



# A FEW REMARKS ON THE POLICY RELEVANCE FROM AN OECD PERSPECTIVE

Dirk Van Damme

Head of the Innovation and Measuring  
Progress division – OECD/EDU



## Skills shortages and mismatches have a significant impact

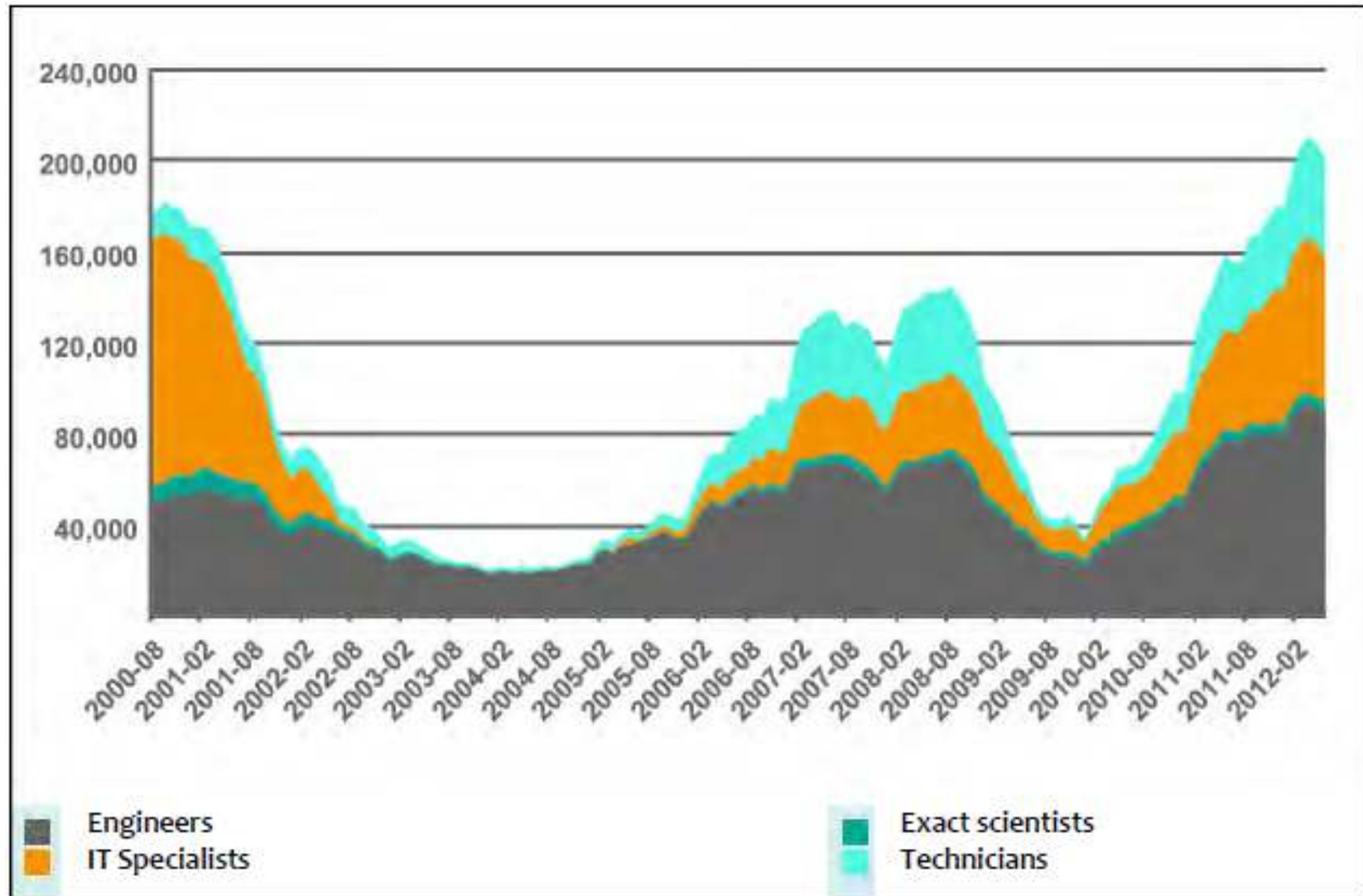
---

- 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



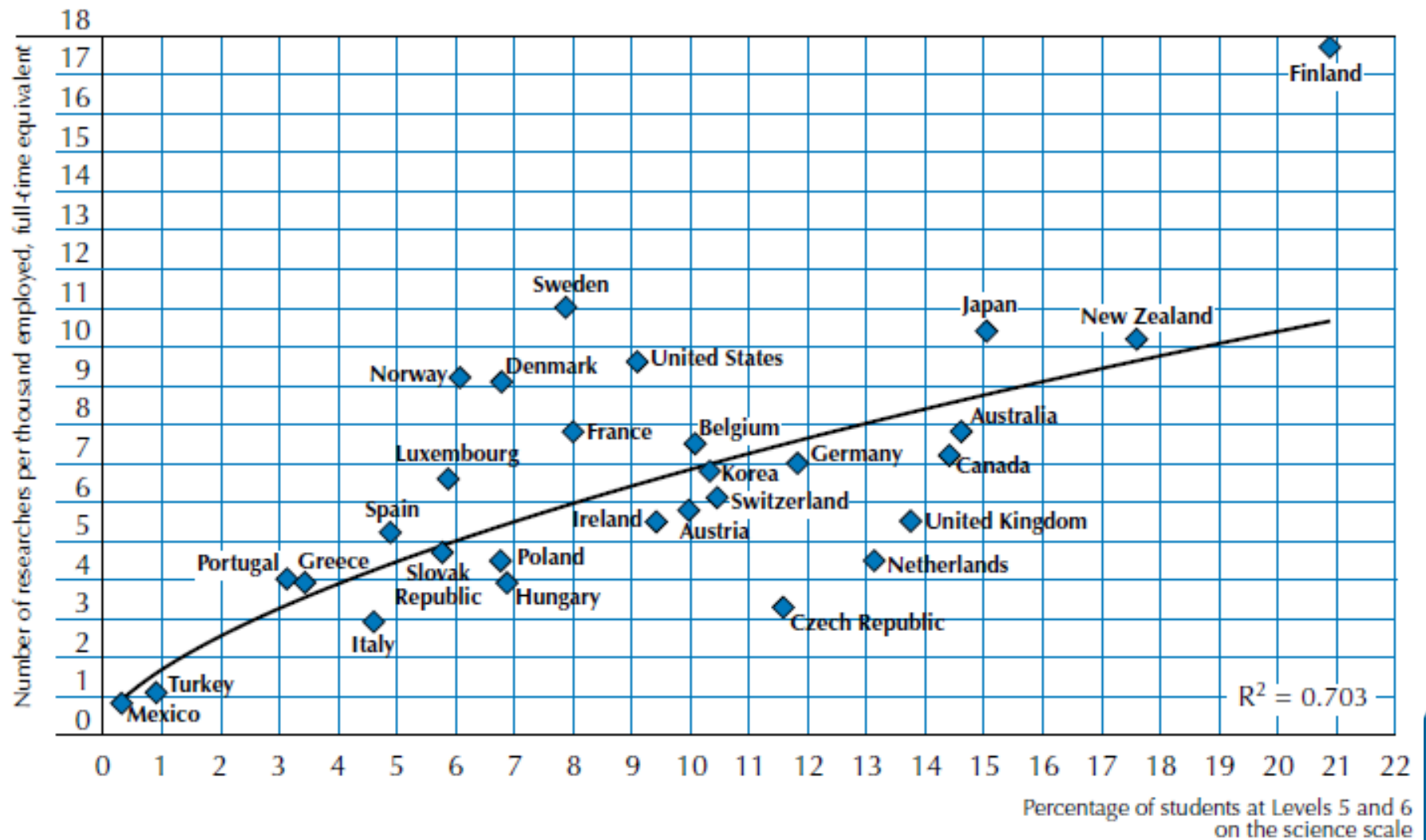


