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Skills mismatch, earnings and job satisfaction among older workers

Socio-Economic Dimensions
in Extended Working Lives
25. April 2018

Overview

- Fairer Active Ageing for Europe (FACTAGE)
- Main focus: Skill levels, skill use and skill utilization of older workers (50-65) vs. younger workers (25-49)
- FACTAGE countries: Austria, Belgium (Flanders), Germany, Spain, UK (England, Northern Ireland)
- PIAAC data

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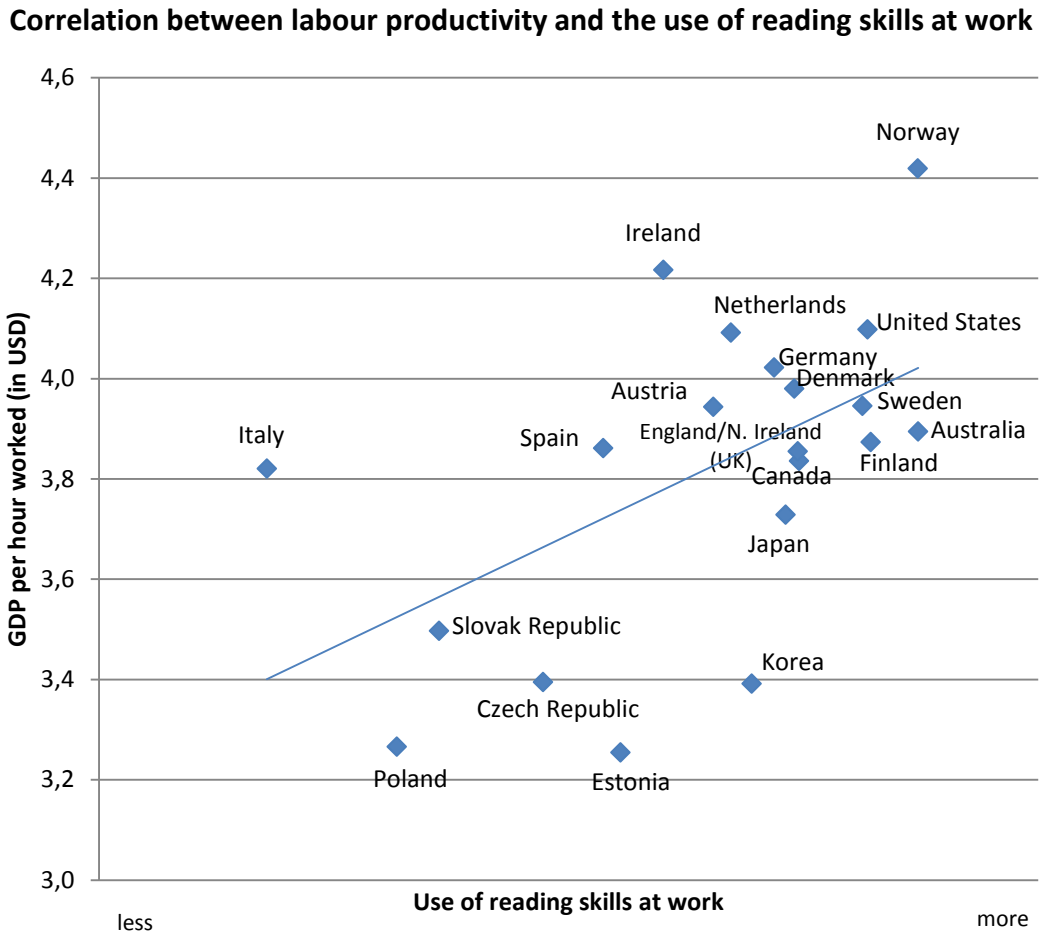
PIAAC - Programme for the International Assessment of Adult Competencies

- **Basic skills of adult population (16-65)**
  - Relevant for participation in modern society
    - Literacy
    - Numeracy
    - Problem solving in technology-rich environments
- **Measured in national language(s)**
- **Skill use (private and work) / Social and economic participation**
- **Multi cycle program (10 years)**

Background/Motivation

- Skills: major ingredient of knowledge-based economies
- Inefficient skill use → mismatch
  - Loss of human capital
  - Impact on labour market outcomes on the individual level
- Policy makers articulate their interest on the topic (e.g. “A New Skills Agenda for Europe”)
- Nevertheless little is known

