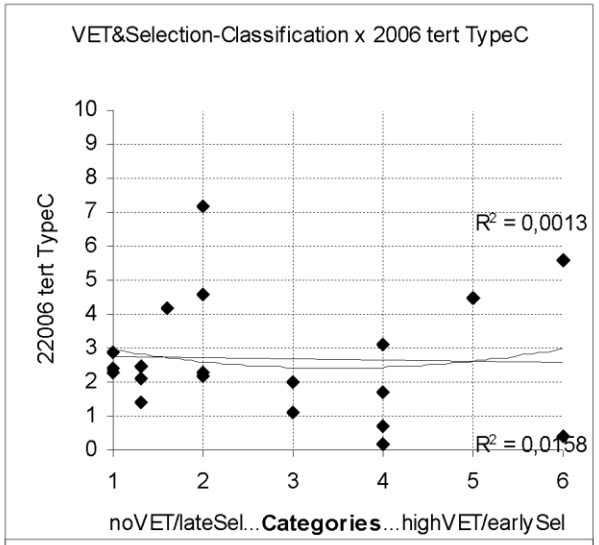


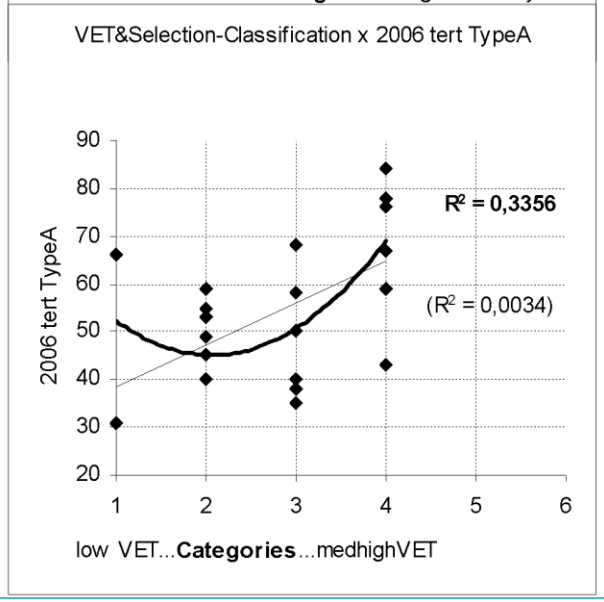


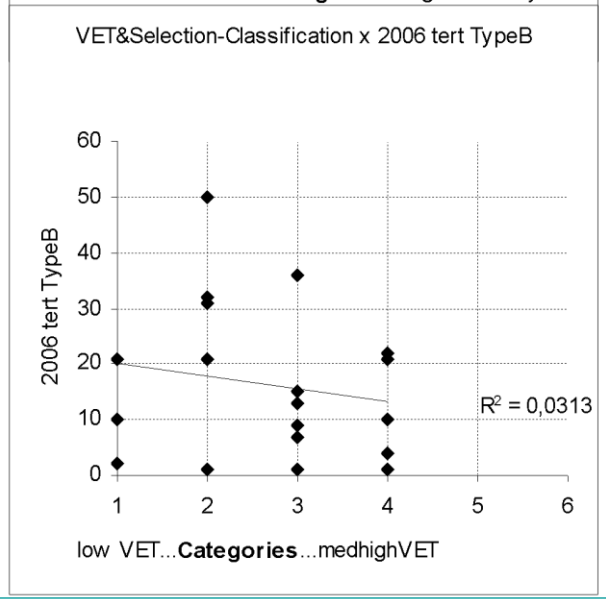
EAG 2006, PISA 2006: VET-Classific. & % HE

