Educational mismatch 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

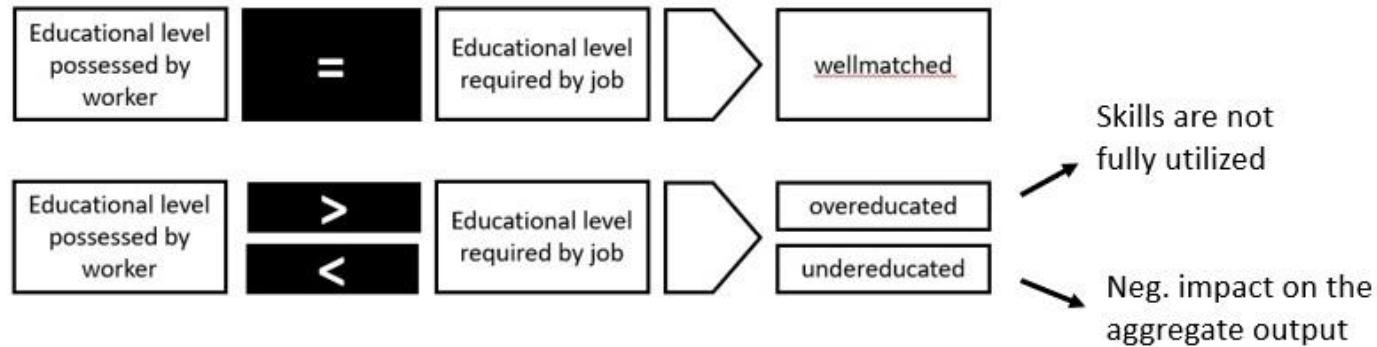Technequality conference

November 25-26, 2021

Technequality

Introduction

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

Technequality

Results that we address in the presentation

➢ The **incidence** of overeducation and undereducation of workers belonging to **four** broad **occupational groups.**

➢ The impact of educational mismatch on **salaries** for different occupational groups.

   ➢ How **automation risk** modifies the impact of educational mismatch on salaries.

Technequality

Theoretical background to explain educational mismatch effect on salaries

Human capital theory (supply side) -> workers' 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.

Technequality

Data

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

Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, UK
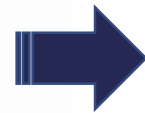
26 European countries

Sample restricted to **full-time** workers

Four broad **occupational groups**: (high-and low-skilled white-collars and blue-collars)

EU-LFS provides individual data in **salary deciles**.

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.

