

Employment and labour markets
**The changing structure of
employment in the EU:
Annual review 2023**



The changing structure of employment in the EU: Annual review 2023



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Contents

Introduction	1
Data and approach	1
Key structural developments in the EU labour market	3
Context	3
Changes in employment	4
Services shift and occupational upgrading	5
Sector-level developments	6
Occupation-level developments	10
A jobs approach to the analysis of employment developments in 2008–2023	13
Developments in labour supply	17
Labour market segregation by gender	19
Conclusions	23
References	25
Annexes	27
Annex 1: NACE/ISCO correspondence	27
Annex 2: Employment shares in selected sectors	28
Annex 3: Changes in employment by job–wage quintile	29

Introduction

This Eurofound research paper asks how the EU employment structure has changed since the recent shock created by the COVID-19 pandemic and to what extent this shock may have had lasting effects on existing secular trends in employment composition. Data from 2008 onwards are used – where possible – in order to capture the two most recent global economic crises, their negative consequences for employment and the subsequent recoveries from them.

When referring to structural change in the labour market, the primary focus is on the shifts in production and employment across sectors of activity. From the 19th century to date, there has been a shift from agricultural labour to manufacturing. Since the 1970s, however, the labour share of manufacturing has declined as deindustrialisation in Europe has resulted from the rise of new industrial powers – notably in Asia – as well as rapid increases in manufacturing productivity. All through this extended two-century era, the share of jobs in service sectors has been expanding. Nearly three in every four workers in the EU27 is now employed in service activities.

These are long-term, relatively slow-moving changes. They are an essential component of economic growth, as labour is reallocated away from lower-productivity activities to more productive ones – or from sectors in which productivity gains have been relatively easily achieved, such as manufacturing and agriculture. Technological change is an important driver of such shifts, automating production processes that previously required human input and freeing up labour to participate in alternative, emerging activities.

In addition to cross-sectoral shifts, increases in human capital through mass education and, increasingly, mass tertiary education have been conducive to occupational upgrading and a rising proportion of white-collar, professional employment at the expense of blue-collar, production-related employment. Eurofound's European Jobs Monitor has focused on how the division of labour at EU, national and regional levels has been changing both horizontally – across sectors or activities – and vertically – in terms of occupational hierarchies within organisations and companies – since the mid-1990s.

Changes in demand from employers for particular types of jobs – more demand for computer programmers, for example, and less demand for craft and trades workers in manufacturing – are the main factor determining shifts in the employment structure. However, supply factors also contribute to these shifts – through demographic ageing or declining birth rates reducing the native working age population, or through

migration and the increasing participation of women in the labour market (feminisation), which tend to increase labour supply. Demand and supply factors are also intertwined in certain activities; increasing labour market participation among women raises the demand for employment in childcare provision and an array of services that would have been mainly provided domestically in the home when the male breadwinner model was the norm.

Both the global financial crisis (2008–2010) and the COVID-19 pandemic (2020–2021) had significant disemployment effects at aggregate EU level, with short-term losses of between 4.5 million and 6 million net jobs in each case. Such recessionary periods are typically periods of accelerated labour reallocation and structural change (Jaimovich and Siu, 2020). But labour is also reallocated, although more steadily, in the more customary periods of slow expansion. The aim of this paper is to identify how changes induced by the pandemic may have interacted with or altered preceding secular trends, which can be summarised as follows: (a) the services shift, (b) occupational upgrading and (c) changes in labour supply, notably arising from the increasing participation of women in the labour market and workforce ageing.

Data and approach

The paper uses EU Labour Force Survey (EU-LFS) data on employment in 2008–2023 to compare the sub-periods 2008–2019 and 2019–2023. The starting year in each case is just before one of two global economic crises – the global financial crisis in 2008–2010 and the COVID-19 pandemic in 2020–2021. The most up-to-date quarterly EU-LFS data are used, with data on the second quarter of the year in question used as reference data. For most of the comparisons that rely on the International Standard Classification of Occupations (ISCO), the time frame is Q2 2011–Q2 2023, given the change in ISCO that became operational in the EU-LFS in 2011.

The primary focus is on aggregate EU27 data, and the analysis treats the EU as if it were one large labour market. While this is not the case (each Member State has its own distinctive path of development, its own comparative advantages and its own set of labour market regulations and institutions), the quality of belonging to the EU does engender a shared set of values and labour market rules, which has promoted convergence over time. In most cases, the structural patterns of change that emerge at EU27 level reflect developments in a majority of Member States and by

definition make it possible to properly identify structural changes in employment composition. Additional breakdowns by Member State of selected data are available in Annexes 2 and 3, while data on

individual company restructurings from Eurofound's European Restructuring Monitor illustrate recent developments in the information technology (IT) sector.

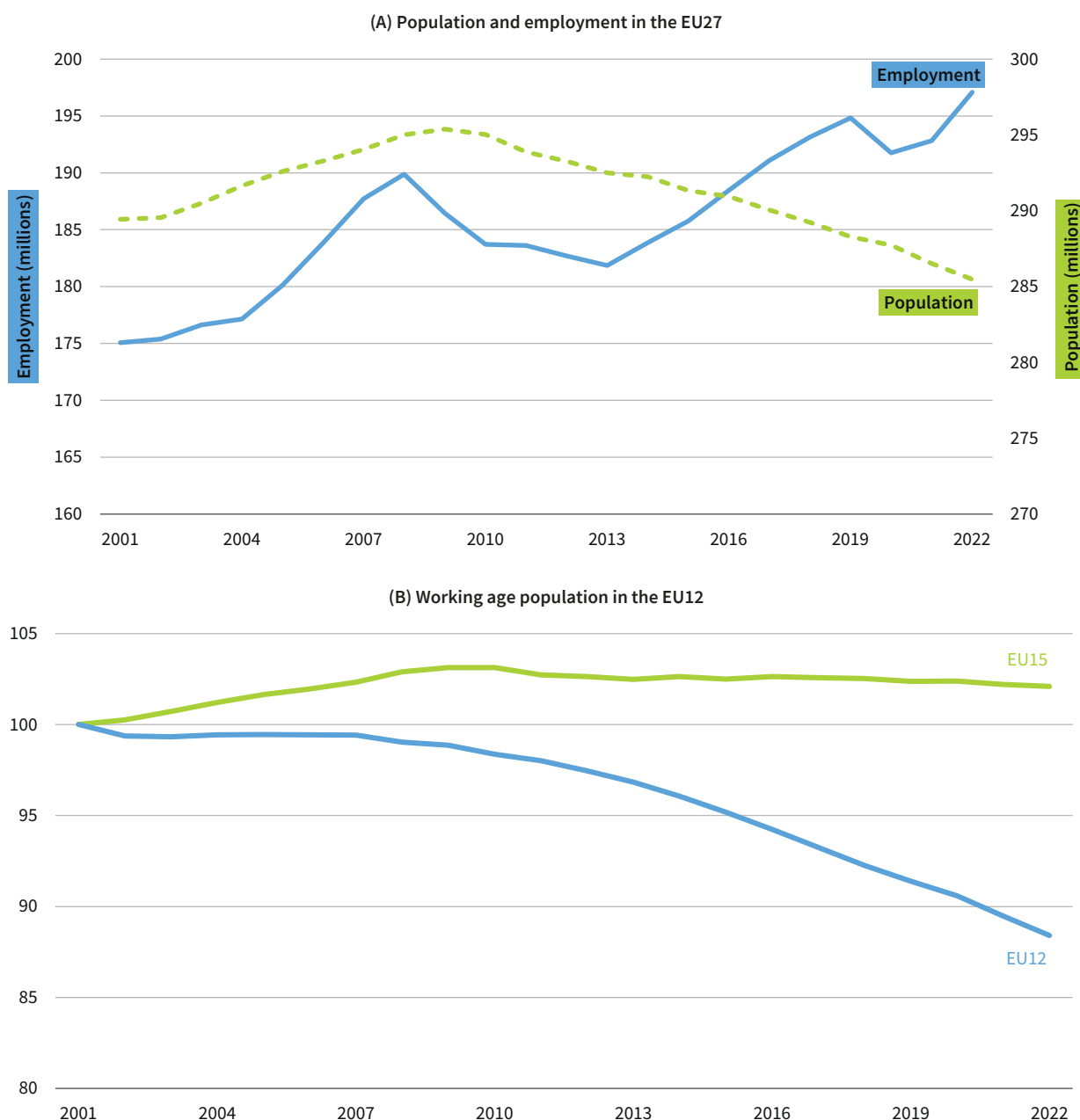
Key structural developments in the EU labour market

Context

The working age population in the EU27 began contracting in 2009. There were in 2022 some 10 million fewer people in this category than at the peak level (Figure 1). This is an important backdrop to any discussion of structural labour market change. All things being equal, one could expect this shift to lead to lower

levels of employment. Instead, a combination of steadily increasing labour market participation and higher employment rates among older workers and female workers has resulted in an increase in employment levels of over seven million. This does however conceal quite different trajectories between the more recently acceding Member States (the EU12) and the older Member States (the EU15).

