



Investing in people's competences: a cornerstone for growth and well-being in the EU

Maria Chiara Morandini, Anna Thum-Thyssen, Anneleen Vandeplass

European Commission

Directorate General for Economic and Financial Affairs

National Productivity Boards workshop

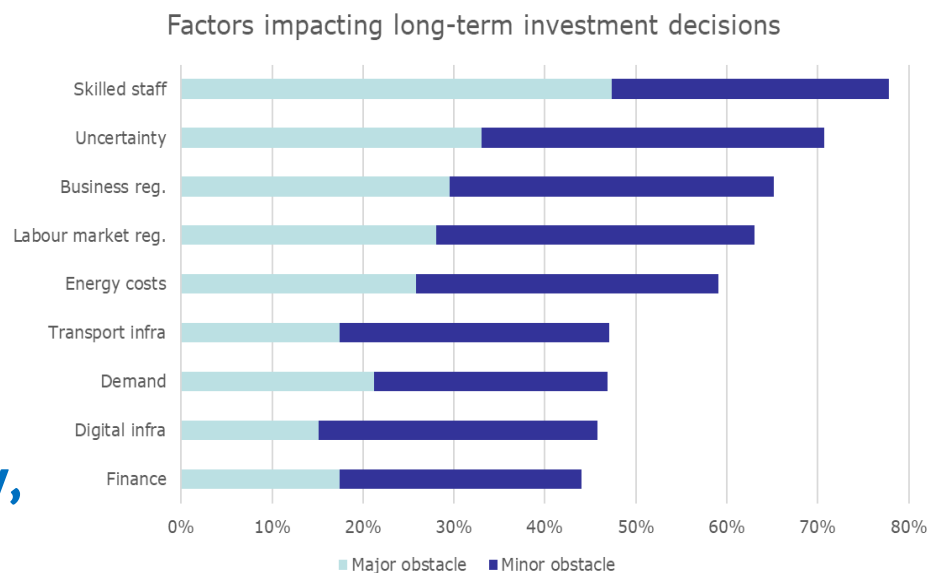
Brussels, 14/11/2019

Education and training is one of the best investments a society can make

Education and training foster productivity:

- Skills facilitate **innovation, technology diffusion** and adaptation to technological change,... (see e.g. Andrews, Nicoletti, and Timiliotis 2018)
- Skills enhance **employability, resilience and allocative efficiency** (see e.g. Schultz 1975)

Availability of skills is the most often mentioned barrier to investment by firms



Source: EIB Investment Survey 2017

Notes: Long-term barriers to investment, Share of firms (%) that named it as an obstacle to their investment activities

