



Preparing Learners for their future Not our past

Scuola Centrale Formazione/AIMFR international conference

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The future will always surprise us

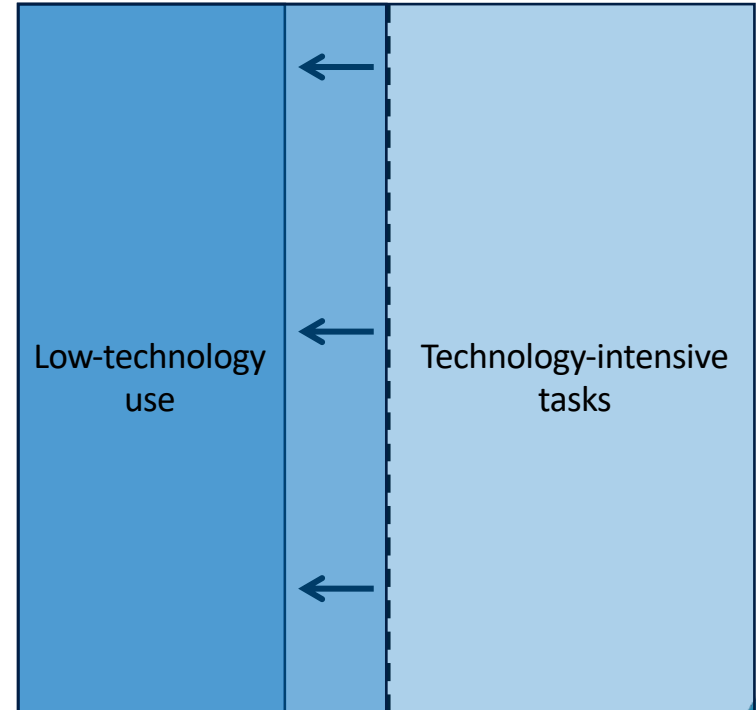
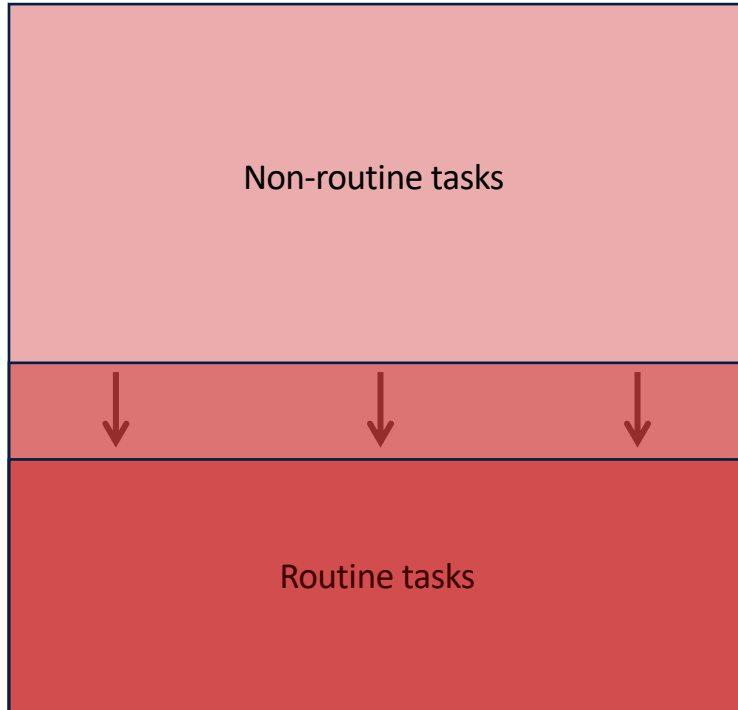
Impact



Uncertainty

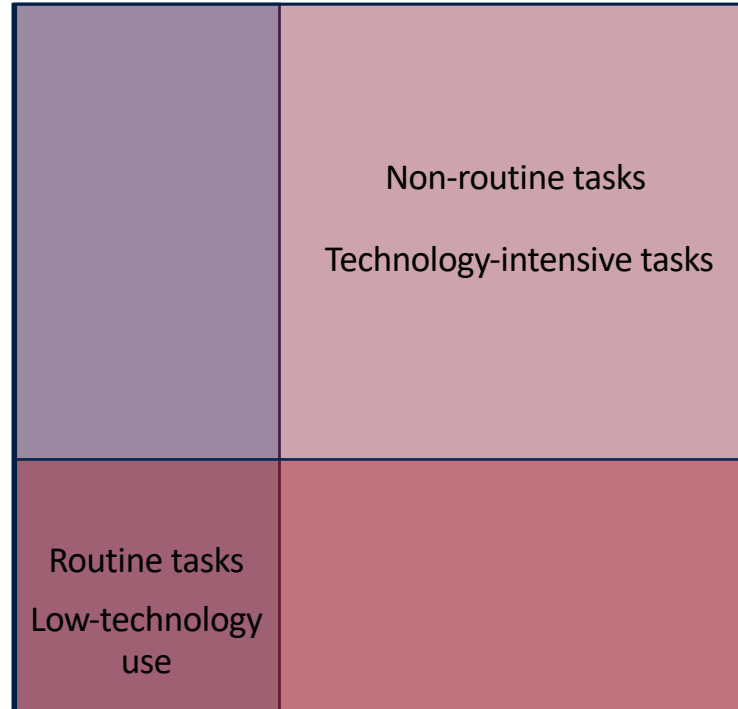


The kinds of things that are easy to teach...
... have now become easy to digitise and automate



