Trends in Learning Outcomes

Andreas Schleicher, Jakarta, March 2017

PISA in brief - 2015

In 2015, over half a million students…

- representing 28 million 15-year-olds in 72 countries/economies

… took an internationally agreed 2-hour test…

- Goes beyond testing whether students can reproduce what they were taught to assess students' capacity to extrapolate from what they know and creatively apply their knowledge in novel situations
- Total of 390 minutes of assessment material

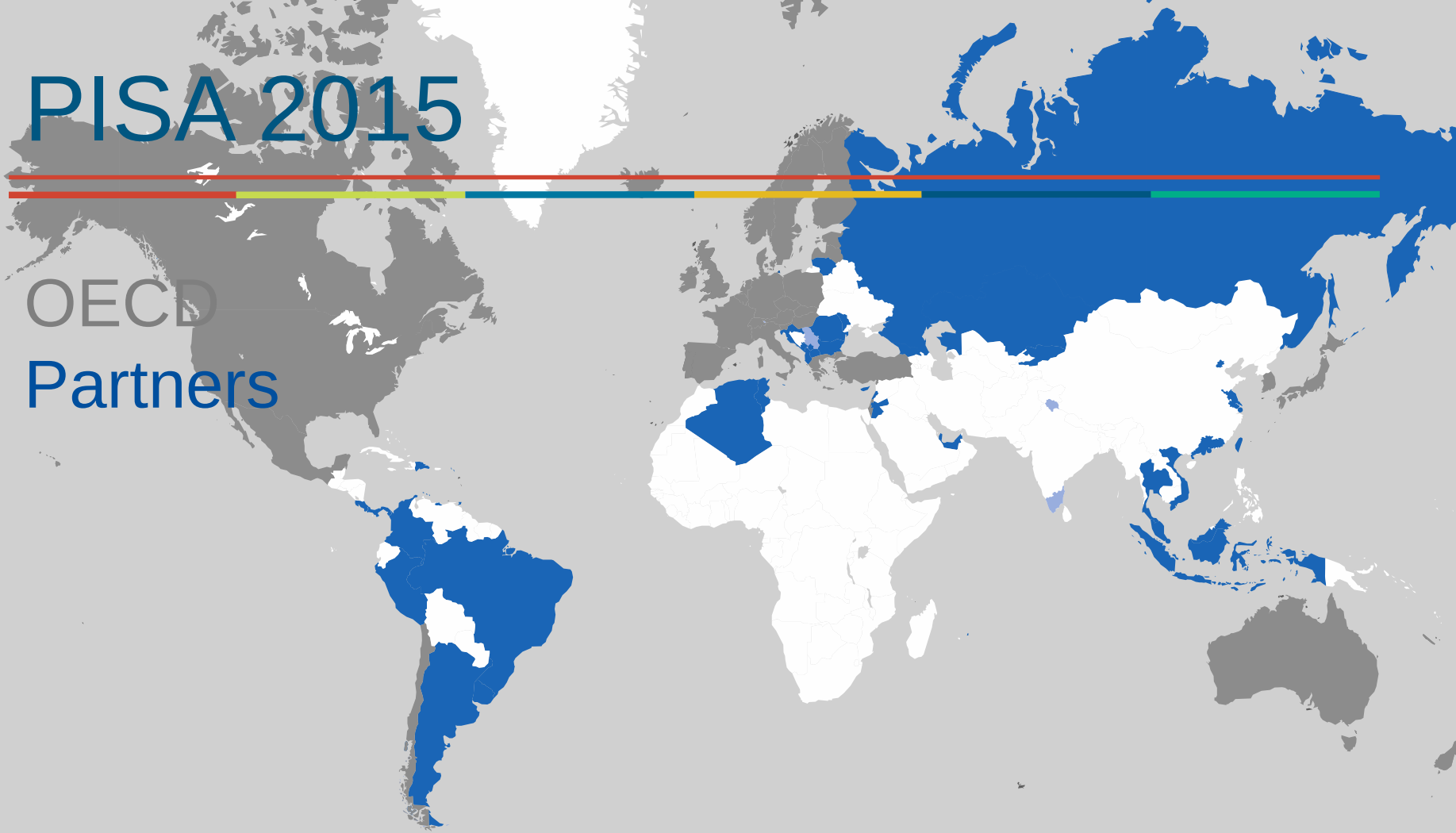
… and responded to questions on…

- their personal background, their schools, their well-being and their motivation

Parents, principals, teachers and system leaders provided data on:

- school policies, practices, resources and institutional factors that help explain performance differences
- 89,000 parents, 93,000 teachers and 17,500 principals responded

PISA 2015

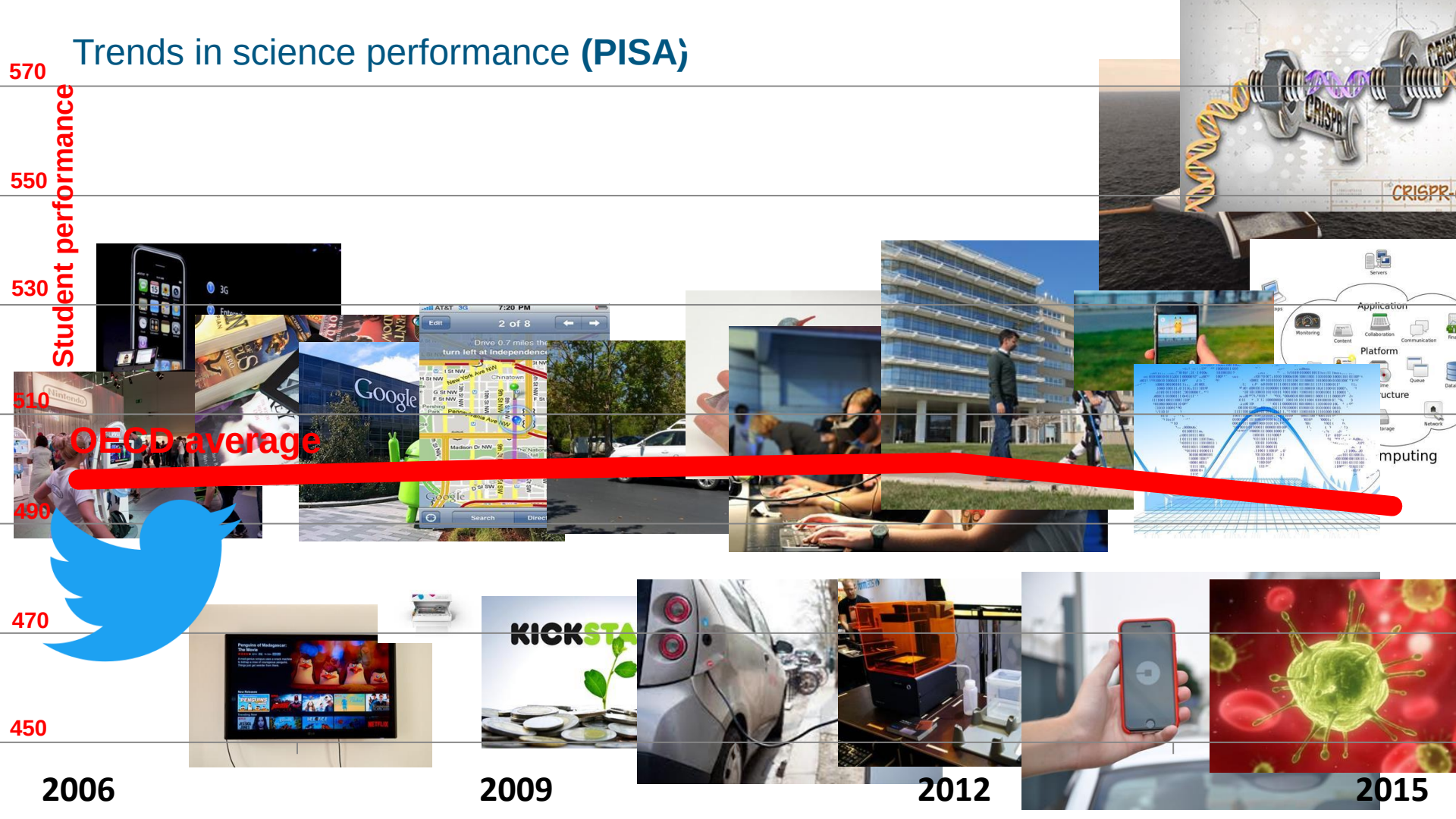


Trends in science performance **(PISA)**

Student performance

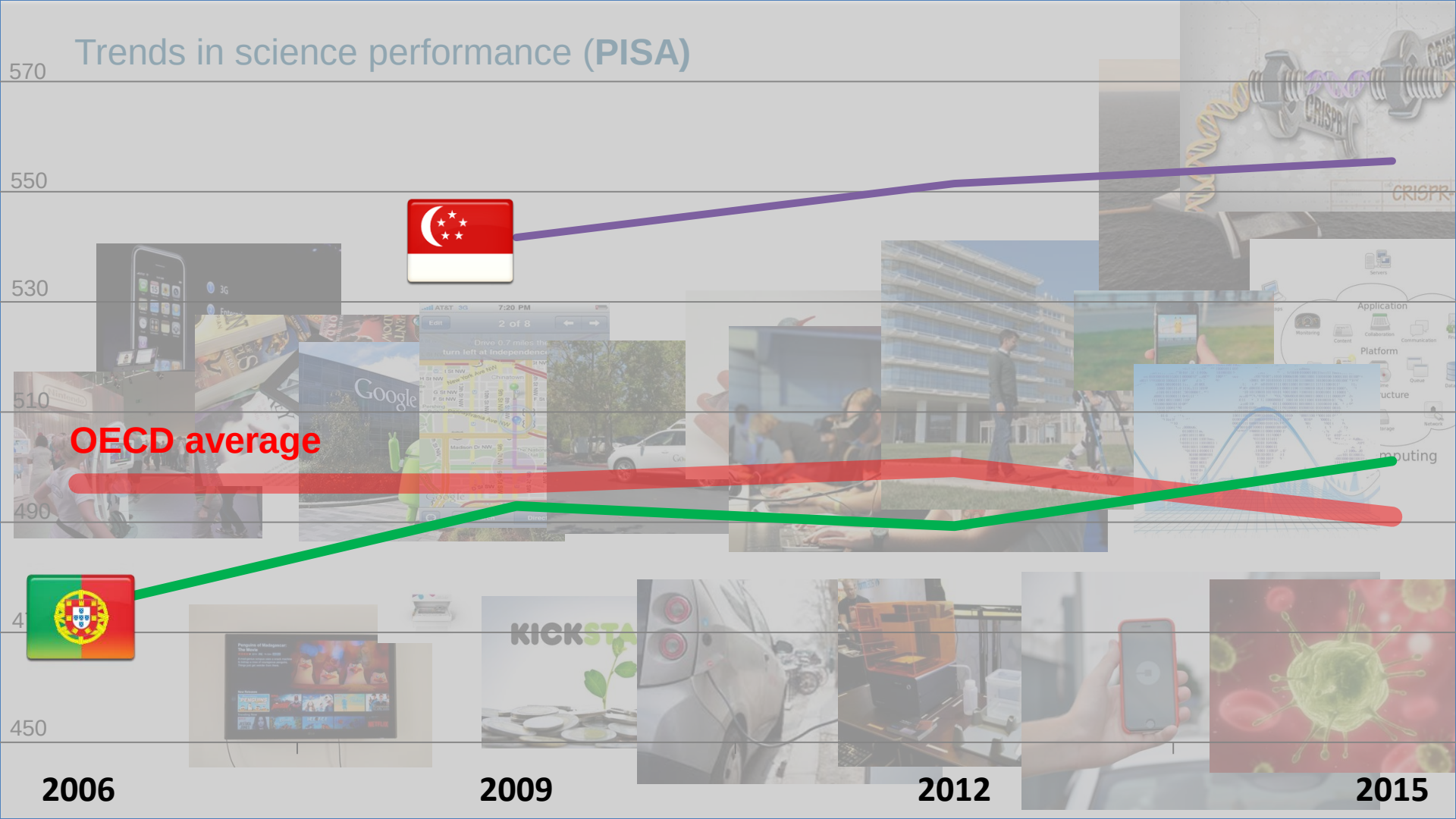
570
550
530
510
490
470
450

OECD average

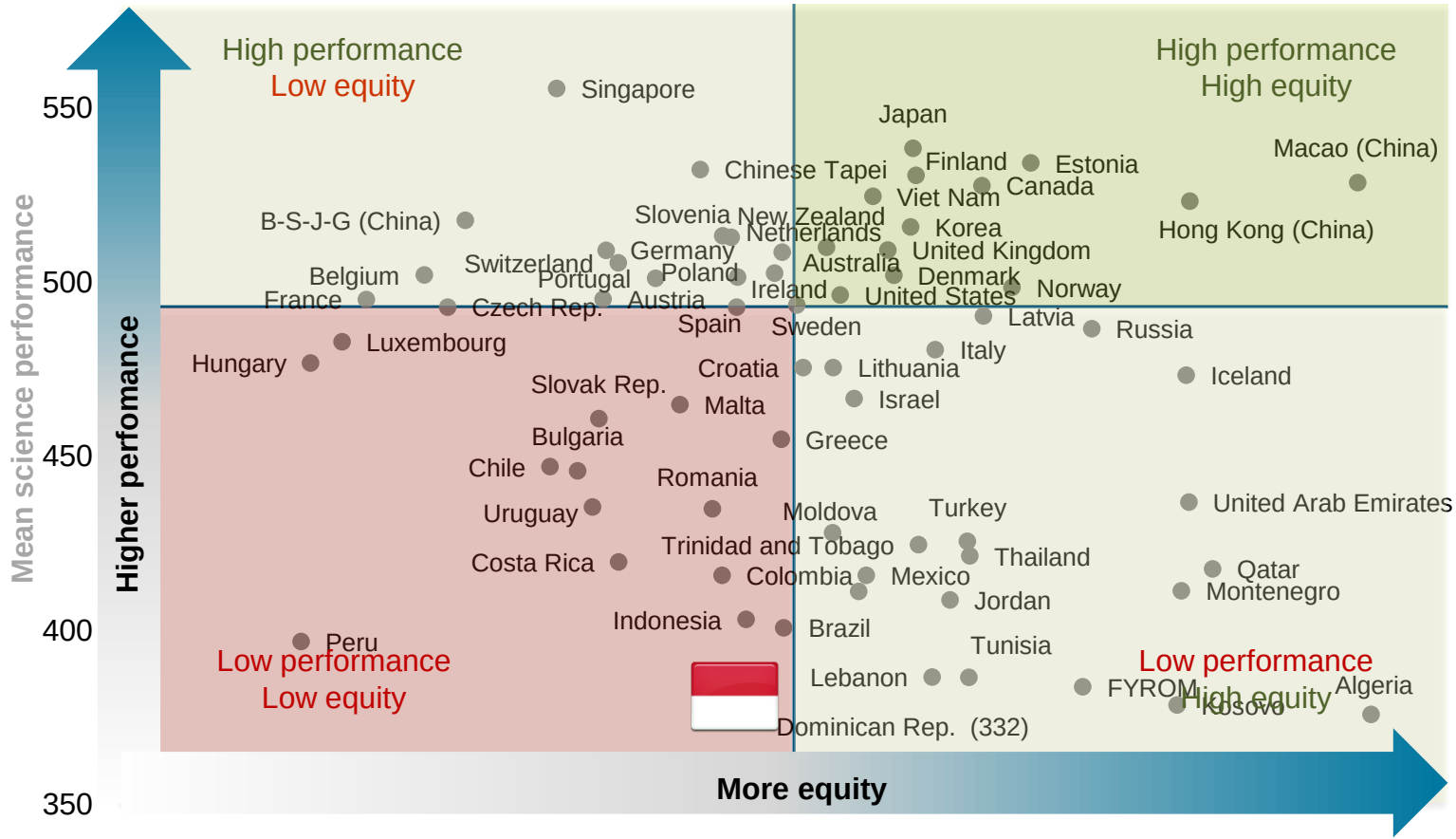


2006 2009 2012 2015

Trends in science performance (**PISA**)



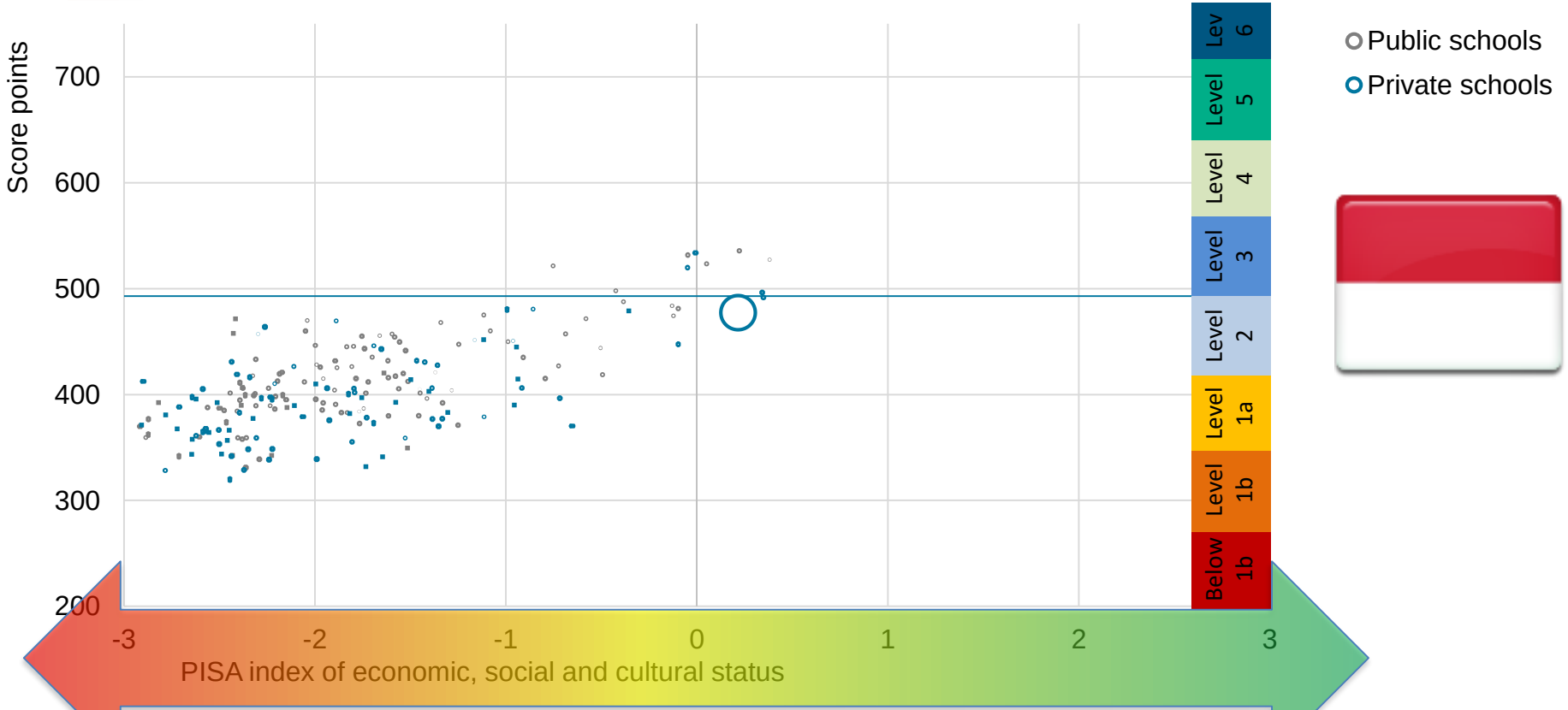
Science performance and equity in PISA (2015)



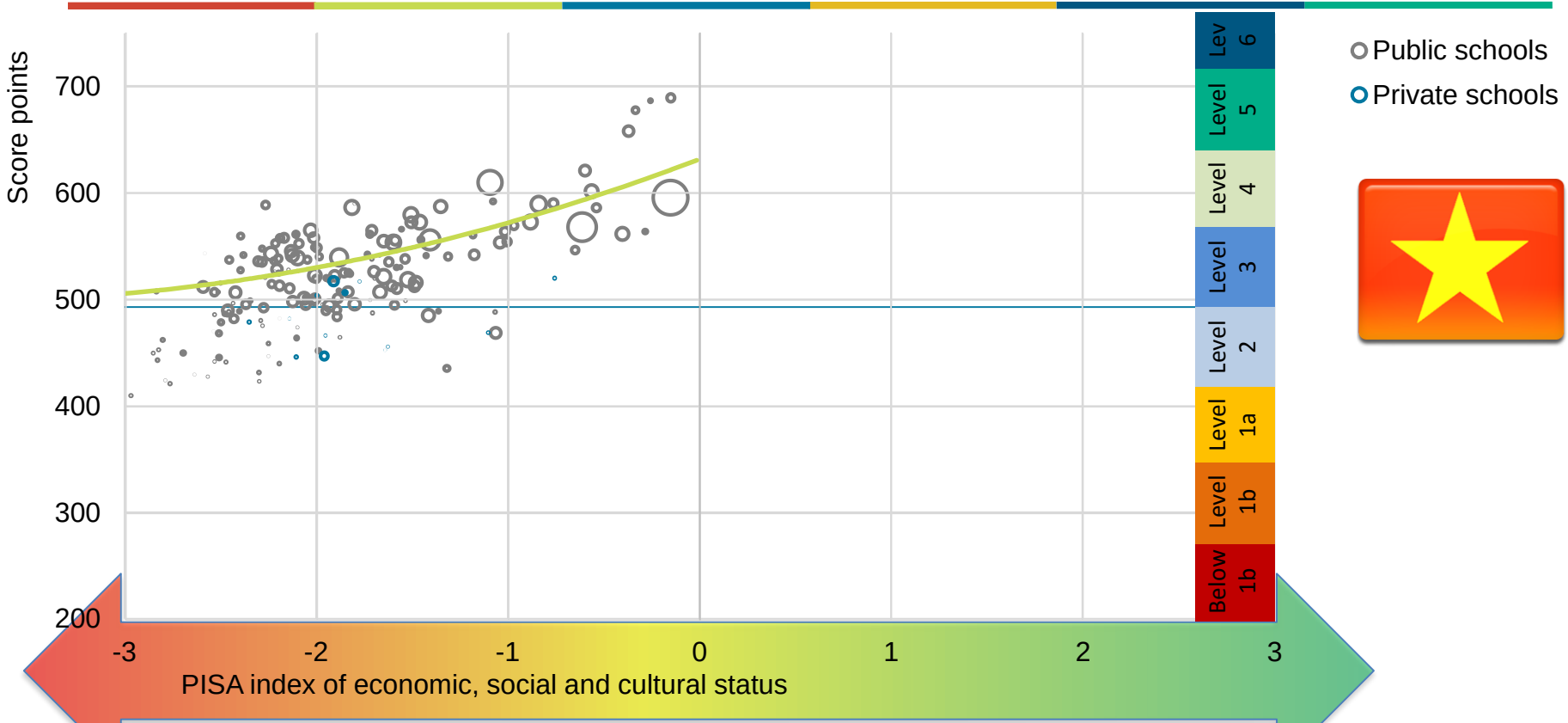
Some countries combine excellence with equity