Skill use and productivity



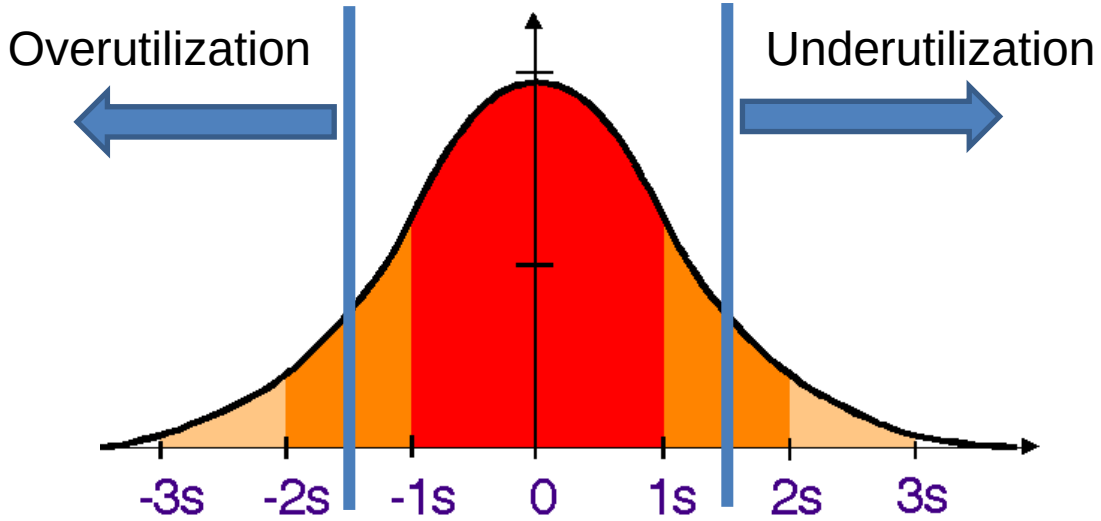
Notes : The line is the best linear prediction. Labour productivity is equal to the GDP per hour worked, in USD current prices
Source: OECD.Stat Survey of Adults Skills (PIAAC) (2012).

Overview

- Exploratory analysis of skill utilization / skill mismatch
- Research questions:
  - To what extent do older workers utilize their skills at work?
  - Which factors influence skill utilization? Does age have a relevant effect when controlling for gender, education and other variables?
  - What are the effects of over- and underutilization on wages and job satisfaction?

Skills mismatch / skill utilization

- **Qualification mismatch**
- **Skills mismatch**
  - Different ways to measure it
  - This paper uses an objective measure of utilization (Allen/van der Velden/Levels 2013)
    - Relative Skill Utilization = skills (standardized) – skill use (standardized)



