

# Employment and labour demand

Statistics Explained

*Data extracted in May-September 2016. No planned update.  
Data from EU Labour force survey — annual results 2015.*



*Author: Filippo Gregorini (Eurostat — Reinforced role of social indicators)*

This article illustrates recent trends in the [EU-28](#) labour market giving insights into the development of labour demand in the European Union and its Member States since 2008, when the financial and economic crisis took hold. The analysis is based on the 2015 [EU Labour force survey \(LFS\)](#) data.

In the first part, figures on [employment](#) , [unemployment](#) , activity and inactivity, and [unemployment rates](#) by educational attainment are presented.

The second part of the article focuses on specific economic activities as defined in the [NACE Rev. 2](#) classification. Over-qualification rates and an indicator of intensity of labour demand for selected sectors are displayed.

Over-qualified workers are defined as those with tertiary education who are working in occupations for which such qualifications are not required. The assumption is that a company that is trying hard to fill a post will scale down its requirements in terms of qualifications; conversely, a company that is having no difficulties in filling a post will raise the level of qualification required. Therefore, over qualification can signal an excess of labour supply from highly qualified workers and/or labour demand shortages. The article presents these figures broken down by economic activity, showing that skills shortages could be also indirectly inferred in case of no over-qualification and/or huge drops of over-qualification rates.

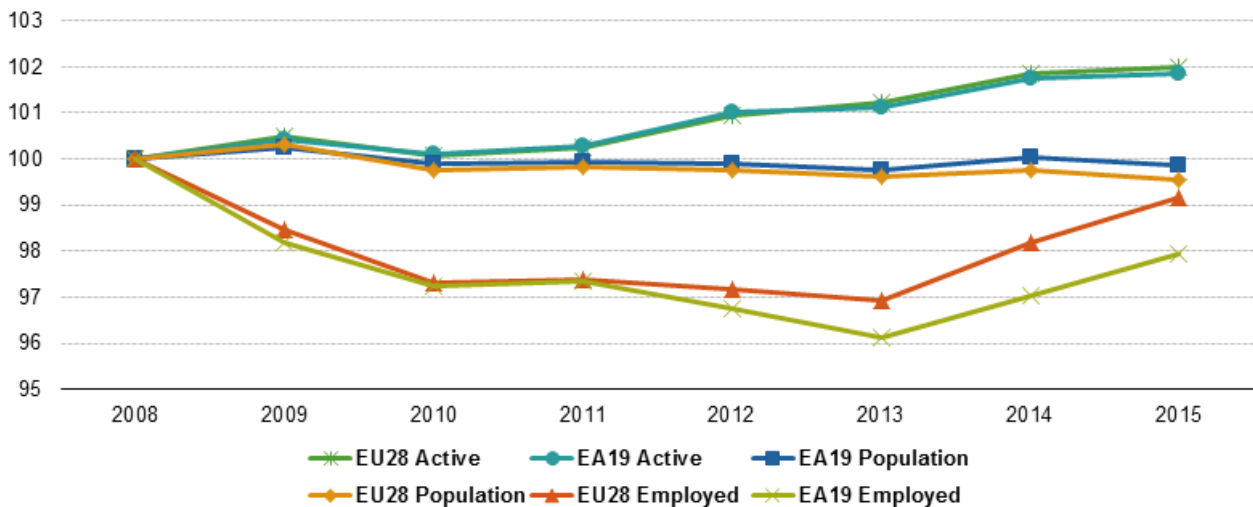
Intensity of labour demand is measured by total hours worked, computed as the average number of usual weekly hours multiplied by the number of people employed. Where total working hours devoted to an economic activity increase, we can infer higher intensity of labour demand. On the other hand, lower intensity of labour demand (decreasing working hours) can signal aggregate demand shortages and/or excess labour supply. Having figures broken down by economic activity make the picture more interesting: in case of strongly increasing working hours in a specific economic activity, it could be inferred that the skills related to that sector are in high demand in the labour market.

Throughout the article, the reference group is people aged 20 to 64, in line with the Europe2020 targets for employment rates.

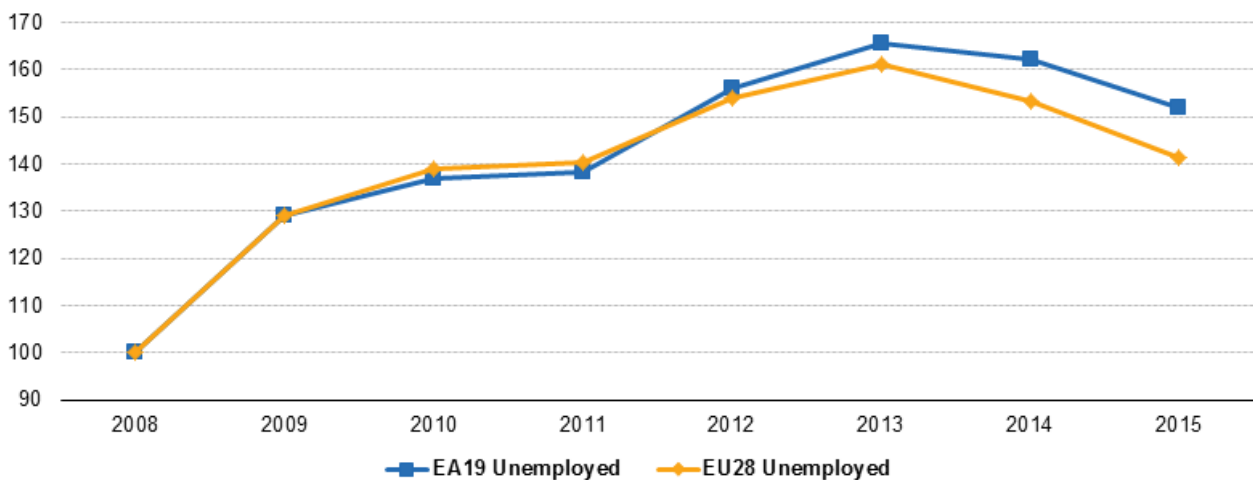
In 2015, the EU labour market was still influenced by the economic crisis but also showed strong signs of recovery.

## Labour force dynamics

The key EU-28 and euro-area employment and unemployment figures for the 20-64 age group improved greatly in the two years after 2013 – see Figures 1 and 2, which show data taking 2008 as the base year (=100).