Figure 1: Population and employment of people of working age (15–64) in the EU27 (A) and working age population decline in the EU12 (2001 = 100) (B), 2001–2022



Source: Authors' elaboration, based on Eurostat [lfsq_egacob]

In the EU12, the inflection point was somewhat earlier (2005), and the rate of decline has been notably greater than in the EU15, especially since the mid-2010s. This is a delayed consequence of very low fertility rates in the EU12 at the turn of the century (below 1.3 children per woman in the majority of countries). These have subsequently risen while still remaining well below the population replacement rate of 2.1 children per woman. The earlier inflection point and more rapid decline also relate to significant mobility, mainly on an east–west axis, from EU12 to EU15 countries. In addition to higher average birth rates in the EU15 than in the EU12, higher net immigration overall has contributed to sustaining the EU15’s working age population levels.

Lower unemployment, labour shortages, increasing labour market participation among under-represented workforce categories and higher levels of labour mobility and immigration are in some respects predictable outcomes of and responses to this demographic shift.

Changes in employment

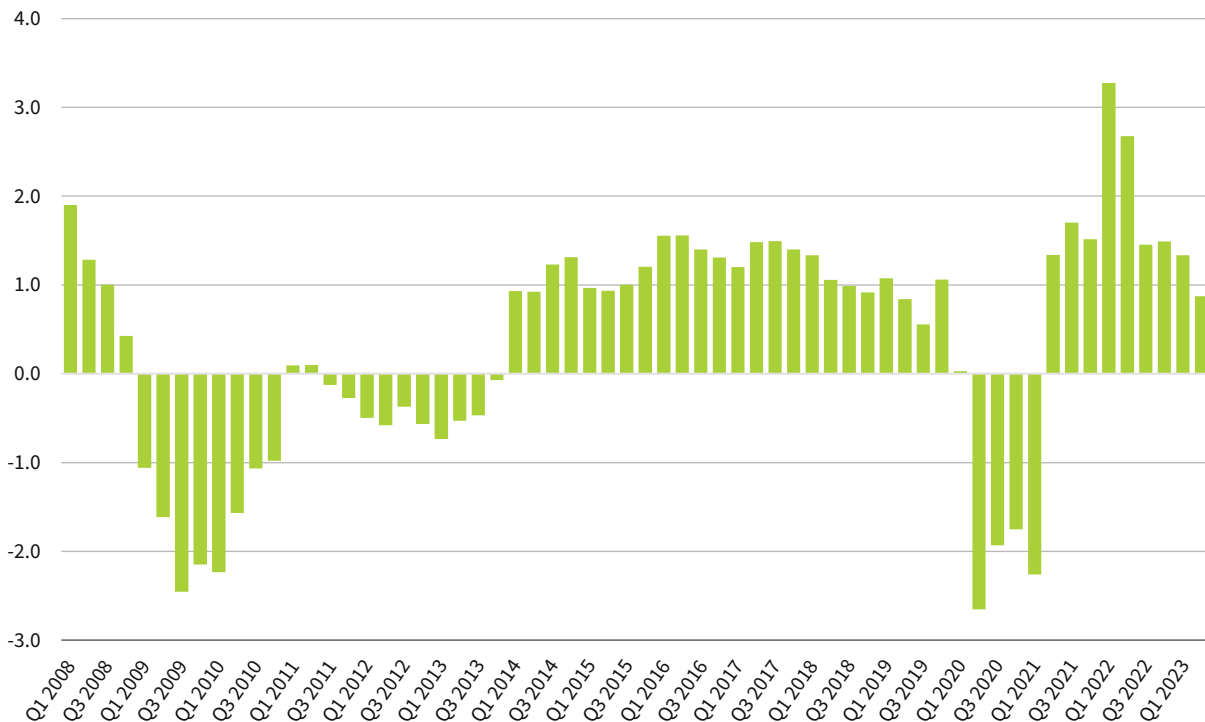
Figure 2 shows the year-on-year percentage change in aggregate EU27 employment, by quarter, from Q1 2008 to Q2 2023. The time series begins with rapid employment growth at the beginning of 2008 (1.9% year-on-year); employment then falls sharply

during the global financial crisis, with peak losses of over 2% year-on-year in three consecutive quarters, from Q3 2009 to Q1 2010. The succeeding sovereign debt crisis was marked by an ongoing but more mild contraction in employment that lasted until the end of 2013. In employment terms, the EU was in recession more or less continually from the end of 2008 until 2013.

The peak to trough contraction in employment amounted to 11.8 million jobs (over 6% of employment in the EU27). The recovery from 2014 onwards was steady if unspectacular, with year-on-year growth rates in a narrow range around 1% per year for much of the period until 2019. The COVID-19 pandemic resulted in a sharp downturn in four successive quarters from Q1 2020 to Q1 2021 – of a similar scale to that experienced during the peak of the global financial crisis. However, this downturn was followed by a quick recovery and resumption of employment growth, which was especially strong in the first half of 2022.

Because of the extended nature of the earlier crisis period – which was effectively marked by two linked and consecutive crises (the global financial crisis and the EU sovereign debt crisis)– the time taken for EU27 employment levels to recover to their pre-crisis levels was fully nine years. By comparison, recovery from the COVID-19 pandemic took 2.5 years (Q4 2019–Q2 2022). Average annual employment growth in 2008–2019 was 0.23%, compared with 0.54% in 2019–2023.

Figure 2: Year-on-year change in employment, by quarter, EU27 (%)



Source: EU-LFS

Services shift and occupational upgrading

Table 1 shows the change in the shares of employment (in percentage points (pp)) across a simple matrix of three broad occupational categories and four broad sector categories in 2008–2019 and 2019–2023.

The main developments to note are the continuation of structural shifts in economies and employment structures away from primary and manufacturing sectors towards services – the ‘services shift’ – and a simultaneous increase in the share of employment of white-collar high-skilled workers – that is, ‘occupational upgrading’ – at the expense of blue-collar workers. These two long-standing trends are observable in both 2008–2019 and 2019–2023, although at different intensities.

The most marked changes have occurred in the occupational (vertical) dimension rather than in the sectoral (horizontal) dimension, in the form of higher rates of job reallocation to growing white-collar professional occupations from declining blue-collar occupations. The pace of professionalisation increased in 2019–2023 (3 pp shift in 4 years compared with a 3.1 pp shift in the preceding 11 years). One contributing factor is likely to have been the acceleration of the process of digitalisation brought about by the pandemic.

The biggest change between 2008–2019 and 2019–2023 was the decreasing share of the white-collar medium-/low-skilled category (including technicians and associate professionals, clerks, service workers and shop and sales workers) in the latter period (-0.9 pp) after robust growth in the pre-COVID-19 period (+2.4 pp). Much of this recent decline was concentrated in mainly private service sectors in job categories such as services and sales workers in the retail sector and clerical workers in financial services. In the former category, many basic retail sales jobs are being replaced either by online retail alternatives or by self-service automation. Financial services is one of the few service sectors in which little or no employment growth has been recorded over the past decade (Eurofound, 2022). It is also one of the sectors with the fastest rates of occupational upgrading; there has been a significant decline in absolute numbers of medium- and low-skilled white-collar workers employed in the sector, as the ranks of professionals have increased. There were nearly half a million fewer clerical support workers in financial services in 2023 than in 2011, a decline of over a quarter (Eurofound, 2022).

The sharp reduction in the blue-collar share of employment in 2008–2019 (5.5 pp) related in large part to the concentration of job losses in the manufacturing and construction sectors during the global financial crisis. These two sectors accounted for more than 100% of net job losses during that period – that is, the remaining sectors experienced net employment growth. They were less negatively affected by the COVID-19 pandemic, and the decline in their employment share was therefore more muted.

Table 1: Employment shifts, by sector and occupation, EU27 (pp)

Sector	2008–2019				2019–2023			
	Occupation							
	White collar, highly skilled	White collar, medium/low skilled	Blue collar	Total	White collar, highly skilled	White collar, medium/low skilled	Blue collar	Total
Primary/extractive/utilities	0.0	0.2	-1.4	-1.2	0.1	0.0	-0.7	-0.6
Manufacturing/construction	0.2	0.4	-3.8	-3.2	0.3	-0.3	-0.8	-0.8
Mainly private services	1.0	1.7	0.3	2.4	1.5	-0.6	-0.3	0.7
Mainly public services	2.0	0.1	0.0	2.1	1.1	0.0	-0.3	0.8
Total	3.1	2.4	-5.5	0.0	3.0	-0.9	-2.1	0.0
Employment growth	0.23% per annum				0.54% per annum			

Note: For the sector and occupation correspondence, see Annex 1.