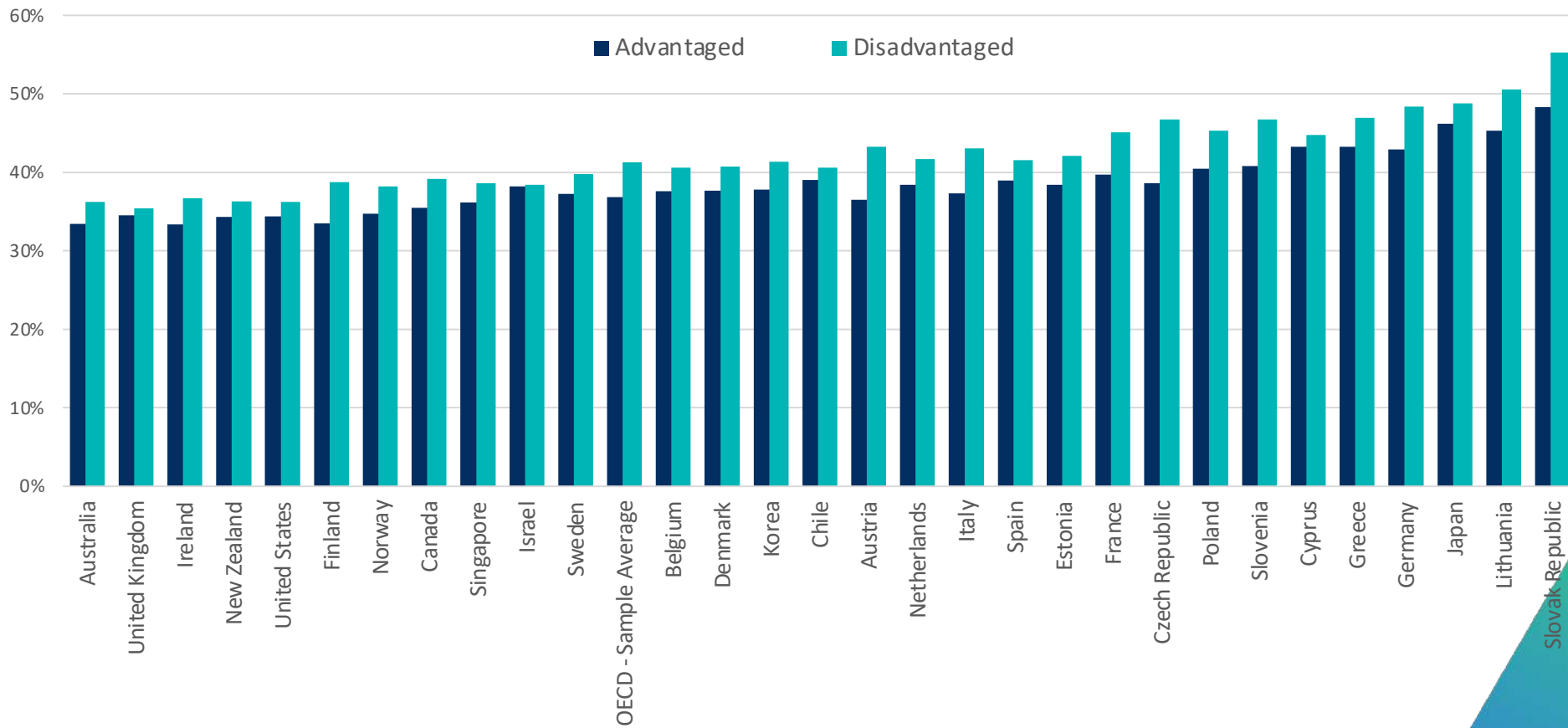


The kinds of things that are easy to teach...
... have now become easy to digitise and automate





Many teenagers aspire to jobs that are at high risk of automation (PISA)

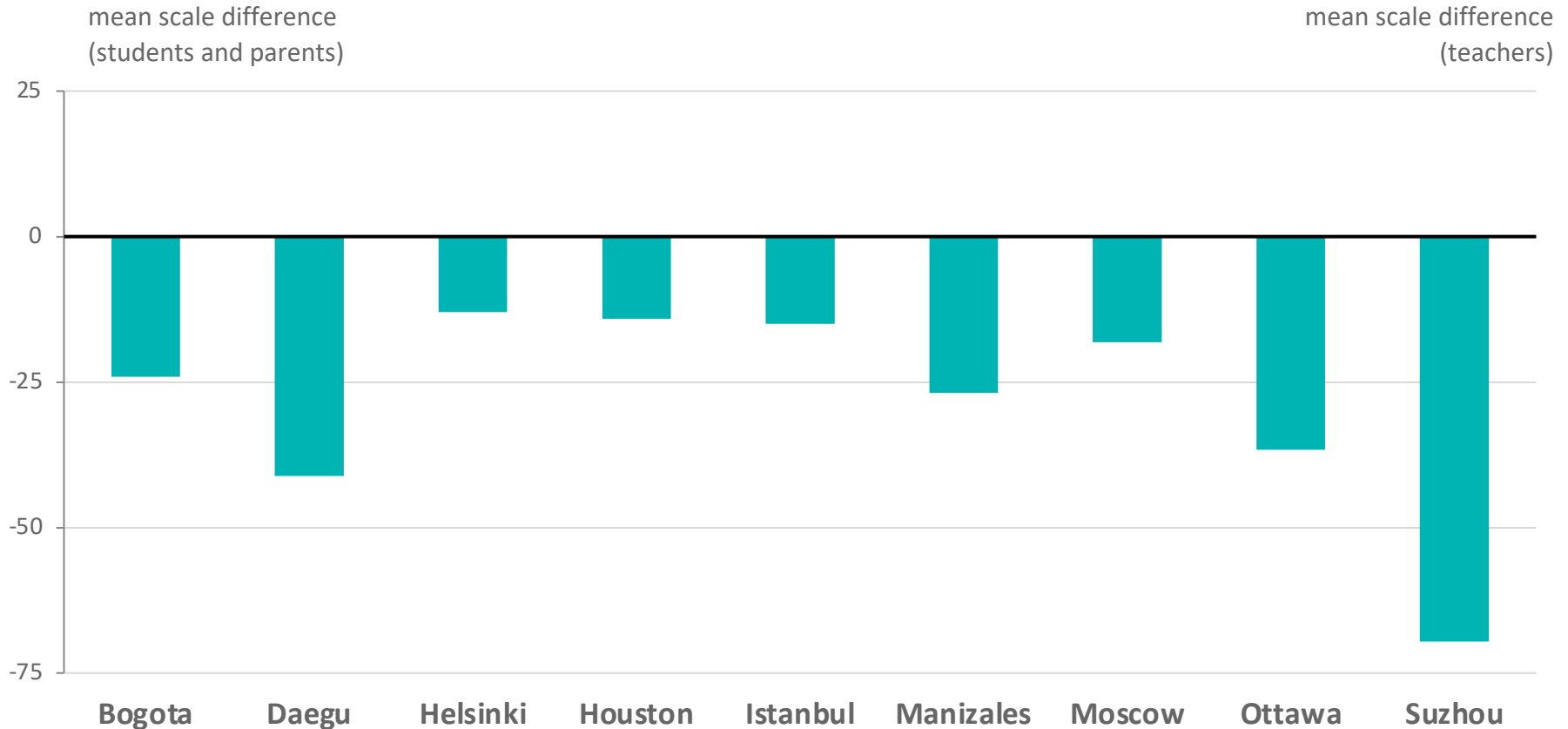




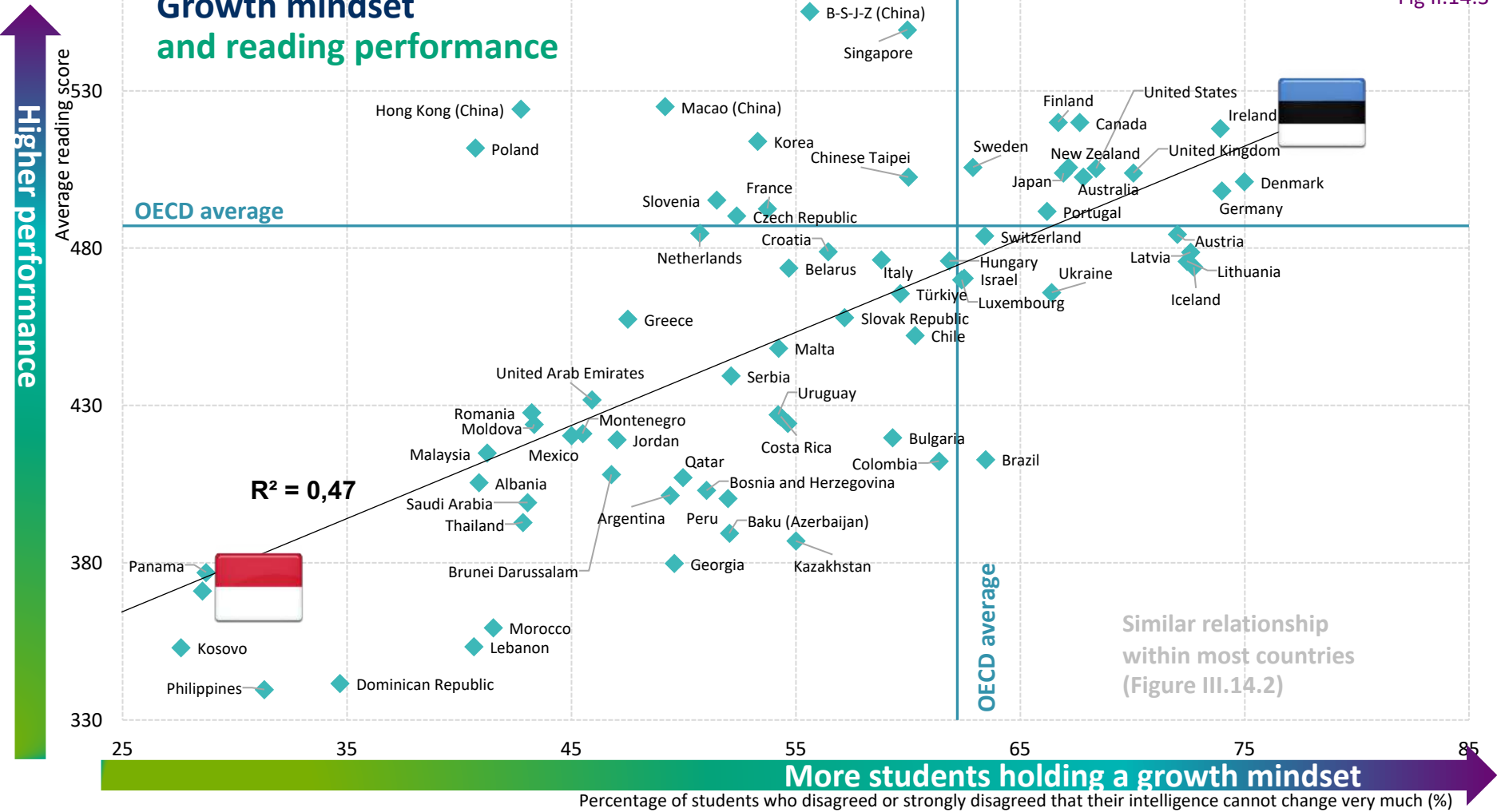
15-year-olds report lower creativity than 10-year-olds