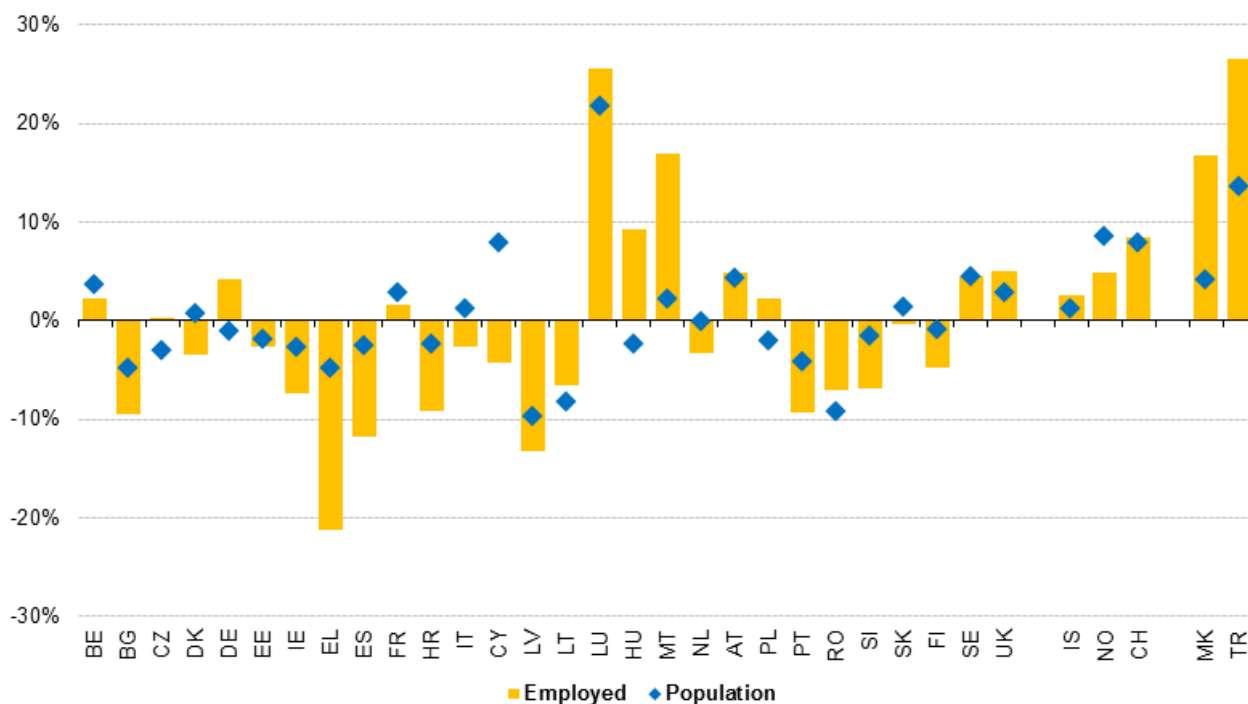
**Figure 1: Labour Force Trends - EU-28 and the euro area for the 20-64 age group - 2008=100** Source: EU - LFS



**Figure 2: Labour Force Trends - EU-28 and the euro area for the 20-64 age group - 2008=100** Source: EU - LFS

Both the EU-28 and the euro area show continuing positive trends in terms of [active population](#), also seeing an increase in the number of employed persons, together with a relatively stable population in the age group. The rise in unemployment that started in 2008 definitely reversed from 2013 onwards, with the EU as a whole doing slightly better than the euro area.

Figure 3 shows in percentage the changes of the population (rhombuses) and employment (bars) in the 20 to 64 age group between 2008 and 2015 in the Member States.



**Figure 3: Population and employment 2015 as compared to 2008 - % changes Source: EU - LFS**

Employment grew faster than population in several countries: the Czech Republic, Germany, Luxembourg, Hungary, Malta, Austria, Poland, Sweden and the United Kingdom. In Belgium and France, employment grew, but more slowly than the total working age population. In the remaining 17 Member States, employment fell; only in Lithuania and Romania did it do so at a slower pace than the population. A fall in employment and a rise in population were observed in Denmark, Italy, Cyprus and Slovakia.

Luxembourg saw the biggest increases in both employment (+25.6 %) and population (+21.8 %), while Greece saw the biggest drop in employment (-21.1 %) and Latvia the biggest contraction of population (-9.8 %).

Slight differences emerge when looking at absolute numbers. In Luxembourg, Austria and Sweden, employment increased, but more slowly than the population of the age group. Germany (+1.56 million) and the United Kingdom (+1.39 million) saw the largest increase in employment and Spain the biggest drop (-2.35 million). The largest increases in population were recorded in the United Kingdom (+1.05 million) and France (+1.04 million) and the biggest decrease in Romania (-1.26 million).

This article turns now to employment rates and activity rates in the Member States since 2008 in the context of the Europe 2020 employment target (75 % of 20-64 year-olds).

[math]Total  
Population = Active  
Population + Inactive  
Population[/math]

[math]Active  
Population = Employed + Unemployed[/math]

[math]Activity  
Rate = Active  
Population / Total  
Population[/math]

[math]Employment  
Rate = (Active  
Population - Unemployed) / Total

Population = Employed / Total  
 Population  $[\text{math}]$

Data show a general increase in terms of activity rate in the EU Member States since 2008 and at the same time several sharp drops in employment rates.

Since employed people are a subset of active people, this article will focus first on the activity rate. Figure 4 shows that this generally rose in the EU after 2008 (increases in 21 Member States). The Member States showing the largest increases – Malta (+9 pp) and Hungary (+7.1 pp) – are those that had the lowest activity rates in 2008. By contrast, six of the seven countries showing drops in activity rates (Denmark, Ireland, Latvia, Portugal, Slovenia and Finland) were among those with the highest rates (>75 %) in 2008.