## Evolution of STEM graduate shortages in Germany





## Science top performers in PISA and countries' research intensity





## Education is seen as critically important to solve STEM shortages

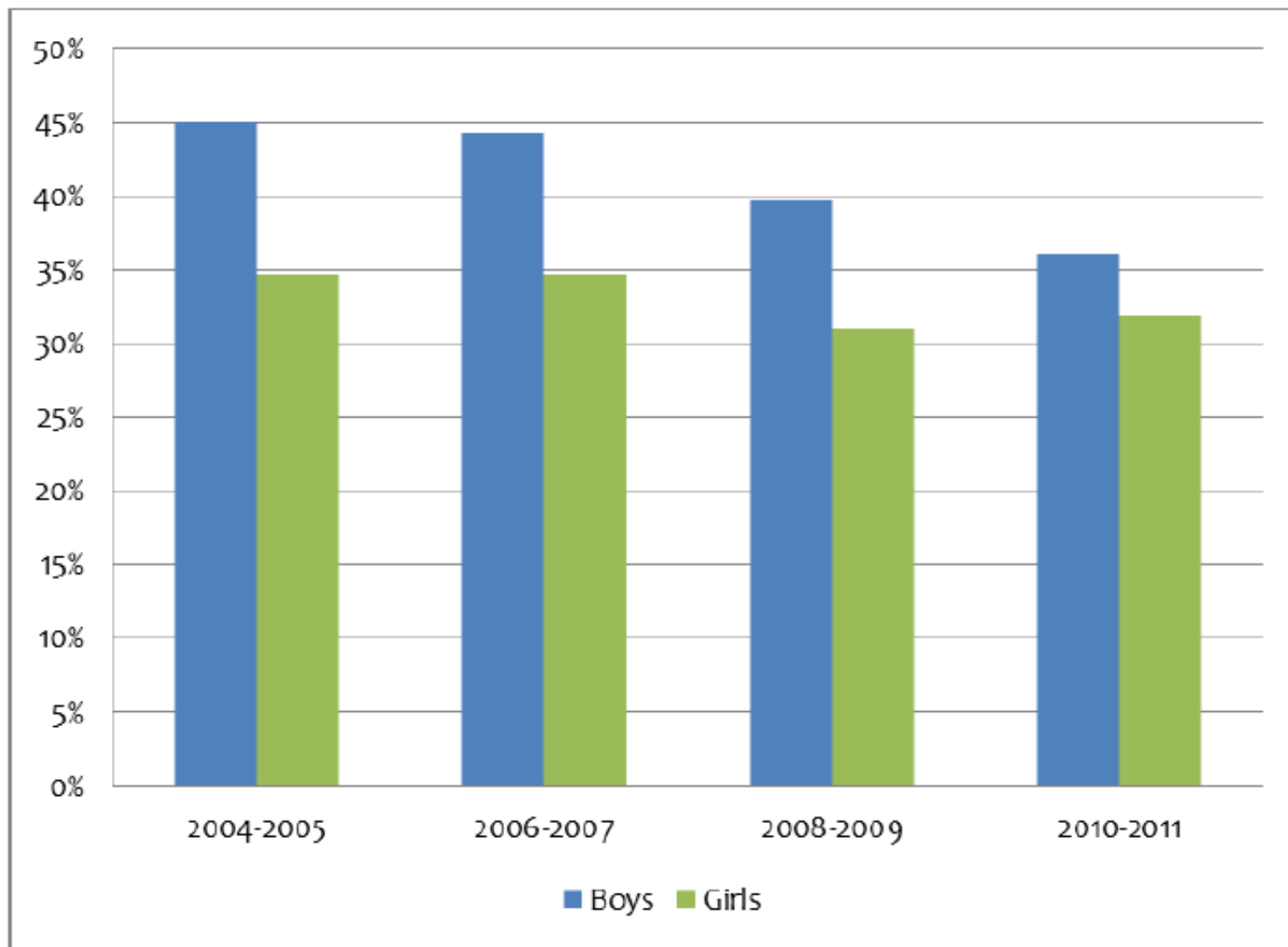
---

- 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



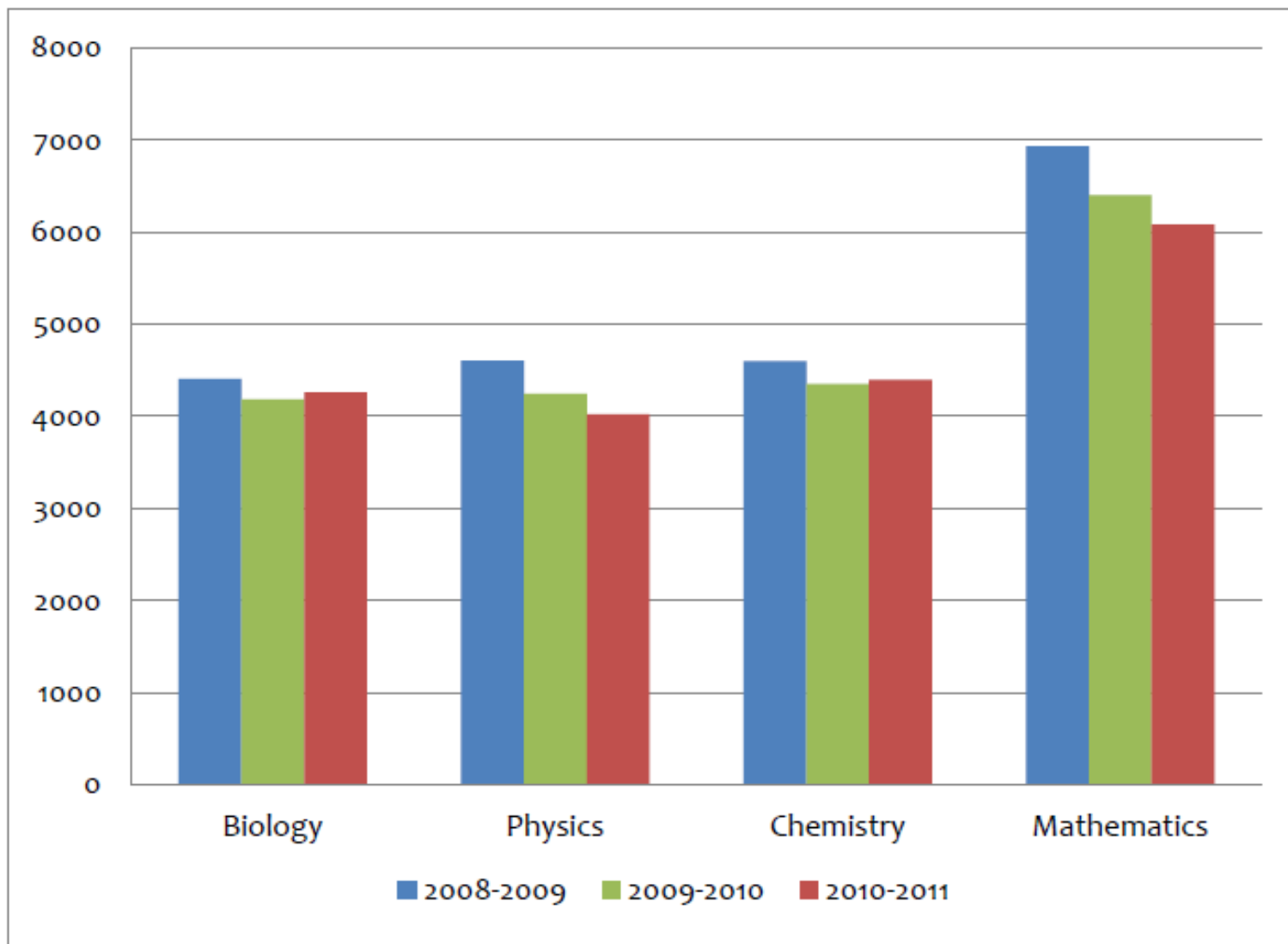


## The share of schoolchildren