Educational mismatch in European countries: determinants by occupational groups and the impact of mismatch on salaries

Ellu Saar, Eve-Liis Roosmaa, Liisa Martma

Institute of International Social Studies, Tallinn University, Estonia

Technequality webinar

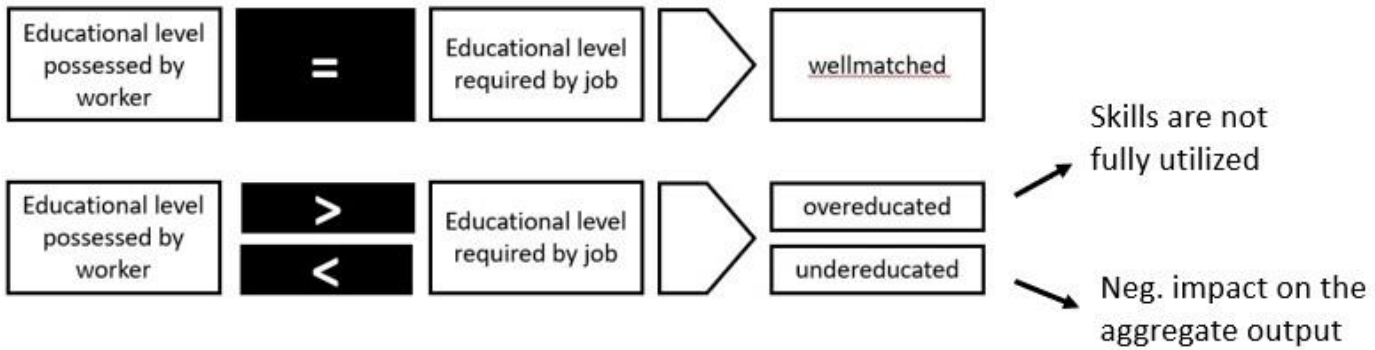
June 30th, 2021

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Introduction

The existence of educational mismatch has been a major concern of social scientists as well as policy makers (Sloane et al., 1999).



The majority of exiting work focuses on mismatches in individual countries or country groups, on specific groups (e.g. tertiary graduates).

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Aims of the paper

To analyse:

- the **incidence** of overeducation and undereducation of workers belonging to **four** broad **occupational groups** across European countries
- the relationship between **educational mismatch** of different occupational groups and the potential **labour supply** and **demand side** as well as **institutional characteristics** which may affect educational mismatch within the European countries
- the impact of educational mismatch on **salaries** for different occupational groups

Funded by the Horizon 2020 Framework Programme of the European Union

Theoretical background to explain educational mismatch effect on salaries

Human capital theory (supply side) -> worker's productivity is determined by past investments into human capital.

Job competition theory and signalling theory (demand side) -> job characteristics determine wages, whereas education signals unobserved productivity or the rank in the order of jobseekers.

Assignment theory (both supply and demand side) -> productivity and wages are determined by both individual and jobs characteristics.

Funded by the Horizon 2020 Framework Programme of the European Union

Data

We are using the data of EU-LFS, focusing on two time periods: **2009** (during the great recession) and **2014** (after the recession).

26 European countries

Sample restricted to full-time workers

Educational mismatch in four broad occupational groups

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Overview of previous research: individual and workplace characteristics

	Impact on: Overeducation	undereducation
Individual level characteristics		
Gender	Women > men In multivariate models no gender differences	Women > men
Age	Younger > older High skilled younger and older workers > others age groups	Older > younger
Work experience	Higher experience < low experience	Higher experience > low experience
Job characteristics		
Job type	Workers with fixed-term contract > workers with permanent contract	?
Economic sector	Higher in service sector; lower in agricultural sector	?

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Overview of previous research: cross-country differences

	Impact on:	
	Overeducation	**undereducation**
Investments in innovation	Higher investments are decreasing	Higher investments are increasing
Business cycle	In recession declines In recessions increases	In recession increases
Employment protection legislation	Higher EPL is increasing	Higher EPL is increasing

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Measuring over/undereducation

Most commonly used measures:

- Workers' self-assessment (subjective)
- Realized matches (objective)
- Job analysis (objective)

We calculate the **modal level** of education (using **four** ISCED categories of <2, 3, 4, 5-8) for each **two-digit occupation group** in each country.