Age gaps in creativity

Figure 4.3



Growth mindset and reading performance



Similar relationship within most countries (Figure III.14.2)

More students holding a growth mindset

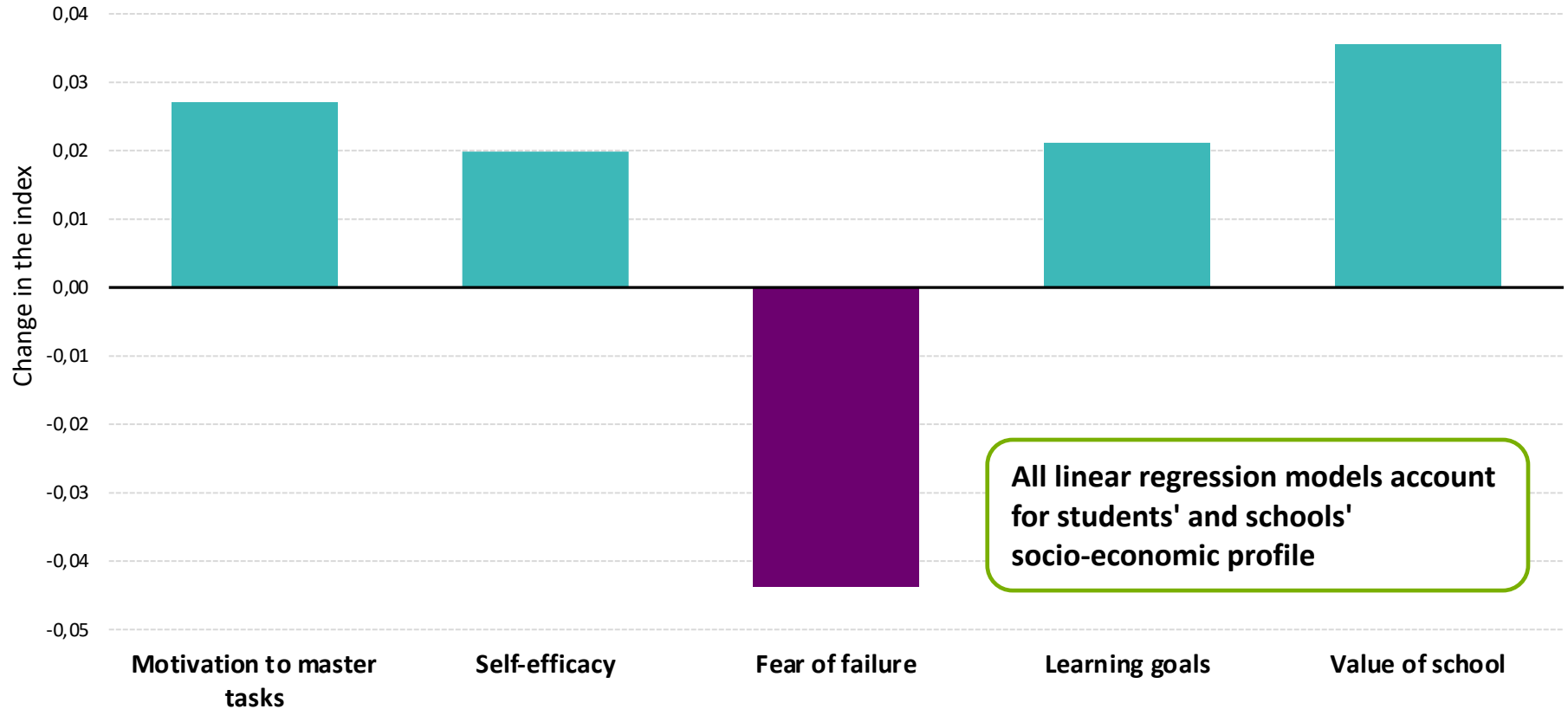
Percentage of students who disagreed or strongly disagreed that their intelligence cannot change very much (%)



Growth mindset and student attitudes

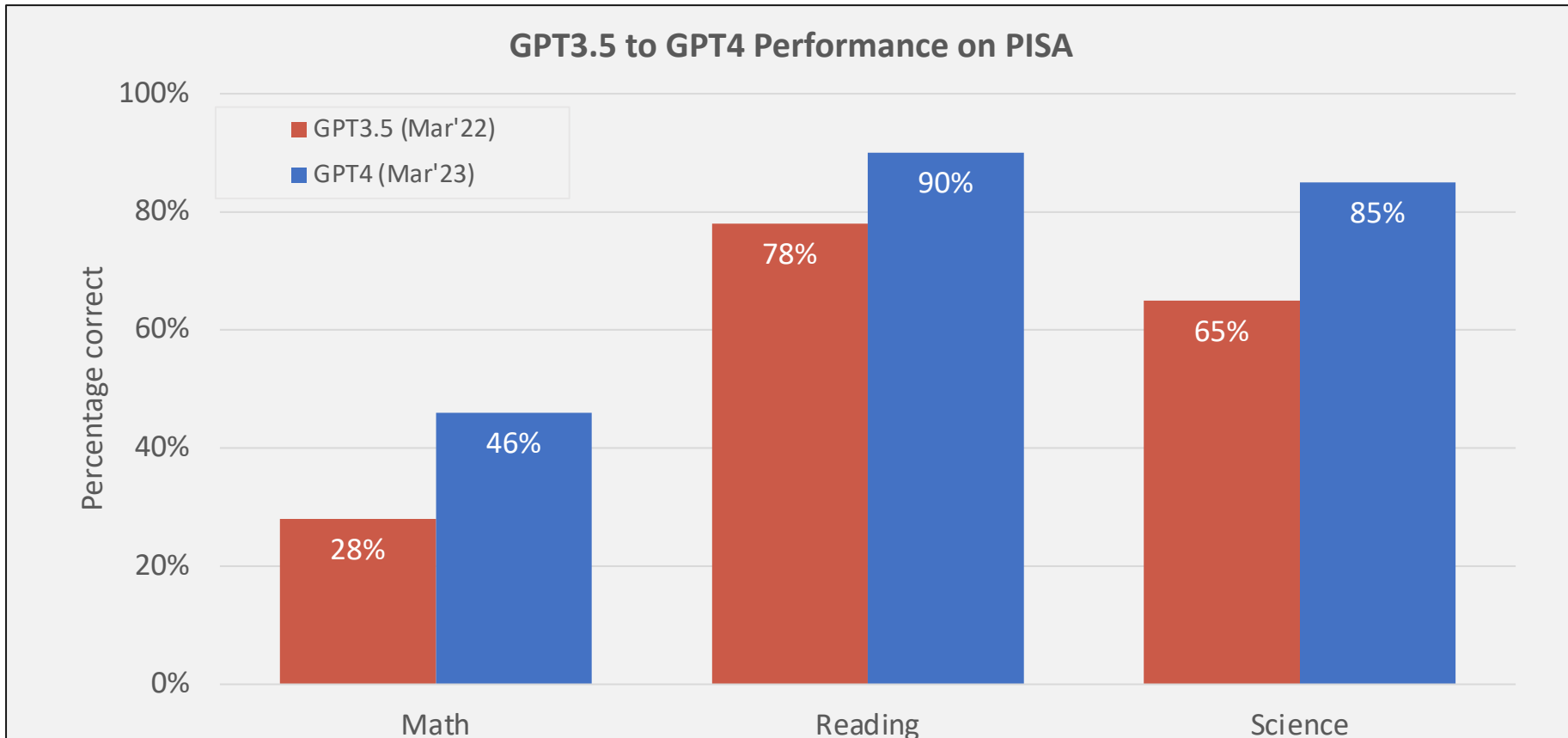
Change in the following indices when students disagreed or strongly disagreed that "your intelligence is something about you that you can't change very much":