Skills and age/generation

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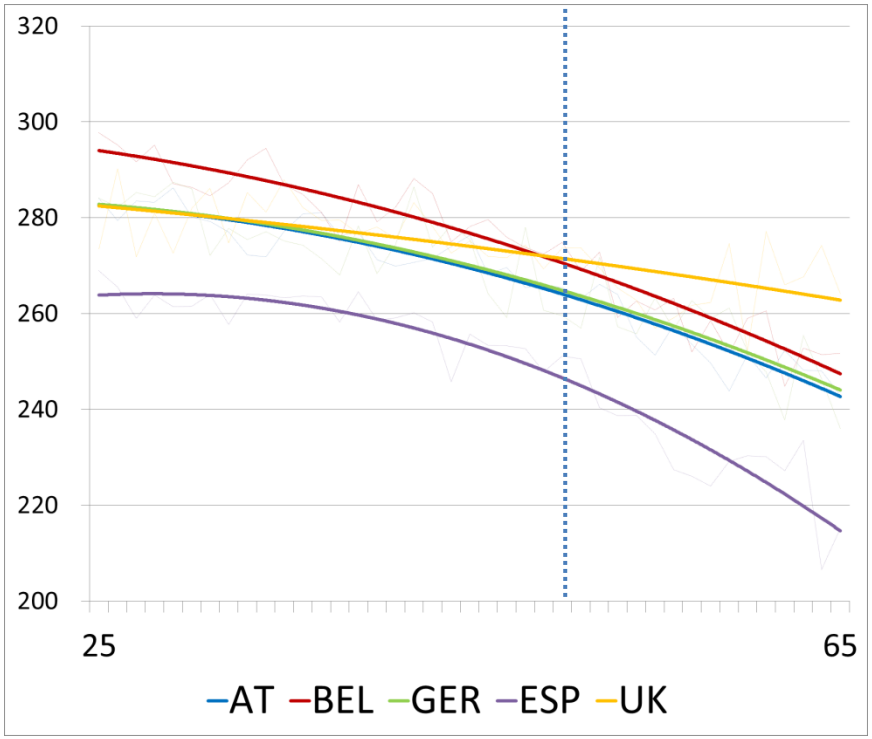
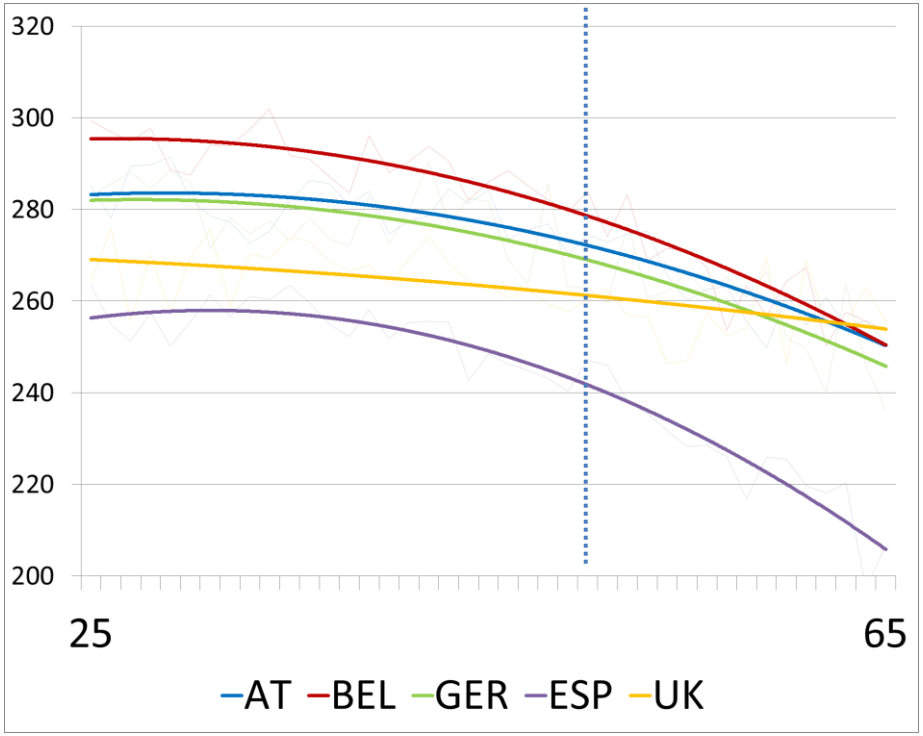
Literacy