Source: EU-LFS

In the primary/extractive/utilities category, there was a decline in the share of employment in both 2008–2019 and 2019–2023, which is largely attributable to employment losses in agriculture. These losses were largely concentrated in Poland and Romania, where processes of deagrarianisation – which have largely reached a limit elsewhere – are still ongoing.¹

Among high-skilled white-collar workers, the recovery from the COVID-19 pandemic involved the greatest increases in employment in mainly private services; in 2008–2019, around two-thirds of the growth in employment was attributable to mainly public service sectors – health, education and public administration.

Sector-level developments

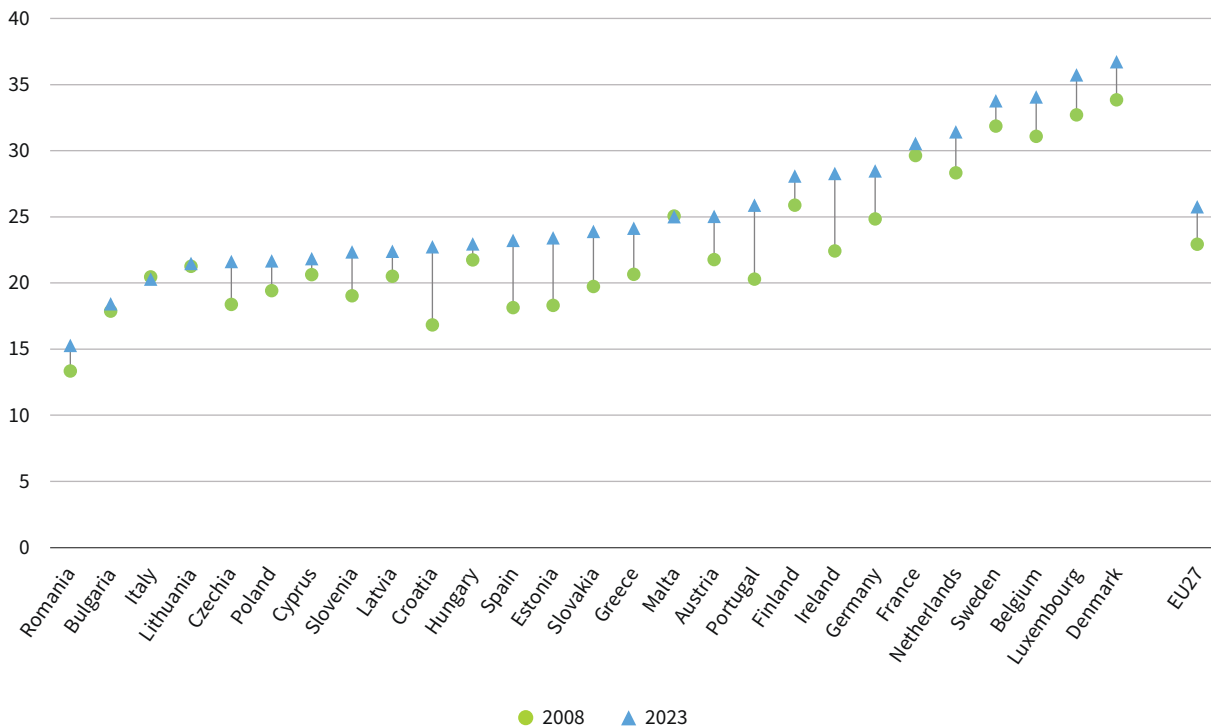
At sectoral level, most consistent employment growth has been in mainly state-funded sectors, especially education and health (see Table 2). Health sector employment recorded the fastest growth from 2019 to 2023, an average of 2% per annum (four times the rate

of growth of aggregate employment). After a decade of stagnation, employment in public administration increased by 1.3% per year from 2019 to 2023, in part due to the demands imposed by the COVID-19 crisis on public services and the fiscal expansion that enabled them to be met.

Overall, the three large mainly public service sectors accounted for a disproportionate share of the increase in net employment. This expansion occurred in all Member States except Italy (-0.2%) and Malta (0%), where the shares declined marginally or were stable over the period (Figure 3). In the EU27, mainly public service sectors accounted for 25.8% of employment in 2023, up from 22.9% in 2008. Over the same period, the private services share of EU employment increased from 43.2% to 46.2%.

The countries with the smallest shares of employment in these sectors in 2023 were Romania (15%), Bulgaria (18%) and Italy (20%), while the countries with the largest shares were Denmark (37%), Luxembourg (36%), Belgium and Sweden (both 34%).

Figure 3: Share of employment in mainly public services, EU27, 2008–2023 (%)



Note: 'Mainly public services' includes Nomenclature of Economic Activities (NACE) group O (public administration and defence; compulsory social security); NACE group P (education) and NACE group Q (human health and social work activities).
Source: EU-LFS

¹ The observed decline does however include a sharp drop in Romanian agricultural employment in 2020–2021, arising from the elimination of nearly half a million workers in ISCO group 63, which includes subsistence farmers.

Table 2: Changes in employment, by sector (Nomenclature of Economic Activities two-digit), EU27, Q2 2008–Q2 2023

Sector	Average annual change in employment, 2008–2019 (%)	Average annual change in employment, 2019–2023 (%)	Employment in the EU27, Q2 2023 (millions)
Retail trade, except of motor vehicles and motorcycles	0.0	0.2	16.5
Education	1.1	1.3	15.0
Public administration and defence; compulsory social security	-0.1	1.3	14.1
Human health activities	1.3	2.0	12.8
Specialised construction activities	-0.8	1.4	8.1
Food and beverage service activities	1.4	0.8	7.3
Wholesale trade, except of motor vehicles and motorcycles	-0.2	-0.4	6.9
Crop and animal production, hunting and related service activities	-2.0	-3.9	6.2
Land transport and transport via pipelines	0.1	0.4	5.5
Social work activities without accommodation	2.8	3.5	5.2
Computer programming, consultancy and related activities	6.2	12.1	4.7
Residential care activities	2.6	-1.5	4.1
Construction of buildings	-2.9	-0.3	4.1
Manufacture of food products	0.0	-0.8	3.9
Services to buildings and landscape activities	2.5	0.1	3.8
Manufacture of fabricated metal products, except machinery and equipment	0.8	0.1	3.5
Wholesale and retail trade and repair of motor vehicles and motorcycles	0.1	-0.1	3.4
Legal and accounting activities	1.3	1.5	3.4
Manufacture of machinery and equipment n.e.c.	1.0	-0.8	3.2
Manufacture of motor vehicles, trailers and semi-trailers	1.3	-1.9	3.1
Financial service activities, except insurance and pension funding	-0.6	-0.5	3.0
Warehousing and support activities for transportation	2.7	1.8	3.0
Architectural and engineering activities; technical testing and analysis	2.0	2.2	2.9
Other personal service activities	0.0	2.5	2.9
Accommodation	1.5	-0.4	2.3
Activities of head offices; management consultancy activities	6.0	6.8	1.9
Real estate activities	1.0	4.0	1.7
Activities of households as employers of domestic personnel	-1.1	-5.1	1.7
Electricity, gas, steam and air conditioning supply	0.2	3.3	1.6
Manufacture of rubber and plastic products	0.6	-1.3	1.5
Activities of membership organisations	1.0	-1.4	1.5
All sectors	0.2	0.5	198.5

Notes: Sectors with fewer than 1.5 million workers in Q2 2023 are excluded. n.e.c., not elsewhere classified.

Source: EU-LFS (data extracted by Eurostat)

At a more detailed level (Nomenclature of Economic Activities (NACE) two-digit), the largest relative growth in employment occurred in two private service sectors: computer programming, consultancy and related activities; and activities of head offices and management consultancy activities. The former sector mainly employs science, technology, engineering and maths graduates in programming, software development and related consultancy and computer/network facility management tasks. The latter sector includes both public relations/lobbying functions and core corporate management functions involving the oversight and management of units of a company at regional, national or international level.

Each of these two sectors enjoyed average annual employment growth of at least 6% per annum in 2008–2019 and 2019–2023. In the computer programming, consultancy and related activities sector, employment growth accelerated to around 12% per annum in 2019–2023 – most likely as a result of the boosting of digitalisation by the COVID-19 pandemic as a result of changes to work organisation arising from social distancing restrictions (which resulted in a higher prevalence of remote working, and a greater share of economic activity and transactions being conducted online). Even a well-publicised wave of redundancies and dismissals in some of the large ‘big-tech’ firms in 2022–2023 reversed only a small share of the recruitment that has taken place in recent years.

Box 1: Big-tech job lay-offs in 2023

Between mid-2022 and the end of 2023, over 400,000 employees working for big-tech companies were laid off across the world. But how did these job losses affect the long-term structural growth of employment in the IT sector? The brief answer is probably not very much.