Relationship between school performance and schools' socio-economic profile:

Indonesia

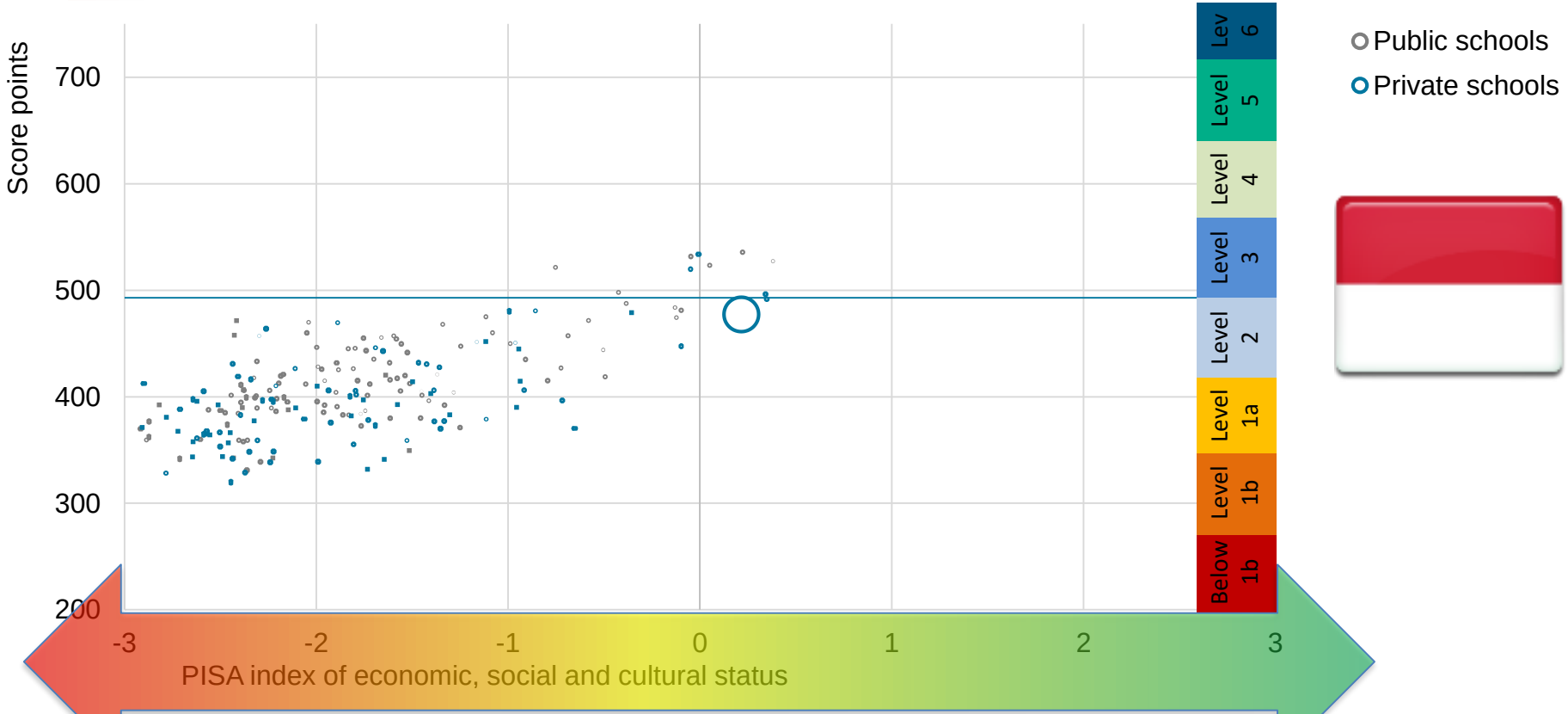


Viet Nam: School performance and schools' socio-economic profile



Relationship between school performance and schools' socio-economic profile:

Indonesia



Poverty is not destiny - Science performance

by international deciles of the PISA index of economic, social and cultural status (ESCS)

Figure I.6.7

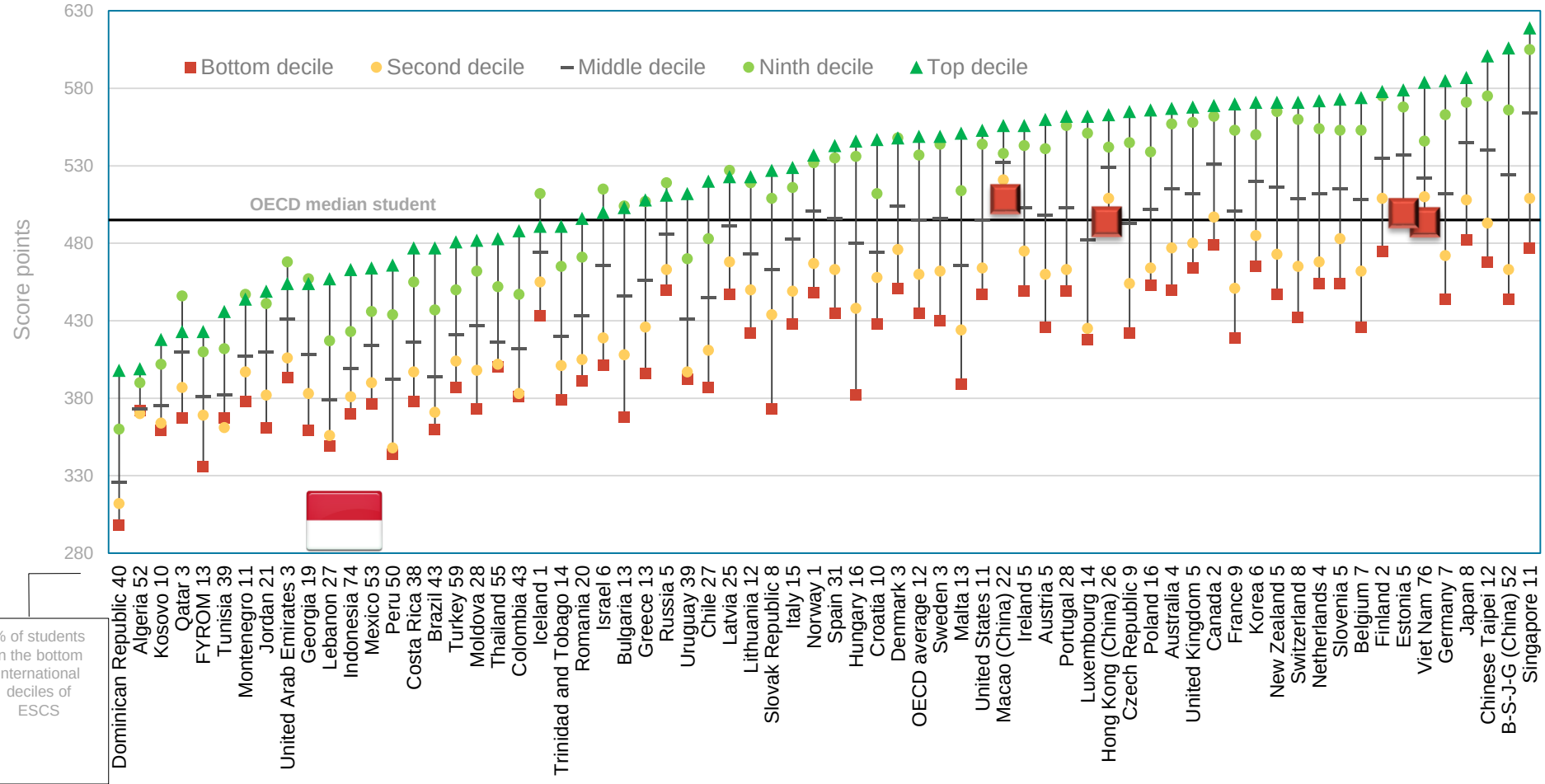
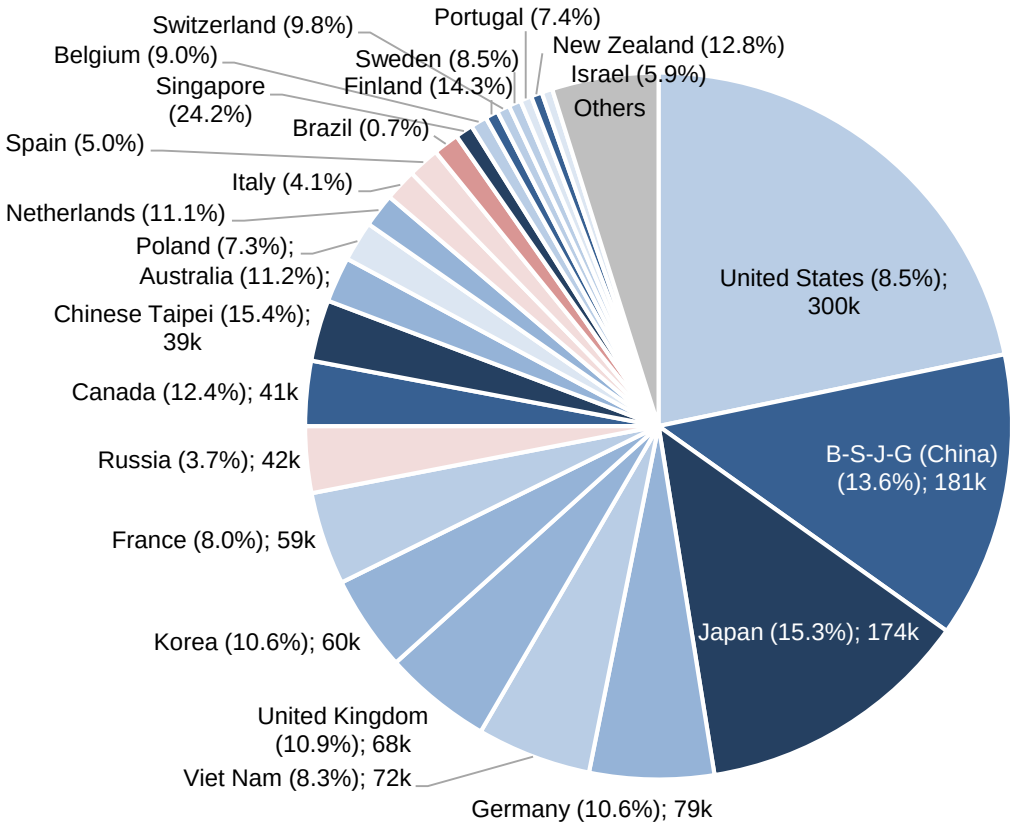


Figure I.2.18

The global pool of top performers: A PISA perspective

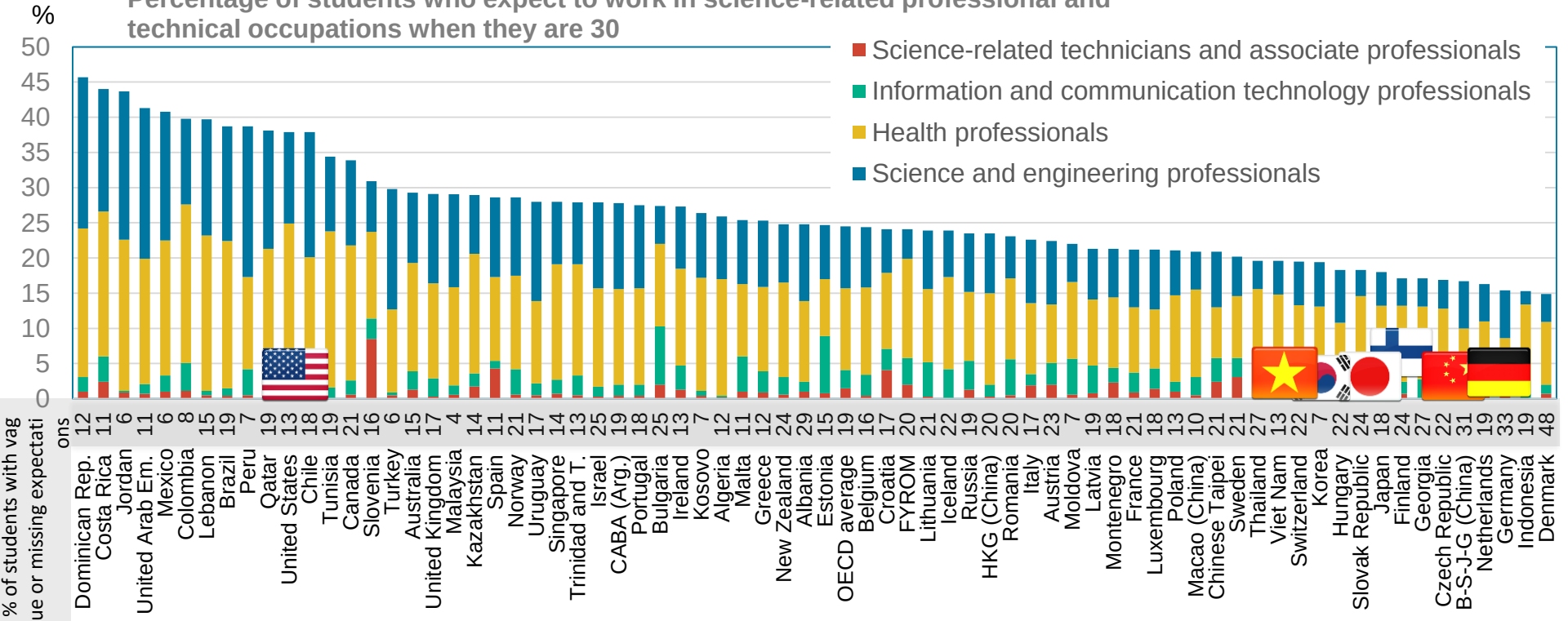


Share of top performers among 15-year-old students:

- Less than 1%
- 1 to 2.5%
- 2.5 to 5%
- 5% to 7.5%
- 7.5% to 10%
- 10% to 12.5%
- 12.5% to 15%
- More than 15%

Figure I.3.2

Students expecting a career in science



Multiple outcomes

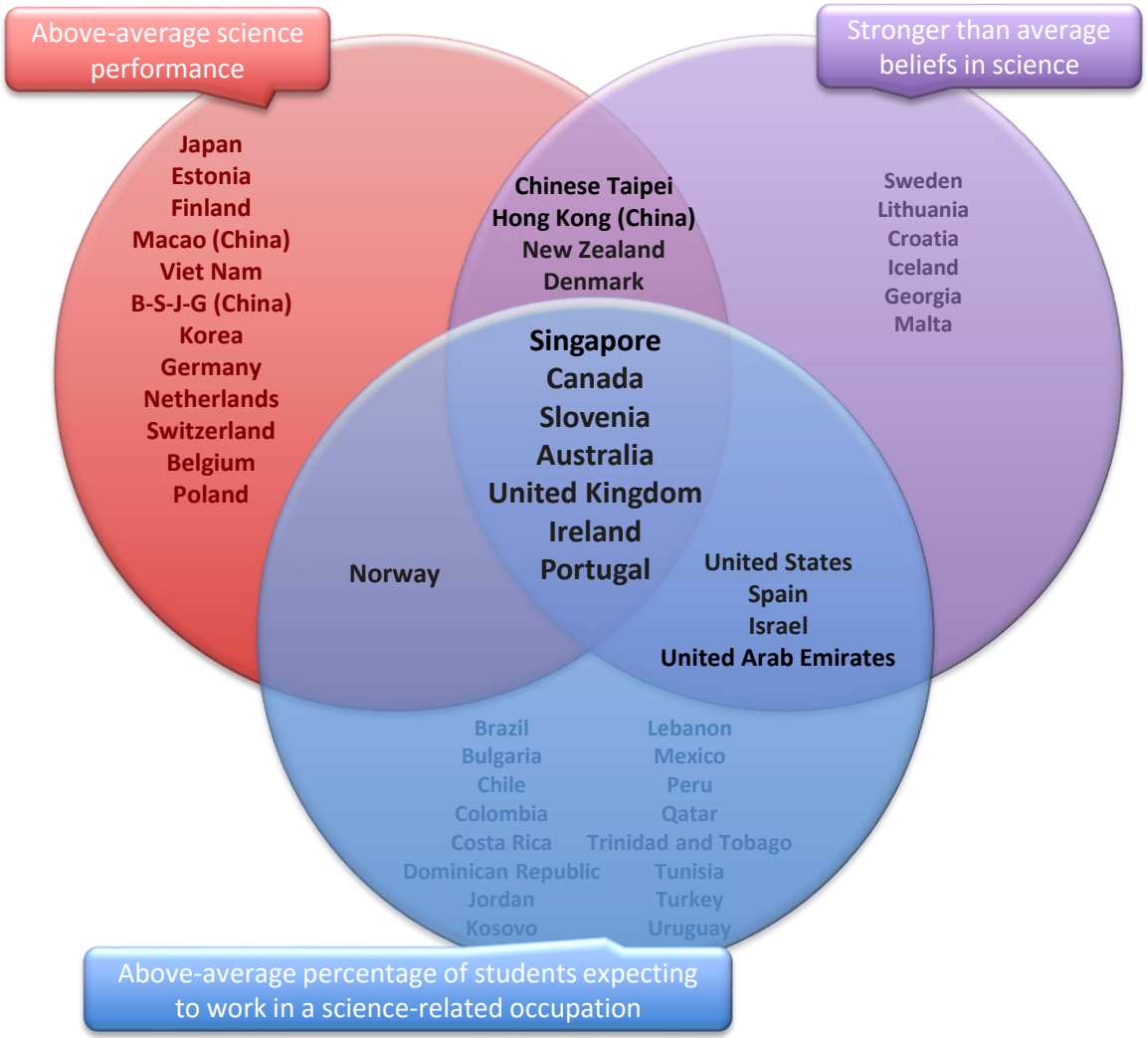
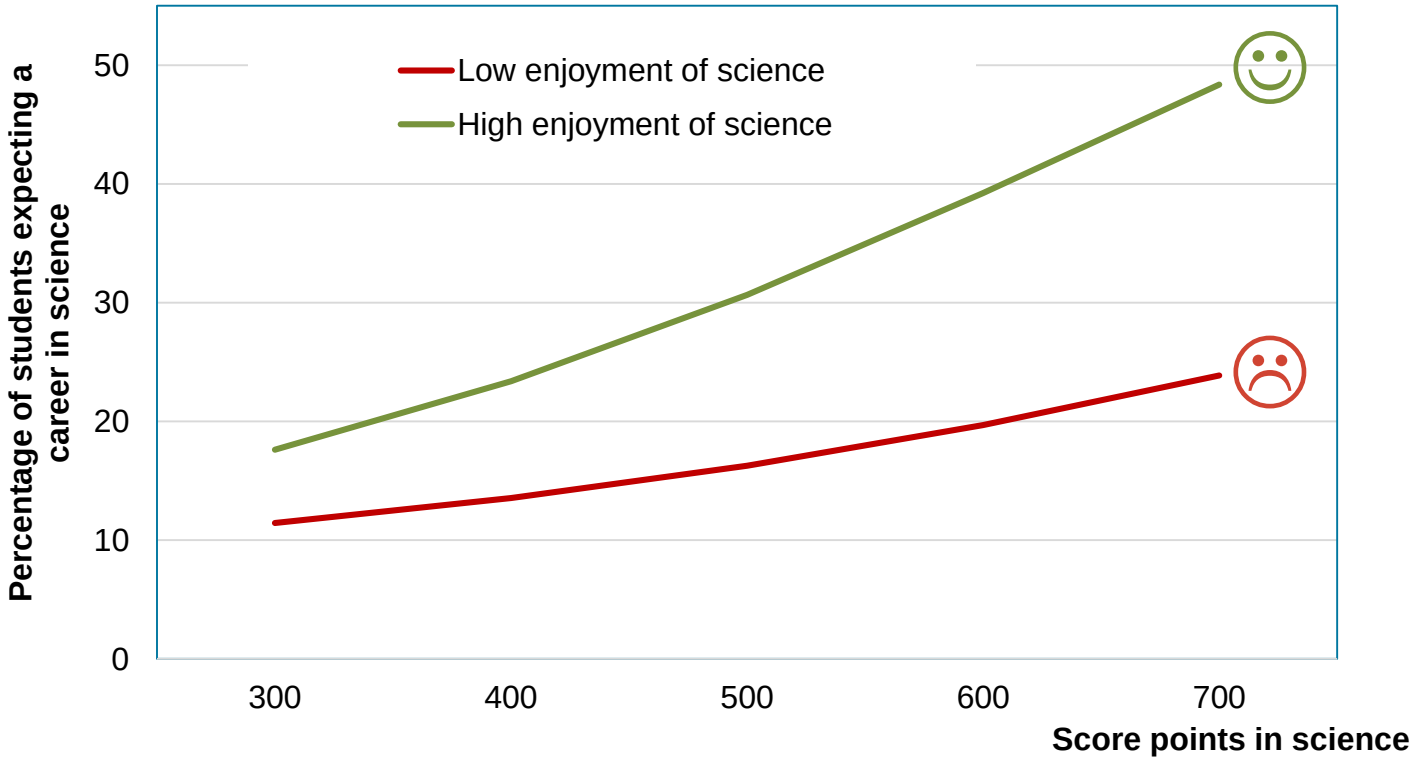
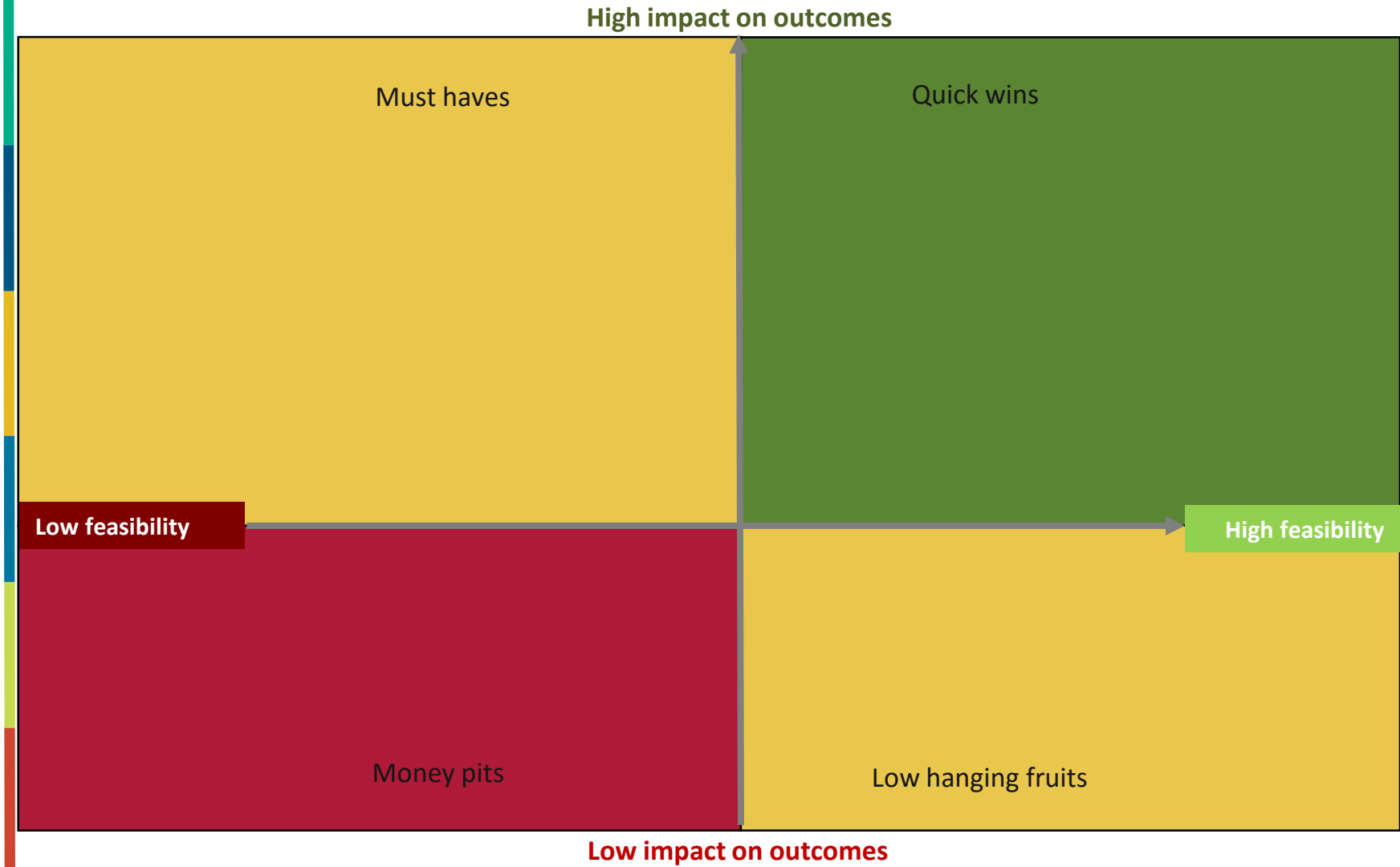