in German general education that choose STEM subjects



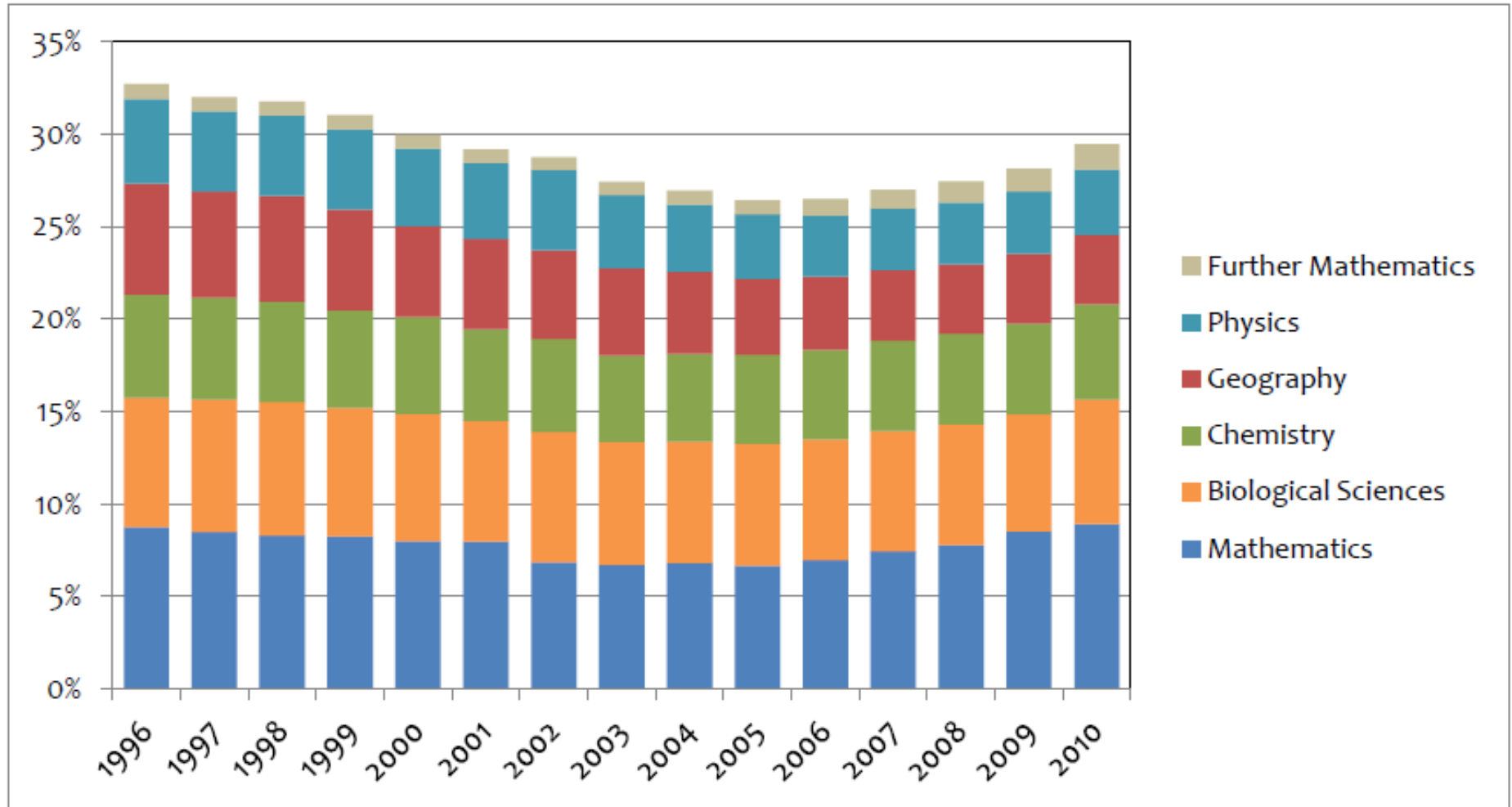


## Evolution of the choice of specialisation courses in Norwegian secondary education