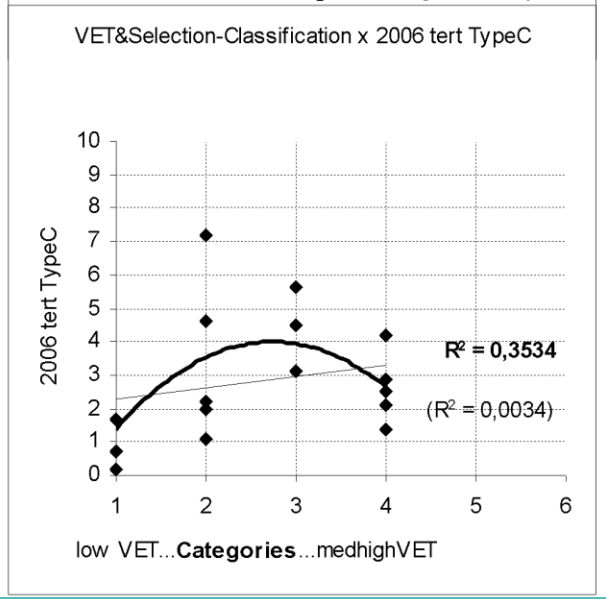








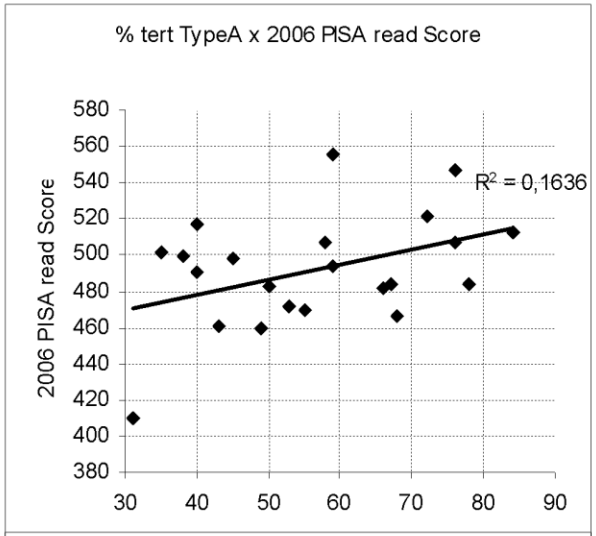


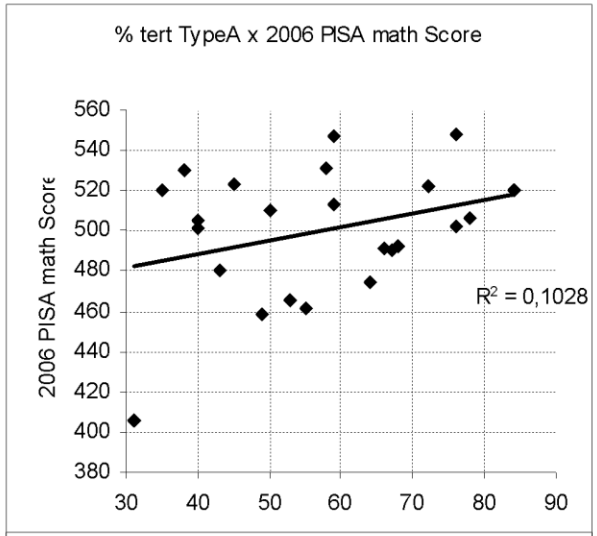


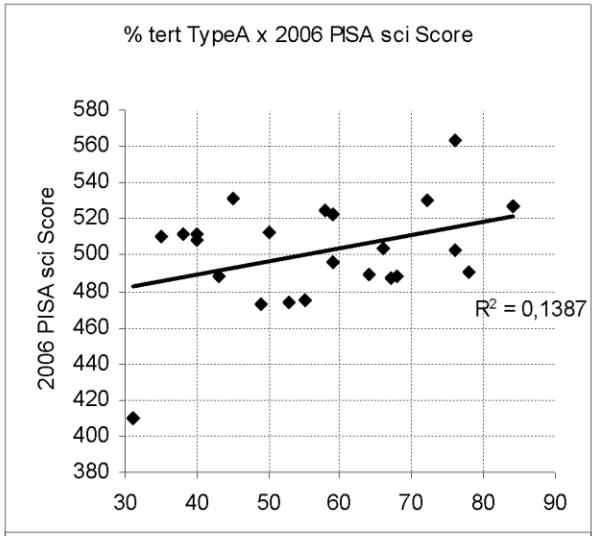
PISA/EAG 2006: %HE TypeA x Scores, Distrib.

