

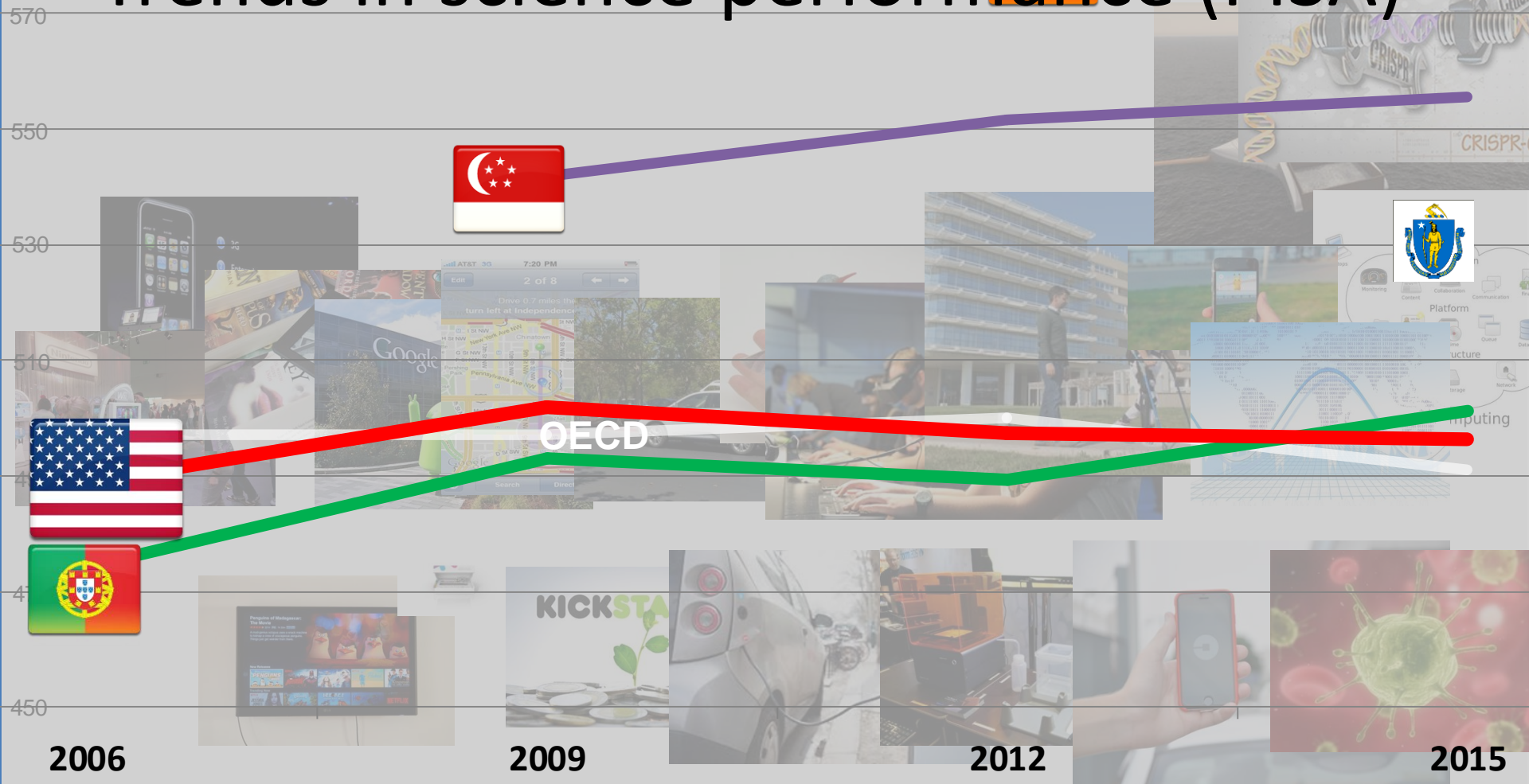


WORLD CLASS

Reform
November 18

Andreas Schleicher

Trends in science performance (PISA)



OECD

2006

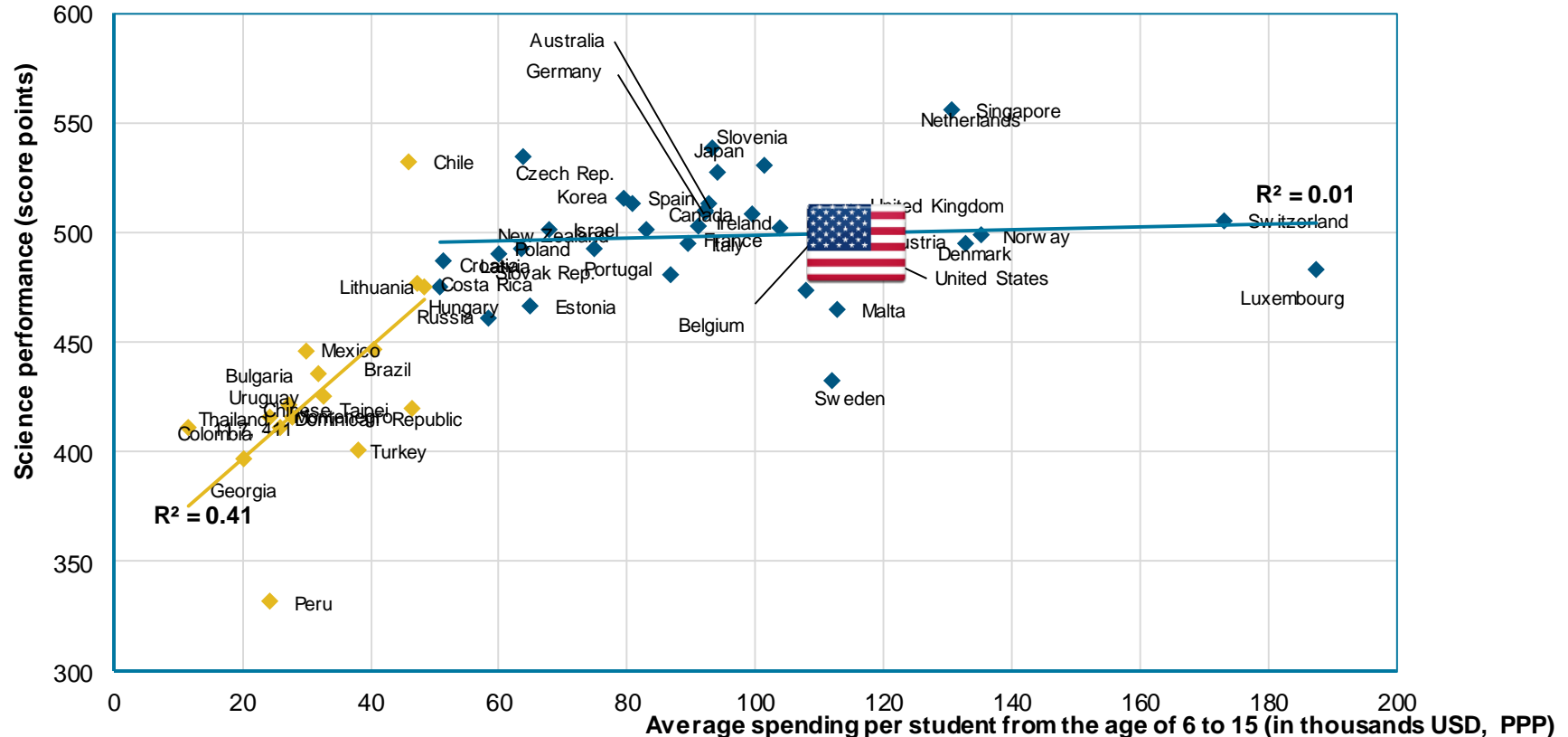
2009

2012

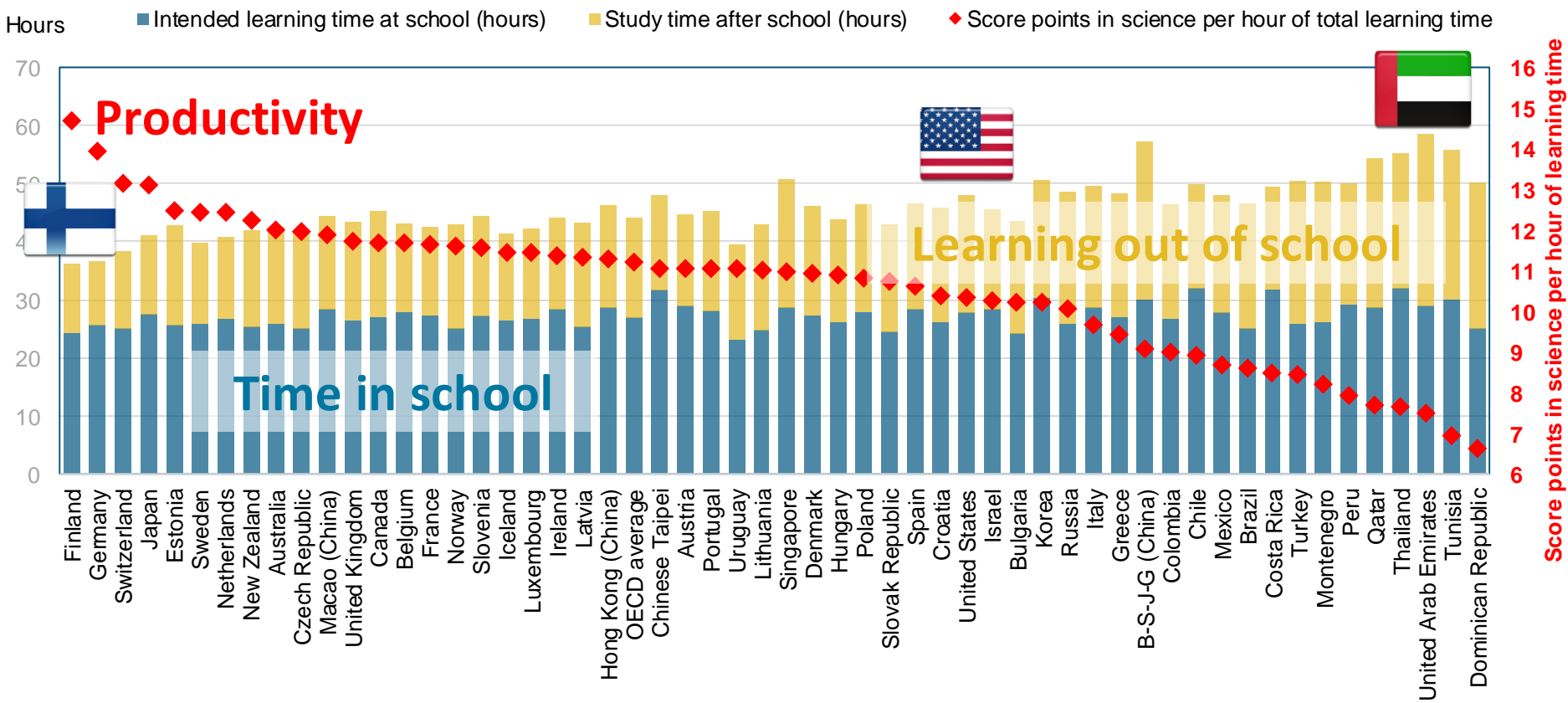
2015

Money is necessary but not sufficient

Spending per student from the age of 6 to 15 and science performance



Learning time and science performance (PISA)



Changing education can be like moving graveyards

- The status quo has many protectors
 - Everyone supports reform – except for their own children
 - Even those who promote reforms often change their mind when they understand what change entails for them
- The frogs rarely clear the swamp
 - The loss of privilege is pervasive because of the extent of vested interests
- Asymmetry of costs and benefits of educational reform
 - Costs are certain and immediate, benefits are uncertain and long-term
- Lack of supportive ecosystems
 - Lack of an ‘education industry’ that pushes innovation and absorbs risks
 - A research sector that is often disengaged from the real needs of real classrooms
- You can lose an election but you don’t win one over education
 - Complexity and length of reform trajectory that extend electoral cycles
 - A substantial gap between the time when the cost of reform is incurred, and the time when benefits materialise

When fast gets really fast, being slow to adapt makes education really slow

Industrial systems

World class systems

Student inclusion

Some students learn at high levels

All students need to learn at high levels

Curriculum, instruction and assessment

Routine cognitive skills

Complex ways of thinking and working

Teacher education

Standardisation and compliance

High-level professional knowledge workers

Work organisation

'Tayloristic', industrial

Flat, collegial, entrepreneurial

Accountability

Primarily to authorities

Primarily to peers and stakeholders



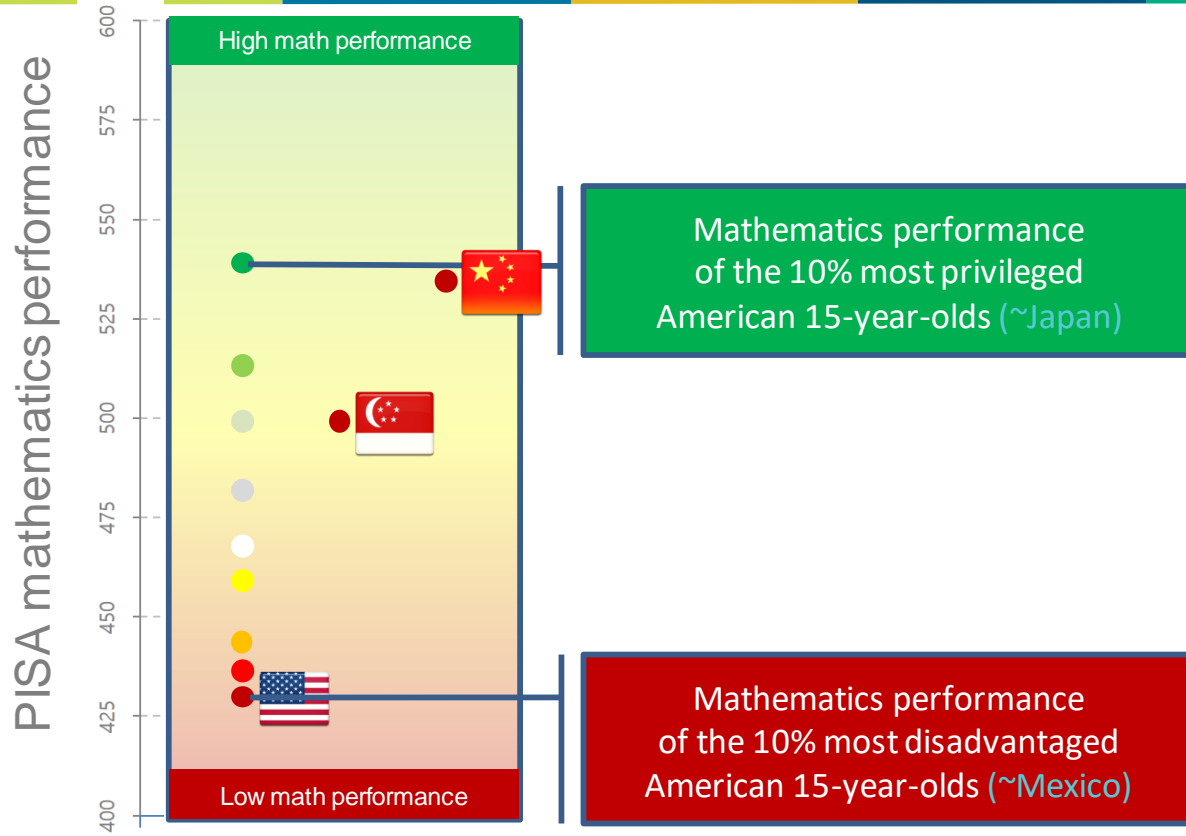
Some learn at high levels



All learn at high levels

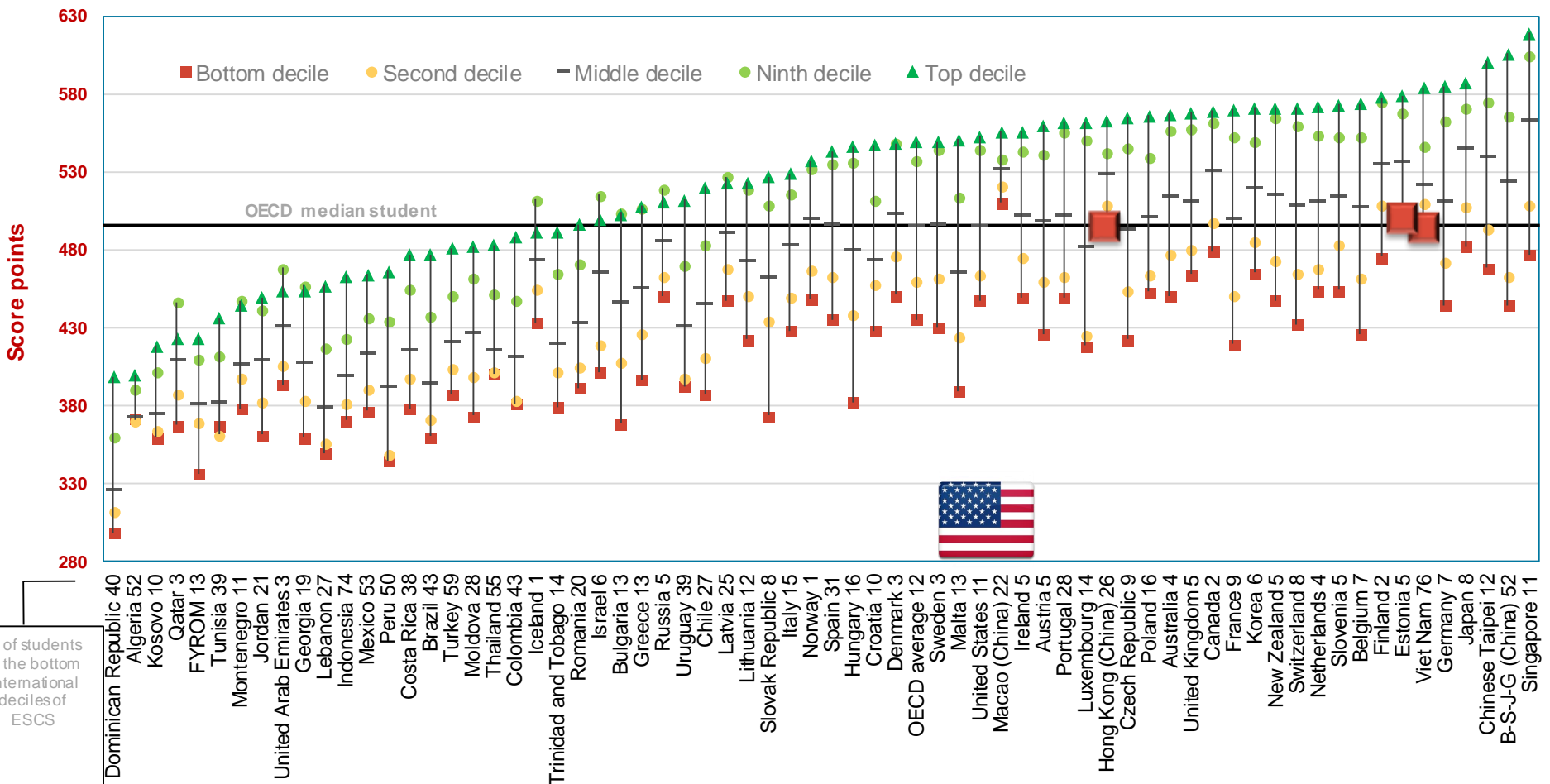
Poverty need not be destiny:

