Structural Skill Change and Marginal Group Employment

Michael Tåhlin and Johan Westerman
Swedish Institute for Social Research (SOFI)
Stockholm University

Does rising skill demand hurt marginal workers' employment prospects?

- In many advanced industrial countries, in Europe and beyond, **marginal groups** in the labor market are facing **increasing difficulties** in finding employment.
- We outline elements of a theory of how **structural skill upgrading** might hurt employment prospects of marginal workers, with a focus on youth and immigrants as especially vulnerable labor force categories.
- A crucial mechanism in this perspective is the **rise in experience requirements** that tends to accompany the growth in skill demand.

Marginal groups

- Youth
- Immigrants (recent)
- Older workers
- Mothers (with dependent children)

Main hypothesis

- The upward shift in the skill structure of labor markets – the growing shares of jobs with high skill requirements and workers with high education – has made crossing the border into employment more demanding.
- These growing entry barriers to employment have affected youth and recent immigrants more than others.
- This hypothesis has not been evaluated before in a sufficiently systematic way.

Hypotheses, cont’d.

- We suggest that the long-term decline in youth and immigrant employment to a significant extent can be explained by the structural change of skill supply and demand.
- This structural change has two interrelated components that should be considered jointly: skill upgrading and skill mismatch.
- The skill structure has a demand side (jobs) and a supply side (individuals). Both skill demand and supply have grown significantly over the past several decades in most OECD countries.
- By skill upgrading we mean a parallel rise in demand and supply, well matched to each other.
- In contrast, skill mismatch appears if skill supply and demand grow out of synch. In many European countries, educational expansion has been faster than the rise in job skill requirements, leading to over-education.
- This will augment the impact of rising skill requirements via crowding-out: highly educated individuals unable to acquire a high-skill job turn downward in the structure and compete with the less skilled for low-skill jobs.
- Both upgrading and over-education may thus hurt the employment chances of labor market newcomers because both affect the availability of entry-level jobs with limited skill requirements.

Link between skill demand and marginal group employment: Lack of experience

- Skills are formed not only through education but also by work experience, a key insight from human capital theory.
- Experience is more highly valued in jobs requiring high education than in other jobs; hence, net of individual education, job upgrading implies a loss of competitive capacity for labor market newcomers.
- The relative lack of experience among young persons and recent immigrants is a weakness in the competition with more established workers for job opportunities.
- Other traditionally marginal groups in the labor market, such as older workers and mothers with dependent children, are probably not to the same extent hurt by structural skill upgrading.

Empirical results

- Our empirical results, based on data from the EU Labour Force Surveys (EU-LFS) 1999-2015 for 20 countries, are well in line with this difference in expected effects for different marginal groups.
- Both matched skill upgrading and overeducation have a clear negative impact on the employment chances of youth and immigrants.
- Older workers and mothers appear less affected by structural skill change.
- Results concerning youth employment were recently published in an article in *European Societies* (Tåhlin and Westerman 2020).
- In the present Technequality report we extend the analyses beyond youth to other marginal groups: Immigrants, older workers, and mothers.

Country patterns in empirical results

- The international variation in structural skill effects also seems compatible with our theoretical view of the mechanisms involved.
- The clearest pattern of empirical associations between skill change and marginal group employment is found for northwestern Europe.
- Both eastern and southern European countries display a less coherent set of findings.
- The less distinct pattern for the East and South is arguably due to a larger influence in these countries of institutional factors unrelated to the skill-based account we use as a theoretical guide.