Technequality

Under- and overeducation rate in 2009 and 2014, pooled data (%)
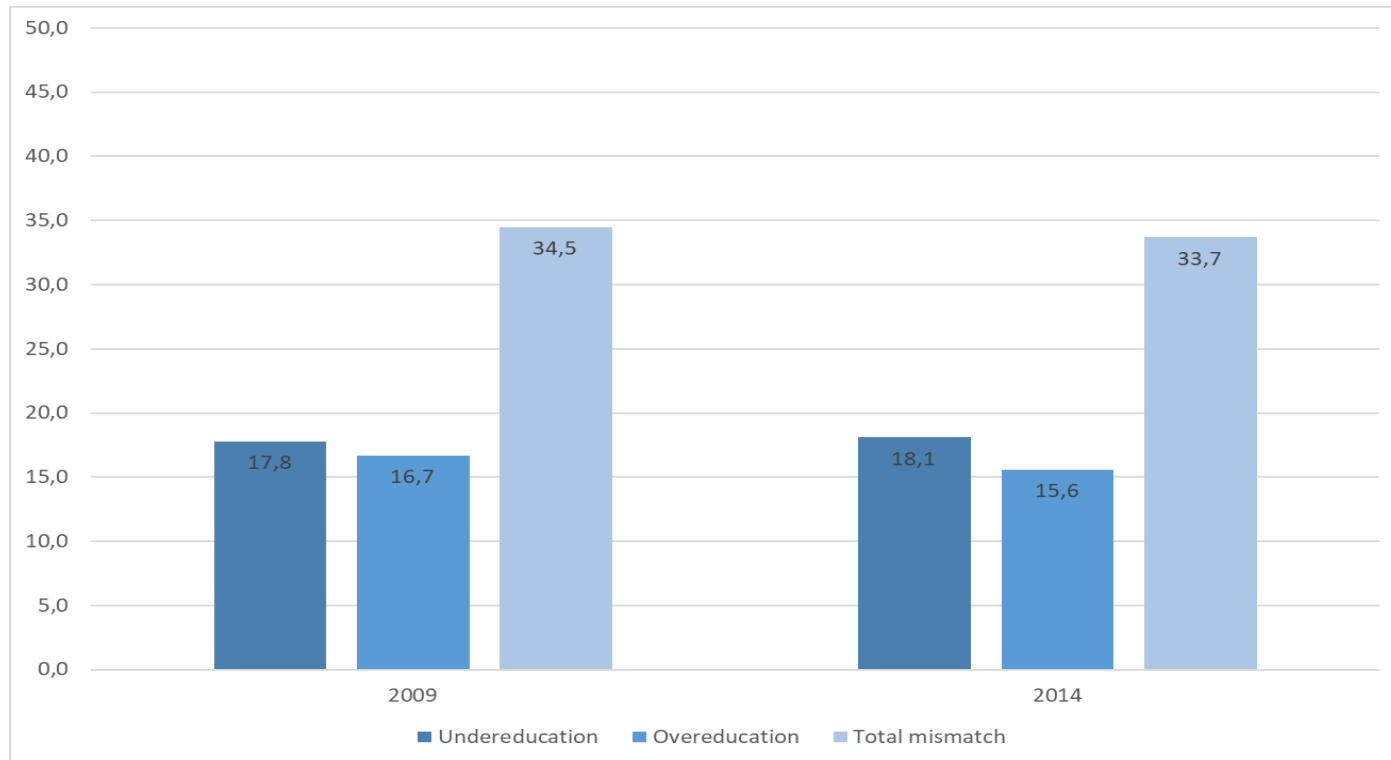
Notes: Authors' calculations based on EU-LFS 2009, 2014; realized matches approach, sample restricted to full-time workers.

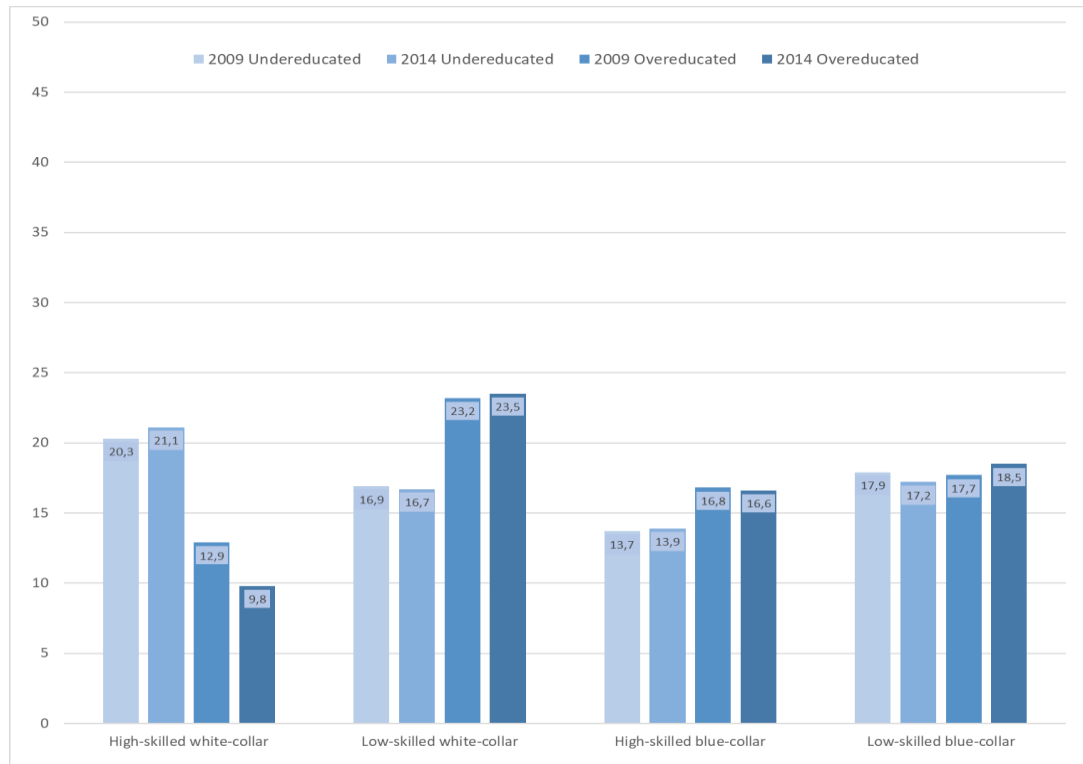# Under- and overeducation rates by occupational groups in 2009 and 2014, pooled data (%)