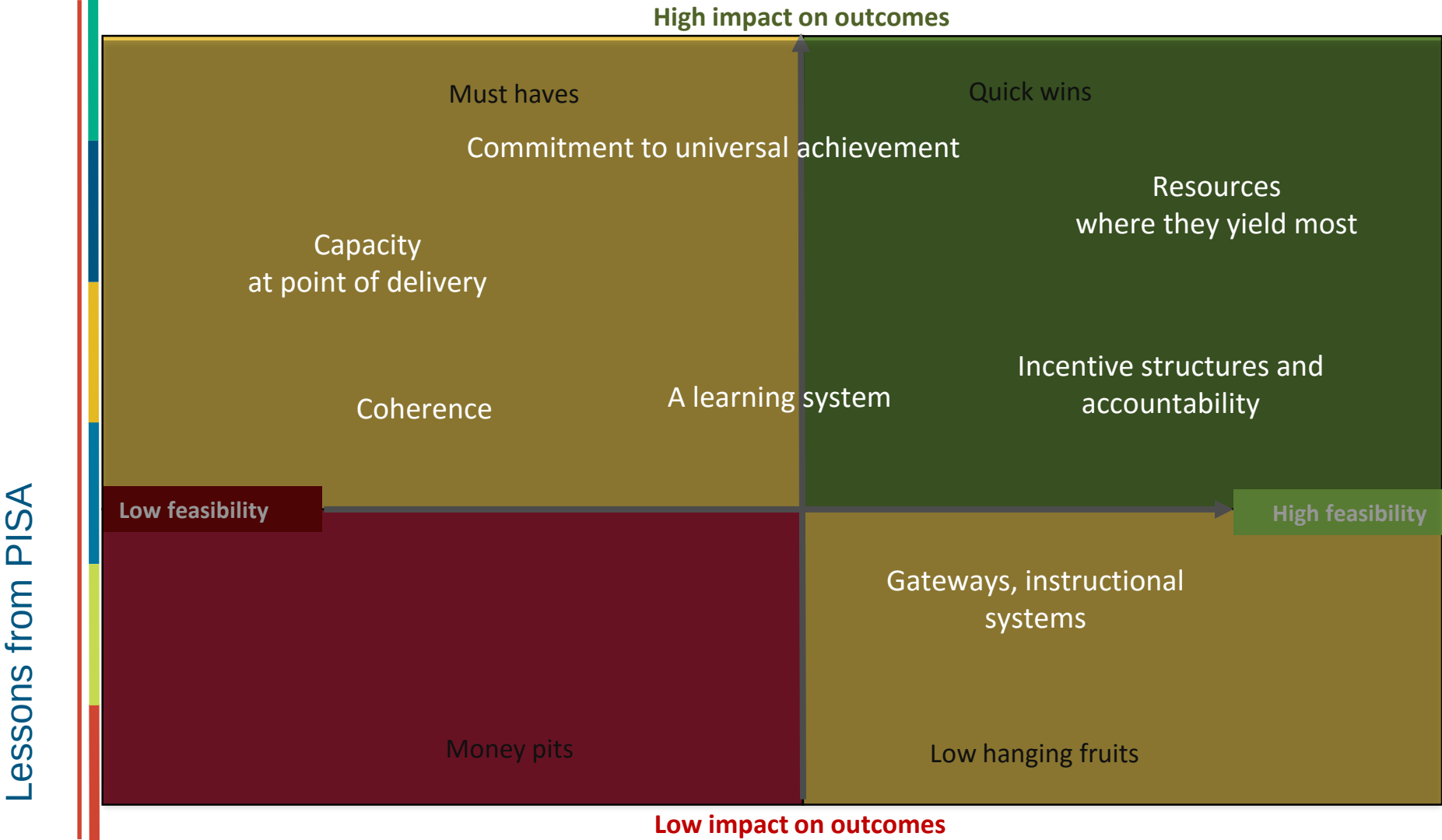
Figure I.3.17

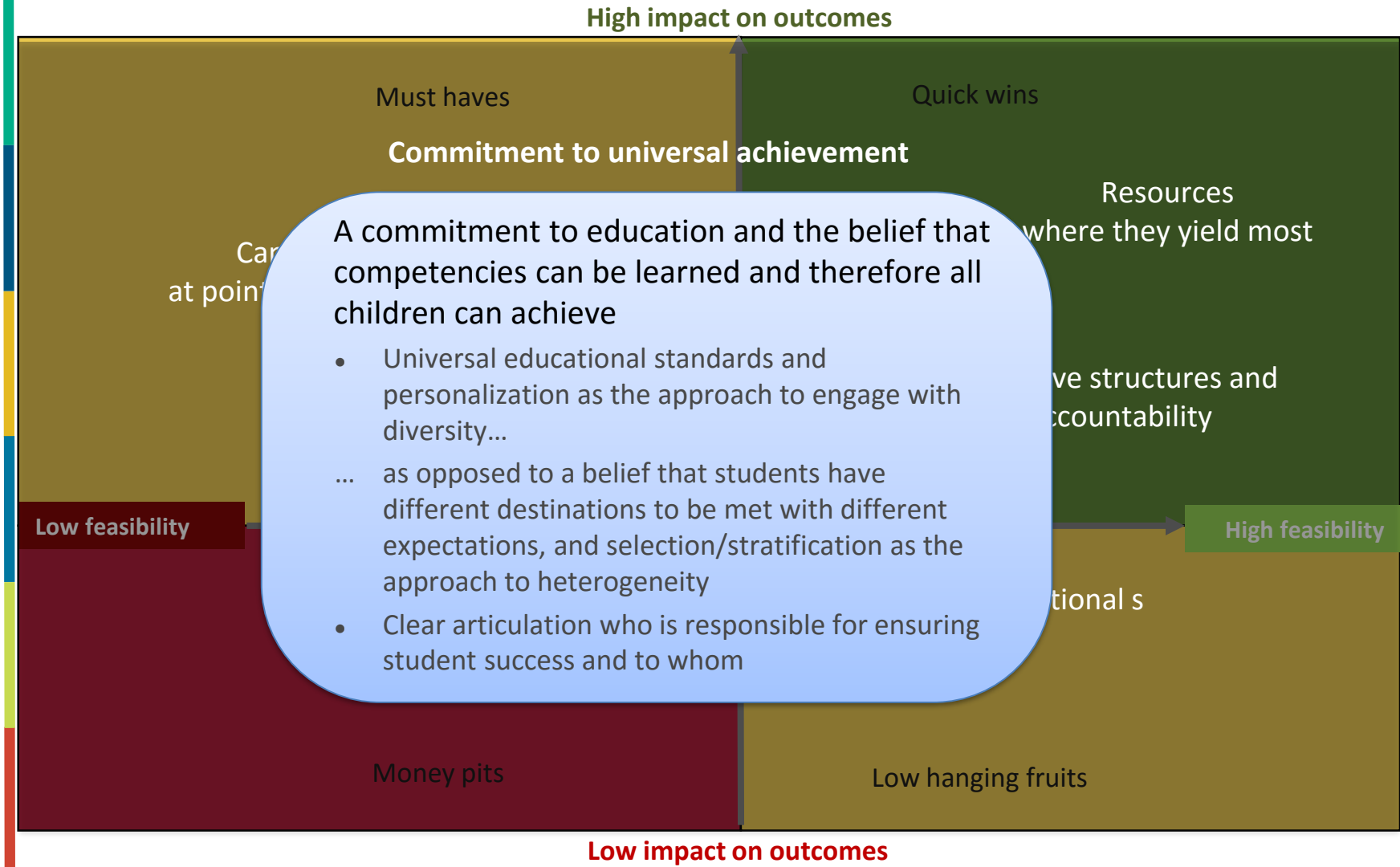
Students expecting a career in science

by performance and enjoyment of learning




High impact on outcomes
Must haves
Quick wins
Low feasibility
High feasibility
Money pits
Low hanging fruits
Low impact on outcomes

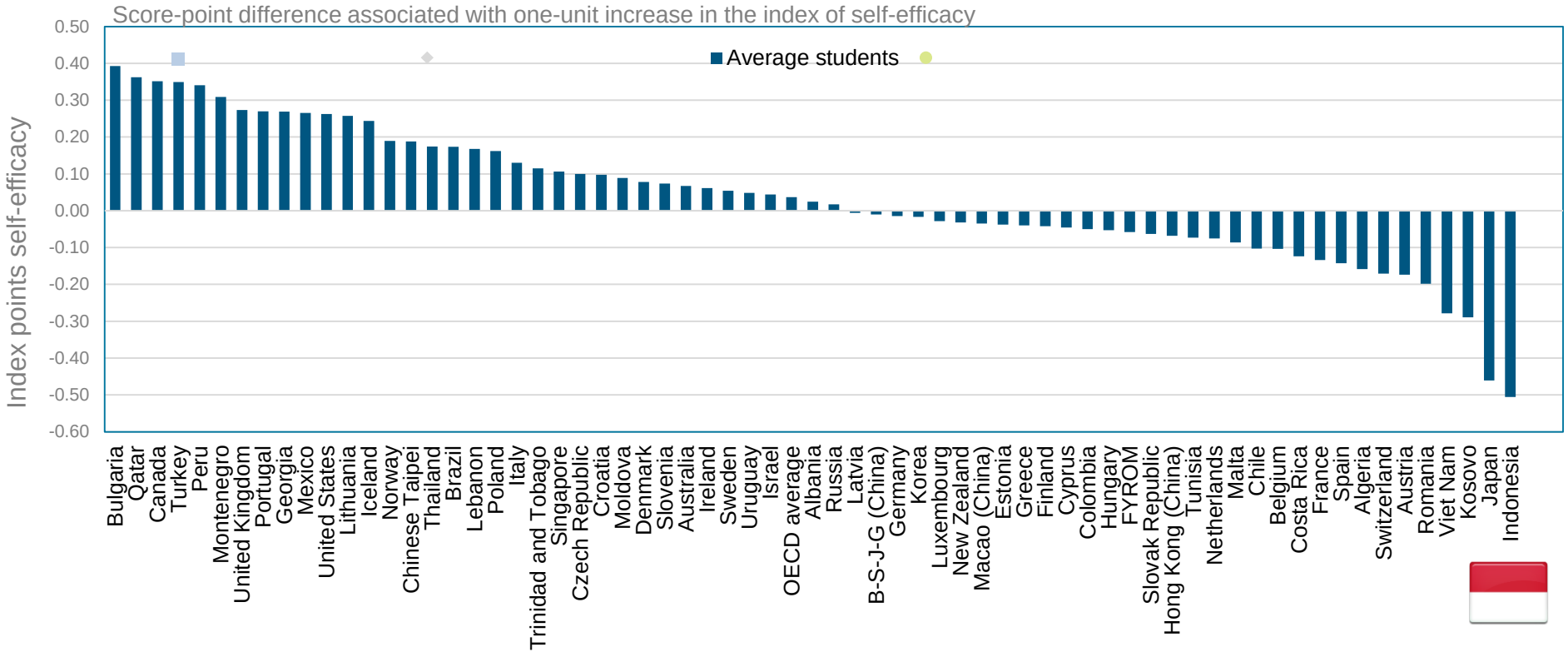

High impact on outcomes
Must haves
Quick wins
Commitment to universal achievement
Resources
where they yield most
Capacity
at point of delivery
Incentive structures and
accountability
Coherence
A learning system
Low feasibility
High feasibility
Gateways, instructional
systems
Money pits
Low hanging fruits
Low impact on outcomes
Lessons from PISA



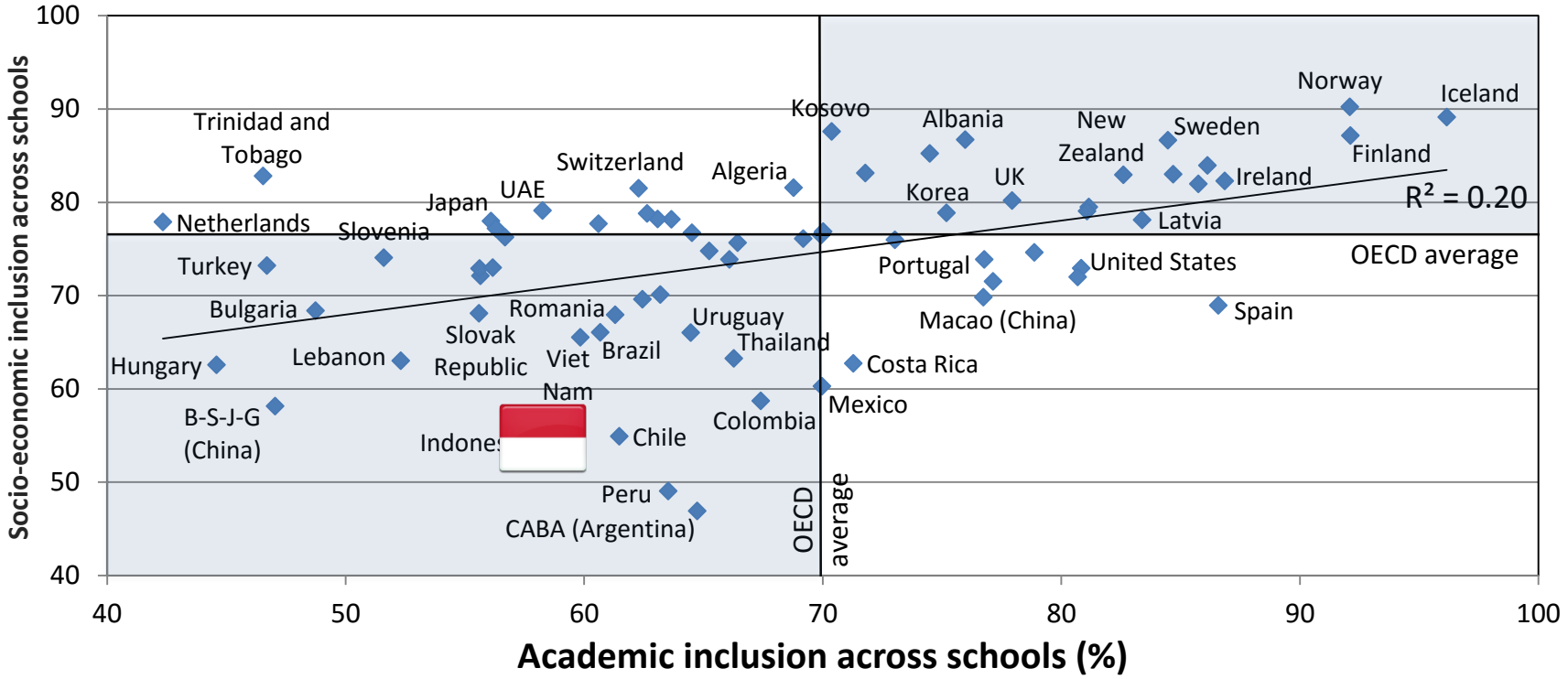
A commitment to education and the belief that competencies can be learned and therefore all children can achieve

- Universal educational standards and personalization as the approach to engage with diversity…
- … as opposed to a belief that students have different destinations to be met with different expectations, and selection/stratification as the approach to heterogeneity
- Clear articulation who is responsible for ensuring student success and to whom

Students' self-efficacy in science and science performance

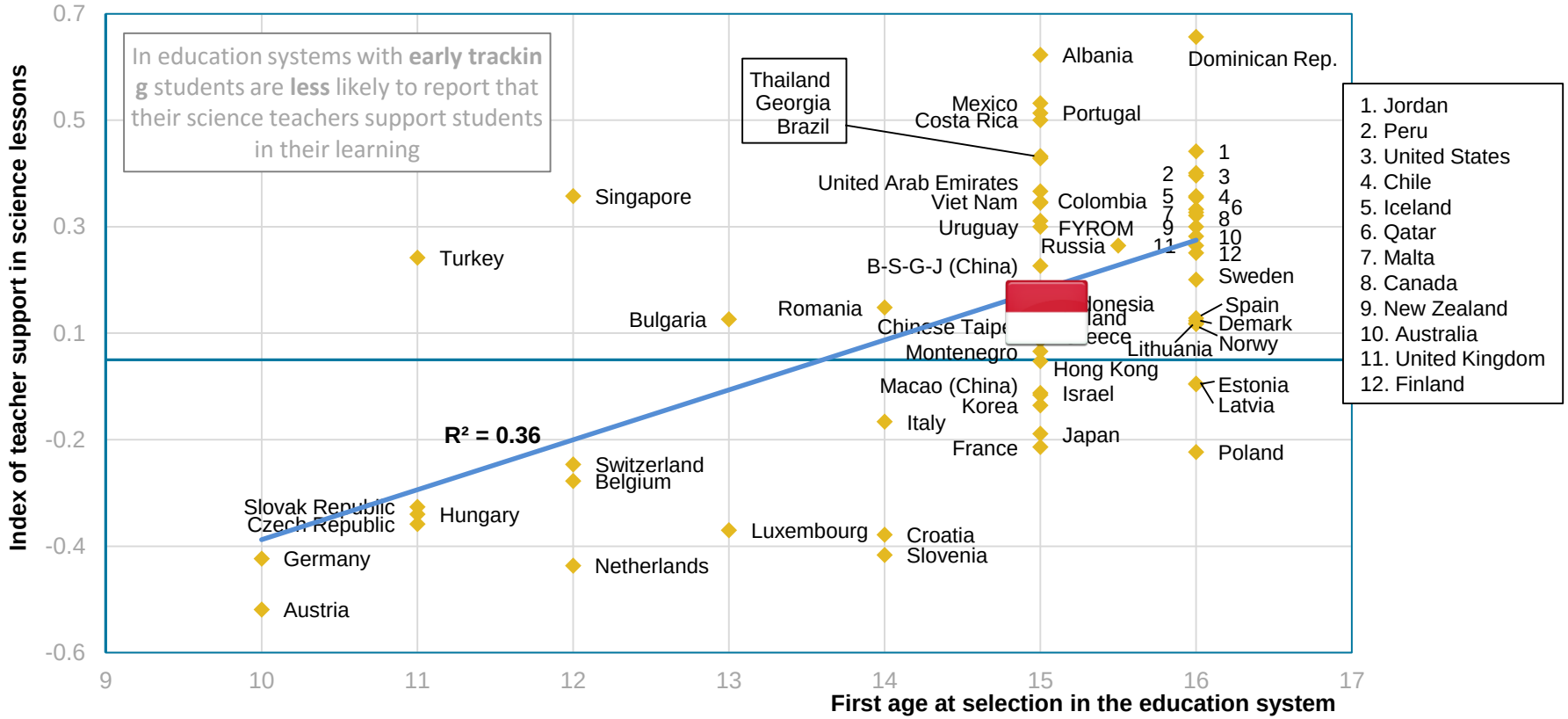


Academic and social inclusion across schools



First age at selection in the education system and index of teacher support in science lessons