PISA math performance by decile of social background (2012)



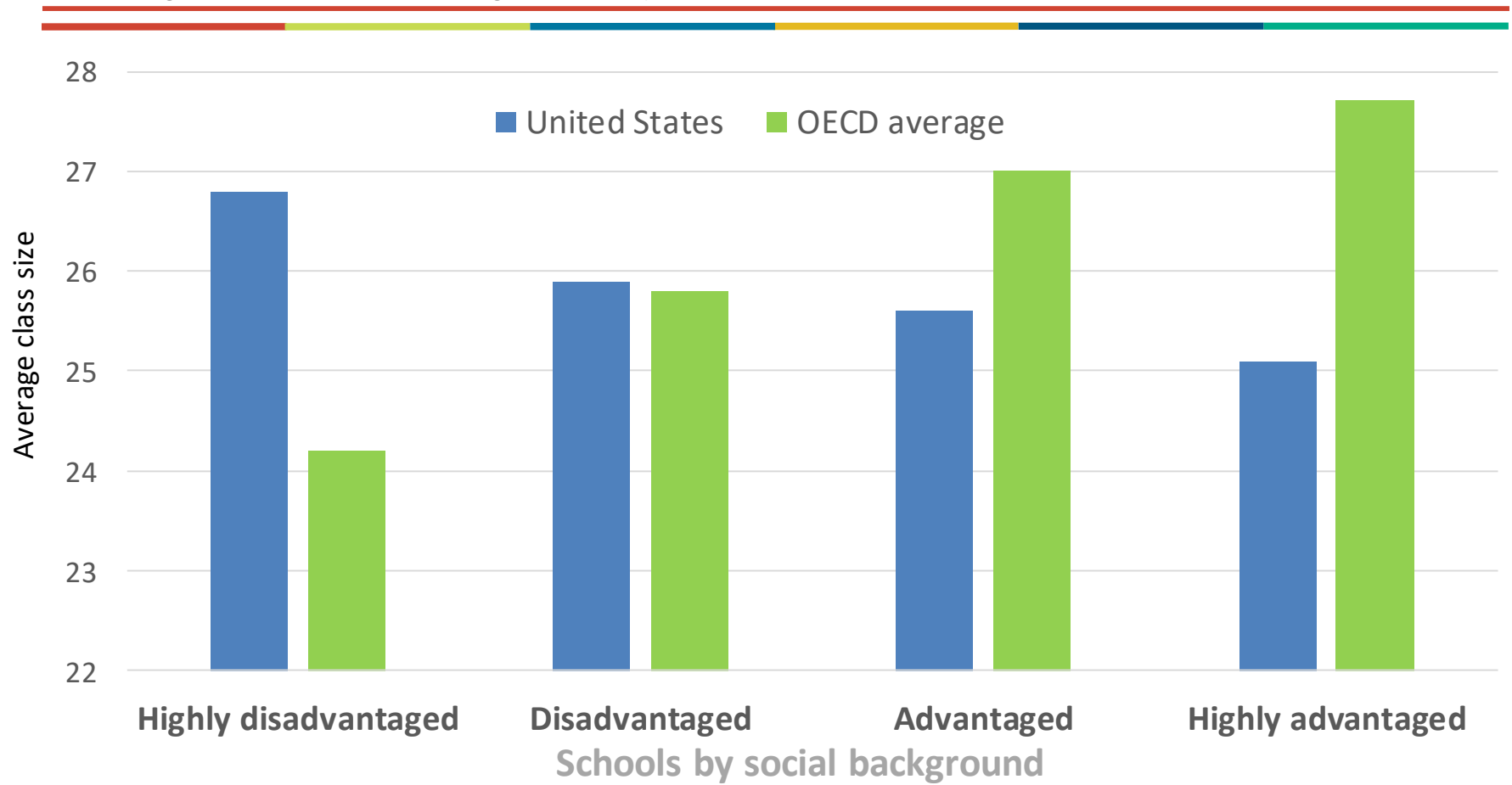
Poverty need not be destiny

Science learning outcomes by international deciles of economic, social and cultural status (ESCS) (2015)



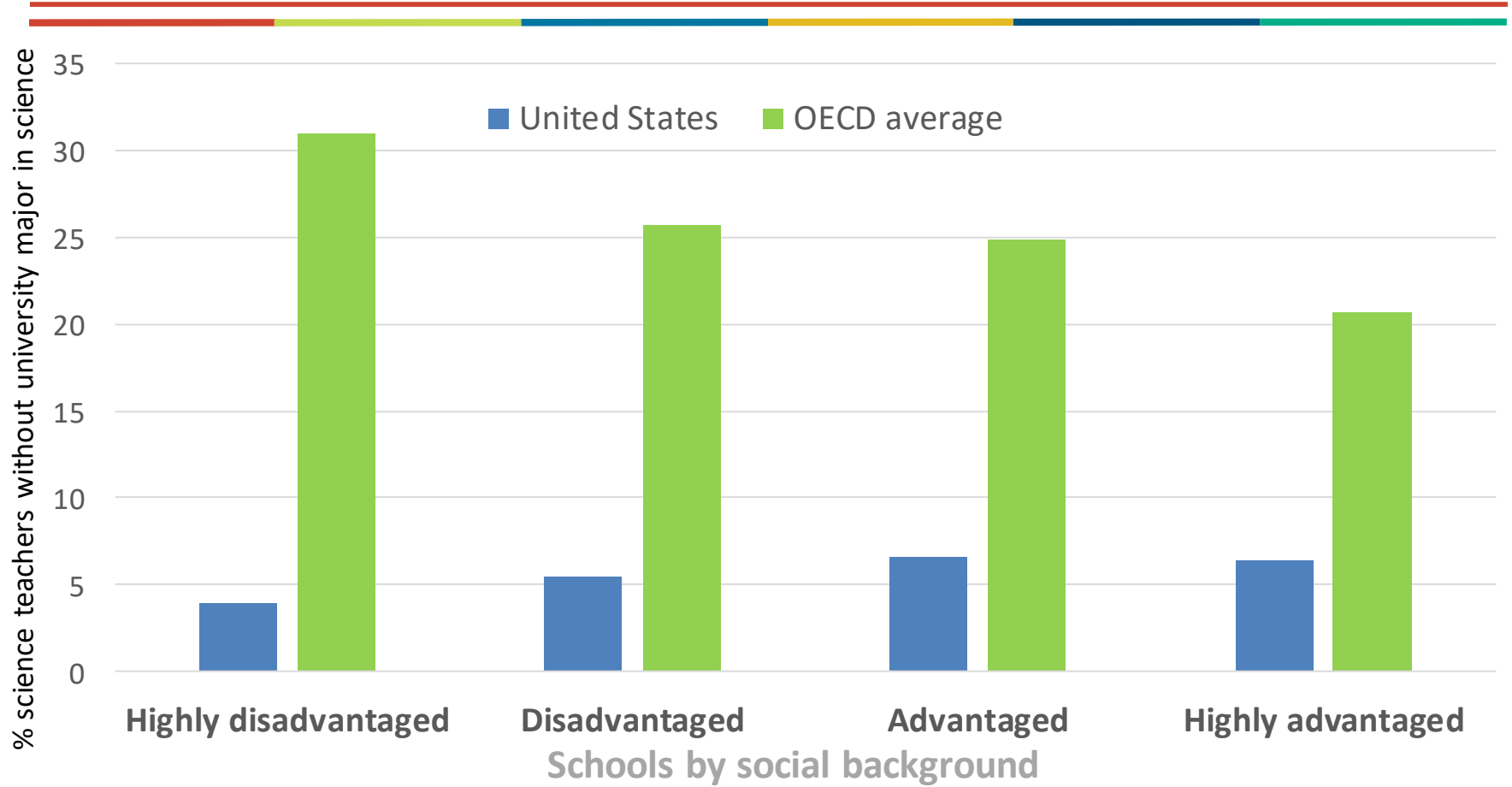
Aligning resources with needs

Average class size in <9th grade>, by quarter of school socio-economic profile

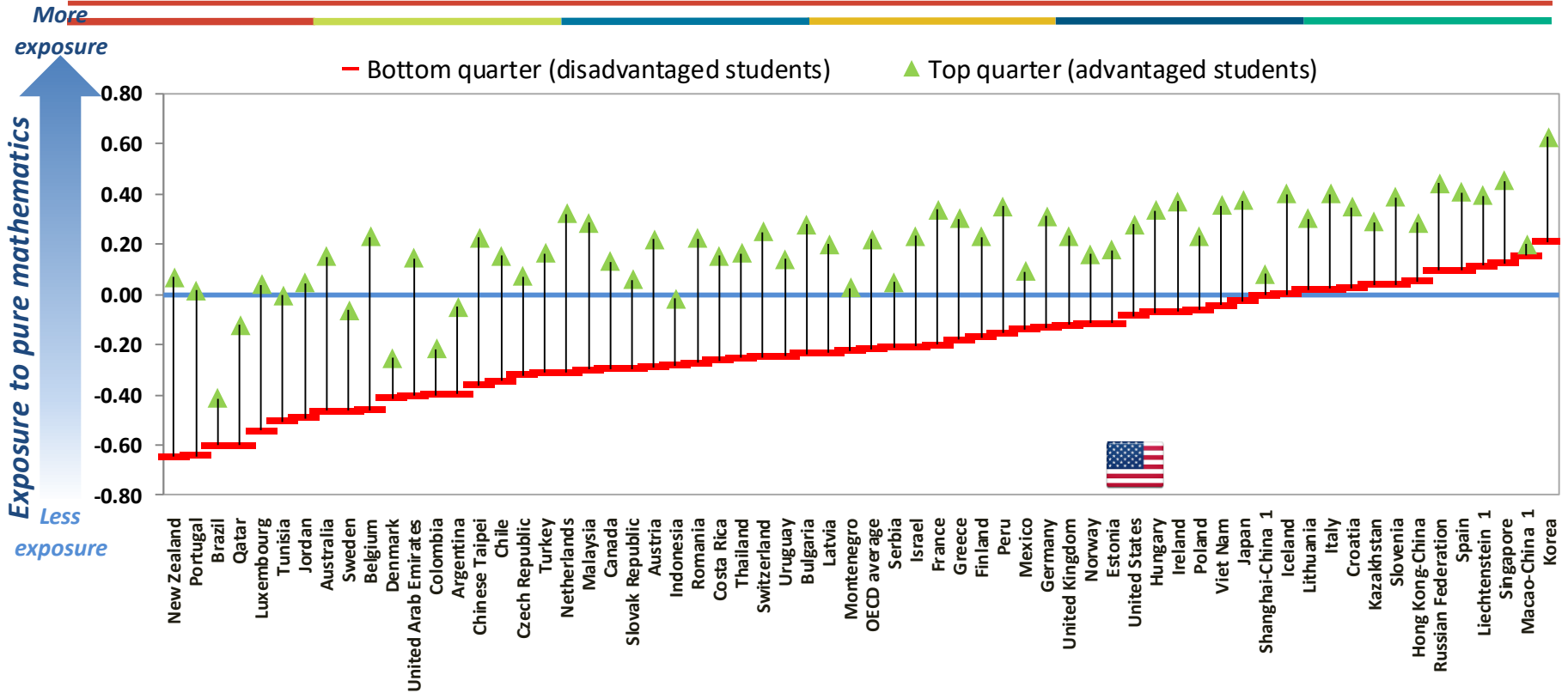


Aligning resources with needs

Science teachers without a university major in science, by school socio-economic profile (OECD Average)



Students in disadvantaged schools have less exposure **conceptual understanding** in math



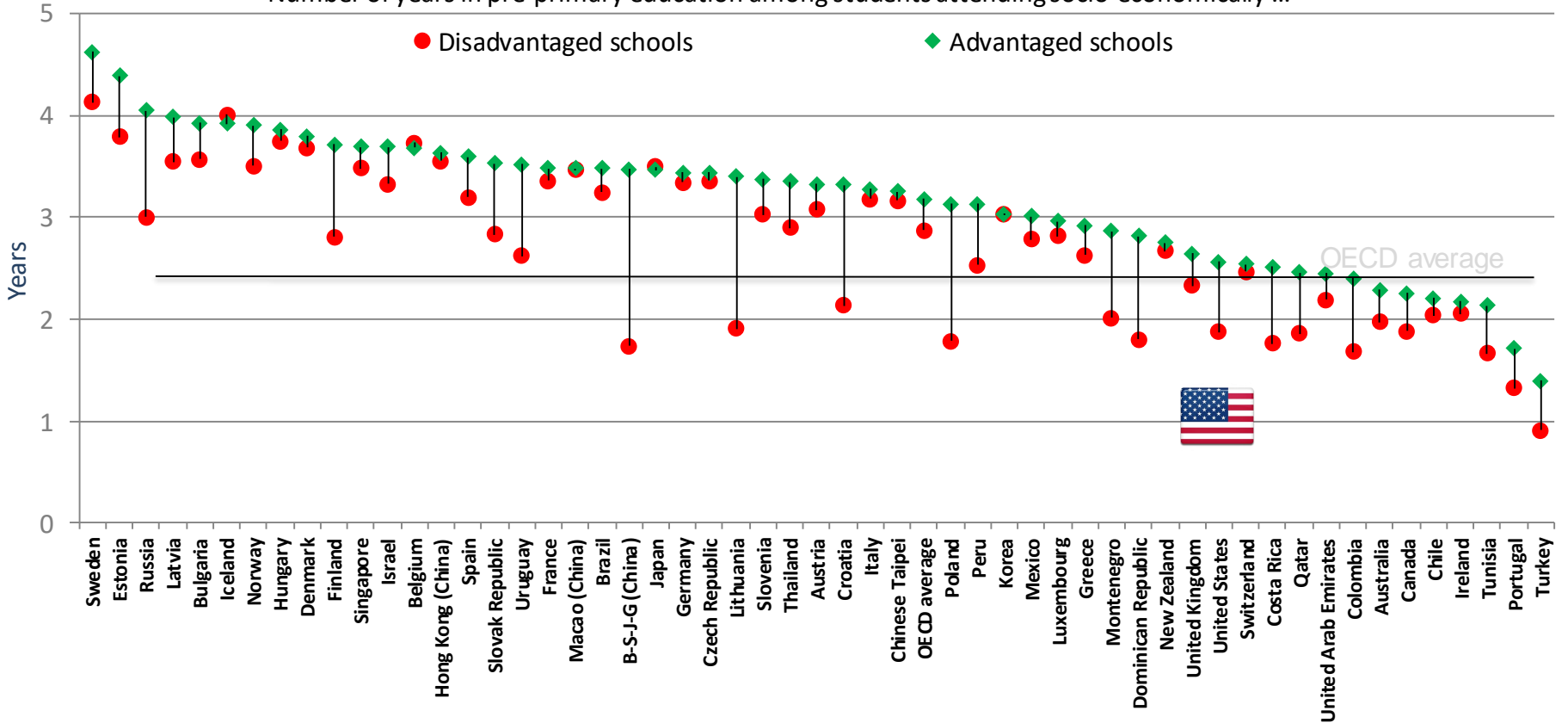
Attendance at pre-primary school

by schools' socio-economic profile

Number of years in pre-primary education among students attending socio-economically ...