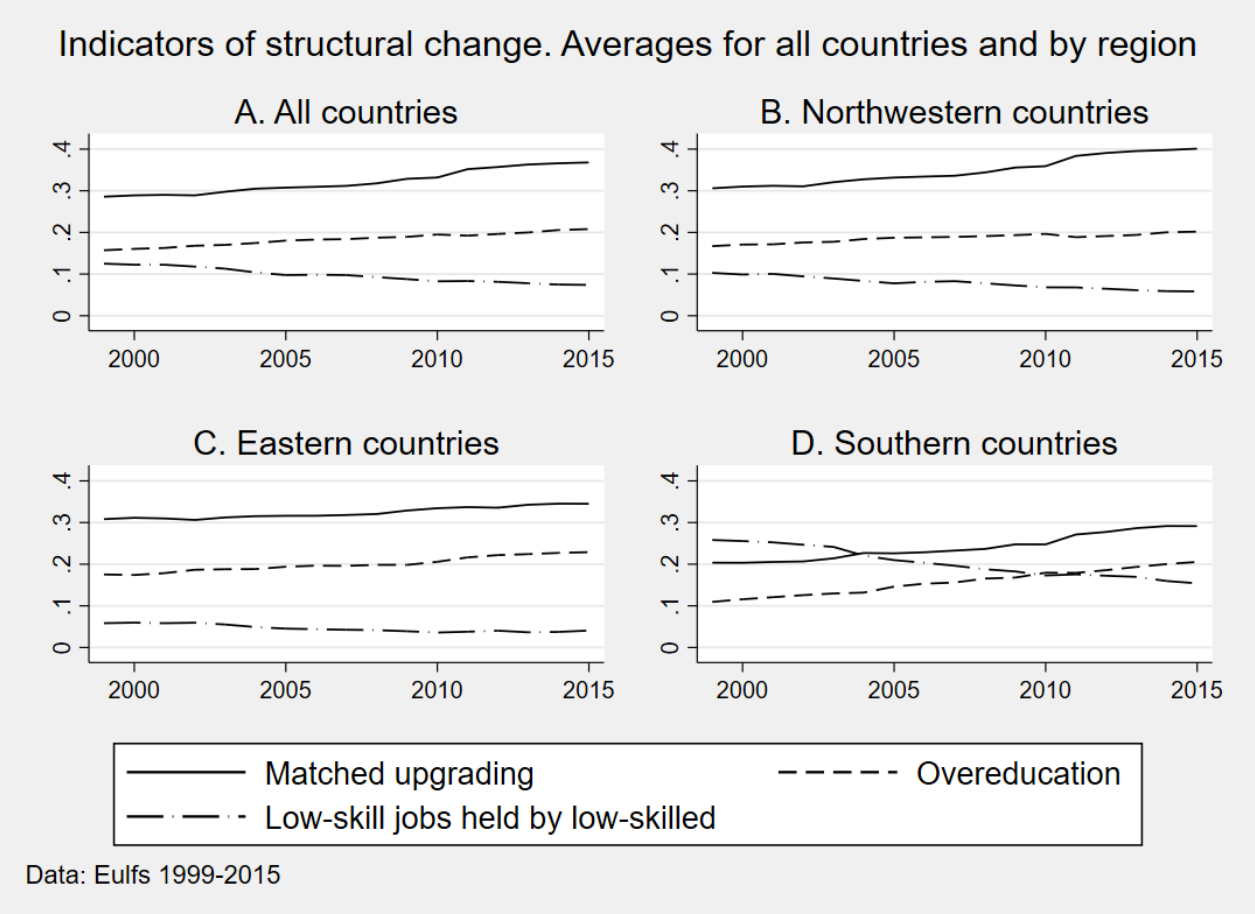
Measuring structural skill change: Applying the ORU model to macro-level data

- According to our theoretical outline, it is important to estimate the separate employment effects of skill upgrading and mismatch in a joint model.
- Duncan and Hoffman (1981) decompose attained education (in years) into three parts: (a) education required in the worker's current job, (b) education attained by the worker that exceeds current job requirements, and (c) education required by the current job that exceeds what the worker has attained.
- This model, known as ORU: Over-Required-Under, thus allows estimation of the separate payoffs to education dependent on the nature of the job match.
- We apply the ORU model to aggregate data on occupation and education at the country-by-year level.
- Skill demand is indicated by ISCO (International Standard Classification of Occupations) categories of the jobs held by individual workers.
- Similarly, on the basis of individual education (ISCED categories; International Standard Classification of Education), a measure of skill supply is constructed.
- Three skill levels of both education and occupation are distinguished: high, medium and low. The individual-level match between skill supply and demand is measured by cross-classifying educational and occupational levels; all observed jobs are sorted into this 9-cell (3 by 3) matrix.
- For each country-year, the nine proportions (estimated from individual-level data) sum to unity (i.e., all non-vacant jobs).