Numeracy



Skill use at work

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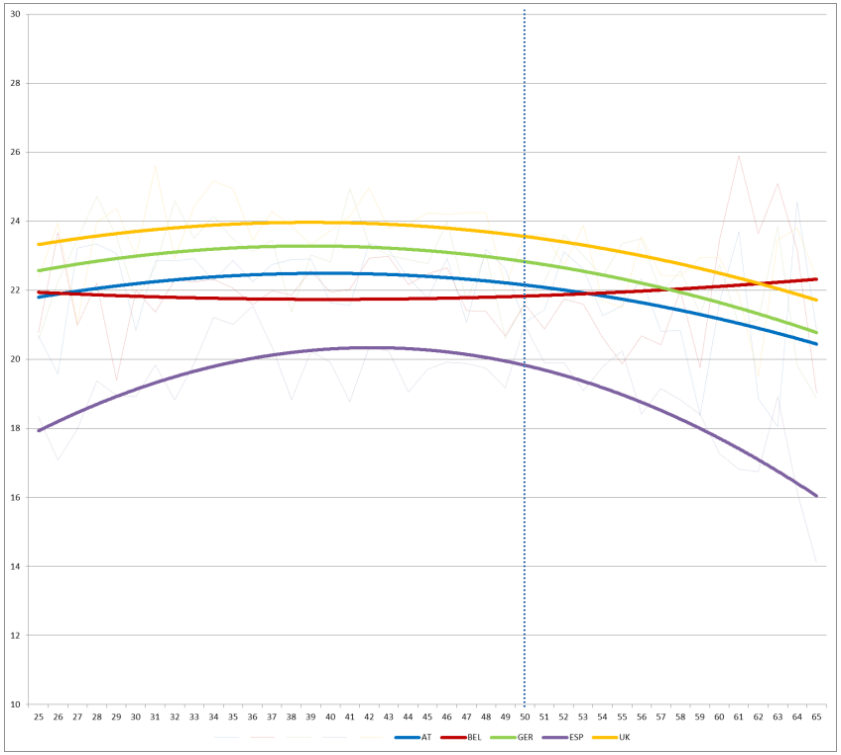