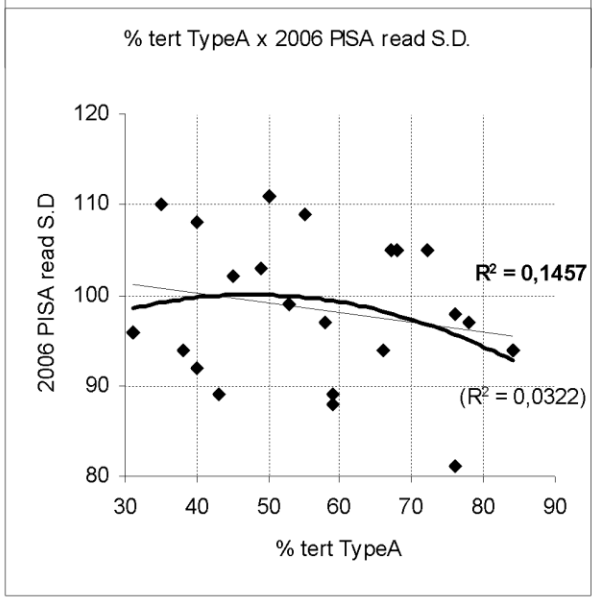
- Relation between HE Type A access rates and PISA scores
  - means slightly increase (similar to VET at upper secondary level), however
  - variation (S.D.) shows different pattern: with high VET: increase of variation, with high HE: decrease of variation

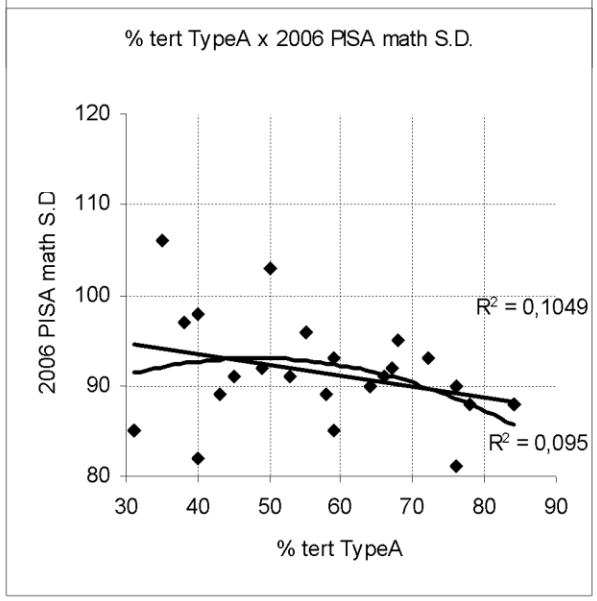
PISA/EAG 2006: %HE TypeA x Scores, Distrib.