Funded by the Horizon 2020 Framework Programme of the European Union

Under- and overeducation rate in 2009 and 2014

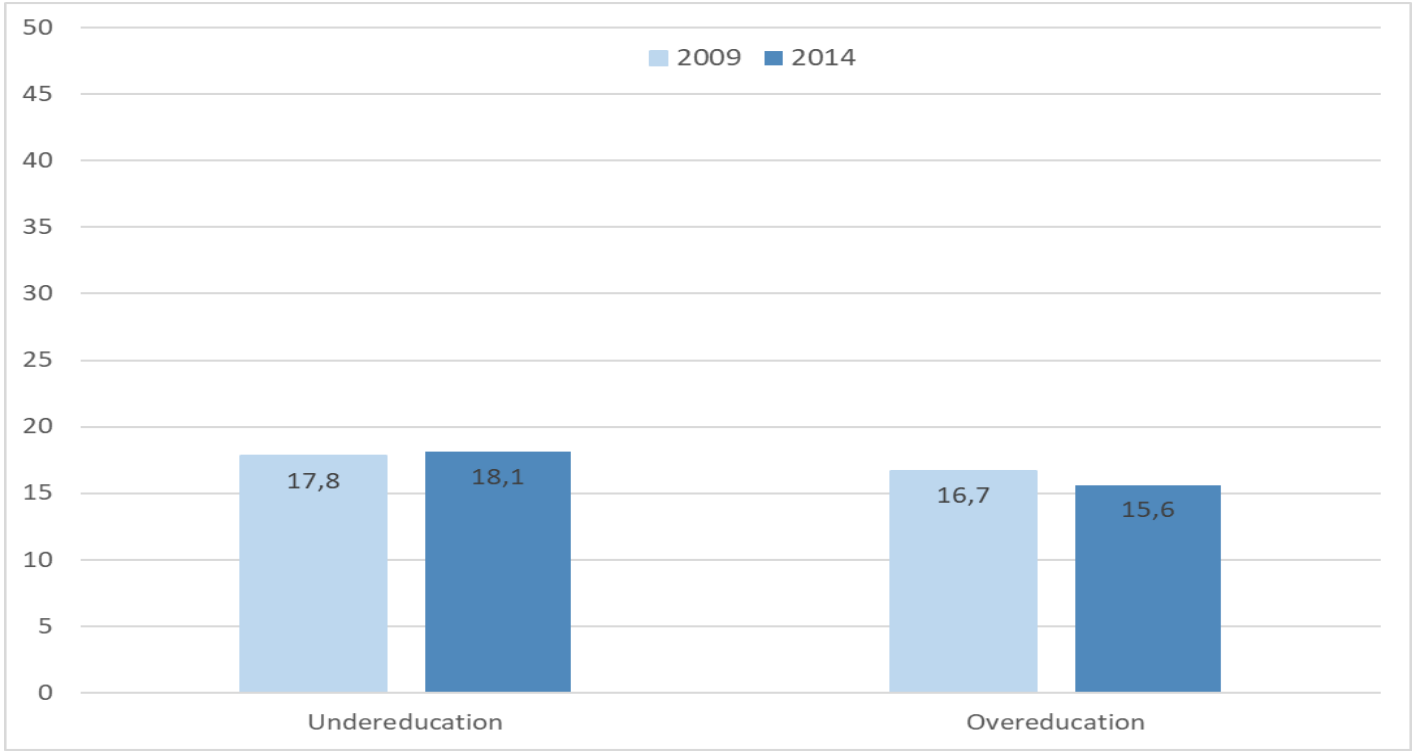


Figure 1. Under- and overeducation rate in 2009 and 2014, pooled data (%)

Source: Authors' calculations based on EU-LFS 2009, 2014; realized matches approach, sample restricted to full-time workers.