The largest lay-offs were made by companies such as Google, Meta, Microsoft and Amazon, as captured in Eurofound’s European Restructuring Monitor (Eurofound, undated). These are well-known, United States-based, relatively recently founded, fast-growing digital-age corporations. Most have a reputation of offering good working conditions and well-paid employment. Each announced collective redundancies of over 10,000 staff globally during the peak period of job cuts occurring between summer 2022 and early 2023. In January 2023 alone, nearly 90,000 job losses were announced in the broadly defined IT sector.

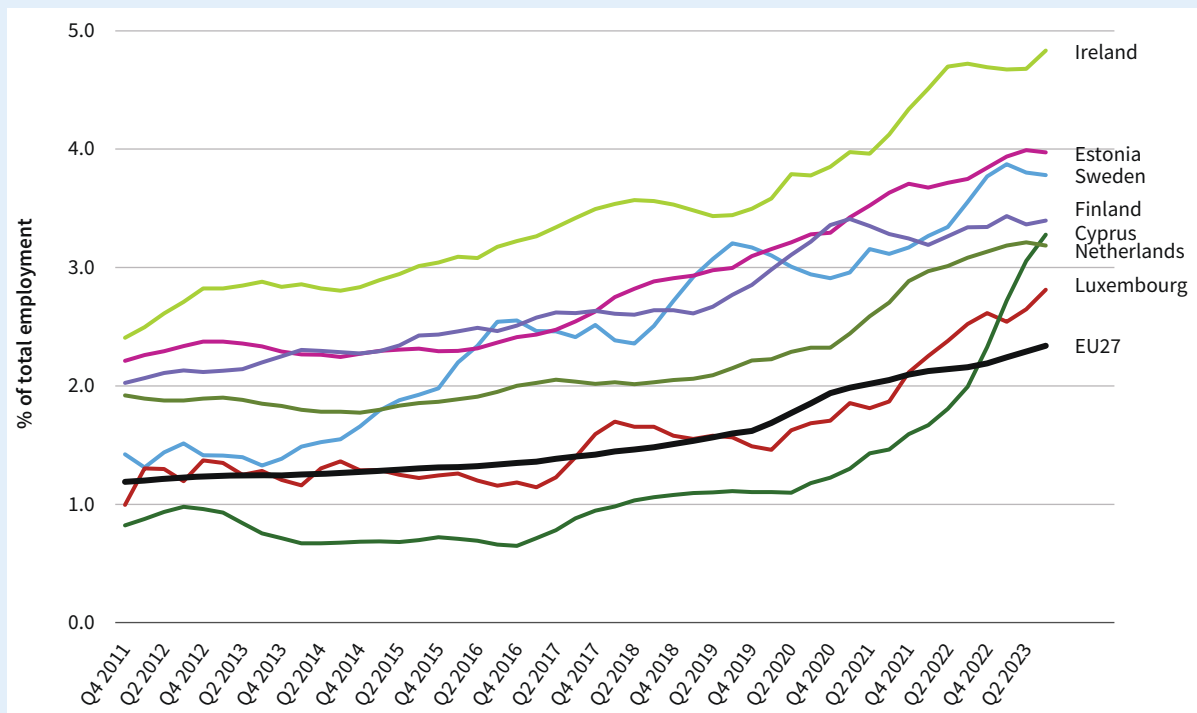
The most common narrative explaining the job cuts was overexpansion during the COVID-19 pandemic as big-tech companies responded to increasing demand for their products and services in a context of much work and consumption moving online. As pandemic restrictions were phased out, the boost to online activity provided by COVID-19 proved short-lived. The companies reacted to declining revenues – and to abrupt drops in their previously ascendant share prices – by making a large number of redundancies. In the case of Meta (owner of Facebook), the company backtracked on earlier commitments to base the company’s future on the ‘multiverse’ and refocused on its core advertising business.

The 2022–2023 job loss announcements in these big companies must be interpreted in context. From 2019 to 2022, the headcount in each of the four companies increased by at least half, and in the case of Amazon and Meta nearly doubled (Eurofound, 2023a). In just these companies, employment grew by nearly 900,000 globally over the period. The 2022–2023 cuts amounted to less than one-tenth of net hiring in the previous three years.

Although not all the companies provide breakdowns of redundancy numbers by country, all of these multinational giants have major offices in Europe. Microsoft’s biggest offices in Europe are in France, Germany, Ireland and the Netherlands. From European Restructuring Monitor data, it is clear that Ireland has been most affected by big-tech restructurings (for example, at Meta, Google, Twitter and Microsoft) (Eurofound, undated). This is unsurprising, as most of these companies’ European or EMEA (Europe, the Middle East and Africa) headquarters are based there, but even there confirmed redundancies amount to no more than 1% of sectoral employment (Conefrey et al, 2023).

As already indicated, the core IT sector – computer programming, consultancy and related services – has been among the fastest-growing sectors over the past decade, doubling its share of EU employment (from 1.2% to 2.4% from 2011 to 2023) (Figure 4). It has experienced accelerating growth in the post-pandemic period, notably in smaller Member States (Cyprus and Luxembourg), while the most recent data in Ireland (Q3 2023) point to a resumption of previous growth rates.

Figure 4: Share of employment in the core IT sector in the EU27 and selected Member States (%)



Notes: The IT sector is proxied by NACE group 62, 'computer programming, consultancy and related activities'. Countries with the highest shares of employment in NACE group 62 are included. The figures are four-quarter moving averages.

Source: Eurostat [lfsq-egan22d]

Most workers laid off are likely to have limited difficulty in finding alternative employment, given the labour demand for and shortages of their specific skills. The main enduring impact on the EU workforce may be on the way the big-tech restructurings are managed and implemented. In particular, trade union participation in restructuring processes has been limited or non-existent in most cases. However, in the wake of the 2022–2023 restructurings a European works council for Google's workforce was organised (UNI Global Union, 2023), and existing unions, for example in financial services, have actively sought to increase their representation in the sector (Irish Times, 2023).

Note: This box summarises and partially updates the work presented in an earlier Eurofound report (Eurofound, 2023a).

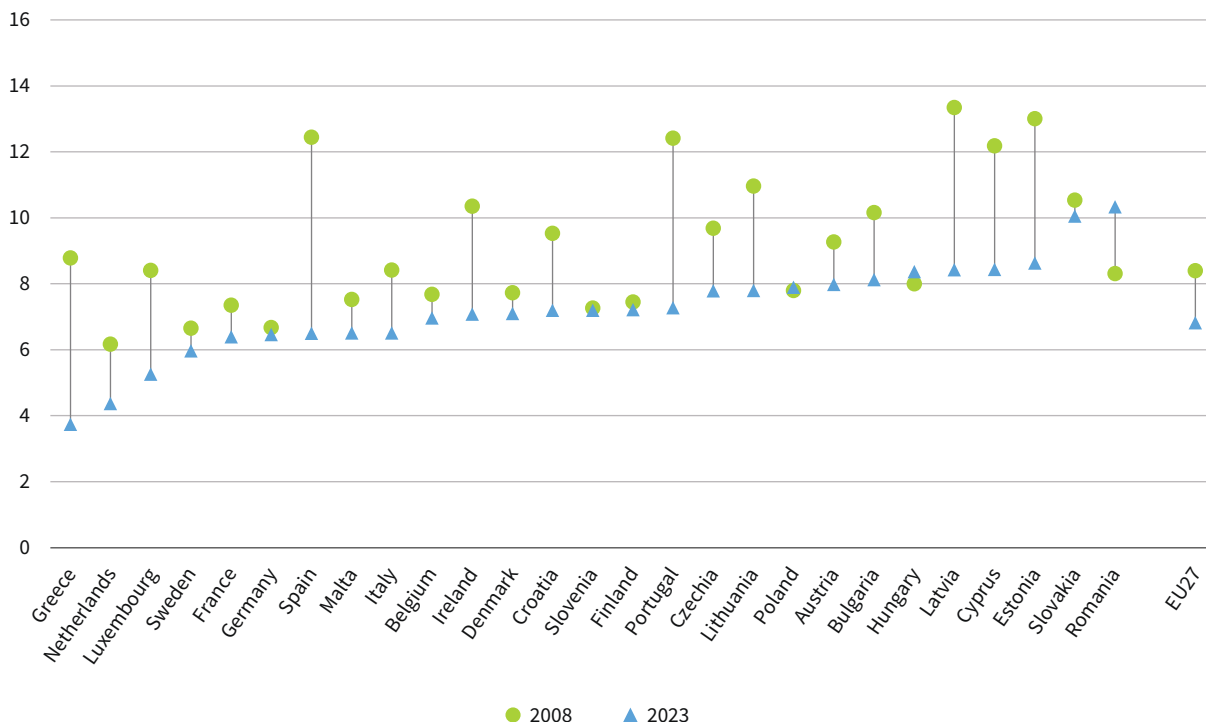
There were also a smaller number of service sectors with stable employment levels in 2008–2019 and 2019–2023 (including the retail sector), or declining employment levels (including financial services and activities of households as employers of domestic personnel).