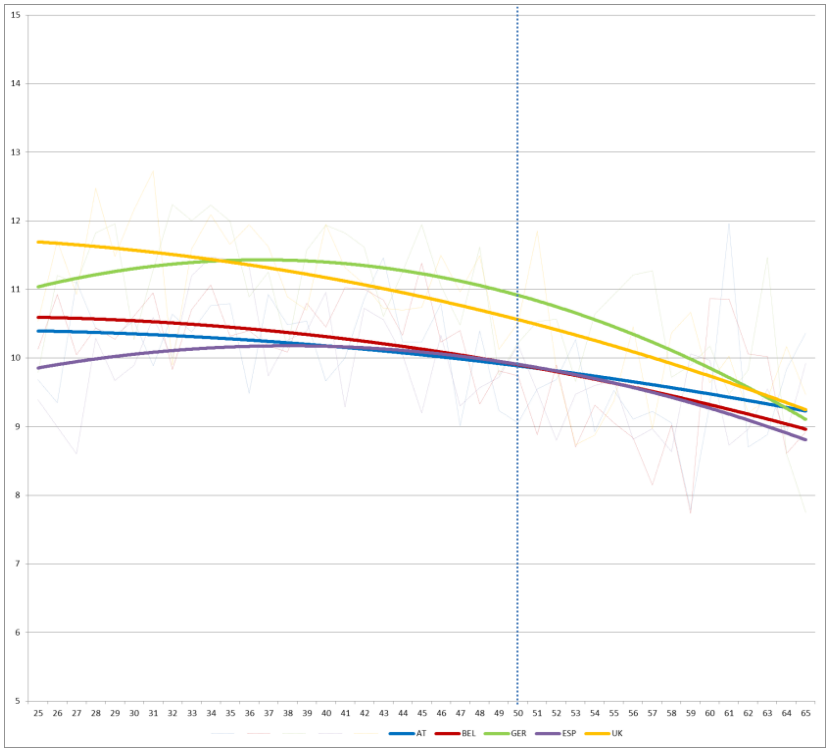
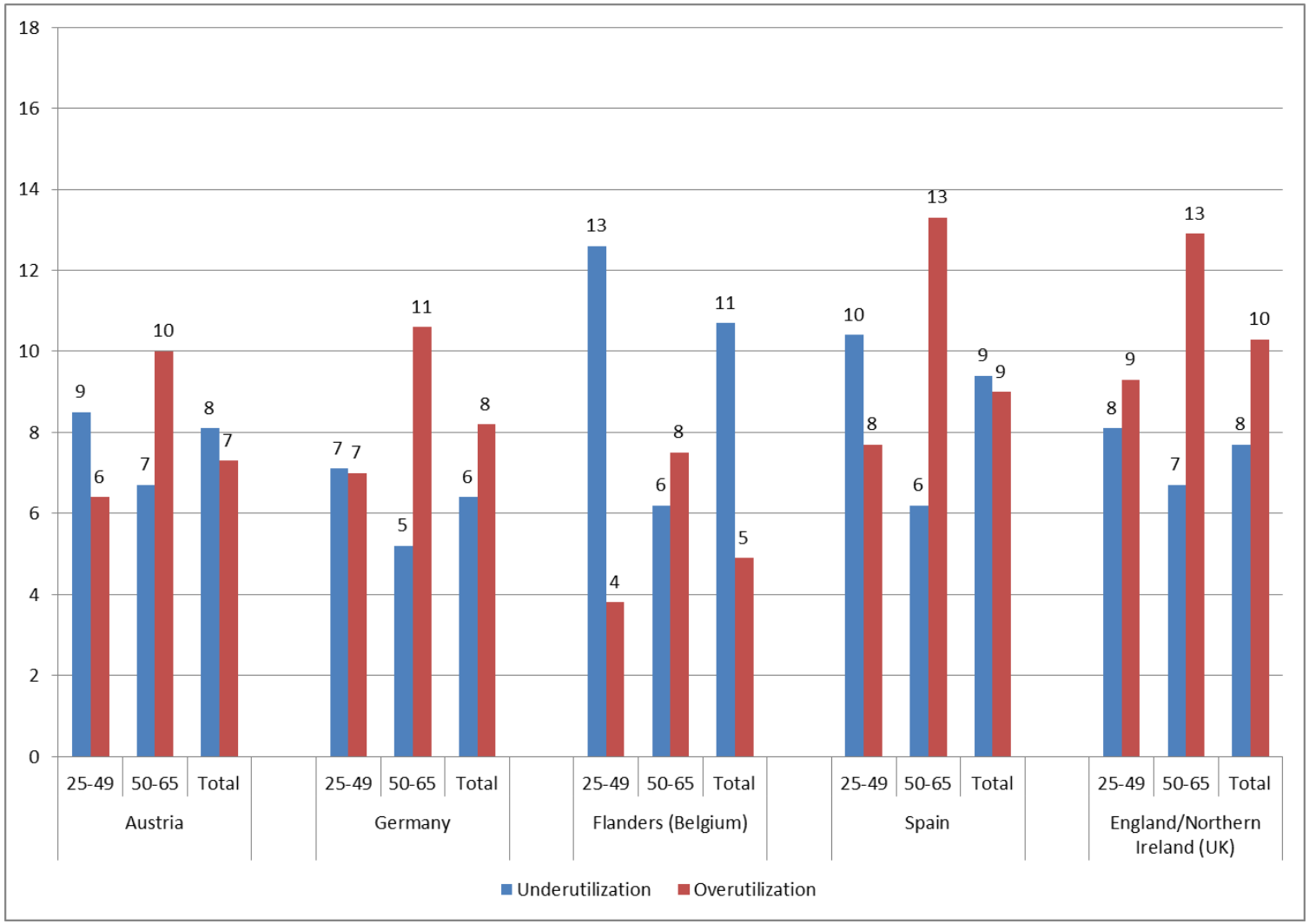
Literacy