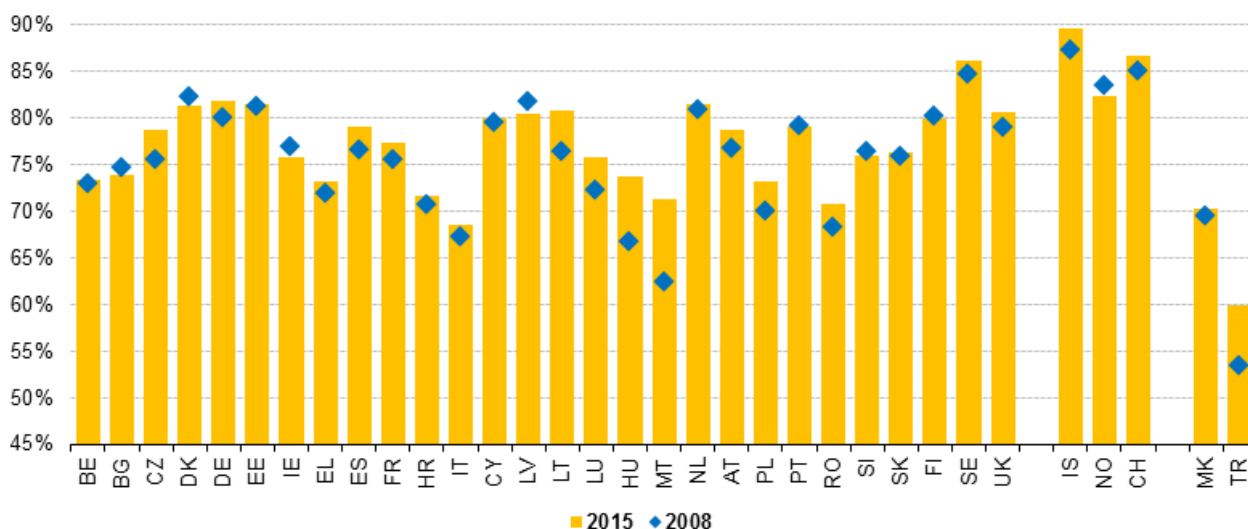
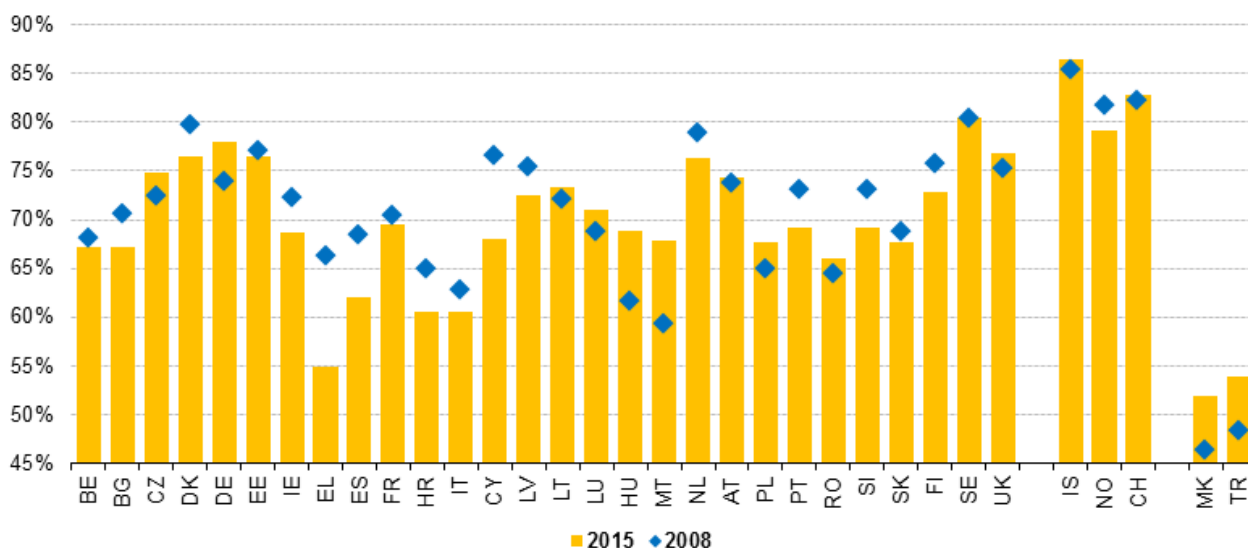


Figure 4: Activity rate 2015 as compared to 2008 Source: EU - LFS (Ifsa\_argacob)

When looking at employment rates for the 20-64 age group (see Figure 5), the picture becomes more complex. These rose in 11 Member States after 2008; once again, Malta and Hungary were the best performers (+8.6 pp and +7.3 pp respectively), but they were also the EU Member States with the lowest employment rates in 2008. The remaining 17 Member States recorded (in some cases, huge) drops; the biggest were observed in Spain (-6.5 pp), Cyprus (-8.6 pp) and Greece (-11.4 pp).



**Figure 5: Employment rate 2015 as compared to 2008 Source: EU - LFS (lfsa\_ergaed)**

Eight Member States exceeded the 75 % Europe 2020 employment target in 2008: Denmark, Estonia, Cyprus, Latvia, the Netherlands, Finland, Sweden and the United Kingdom. In 2015, Cyprus, Latvia and Finland were no more compliant with the 75 % employment rate target for the 20-64 years old, and Germany joined the group of the Member States above the threshold. It is worth highlighting that, of the Member States that recorded drops of over 3 pp in employment rates for 20-64 year olds, none was above 75 % in 2008; in other words, for these countries the situation deteriorated significantly after 2008 as regards the Europe 2020 target.

Calculating the index of dispersion (variance to mean ratio) for the series shown in Figures 4 and 5 enables us to gauge whether activity rates and employment rates became more or less homogeneous across Member States between 2008 and 2015. Using the formula:

$$\text{Index of Dispersion}(\text{year, indicator}) = \frac{1}{28} \left[ \frac{\sum (\text{MS Value} - \text{EU Average})^2}{\text{EU Average}} \right]$$

the following can be obtained:

On the one hand, dispersion in terms of activity rate decreased in the EU; this is due mainly to the increase in

SERIES / INDEX of DISPERSION	2008	2015
ACTIVITY RATE	0.37	0.22
EMPLOYMENT RATE	0.42	0.48

activity rates in the Member States with the lowest levels in 2008. On the other hand, the decrease in employment rates in several EU countries already affected by low employment in 2008 led to an increase in dispersion for this series.

To complete the picture, it can also be noted that the dispersion of unemployment rates across EU Member States between 2008 and 2015 increased from 0.57 to 2.46. There were large increases in unemployment in Member States already presenting high rates in 2008, in particular Greece (from 7.7 % in 2008 to 24.9 % in 2015) and Spain (from 10.6 % to 21.7 %). Cyprus also saw an increase of over 10 pp (+11.3 pp).

Unemployment fell in only four Member States, with minimal variation in Malta and the United Kingdom (-0.1 pp in both cases) and more significant decreases in Hungary (-1 pp) and Germany (-2.9 pp).