Taken together, the two large construction subsectors saw a decrease in employment from 2008 to 2023. The pace of contraction slowed down from 2019 to 2023, but there were still two million (or 15%) fewer construction sector workers in the EU27 in 2023 than in 2008. The share of employment in the sector in the EU27 declined from 8.4% to 6.8%. In part, this reflects the unsustainable growth in the run-up to the 2008–2010 crisis. Starting shares were already high in 2008, following construction booms in many countries in the

preceding decade. Subsequent contractions in the share of employment were especially sharp in those countries (Greece, Spain, Ireland, Portugal, Latvia, Cyprus and Estonia; see Figure 5). The only Member States in which the share of employment in the construction sector grew were Romania (2 pp) and, to a much more modest extent, Hungary (0.4 pp)

The construction sector remains one in which there are labour shortages, and one that is strategically important if various greening targets are to be met (for example, through energy efficiency retrofits of existing housing stock, the installation of solar panels or heat pumps, or the construction of new facilities to increase the share of renewable energy) (Eurofound, 2023b). The evident mismatch between demand for and supply of workers in this sector therefore demands attention.

Figure 5: Share of employment in the construction sector, EU27, 2008–2023 (%)



Source: EU-LFS

One can identify sectors particularly affected by the physical distancing restrictions implemented during the COVID-19 pandemic by the change in employment growth rates pre- and post-pandemic. Employment growth turned negative in particular in the accommodation, activities of households and residential care activities sectors. The fact that it remained so until Q2 2023 shows that these sectors were largely exempt from the post-COVID-19 employment recovery. The growth rate of food/beverage activities also slowed somewhat post-2019, but the sector did record some additional employment in 2019–2023.

Employment in manufacturing overall contracted at the same average annual rate pre- and post-COVID-19 (0.63% per annum), and there were over three million fewer manufacturing jobs in 2023 than in 2008.

However, all of the job destruction was concentrated in 2008–2013; there were 1.5 million more manufacturing jobs in the EU27 in 2023 than in the trough year of 2013. The period of recovery from the global financial crisis in particular was one of steady growth in industrial employment.

Of note, however, is the shift in the employment trajectory in the strategically important and large-employing automotive sector (manufacture of motor vehicles), from growth pre-2019 (on average, 1.3% per annum) to contraction post-2019 (1.9% per annum), and similar

developments in the related manufacture of machinery sector. Employment levels in the automotive sector have declined by over a quarter of a million since 2019, and the overall headcount in the manufacturing sector is down by 800,000 (2.5%). The diversion of demand for cars with internal combustion engines – in which the EU has hitherto had a large positive trade surplus with the rest of the world – to electric vehicles is proving disruptive to the automotive sector in the EU27. The market share of Chinese car brands is growing in China at the expense of EU car producers’ market share, and Chinese electric car brands (including BYD and Polestar) have rapidly established a foothold in the EU27 markets, accounting for 4% of battery-electric car sales in 2022 compared with just 0.4% three years previously (ACEA, 2023).

Occupation-level developments

Many of the occupation-level developments in employment can be inferred from the previous sectoral trends given the strong association of specific occupations in specific sectors (for example, stationary plant and machine operators in the manufacturing sector, health professionals in the health sector and food preparation assistants in the food and beverages services sector).

Table 3: Changes in employment, by ISCO two-digit occupation category, EU27, Q2 2008–Q2 2023

Occupation	Average annual change in employment, 2011–2019 (%)	Average annual change in employment, 2019–2023 (%)	Employment in the EU27, Q2 2023 (millions)
Clerical support workers*	0.2	1.3	19.5
Sales workers	0.1	-0.5	13.5
Business and administration associate professionals	0.3	-0.2	13.1
Teaching professionals*	0.4	3.3	10.9
Business and administration professionals	4.8	6.0	9.2
Personal service workers	1.0	-1.9	8.9
Drivers and mobile plant operators	0.3	-0.1	8.3
Building and related trades workers	-0.5	-0.5	7.5
Metal, machinery and related trades workers	0.0	-0.4	7.3
Science and engineering professionals*	1.4	5.2	7.3
Science and engineering associate professionals*	0.4	-2.3	7.0
Personal care workers	0.4	2.2	6.4
Cleaners and helpers	-0.2	-2.4	6.4
Health associate professionals	1.6	0.9	6.2
Health professionals	1.6	2.6	5.9
Legal, social and cultural professionals	1.8	1.9	5.9
Labourers in mining, construction, manufacturing and transport	0.0	-0.3	5.3
Market-oriented skilled agricultural workers*	-1.8	-2.5	5.1
ICT professionals	4.4	9.7	4.9
Stationary plant and machine operators	0.3	-1.0	4.9
Food processing, garment and other craft and related trades workers	-0.2	-1.2	3.9
Legal, social, cultural and related associate professionals*	3.7	-3.1	3.6
Production and specialised services managers	2.5	-2.0	3.3
Protective services workers	0.1	1.4	3.1
Electrical and electronic trades workers	0.9	-0.6	3.1
Administrative and commercial managers	-1.3	1.6	2.7
Hospitality, retail and other services managers	-1.0	1.8	2.4
Information and communication technicians	2.8	5.2	2.1
Refuse workers and other elementary workers	0.6	-0.1	1.9
Assemblers	1.7	-2.2	1.7
Chief executives, senior officials and legislators	-0.8	0.9	1.5
Agricultural, forestry and fishery labourers	-1.1	1.7	1.5
Food preparation assistants	3.1	1.0	1.5

Notes: Only occupations with more than 1.5 million workers in 2023 in the EU27 are included. For clerical support workers, the broad ISCO one-digit category is used – grouping together the four ISCO two-digit categories 41–44 – given evidence of reclassification within the broader one-digit category in two larger countries (France and Germany). * Occupational reclassification appears to have occurred in these occupations, so the estimates must be interpreted with caution.

Source: EU-LFS (data extracted by Eurostat)

The fastest-growing occupation has been that of information and communications technology (ICT) professionals, with the growth rate accelerating from an average of 4.4% per annum in 2011–2019 to 9.7% per

annum in 2019–2023 (Table 3). The number of ICT professionals more than doubled in the EU27 between 2011 and 2023. The related associate professional grade (information and communication technician) also

experienced strong growth over the period, accelerating after 2019 (2.8% per annum in 2011–2019 and 5.2% per annum in 2019–2023).

Most of the fastest-growing occupations are in professional grades (ISCO two-digit). Among the occupations employing the most workers, the number of business and administration professionals has nearly doubled since 2011 (from 4.8 million to 9.2 million). There has also been notable growth among health professionals, science and engineering professionals and teaching professionals.²

The quickening pace of professionalisation of employment from 2019 to 2023 can be seen in Table 4, which shows the share of professionals by sector (NACE one-digit). At aggregate EU27 level, the share increased more in 2019–2023 (3 pp) than in 2011–2019 (2.5 pp).

The sectors in which professional shares are increasing fastest post-COVID-19 include some with already high shares, such as professional, scientific and technical activities – a broad sector including legal, public relations, advertising, accounting and management consultancy activities – and health, financial services and electricity/gas provision. In other sectors employing a large number of workers, notably public administration and manufacturing, growth in the professional shares of employment has accelerated post-COVID-19, albeit starting from more modest levels.

The headcounts in blue-collar occupations employing a large number of workers – drivers and mobile plant operators, building and related trades workers and metal, machinery and related trades workers – were stable or fell slightly over both periods, more or less in line with trends in the main sectors employing these

Table 4: Share of employment of professionals, by sector, EU27, 2008–2023

Sector	Share of employment of professionals (%)			Change in the share of employment (pp)	
	2011	2019	2023	2011–2019	2019–2023
Activities of households as employers	0.7	0.4	0.6	-0.4	0.2
Accommodation and food services	1.1	1.3	1.6	0.3	0.2
Agriculture, forestry and fishing	1.3	1.6	1.9	0.3	0.3
Transportation and storage	3.6	4.5	5.4	0.9	0.9
Construction	4.3	5.1	5.9	0.9	0.7
Water supply and sewage	5.8	7.8	7.6	2.0	-0.2
Administrative and support services	5.3	6.3	7.8	1.0	1.5
Wholesale and retail	4.5	6.	8.0	1.9	1.6
Real estate activities	5.7	7.1	9.3	1.4	2.3
Mining and quarrying	9.2	13.1	11.1	3.9	-2.0
Manufacturing	8.1	9.8	12.5	1.8	2.7
Other service activities	11.0	12.8	15.6	1.8	2.8
Public administration	17.3	19.4	22.6	2.1	3.2
Arts, entertainment and recreation	28.3	28.4	27.5	0.1	-0.9
Electricity, gas, steam and air conditioning supply	17.2	22.8	27.9	5.6	5.1
Financial and insurance services	17.9	25.8	31.6	7.9	5.7
Human health	28.1	29.6	32.0	1.4	2.4
Professional, scientific and technical activities	46.4	50.9	53.8	4.5	2.9
Information and communication	45.2	54.4	57.7	9.2	3.4
Education	69.2	66.5	70.4	-2.7	3.8
All sectors	16.8	19.2	22.2	2.5	3.0

Note: Activities of extraterritorial organisations are excluded.

