



A FEW REMARKS ON THE POLICY RELEVANCE FROM AN OECD PERSPECTIVE

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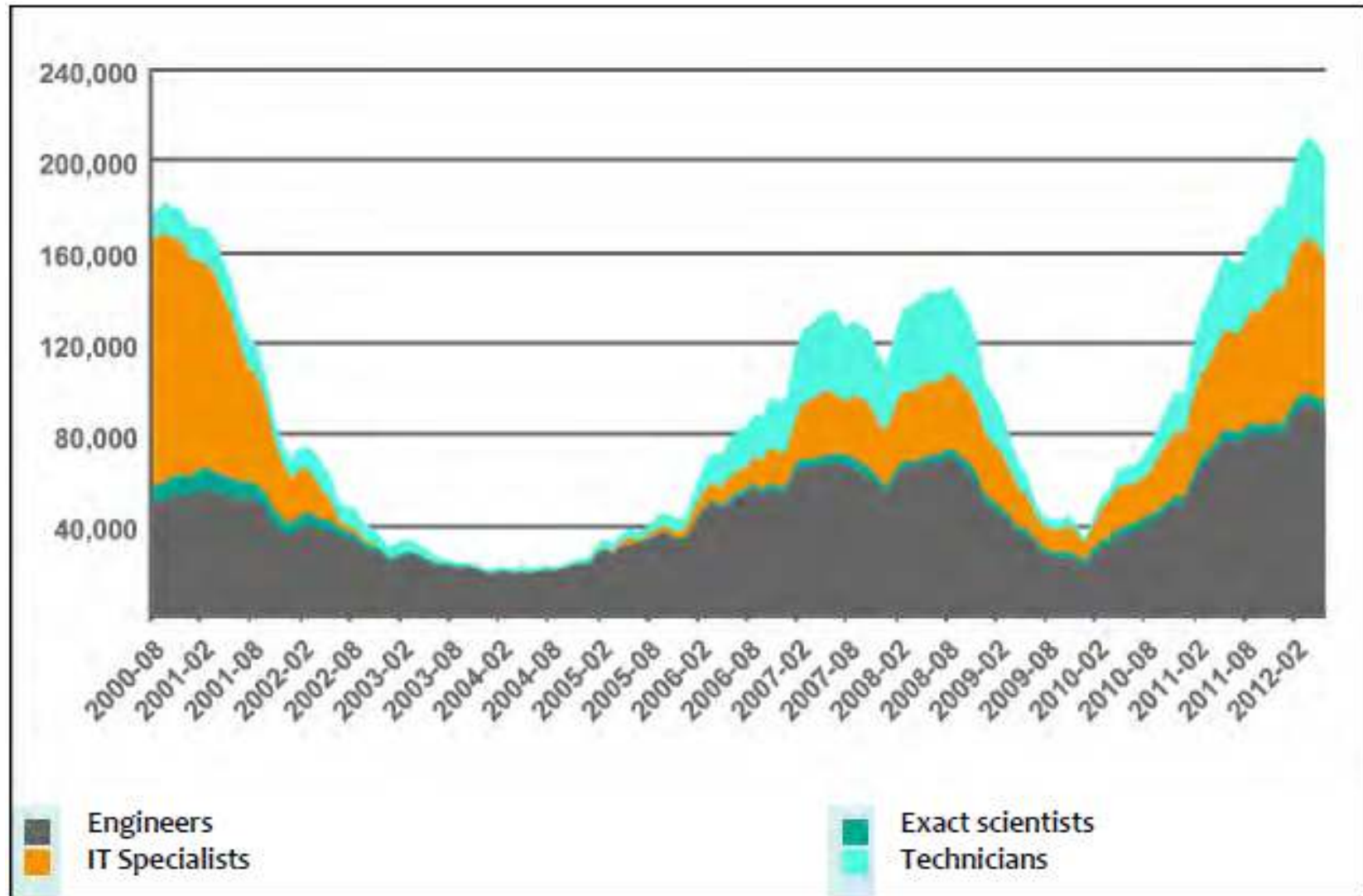
Skills shortages and mismatches have a significant impact

- Lack of STEM graduates has a very negative economic impact
- STEM shortages become important when economic growth accelerates, so can hamper post-crisis recovery
- Production of STEM graduates is also important for feeding the country's research and innovation system
- In turn, less excellent math and science graduates also imply less qualified teachers