Figure II.3.11



Grade repetition

Favour additional support to struggling students over grade repetition

Change between 2009 and 2015 in grade repetition rates

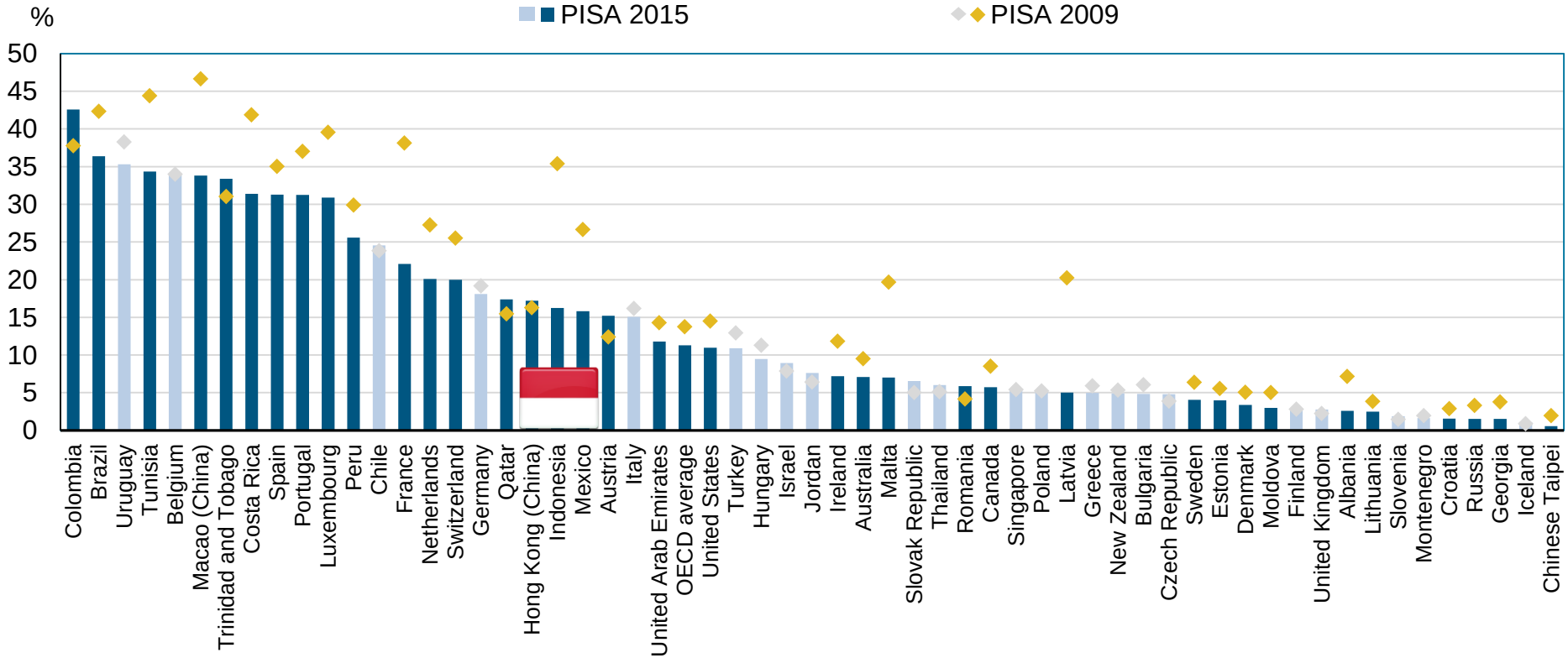


Figure I.6.15

Increased likelihood of grade repetition

by students' socio-economic status

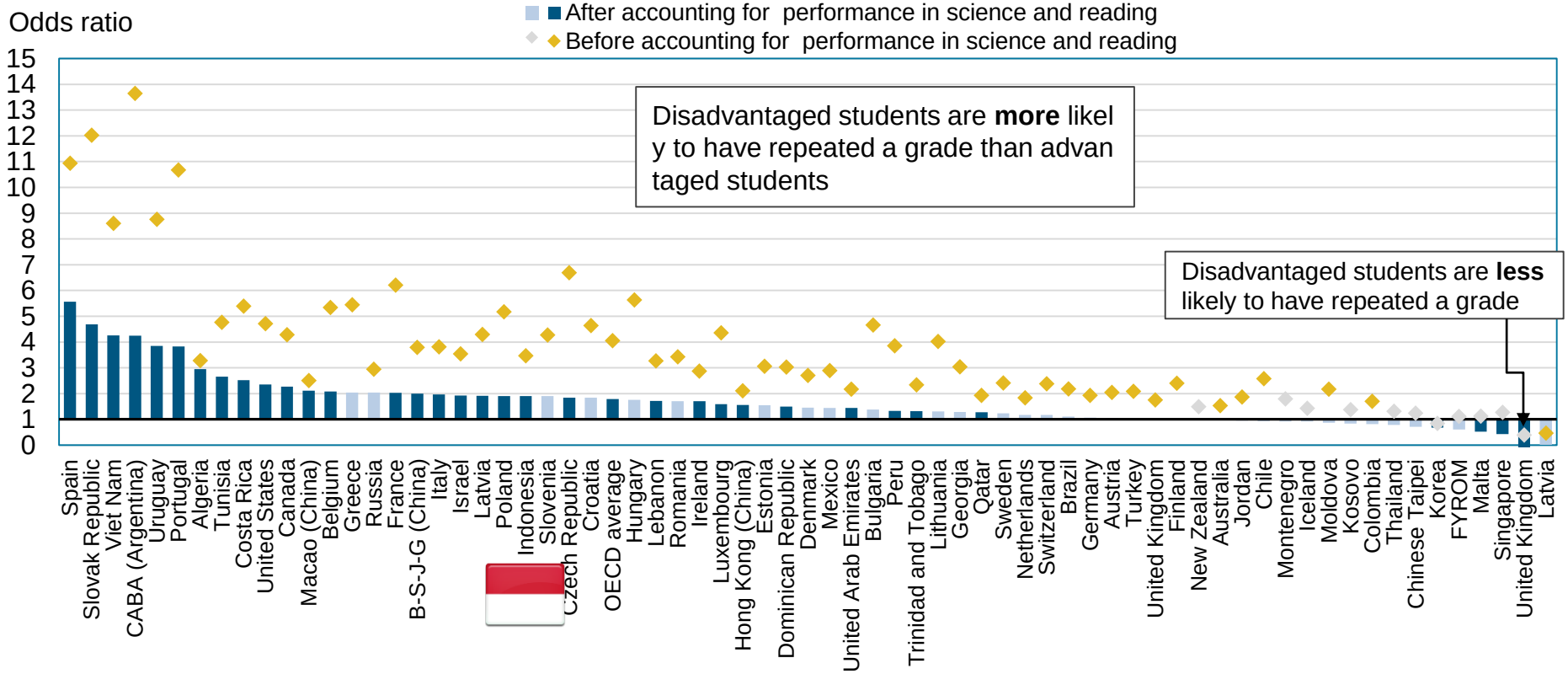
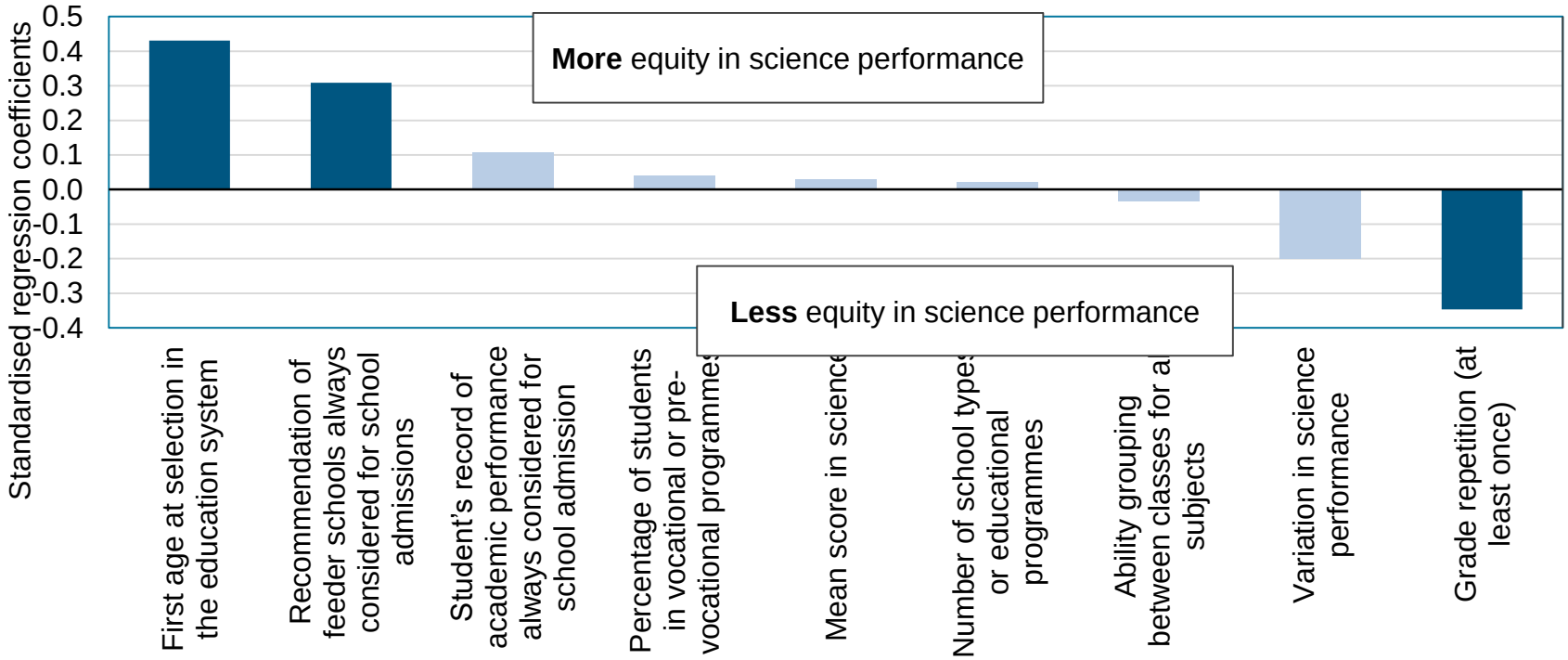
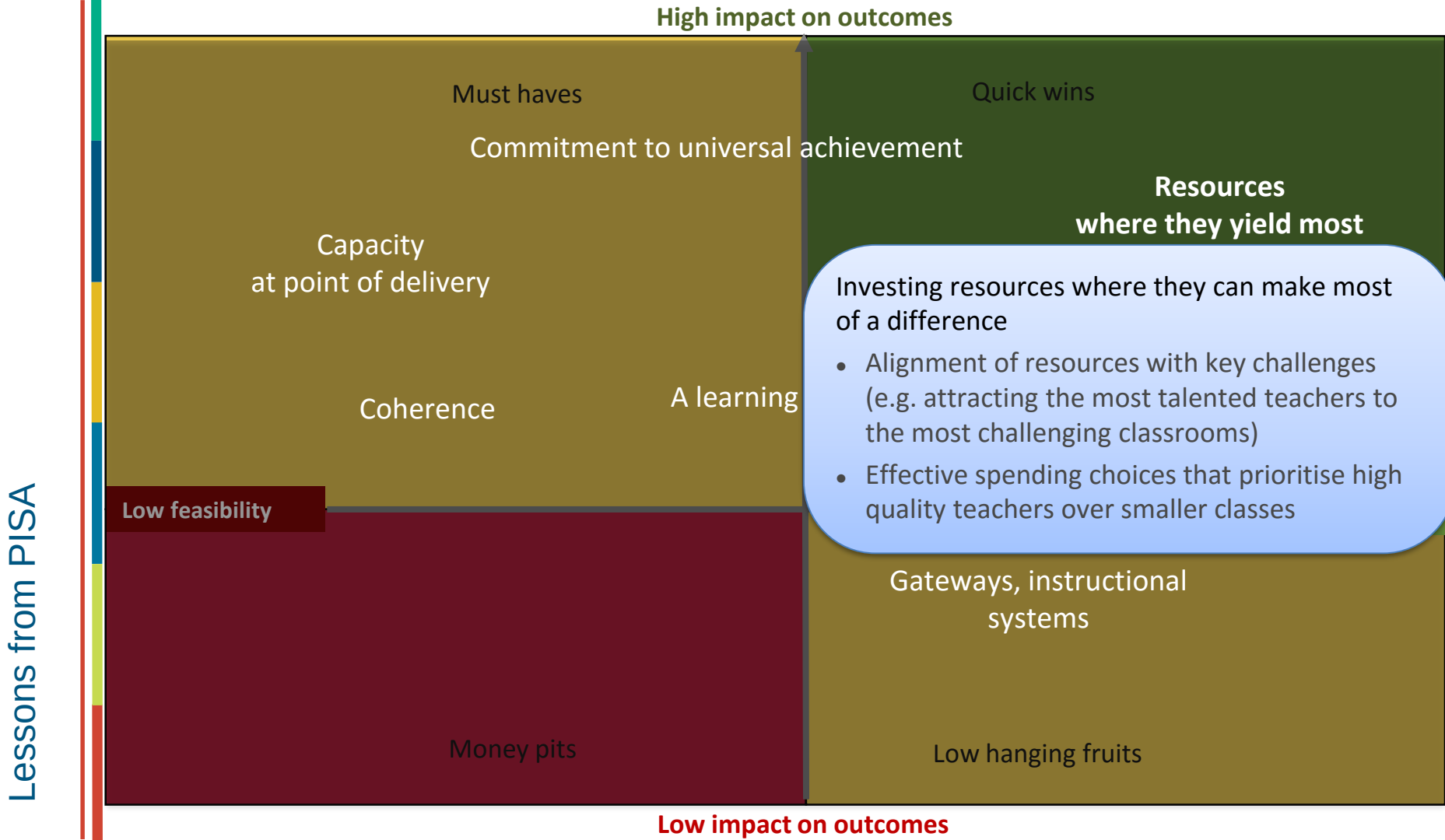


Figure II.5.13

Factors associated with equity in science performance




High impact on outcomes
Must haves
Commitment to universal achievement
Quick wins
Resources
where they yield most
Capacity
at point of delivery
Coherence
A learning
Investing resources where they can make most of a difference
• Alignment of resources with key challenges (e.g. attracting the most talented teachers to the most challenging classrooms)
• Effective spending choices that prioritise high quality teachers over smaller classes
Low feasibility
Gateways, instructional systems
Money pits
Low hanging fruits
Low impact on outcomes
Lessons from PISA

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

Figure II.6.2

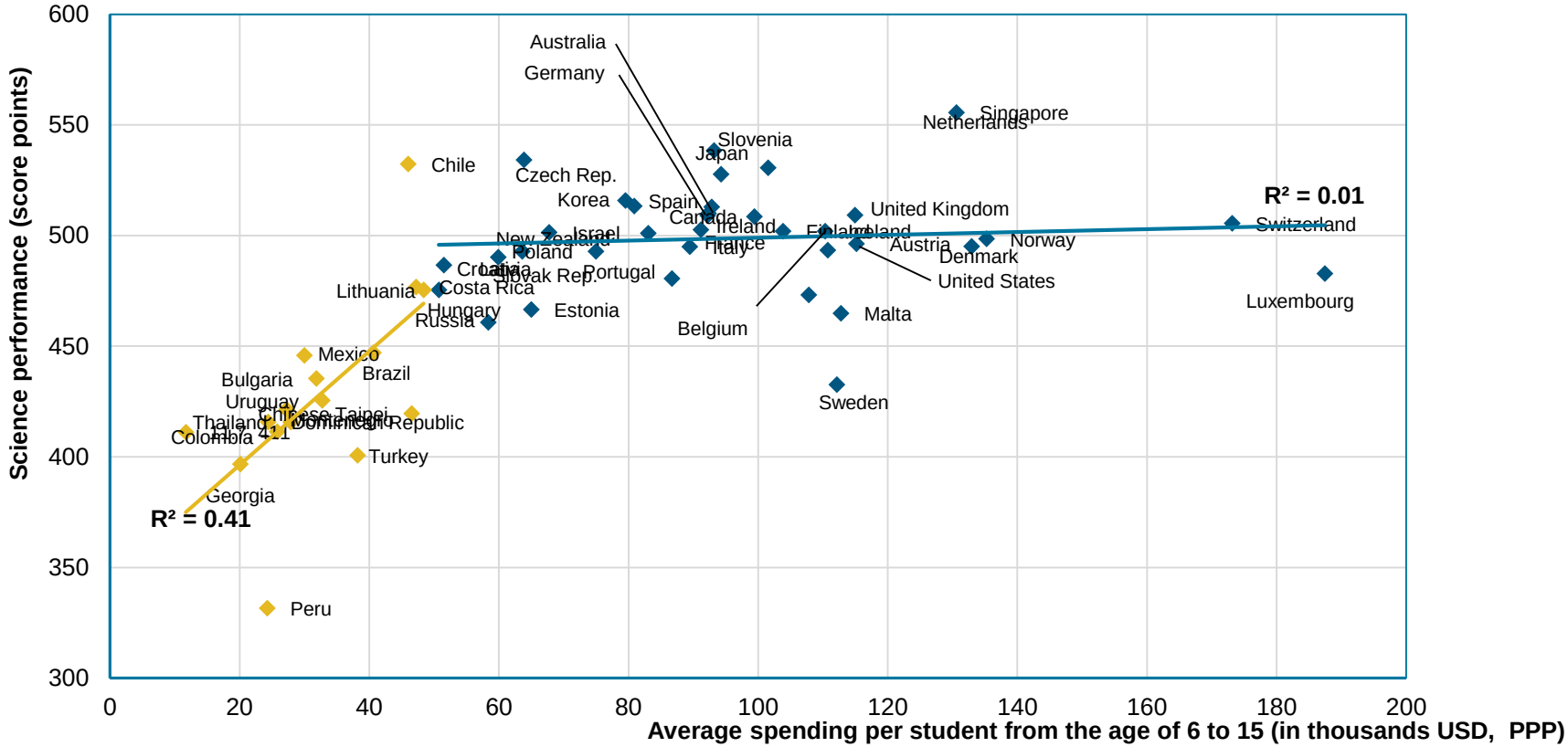
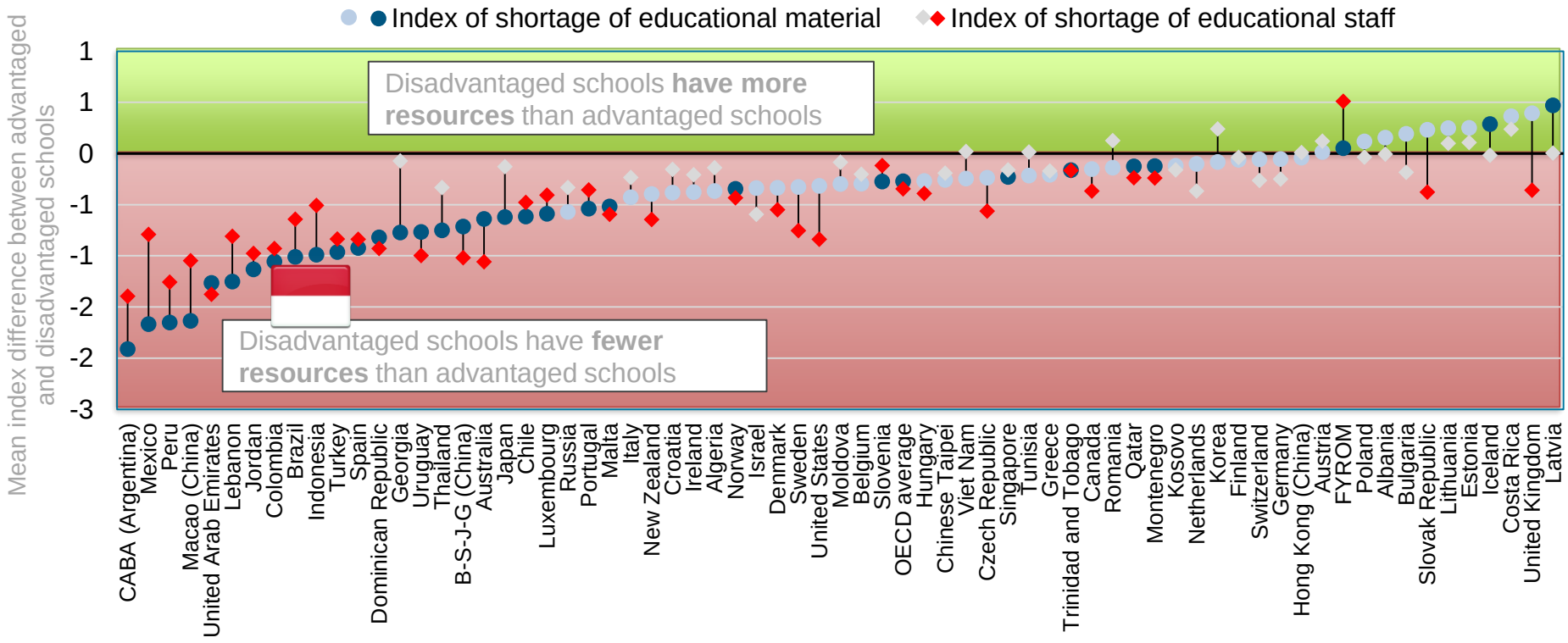