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Under- and overeducation rates by occupational groups in 2009 and 2014

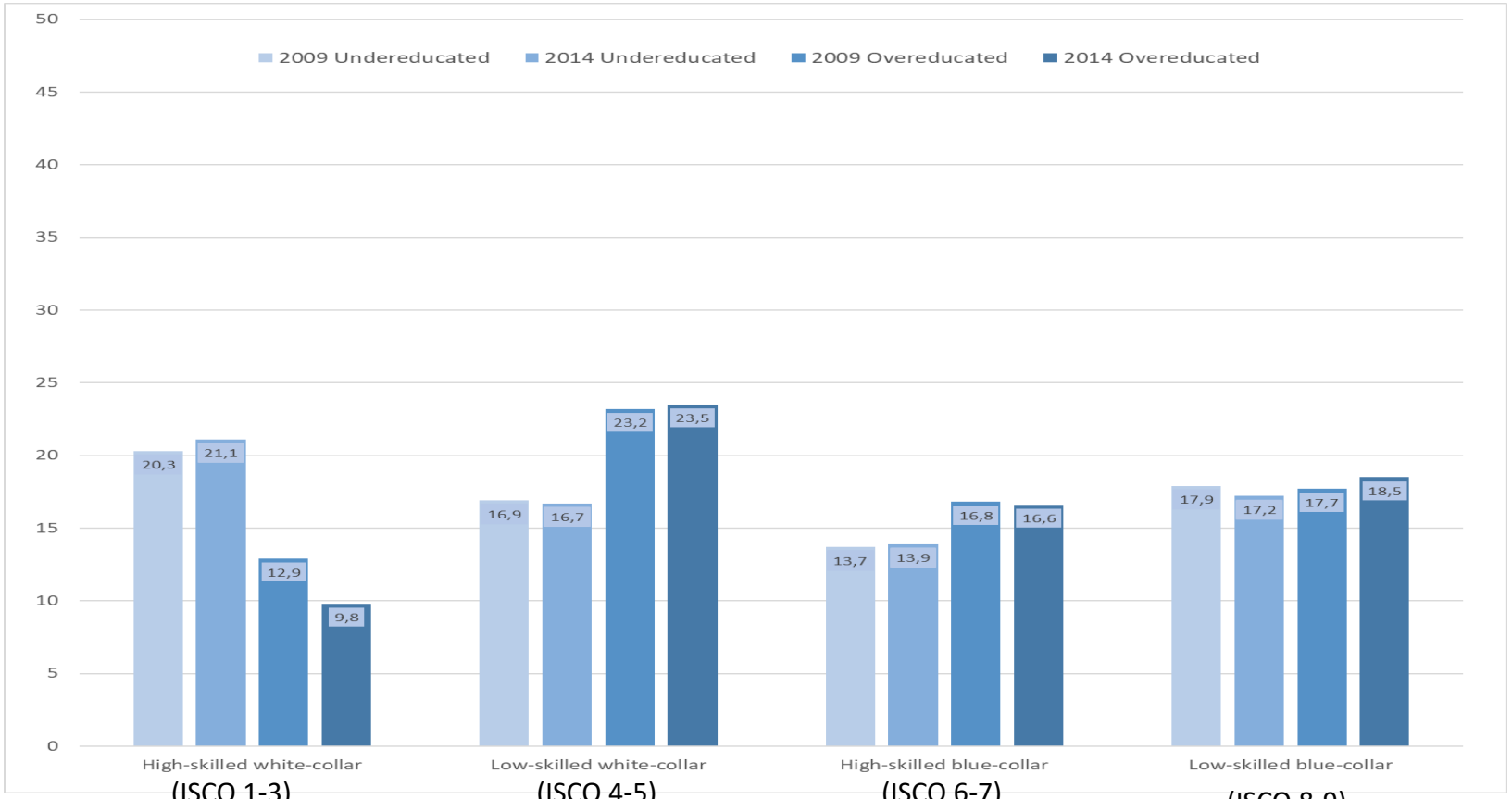


Figure 2. Under- and overeducation rates by occupational groups in 2009 and 2014 (%)

Source: Authors' calculations based on EU-LFS 2009, 2014; realized matches approach, sample restricted to full-time workers.

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

The impact of individual and job-related characteristics on educational mismatch

	High-skilled white-collars (ISCO 1-3)		Low-skilled white-collars (ISCO 4-5)		High-skilled blue-collars (ISCO 6-7)		Low-skilled blue-collars (ISCO 8-9)	
	O	U	O	U	O	U	O	U
Gender	Not sig.	M>W	M>W (2009)	M>W (both)	M>W (2009)	M<W (2009)	M<W (2014)	M<W (both)
Age	20-29>50	20-29<50	20-29>50	20-29<50	20-29>50	20-29<50 (2009)	20-29>50	50>20-29
Work exp	exp<	exp>	exp<	exp>	exp<	exp> (2009)	exp<	No impact
Contract	Perm<temp	Perm>temp	Perm>temp (2009) Perm<temp (2014)	Perm>temp	No impact	Perm>temp	Perm>temp (2014)	Perm<temp