In 2008, only Spain had an unemployment rate above 10 %; in 2015, eight Member States exceeded this threshold, with Greece and Spain above 20 %. Of the nine Member States with unemployment rates below 5 % in 2008, only Malta and the United Kingdom remained below this level, joined by Germany (7.5 % in 2008 and 4.6 % in 2015).

## EMPLOYMENT AND UNEMPLOYMENT RATES

The Europe 2020 targets include a reference to the employment rate. Contrary to what is often thought, the unemployment rate is not the direct opposite of this, since the two measures do not have the same denominator:

$$\text{Employment Rate} = \frac{\text{Employed}}{\text{Total Population}}$$

$$\text{Unemployment Rate} = \frac{\text{Unemployed}}{\text{Active Population}}$$

The unemployment rate does not take into account those who have given up looking for work (who are part of the inactive population). The unemployment rate could fall as a result of people being so disillusioned by not finding work that they have stopped looking — and are thus no longer formally classified as unemployed. Particularly in times of economic turbulence, the unemployment rate may be lower than the number of people out of work because it includes only those who are actively looking for work and are available to start immediately.

Unemployment statistics do not include workers who have become discouraged and dropped out of the labour force.

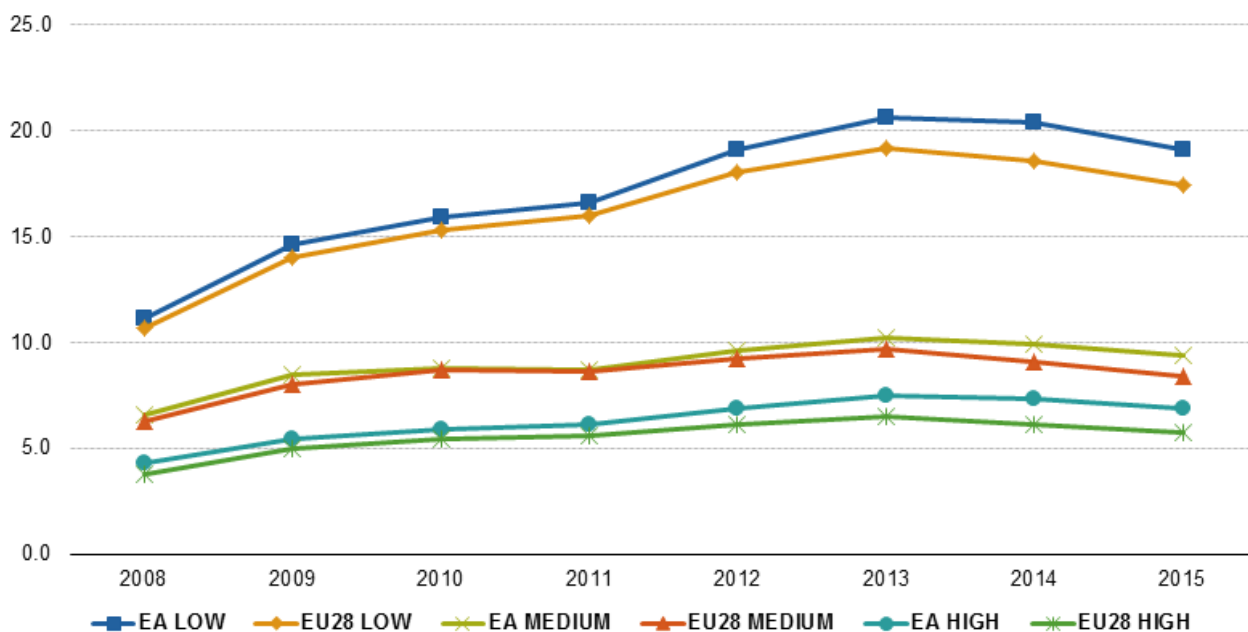
Eurostat tables on 'persons available to work but not seeking' could pre-empt this criticism: data on such 'work seekers' show that they represented quite a limited proportion of the 20 to 64 age group in all Member States in 2008-2015 (never more than 10 % and over 5 % in only four Member States; in 13 Member States, they made up less than 2 % of the population throughout the period). Moreover, unlike unemployed people, they represented a very stable proportion of total population in all EU Member States.

In any case, the unemployment rate remains one of the most well-known and commonly accepted labour market indicators, and there is no doubt as to its relevance: unemployment statistics publications — with unemployment rates as headline indicator — are always among those with the highest visibility.

## Unemployment by level of educational attainment

Figure 6 shows trends in unemployment rates by level of educational attainment in the EU-28 and the euro area for people aged 20 to 64. As expected, there is an inverse relation between unemployment rates and educational attainment. According to the standard [ISCED11](#) classification of educational attainment levels, the following categories are considered:

- LOW: less than primary, primary and lower secondary education — ISCED11 0-2
- MEDIUM: upper secondary and post-secondary non-tertiary education — ISCED11 3-4
- HIGH: tertiary education — ISCED11 5-8

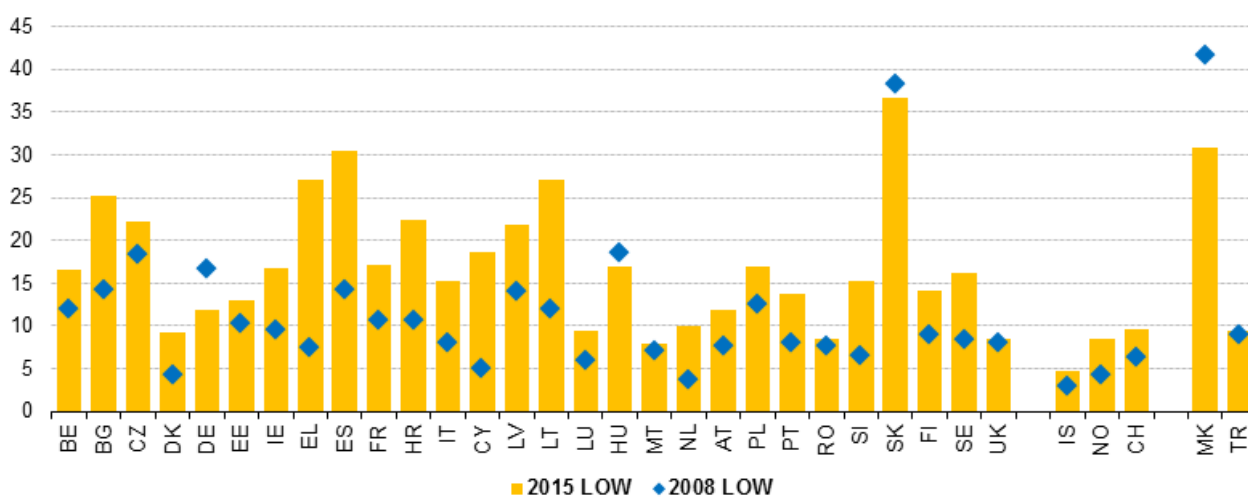


**Figure 6: Unemployment rate by educational attainment level trends - EU-28 and the euro area Source: EU - LFS (Ifsa\_urgaed)**

