

Skills mismatch experimental indicators Methodological note

EUROSTAT

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Skills mismatch experimental indicators

As no commonly agreed indicators to measure skills mismatch within the European Statistical System (ESS) exist, Eurostat has developed some experimental statistics to foster the policy debate on this issue.

Using EU Labour Force Survey (EU-LFS) data, Eurostat proposes experimental indicators measuring the "vertical" and "horizontal" skills mismatch. "Vertical" measures focus on discrepancies between educational attainment levels (ISCED 2011 1-digit) and occupations (ISCO 2008 1-digit). "Horizontal" measures focus on misalignments between the educational field of the highest level of education attained (ISCED-1999 fields of education and training) and occupations (ISCO 2008 3-digit).

Vertical skills mismatch: over-qualification rate

Overqualified workers are defined as employed persons who have attained tertiary education (ISCED 2011 level 5-8) and who work in occupations for which a tertiary education level is not required; equivalent to the major groups 4 to 9 of the ISCO 2008 classification, including 'Clerical Support Workers; Services and Sales Workers; Skilled Agricultural, Forestry and Fishery Workers; Craft and Related Trades Workers; Plant and Machine Operators and Assemblers; and Elementary Occupations'. It is based on the correspondence between occupations and level of education as proposed by the International Labour Organization (ILO) in the [International Standard Classification of Occupations; Structure, group definitions and correspondence tables](#).

This indicator is now used in official statistics as an experimental indicator to measure over-qualification. Although not yet methodologically grounded, it gives useful insight and the intuitive reasoning is straightforward.

Overqualification figures are useful for labour market analyses, as businesses having difficulties in recruiting staff will scale down their requirements in terms of qualifications. The reverse also applies: businesses that have no difficulties in filling a post might increase the required level of qualification. Therefore, overqualification can signal an excess of labour supply from workers with high qualifications or, on the contrary, labour demand shortages.

Data are presented for the whole economy and by economic activity (NACE Rev. 2, 1-digit).

Over-qualification rate (OQR):

$$OQR (\text{Country, Year, NACE}) = \frac{\text{Persons employed with ISCED 5 - 8 and ISCO 4 - 9}}{\text{Persons employed with ISCED 5 - 8}}$$

The analysis focuses on persons employed in the age group 20 to 64.

ISCED 5-8 refers to the educational attainment level (ISCED 2011); ISCO 4-9 refers to the occupation major groups (ISCO 2008).

More information on over-qualification rates can be found in the Statistics explained article on [Employment and Labour Demand](#).

Horizontal skills mismatch: field of education

The rate of skills mismatch by field of education is defined as the discrepancy between a person's current occupation and their field of education related to the highest level of education attained.

After matching fields of education according to the ISCED classification of fields of education and training to occupations at ISCO 2008 3-digit level, persons working outside their field of education are considered as individuals with horizontal skills mismatch. The criterion used for the matching of occupational ISCO codes with the fields of education is the assumed congruence of skills acquired through education and the skills needed for the job.

Skills mismatch by field of education may be relevant for labour market analyses since 'non-matched' persons (i) might face frustration because of the lack of a direct return to the effort dedicated to study and (ii) may generate economic losses for businesses as a result of lower efficiency and/or the additional costs of acquiring specific skills on the job.

The data presented on the experimental skills statistics dedicated page cover both persons in employment aged 15 to 34 years who have attained at least secondary education (ISCED levels 3 to 8) and persons in employment aged 25 to 34 years who have attained tertiary education (ISCED level 5 to 8).

Please note that horizontal skills mismatch cannot be calculated for all persons in employment because the information about the field of education is only collected if the person has successfully completed his/her highest level of education within the last 15 years.

Fields of education are defined according to the ISCED fields of education and training classification (ISCED-F 1999 applicable for the years 2014 and 2015, ISCED-F 2013 as from 2016 onwards). Occupations are identified according to the ISCO 2008 categories at 3-digit (minor groups).

Horizontal skills mismatch rate by field of education (HSMR):

$$HSMR (Country, Year, FoE) = 1 - \frac{\text{Persons employed with matching FoE}}{\text{Persons employed}}$$

The analysis focuses on two groups:

- Persons employed aged 15 to 34 having at least completed secondary education (educational attainment level 3 to 8 in ISCED 2011), and
- Persons employed aged 25 to 34 having completed tertiary education (educational attainment level 5 to 8 in ISCED 2011).

"Matching FoE" means working in an occupation (ISCO 2008) that matches the FoE (Field of Education in ISCED-F)

A similar methodology had been applied for the 2000 ad-hoc module of the EU-LFS which focused on the transition from school to working life.

In order to match fields of study to occupation the methodology from the article **Job Mismatches and their Labour Market Effects among School-leavers in Europe by Maarten Wolbers (European Sociological Review, Vol.19 No. 3, 249-266)** has been used.