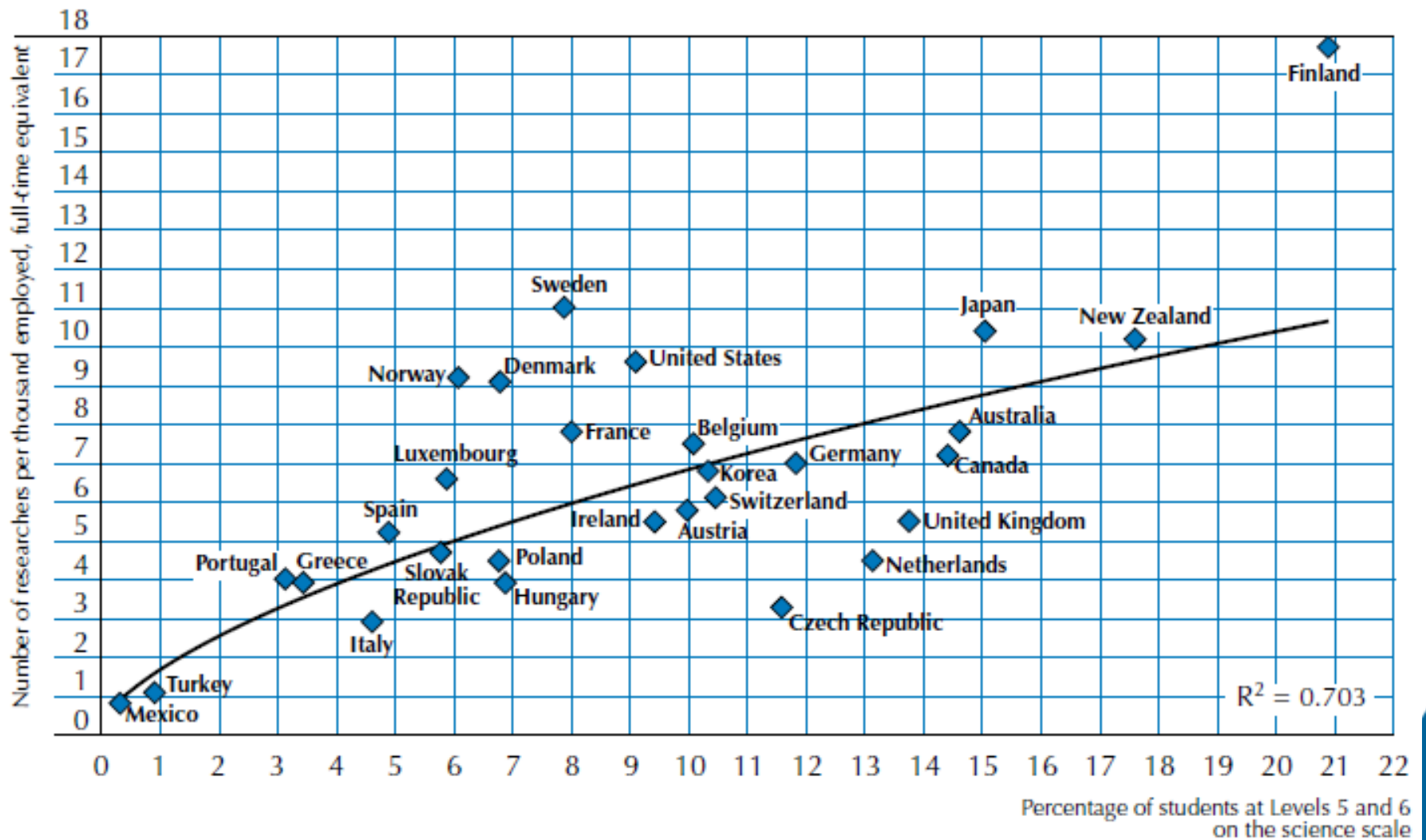


Evolution of STEM graduate shortages in Germany





Science top performers in PISA and countries' research intensity





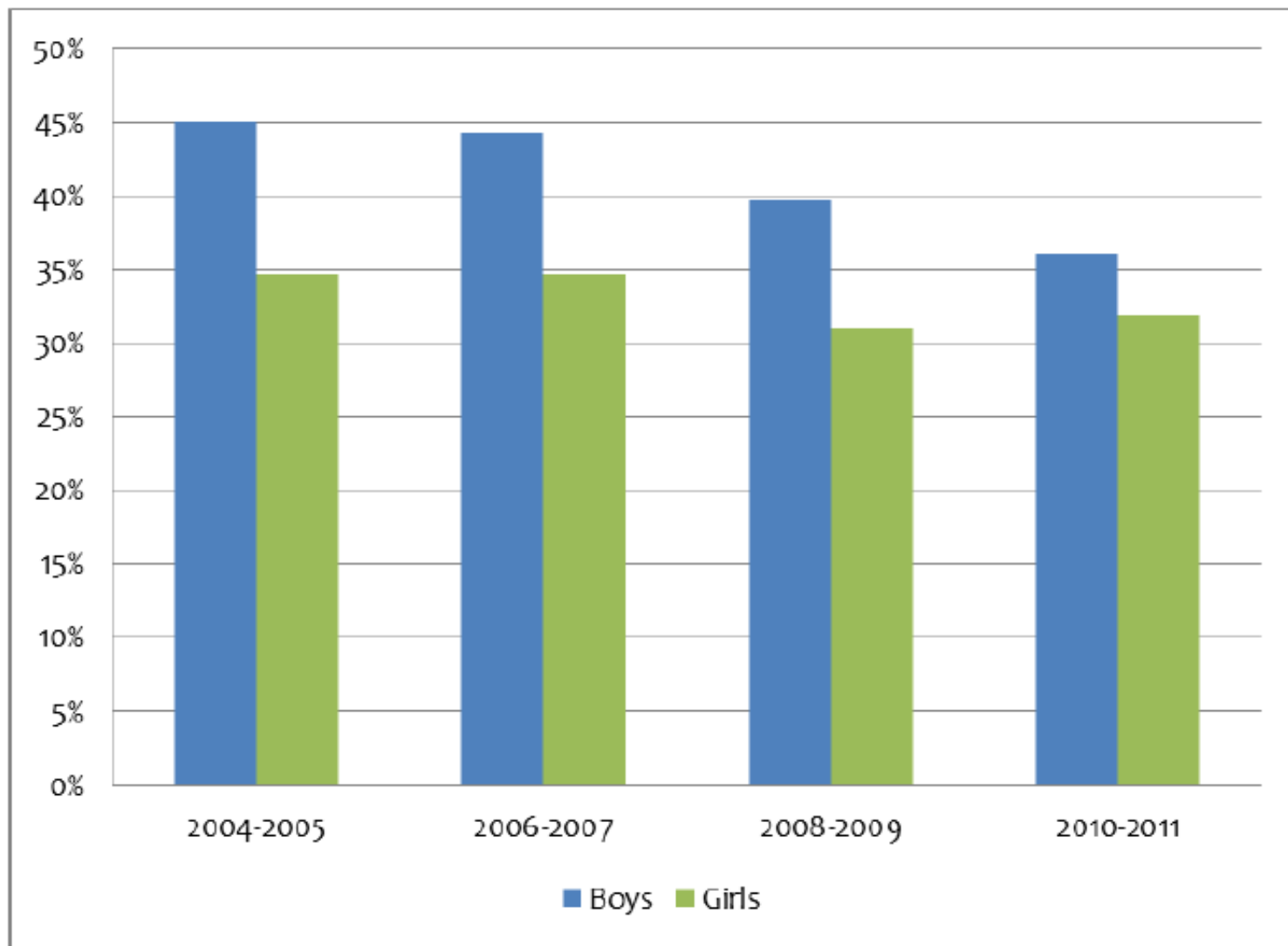
Education is seen as critically important to solve STEM shortages

- Concerns with STEM education especially at secondary level education
 - Students' choices
- Some worrisome PISA data
 - Decline in math learning outcomes 2003-2009 in some countries
 - Decrease in top-performers
 - Negative correlation between cognitive score and interest in science and career preferences