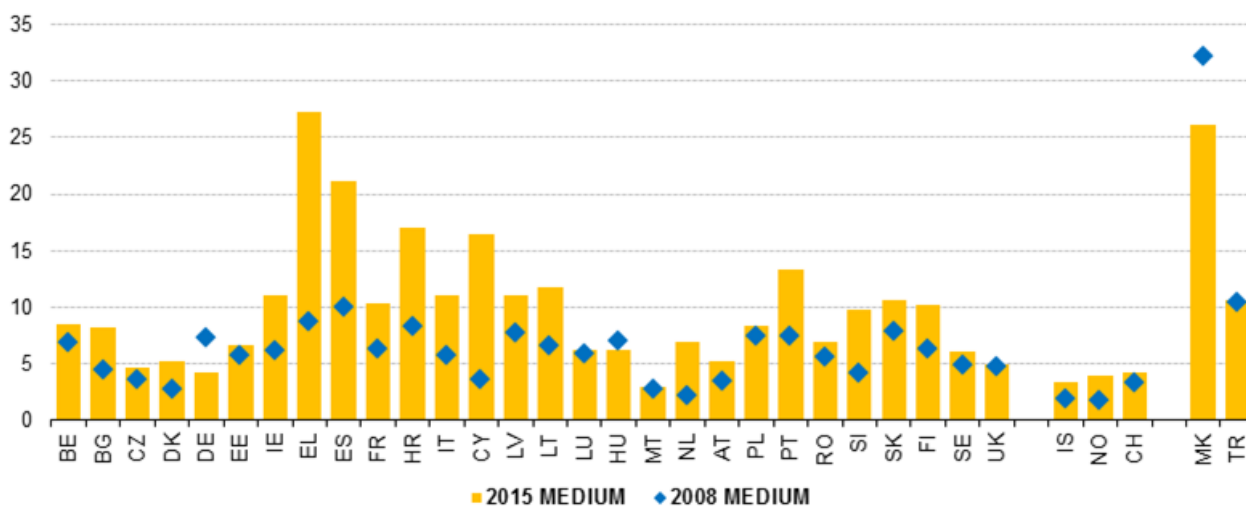
Observing 2008 to 2015, the EU-28 is always (slightly) better off than the euro area and the unemployment rate peak of 2013 (see previous section) is confirmed for all levels of educational attainment.

EU-28 and the euro-area unemployment rates follow very similar trends for each attainment level. However, we can observe a divergent path between LOW and MEDIUM attainment and a convergent path between MEDIUM and HIGH attainment.

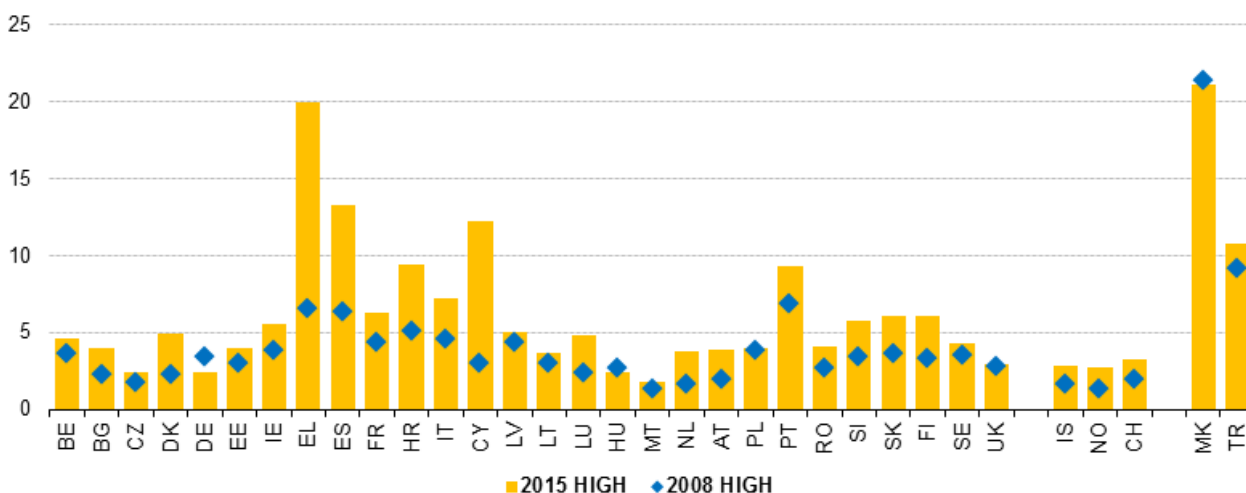
Unemployment rates increased between 2008 (rhombuses) and 2015 (bars) in almost all Member States, for all educational attainment levels (see Figures 7, 8 and 9). Germany and Hungary are the two exceptions, showing decreases for all three levels.



**Figure 7: Unemployment rate - LOW level of educational attainment 2015 as compared to 2008 Source: EU - LFS (Ifsa\_urgaed)**



**Figure 8: Unemployment rate - MEDIUM level of educational attainment 2015 as compared to 2008 Source: EU - LFS (ifsa\_urgaed)**



**Figure 9: Unemployment rate - HIGH level of educational attainment 2015 as compared to 2008 Source: EU - LFS (ifsa\_urgaed)**

Calculating the index of dispersion (variance to mean ratio) for each of the six series in Figures 7, 8 and 9 enables us to gauge whether dispersion increased or decreased across Member States between 2008 and 2015 in terms of unemployment rates by level of educational attainment. Using the formula:

$$\text{Index of Dispersion}(\text{year, ISCED}) = \frac{1}{28} \left[ \sum (\text{MS Value} - \text{EU Average})^2 / \text{EU Average} \right]$$

the following can be obtained:

The index decreased for the low attainment group (-0.86) and increased significantly for the medium and high attainment groups (+2.12 and +1.77 respectively).