Source: EU-LFS

² Although in each of the last two groups, occupational reclassification may have exaggerated the extent of this growth.

workers. The main agricultural occupation – market-oriented skilled agricultural workers – has declined continually, which is consistent with the long-term secular contraction of the sector. There were nearly two million fewer workers (-28%) in this occupation in 2023 than in 2011.

The occupations in which the pandemic appears to have altered the trend in employment include those of cleaners and helpers and personal services workers, for whom employment contracted sharply post-2019. This decline was probably initially related to social distancing restrictions implemented to tackle the spread of COVID-19. Another possible explanatory factor in the more general non-recovery of employment in some low-paid service occupations is the unattractiveness of the work profile of some of these jobs (irregular hours, high physical demands, low pay, etc.) (Eurofound, 2023b).

A jobs approach to the analysis of employment developments in 2008–2023

This section uses the ‘jobs approach’ methodology of the European Jobs Monitor (Eurofound and European Commission Joint Research Centre, 2021) to analyse employment shifts across the job–wage distribution in 2008–2023.

The jobs approach breaks down net employment shifts over time by job, where a job is defined as a given occupation in a given sector. For example, the two biggest jobs so defined are those of sales assistants in the retail sector (including 10.4 million workers in 2023, or just over 5% of employment in the EU27) and teaching professionals in the education sector (including 9.5 million workers, or 4.8% of employment). Just over 800 jobs were identified³ with some employment across the EU27 in 2023 ($n = 823$), but most employment was in a much smaller number of jobs employing a large number of workers. The largest 32 jobs account for over half of EU27 employment. Ranking jobs by mean hourly wage makes it possible to see where in the wage distribution employment is being created or destroyed.

The analysis that follows relies largely on average gross hourly wage estimates from the Structure of Earnings Survey (2018), ranking jobs and assigning them to job–wage quintiles. This is useful for presentation purposes and allows a simple visual inspection of shifts in employment by job–wage quintile over time,⁴ enabling the identification of trends (for example, employment polarisation, upgrading or downgrading).

Box 2: Employment polarisation or upgrading

Most of the debate about shifts in the employment structure in developed economies has focused on two main trends – upgrading and polarisation (Autor et al, 2006; Goos et al, 2009; Fernández-Macías and Hurley, 2017; Oesch and Piccitto, 2019). Upgrading refers to a linear or monotonic improvement in employment structure, with the greatest employment growth in high-paid (or high-skilled) jobs and the least growth in low-paid (or low-skilled) jobs, with moderate growth in mid-paid jobs. With regard to polarisation, the main difference is that the relative positions of the middle and bottom of the job distribution are swapped: employment growth is weakest in the middle and stronger at both ends of the job–wage distribution, leading to a ‘shrinking’ or ‘hollowed’ middle.

Each of the trends has its own supporting narrative – skill-biased technological change (SBTC) in the case of upgrading and routine-biased technological change (RBTC) in the case of polarisation. In both narratives, the principal driver of employment change is technology and its principal effect is to increase the demand for skilled labour at the expense of less-skilled labour. Higher levels of skill endow their possessors with the capacity to utilise and master new technologies. This should enhance their individual productivity. But while technology tends to benefit those with higher skills most, it is most likely to replace those with lower skills whose job tasks are more easily carried out by machines or computers.

The main explanation for the differences between SBTC and RBTC relates to where in the job–wage distribution – at the bottom or in the middle – those jobs most susceptible to technological displacement lie. For SBTC, they are mainly at the bottom. However, for RBTC routine jobs are predominantly mid-paid, and it is these jobs – often blue-collar manufacturing jobs or routine clerical or administrative jobs – that are most exposed to displacement, inducing employment polarisation. Less routine jobs – in personal services at the bottom of the wage

3 At one-digit sectoral level ($n = 21$) and two-digit occupational level ($n = 43$).

4 For a more complete description of the European Jobs Monitor methodology, see Eurofound and European Commission Joint Research Centre (2021).

distribution, for example hairdressers and restaurant workers, and in knowledge-intensive professional services at the top, for example lawyers or medical doctors – are less easy to automate and therefore less vulnerable to replacement.

Most published research assigns a secondary role to international trade as a driver of structural change (see, for example, Goos et al, 2009). The less routine jobs mentioned above involve services that generally have to be carried out in person. Offshoring them or performing them remotely is often not feasible. They may also be subject to specific national occupational licensing frameworks, especially the case, for example, for higher-skilled occupations in the health or professional services sectors. For these reasons, such jobs enjoy some protection from the threats of both technological and trade displacement.

In Figure 6, jobs are assigned to EU job–wage quintiles each accounting for 20% of employment in the base year, and the subsequent changes in employment by quintile – that is, summing employment shifts in the jobs assigned to each quintile in the base year for the indicated time frames – are shown. Two base years are indicated (2008 and 2011), as changes in ISCO in 2011 require that the pre- and post-2011 periods are treated separately. In addition, Figure 6b shows the sub-periods 2011–2019 and 2019–2023 separately in order to demonstrate more clearly the impact of the COVID-19 pandemic and the subsequent recovery.

A comparison of the impacts of the COVID-19 pandemic and its aftermath up to Q2 2023 (the blue portion of the bars in Figure 6b) with those of the global financial crisis a decade earlier (Figure 6a) confirms that the reduction in headcount during the pandemic was concentrated in the lowest job–wage quintile. An earlier analysis (Eurofound, 2022) showed that these declines were especially sharp among low-paid female workers. By contrast, the global financial crisis (2008–2010) induced the greatest losses in the middle of the job–wage distribution, with much more severe impacts on male employment. It was only during this period of steep job loss in the aftermath of the global financial crisis that the EU27 as a whole experienced employment polarisation. Since 2011, the pattern has been upgrading, with the trend becoming even steeper after 2019. Nonetheless, beyond the EU aggregate patterns vary considerably across countries, and certain Member States have had more polarising changes in employment post-2011 (for example, Belgium, Estonia, Hungary, the Netherlands and Spain; see separate country outputs in Annex 3).

The EU-level differences identified between the effects of the two crises relate to the specific sectors most affected during either crisis: construction and manufacturing in the aftermath of the financial crisis; and accommodation, transport, food/beverages, etc. during the pandemic. The former has a high share of male employment, while employment in the latter is either gender-mixed or predominantly female. The main employment shifts took place at the margins of the wage distribution during the pandemic, in contrast to those during the financial crisis, which took place in the middle.

Figure 6: Changes in employment, by job–wage quintile, EU27, 2008–2010 (Q2) (A) and 2011–2023 (Q2) (B) (millions)