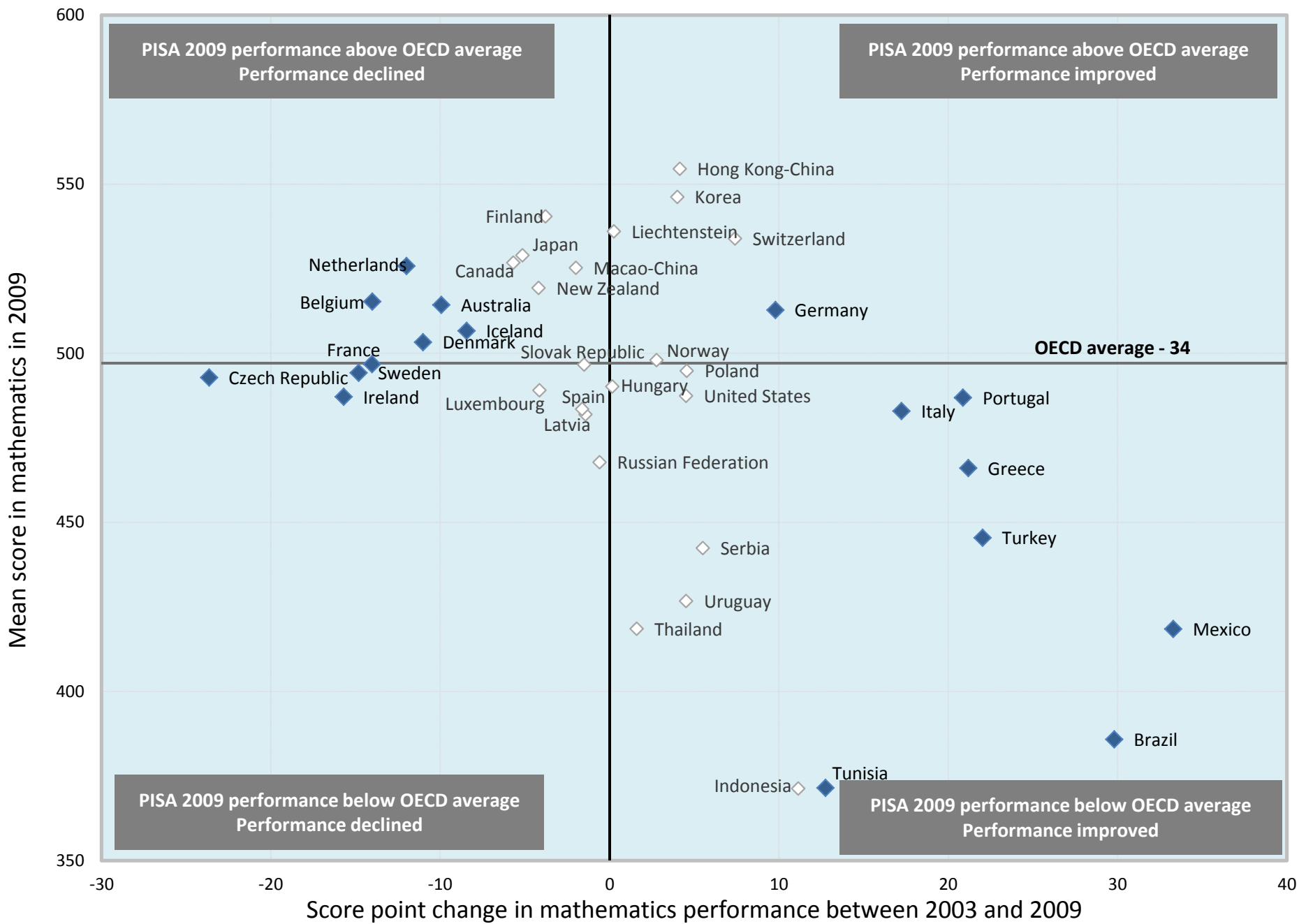




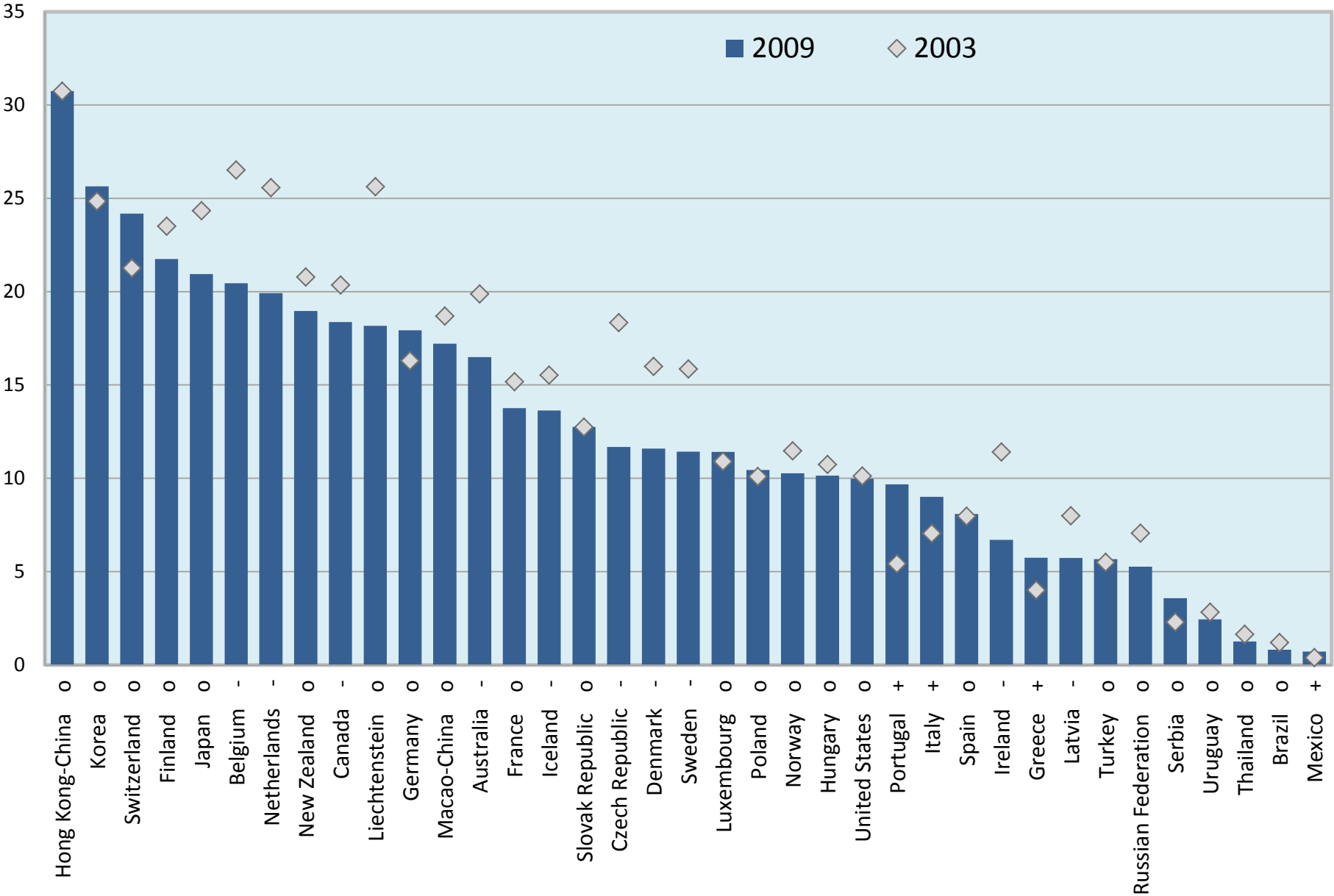
## Pupils' choices for STEM subjects in England made at the age of 16 ("GCE A level entries")