Numeracy

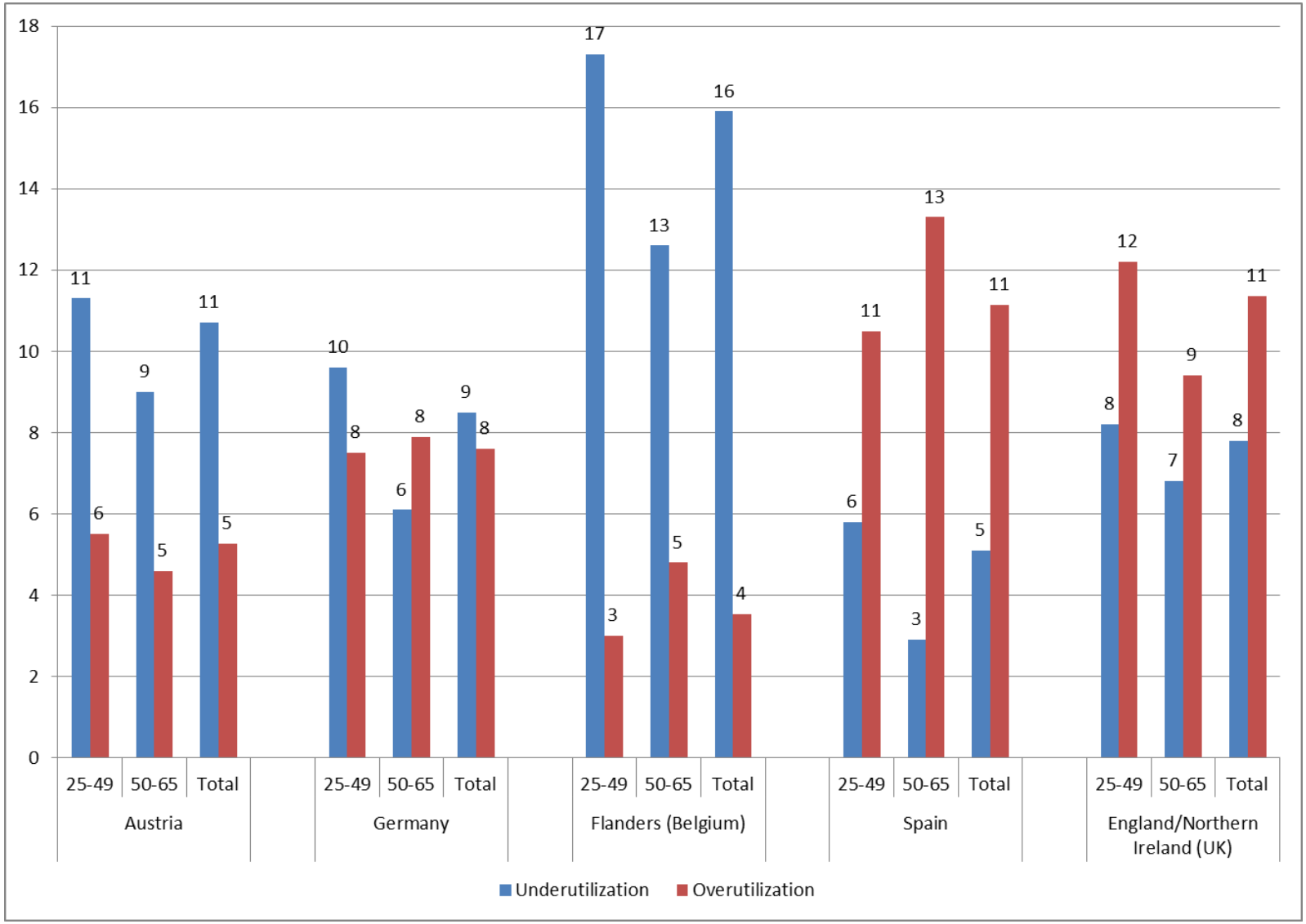


Skills and Skill use – Mismatch (Literacy)



Source: PIAAC 2012

Skills and Skill use – Mismatch (Numeracy)



Country specific Analysis

- Belgium (Flanders): high underutilization in Literacy (11%) and Numeracy (16%) → risk of skill loss
  Low overutilization in general; older worker overutilize more
- UK (England/Northern Ireland): high overutilization in Literacy (10%) and Numeracy (11%)
  Older worker overutilize more (Literacy)
- Spain: high overutilization in Literacy (9%) and Numeracy (11%)
  Older worker overutilize more
- Germany: adequate match a bit higher than other countries
  Older worker overutilize more
- Austria: adequate match a bit higher than other countries
  High underutilization in Numeracy
  Older worker overutilize more (Literacy)

Multivariate Analysis

Is there a significant relationship between skill utilization and age, when controlling for other variables?

Possible determinants:

- Gender
- Highest formal education
- Educational mismatch
- Native language
- Occupational classification
- Economic sector
- Firm-size
- VET