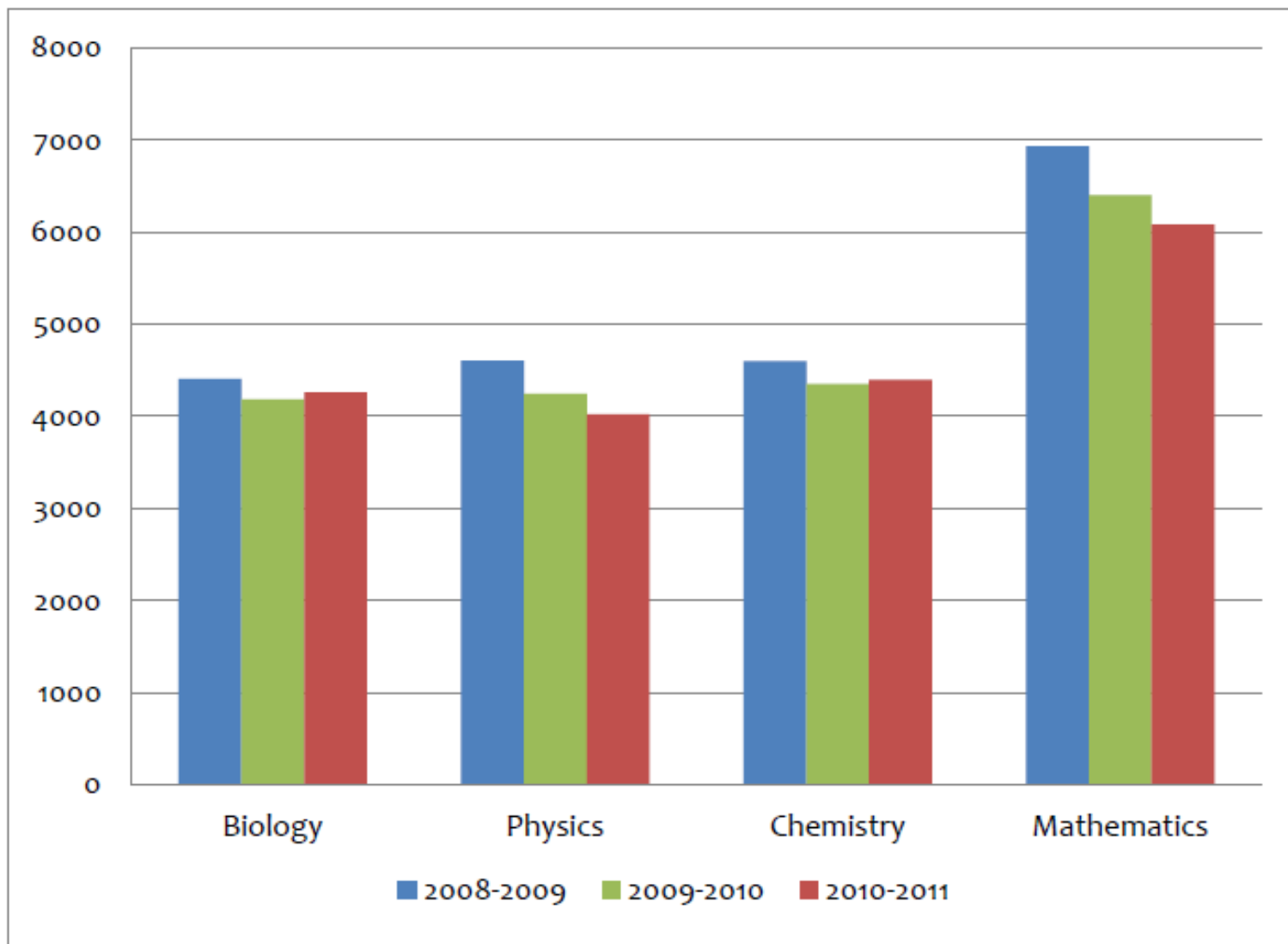


The share of schoolchildren in German general education that choose STEM subjects



