Digital transitions as a determinant of skills mismatch

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Introduction

Despite the existence of a digital divide between EU regions with low share of people who have never used the internet and other (e.g. Greece, Bulgaria, and Portugal) with the highest (European Commission, 2022), there have been recent national and international efforts aimed to support the transition of the least digitalised region into a digital economy, such as the launch of the Digital Agenda for Europe and the Digital Single Market (DSM) strategy by the European Commission.

Understanding how the transition had an impact on skill mismatch in most digitalized countries and to which extent upskilling helped to reduce the negative effects vis-à-vis a comparison with countries who are least advanced in terms of digitalization is important to inform policies targeted to the groups at the highest risk of mismatch, improving labour market efficiency and productivity, which is usually negatively correlated with skills mismatch (Adalet McGowan & Andrews, 2015).

This paper aims to answer three research questions:

(i) What type of skill mismatches are associated with worker´s characteristics, job and geographic characteristics and the adoption of new digital technologies in workplaces?;

(ii) To which extent upskilling or re-skilling can mitigate the negative effects of digitalization on jobs?;

(iii) To what extent does digitalization (or experiencing technological change) drive different skills mismatch across EU countries, EU geographical regions and EU clusters of countries with heterogeneus digitalization intensity?

Methods

In the preliminary results presented here, we concentrate on overeducation and the influence of digitization. Other mismatch indicators (occupational mismatch, overeducation using the empirical method) show similar albeit not exactly the same outcomes.

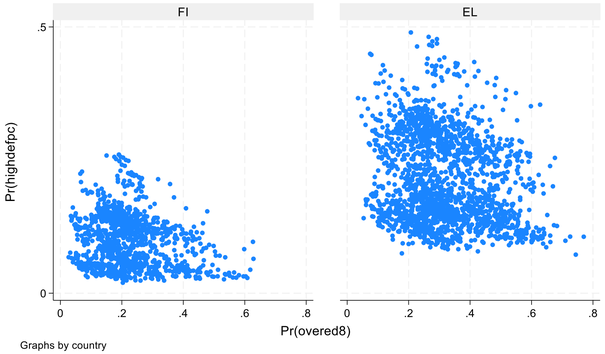
(i) Regression on the pooled (EU countries) cross-section 2021:

$$Y_{itc} = \alpha + \delta_{itc}Ind\_char + \beta_{itc}ExpTC^* + \varepsilon_{itc}Job\_char + \theta CountryFE_c + u_{itc}$$

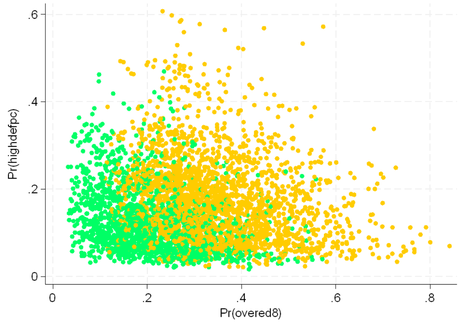
The dependent variable is a dummy variable for digitally under-skilled or under/over-qualified. Controls include:

- Individual characteristics: Gender, age, level of formal education, GEN/VET education, digital upskilling;
- Experienced technological change; alternatively: predicted technological change;
- Job characteristics: basic job-skill requirements (literacy and numeracy); social/interpersonal job-skill requirements; manual/physical job-skill requirements; digital job-skill requirements; job complexity; work routinisation; industry and occupation dummy variables;
- We correct for the survey mode;
- Year-fixed effects to control for trends in skills mismatch over time;
- Country fixed effects to control for different levels of skills mismatch across countries constant over time.

Relation between predicted degree of digital skills mismatch and predicted probability of overeducation.



Relation between predicted degree of digital skills mismatch and predicted probability of overeducation for medium (green) and high educated (yellow), EU+



Conclusions

There is a relation between implementing (digital) technologies in the main job and the likelihood of a perceived need to develop better IT skills.

The perceived need to develop better IT skills is negatively related to the likelyhood of overeducation.

Having a medium education significantly decreases the probability of an employee being overeducated.

Overeducation is less likely in employment situations in workplaces that have implemented modern digital technologies.

There seems to be “some” relation between degrees of digitization (of a country or region) and the relation between digitization and overeducation.

The results indicate that many instances of overeducation occur in digitally lagging workplaces. This is further supported by findings that employment relationships tend to be shorter, particularly in small businesses and non-permanent positions.

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