● Disadvantaged schools

◆ Advantaged schools





Reproducing knowledge



Creating knowledge

Think for yourself and work with others

INSIDE: A 14-PAGE SPECIAL REPORT ON TECH STARTUPS

The
Economist

JANUARY 18TH - 24TH 2014

Economist.com

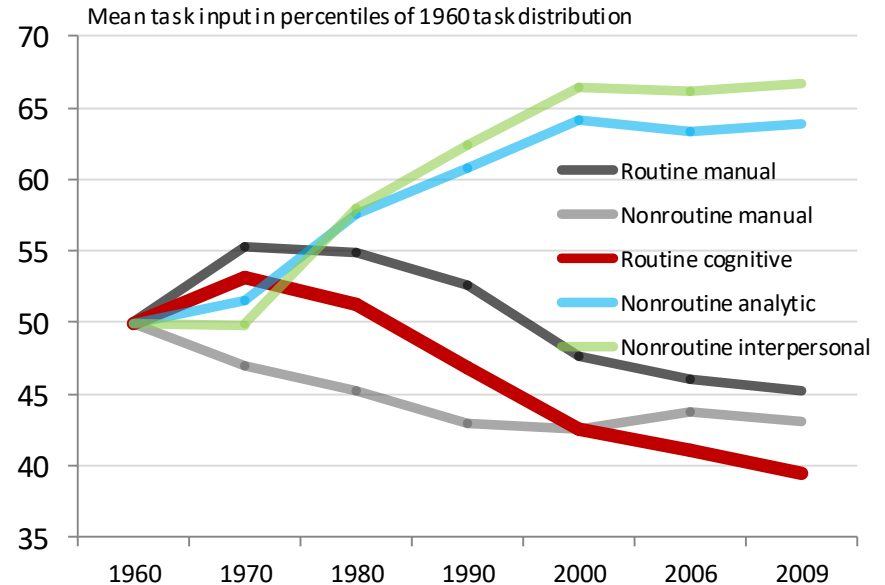
If the French ran America
China cracks down on microblogs
New opportunities for organised crime
Regulators go soft on Europe's banks
Google and the internet of things

Coming to an office
near you...

What today's
technology will do to
tomorrow's jobs



The kind of things that are
easy to teach are now easy
to automate, digitize or
outsource



Digitalisation



Participating



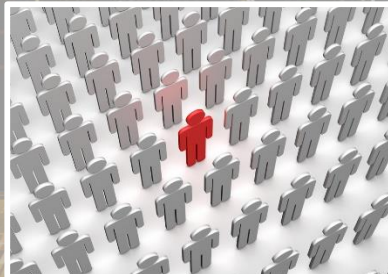
Particularizing



Empowering



Concentrating

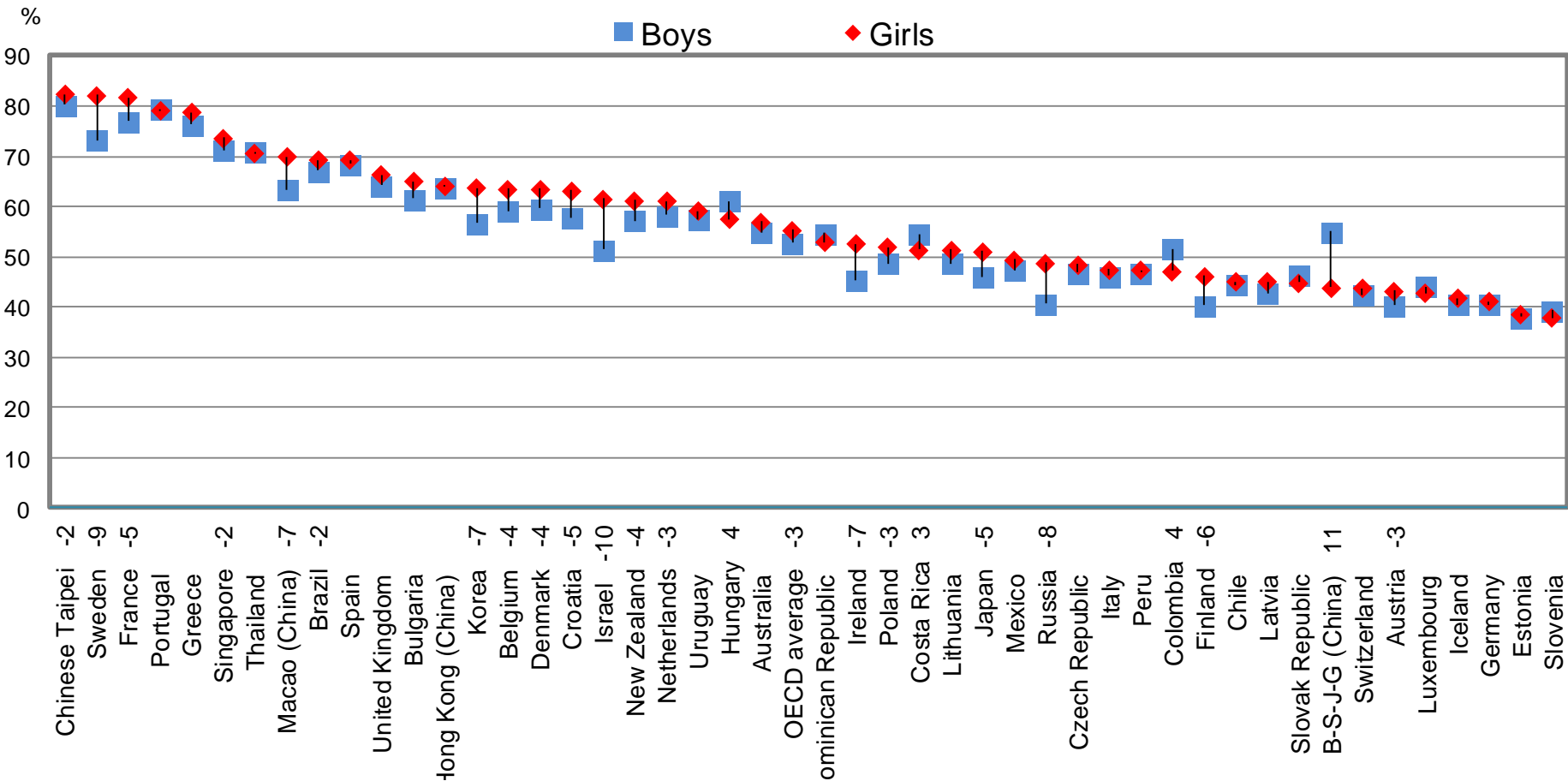


Homogenizing



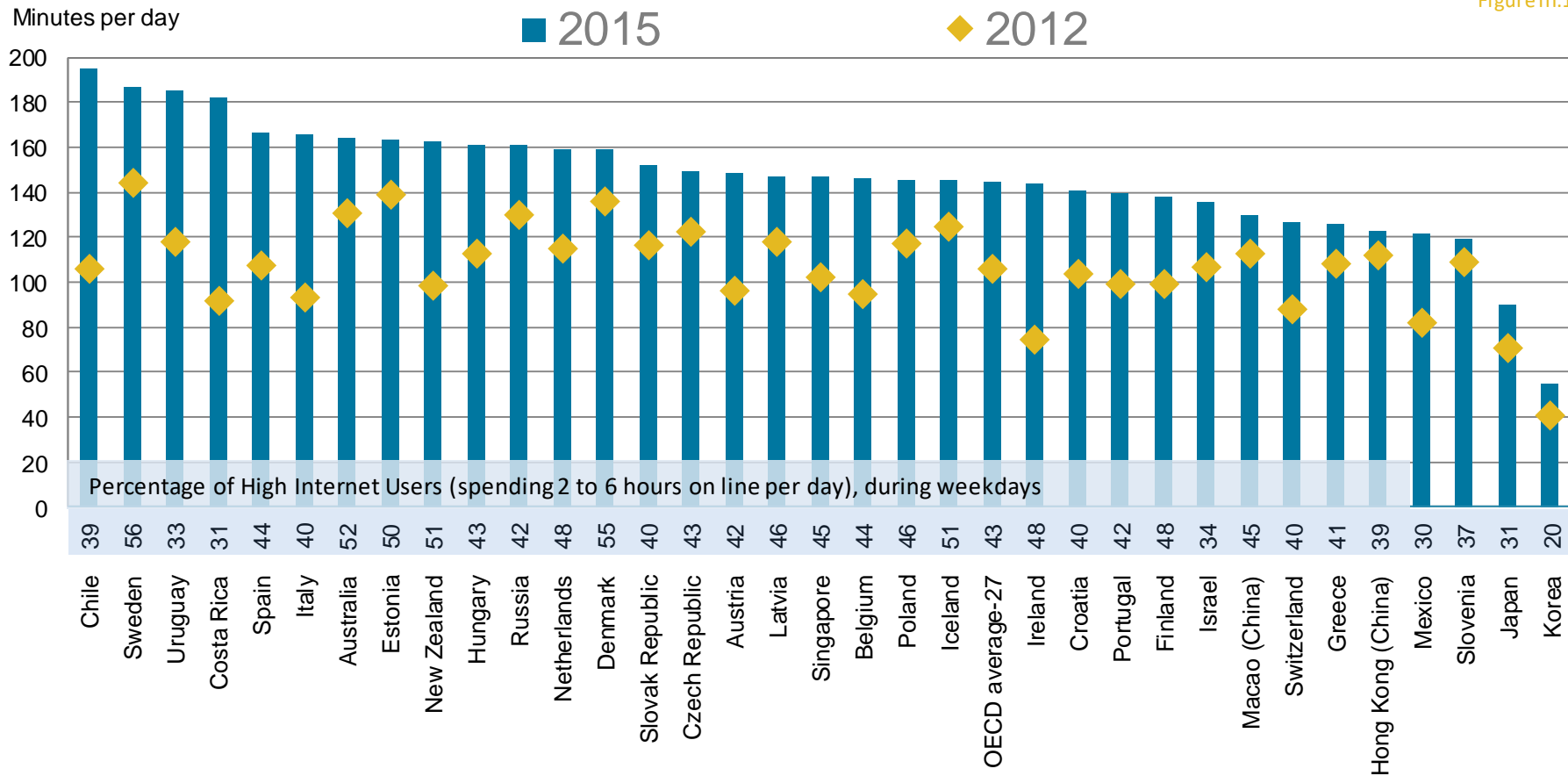
Disempowering

15-year-olds feeling bad if not connected to the Internet (PISA)

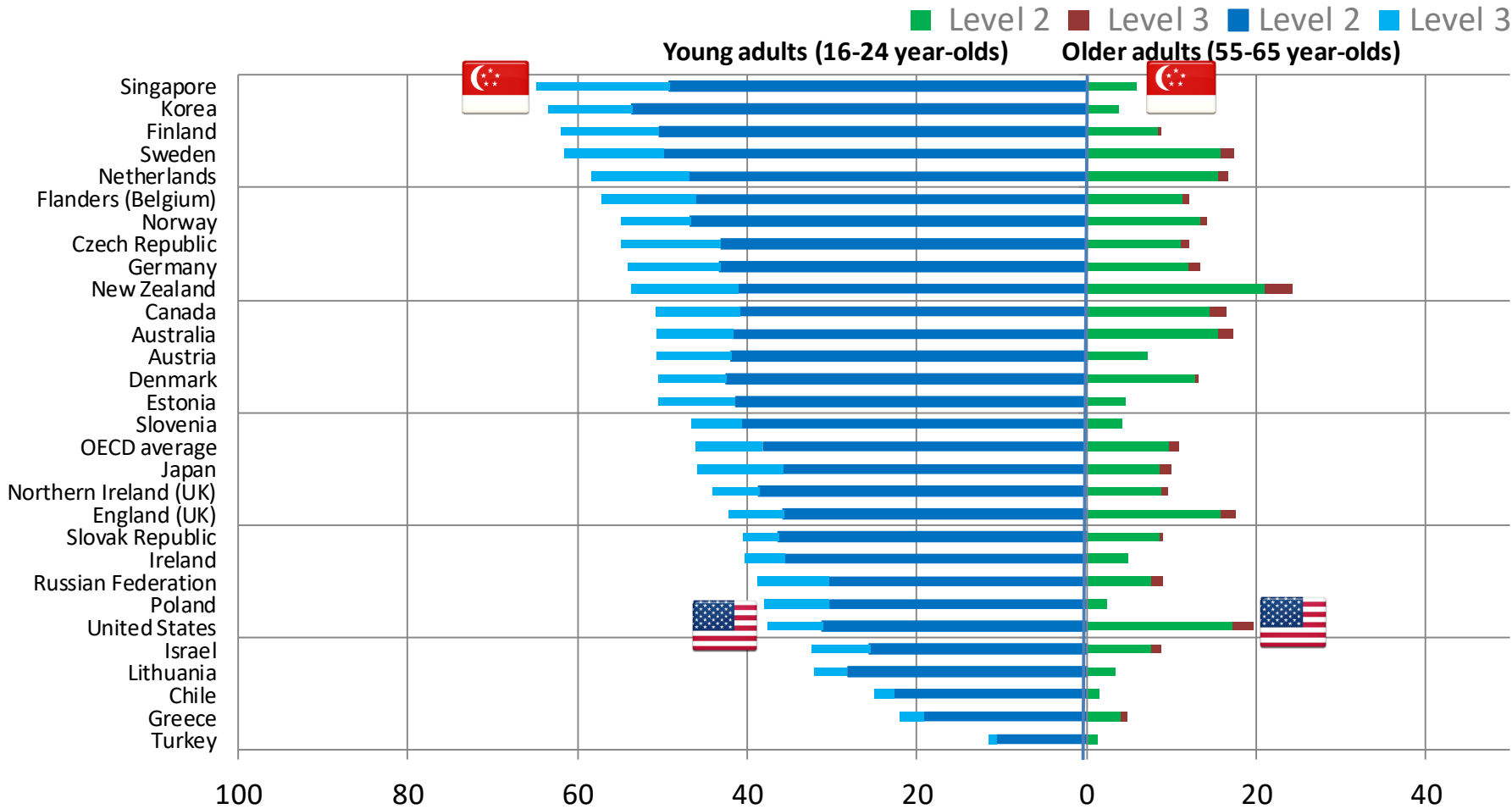


Students are using more time online outside school on a typical school day (PISA)

Figure III.13.3

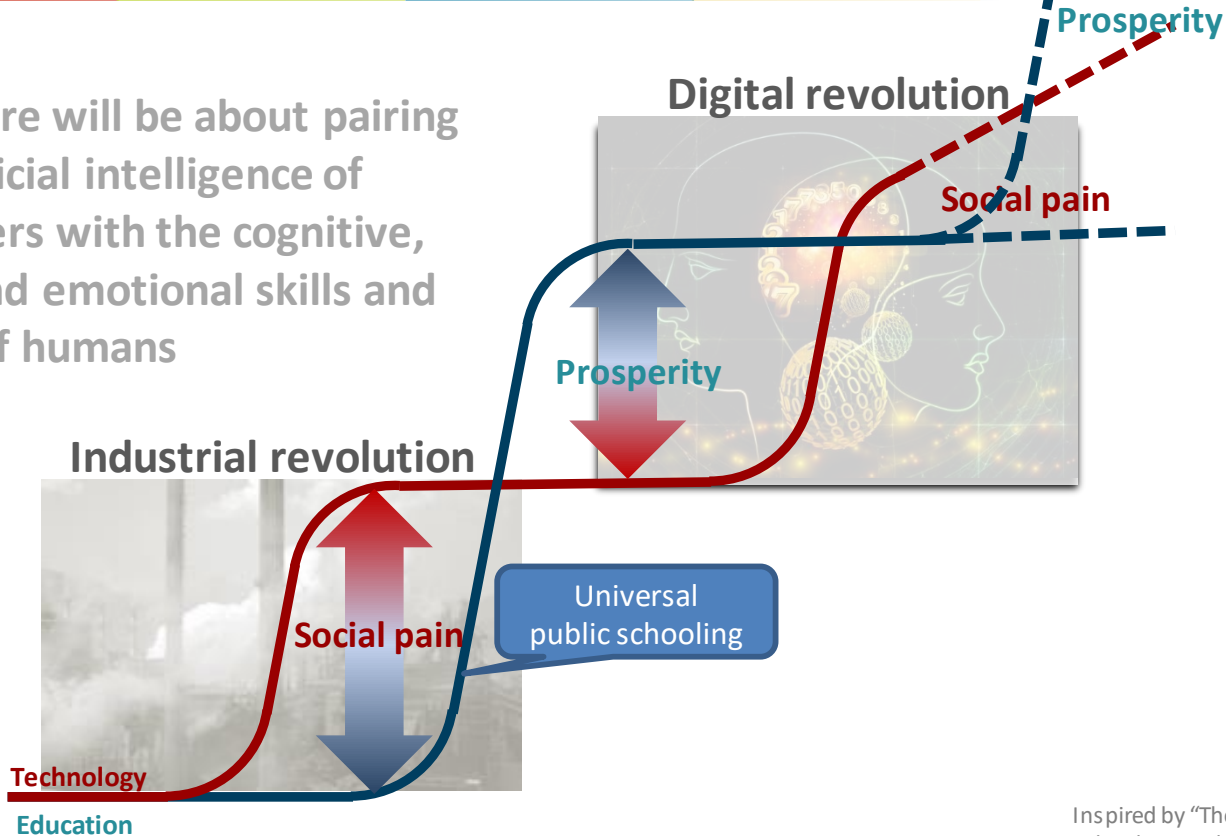


Skills to manage complex digital information



Education won the race with **technology** throughout history, but there is no automaticity it will do so in the future