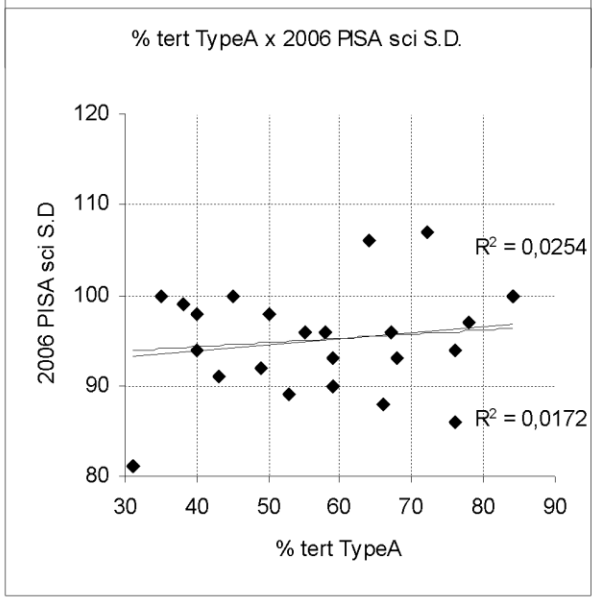




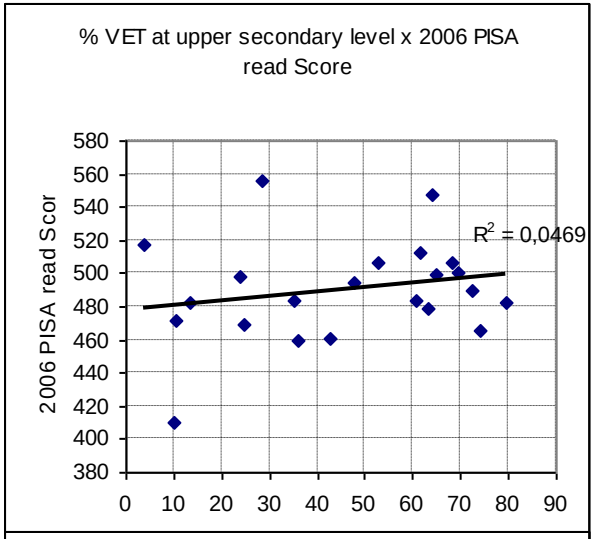


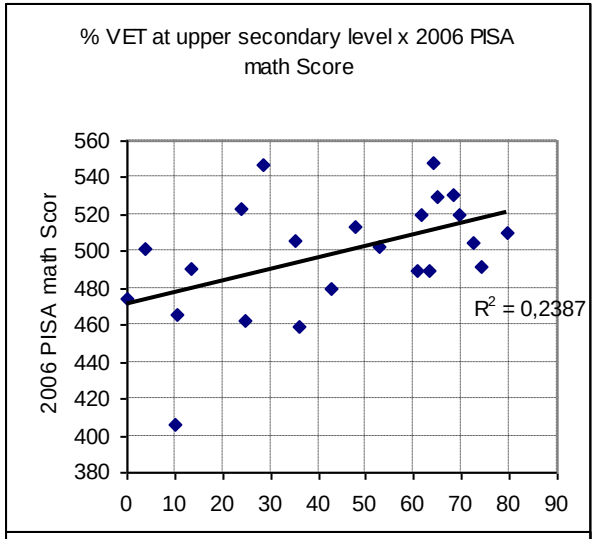


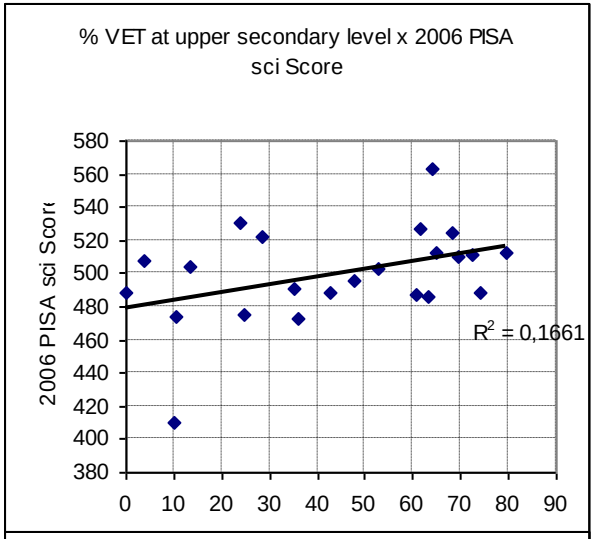


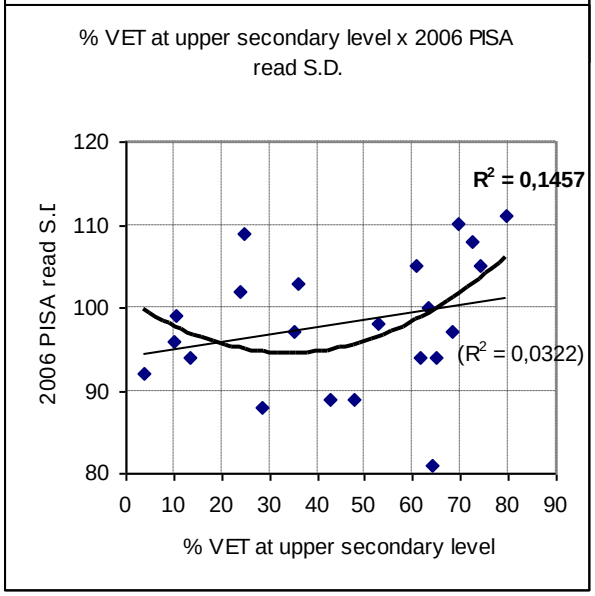