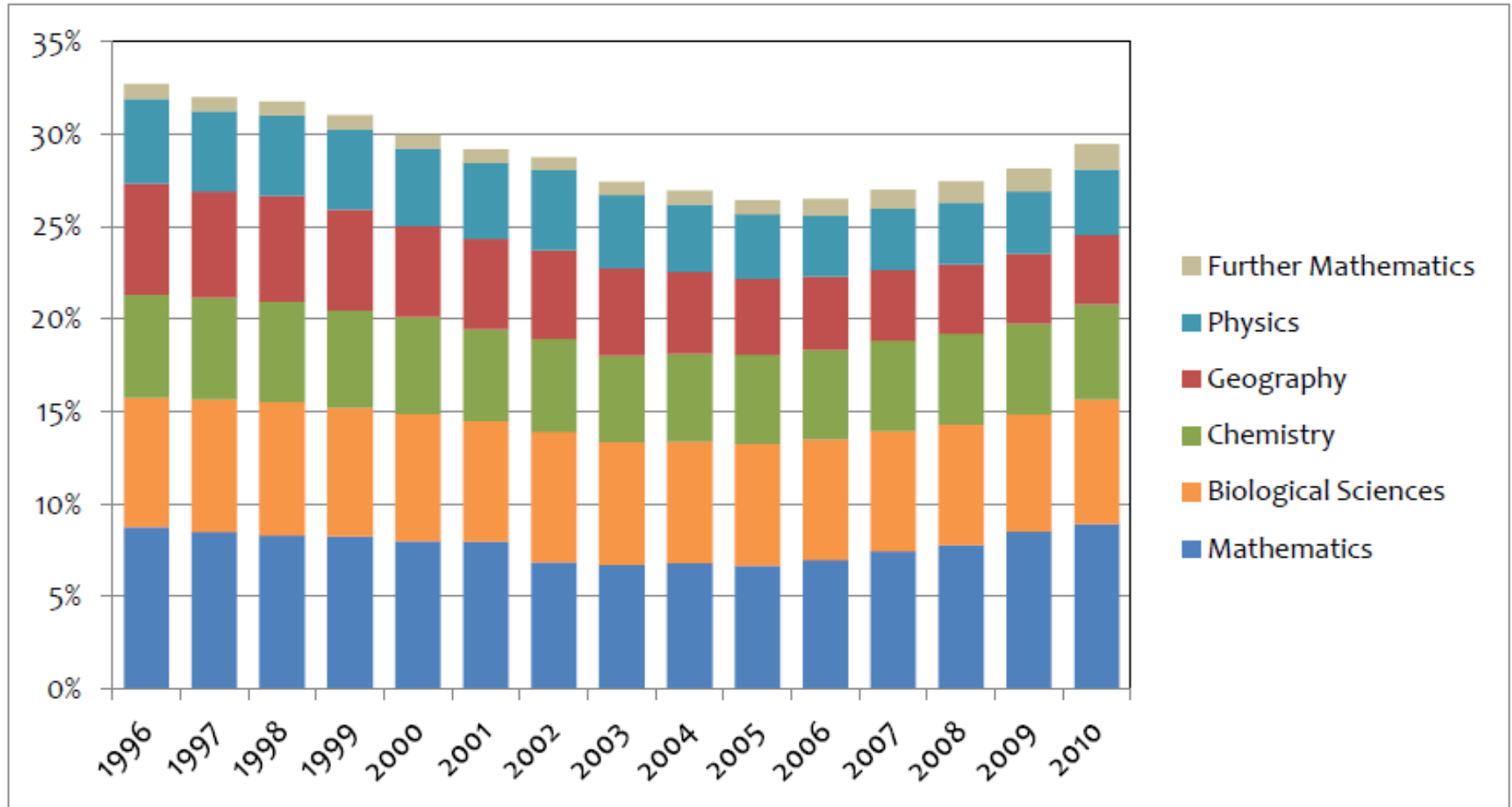


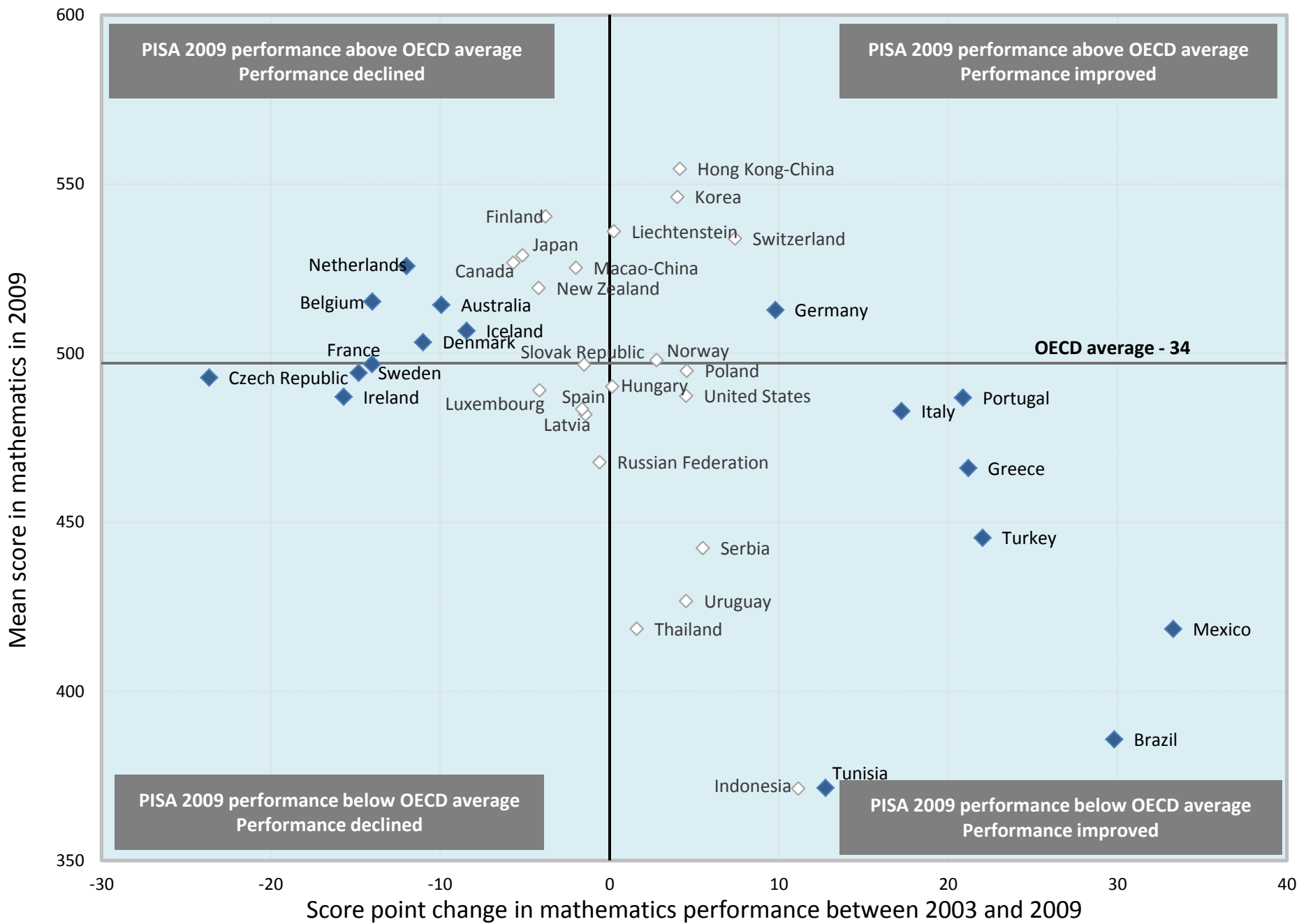
Evolution of the choice of specialisation courses in Norwegian secondary education