The future will be about pairing the artificial intelligence of computers with the cognitive, social and emotional skills and values of humans



Inspired by "The race between technology and education"
Pr. Goldin & Katz (Harvard)



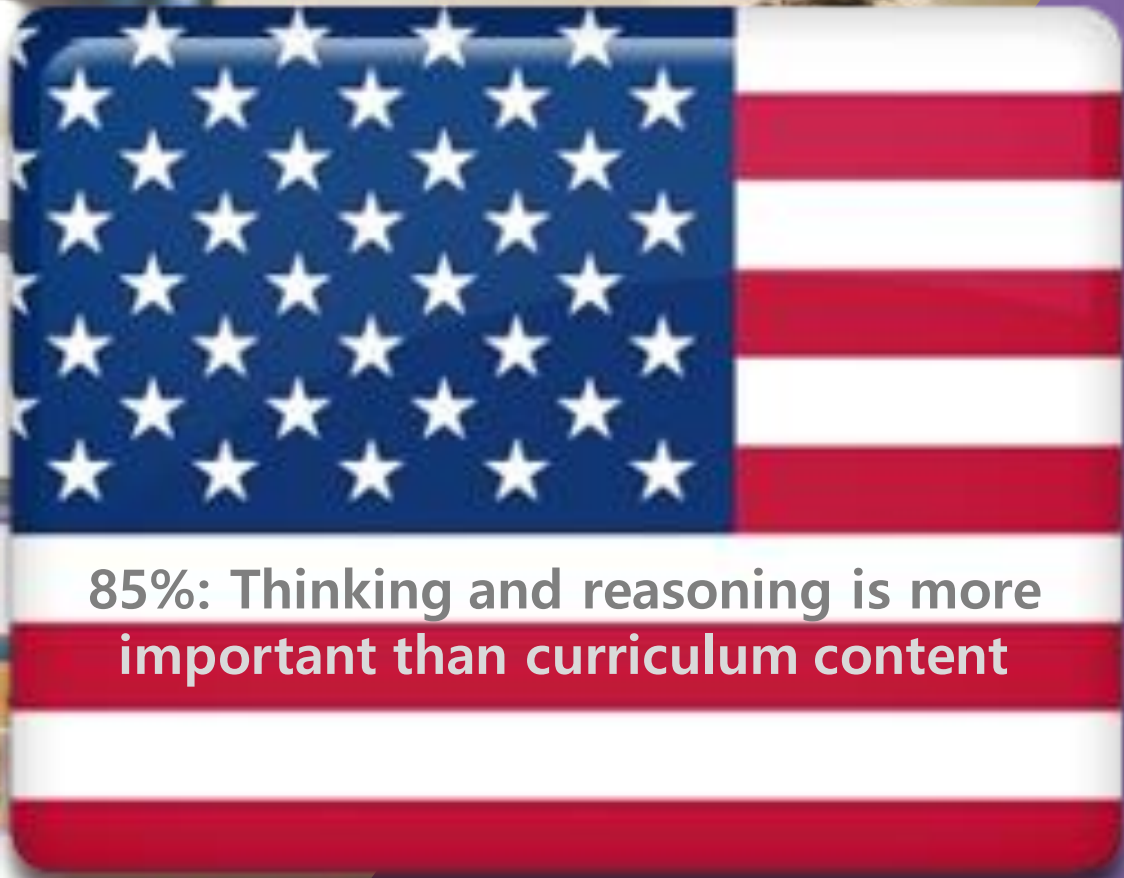
**What teachers say
and what teachers do**



95% of teachers: My role as a teacher is to facilitate students own inquiry



**82%: Students learn best
by findings solutions on their own**



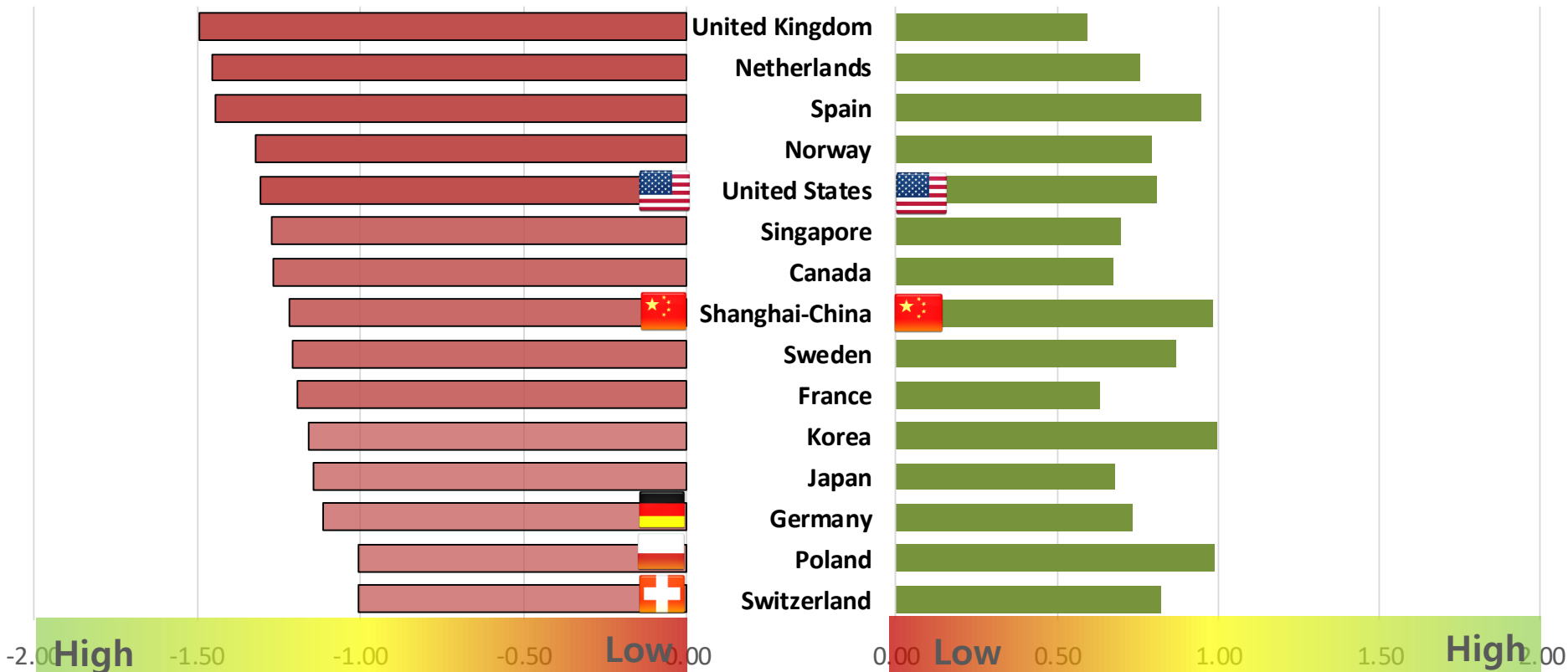
85%: Thinking and reasoning is more important than curriculum content

Prevalence of **memorisation**

rehearsal, routine exercises, drill and practice and/or repetition

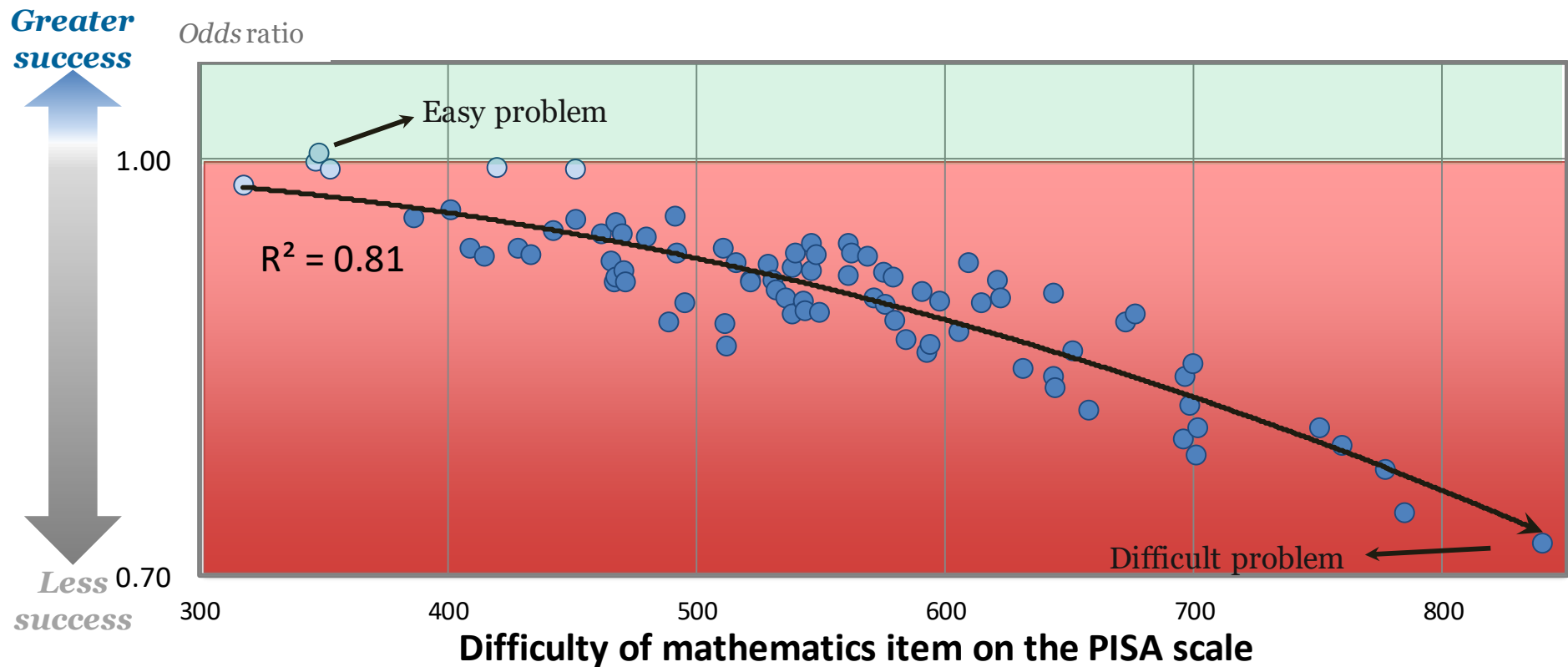
Prevalence of **elaboration**

reasoning, deep learning, intrinsic motivation, critical thinking, creativity, non-routine problems

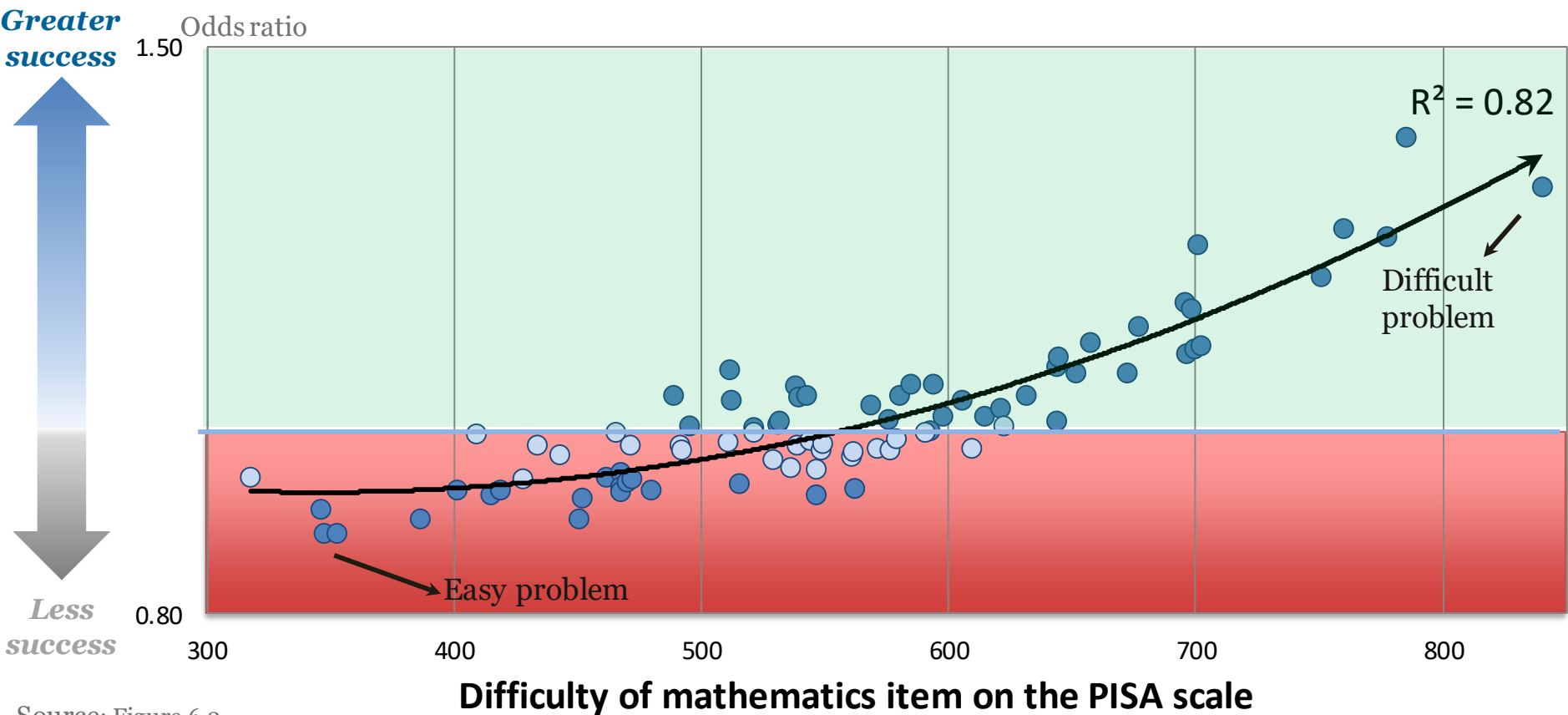


Memorisation is less useful as problems become more difficult

(OECD average)



Elaboration strategies are more useful as problems become more difficult (*OECD average*)



Some lessons from high performers

- Rigor, focus and coherence
- Remain true to the disciplines
 - but aim at interdisciplinary learning and the capacity of students to see problems through multiple lenses
 - Balance knowledge of disciplines and knowledge about disciplines
- Focus on areas with the highest transfer value
 - Requiring a theory of action for how this transfer value occurs
- Authenticity
 - Thematic, problem-based, project-based, co-creation in conversation
- Some things are caught not taught
 - Immersive learning propositions

A woman with blonde hair in a ponytail, wearing a pink cardigan and white top, sits at a desk in a large, empty classroom. She is looking down with a thoughtful or somber expression. The room is filled with rows of wooden desks and blue chairs, all of which are empty except for her. The lighting is warm and slightly dim, creating a contemplative atmosphere.

The past was divided

Teachers and content divided by subjects and student destinations

Schools designed to keep students inside, and the rest of the world outside



The future is integrated

Integrated: Emphasising integration of subjects, integration of students and integration of learning contexts

Connected: with real-world contexts, and permeable to the rich resources in the community

Less subject-based, more project-based

A man in a light-colored suit jacket and blue shirt is leaning over a table, pointing at a tablet with his right hand. A woman with long dark hair, wearing a light-colored blouse with a bow at the neck, is sitting at the table looking at the tablet. On the table, there is a laptop and a glass of water. The background is a bright, out-of-focus office or meeting room. The entire image has a warm, reddish-orange tint.

Prescription



Ownership of professional practice

Powerful learning environments are constantly creating synergies and finding new ways to enhance professional, social and cultural capital with others. They do that with families and communities, with higher education, with other schools and learning environments, and with businesses.