Education and training is one of the best investments a society can make

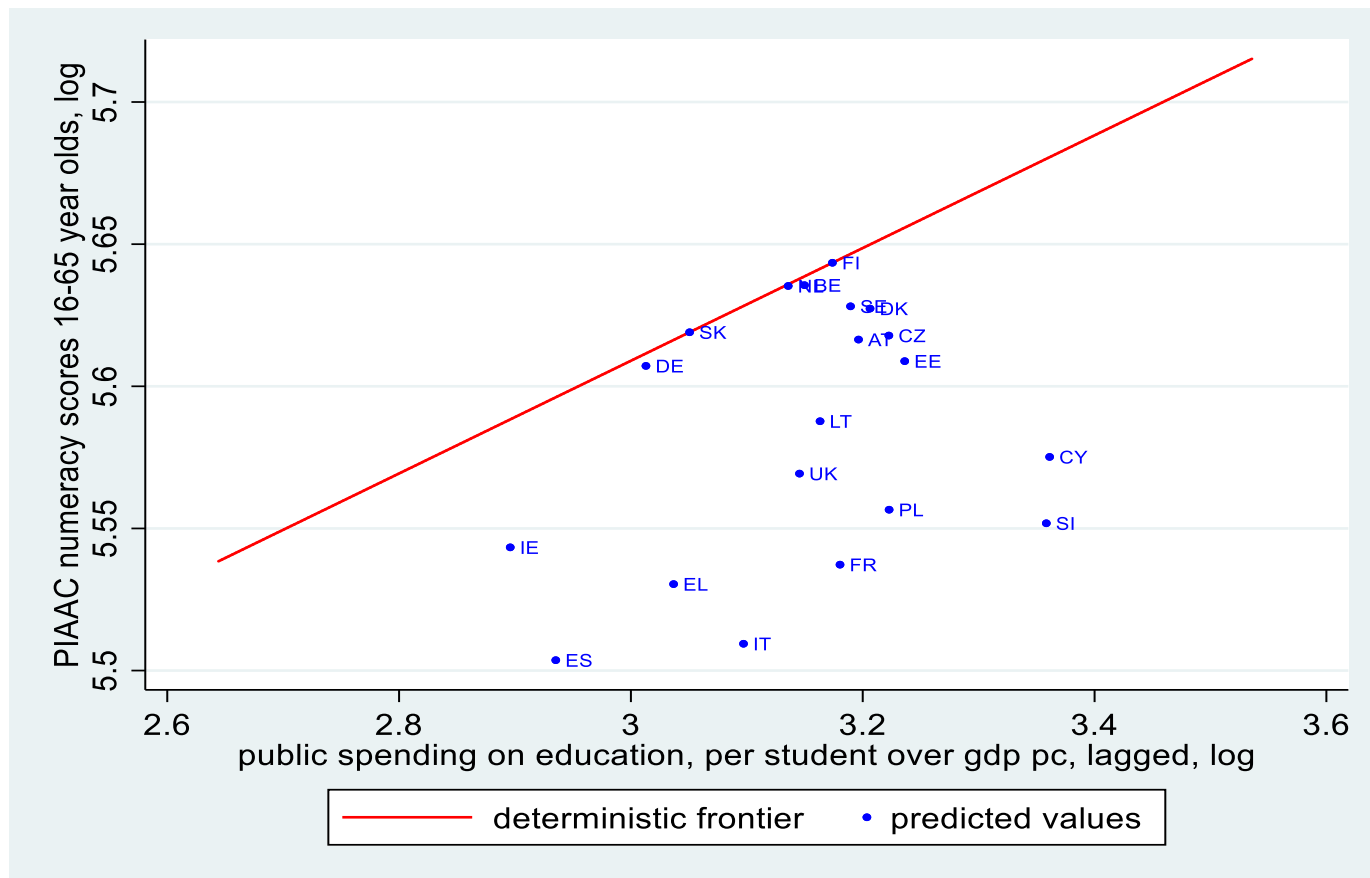
- But it does not come for free: *effectiveness and efficiency of investment in education* matter for sound public finance and productivity **(part 1 of the presentation)**
- *Matching skills demand and supply* crucial for productivity and resilience. **(part 2 & 3 of the presentation)**

1. INVESTMENT IN EDUCATION: AN EFFICIENCY ANALYSIS

Good educational outcomes require appropriate spending

Need for spending money *effectively* to reach high quality and equitable outcome and making *efficient* use of the resources available.

Efficiency of public spending and PIAAC scores



Effectiveness and efficiency of investment in education and training matter

- Our efficiency analysis further shows that:
 - Public spending in the EU has become **more efficient over time in achieving high educational attainment (number of tertiary graduates), but not in terms of PISA scores**
 - Some member states are more efficient in reaching high PISA or PIAAC scores, others in reaching high educational attainment or in inclusiveness, some show that **it is possible to strike a favourable balance between output dimensions**
 - Raising efficiency of public spending on education boosts growth: simulations show that **member states can gain between 0.4 and 1.6 %-points in GDP per capita growth by reducing inefficiencies**

2. SKILLS MISMATCH AND PRODUCTIVITY

How do we measure skills mismatches?

1. Differences between unemployed (inactive) and available jobs

- Macro-economic skills mismatch: weighted relative dispersion of employment rates across skills groups (low-, medium-, high-skilled)
- Skills shortages: survey question e.g. EU-BCS "Is labour a major factor limiting your production?"