In 2008, there was a huge gap between the low and medium/high educated in terms of dispersion of unemployment



SERIES / INDEX of DISPERSION	2008	2015
UNEMPLOYMENT RATE — LOW educated	3.59	2.73
UNEMPLOYMENT RATE — MEDIUM educated	0.61	2.72
UNEMPLOYMENT RATE — HIGH educated	0.59	2.36

rates across Member States. By 2015, this gap had closed.

Unemployment rates among the medium and highly educated were more or less homogeneous across EU Member States in 2008; 2015 figures show that the main contributors to the substantial increases in heterogeneity are Greece, Spain and Cyprus.

Unemployment rates increased by over 10 pp for all educational attainment levels in Greece (+19.5 pp for low; +18.6 pp for medium and +13.5 pp for high), for the low and medium levels in Spain (+16.2 pp and +11.1 pp respectively) and Cyprus (+13.7 pp and +12.8 pp respectively), and for the low level in Bulgaria (+10.9 pp), Croatia (+11.7 pp) and Lithuania (+15.2 pp).

## Labour market by economic activity

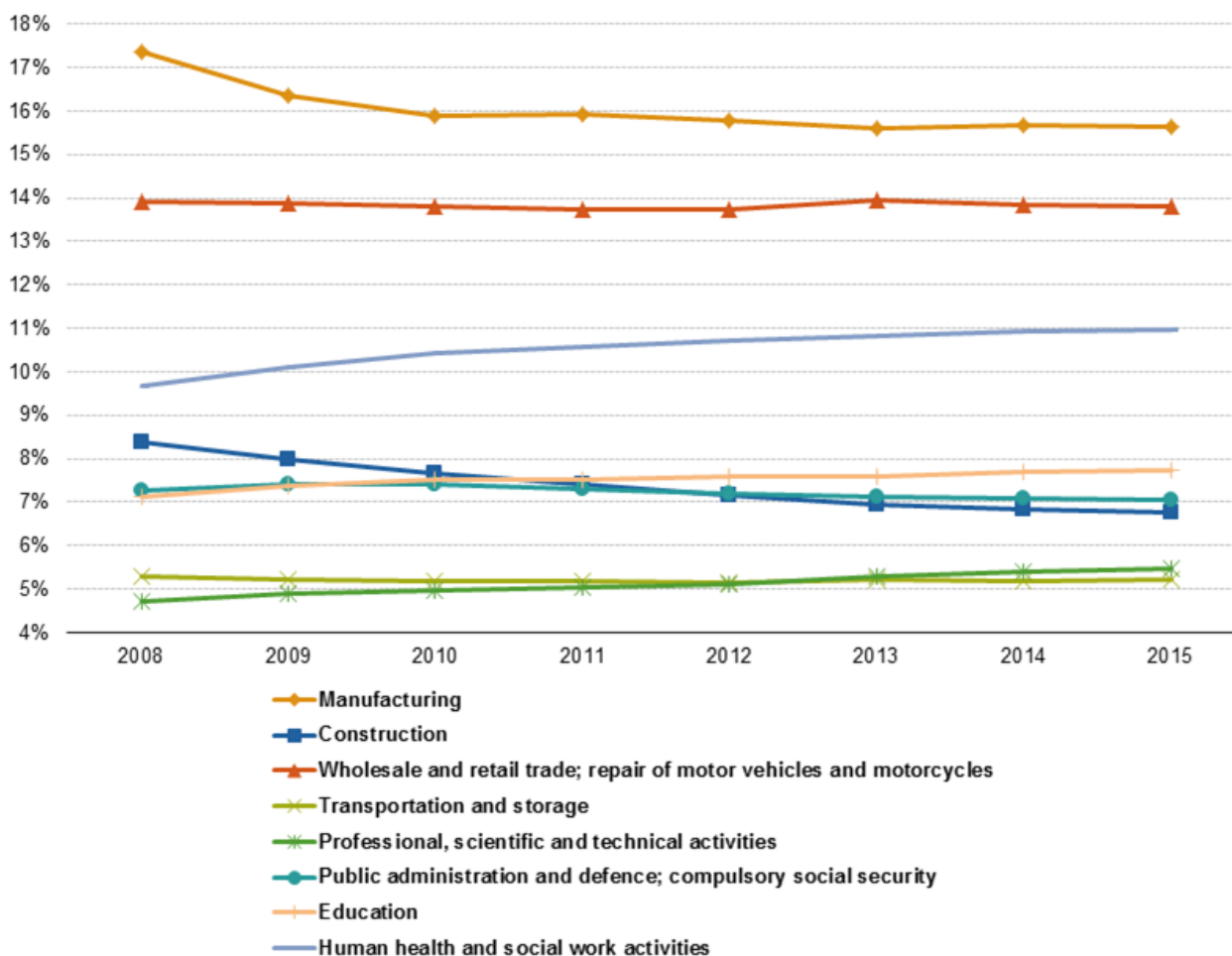
For the remainder of the article, the analysis focuses on specific economic activities as defined in the NACE Rev. 2 classification.

In general, in the first part of this article increased heterogeneity across Member States has been observed and it is interesting to test whether the same (in terms of over-qualification and intensity of labour demand) applies across economic activities too. This will provide insights into the 'health status' of the European labour market: is labour demand high? Are there shortages of aggregate demand or labour supply? And most importantly: in what Member States and what economic activities?

This article, therefore, examines whether there are homogeneous sectoral trends within the EU labour market and provide data by Member State.

The analysis focuses on the eight economic activities that were each responsible for over 5 % of total EU employment in the 20-64 age group in 2015. Together, these have provided 72 to 74 % of total employment for that age group in recent years.

Figure 10 gives some insight into how the labour market has evolved in the EU since 2008.



**Figure 10: Weight in EU-28 employment of main NACE Rev\_2 economic activities Source: EU - LFS**

With total employment for people aged 20 to 64 declining slightly (211.6 million in 2015, as compared with 213.4 million in 2008), some economic activities, such as human health and social work activities (+1.27 pp), professional, scientific and technical activities (+0.74 pp) and education (+0.61 pp), are gaining 'market share' in terms of total employment. Other sectors, such as manufacturing and construction (-1.73 pp and -1.61 pp respectively), are declining, whereas public administration and defence, compulsory social security (-0.22 pp), wholesale and retail trade, repair of motor vehicles and motorcycles (-0.11 pp), and transportation and storage (-0.07 pp) show very limited variations.

### Over-qualification rate

Over-qualified workers are defined here as those with tertiary education (ISCED11 categories 5 to 8) working in occupations in categories 4 to 9 of the ISCO08 classification, i.e. occupations for which tertiary education is not required.