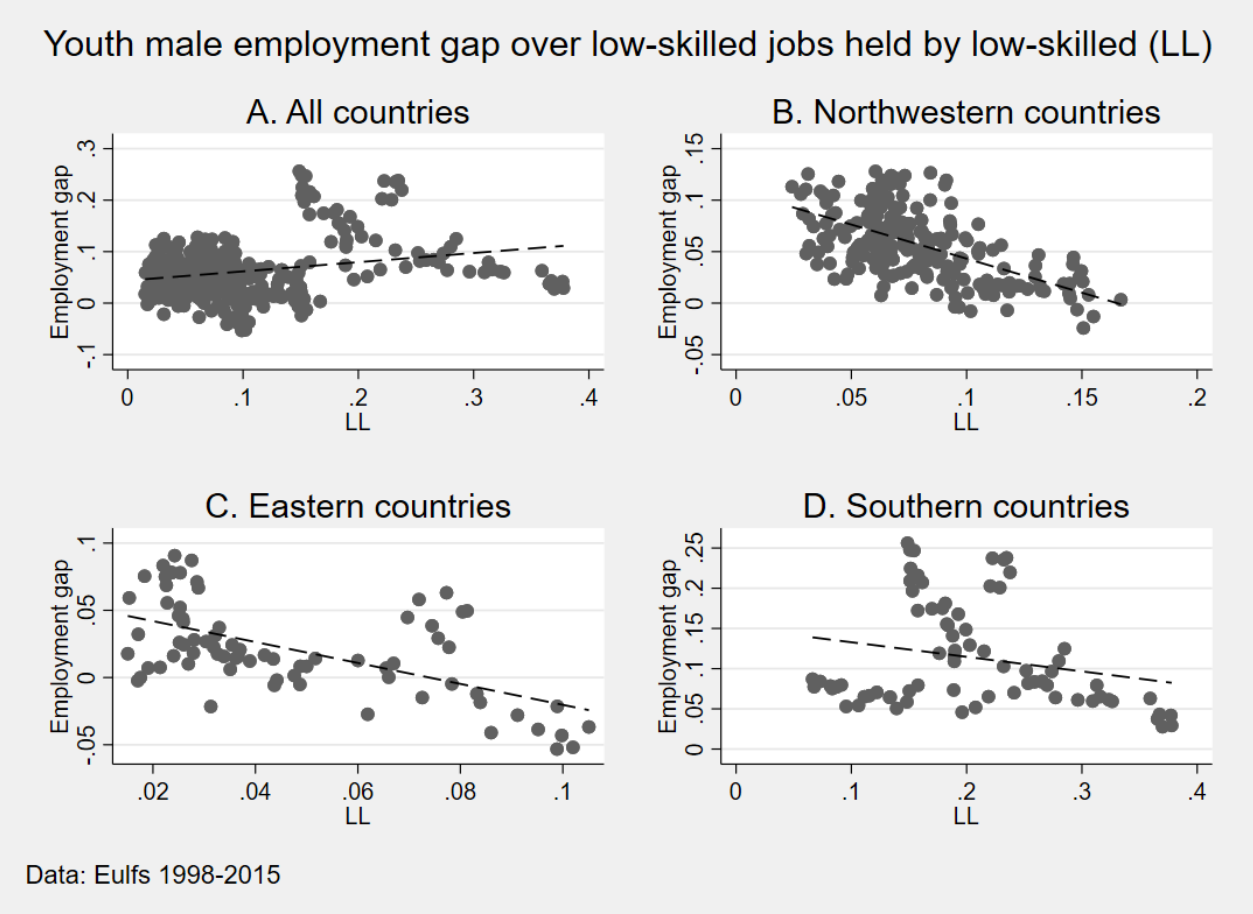
Education by Occupation matrix, indicating Skill Structure

		Education		
Occupation		Low (ISCED 0-2)	Medium (ISCED 3-4)	High (ISCED 5-8)
	Low (ISCO 5,6,8,9)	Low-skill jobs held by Low-skill workers (LL)	Low-skill jobs held by Mid-skill workers (ML)	Low-skill jobs held by High-skill workers (HL)
	Medium (ISCO 3,4,7)	Mid-skill jobs held by Low-skill workers (LM)	Mid-skill jobs held by Mid-skill workers (MM)	Mid-skill jobs held by High-skill workers (HM)
	High (ISCO 1,2)	High-skill jobs held by Low-skill workers (LH)	High-skill jobs held by Mid-skill workers (MH)	High-skill jobs held by High-skill workers (HH)