Figure I.6.14

Differences in educational resources

between advantaged and disadvantaged schools

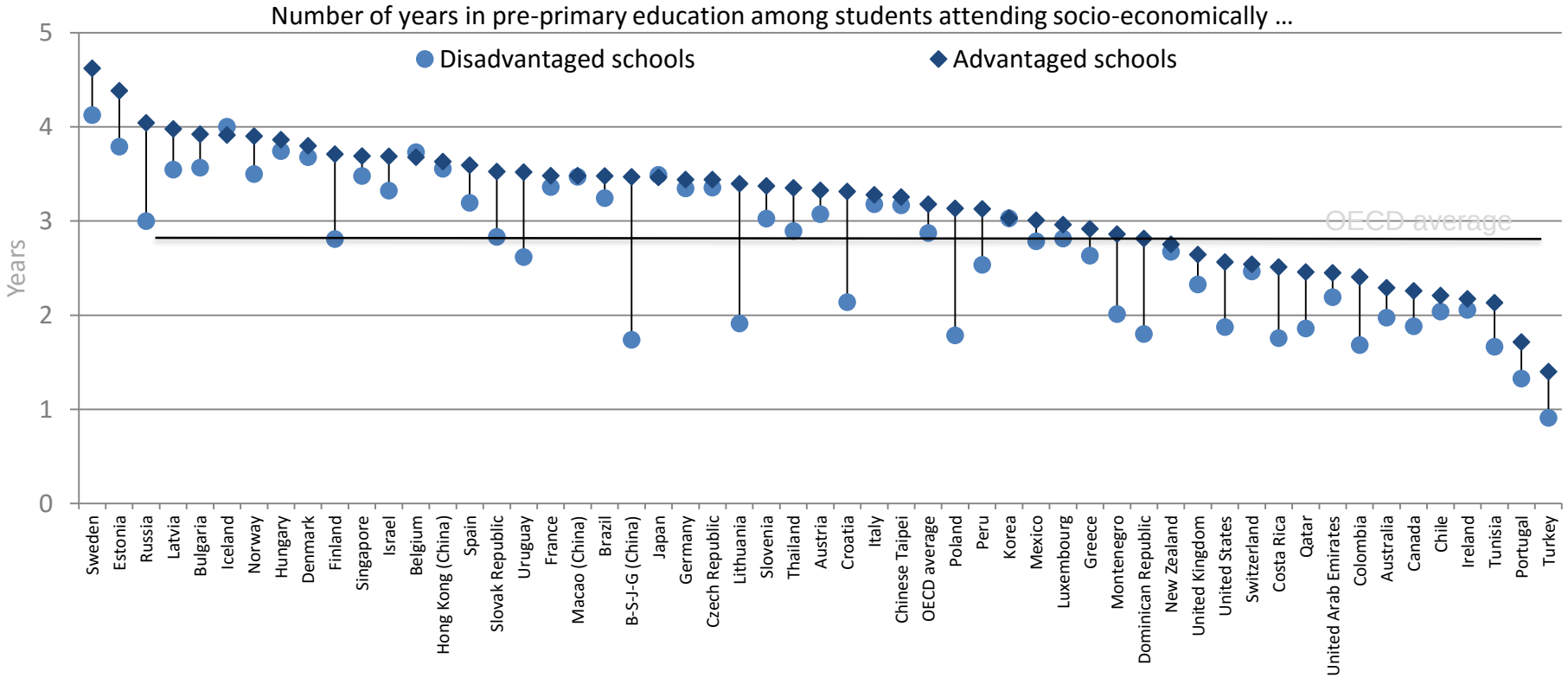


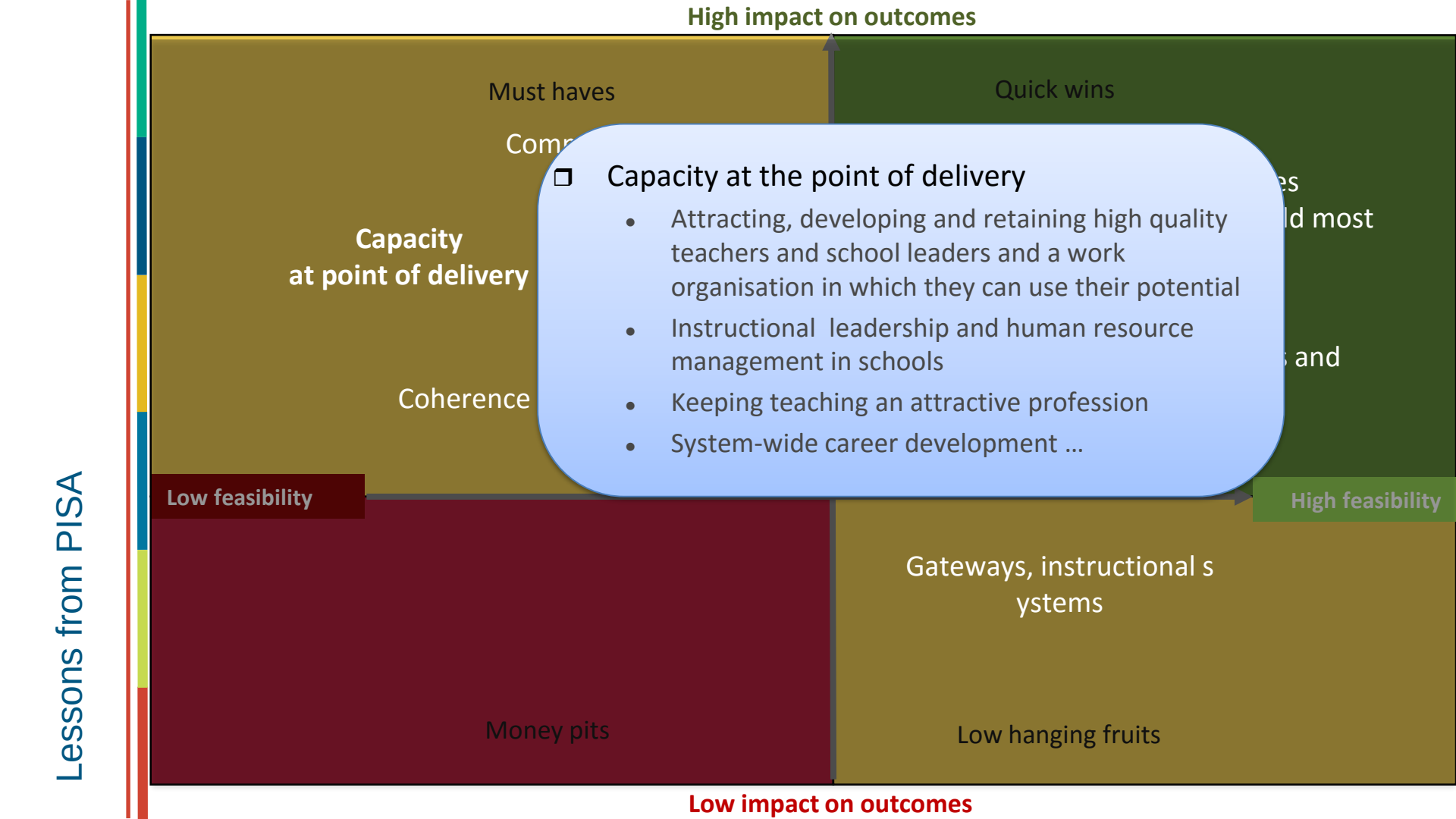
Starting strong

Table II.6.51

Attendance at pre-primary school

by schools' socio-economic profile




High impact on outcomes
Must haves
Quick wins
Capacity
at point of delivery
Coherence
Capacity at the point of delivery
Attracting, developing and retaining high quality teachers and school leaders and a work organisation in which they can use their potential
Instructional leadership and human resource management in schools
Keeping teaching an attractive profession
System-wide career development …
Low feasibility
High feasibility
Gateways, instructional s ystems
Money pits
Low hanging fruits
Low impact on outcomes
Lessons from PISA

The ‘productivity’ puzzle

Making learning time productive so that students can build their academic, social and emotional skills in a balanced way

Learning time and science performance

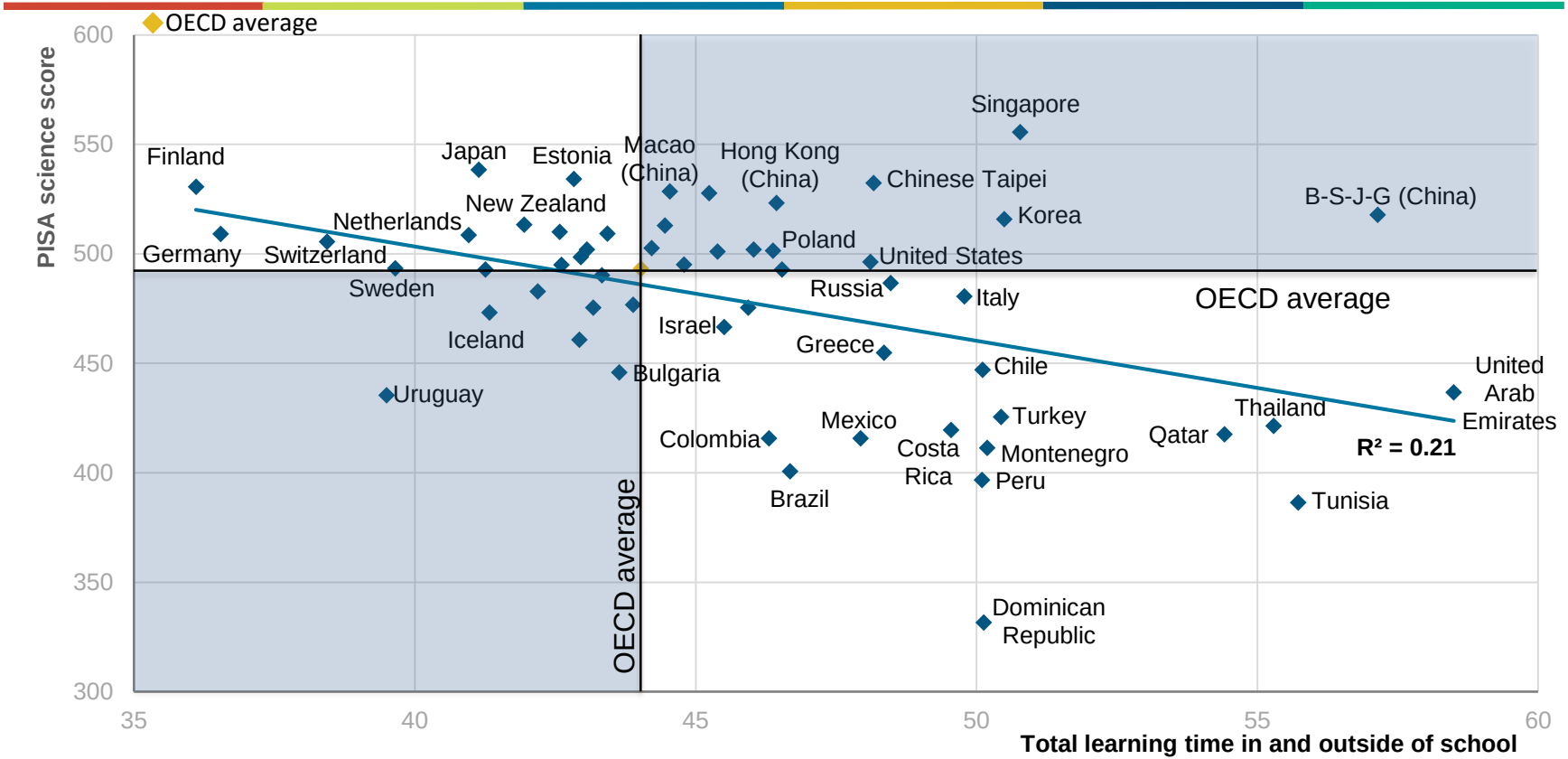
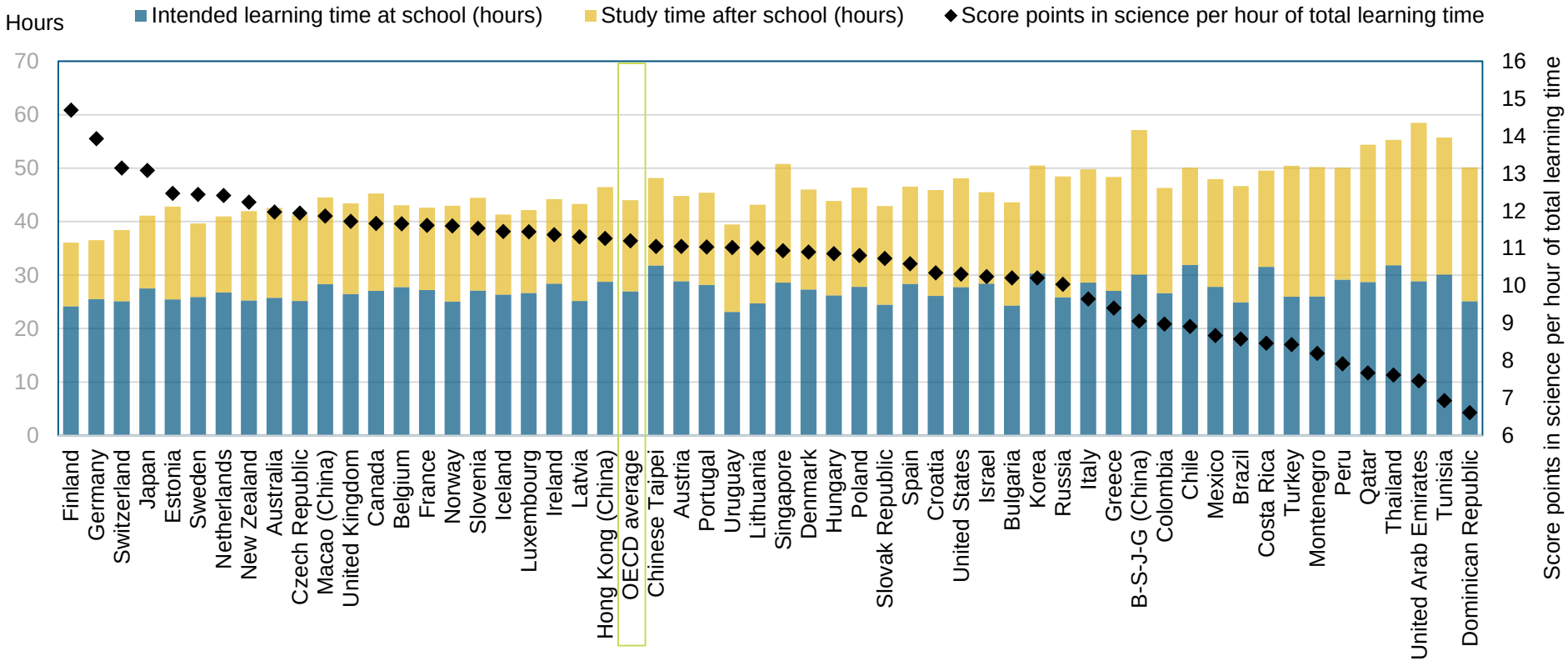


Figure II.6.23

Learning time and science performance



Implementing highly effective teacher policy and practice

Improve the societal view of teaching as a profession

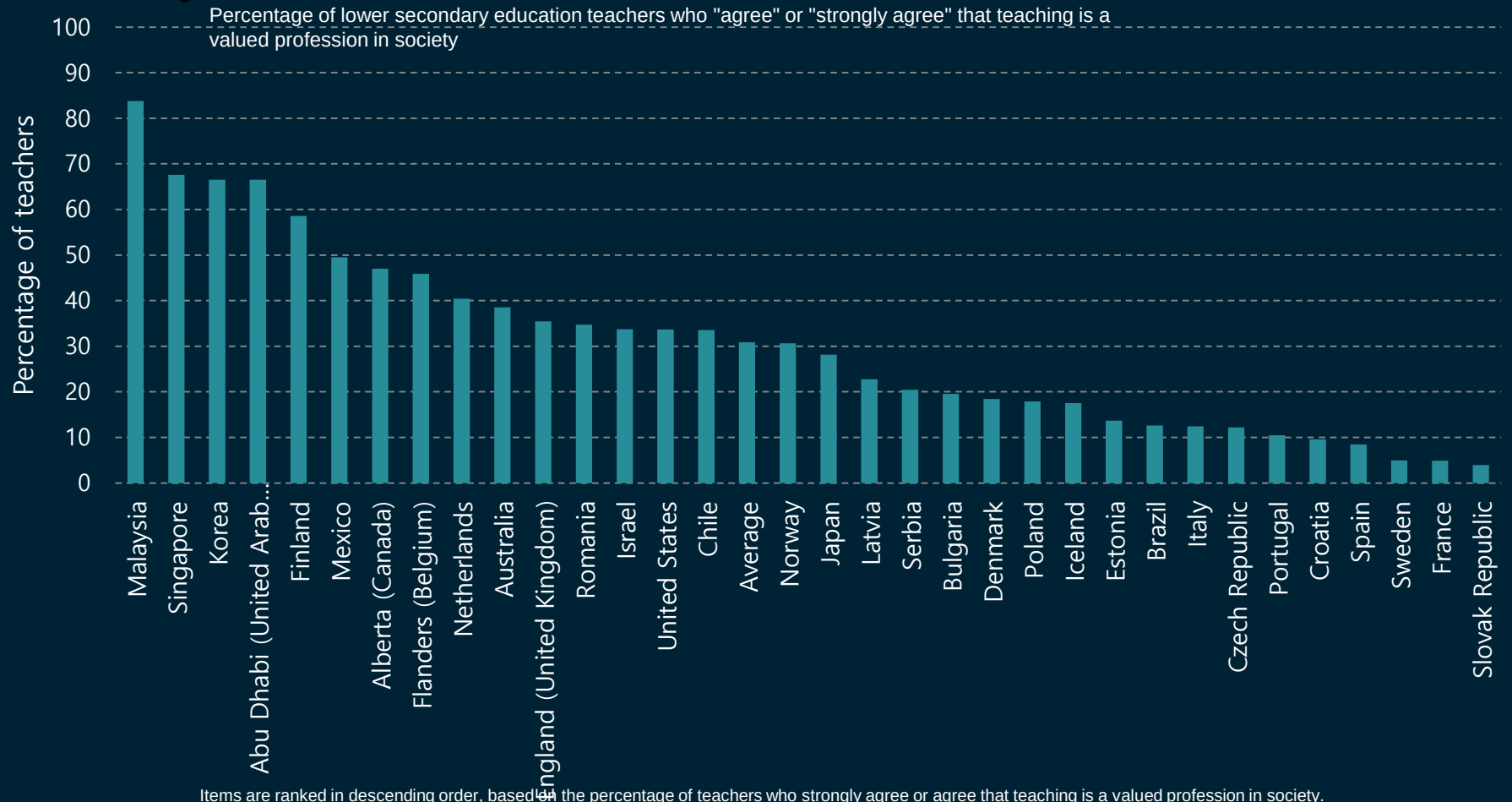
Recruit top candidates into the profession

Developing Teaching as a profession

Retain and recognise effective teachers – path for growth

Support teachers in continued development of practice

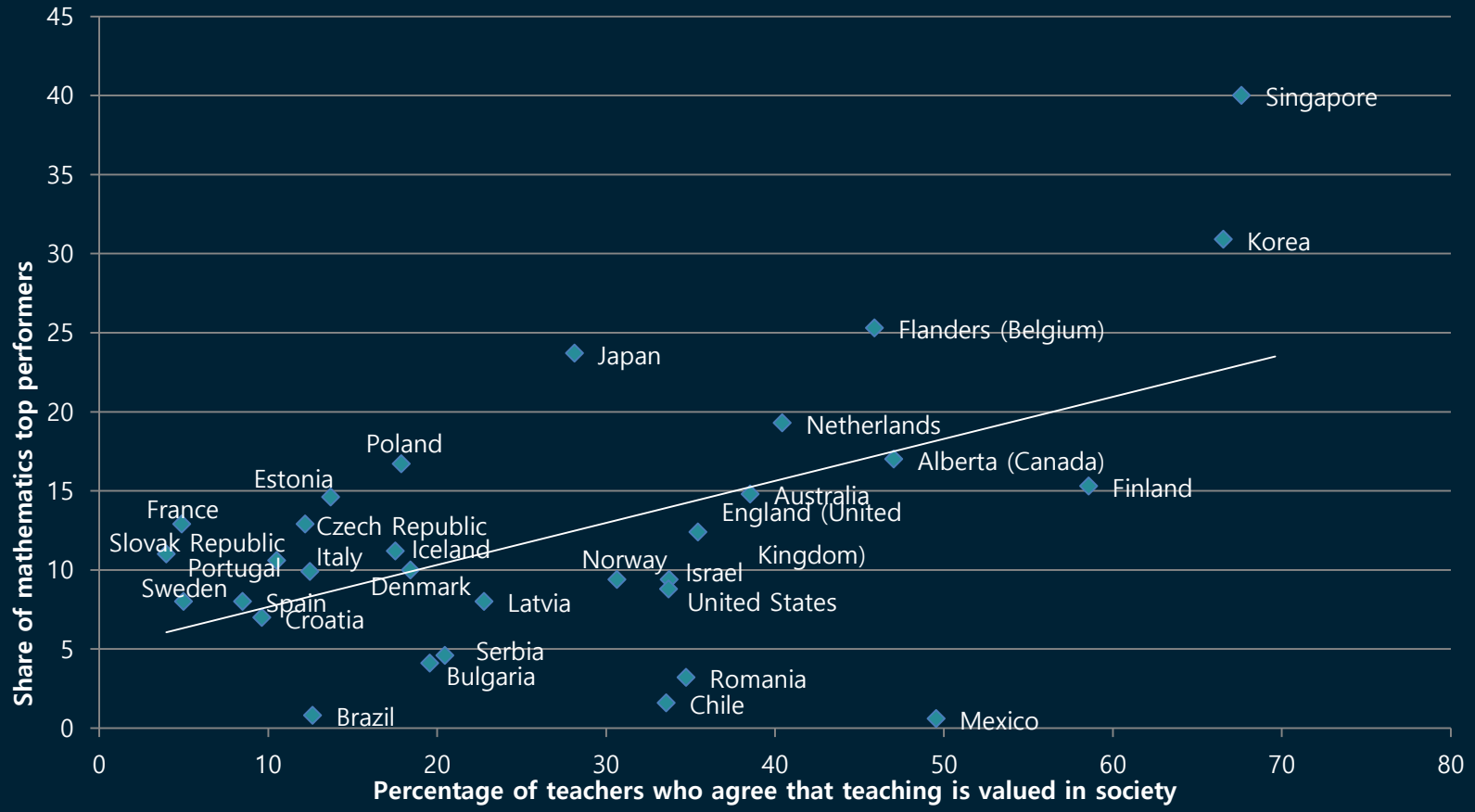
Teachers' perceptions of the value of teaching in society



Items are ranked in descending order, based on the percentage of teachers who strongly agree or agree that teaching is a valued profession in society.