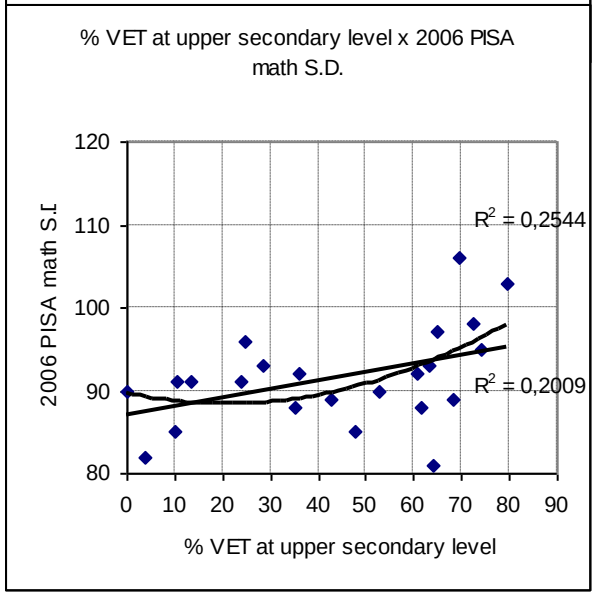
PISA/EAG 2006: %VETups x Scores, Distrib.

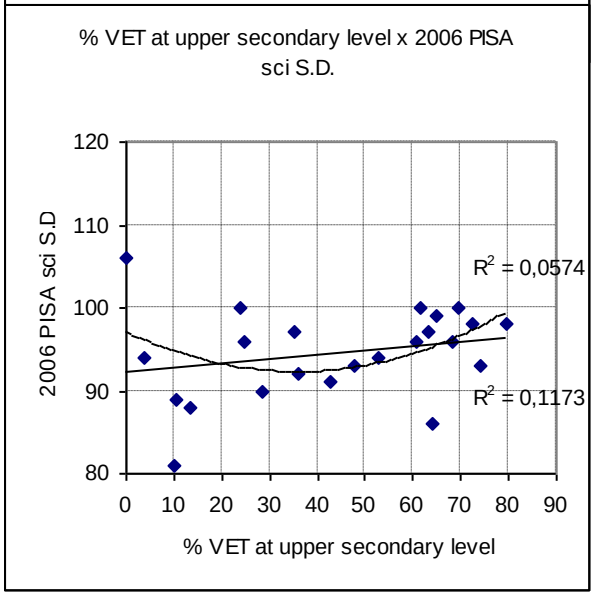












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Some results about Austrian VET