Fig III.14.5





GPT Performance on PISA student assessments





AI still has many limitations, but will improve

Near-term

Tracability

- Trace and identify sources,
- Improve citations

Accuracy

- Incorporate fact-checking





AI still has many limitations, but will improve

Mid-term

Interpretation

- Understanding semantic of queries
- More natural writing style

Long-term

Reduced bias

→ Reduced bias in model outputs

Increased originality

→ Increased originality in model outputs



AI still has many limitations, but will improve

Long-term

Reduced bias

- Avoid that bias in training data is inherited

Increased originality

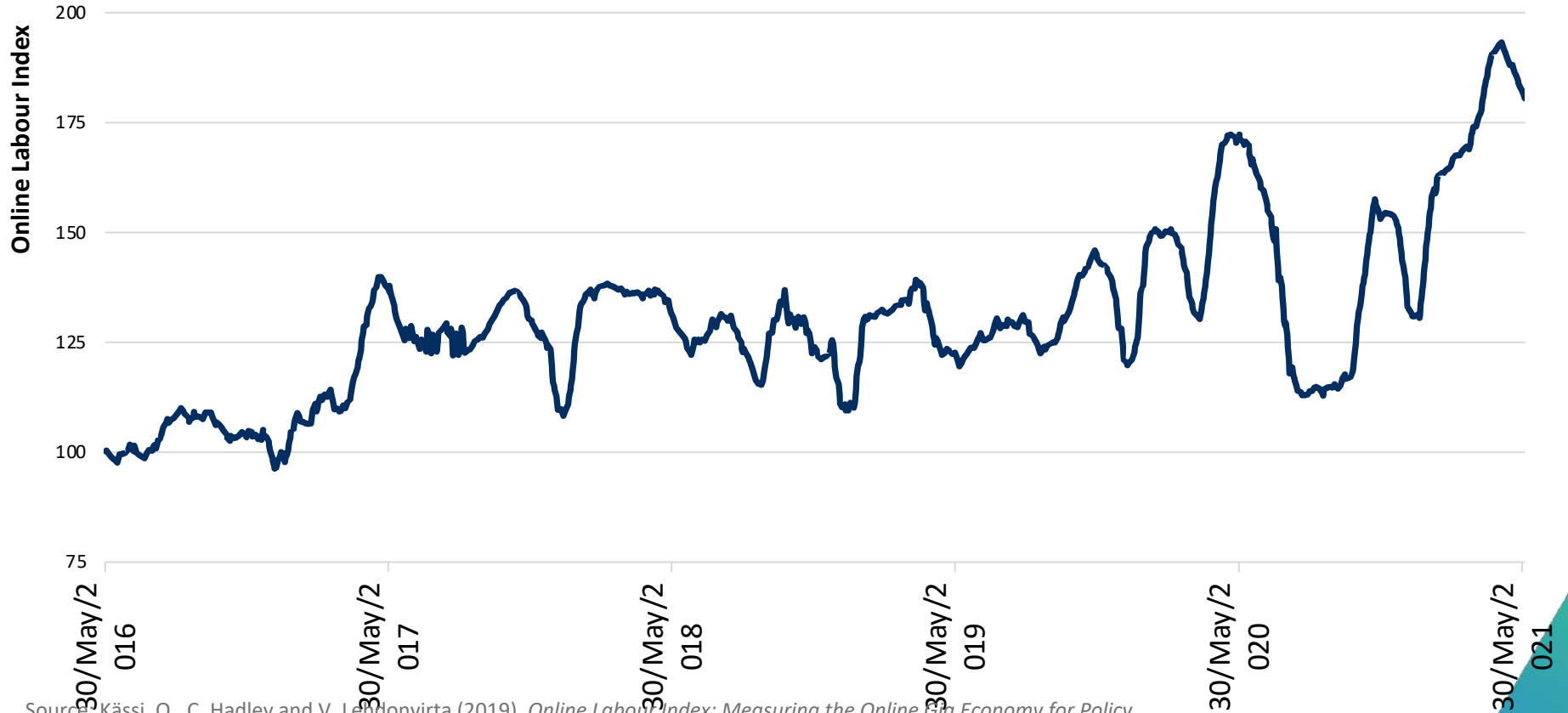
- Go beyond the synthesis of training data



Digital Taylorism

Online Labour Index (OLI), May 2016-May 2021

Figure 2.4



Source: Kässä, O., C. Hadley and V. Lendonvirta (2019), *Online Labour Index: Measuring the Online Gig Economy for Policy and Research*, figshare Dataset. <https://doi.org/10.6084/m9.figshare.3761562.v1842>.