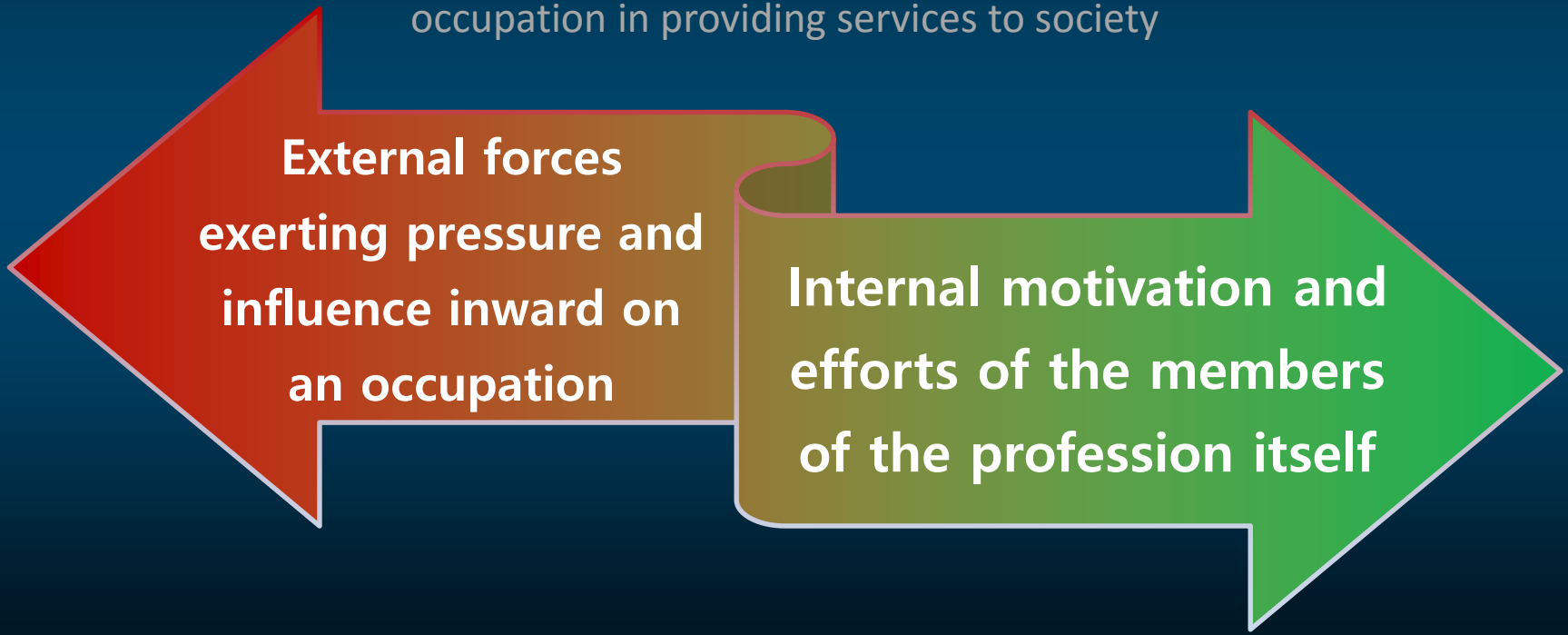
Relationship between the perceived value of the teaching profession and the share of PISA top performers (math)

Relationship between lower secondary education teachers' views on the value of their profession in society and the share of top mathematics performers in PISA 2012

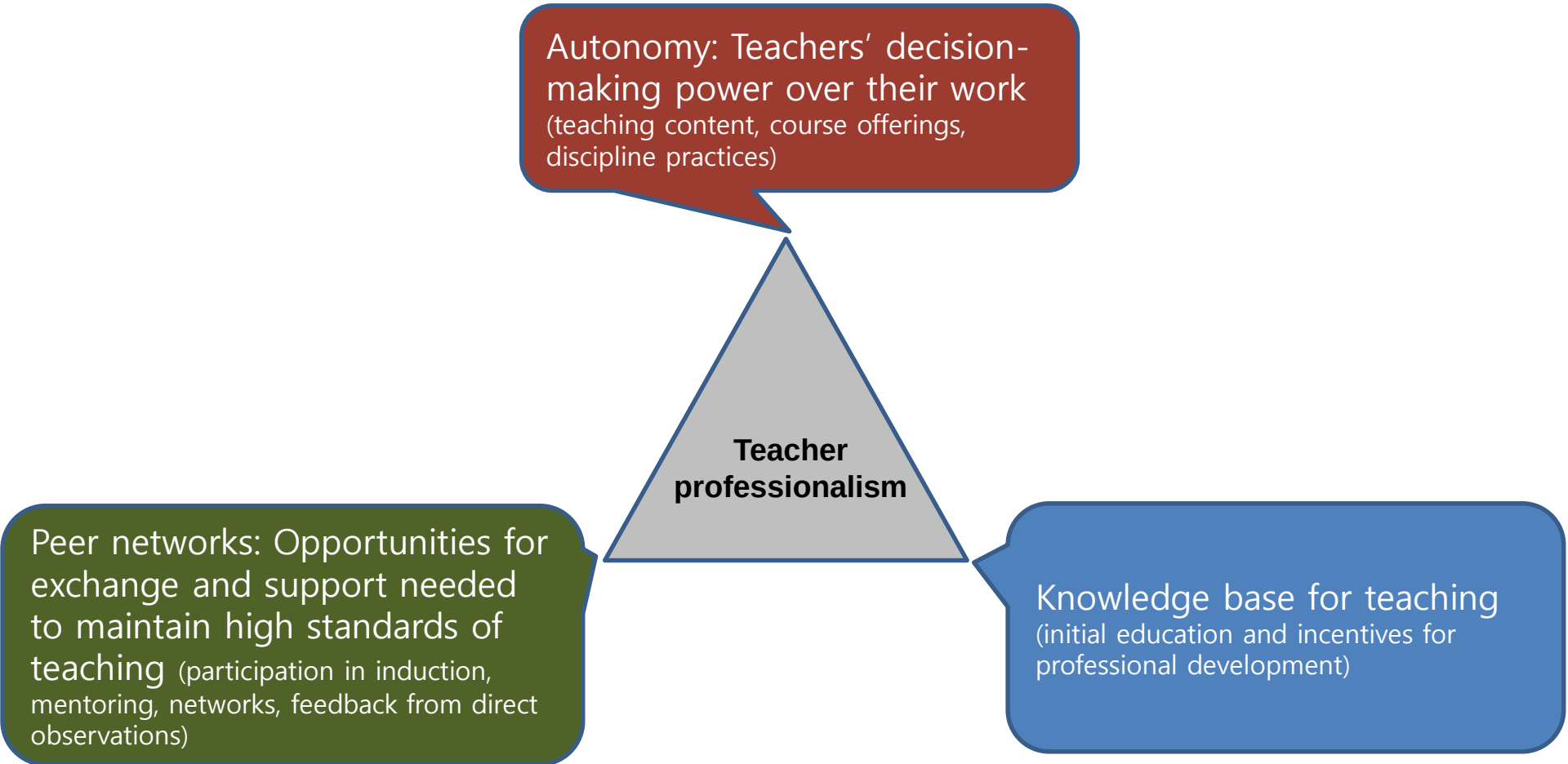


Professionalism

Professionalism is the level of autonomy and internal regulation exercised by members of an occupation in providing services to society

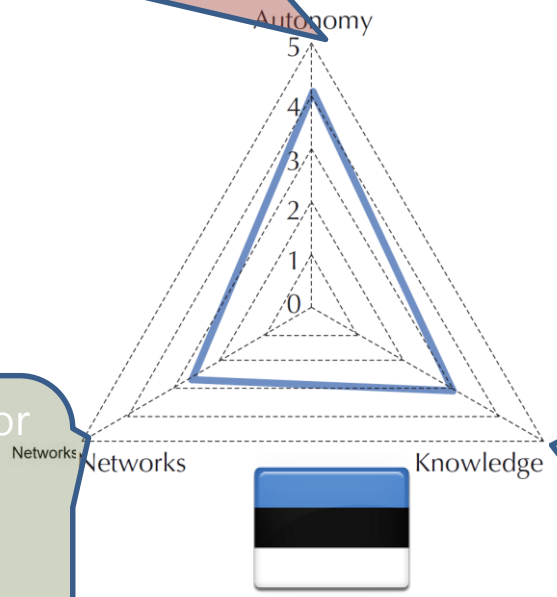


Policy levers to teacher professionalism



Teacher professionalism

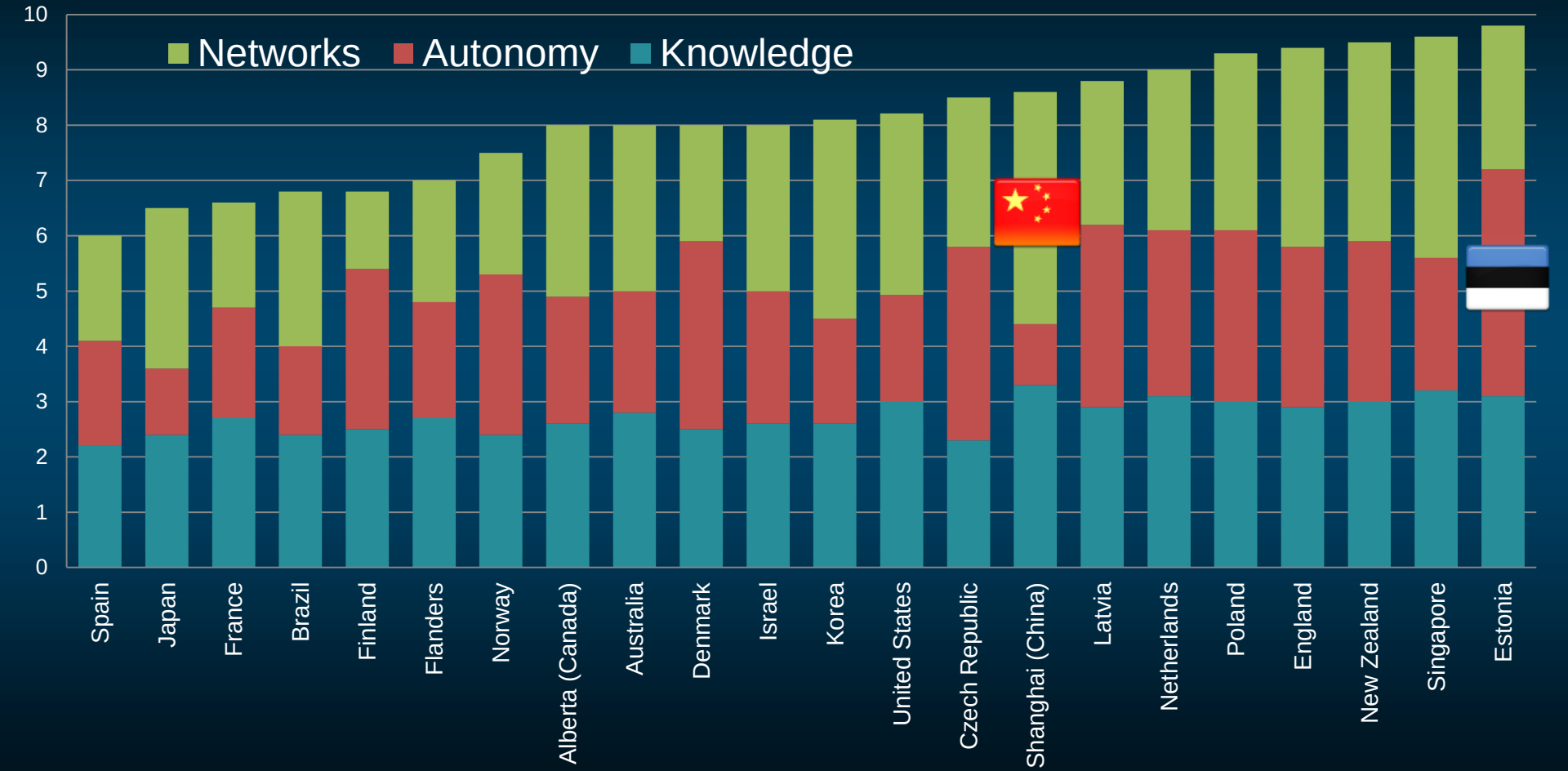
Autonomy: Teachers' decision-making power over their work (teaching content, course offerings, discipline practices)



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

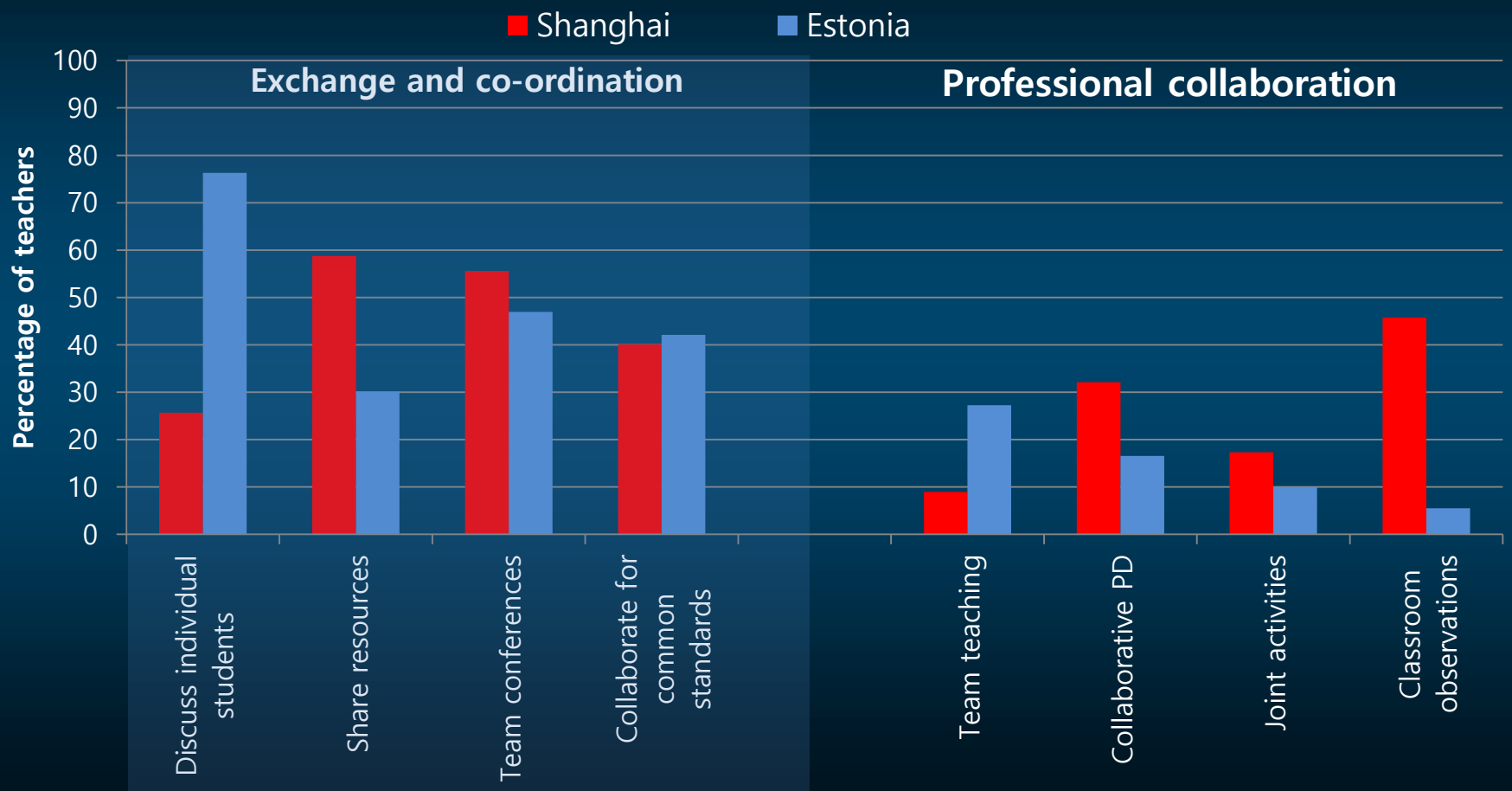
Knowledge base for teaching (initial education and incentives for professional development)