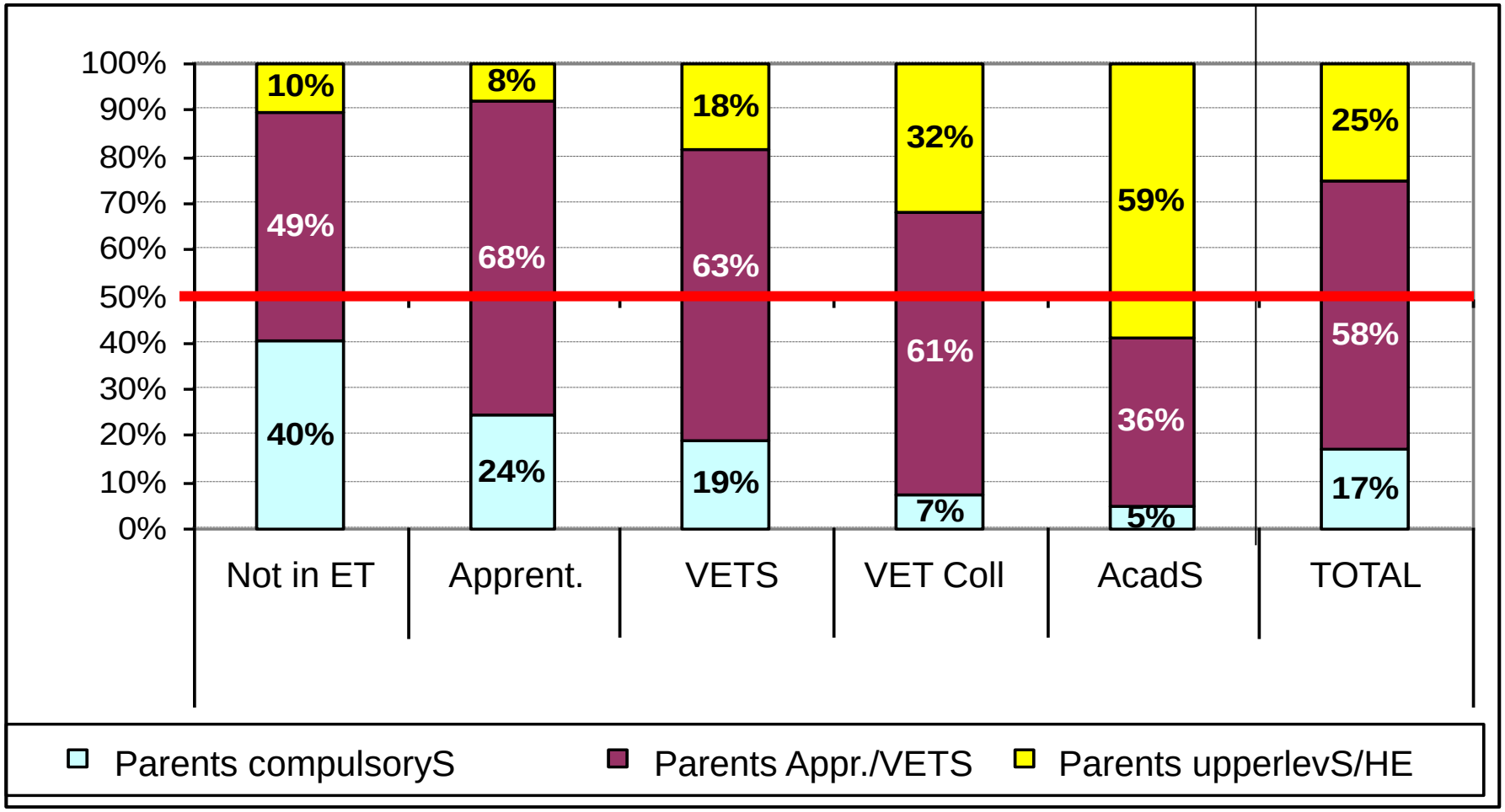
Austrian profile

- Early VET system
  - with 1st selection at 10,
  - 4 programmes at 15,
  - ~40% in VET at age 15,
  - increasing to ~70% at upper secondary level
- Achievement
  - mean scores ~at average
  - variation high, also percentile difference in reading and math
  - gender difference in math and science is high
  - in primary education mean scores and variation at average also gender and percentile differences
- Higher education
  - Type A&B low, type C high
  - achievement rather above average