The future of education and skills

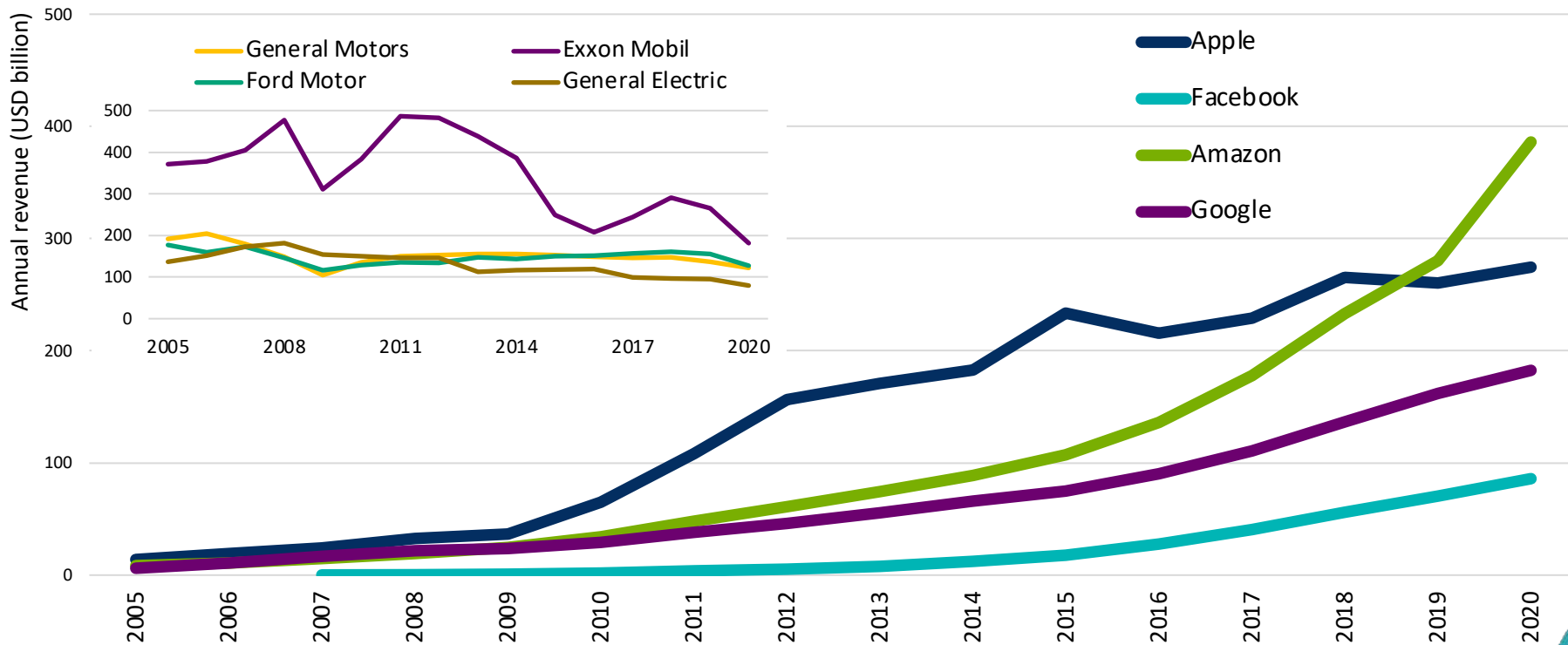
The rise of intangibles





The rise of Big Tech

Annual revenue of top four companies from the Fortune 500 in 1960 vs “Big Four” tech companies, 2005-2020 Figure 1.4



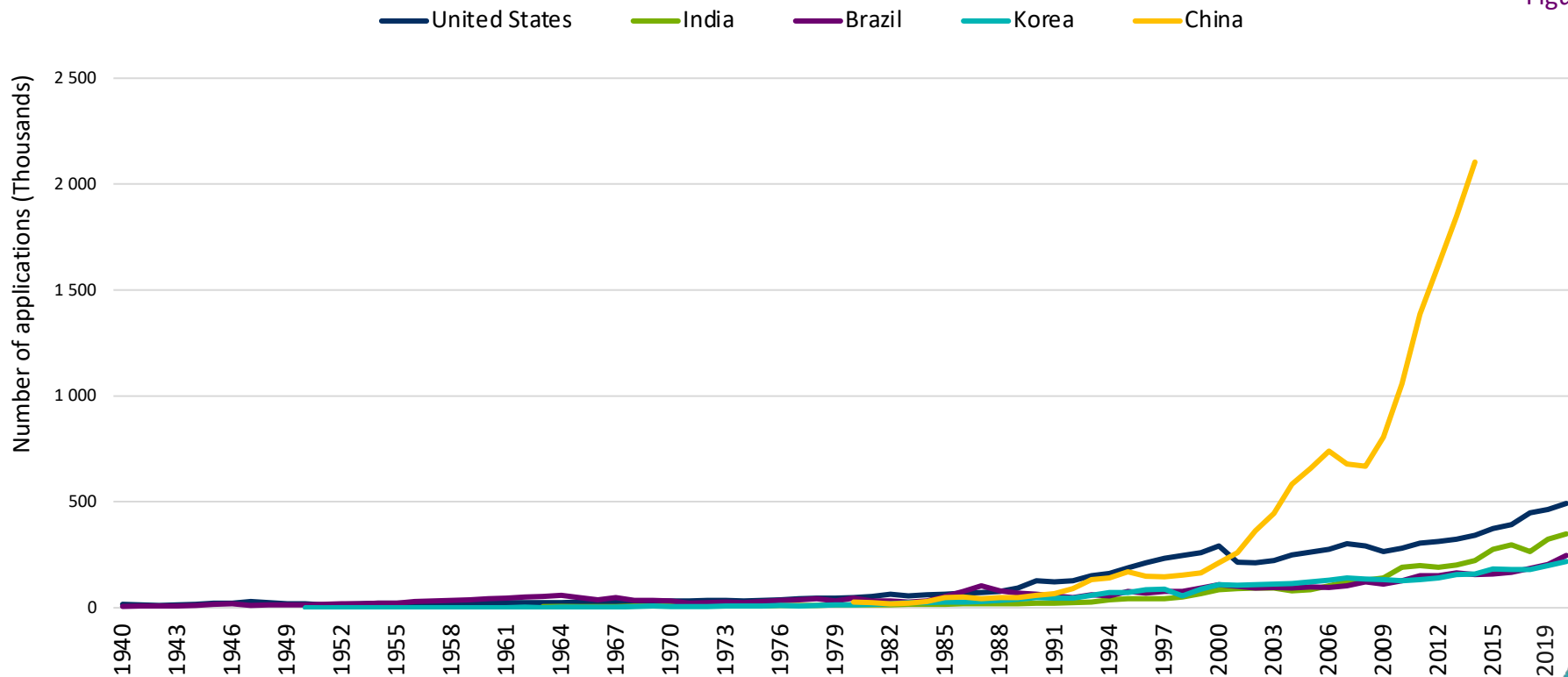
Source: OECD(2019), *An Introduction to Online Platforms and Their Role in the Digital Transformation*, <https://doi.org/10.1787/53e5f593-en>; 'companies' annual reports; and <https://macrorends.net>