Source: Own calculations based on EU LFS 2009 and 2014

The impact of structural and institutional characteristics on educational mismatch

	High-skilled white-collars (ISCO 1-3)		Low-skilled white-collars (ISCO 4-5)		High-skilled blue-collars (ISCO 6-7)		Low-skilled blue-collars (ISCO 8-9)	
	O	U	O	U	O	U	O	U
Summary innovation index	Positive	Positive	Positive (2014)	Positive	Negative (2009)	Positive	Positive (2009)	Positive
Unemployment (%)	Neg.	Neg.	Pos.	Pos.	Pos.	Neg.	Pos.	Neg.
EPL	Pos.	Neg.	Pos.	Neg.	Pos. (2009)	Neg.	Pos.	Neg.

Source: Own calculations based on EU-LFS 2009 and 2014

Notes: Calculated based on full-time workers. CH, MT, IS, LU, HR excluded from the analysis.

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

The impact of educational mismatch on salaries

	Overeducated (ref matched)		Undereducated (ref matched)	
	2009	**2014**	**2009**	**2014**
High-skilled white-collars	No impact	Wage penalty	Wage penalty	Wage premium
Low-skilled white-collars	Wage premium		Wage penalty	No impact
High-skilled blue-collars	No impact		Wage penalty	
Low skilled blue-collars	No impact	Wage premium	Wage penalty	

Note: Salary is measured in deciles.

*** p ≤ .001; **p ≤ .01; * p ≤ .05

Source: Own calculations based on EU-LFS 2009 and 2014. Notes: Calculated based on full-time workers. CH, MT, IS, LU, HR excluded from the analysis. Models include individual and job characteristics.

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality

Conclusion

- **Educational mismatch:**

- On average, undereducation and overeducation rate has **remained stable** between 2009 and 2014.
- Overall, the results show that **recession affected countries differently.**
- **Mismatch varies by occupational groups:** overeducation is highest in the low-skilled white-collar (ISCO 4–5) occupational groups and share of undereducated workers is highest in high-skilled white-collar (ISCO 1-3) occupational groups.

- **Individual and job-related characteristics:** differences in effects of individual and job characteristics between two time periods are more evident in case of overeducation than undereducation.

- regarding overeducation, **gender differences are most diverse** across occupational groups
  - analysis by occupational groups does not confirm previous findings which suggest that women are more mismatched compared to men.

Funded by the Horizon 2020 Framework Programme of the European Union

Conclusion

➢ **Macro-level characteristics:** impact of all characteristics are mostly significant

- results regarding undereducation are more straightforward across occupational groups and there are less variance in two time periods

➢ **The effect of educational mismatch on salaries:**

- the results show that overeducated workers in some occupations like low-skilled white-collars and low-skilled blue-collars groups are having a wage premium compared with matched workers, but workers in high-skilled white-collar groups suffer from a wage penalty.
- undereducation is associated with wage penalty in 2009 for all occupational groups and in 2014 for high- and low-skilled blue-collars

Funded by the Horizon 2020 Framework Programme of the European Union

References

Capsada-Munsech, Q. (2019). Measuring Overeducation: Incidence, Correlation and Overlaps Across Indicators and Countries. *Soc Indic Res, 145*, 279–301.

Davia, M. A., McGuinness, S. & O'Connell, P. (2017). Determinants of regional differences in rates of overeducation in Europe, *Social Science Research, 63*, 67–80.

McGuiness, S. & Pouliakas, K. (2016). Deconstructing Theories of Overeducation in Europe: A Wage Decomposition Approach, IZA Discussion paper No. 9698.

McGuiness, S., Bergin, A. & Whelan, A. (2017). Overeducation in Europe: Trends, Convergence and Drivers, *Oxford Economic Papers*, *70*(4), 994–1015.

Muñoz de Bustillo Llorente, R., Sarkar, S., Sebastian, R., Antón, J.-I. (2018). Educational mismatch in Europe at the turn of the century Measurement, intensity and evolution, *International Journal of Manpower*, *39*(8), 977–995.

Verhaest, D. & Van der Velden, R. (2012). Cross-country differences in graduate overeducation, *European Sociological Review*, *29*(3), 642–653.

Funded by the Horizon 2020 Framework Programme of the European Union

Technequality