TALIS Teacher professionalism index

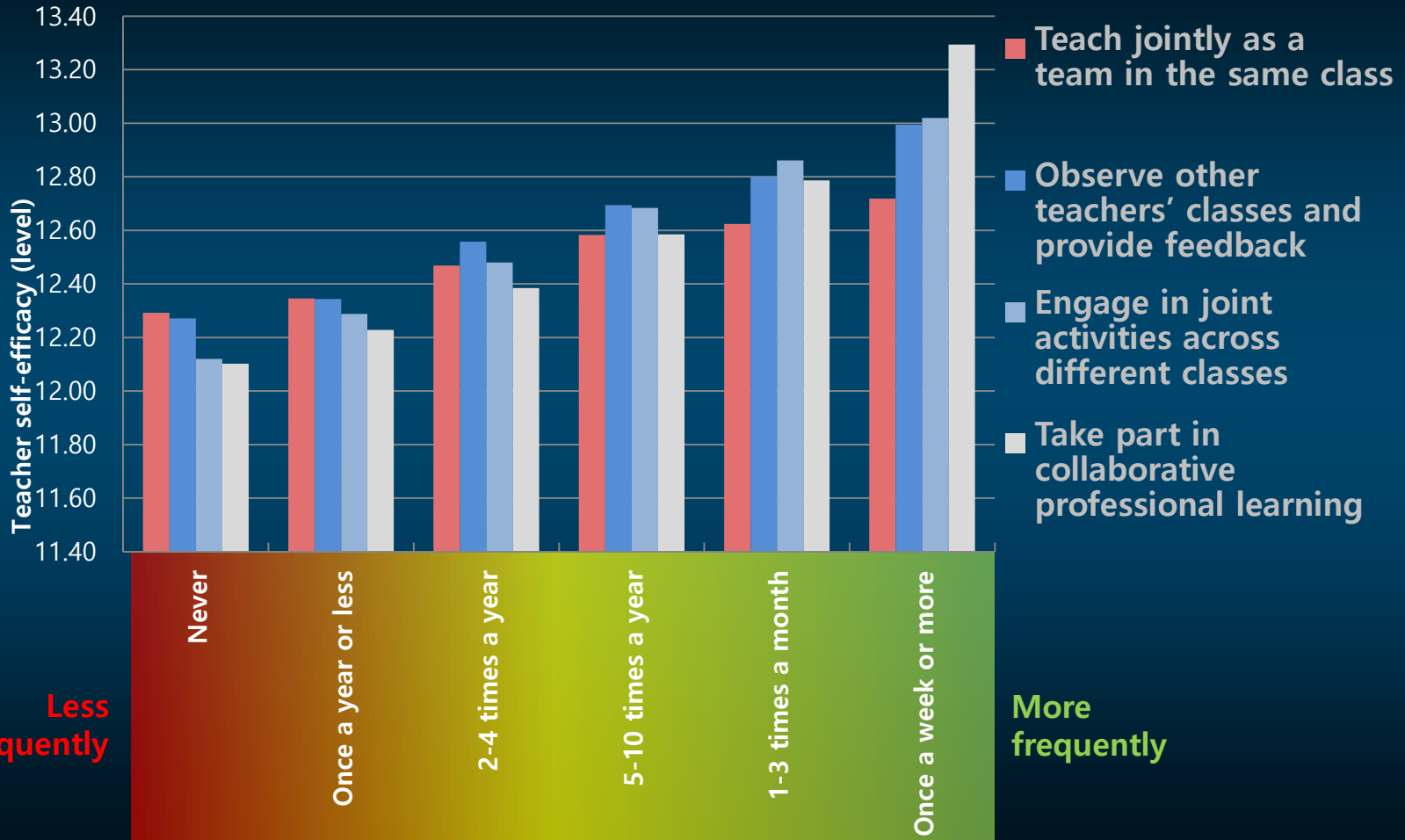


Teacher co-operation

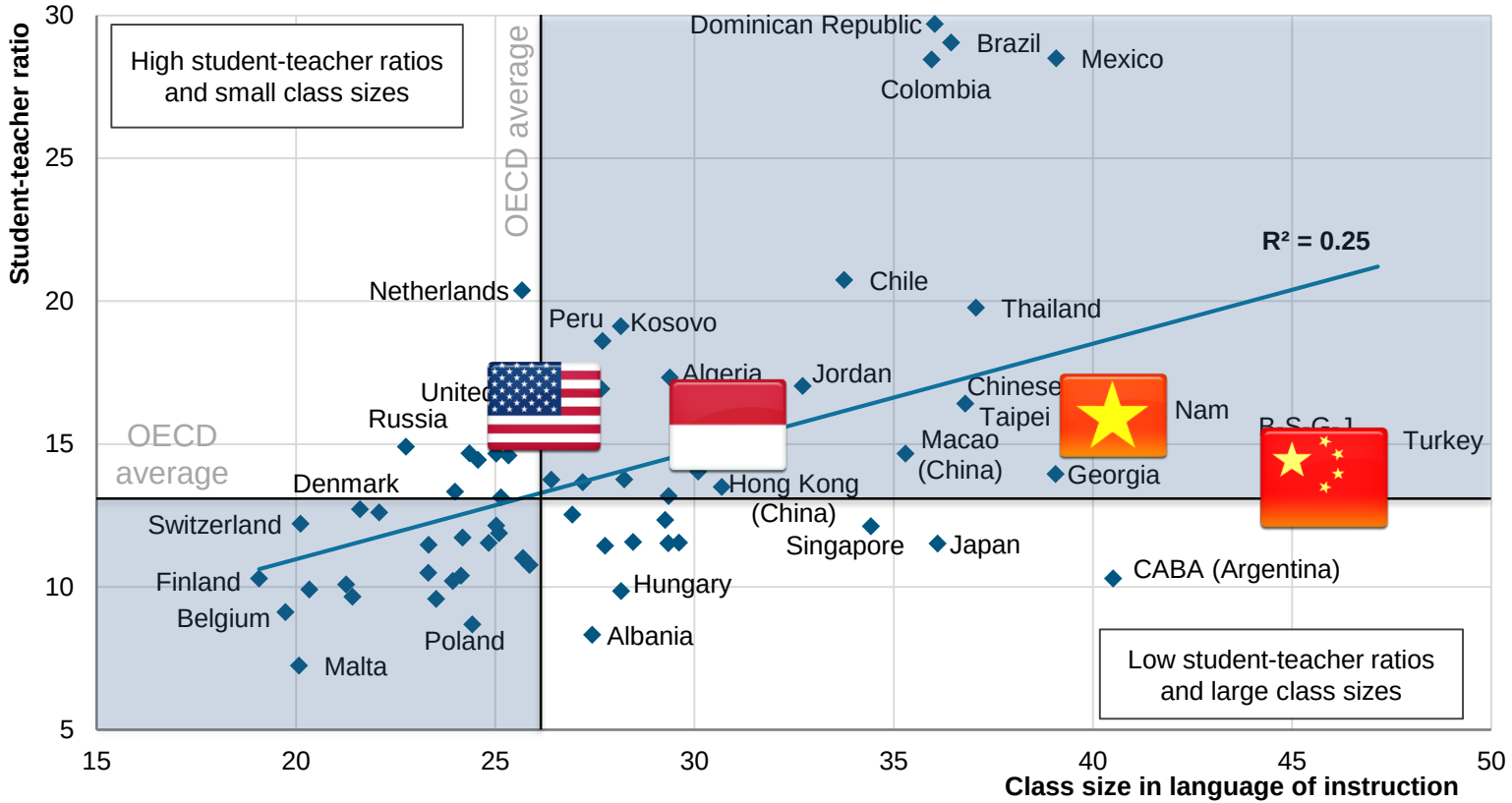
Percentage of lower secondary teachers who report doing the following activities at least once per month



Teachers Self-Efficacy and Professional Collaboration



Student-teacher ratios and class size



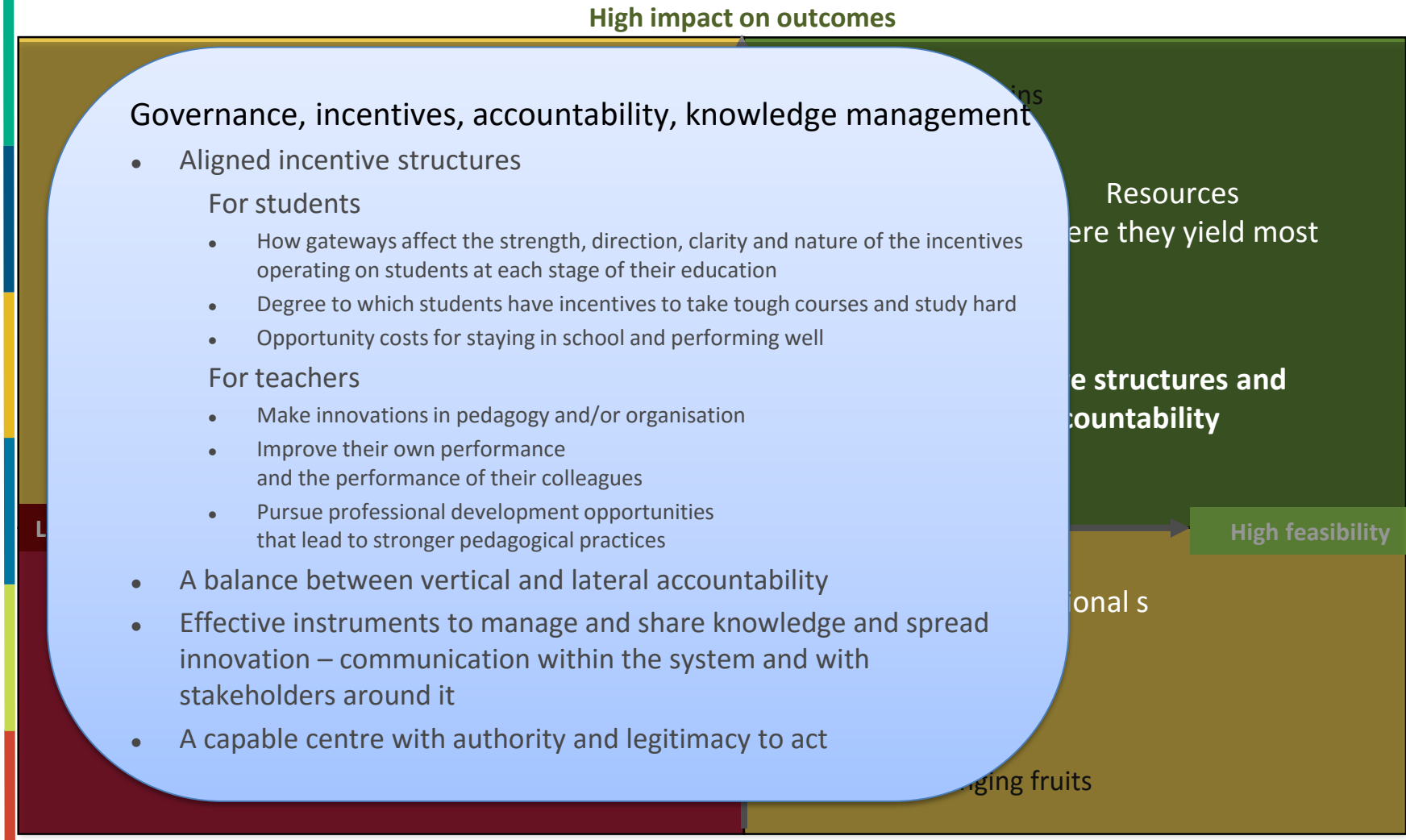
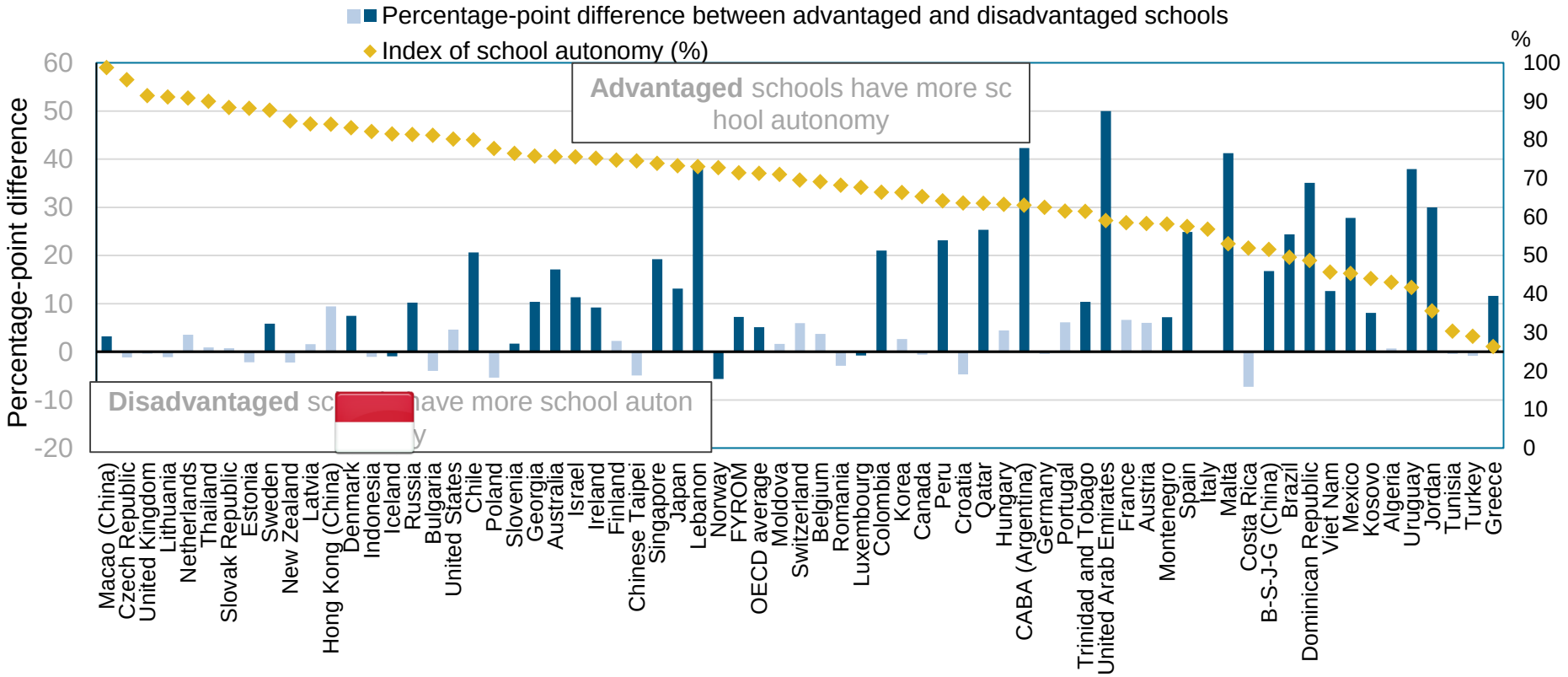

High impact on outcomes
Governance, incentives, accountability, knowledge management
• Aligned incentive structures
For students
• How gateways affect the strength, direction, clarity and nature of the incentives operating on students at each stage of their education
• Degree to which students have incentives to take tough courses and study hard
• Opportunity costs for staying in school and performing well
For teachers
• Make innovations in pedagogy and/or organisation
• Improve their own performance and the performance of their colleagues
• Pursue professional development opportunities that lead to stronger pedagogical practices
• A balance between vertical and lateral accountability
• Effective instruments to manage and share knowledge and spread innovation – communication within the system and with stakeholders around it
• A capable centre with authority and legitimacy to act
Resources
ere they yield most
e structures and
countability
High feasibility
ional s
ging fruits
Low impact on outcomes

Figure II.4.7

Index of school autonomy

by schools' socio-economic status



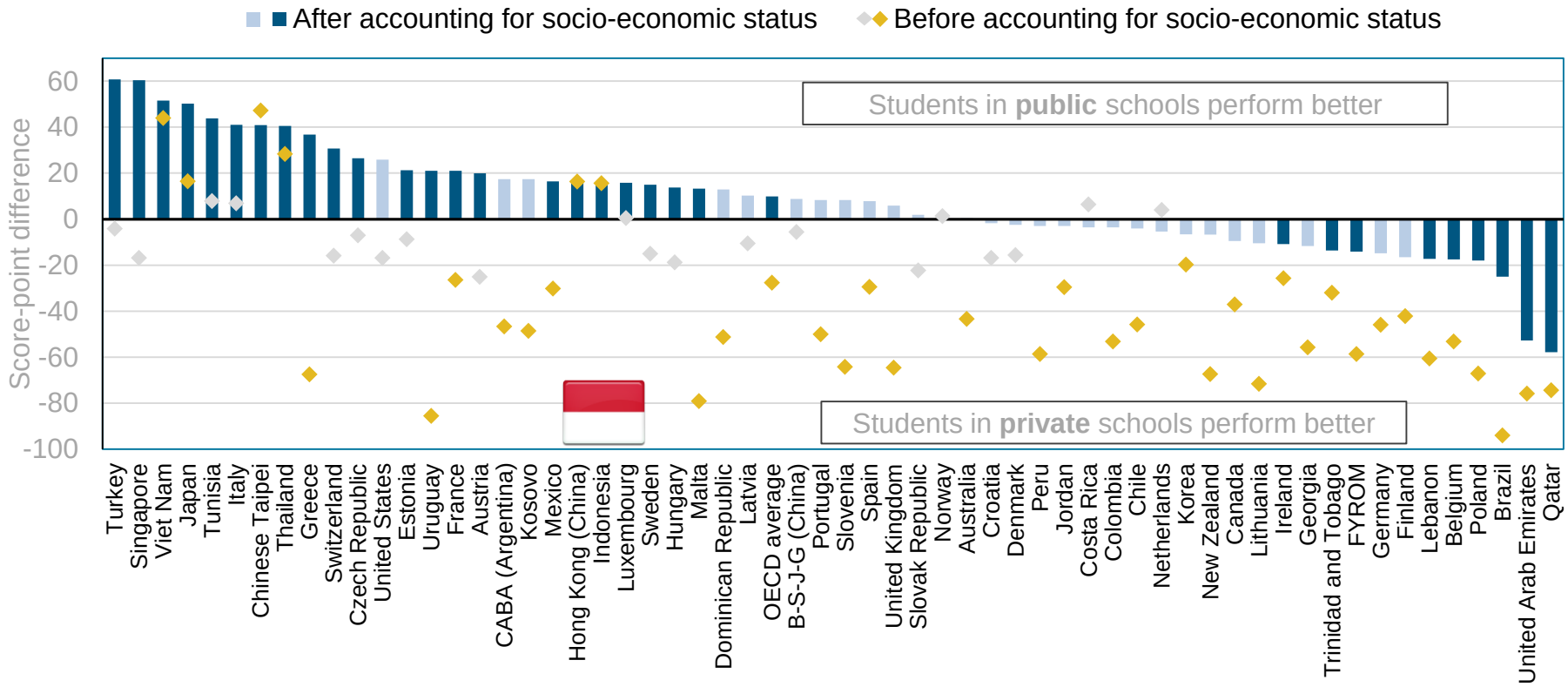
Public and private schools

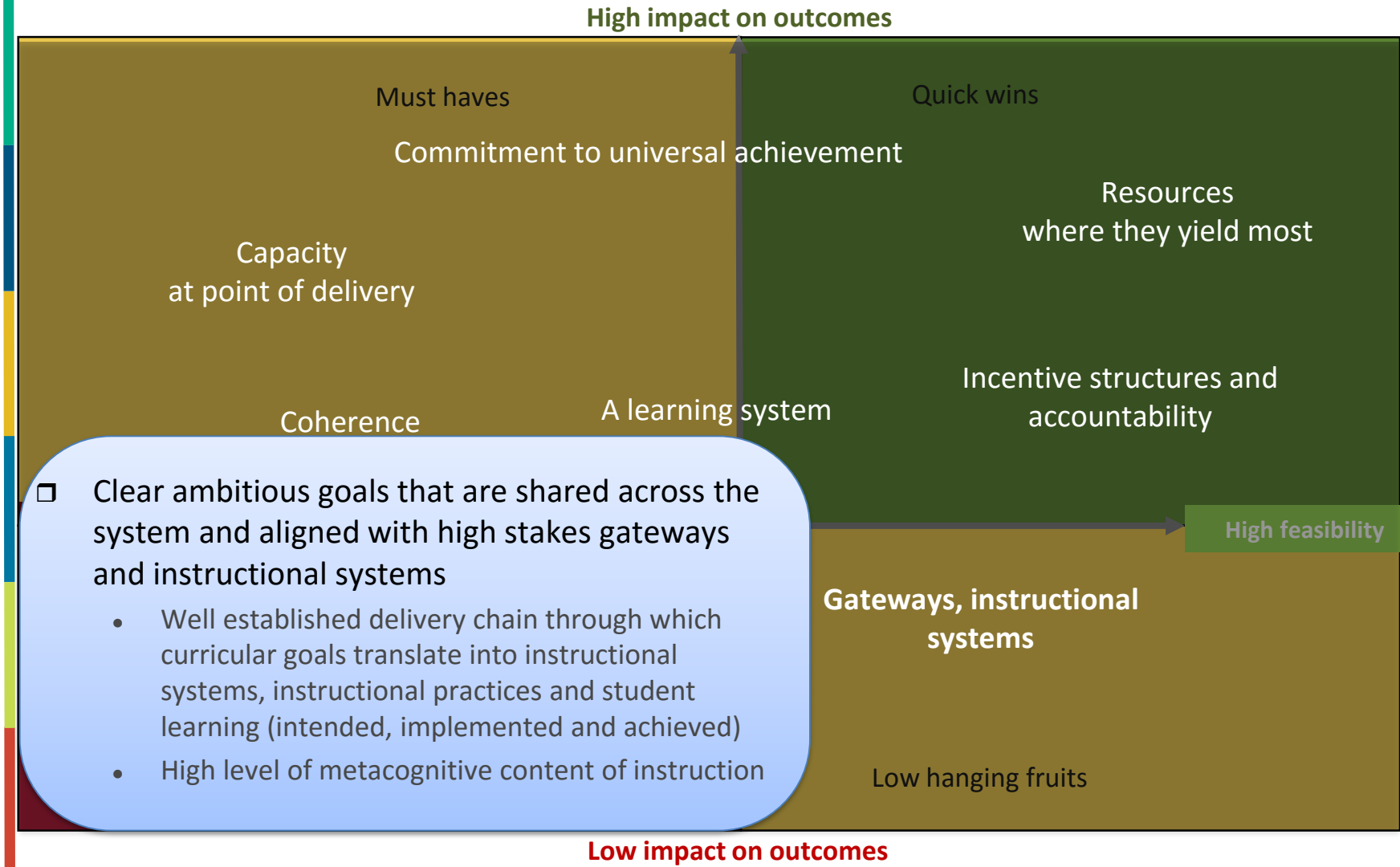
Across OECD countries, 84% of students attend public schools,
12% government-dependent private schools and 4% independent private schools

PISA generally observes no systematic net performance differences

Figure II.4.14

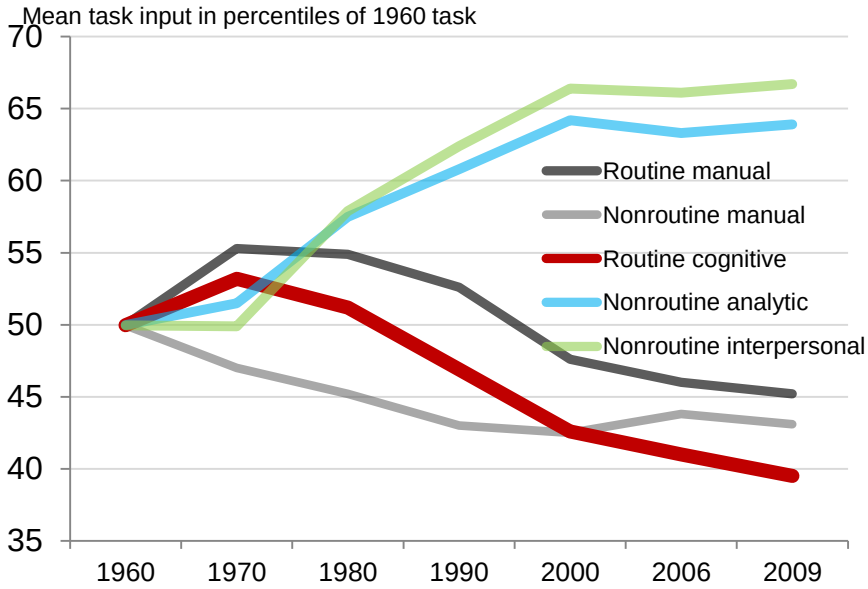
Science performance in public and private schools





- Clear ambitious goals that are shared across the system and aligned with high stakes gateways and instructional systems
  - Well established delivery chain through which curricular goals translate into instructional systems, instructional practices and student learning (intended, implemented and achieved)
  - High level of metacognitive content of instruction