Structural change in Europe 1999-2015



Structural change and the youth employment gap



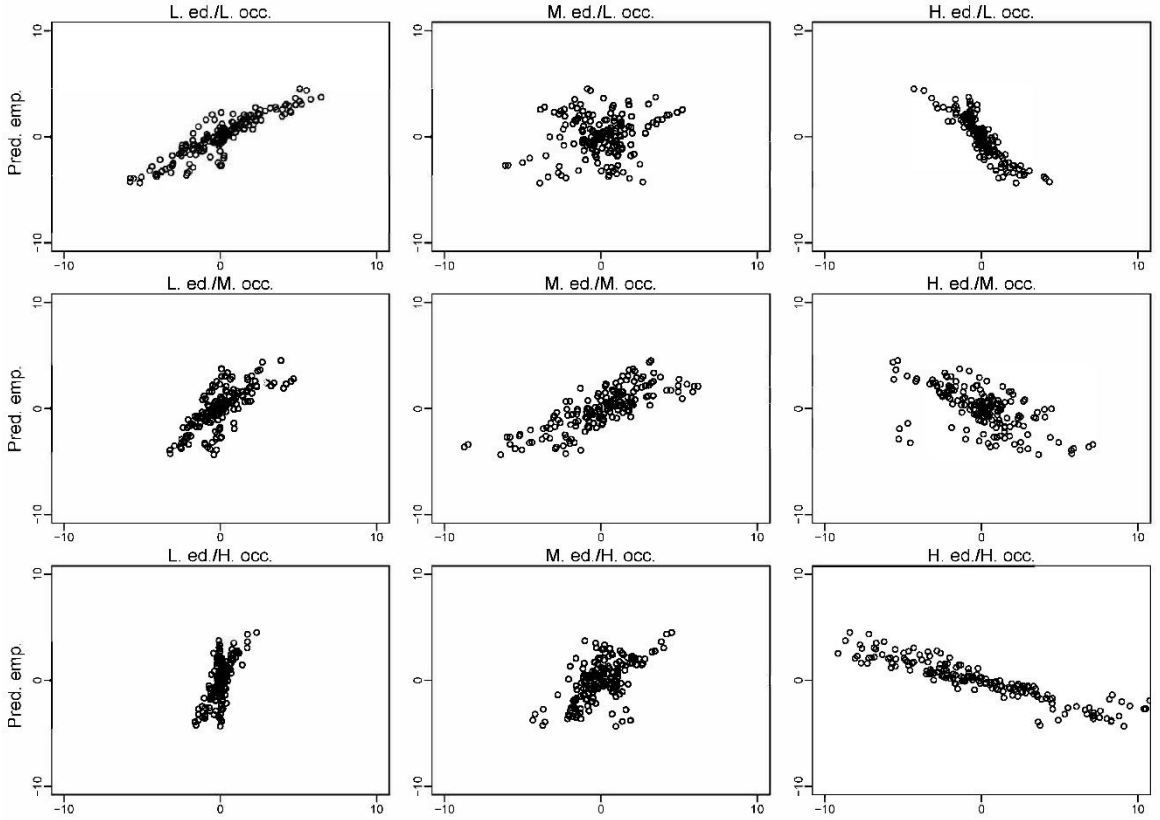
Regressions of youth male employment on matched skill upgrading and overeducation

20 countries in North-western (NW), Eastern (EA) and Southern (SO) Europe, 1999-2015, EU-LFS.

	ALL	ALL FE	NW	NW FE	EA	EA FE	SO	SO FE
Matched skill upgrading	-0.173* (-2.45)	-0.178*** (-3.47)	-0.329*** (-5.98)	-0.278*** (-4.53)	-0.222 (-1.11)	-0.051 (-0.19)	0.023 (0.15)	-0.273* (-2.00)
Overeducation	-0.231** (-2.64)	-0.175*** (-3.56)	-0.320*** (-5.13)	-0.314*** (-5.21)	-0.466* (-2.56)	0.275 (0.82)	-0.075 (-0.50)	-0.123 (-0.46)
N (country-years)	376	376	225	225	76	76	75	75

Predicted male youth employment and observed changes in skill structure

Figure 4. Predicted male youth employment and observed changes in education/occupation combinations