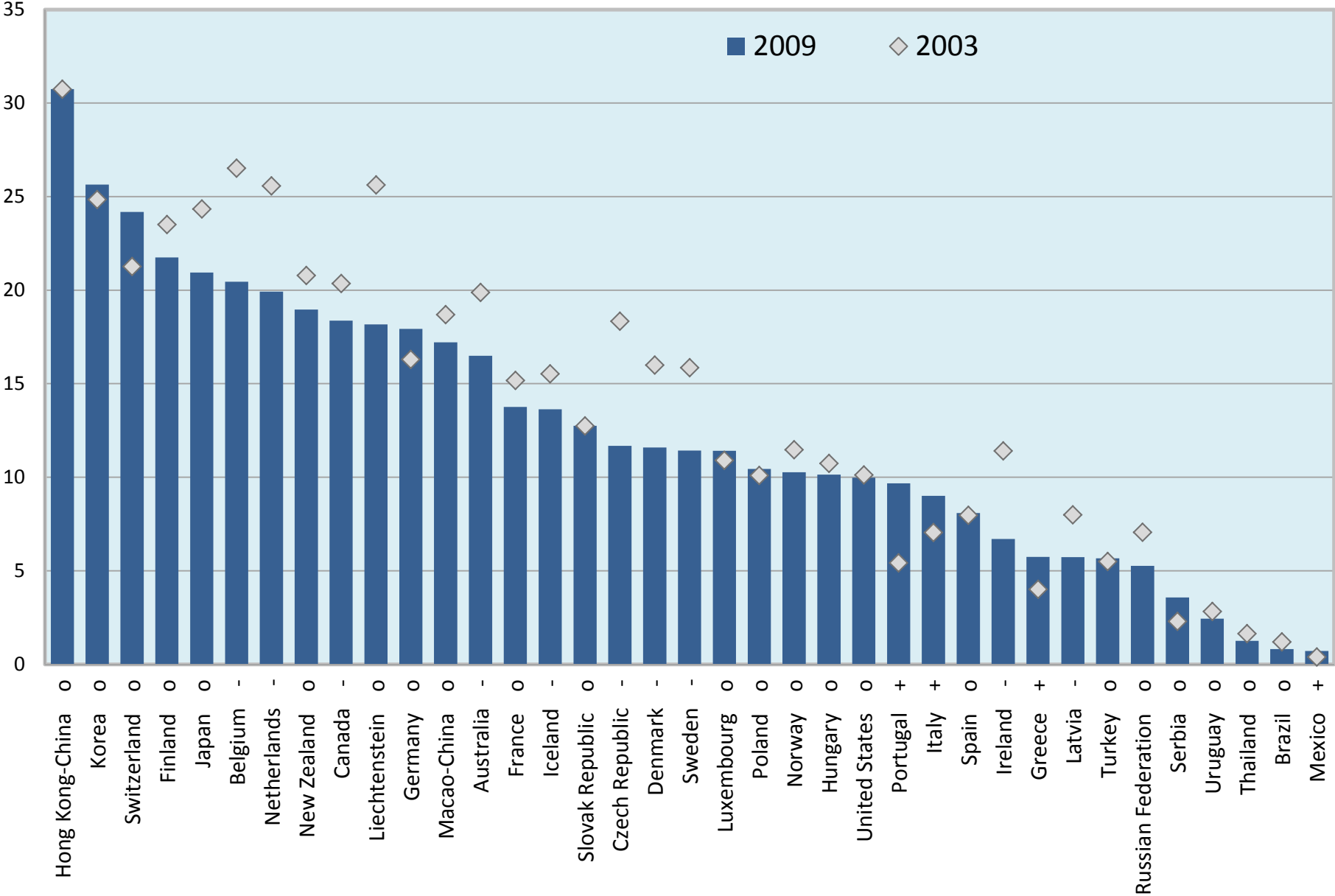


Pupils' choices for STEM subjects in England made at the age of 16 ("GCE A level entries")