2. Mismatch between employees and their job

- On-the-job skills mismatch (over-qualification/under-qualification): discrepancies between skills of job-holder (ISCED level) and required skills for the job (ISCED-ISCO mapping by ILO(2007))

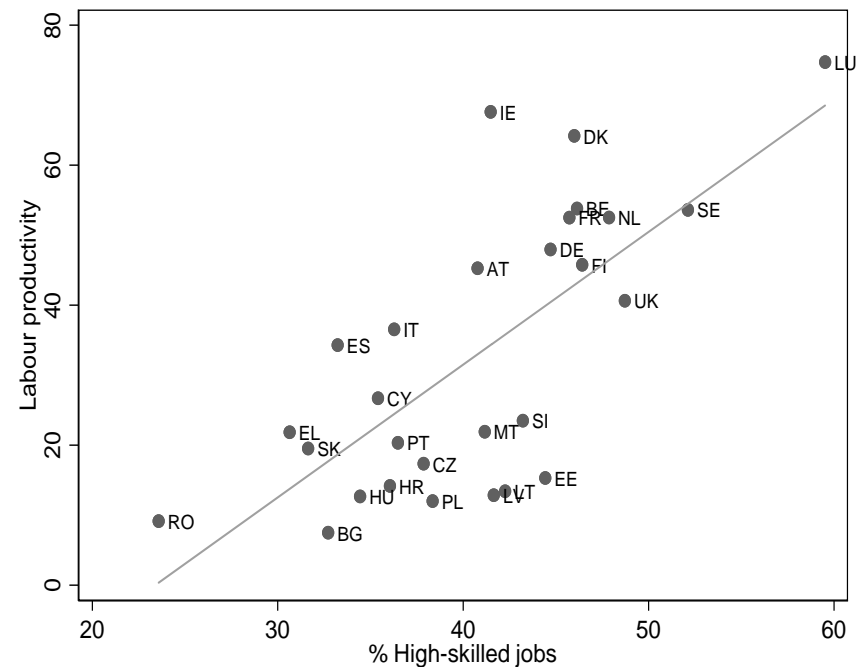
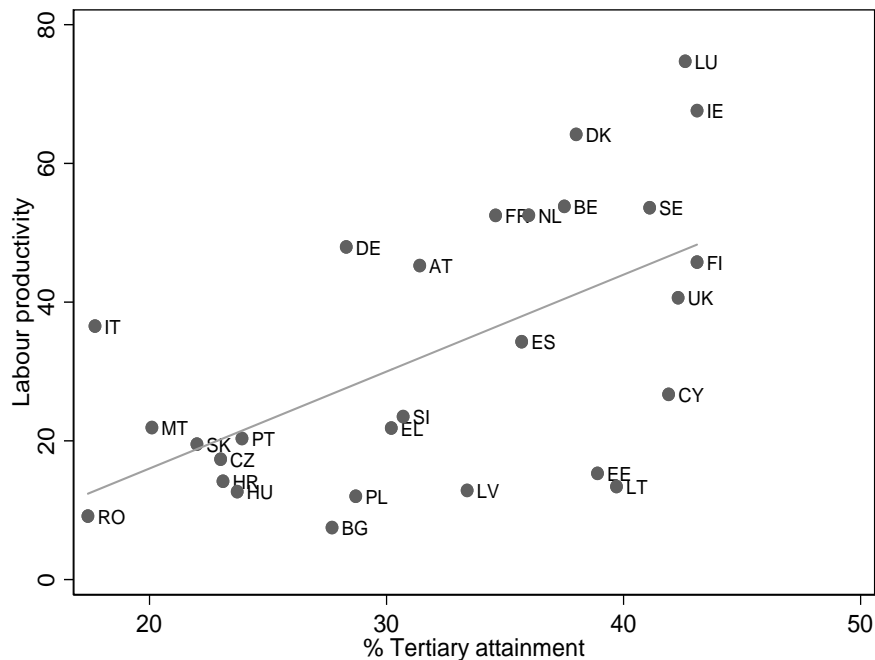
Skills mismatch and productivity: a complex relationship