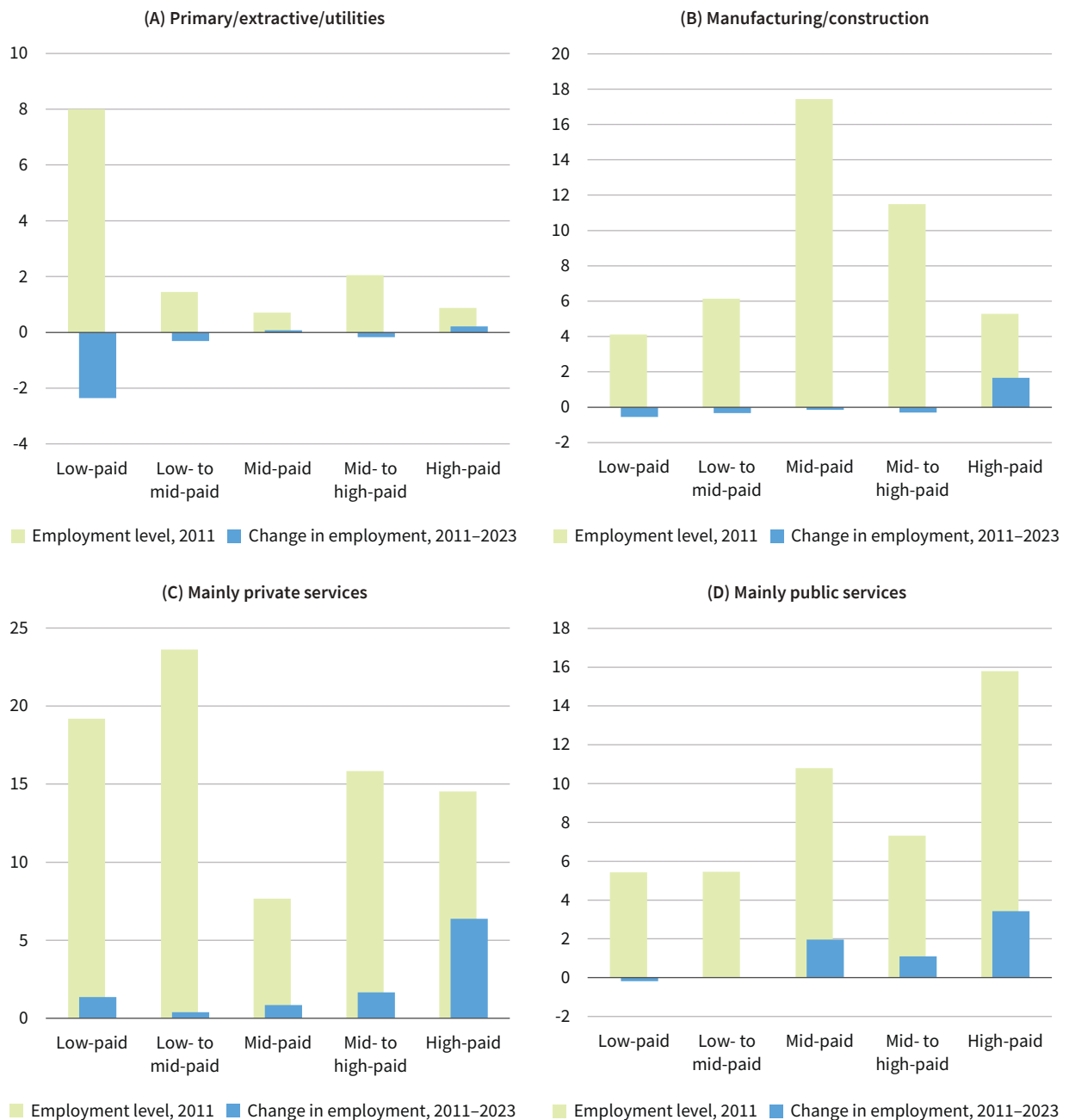
Sources: EU-LFS and Structure of Earnings Survey, using a jobs approach (see Eurofound and European Commission Joint Research Centre, 2021)

But the consistent feature of the charts in Figure 6 is the resilience of employment growth in the top job-wage quintile. Employment in jobs in the top quintile increased by one million during the global financial crisis, even as employment declined in all other quintiles. In 2011–2023, these jobs accounted for 11.6 million net new jobs or four out of five of the 14.3 million new jobs created in the EU27 over the period. Consistent with the earlier findings on the accelerating pace of professionalisation, roughly equal shares of this increase in top-quintile employment took place in 2011–2019 and in the more recent, much shorter, period of 2019–2023.

In Figure 7, employment shifts (blue bars) in 2011–2023 are broken down by job-wage quintile and broad sectoral group. The grey bars show the starting distribution of employment in 2011 in order to give context for the changes that subsequently occurred.

Each of the broad sectors have quite distinctive distributions of employment across the wage spectrum. Employment in the **primary/extractive/utilities** group is heavily concentrated in the lowest quintile, where there was a significant decrease in employment in 2011–2023 (2.35 million). Over 90% of job losses occurred in the agriculture sector. This combination of sectors accounted for just over 1 in 20 EU27 jobs in 2023 (5.3%).

Figure 7: Employment distribution and change by job-wage quintile, by broad sector, 2011–2023 (millions)



Sources: EU-LFS and Structure of Earnings Survey, using a jobs approach (see Eurofound and European Commission Joint Research Centre, 2021)

Employment in **manufacturing/construction** tends to be mid-paid, with less high- and low-paid jobs in the sector. The sectors experienced marginal employment growth in 2011–2023, but this was concentrated in high-paid, top quintile jobs (+1.66 million). There were employment losses in all of the other four quintiles. These trends are very similar in both construction and manufacturing, and reflect employment growth in professional categories at the same time as the stagnation of the more traditional blue-collar occupational categories. The specific jobs that contributed most to the employment gains were science and engineering professionals and business and administration professionals in manufacturing, which added 1.2 million jobs between them over the period. The broad manufacturing/construction category accounted for 22.6% of EU27 employment in 2023 (44.8 million workers).

The largest employment gains occurred in the two broad service sector categories. **Mainly private services** accounted for nearly half of all employment in 2023 (46.8%, or 91.5 million workers), while **mainly public services** accounted for over a quarter (25.8%, or 51.1 million workers).

The distribution of employment in mainly private services is quite polarised, with most employment in the lowest quintiles, a low level in mid-paying jobs and more in high-paid jobs. While there has been employment growth across the board in this group, by far and away the biggest contribution has been in top-quintile employment (+6.37 million). High-paid jobs contributed 60% of net employment growth in 2011–2023, with ICT professionals in the information and communication sector (+1.52 million) the fastest-growing single job. As in manufacturing/construction, there was a significant upgrading of employment in mainly private services in 2011–2023.

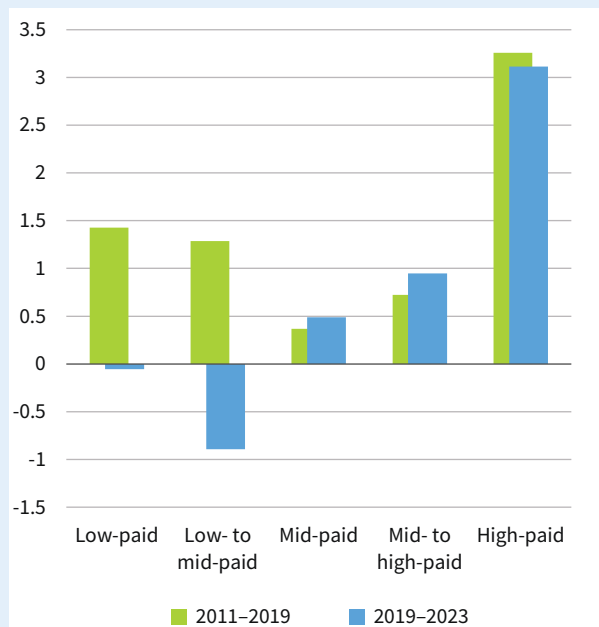
Finally, in mainly public services, where there was initially a skew towards high-paid employment, there was significant employment growth, which reinforced that skew. There were an additional 3.42 million workers in top-quintile jobs (including 1.31 million new teaching professionals and 0.97 million new health professionals), and approximately 1 million new mid- to high-paid jobs and 2 million mid-paid jobs.

Box 3: The weak recovery of in-person services jobs

While growth at the top accelerated in 2019–2023, a reversal of the previously robust employment growth in low- and low- to mid-paid jobs in mainly private services was recorded in 2011–2019 (Figure 8). Of note here are the large declines in two contact-intensive service jobs employing a large number of workers: retail sales workers (0.65 million jobs, mainly low- to mid-paid jobs) and personal services workers in accommodation and food services (0.67 million jobs, mainly low-paid jobs). In the latter, all of the employment gains recorded in 2011–2019 (just over half a million jobs) were erased in the more recent period. The decline during 2019–2023 appears to be a direct result of the pandemic’s impact on in-person services in 2019–2020. There was only a very modest bounce during 2021–2023, despite the relaxation of COVID-19 restrictions. At the same time, there is evidence of growing labour shortages in low-paid occupations in the accommodation and food services sector in most Member States (ELA, 2022).

Various explanations have been offered for the mismatch of supply and demand for these jobs: workers may have taken up employment in other sectors during the period of COVID-19 restrictions and been reluctant to return; workers may have had lingering public health concerns; and tighter labour markets more generally provide alternative opportunities for jobseekers that are better paid and more secure, with more regular or predictable working time arrangements, or more attractive in other ways than low-paid occupations.

Figure 8: Changes in employment in mainly private services, EU27, 2011–2023 (millions)



Sources: EU-LFS and Structure of Earnings Survey, using a jobs approach (see Eurofound and European Commission Joint Research Centre, 2021)

According to data from the European Working Conditions Telephone Survey, job strain – a measure of (negative) job quality – is substantially above the EU average for cooks and bartenders (European Commission, 2023, p. 17). The European Federation of Food, Agriculture and Tourism Trade Unions, which represents unions in the sector, points to the need to increase the quality of jobs on offer in order to address labour shortages (EFFAT, 2022), including through increasing wages and creating full-time, permanent jobs. Hotrec, the employer confederation, advocates for extending legal migration pathways, including through the Talent Pool initiative, which makes the recruitment of non-EU nationals in shortage-affected occupations easier. It also recommends promoting the image of the sector and different forms of employment within it (including part-time, temporary and casual). Hotrec reported especially high vacancy rates in 2022 in eastern European Member States, equivalent to a third of employment in Czechia and Lithuania and 40–50% in Poland (Hotrec, 2022).