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

Technequality

Impact of over- and undereducation on salaries in 2009 and 2014

	2009	2014
Educational level[1]		
Overeducation	Decreasing	Decreasing
Undereducation	Increasing	Increasing
Occupational group[2]		
Overeducation	Increasing	Increasing
Undereducation	Decreasing	Decreasing

Notes: Summarised results of linear regression.

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

Technequality

Impact of over- and undereducation on salaries of different occupational groups in 2009 and 2014

	Overeducation		Undereducation	
	2009	**2014**	**2009**	**2014**
Model with educational level[1]				
High-skilled white-collar	decreasing	decreasing	increasing	increasing
Low-skilled white-collar	no impact	decreasing	no impact	increasing
High-skilled blue-collar	no impact	no impact	no impact	no impact
Low-skilled blue-collar	decreasing	no impact	no impact	increasing
Model excluding educational level[2]				
High-skilled white-collar	decreasing	decreasing	decreasing	decreasing
Low-skilled white-collar	increasing	increasing	decreasing	decreasing
High-skilled blue-collar	increasing	increasing	decreasing	decreasing
Low-skilled blue-collar	increasing	increasing	decreasing	decreasing

Notes: Summarised results of multilevel linear regression

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

Technequality

The modifying impact of automation risk and educational mismatch on salaries

	Low automation risk	**High automation risk**
High-skilled white-collar	No significant differences in salaries between matched and overeducated workers, wage penalty for undereducated	Clear wage penalty for mismatched vs matched; wage gap for under- and overeducation decreases
Low-skilled white-collar	Wage premium for overeducated (compared with matched and undereducated)	Wage premium for overeducated. Wage gap between matched and undereducated decreases, in 2014 also for overeducated
High-skilled blue-collar	No modifying effect of automation risk	No modifying effect of automation risk
Low-skilled blue-collar	No significant differences between over- and undereducated and matched	Wage premium for overeducated, wage penalty for undereducated compared with matched

Notes: Summarised results of multilevel linear regression models with the interaction of automation risk and educational mismatch.

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

Technequality

Conclusions

Models controlling for educational level:

Overeducated workers are having a wage penalty compared with workers with same educational background in higher job positions.

On the contrary, **undereducated** workers seem to have wage premium in comparison to matched workers with a similar educational background, but working in lower job positions.

Technequality

Conclusions

Models **controlling for occupational group** are in line with previous research:

> ➢ **overeducated** workers have wage premium compared with adequately educated workers in jobs with requirements that match their education and **undereducated** have wage penalty.

Interesting finding**: only** for **high-skilled white-collars** both **over-** and **undereducation** have negative effect on **salaries**, as matched workers appear to be most advantaged.

Technequality

Conclusions, modifying effect of automation risk

We observed a somewhat **surprising trend**:

> ➢During the economic crisis high automation risk seems to have positive impact on salaries of low-skilled white- and blue-collars.

> ➢**Automation risk** -> Jobs which were considered high risk of automation in 2019, might not have been at the risk in 2009 (e.g. general clerks; assemblers) -> positive effect on salaries.

Differences among occupational groups with high automation risk:

- ➢ High-skilled white-collars: clear wage penalty for mismatched workers, but at the same time decreasing the wage gap.
- ➢ Low-skilled white- and blue-collars: wage premium for overeducation.

Technequality

Future research

➢ **Policy recommendations** varies across countries and more research is needed in this respect.

➢ The relative role of **structural demand** and **labour market institutions** in explaining **country differences** in terms of the effect of **educational mismatch** on **salaries** is a matter for future research.

Technequality

Thank you for your attention!

Technequality