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

Over-qualification figures are useful for labour market analysis, on the basis that a company trying hard to fill a post will scale down its requirements in terms of qualifications. The converse also applies: a company that is having no difficulties in filling a post will raise the level of qualification required. Therefore, over-qualification can signal an excess of labour supply from workers with high qualifications — or, conversely, labour demand shortages.

Skills shortages could be also indirectly inferred in case of no over-qualification and/or huge drops of over-qualification rates. The figures below show changes in over-qualification rates between 2008 and 2015 for the eight key sectors. These are calculated as follows:

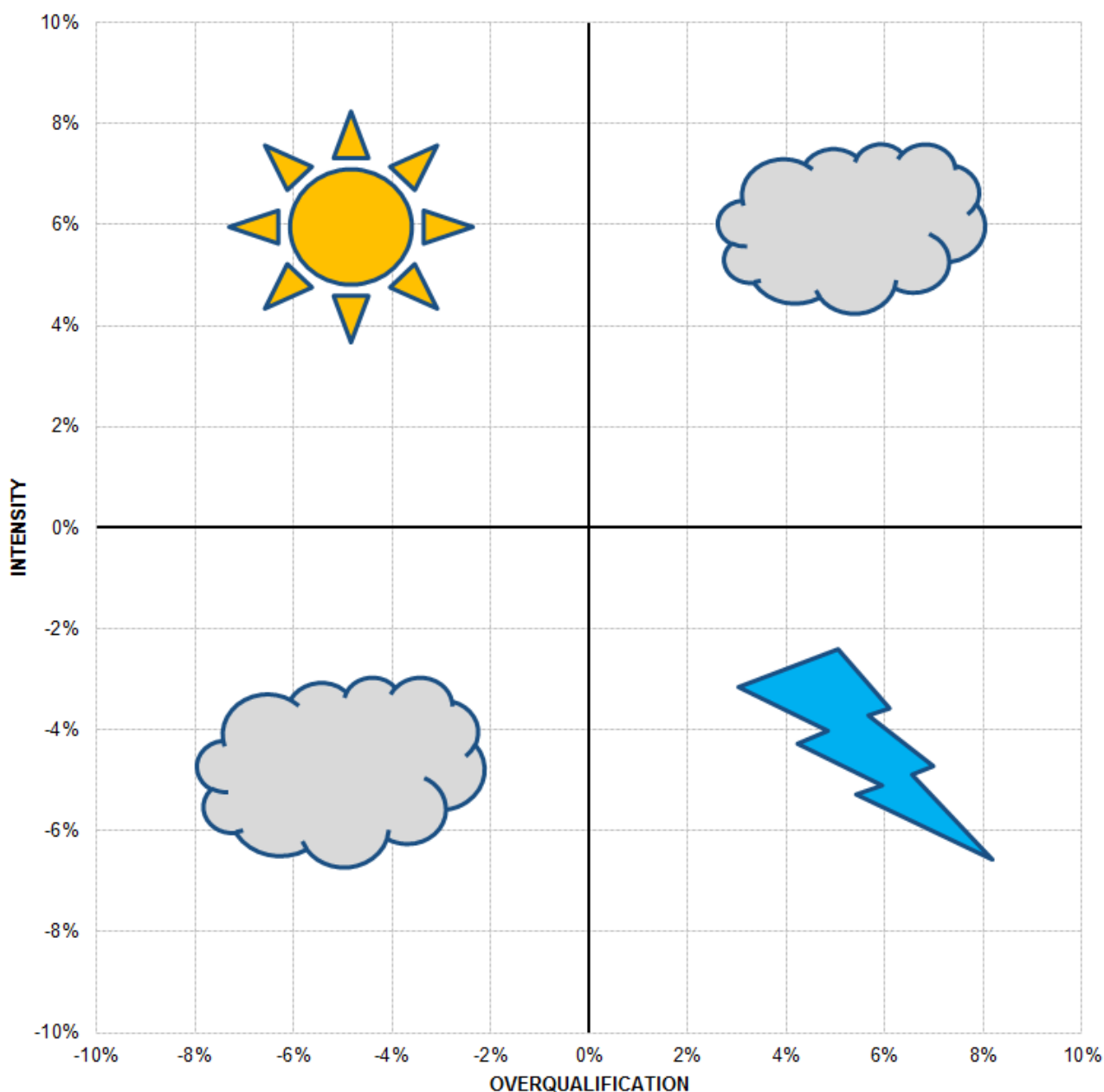
$$\frac{\text{OverQualRate (MS,year, NACE)= ISCED 5-8 Employed in ISCO 4-9 / ISCED 5-8 Employed}}{\text{Employed}}$$

and

$$\frac{\text{OverQualRate (MS,2015,NACE) - OverQualRate (MS,2008,NACE)}}{\text{OverQualRate (MS,2008,NACE)}}$$

**The detailed tables and figures on over-qualification rates by economic activity are available [here](#) .**

Mixed evidence emerges on the incidence of over-qualification by economic activity in Member States between 2008 and 2015. It is also interesting to note the mixed evidence when analysing trends by Member State; in fact, in very few countries there is a homogeneous trend in terms of rising or falling over-qualification rates in all the economic activities covered.



**Figure 11: NACE Rev.2 Economic Activity 2015 as compared to 2008 Source: EU - LFS**

There are two important exceptions to this mixed picture: in wholesale and retail trade, repair of motor vehicles and motorcycles, and education, over-qualification rates increased in almost all Member States. (The rates fell for wholesale and retail trade; repair of motor vehicles and motorcycles in Portugal and for education in Estonia, Latvia and Finland).

### **Intensity of labour demand - employment and working hours**

A good measure of the intensity of labour demand should give insight into whether an economic activity is expanding in terms of use of labour. Eurostat currently publishes total employment and individuals' usual working hours by economic activity.<sup>1</sup> Given that:

- increased employment signals higher aggregate demand; and
- if employers face high demand but cannot find suitable workers, they will seek to ramp up the hours of the workers they have,

<sup>1</sup>Number of persons in employment and number of working hours include both full-time and part-time workers and refer to main job only.

more intense labour demand can be inferred when total working hours in an economic activity increase. On the other hand, less intense labour demand (decreasing working hours) can signal aggregate demand shortages and/or excess of labour supply. However, it is clear that neither of these two indicators alone will be suitable for the purpose of measuring intensity of labour demand by economic activity: what if total employment goes up but working hours by employee go down (or vice versa)?<sup>2</sup>

In view of the above, total hours worked by sector (and developments over time) as a measure of intensity of labour demand are presented. Low intensity (decrease of total hours worked) can therefore signal aggregate demand shortages.