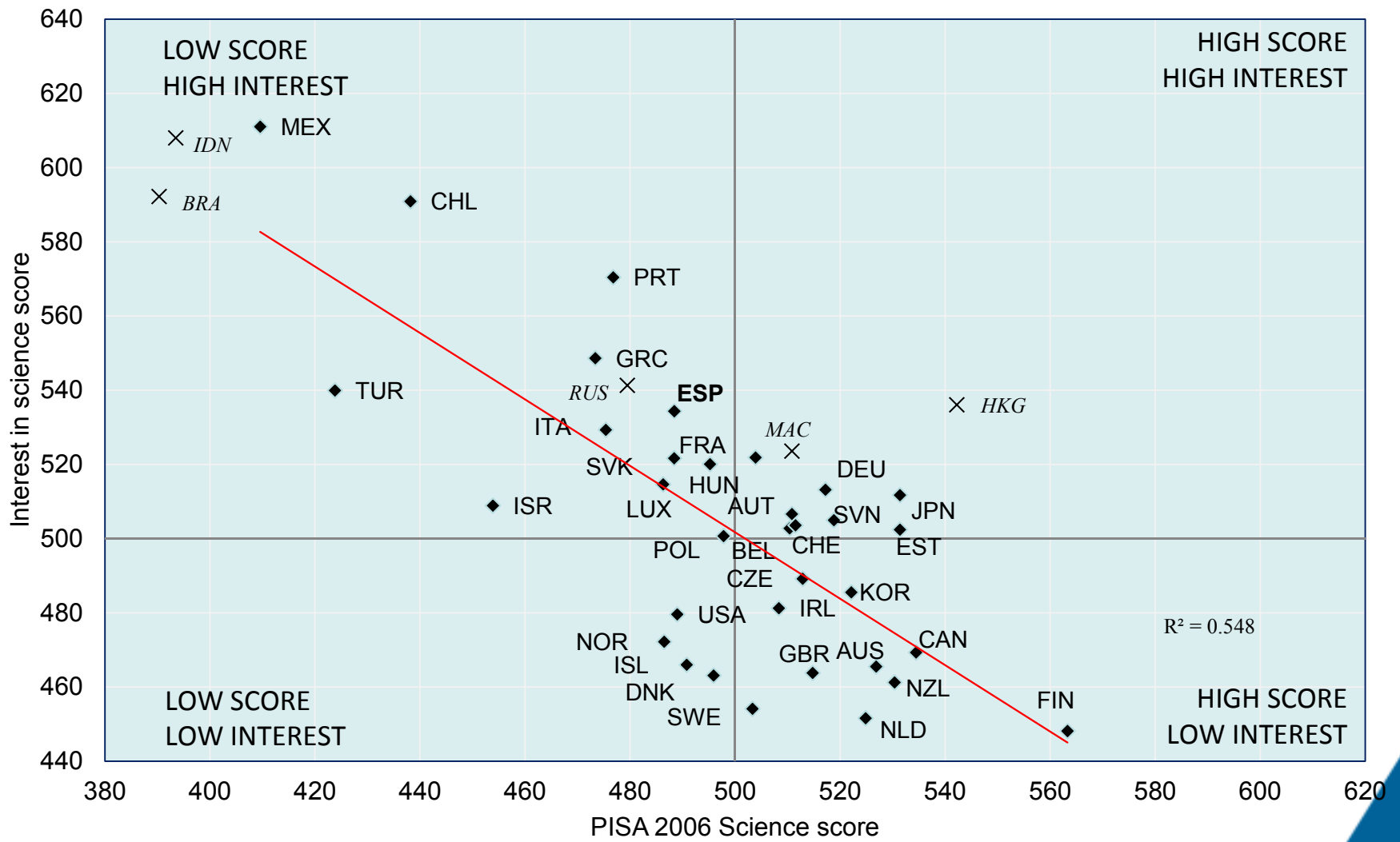


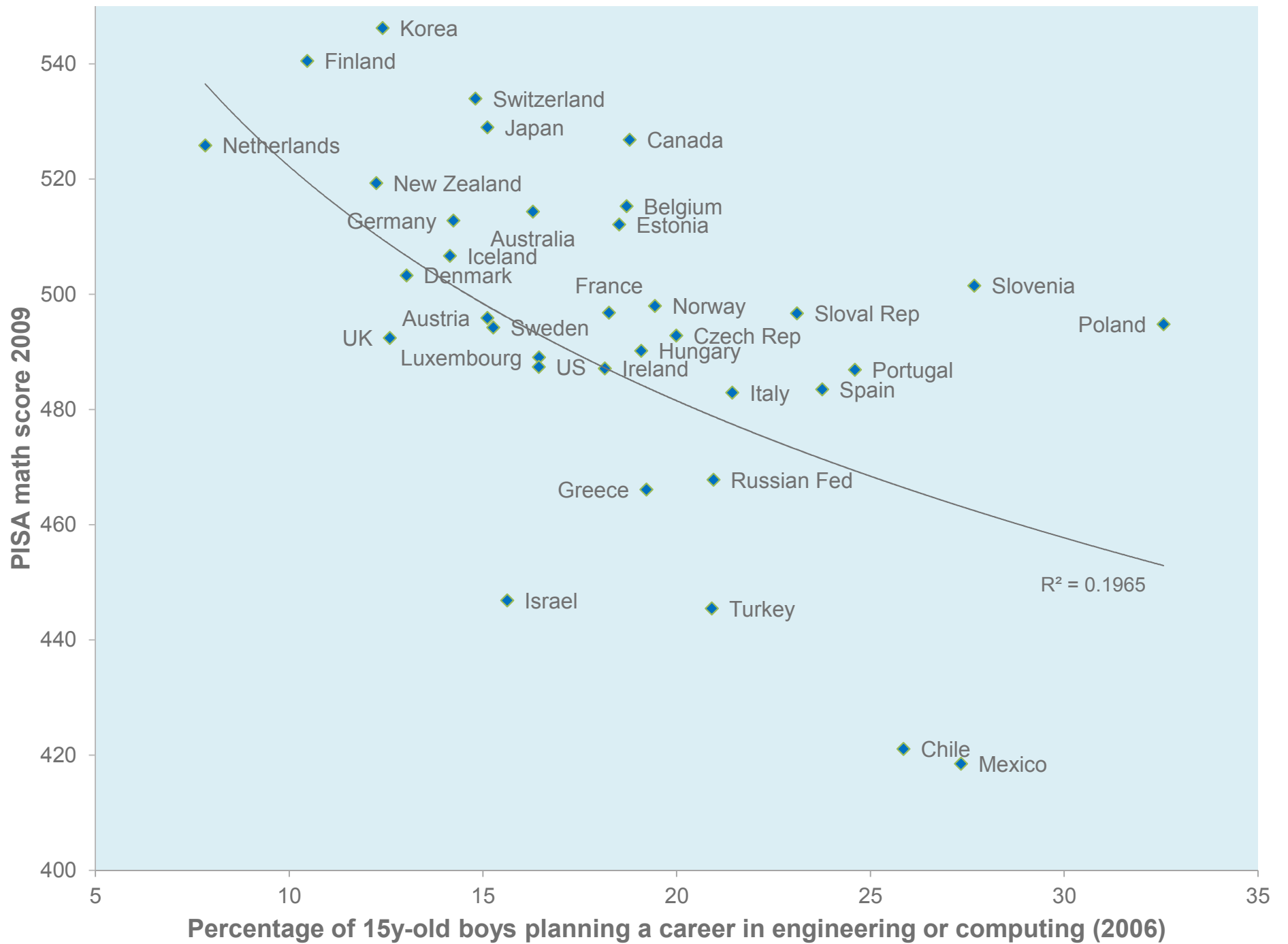
Change in the percentage of top performers in mathematics between 2003 and 2009





# 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 21<sup>st</sup> Century skills