Intangible innovation

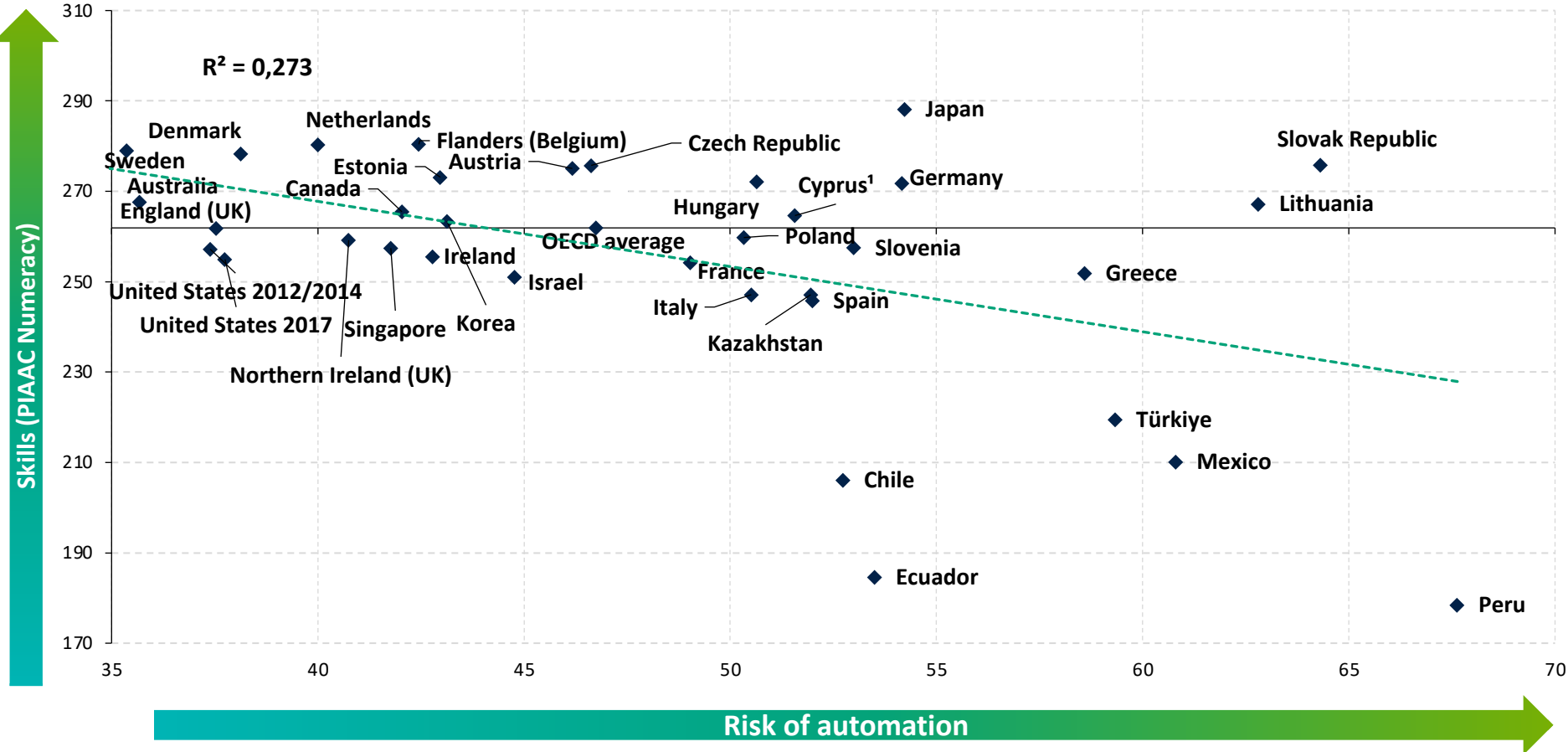
Trademark applications for the top five offices, 1940-2019

Figure 1.3





Skills and the risk of automation



The future of education and skills

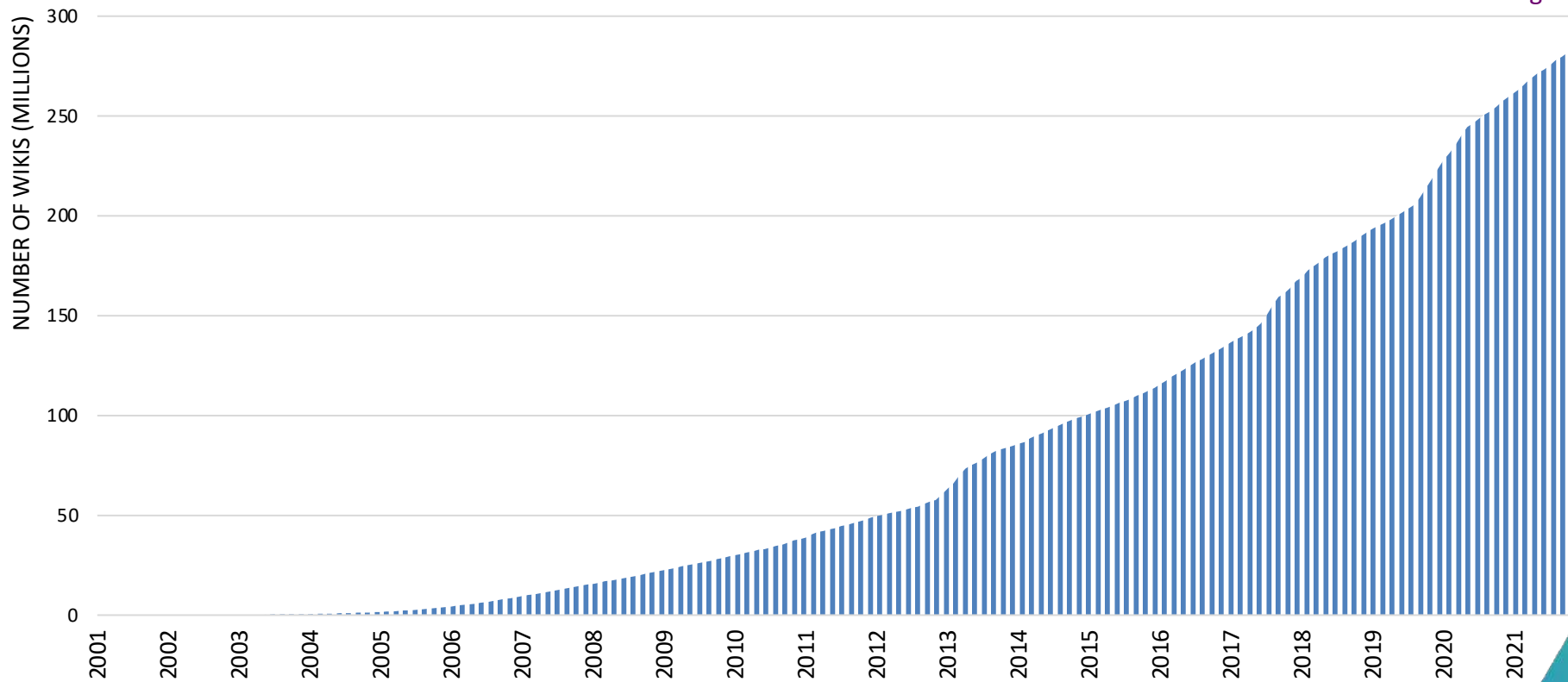
Learning for the digital world, learning in the digital world