Having figures broken down by economic activity can also help to infer which skills are in high demand in the labour market. In the graphs below, the percentage changes in total working hours between 2008 and 2015 are displayed for the eight key sectors. Values are displayed as follows:

$$\frac{\text{Total Hours Worked}(MS,2015, NACE )}{\text{Total Hours Worked}(MS,2008, NACE )} - 1$$

**The detailed tables and figures on intensity of labour demand by economic activity are available [here](#) .**

The figures show that, in terms of variation in the intensity of labour demand between 2008 and 2015, the situation across economic activities is quite polarised. Some sectors (e.g. transportation and storage and public administration and defence, compulsory social security) present mixed evidence, but as a rule there is either higher or lower intensity of labour demand in almost all Member States. This is a very significant finding which corroborates the perception that the EU labour market is seeing a shift from traditional sectors towards tertiary activities.

On the one hand, professional, scientific and technical activities, education, and human health and social work activities show higher intensity of labour demand in most EU countries; however, there are exceptions in all these sectors. In particular, Greece shows lower intensity of labour demand in all three cases.

On the other hand, manufacturing, construction and wholesale and retail trade; repair of motor vehicles and motorcycles generally show decreased intensity of labour demand. In all these sectors, however, intensity of labour demand increased in some Member States. In Belgium, Germany and Sweden, labour demand increased in both construction and wholesale and retail trade; repair of motor vehicles and motorcycles. Hungary and Austria are the only EU-28 countries where the intensity of labour demand increased in manufacturing, which remains the biggest sector in terms of employment, despite a declining trend since 2008.

## Conclusion

In this article over-qualified workers are defined as those with tertiary education who are working in occupations for which such qualifications are not required. Under the assumption that a company having no difficulties in filling a post will raise the level of qualification required, increased over qualification can signal increased labour supply from highly qualified workers and/or decreased labour demand.

Since in this paper intensity of labour demand is measured by means of total hours worked, it is straightforward that decreasing working hours can signal aggregate demand shortages and/or excess labour supply.

As a consequence of the arguments above, increasing demand of labour and/or labour supply shortages can be inferred where over-qualification is decreasing and labour demand intensity is increasing. Conversely, where over-qualification is increasing and intensity of labour demand is decreasing, the labour market can be inferred as being affected by excess of labour supply and/or decreasing labour demand. Both indicators going in the same

<sup>2</sup>Working hours per week alone cannot be a good indicator of intensity of labour demand, since they are regulated by both national and EU law. According to the Working Time Directive (2003/88/EC) weekly working hours must not exceed 48 hours on average, including overtime.

direction represents 'mixed evidence'.

Plotting percentage variations in terms of over-qualification rate and intensity of labour demand by economic activity in the same graph gives a clear picture of trends in key labour market sectors.

The main conclusion of this article is that heterogeneity in the EU labour market – both across Member States and across economic activities – has increased since 2008.

**The detailed plots by economic activity are available [here](#).**

## Data sources

**Source:** the European Union Labour Force Survey (EU-LFS) is a large sample, quarterly survey providing results for the population in private households in the EU, EFTA and the candidate countries. Conscripts in military or community service are not included in the results.

**Reference period:** Yearly results are obtained as averages of the four quarters in the year.

**Coverage:** The data for France cover the metropolitan territory (excluding overseas regions) Country codes: Belgium (BE), Bulgaria (BG), the Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), the Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE), the United Kingdom (UK), Iceland (IS), Norway (NO), Switzerland (CH), the former Yugoslav Republic of Macedonia (MK), Turkey (TR). The abbreviation MK used for the former Yugoslav Republic of Macedonia is a provisional code which does not prejudice in any way the definitive nomenclature for this country, which will be agreed following the conclusion of negotiations currently taking place on this subject at the United Nations.

**European aggregates:** EU refers to the sum of EU-28 Member States and EA to the sum of the 19 euro area Member States. If data are unavailable for a country, the calculation of the corresponding aggregates takes into account the data for the same country for the most recent period available. Such cases are indicated.

**Definitions:** The concepts and definitions used in the survey follow the guidelines of the International Labour Organisation. Employment covers persons aged 15 years and over (16 and over in Spain, Italy and the United Kingdom, 15-74 years in Estonia, Latvia, Hungary, Finland, Sweden, Norway and Denmark, and 16-74 years in Iceland), living in private households, who during the reference week performed work, even for just one hour, for pay, profit or family gain, or were not at work but had a job or business from which they were temporarily absent, for example because of illness, holidays, industrial dispute or education and training.

The LFS employment concept differs from national accounts domestic employment, as the latter sets no limit on age or type of household, and also includes the non-resident population contributing to GDP and conscripts in military or community service.

Unemployment covers persons aged 15-74 (16-74 in Italy, Spain, the United Kingdom and Iceland) who were not employed during the reference week, were currently available for work and had either been actively seeking work in the past four weeks or had already found a job starting within the next three months.

Long-term unemployment covers persons unemployed for one year or more. Youth unemployment is unemployment of persons aged 15 to 24. Citizenship is defined according to the national legislation of each country.

Definitions of indicators reported in this publication are available on the EU-LFS Statistics Explained website: [EU Labour Force Survey \(Statistics Explained\)](#)

## Context

The EU-LFS is the largest European household sample survey providing quarterly and annual results on labour participation of people aged 15 and over as well as on persons outside the labour force. It covers residents in

private households. The EU-LFS is an important source of information about the situation and trends in the EU labour market.

Each quarter around 1.8 million interviews are conducted throughout the participating countries to obtain statistical information for some 100 variables. Due to the diversity of information and the large sample size the EU-LFS is also an important source for other European statistics like Education statistics or Regional statistics.

## See also

- [All articles on the labour market](#)

## Main tables

- [Employment and unemployment \(Labour Force Survey\) \(t\\_employ\)](#)

## Database

- [Employment and unemployment \(Labour Force Survey\) \(employ\)](#)

## Dedicated Section

- [Employment and unemployment \(Labour force survey\)](#)

## Methodology

- [EU Labour Force Survey — online publication](#)

*View this article online at*

[http://ec.europa.eu/eurostat/statistics-explained/index.php/Article\\_name](http://ec.europa.eu/eurostat/statistics-explained/index.php/Article_name)