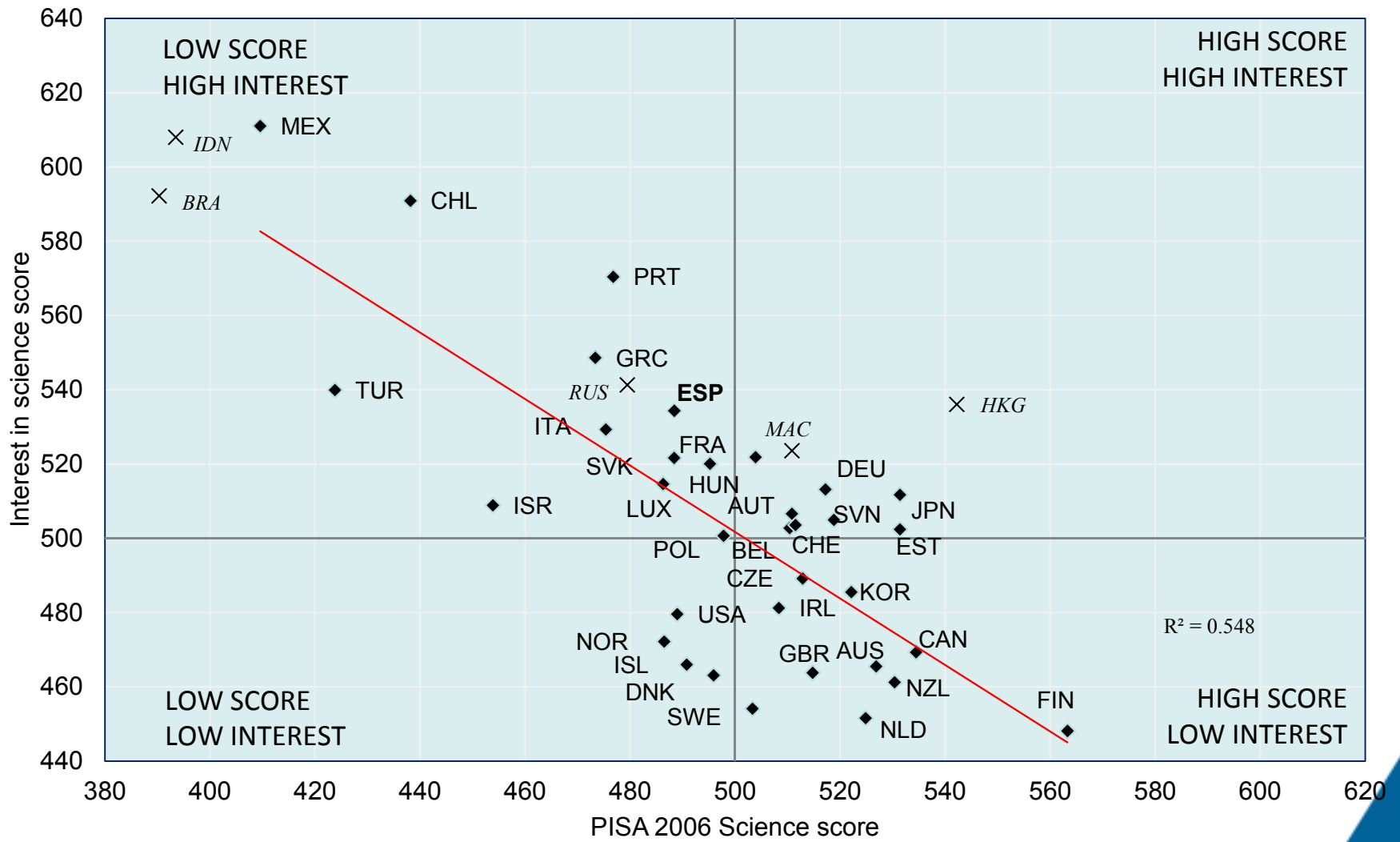


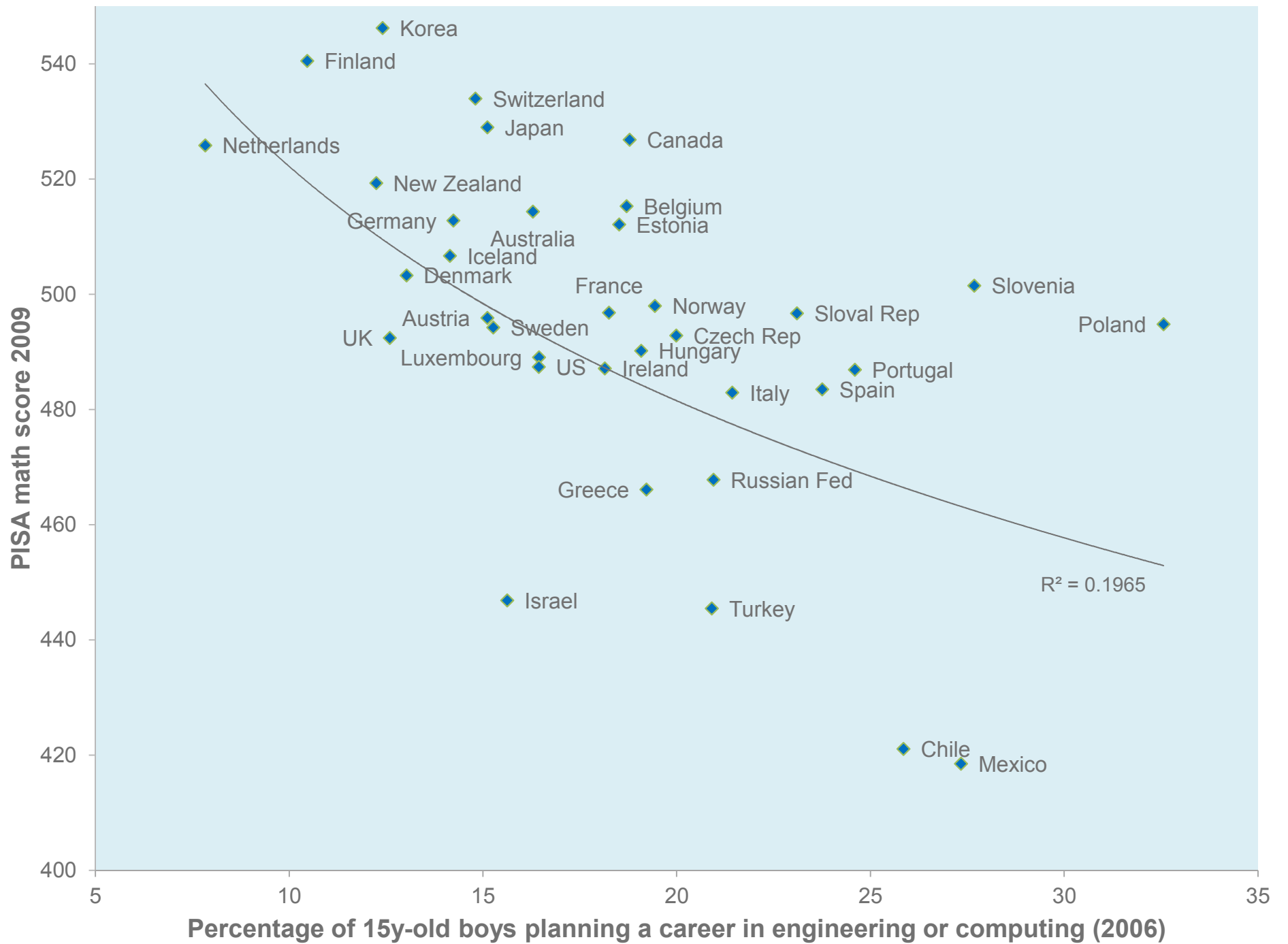
Change in the percentage of top performers in mathematics between 2003 and 2009





Science scores and interest in science correlate negatively







Some questions

- What's wrong with STEM education, in particular mathematics education?
 - 'How' question of teaching math
 - 'What' question of teaching math: relevance of the curriculum
- Relevance
 - to future labour market & innovation needs
 - to learning, 'joy of learning', motivation and cognitive & non-cognitive skills development
 - to 21st Century skills