Multivariate Analysis – Effects on utilization

		AT			GER			BEL			ESP			UK		
		B		SE	B		SE	B		SE	B		SE	B		SE
(Intercept)		-0,16		0,13	-0,24		0,15	0,01		0,12	0,19	*	0,10	-0,20	*	0,11
AGE (reference:< 50)																
	AGE 50+	-0,19	***	0,05	-0,22	***	0,05	-0,26	***	0,04	-0,30	***	0,06	-0,09		0,06
Educational-Mismatch (reference: matched)																
	overeducated	0,30	***	0,06	0,34	***	0,07	0,19	***	0,07	0,45	***	0,08	0,22	***	0,07
	undereducated	-0,18	***	0,06	-0,17	*	0,09	-0,28	***	0,07	-0,39	***	0,09	-0,15		0,09
Highest formal education (reference: Lower secondary or less)																
	Upper secondary	-0,21		0,18	0,14		0,13	0,17	**	0,08	-0,91	***	0,33	0,11		0,08
	Post-secondary, non-tertiary	-0,01		0,17	0,37	**	0,17	-0,01		0,14	-1,03	***	0,38	0,57		0,46
	Tertiary	0,00		0,11	0,25	*	0,13	0,25	***	0,09	-0,35	***	0,08	0,31	***	0,09
Amount of people working for employer (reference: 1-10)																
	11-50	0,02		0,07	-0,08		0,07	0,01		0,07	-0,07		0,06	-0,27	***	0,09
	51-1000	0,04		0,06	-0,07		0,06	0,02		0,06	-0,05		0,06	-0,07		0,07
	1001+	-0,01		0,08	0,09		0,08	0,15		0,09	-0,23	**	0,11	-0,23	***	0,08
Gender (reference: male)																
	female	0,29	***	0,05	0,14	***	0,04	0,13	***	0,04	0,06		0,06	0,06		0,06
Occupational classification of respondent's job (reference: skilled occupations)																
	ISCO - Elementary occupations	0,63	***	0,11	0,69	***	0,10	0,49	***	0,10	0,45	***	0,11	0,41	***	0,11
	ISCO - Semi-skilled blue-collar occupations	0,53	***	0,08	0,24	***	0,07	0,43	***	0,08	0,27	**	0,10	0,16	*	0,09
	ISCO - Semi-skilled white-collar occupations	0,19	***	0,07	-0,06		0,05	0,20	***	0,06	0,06		0,08	0,07		0,06
Native Language (reference: native language)																
	not native language	-0,42	***	0,07	-0,34	***	0,09	-0,47	***	0,11	-0,17	*	0,08	-0,47	***	0,10
Economic sector (reference: private)																
	SECTOR - public/non-profit sector	-0,11	**	0,05	-0,14	**	0,06	-0,10	*	0,05	-0,05		0,06	-0,07		0,06
vocational or general education (reference: no secondary education)																
	general	0,33		0,22							0,66	**	0,33	0,32	***	0,08
	vocational	0,01		0,18				-0,22	***	0,08	0,47		0,30	0,06		0,15

Source: PIAAC 2012. ***: p < 0,01; **: p < 0,05; *: p < 0,1

Multivariate Analysis – Labour market outcomes

Effects of over/underutilization on income

	overutilization			underutilization		
	B		SE	B		SE
Austria	0,09	**	0,03	-0,12	***	0,03
Germany	0,07	*	0,03	-0,12	***	0,03
Flanders (Belgium)	0,04		0,04	-0,05	**	0,02
Spain	0,13	***	0,04	-0,13	***	0,03
England/Northern Ireland (UK)	0,11	***	0,03	-0,11	***	0,03

Source: PIAAC 2012. ***: p < 0,01; **: p < 0,05; *: p < 0,1

Effects of over/underutilization on job satisfaction

	overutilization			underutilization		
	B		SE	B		SE
Austria	-0,23		0,36	0,19		0,26
Germany	-0,15		0,21	0,07		0,24
Flanders (Belgium)	0,00		0,42	0,66	***	0,20
Spain	-0,41		0,26	0,30		0,22
England/Northern Ireland (UK)	-0,28		0,23	0,32		0,25

Source: PIAAC 2012. ***: p < 0,01; **: p < 0,05; *: p < 0,1

Conclusions

General:

- 50-65: lower skills, bit lower skill use → higher overutilization
- Skill overutilization → wage premium; skill underutilization → wage penalty
- Hardly any effects on job satisfaction

Country specific results:

- High underutilization in Belgium(Flanders) – risk of skill loss
  No/Low effects of over/underutilization on income
- UK: no age effect on utilization
- UK/Spain: high overutilization and high effects of over/underutilization on income
- Austria/Germany: slightly higher rate of well matched

More information and discussion

- Bönisch M., Peterbauer J., Stöger E. (2018), Skills mismatch, earnings and job satisfaction among older workers https://www.factage.eu/pubs/FACTAGE%20Skill%20mismatch%20research%20report%20STAT.pdf
- Allen J., Levels M., van der Velden R. (2013), Skill mismatch and use in developed countries: evidence from the PIAAC study
- Perry A., Wiederhold S., Ackermann-Piek D. (2014), How can skill mismatch be measured? New approaches with PIAAC. Methods, data, analyses Vol.8.(2), 2014
- OECD (2016), Skills Matter: Further Results from the Survey of Adult Skills, OECD Skills Studies, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264258051-en
- OECD (2016), The Survey of Adult Skills: Reader's Companion, Second Edition, OECD Skills Studies, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264258075-en