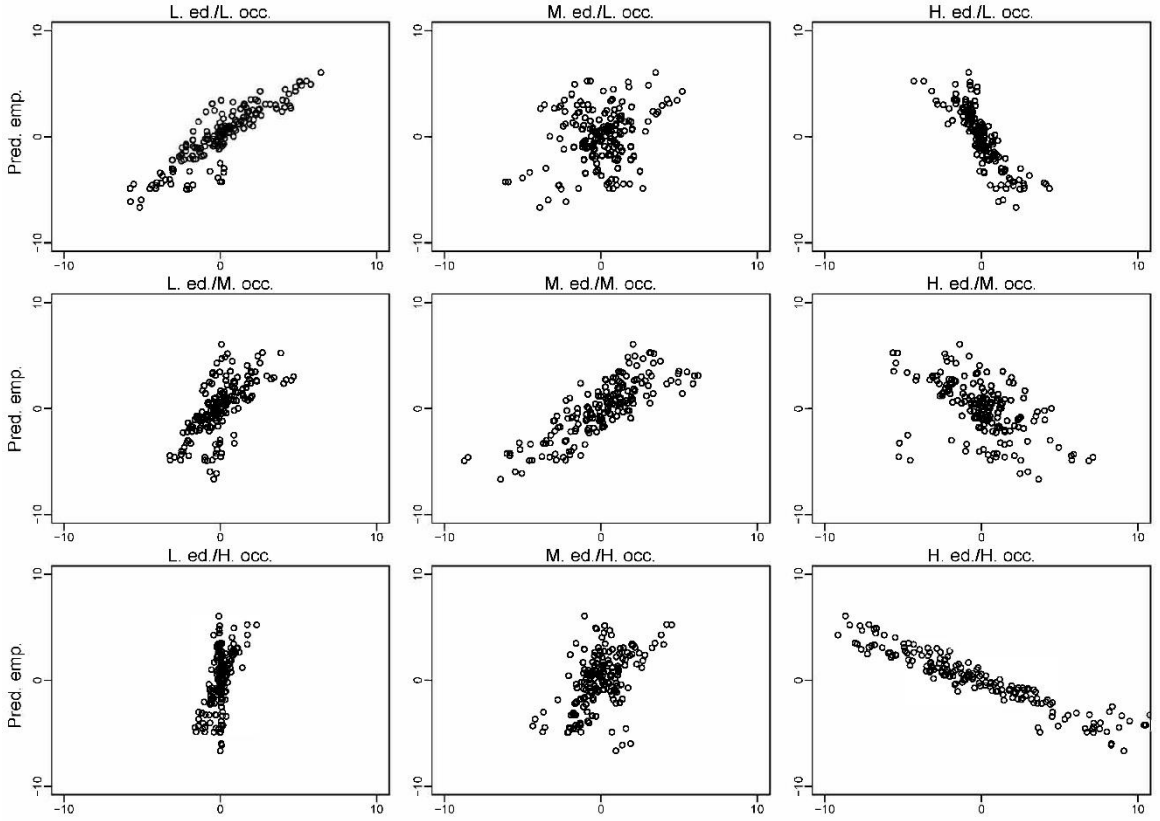
Regressions of youth female employment on matched skill upgrading and overeducation

20 countries in North-western (NW), Eastern (EA) and Southern (SO) Europe, 1999-2015, EU-LFS.

	ALL	ALL FE	NW	NW FE	EA	EA FE	SO	SO FE
Matched skill upgrading	0.186**	-0.268***	-0.093	-0.388***	0.640***	0.100	0.151	-0.331*
	(2.89)	(-4.14)	(-1.49)	(-4.67)	(4.39)	(0.49)	(0.66)	(-1.97)
Overeducation	0.060	-0.099	-0.139	-0.330***	0.458**	-0.688*	0.676**	0.699
	(0.70)	(-1.41)	(-1.76)	(-3.70)	(3.01)	(-2.41)	(2.80)	(1.71)
N (country-years)	376	376	225	225	76	76	75	75