Skills mismatch indicator	Expected relationship	Empirical relationship
Macro-economic skills mismatch	(+) as high macro-economic skills mismatch is associated with low employment rates of lower qualified individuals and labour productivity is expected to be higher if employment is biased towards the higher-qualified	(-) for the full sample, possibly due to strong correlation with economic growth (+) for the EU-15
Skills shortages	(-)	(+) possibly due to strong correlation with economic growth
Overqualification	(+) within a given job category, (-) within a given qualification	(+) within a given job category, (-) within a given qualification
Underqualification	(-) within a given job category, (+) within a given qualification	(-) within a given job category, (+) within a given qualification

Source: Vandeplas, A. and A. Thum-Thysen (2019) "Skills mismatch and productivity in the EU", DG ECFIN Discussion Paper No. 100, https://ec.europa.eu/info/publications/skills-mismatch-and-productivity-eu_en. Table summarizes results based on a regression of productivity on measures of skills mismatch, controlling for skill levels and country-specific effects and the output gap.

Skills mismatch on-the-job

- Generally, positive impact of education on productivity
- However, this impact on productivity is stronger if high-qualified workers work in high-skilled jobs
 - ▶ Importance of quality assurance and demand-side (economic development) policies



2. THE DIGITAL ECONOMY: ARE DIGITAL SKILLS ENOUGH?

A skills taxonomy based on PIAAC



Physical skills

- Working physically over long periods
- Working accurately with fingers



Socio-behavioural skills

- Self-organisational skills
- Interacting and communicating
- Managing
- Conscientiousness and job engagement
- Readiness to learn and creative thinking
- Trust in persons



Cognitive skills

- Literacy (assessment through administered tests)
- Numeracy (assessment through administered tests)
- ICT skills (complex and less complex)
- Problem-solving

Source: based on Grundke et al (2016): Skills and global value chains: a first characterization, OECD Working Party on Industry Analysis; based on the OECD Survey of Adult Skills (PIAAC) (2012).

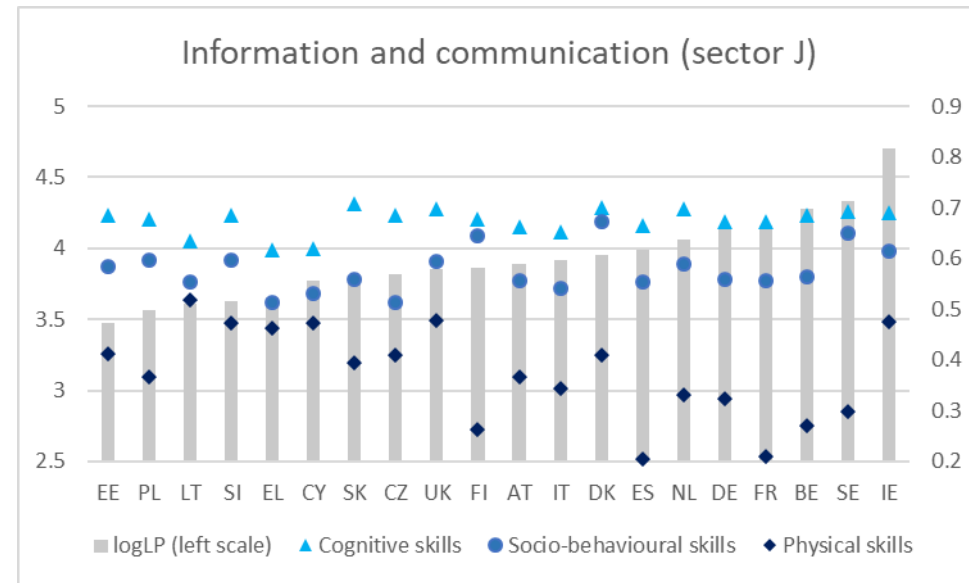
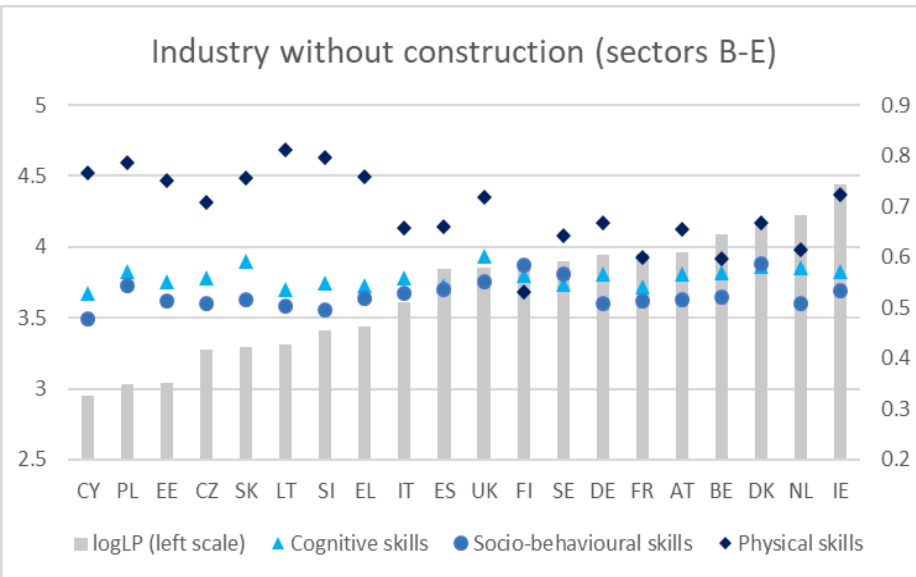
Skills are distributed differently across countries and sectors

Industry:

- In most member states physical skills are used more frequently than socio-behavioural skills - except for FI

ICT sector:

- Socio-behavioural skills are used more than frequently than physical skills in all member states
- Productivity and cognitive skills are generally higher than in the industry sectors



Socio-behavioural skills matter for productivity

Skill	Correlation with productivity
Physical skills	(-) ^{***}
Numeracy	(+) ^{***}
Literacy	(+) ^{***}
Problem-solving	(+) ^{***}
ICT skills – complex	(+) ^{***}
ICT skills – simple	(+) ^{***}
Cognitive skills - aggregate	(+) ^{***}
Readiness to learn and creative thinking	(+) ^{***}
Conscientiousness and job engagement	(+) ^{***}
Trust in persons	(+) ^{***}
Interacting and communicating	(+) ^{***}
Managing	(+) ^{***}
Self-organisation	0
Socio-behavioural aggregate	(+) ^{***}

Source: Own calculations based on PIAAC and EUKLEMS data in Morandini, Thum-Thyssen and Vandeplas (forthcoming), “Facing the digital transformation: are digital skills enough?”, DG ECFIN Economic Policy Brief.



CONCLUSION AND POLICY IMPLICATIONS

Conclusions and policy implications

- Human capital investment is key in technology adoption, productivity and growth ▶▶▶ **not only quantity of spending matters, but also efficiency of spending to target quantity, quality and inclusion**
- Lower skills mismatch is associated with good economic performance ▶▶▶ **boost skills supply** (e.g. invest in upskilling and reskilling) **and demand** (e.g. promote job creation in skills-intensive sectors)
- Building “skills for the digital economy” to foster productivity requires a multi-pronged approach ▶▶▶ **boost digital and cognitive skills, but also socio-behavioural skills such as self-organisation or teamwork** (for instance through curricula design)

Conclusions and policy implications

▶▶▶ **What can National Productivity Boards do?**

- Encourage reforms aimed at achieving sustainable economic growth and convergence, including in the area of human capital formation

▶▶▶ **What can the EU do?**

- Structural policy coordination through the European Semester
- EU policy initiatives such as the Investment Plan for Europe, the Digital Single Market Strategy, Erasmus+, Skills intelligence coordination and the New Skills Agenda for Europe