The wisdom of crowds

Number of pages in all wikis, 2001-2021

Figure 3.2

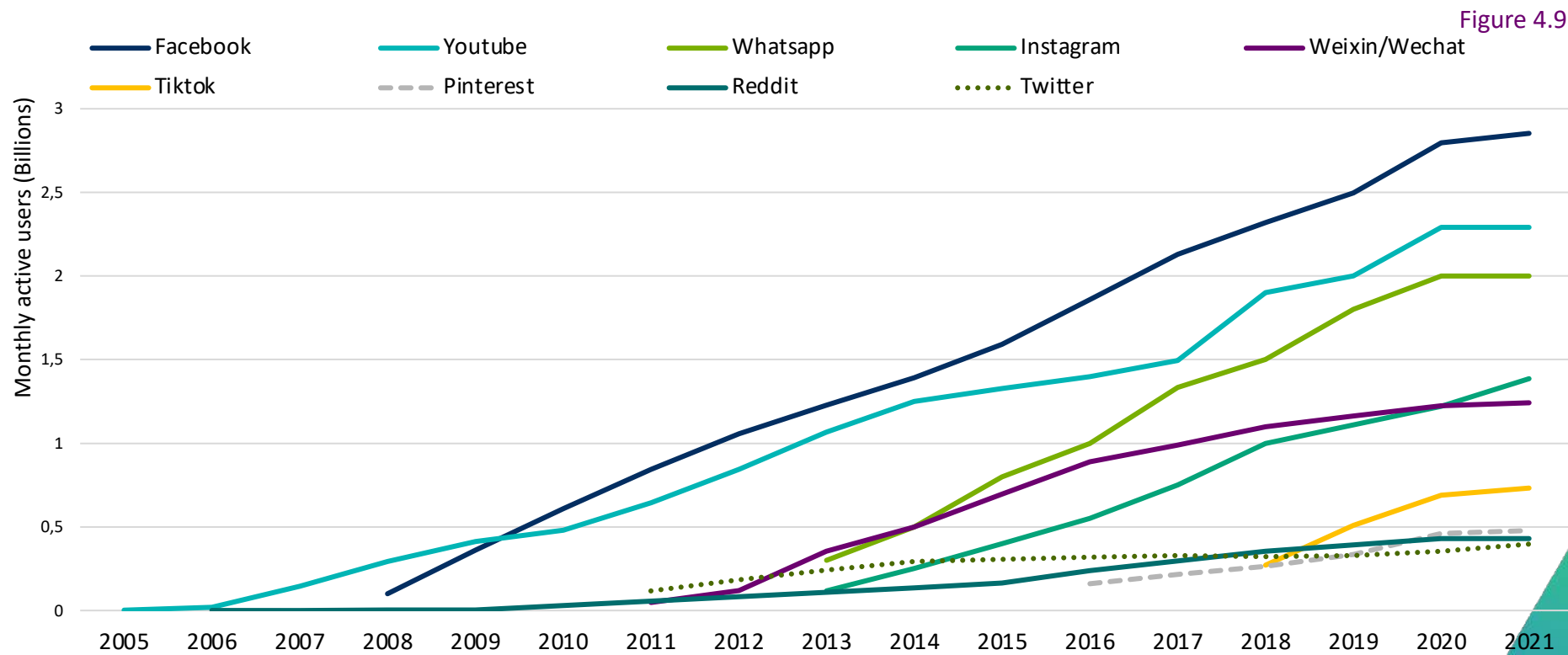


Source: Wikimedia (2021), Pages to Date, All Wikis, <https://stats.wikimedia.org/>



I post, therefore I am

Number of monthly active users on social media platforms, 2004-2021

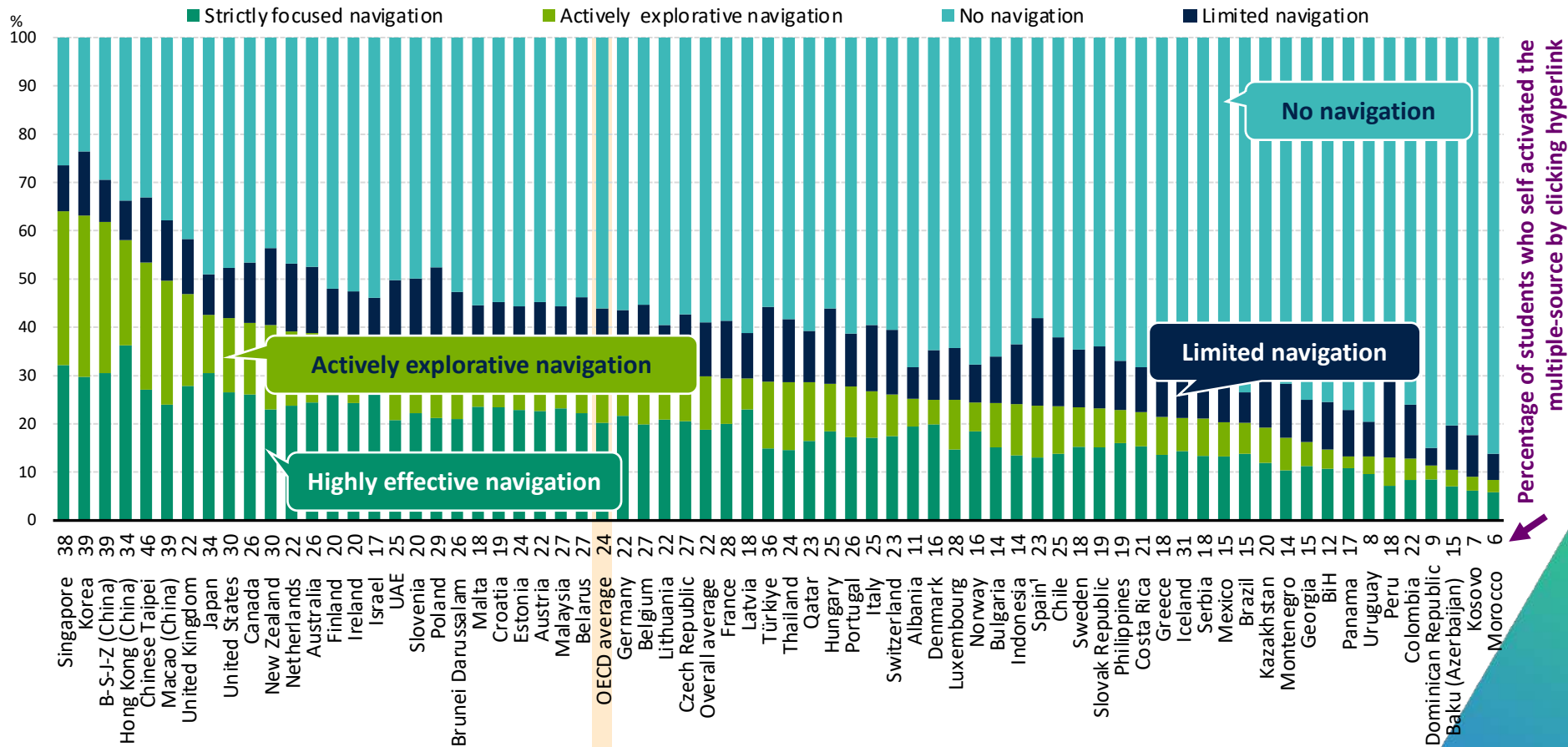


Source: OECD calculations from companies' annual reports; Ortiz-Espina (18 September 2019), <https://ourworldindata.org/>; Iqbal (13 May 2021), <https://www.businessofapps.com/>; Sherman (24 August 2020), <https://www.cnn.com/>; Statista (2021), <https://www.statista.com/>.



Digital navigation skills (PISA 2018)