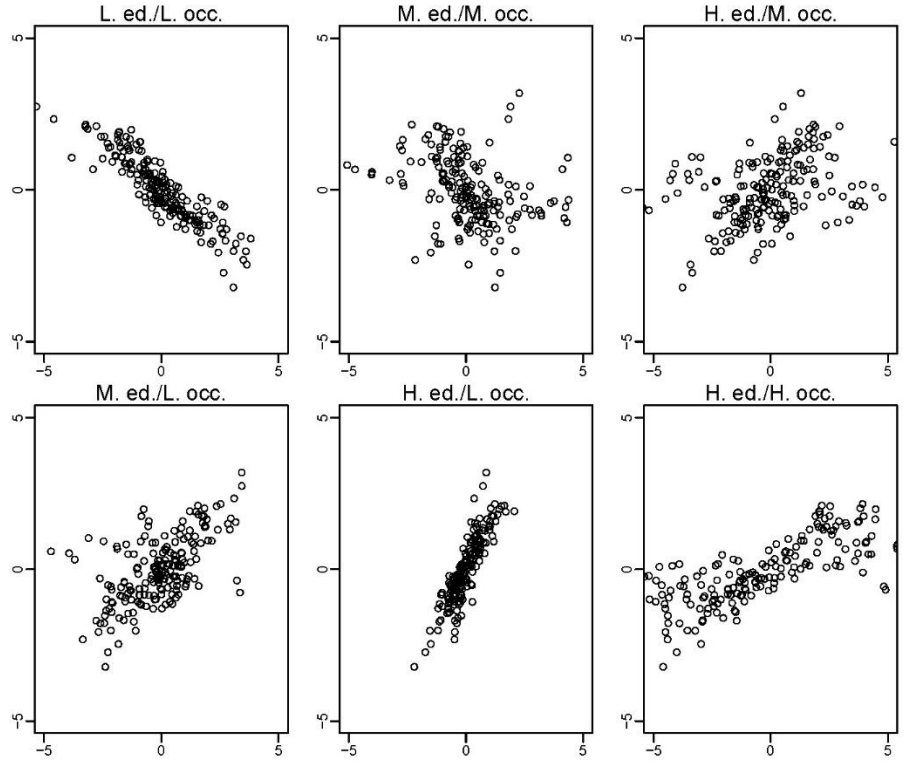
Predicted female youth employment and observed changes in skill structure

Figure 5. Predicted female youth employment and observed changes in education/occupation combinations



Predicted immigrant-native employment gaps and observed changes in skill structure

Figure 11. Predicted change in immigrant employment gaps over observed changes in ed./occ. combinations



Conclusions

- First, both matched skill upgrading and overeducation are strongly and negatively linked to young people's employment chances.
- Second, a large low-skill job share is favorable for immigrants' employment, but only if workers in these jobs have low qualifications. A combination of skill upgrading and rising over-education creates the most unfavorable employment opportunities for immigrants.
- Third, older workers and mothers are much less affected by structural skill change than youth and immigrants are.
- Fourth, the negative impact of structural skill change on marginal group employment is clear in North-Western European countries, but appears less evident in Eastern and Southern Europe.

Policy implications

- Our main conclusion is that skill upgrading and skill mismatch tend to have negative consequences for youth and immigrant employment.
- But skill upgrading is of course beneficial in many ways.
- Perhaps the most important lesson to be learned from our analysis is that employment difficulties for youth and immigrants, at least relative to other groups but probably also in absolute terms, are strongly linked to economic and technological advancement.
- In that sense, employment difficulties for marginal groups can be seen as a negative side-effect of a positive general development.

Policy implications, cont’d

- A possible avenue forward would be to raise the general employment rate by subsidizing low-skill entry-level jobs in sectors where labor demand is high but wage floors are (prohibitively) high as well.
- While stimulating expansion of low-skill jobs reduces average productivity of the workforce, it might, by lifting the employment rate, raise average productivity of the population.
- This dynamic could be further improved by expanding opportunities for upward job mobility from the entry level, which is obviously easier said than done.
- Adjustments of education policies might also be useful.
- Regardless of specific policy proposals, it is of course important to understand the general causes of secular change in the employment prospects for marginal groups in order to evaluate more long-run options.

Policy implications, cont’d

- With regard to skill mismatch it is easier than in the case of skill upgrading to see ways in which policies might be usefully redesigned.
- Apparently, educational expansion can go too far, or at least go in a less than optimal direction.
- Here we seem to confront a problem of the ‘tragedy of the commons’ type: at the individual level, it is typically rational to pursue further education in order to become more competitive in the job market. And this is also the standard policy recommendation.
- But the more individuals in general increase their education, the tougher the competition will get for each specific person.
- According to our results, aggregate overeducation hurts young people’s and immigrants’ employment opportunities considerably.
- The paramount policy task is therefore hardly to expand education in general but in a more prudent manner with regard to both magnitude and composition.

Thanks for your attention!