Making teaching not just financially, but intellectually more attractive



Policy levers to teacher professionalism

Autonomy: Teachers' decision-making power over their work (teaching content, course offerings, discipline practices)

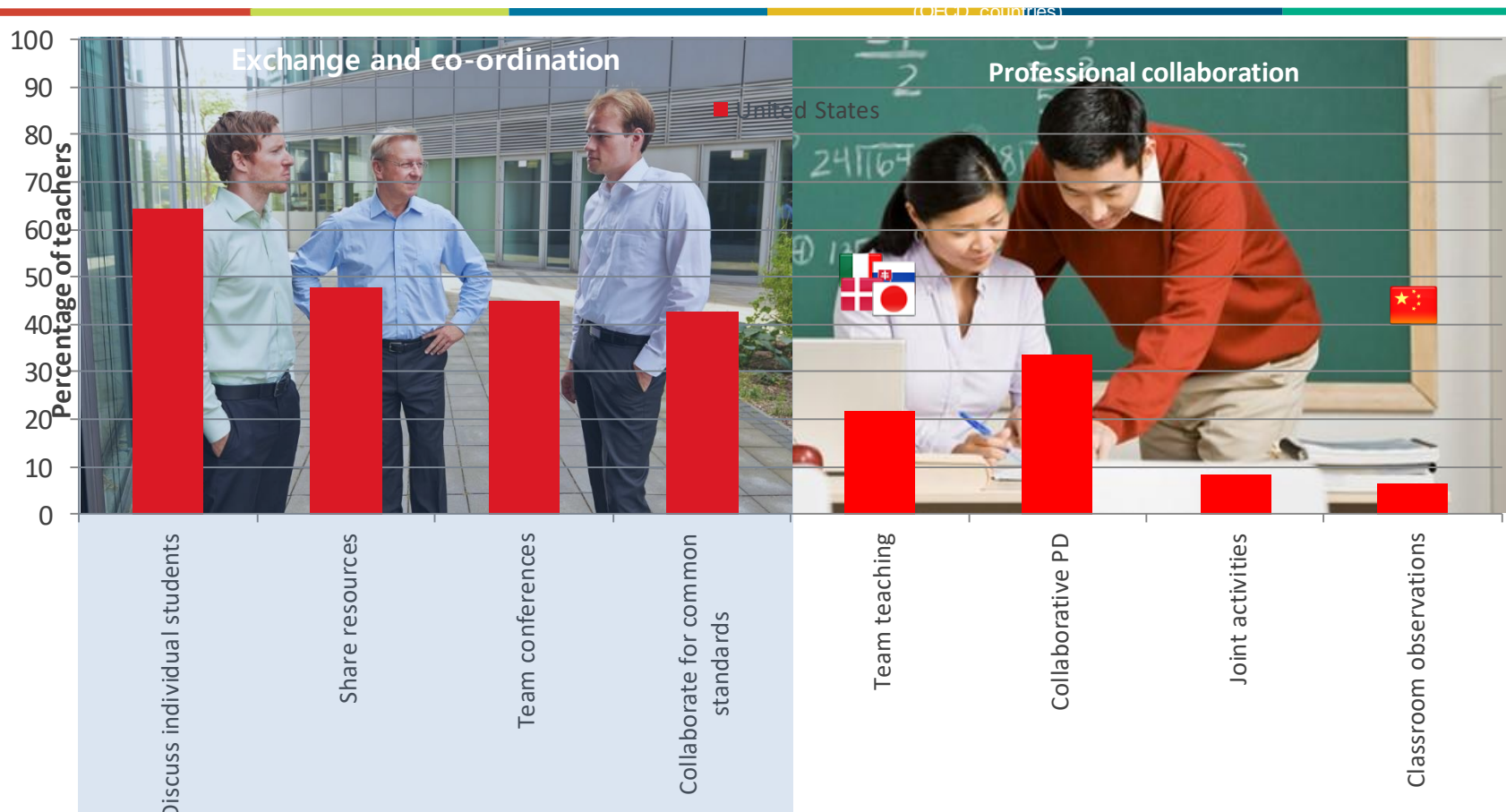
**Teacher
professionalism**

Peer networks: Opportunities for exchange and support needed to maintain high standards of teaching (participation in induction, mentoring, networks, feedback from direct observations)

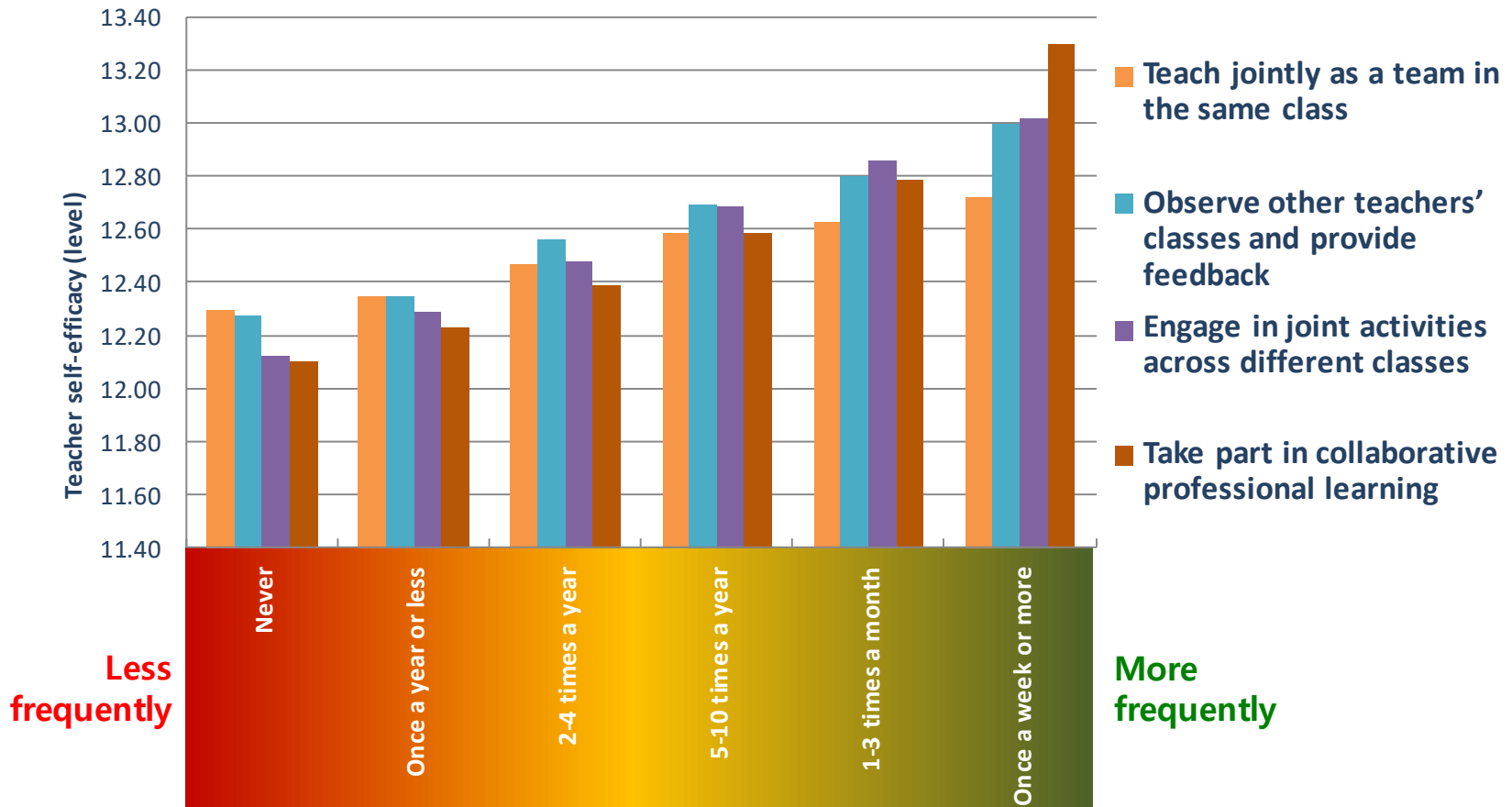
Knowledge base for teaching (initial education and incentives for professional development)

Teacher professional collaboration

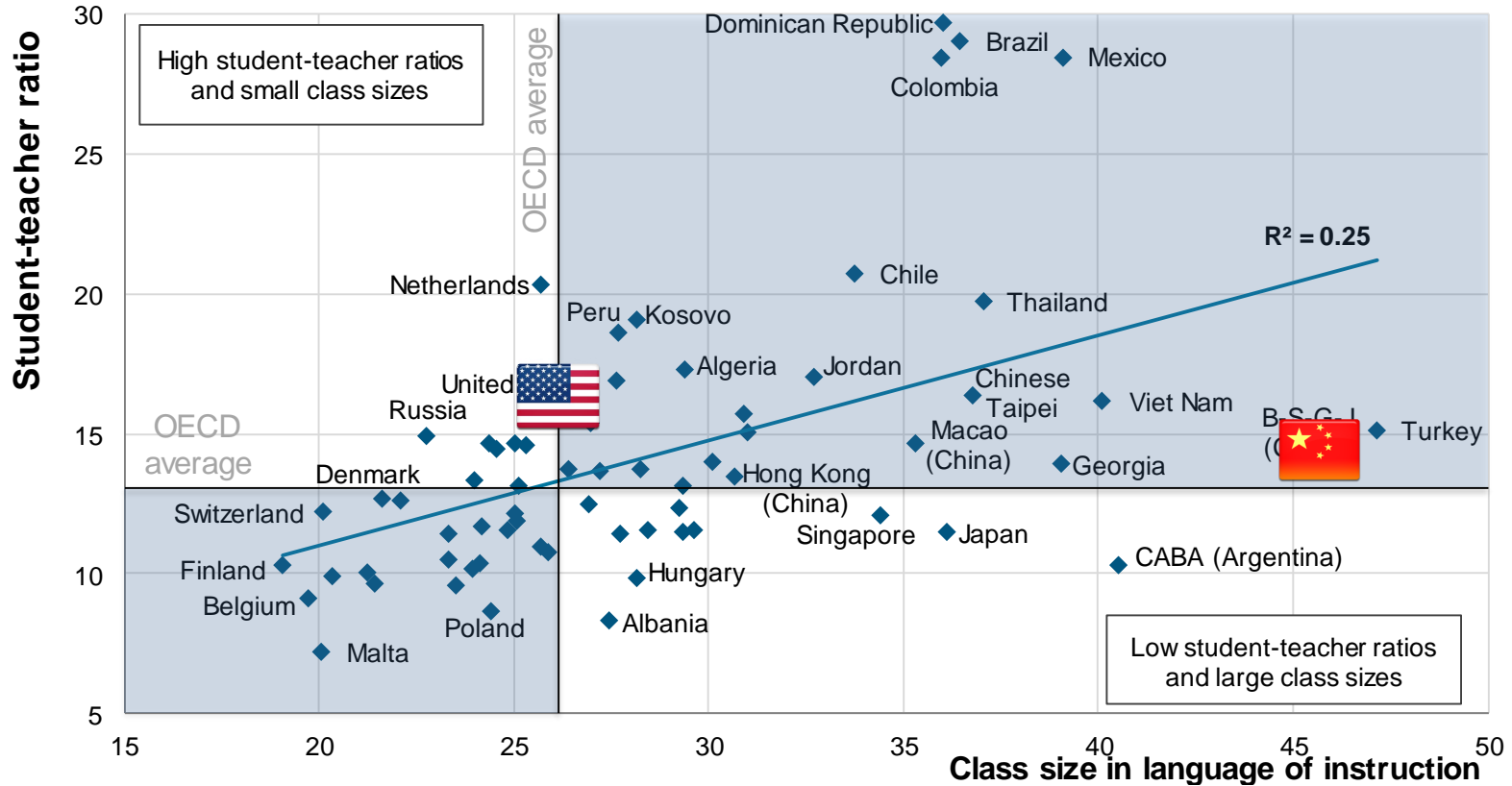
Percentage of lower secondary teachers who report doing the following activities at least once per month