Figure 3.7





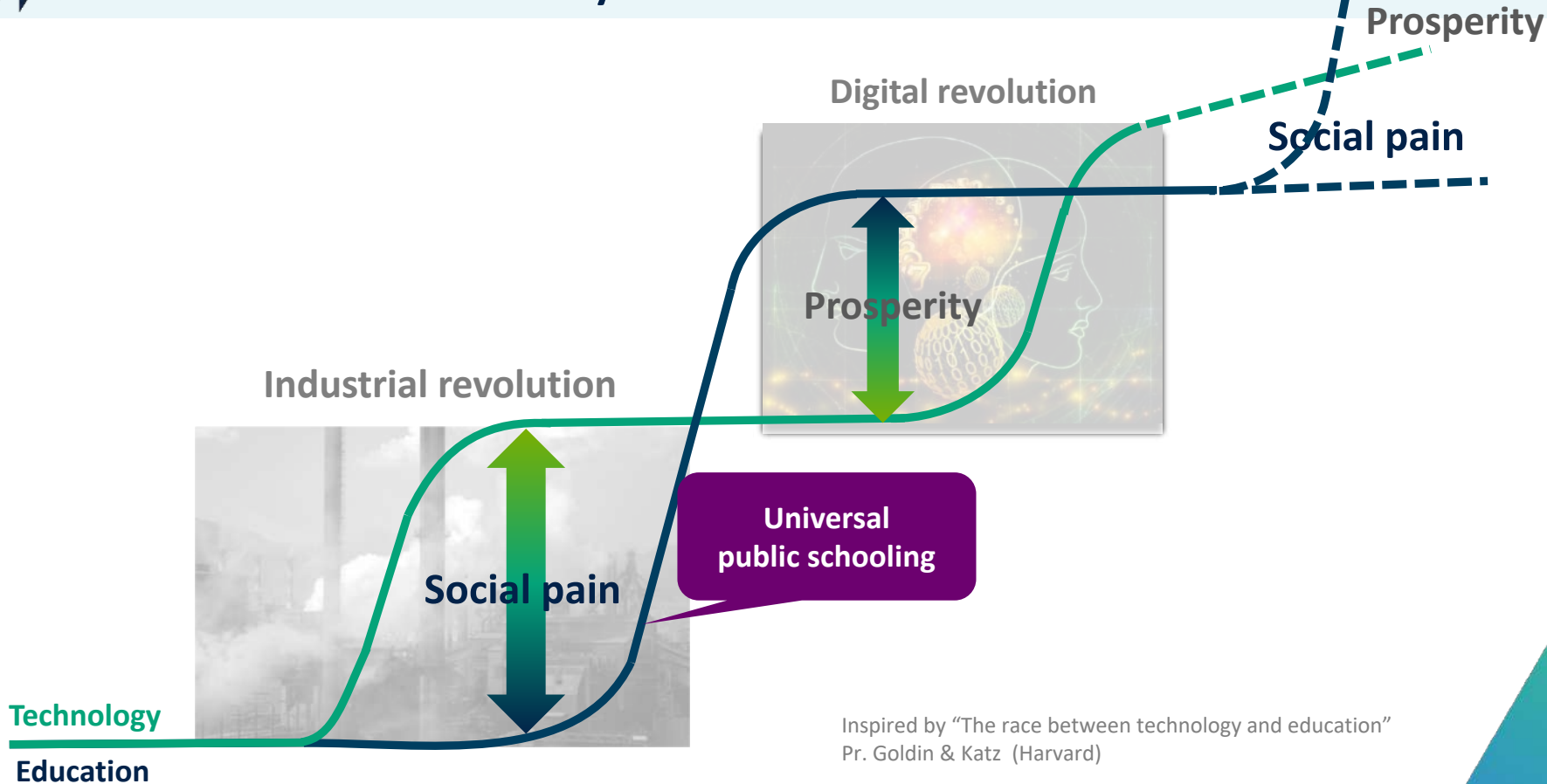
The future of education and skills

We used to learn to do the work,
now learning is the work





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



Digital revolution

Prosperity

Industrial revolution

Social pain

Universal public schooling

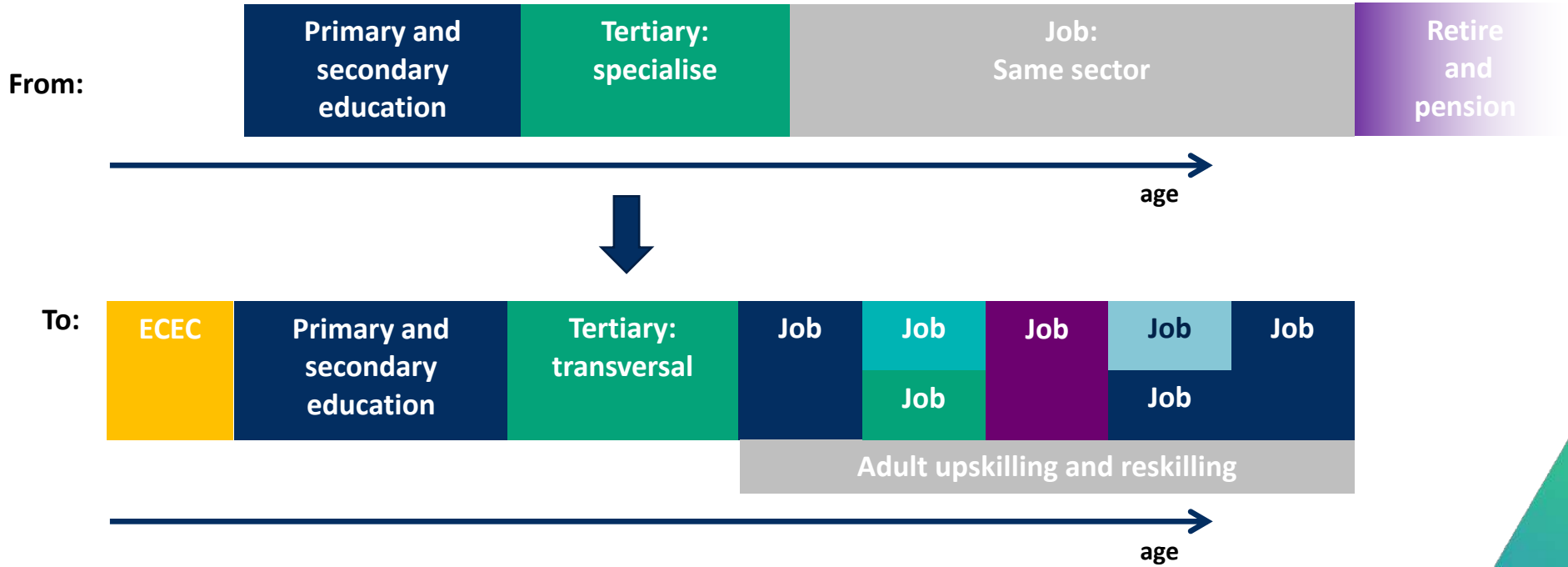
Prosperity

Social pain

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



We used to learn to do the work, now learning is the work





What can employers and policy-makers do ?



1. Provide more flexible and resilient education



2. Increase the use of technology in education and training



3. Focus more on training in more future-proof sectors and occupations



4. Enhance broader range of cognitive, social and emotional skills



More flexible and resilient means for reskilling

- Vocational education and training, including apprenticeships
 - ◆ Allow training breaks, extensions and modularisation.
 - ◆ Provide part-time, weekend or online courses and in-company training.
 - ◆ Support employers that offer apprenticeships
- Fast-track licensing and recognition of prior learning
 - ◆ Direct access to qualification exams
 - ◆ Modular training to top-up partially missing skills
- Rapid retraining
 - ◆ Essential jobs
 - ◆ Targeting workers who already had some relevant skills helped to keep training times short.
 - Short medical training to laid-off workers in the airline industry
 - Retrain hospitality workers to care for the elderly
- Training while on reduced working hours
 - ◆ Training while on short term work scheme to improve the viability of their current job or improve the prospect of finding a new job



Reconcile skills demand and career aspirations

- Forecasting economic demand requires not just data projection, but also stakeholder engagement
- For the short-term, rapid retraining in essential jobs
- For the long-term, focus more on sectors that have increasing skills demand (mostly higher skilled jobs, such as IT, BT, health and care, green sectors)
- Matching and recruitment support
- Providing career guidance and advice



Implications for education and training

Increased demand for skills means education systems have to respond

Education and training systems need to deliver:

- Higher skills levels for more people in **initial education and training**
- Opportunities to **upskill and reskill** throughout life



Front-loaded learning to lifelong learning



Multiple pathways



Combining work & study

Responding to priority skills needs (as well as core competencies)



Motivating & incentivising individuals



Assessing risks, leveraging opportunities

Tensions and paradoxes require smart responses



MODERNISING



DISRUPTING



NEW GOALS



OLD STRUCTURES



GLOBAL



LOCAL



INNOVATION



RISK AVOIDANCE



POTENTIAL



REALITY



VIRTUAL



FACE-TO-FACE



LEARNING



EDUCATION





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

Take the test: www.oecd.org/pisa/test

FAQs: www.oecd.org/pisa/pisafaq

PISA indicators on Education GPS: <http://gpseducation.oecd.org>

PISA Data Explorer: www.oecd.org/pisa/data

Email: Andreas.Schleicher@OECD.org

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

Wechat: [AndreasSchleicher](#)

and remember:

Without data, you are just another person with an opinion