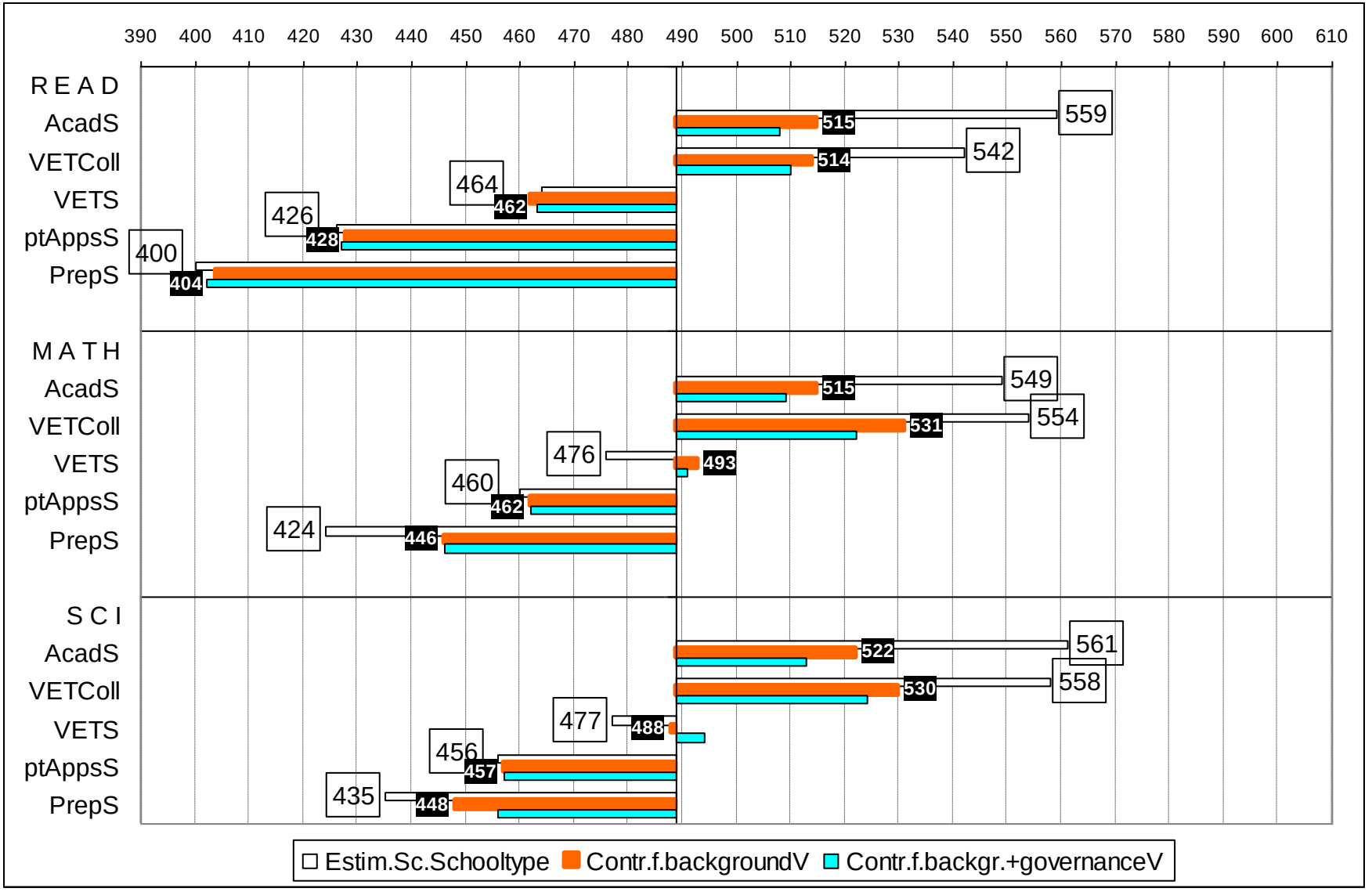
Some results about Austrian VET
In-depth analysis

- Very strong influence of background variables
  - on participation
  - on achievement
- ...however, VET colleges provide a limited platform for progression in ET...
- ...and the strong selectivity of the system does not seem to exert a „backward influence“ on primary education...
- ...overall, the Austrian system seems rather an exceptional case among VET systems...
- ...as the diversity and complexity of structures seems really higher than expected

Parents‘ education of 17y.old students in different schooltypes



Estimated Scores by schooltypes



Agenda

- VET and upper secondary achievement
- VET and primary achievement
- VET and higher education
- Some results about Austrian VET
- Conclusions: complexities and diversities about VET

Conclusions: complexities and diversities about VET I

- **LSAs**: the impact of VET is not very much included in the analyses, despite there are of course questions about effects of VET on achievement
- **Analysis**: some explorative analysis of aggregate relations on country levels has been made, by using some variables about VET structures:

  %VET at age 15, no.of programmes, 1st selection point, %VET at upper sec.level
- **VET structures**: there is no dichotomous alternative of comprehensiveness and VET, rather early VET and comprehensive VET structures exist
- **Impact**: Concerning impact of VET on achievement, three preliminary statements can be made

  early VET does not seem to structurally reduce current achievement levels,
  neither those in primary education by „backward influence“,
  however, might increase variation of achievement

Conclusions: complexities and diversities about VET II

- **Higher Education**: there is a lack of comparative data about transition from VET to HE;
- Structural relationships do not point to a substitutive relation of VET and HE

  To some extent substitution might occur with HE Type B
- **Impact**: Increase of HE is related to a similar increase of achievement scores as of VET, however, variation seems rather reduced

  whereas it increases with increase of VET
- The **Austrian** case fits well in the picture of early VET systems,
  - with average mean achievement and increased variation
  - the strong selectivity by background variables seems increased and reduced at the same time by the VET structure
  - the relation between the HE share and the achievement level point to an underutilisation of competences by the comparatively low HE access

The End

Thank you
for your attention !

Material