Teachers' self-efficacy and professional collaboration

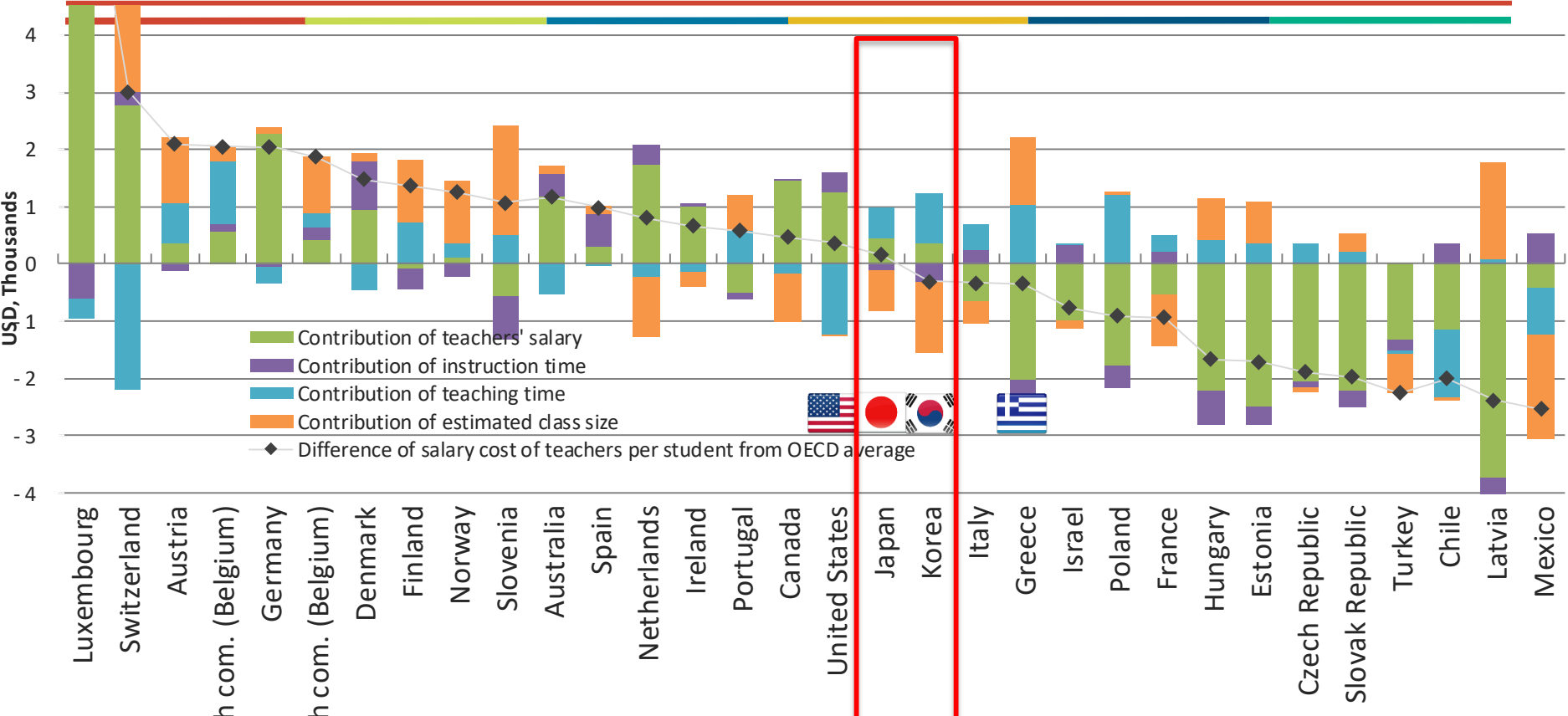


Student-teacher ratios and class size

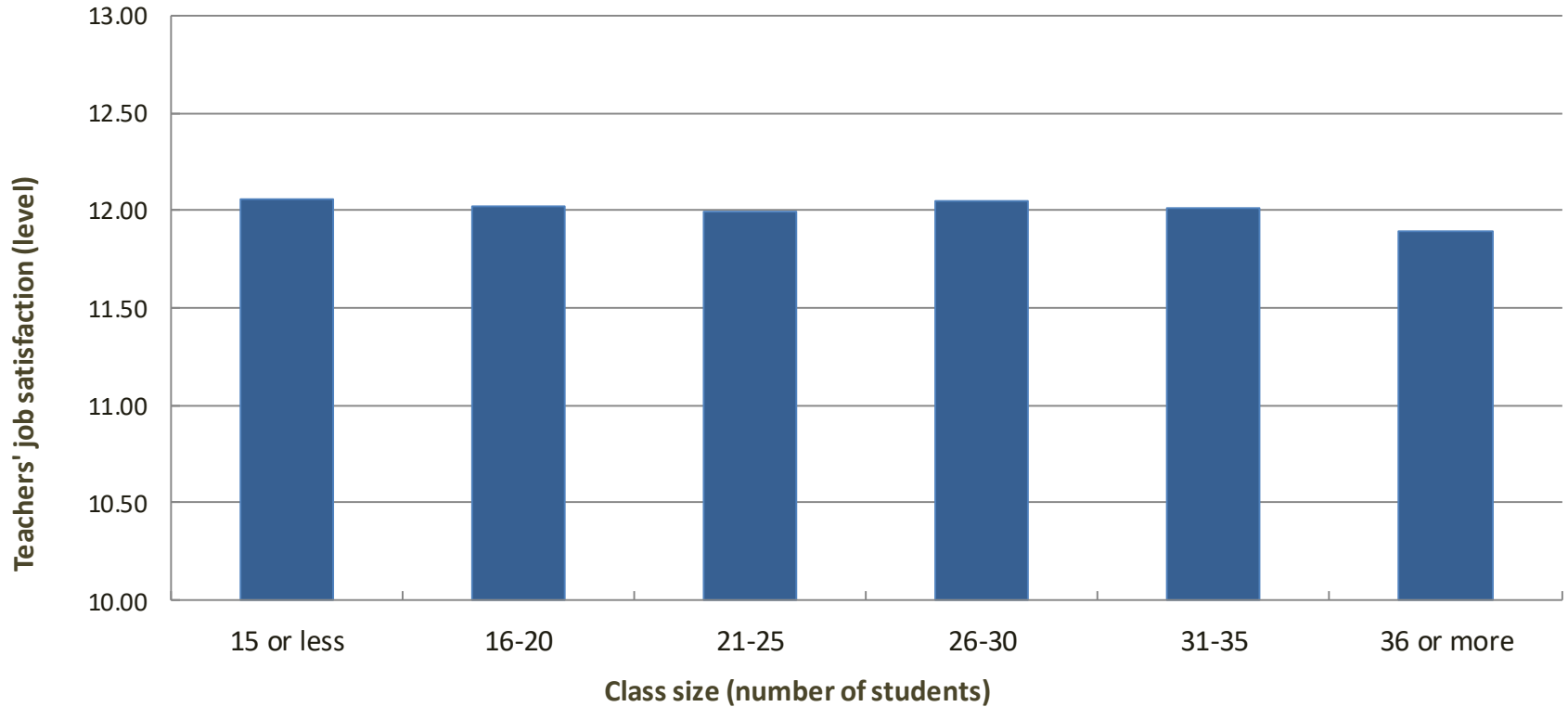


Countries spend their money differently

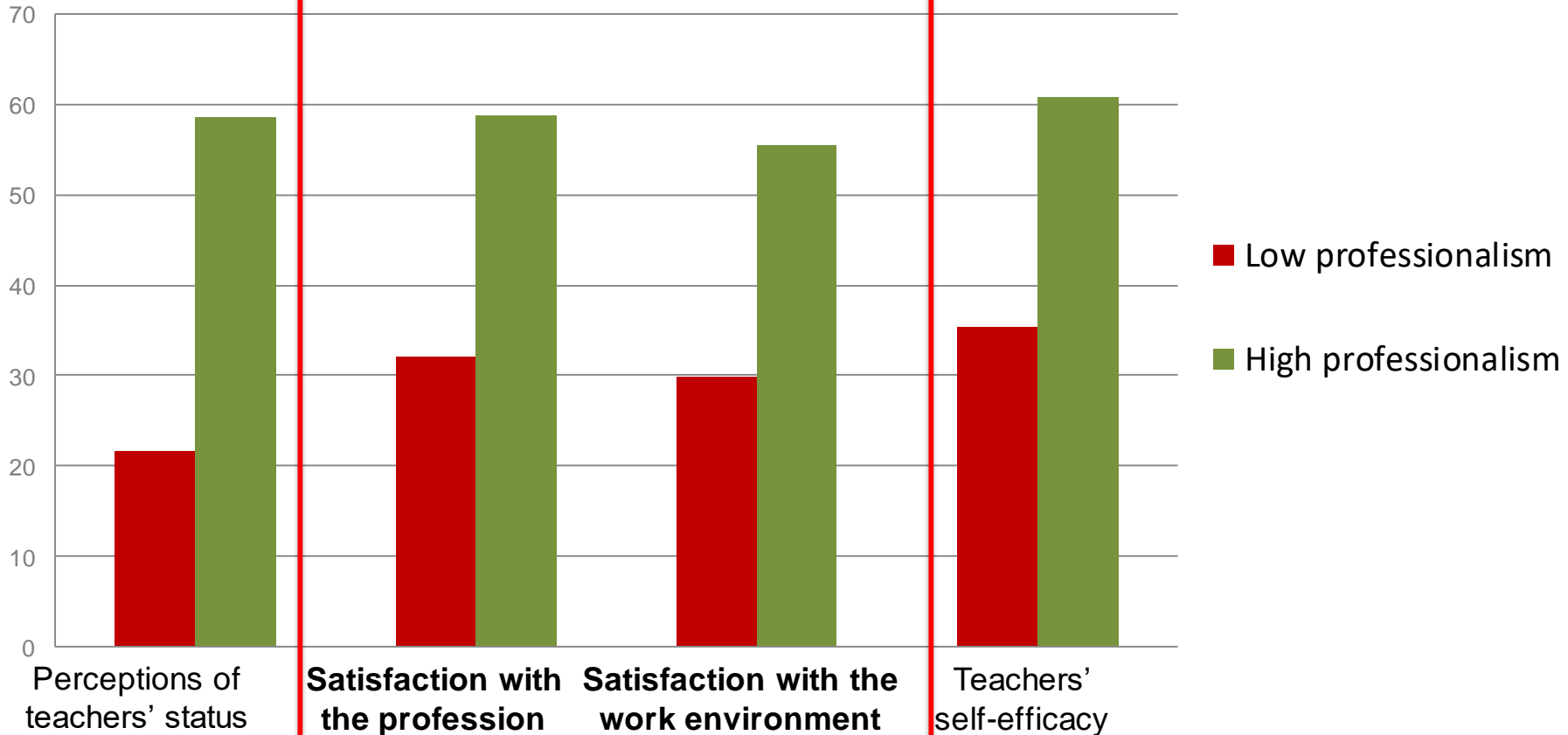
Contribution of various factors to salary cost of teachers per student in public institutions, lower secondary education (2015)



Teachers' job satisfaction and class size

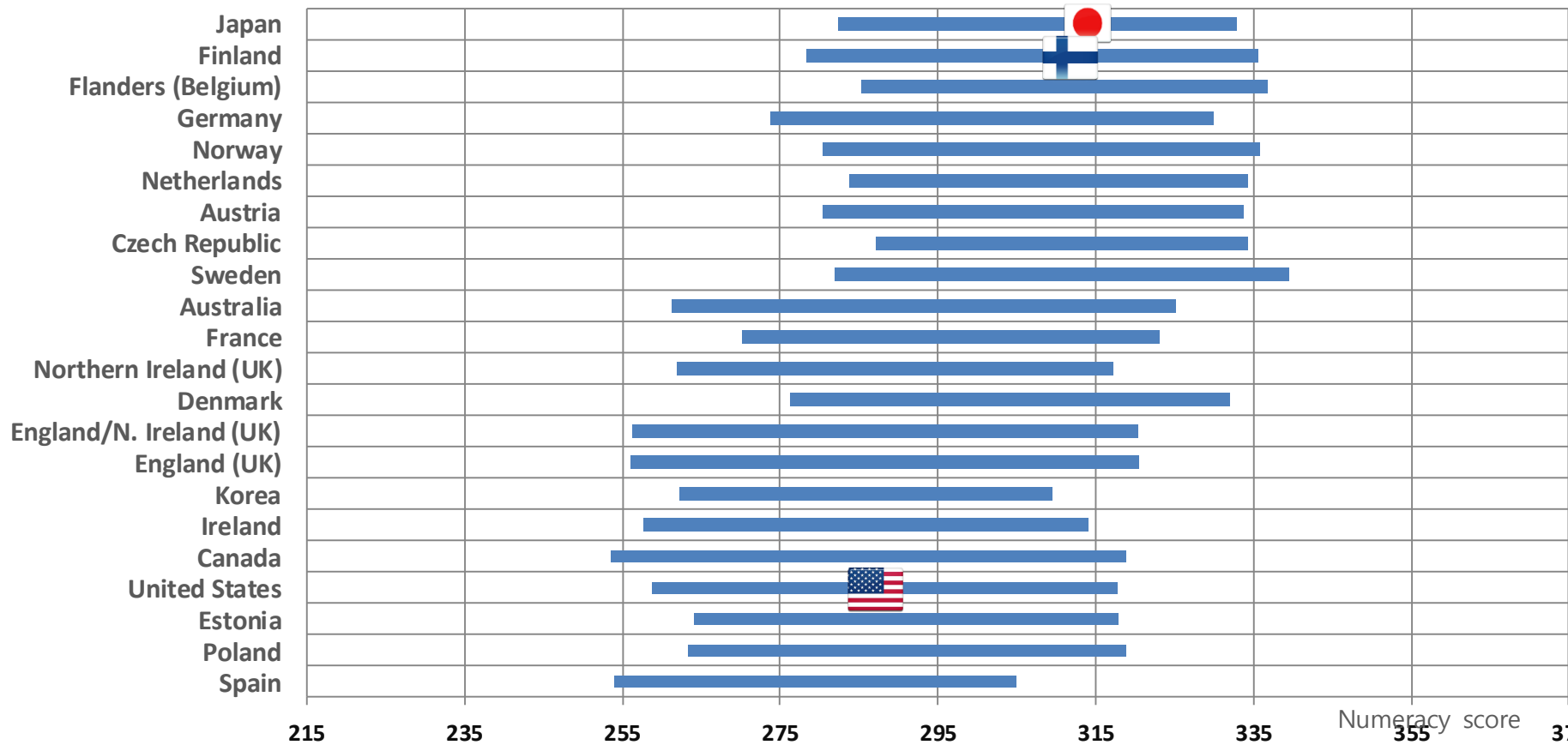


Teacher job satisfaction and professionalism



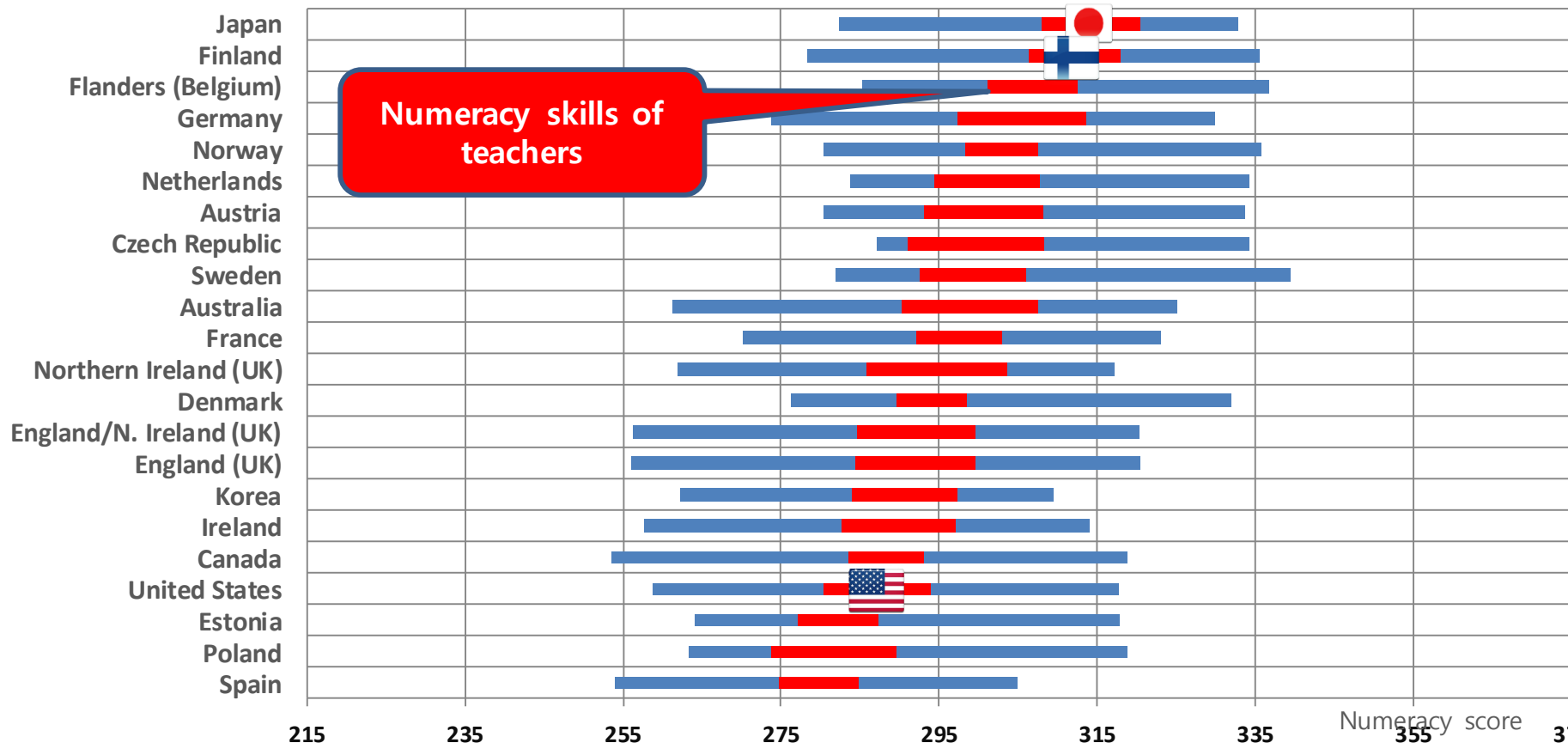
Teachers' skills

Numeracy test scores of tertiary graduates and teachers

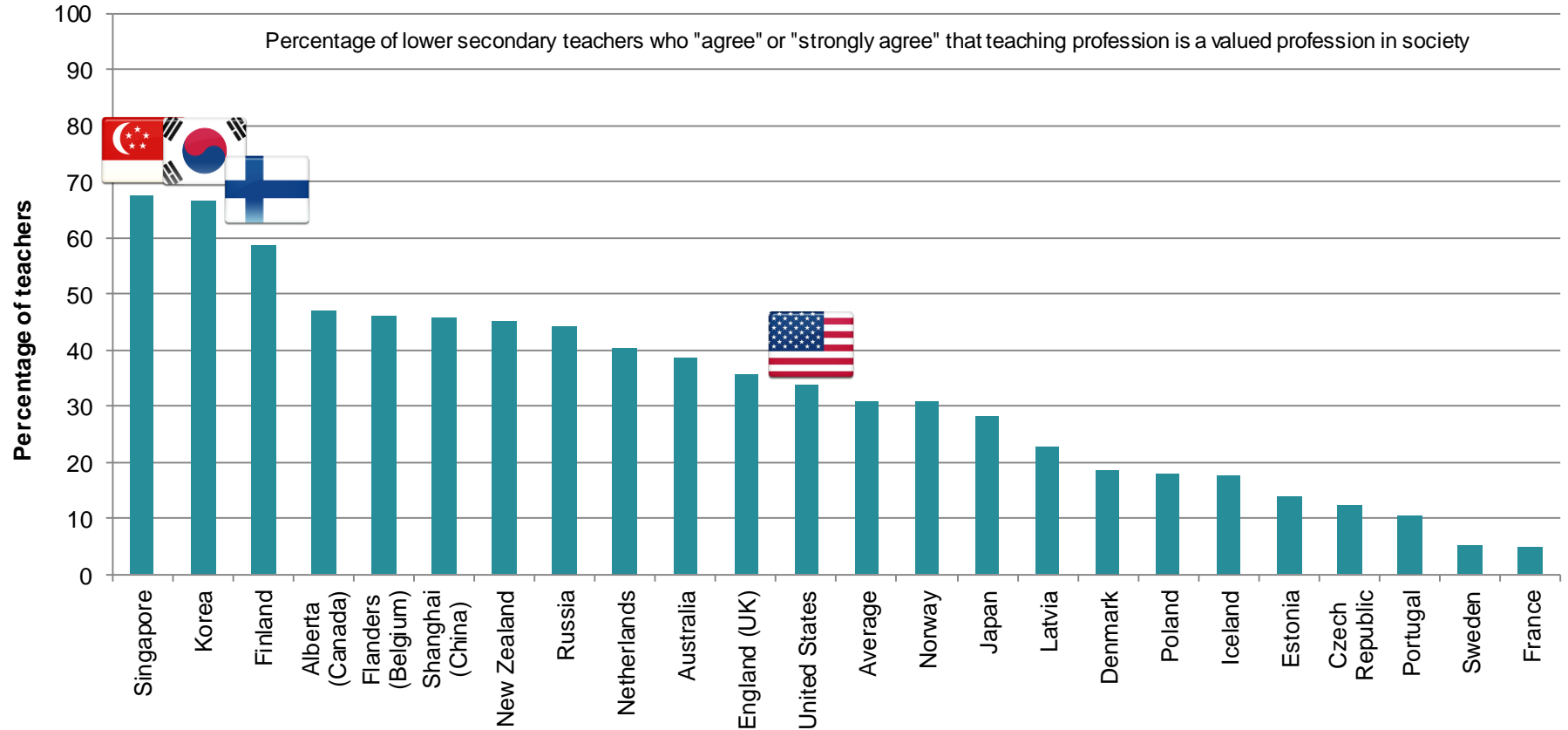


Teachers' skills

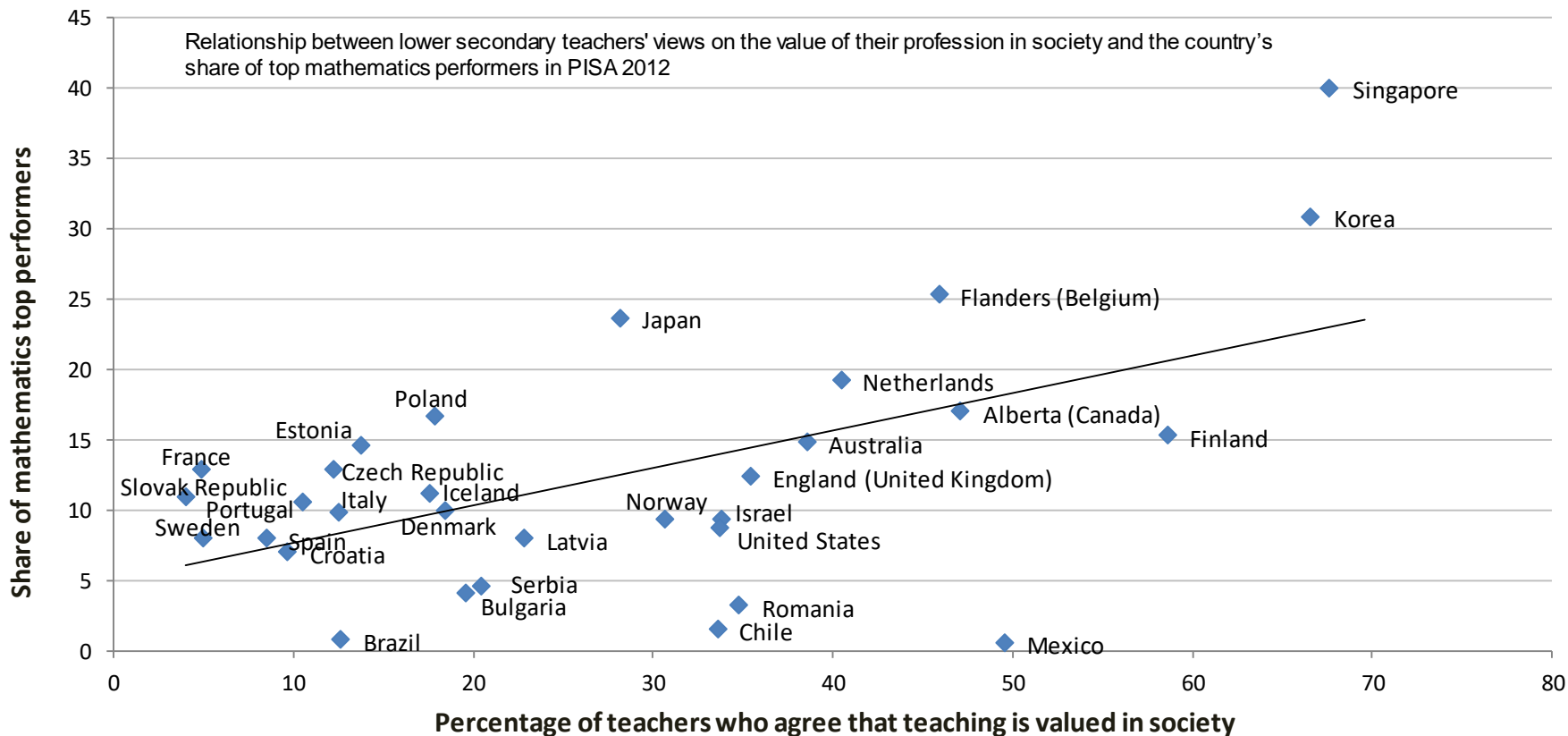
Numeracy test scores of tertiary graduates and teachers



Teachers perception of the value of teaching



Countries where teachers believe their profession is valued show higher levels of excellence in learning outcomes (PISA)



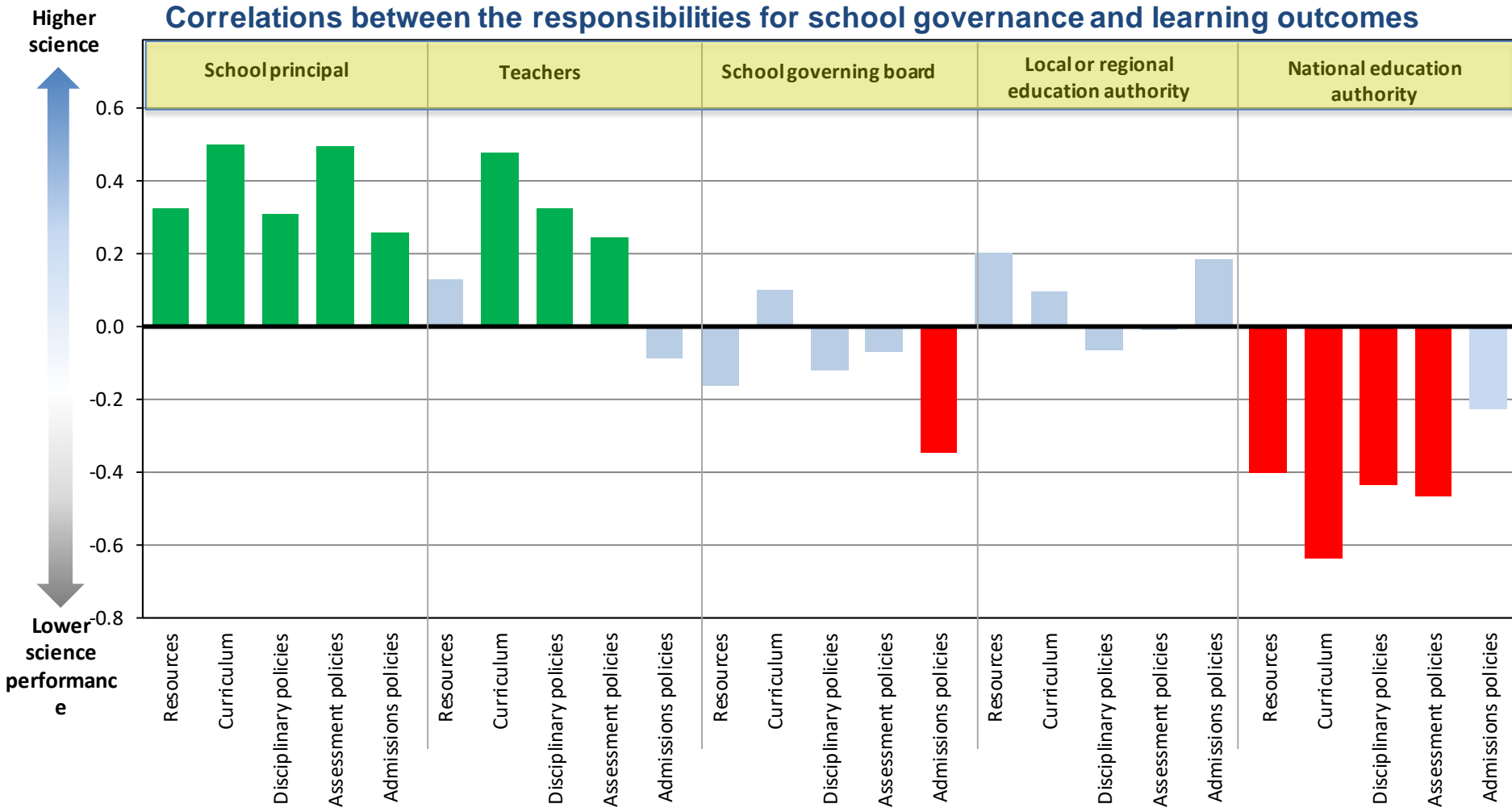
A person in a dark suit and tie is shown from the chest up, holding a wooden gavel and a stack of three books. The books have a textured cover with vertical lines. The background is a blurred cityscape at sunset or sunrise, with a warm orange and red color palette. The text "Bureaucratic Look-up" is overlaid in white, bold, sans-serif font across the center of the image.

Bureaucratic Look-up

A photograph of three business professionals (two men and one woman) sitting around a white conference table in a bright office setting. The man on the left is wearing a dark suit and a patterned tie, smiling and looking towards the camera. The woman in the center is wearing a white blazer over a black top, smiling and looking towards the camera. The man on the right is wearing a dark suit and a striped tie, smiling and looking towards the camera. They are all looking towards the camera. The table in front of them has several documents, a laptop, and a pen. The background is a blurred office space with large windows. The entire image has a green color overlay.

Devolved Look-outward

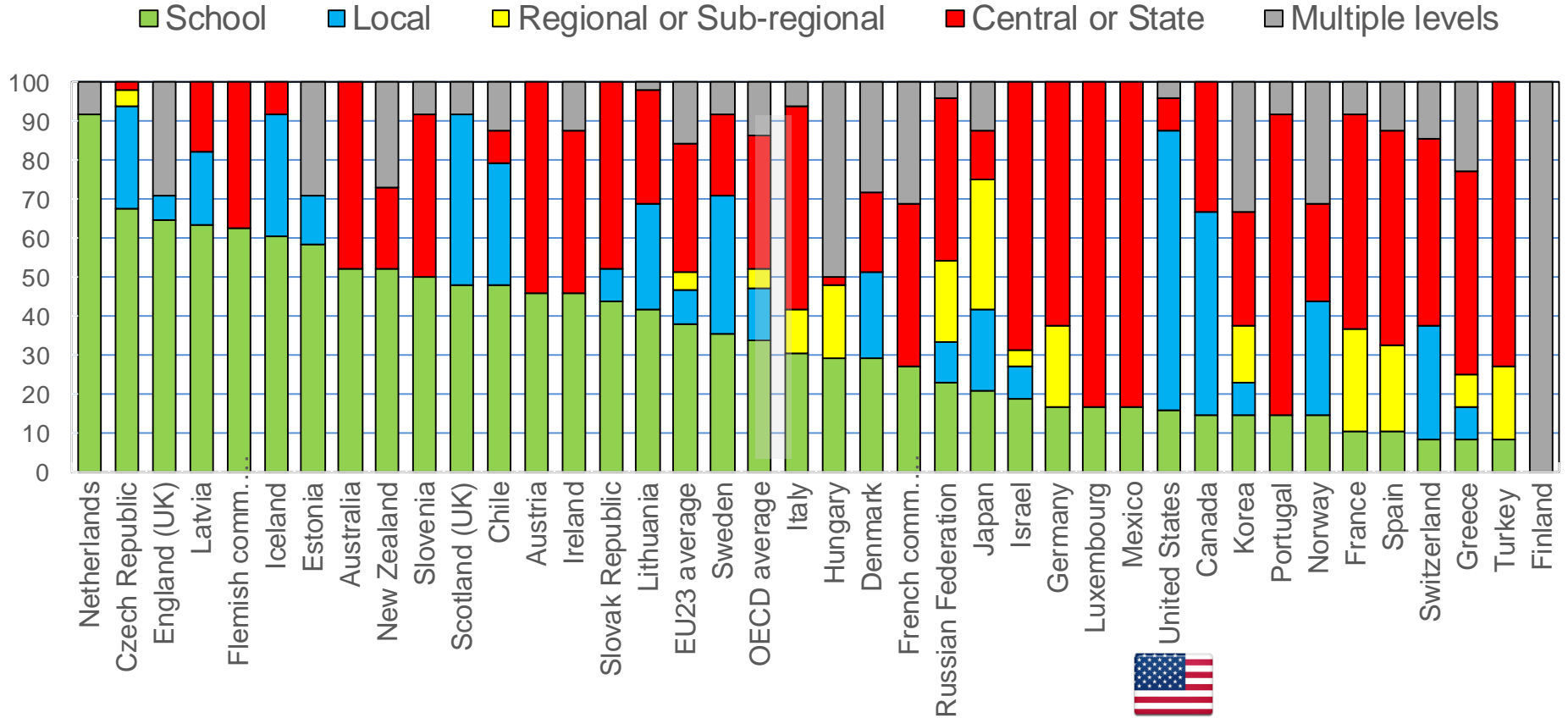
Correlations between the responsibilities for school governance and learning outcomes



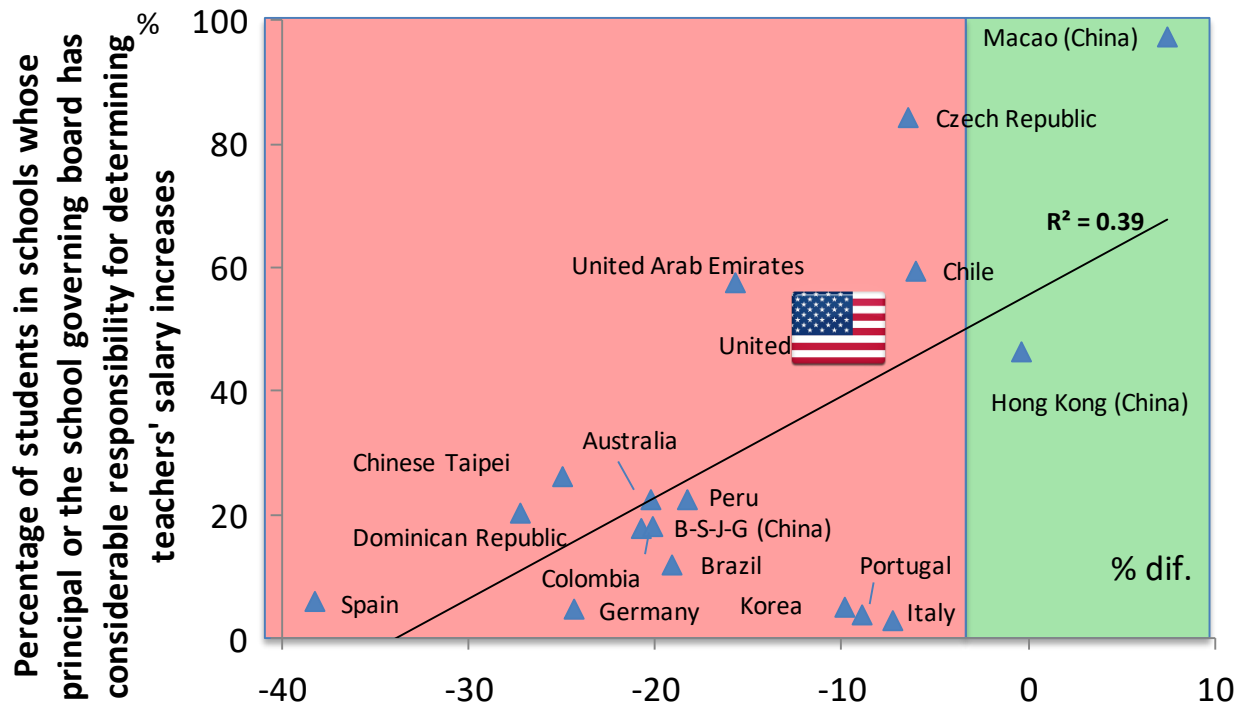
Source: OECD, PISA 2015 Database.

Who decides?

Percentage of decisions taken at each level of government in public lower secondary education (2017)