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

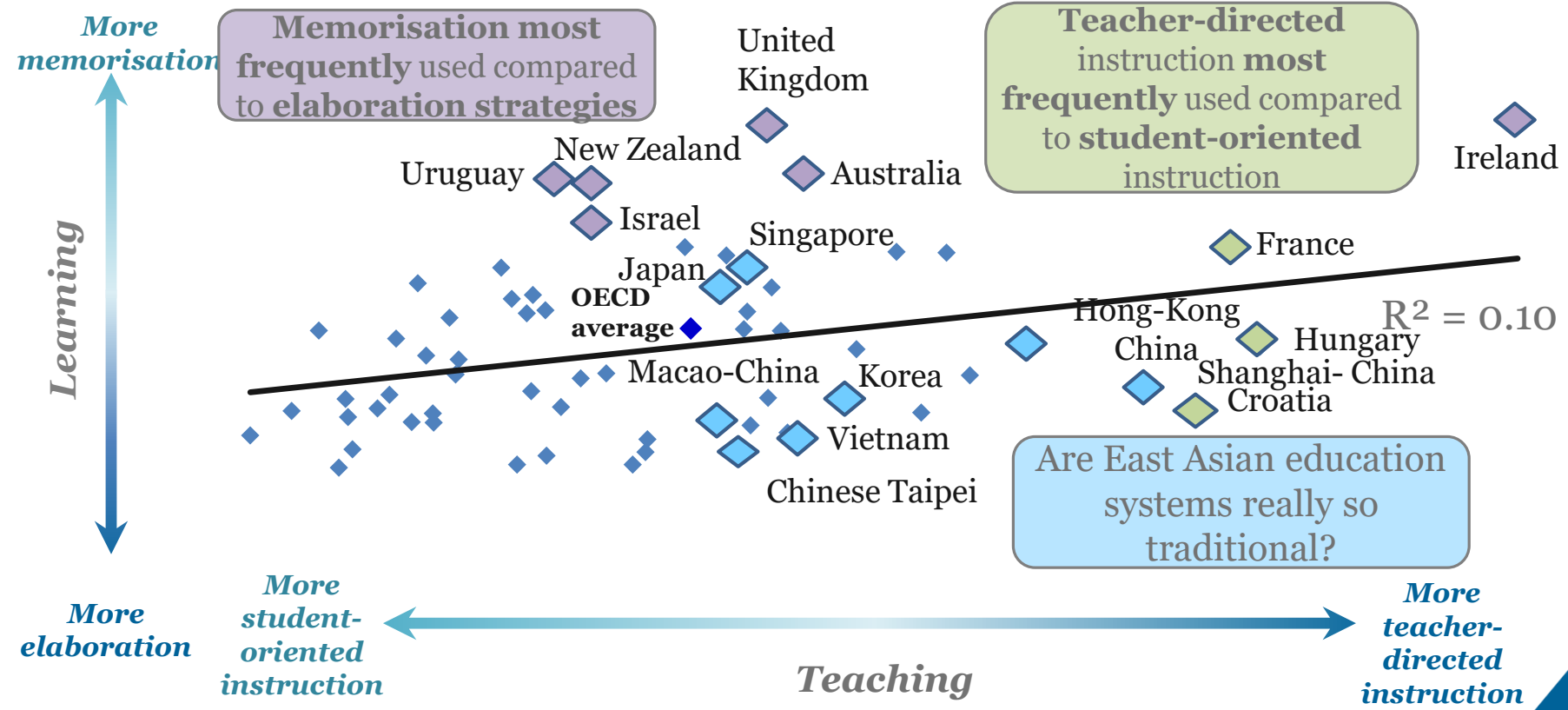


Effective teaching

A well-structured, clear and informative lesson on a topic including teachers' explanations, classroom debates and students' questions pays off, as does adaptive instruction

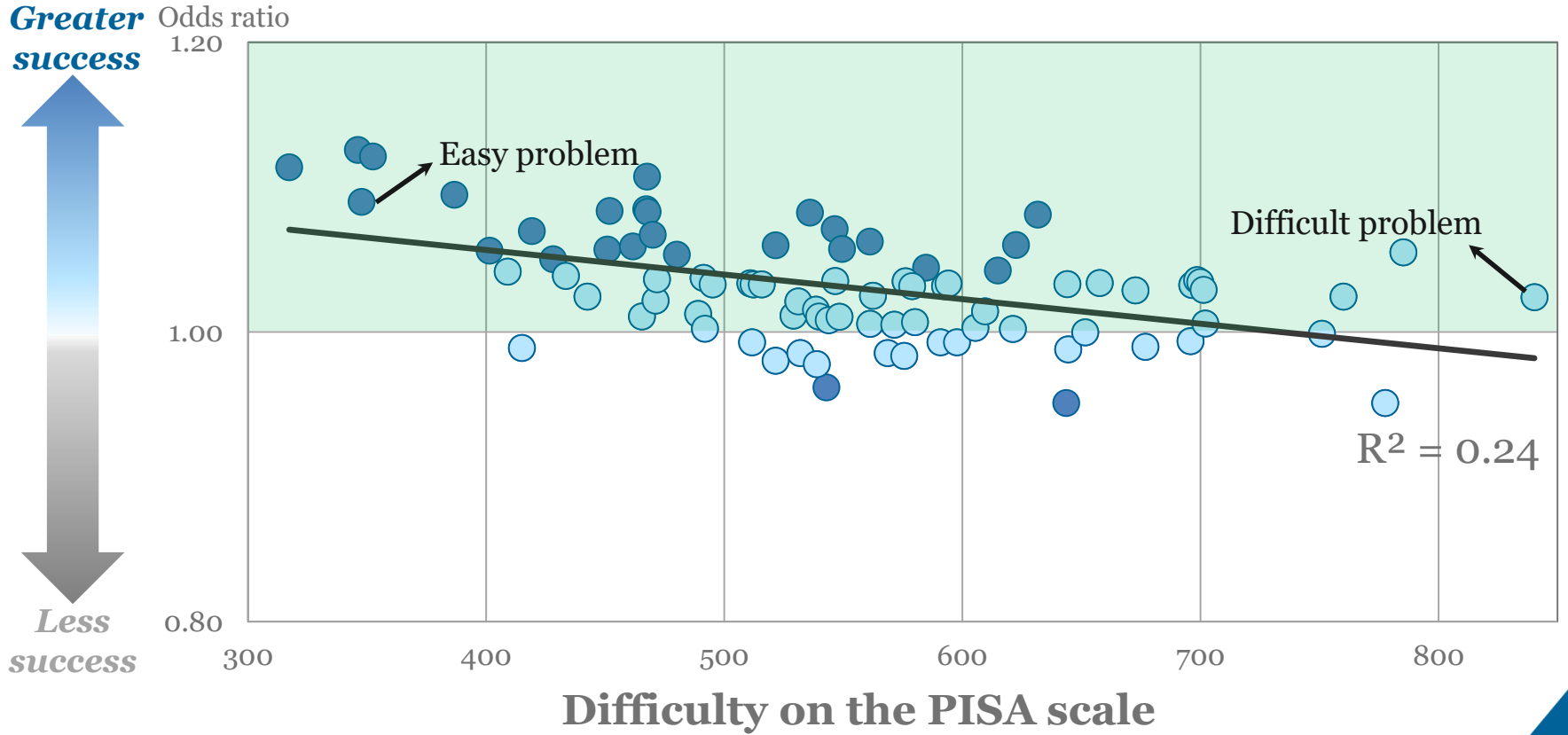
Inquiry-based science instruction (e.g. experimentation and hands-on activities) tends to relate negatively to performance but positively to student engagement and career expectations

Teaching and learning strategies in mathematics around the world



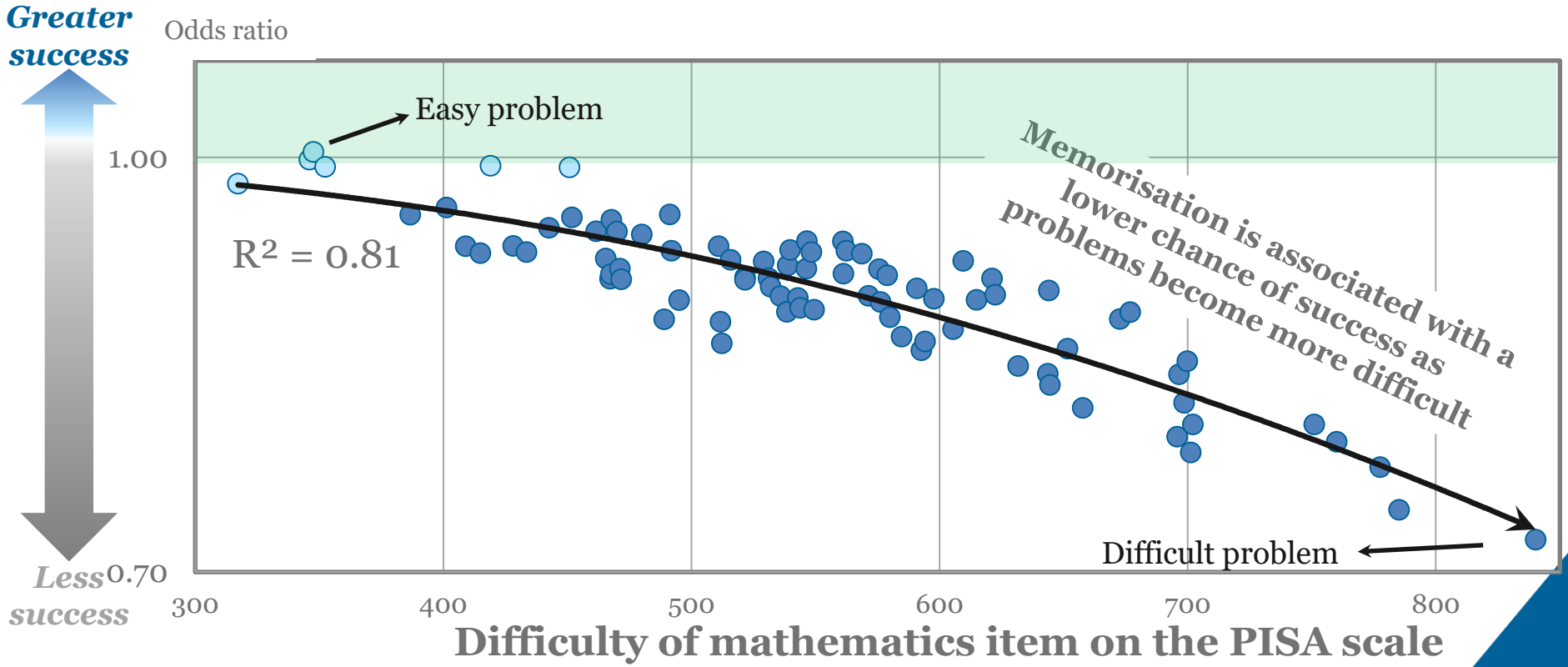
Source: Figure 1.2

Teacher-directed strategies are related with **higher solution rates** *(OECD average)*



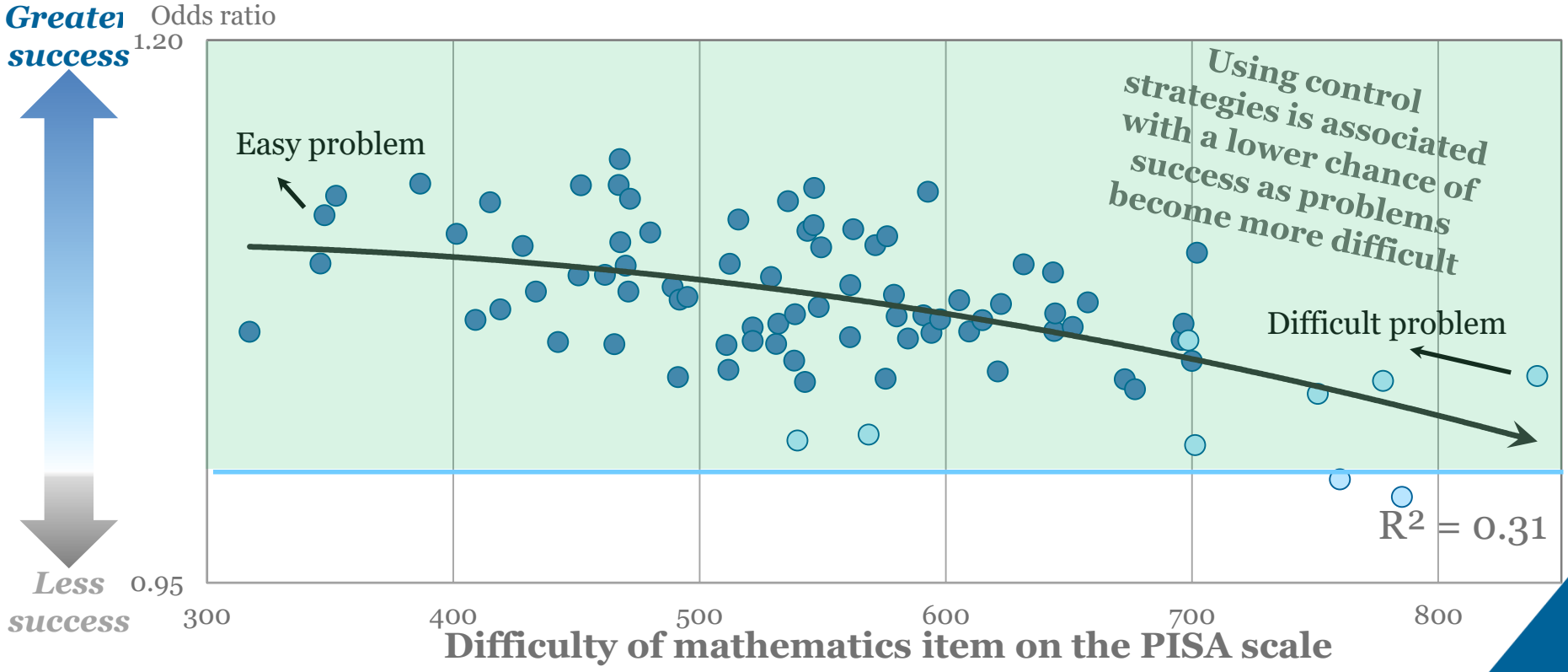
Source: Figure 1.4

Memorisation is **less useful** as problems become **more difficult** *(OECD average)*



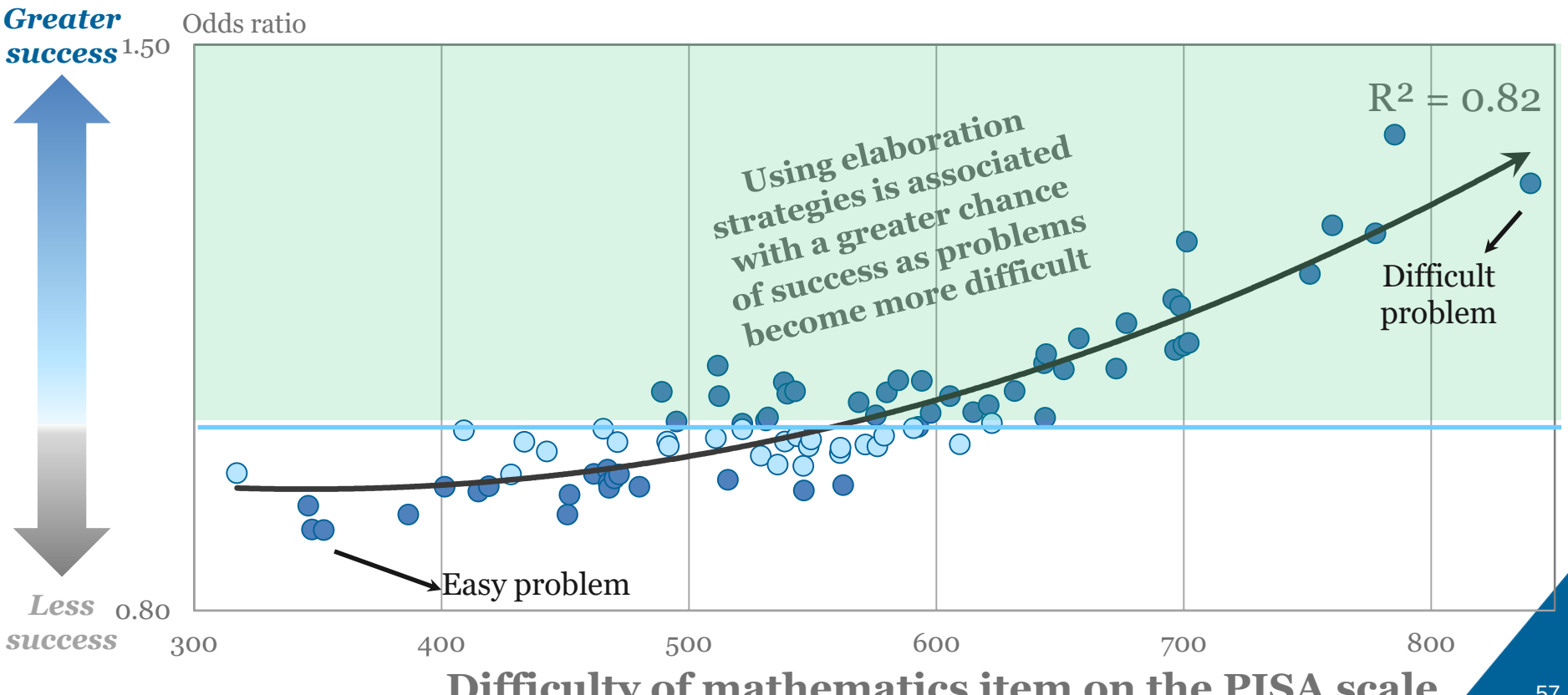
Source: Figure 4.3

Control strategies are **always helpful** but **less so** as problems become **more difficult** *(OECD average)*

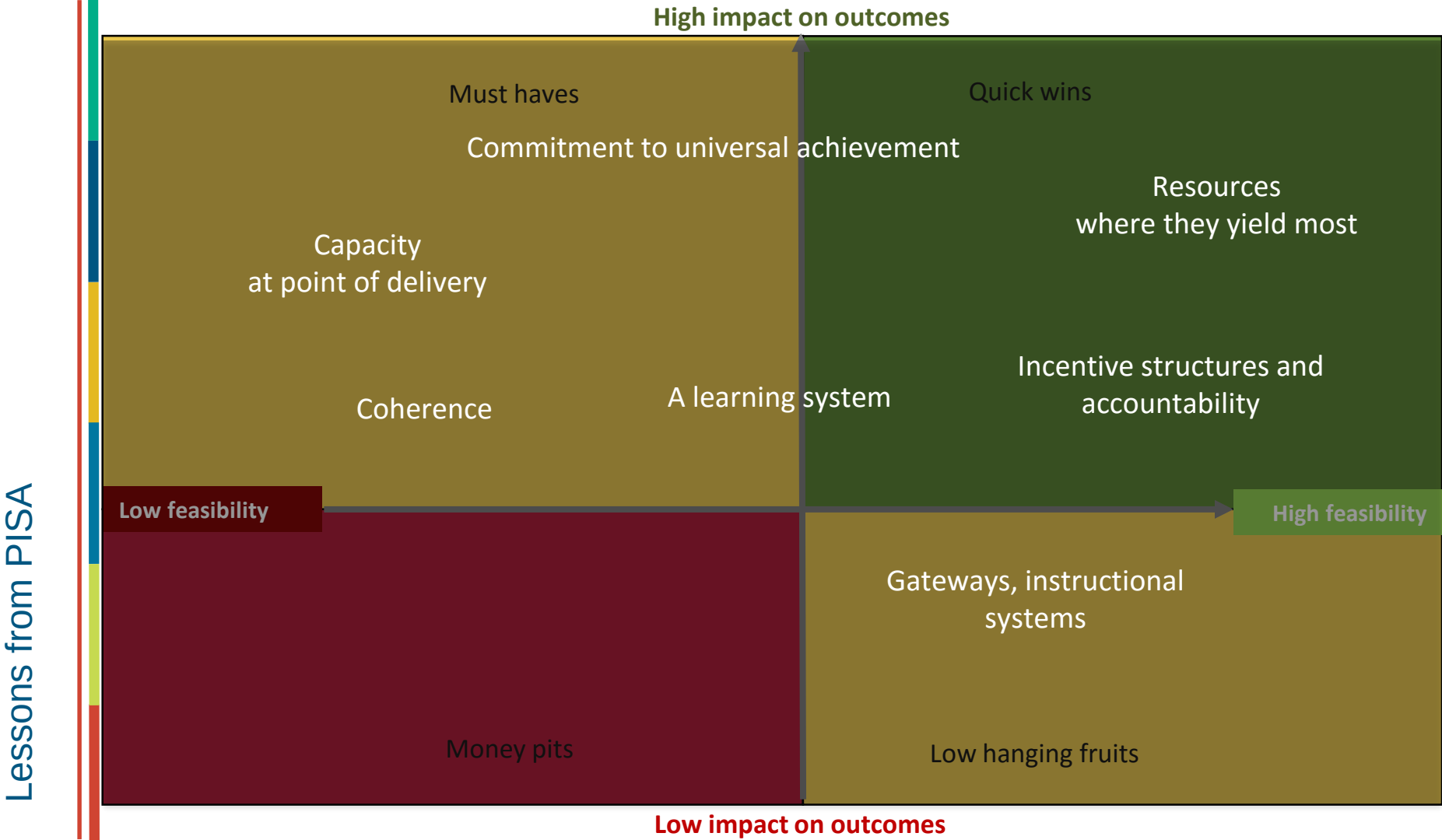


Source: Figure 5.2

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



Source: Figure 6.2


High impact on outcomes
Must haves
Quick wins
Commitment to universal achievement
Resources
where they yield most
Capacity
at point of delivery
Incentive structures and
accountability
Coherence
A learning system
Low feasibility
High feasibility
Gateways, instructional
systems
Money pits
Low hanging fruits
Low impact on outcomes
Lessons from PISA

Schooling today		Schooling tomorrow
Some students learn at high levels	→	**All** students learn at high levels
Uniformity	→	Embracing diversity
Curriculum-centred	→	Learner-centred
Learning a place	→	Learning an activity
Prescription	→	Informed profession
Delivered wisdom	→	User-generated wisdom

Thank you

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and remember: