

The return on human (STEM) capital in Belgium

HSOP - Country-specific analyses Belgium

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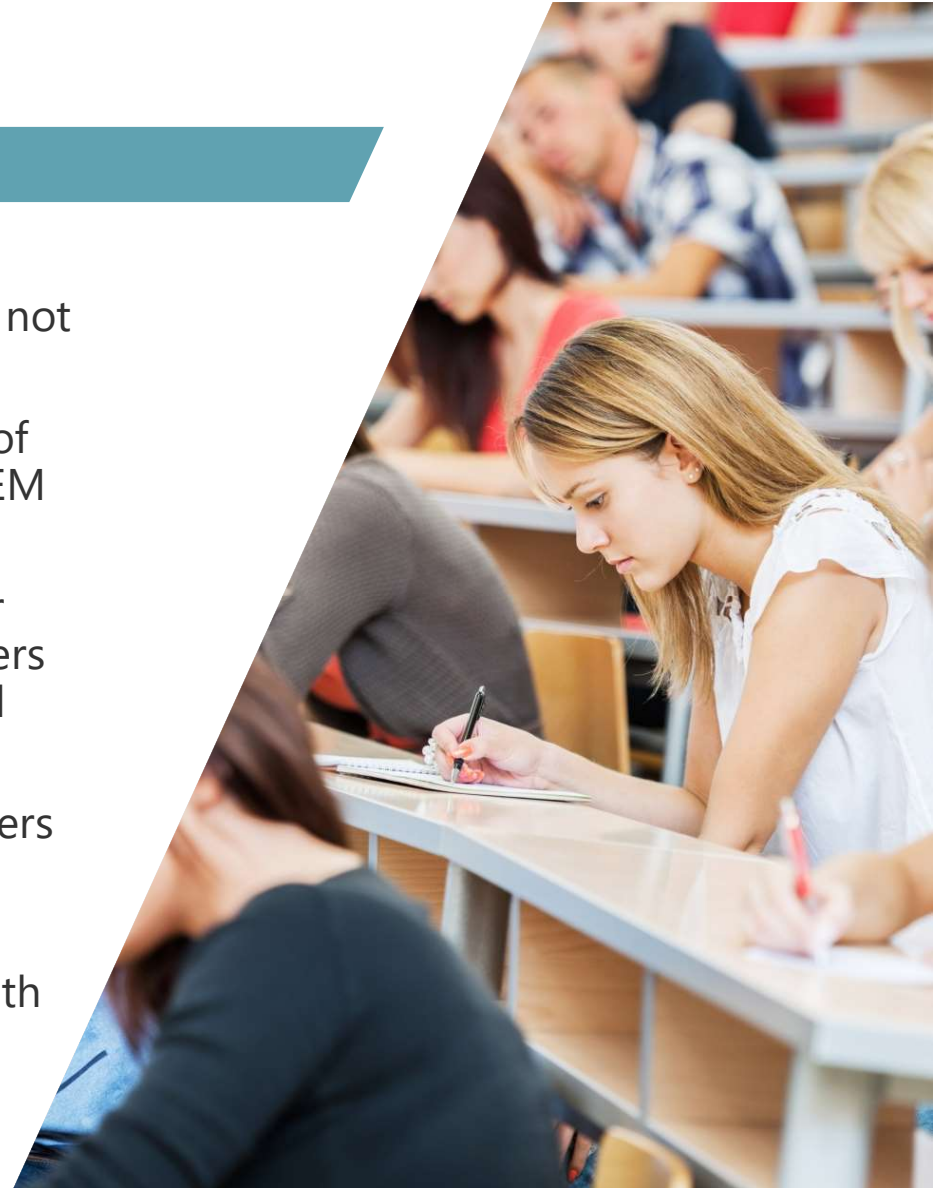
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Key take-aways

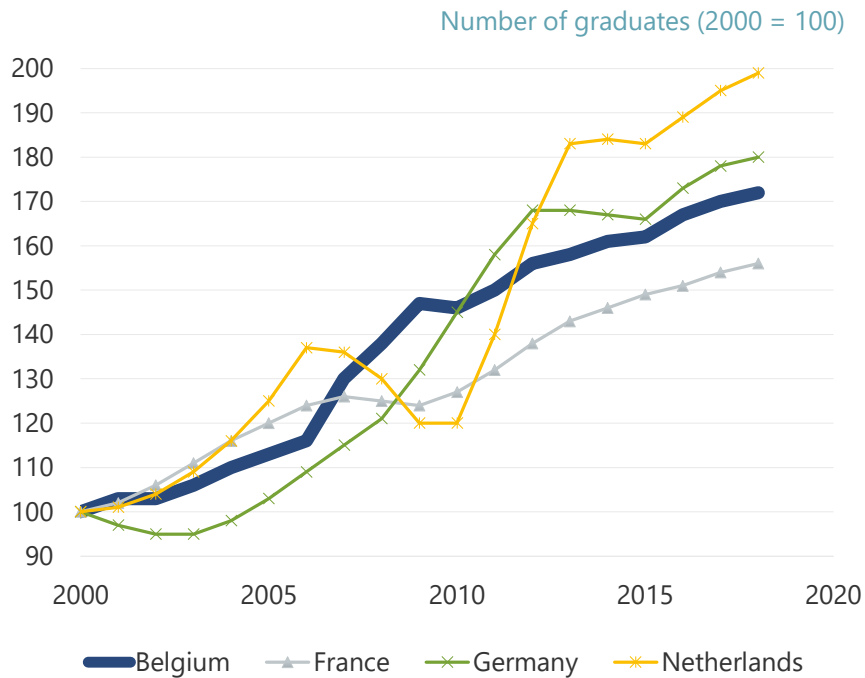
- Belgium does well with regard to human capital, but not with regard to human STEM capital
- Therefore, we complement the OECD's Human Side of Productivity analysis with specific information on STEM skills
- Return on human capital: elasticity of 0.20 to 0.70 for high-skilled workers and 0.20 to 0.45 for STEM workers (of any skill level), significantly higher for high-skilled STEM workers for certain types of firms
- More importantly, the elasticity for high-skilled workers decreases over time while for STEM workers this increases
- Policy implications in light of the pandemic touch both supply and demand



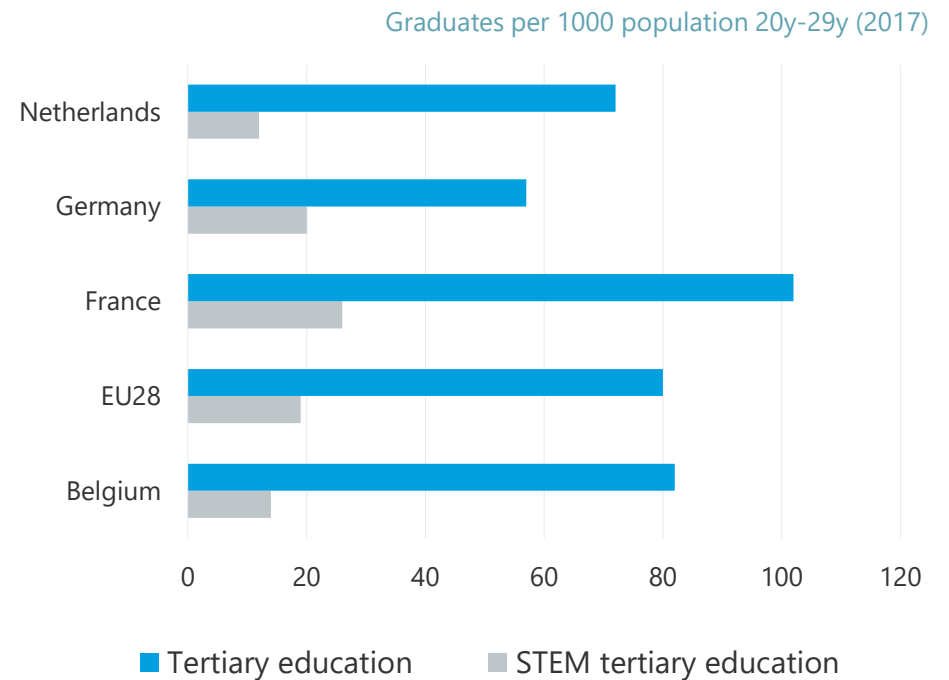


Belgium does well with regard to human capital, but not human STEM capital

Number of graduates in tertiary education increases



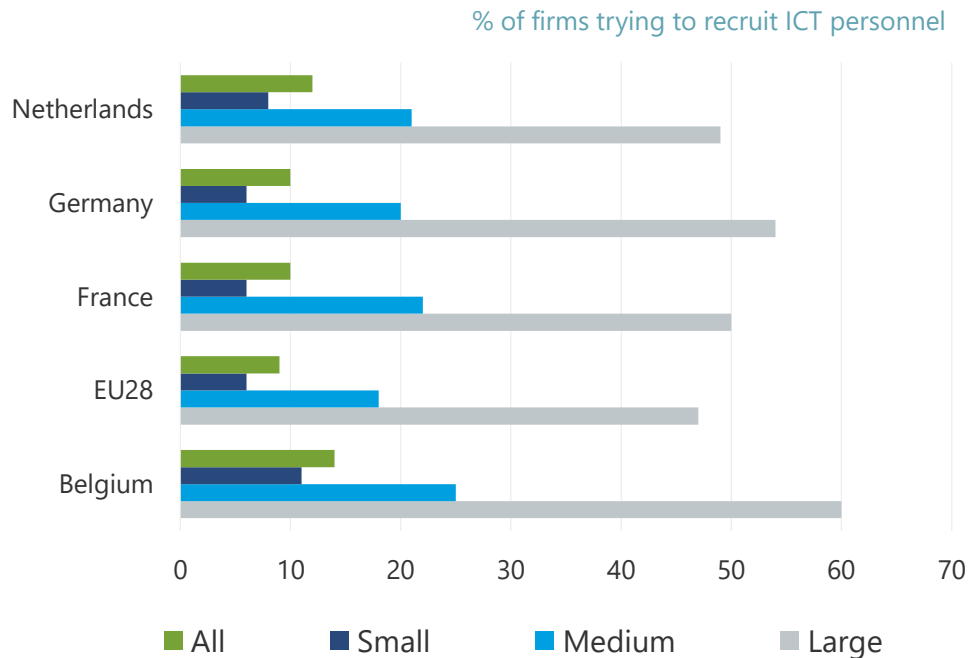
... but only a small share graduates in STEM



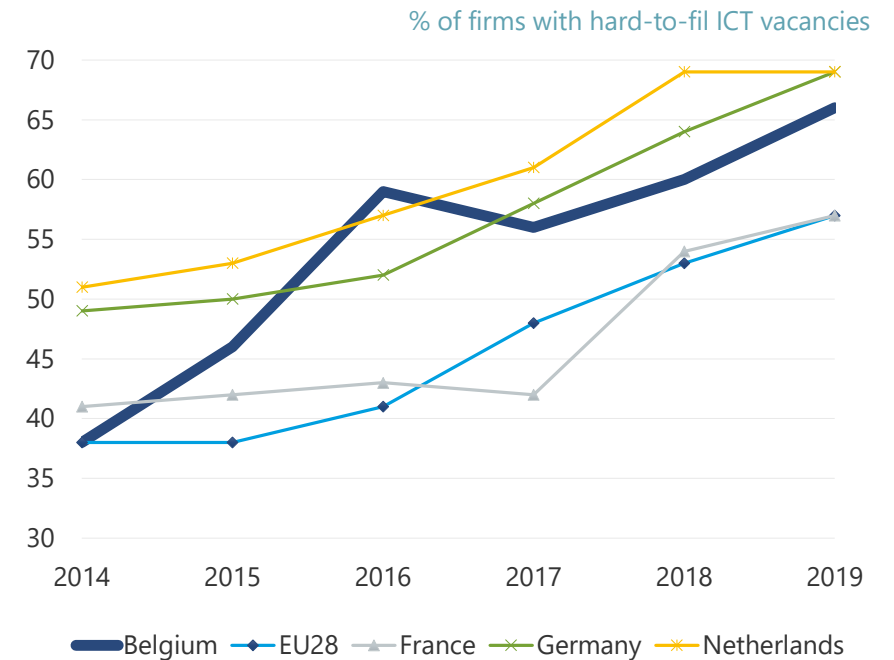


Belgium has both a high need and a shortage for ICT skills

Belgian firms (try to) recruit more ICT personnel compared to other countries



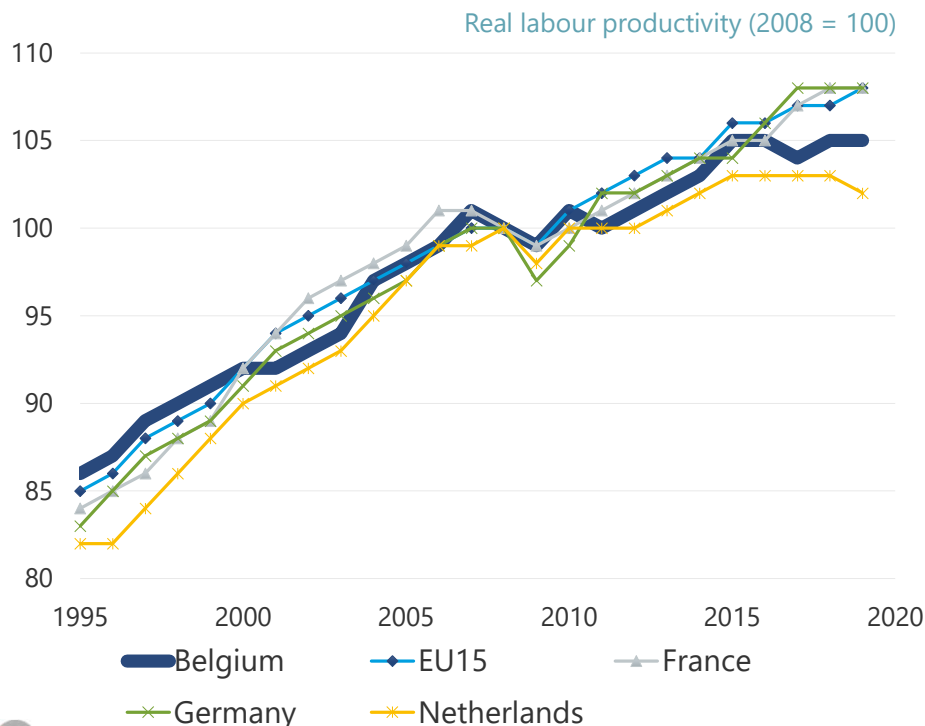
... but experience more and more difficulties finding them





In this study we look into a specific part of the productivity puzzle

Sluggish productivity growth ...



... but not for everybody

- Divergence between “best” and “rest” (Andrews et al. 2019)
- Increasing markups (De Loecker et al. 2020)
- “Superstar” firms (Autor et al. 2020)
- Role of intangible assets to benefit from new technologies (Brynjolfsson et al. 2021)

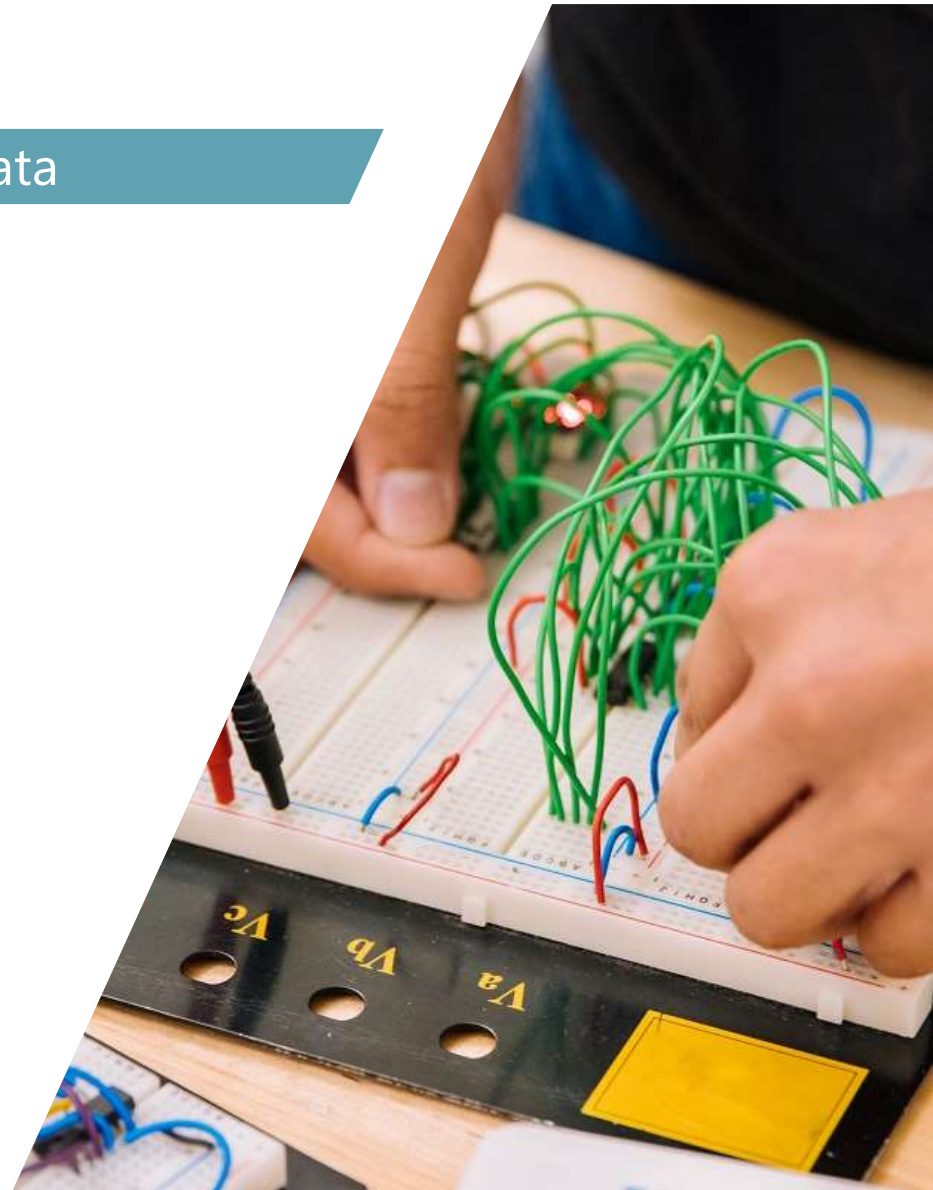


What is the role of human (STEM) capital?



We make use of linked employer-employee data

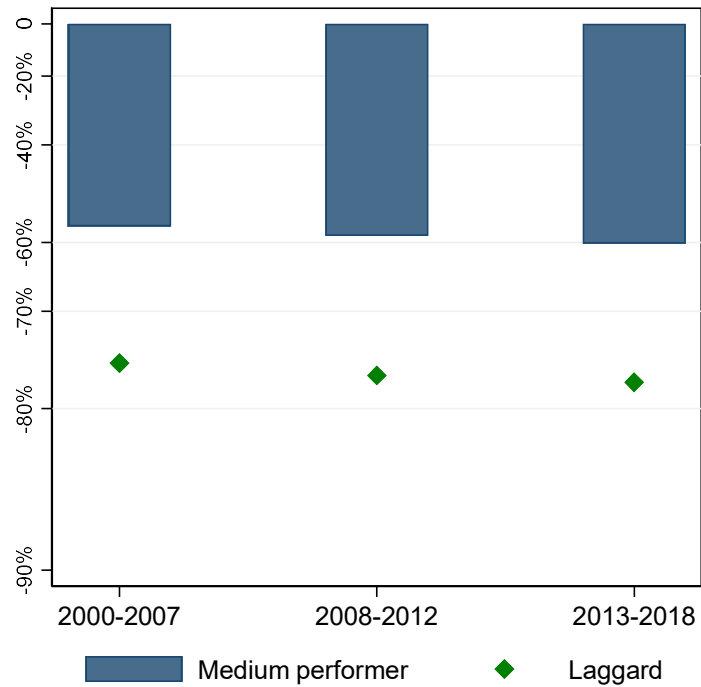
- Employee data from Crossroads Bank Social Security
 - Wage, hours worked
 - Level and field of education (ISCED 1997)
 - Nationality, gender
- Firm-level data from NBB (annual accounts + VAT)
 - Turnover, added value
 - Employees (number, FTE, hours worked)
 - Age, industry
- 2000 – 2018, firms >10 employees only, ~20,000 firms and ~1,5 M workers p.a.



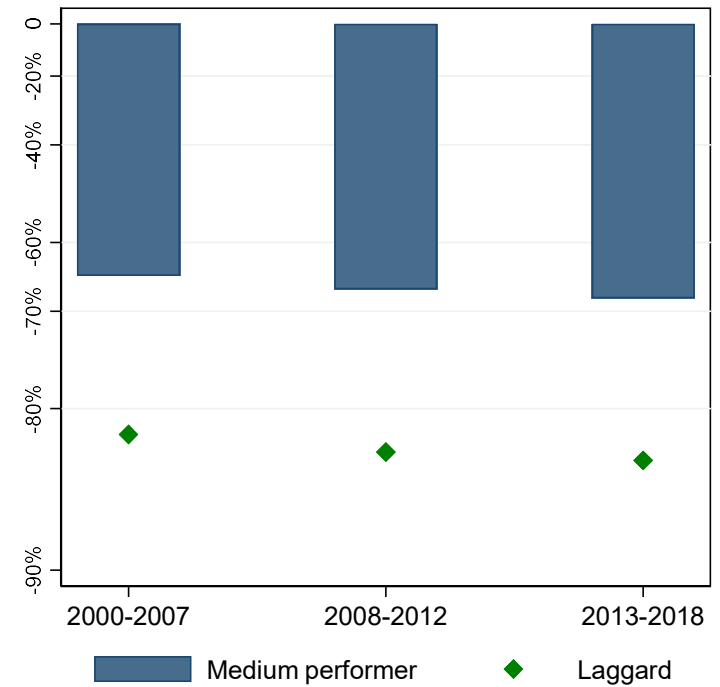


The productivity gap is significant and increasing

Productivity vs. frontier firm (all sectors)



Productivity vs. frontier firm (less knowledge intensive services)

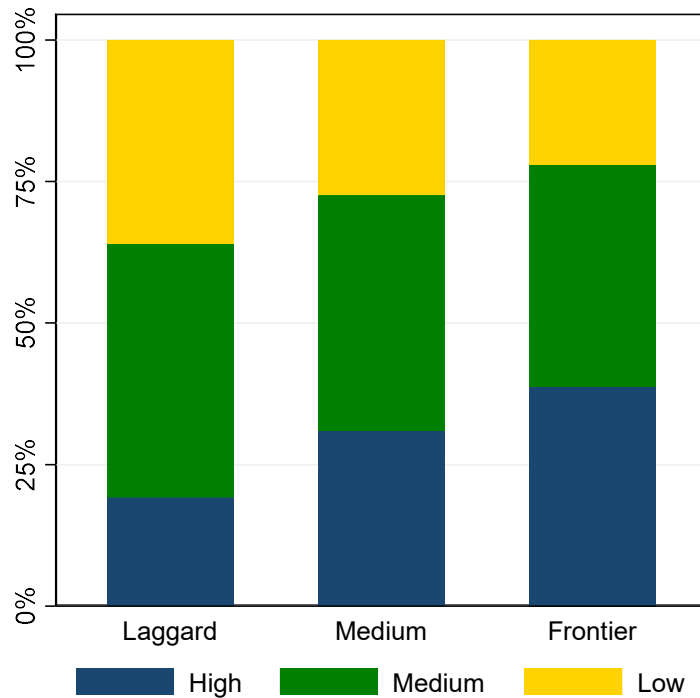




Also, the skill gap is significant and increasing

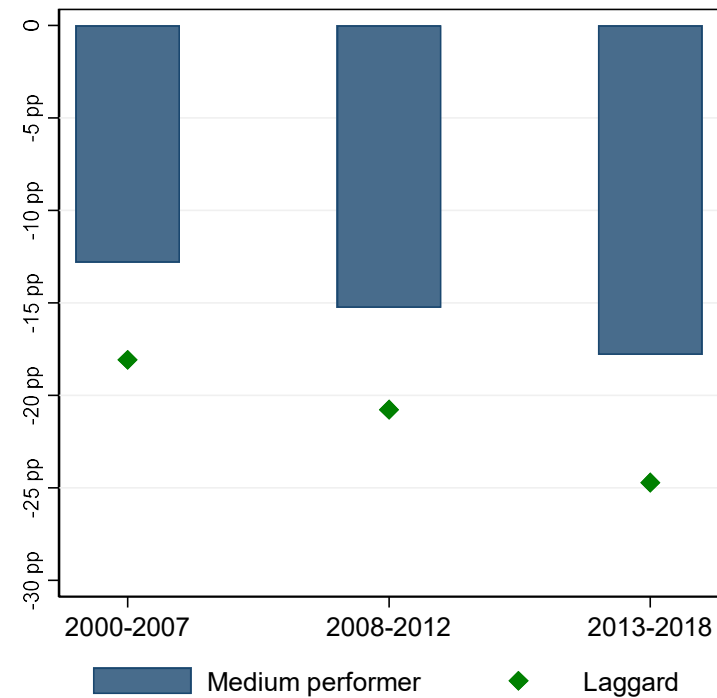
Skill profile typical firm

(share of high, medium, low skilled workers)



Skill gap high-skilled workers (LKIS)*

(difference in share high-skilled workers vs. frontier firm)





More skilled workers positively (and robustly) correlate with productivity

More high (& less medium) is positive



more so than more medium (& less low), except KIS



with decreasing returns



Replacing non-STEM worker by STEM (of the same skill) is positive



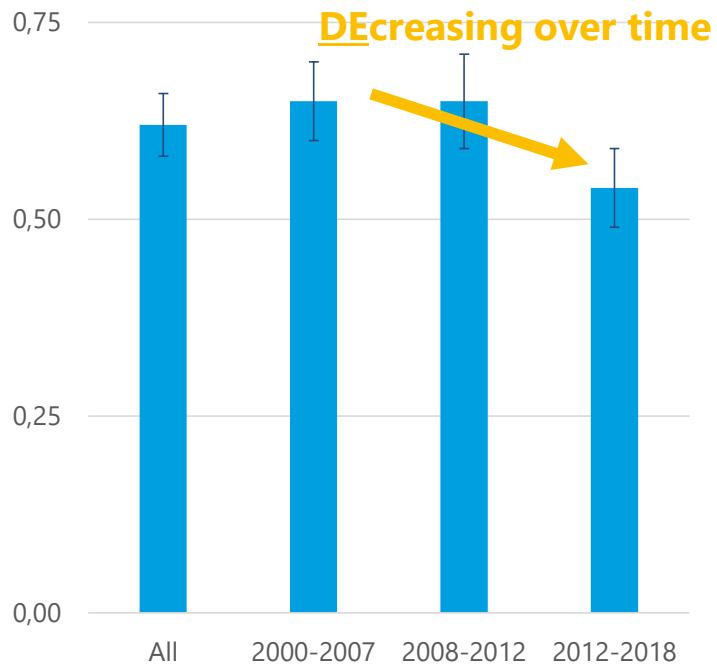
	(1) All industries <i>labor prod</i>	(2) Manufacturing <i>labor prod</i>	(3) KIS <i>labor prod</i>	(4) LKIS <i>labor prod</i>
<i>Share high-skilled</i>	0.621*** (0.021)	0.653*** (0.048)	0.218* (0.093)	0.720*** (0.028)
<i>Share low-skilled</i>	-0.310*** (0.021)	-0.144*** (0.045)	-0.360*** (0.093)	-0.319*** (0.030)
<i>High × high</i>	-0.308*** (0.061)	-0.045 (0.236)	0.208 (0.147)	-0.234* (0.101)
<i>High × low</i>	-0.920*** (0.114)	0.084 (0.276)	-0.197 (0.330)	-0.871*** (0.169)
<i>Share STEM</i>	0.227*** (0.013)	0.273*** (0.027)	-0.041 (0.027)	0.390*** (0.021)
Additional controls	age composition, manager/worker wage	age composition, manager/worker wage	age composition, manager/worker wage	age composition, manager/worker wage
Industry × year FE	yes	yes	yes	yes
Firm size categories	yes	yes	yes	yes
R-squared	0.406	0.379	0.386	0.416
Number of observations	321688	65194	29312	176910

Source: Bijnens & Dhyne (2021)

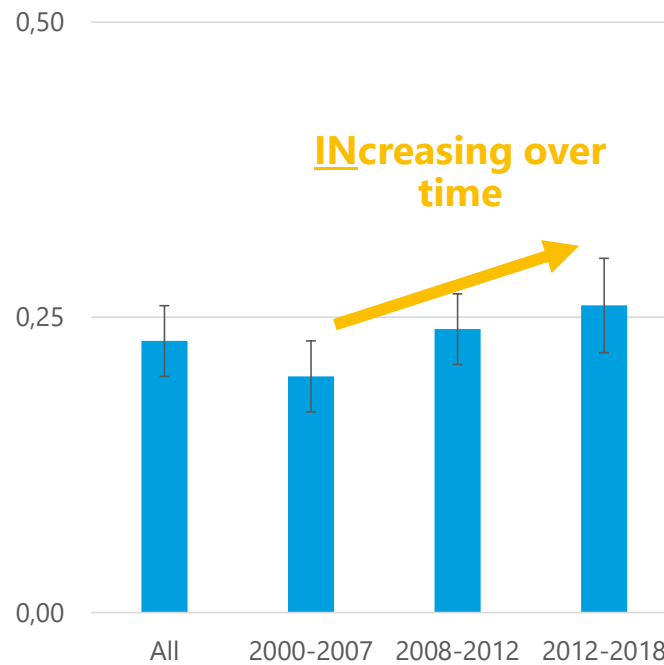


The return to high-skilled decreases over time, whilst return to STEM increases

Elasticity in function of high-skilled workers



Elasticity in function of STEM workers



- STEM workers refers to workers of all skill levels
- Depending on the firm skill composition and sector, the impact from adding a high-skilled STEM worker can be 4x higher than adding high-skilled non-STEM



Policy implications linked with both supply and demand

- Supply shortages
 - More (STEM) graduates needed
 - COVID? Increasing literature on effect of school closures, sciences might have suffered (even) more
- Demand expected to keep rising
 - NextGenerationEU recovery package rightfully focusses on research, innovation, and digitalization
 - COVID? Rapidly rising need for digitalisation of both workers and firms
- But keep in mind simple economics: stimulating demand for an elastic good results in price increases; we need more STEM workers not (only) higher STEM wages