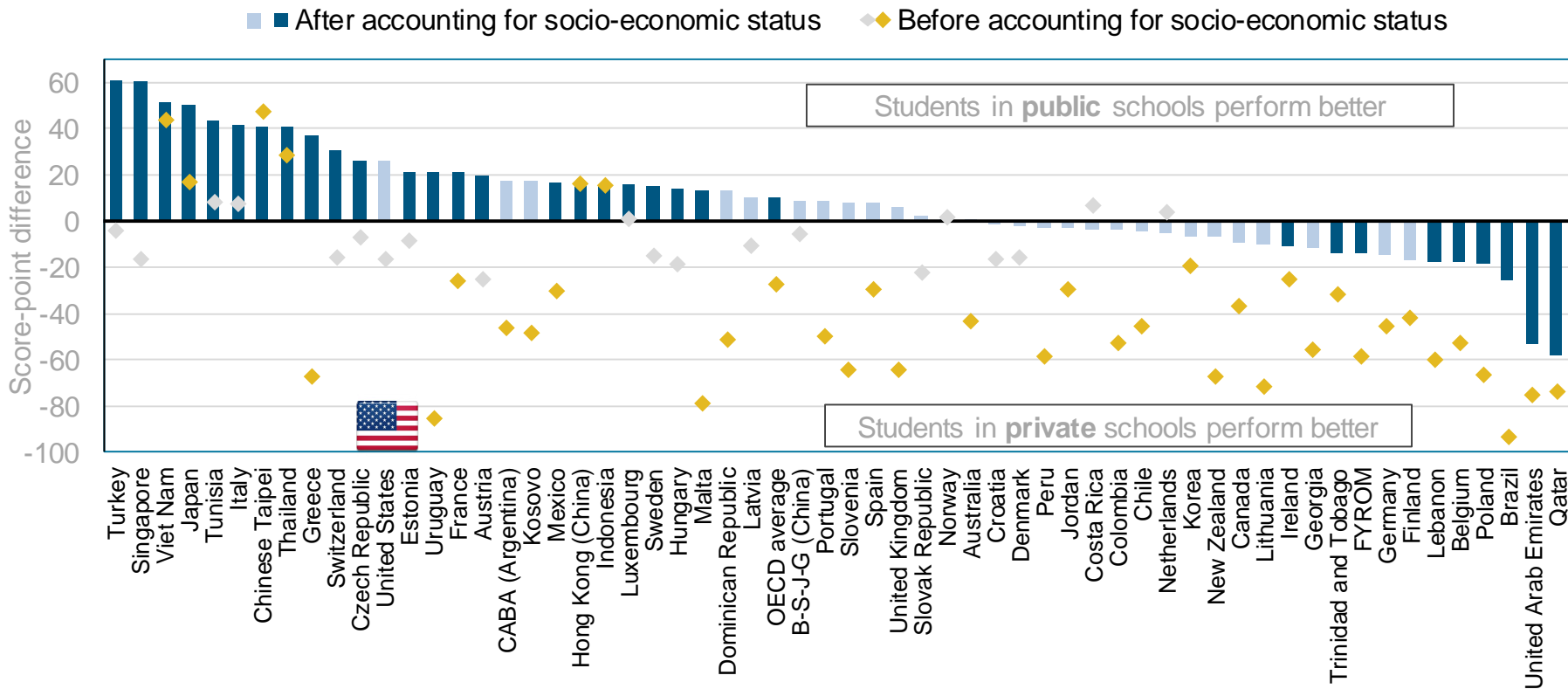


School autonomy and equity

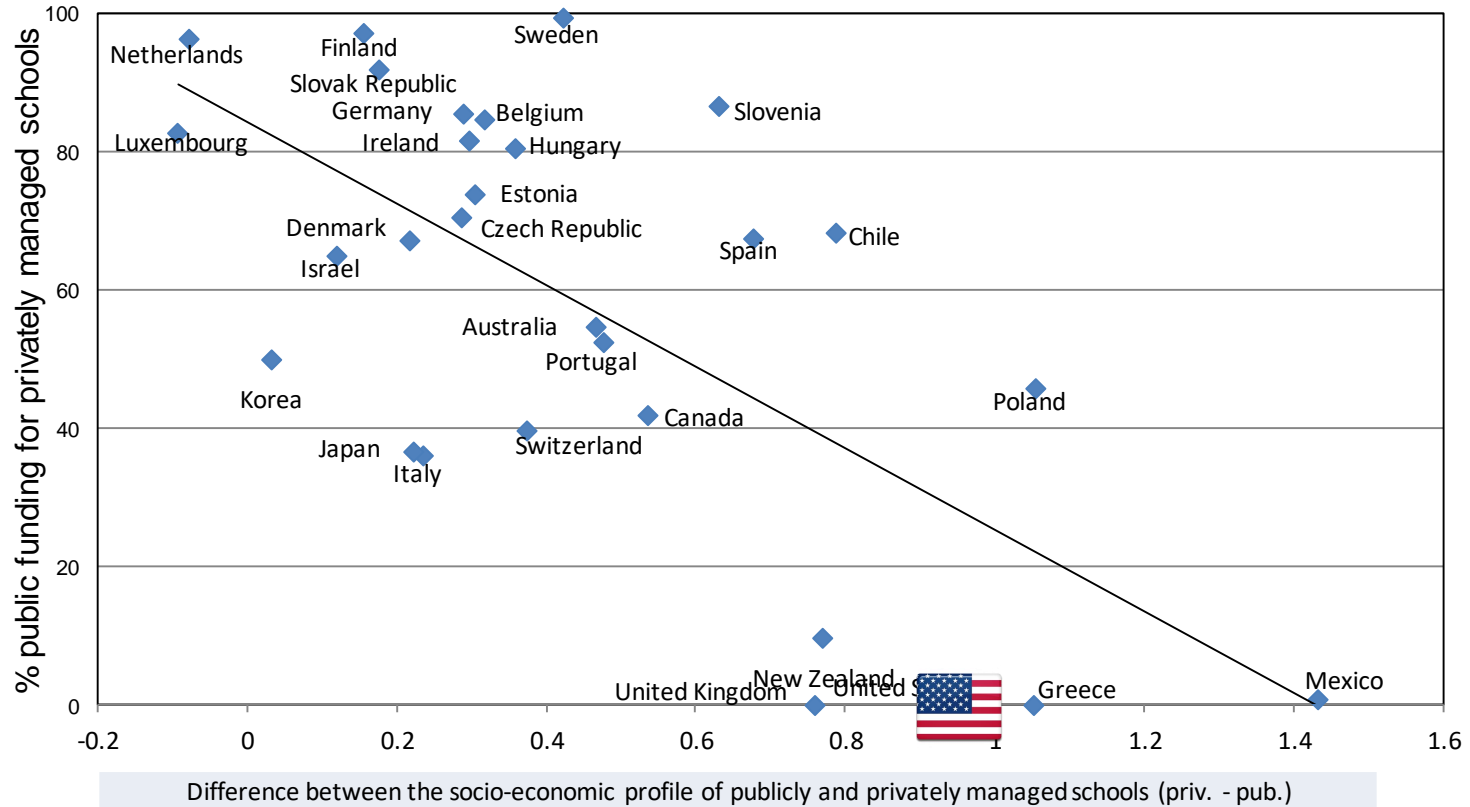


Where school responsibility for hiring teachers and setting salaries is greater, teacher allocation tends to be more equitable

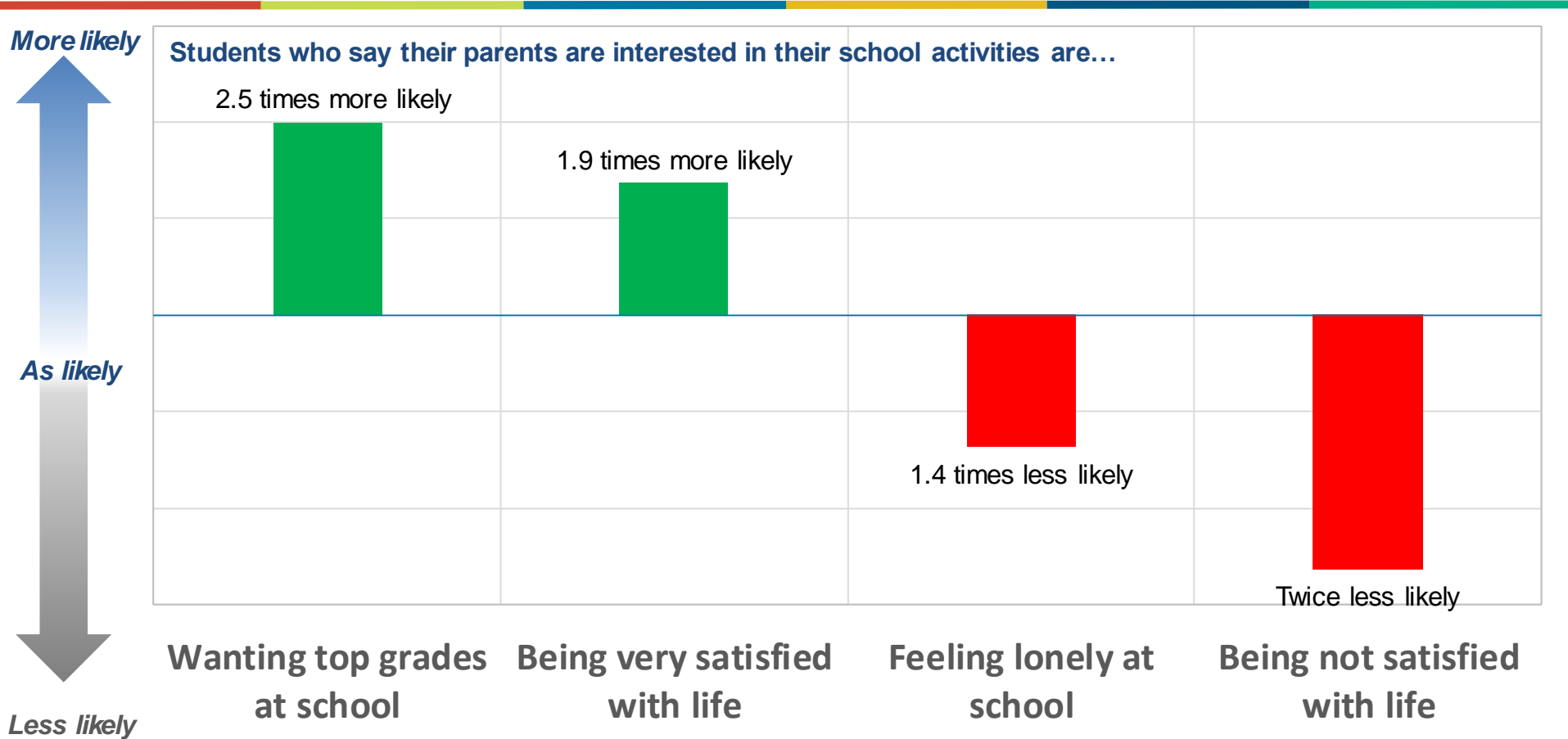
Science performance in public and private schools



Countries that invest more public funds in privately managed schools tend to have less of a difference between the socio-economic profiles of publicly and privately managed schools



Parents' interest in their child's activities at school and well-being (average)



A hand in a white shirt sleeve points from the right towards a row of ten wooden blocks of varying heights on the left. The background is a solid light red color. The title 'Standardisation and Conformity' is overlaid in white text on the blocks.

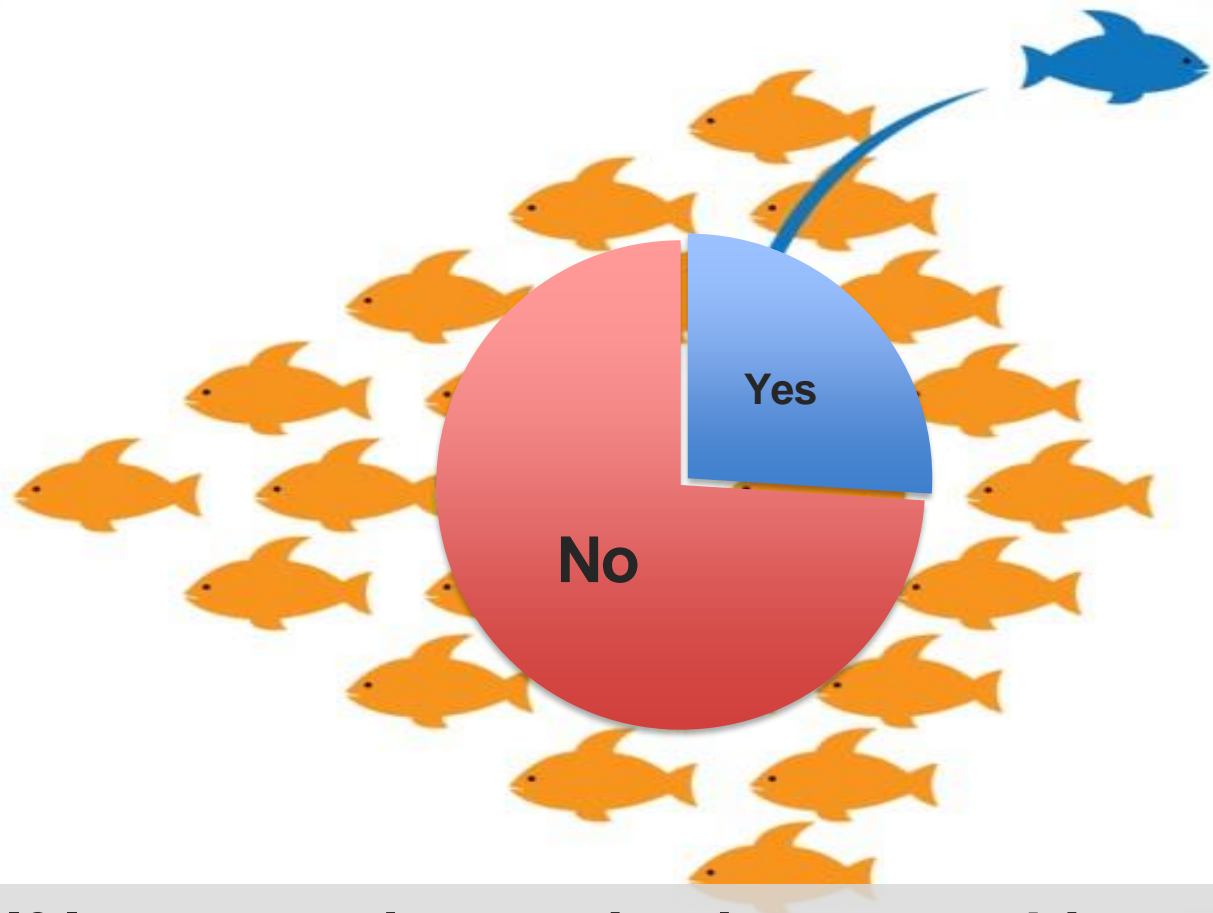
Standardisation and Conformity

Standardisation and compliance lead students to be educated in batches of age, following the same standard curriculum, all assessed at the same time.

A photograph of a man with a beard and a young child in a plaid shirt, both smiling and looking upwards. They are standing under a tree with green leaves and several red apples hanging from the branches. The child's right arm is raised towards the sky. The entire image has a soft green tint.

Ingenious

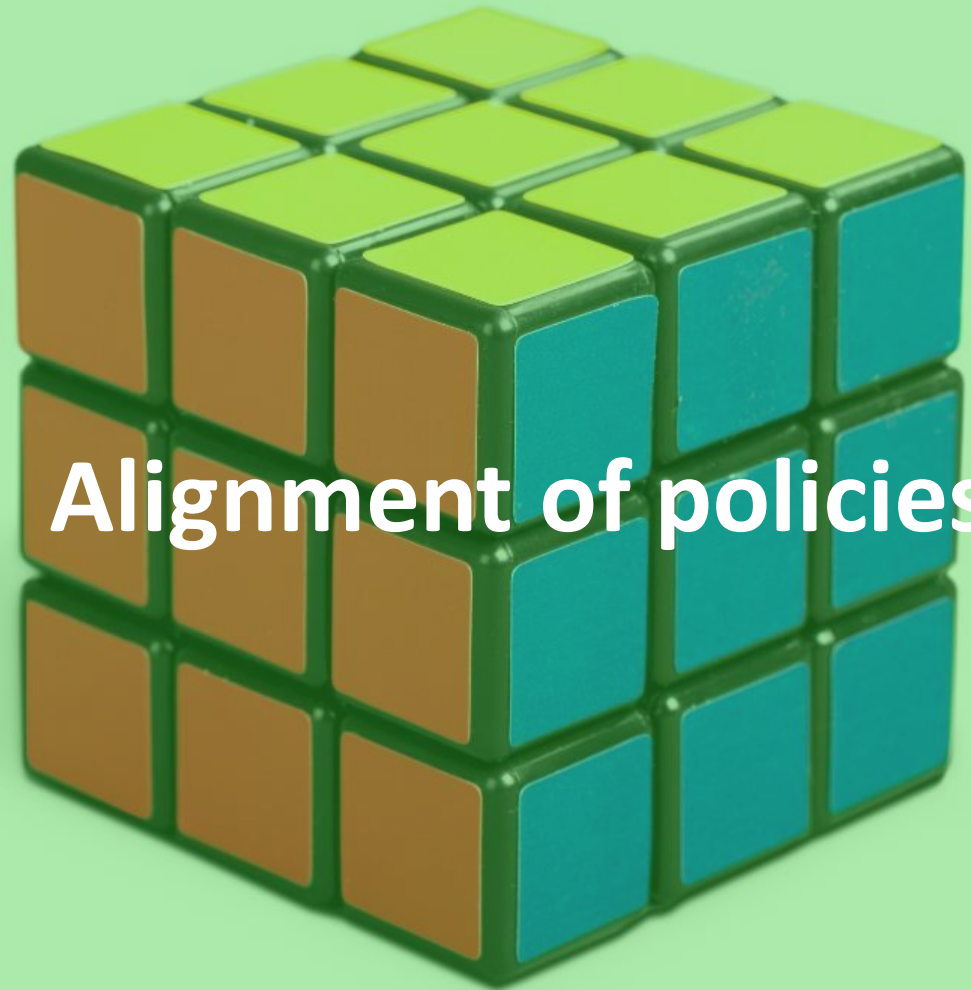
Building instruction from student passions and capacities, helping students personalise their learning and assessment in ways that foster engagement and talents.



**If I am more innovative in my teaching
I will be rewarded (country average)**



Ideosyncratic policy



Alignment of policies

Making reform happen

Knowledge is only as valuable as our capacity to act on it,
and the road of educational reform is littered with good
ideas that were poorly implemented

Making reform happen

Setting the direction

People are more likely to accept changes that are not solely in their own interests if they understand the reasons for these changes and can see the role they should play within the broad strategy.



Engaging the profession



Building capacity



Looking outward

Making reform happen

Setting the direction

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Engaging the profession

Educational leaders are rarely successful with reform unless they build a shared understanding and collective ownership for change, and unless they build capacity and create the right policy climate, with accountability measures designed to encourage innovation rather than compliance

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Often the resource implications of reform are underestimated in scope, nature and timing. The main shortcoming is often not a lack of financial resources, but a dearth of human capacity at every level of the system.

Looking outward

Making reform happen

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Looking outward

School systems that feel threatened by alternative ways of thinking get trapped in old practice. The ones that progress are those that are open to the world and ready to learn from and with the world's education leaders.

oe.cd/WorldClass

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In conclusion

Andreas.Schleicher@OECD.org

Universal high quality education is an attainable goal, and our task is not to make the impossible possible, but to make the possible attainable. It is entirely within our means to deliver a future for millions of learners who currently don't have one

Thank you

Find out more about our work at www.oecd.org/pisa

- All publications
- The complete micro-level database

Email: Andreas.Schleicher@OECD.org

Twitter: [SchleicherOECD](https://twitter.com/SchleicherOECD)

Wechat: [AndreasSchleicher](#)