In summary, these broad sector findings confirm that at aggregate EU level there has been robust occupational upgrading since 2011, with most employment gains concentrated in the top quintile. This upgrading accelerated in 2019–2023 (Figure 6), and occurred across all broad sectoral groupings (Figure 7). Even in the contracting primary/extractive/utilities category, over 200,000 net new top-quintile jobs were generated over the period. Employment growth was weakest in structurally declining sectors – in particular agriculture – and more generally in low-, low- to mid-paid and mid-paid jobs. More recently, employment in lower-paid in-person services jobs was especially disrupted by the pandemic restrictions, has been slow to recover and in many sectors affected has yet to reach pre-2020 employment levels.

Developments in labour supply

The canonical explanations for changes in advanced economy employment structures (SBTC or RBTC or trade/globalisation) are demand-side explanations of why the market for specific types of labour, jobs and tasks in developed economies is changing. The main drivers of change are the deployment of new technologies and computerisation, with a secondary role attributed to trade through globalisation and international competition. But labour supply also plays a role. The quality and quantity of labour supplied to employers is also changing.

Two dimensions of the change in labour supply are especially worth noting: the increasing participation of women and older people in the labour market and increasing labour mobility and migration.

Increasing participation of women and older people

Women have accounted for two out of three net new jobs created in the EU in recent decades (Eurofound and European Commission Joint Research Centre, 2021). As the male breadwinner model has weakened, women have entered – and stayed in – the labour market in

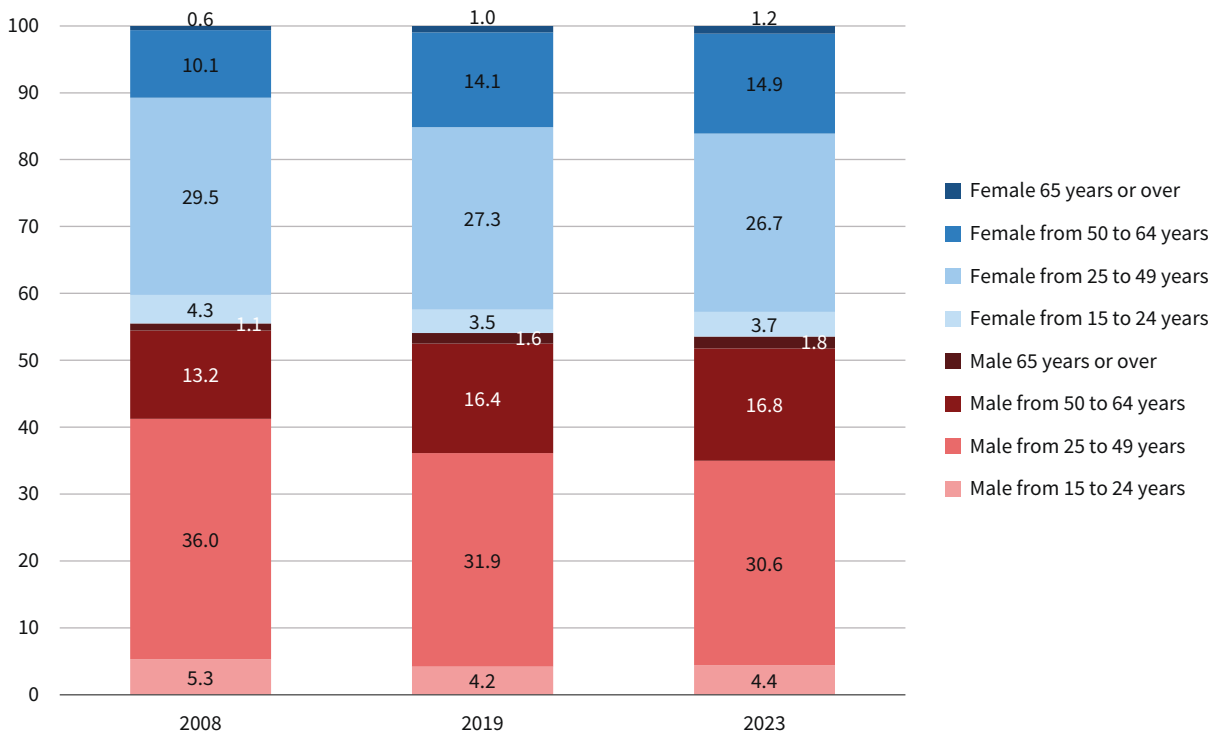
much greater numbers. The resulting reduction in the gender employment gap (in 2022, 10.7% in the EU27) is likely to continue, in line with EU targets to further half the gap by 2030 compared with 2019 levels.

Figure 9 breaks down all employment in the EU27 into gender and age categories, distinguishing between younger (15–24 years of age), core-age (25–49), older pre-retirement (50–64) and post-retirement (65+) groups. In 2008–2023, increasing shares of workers of both sexes were in the two older age groups. The fastest increase in share was in the post-retirement cohort, although from a very low base level. The share of older pre-retirement workers (50–64) in employment increased by 4.8 pp for women and 3.6 pp for men.

A consequence of this is the contracting share of core-age and younger workers in the workforce. The male core-age share declined from 36% to 30.6% between 2008 and 2023, while the female share declined from 29.5% to 26.7%. The trends in employment share were continuous from 2008 to 2019 and 2019 to 2023 in all categories except those for the youngest age cohorts. For 15- to 24-year-olds of both sexes, the downward trend from 2008 to 2019 bottomed out and there was a small (0.2 pp) increase in share during and after the pandemic (2019–2023).

This is surprising on two counts. First, the employment rate of younger people has tended to decrease in line with increasing rates of participation in higher education. This is a longstanding secular trend, as third-level qualifications are increasingly perceived as a necessary – but not sufficient – credential for accessing good-quality, high-paid jobs. Some 42% of young Europeans aged 25–34 were third-level graduates in 2023, an increase of 12 pp from 2008 (Eurostat [edat_lfse]). Second, the negative employment effects of the steep recession in 2008–2010 fell disproportionately on younger workers. The EU's Youth Guarantee was a policy response to levels of youth unemployment, which had surpassed 55% in some Member States (for example, Greece and Spain in 2014; Eurostat [lfsq_urgan]).

Figure 9: Change in the gender–age composition of the labour market, EU27, 2008, 2019 and 2023 (%)

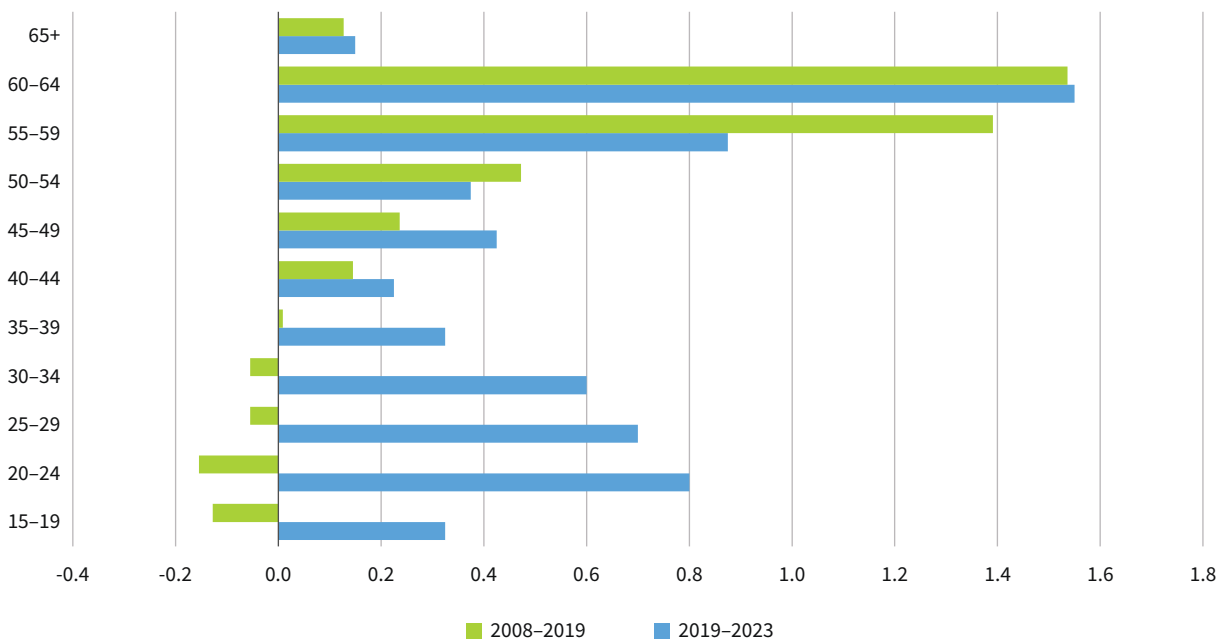


Source: EU-LFS

As Figure 10 confirms, employment outcomes for younger cohorts were much improved during and after the pandemic compared with the previous decade from

the beginning of the global financial crisis onwards (2008–2019). The figure shows the average change in employment rate per annum for each period.

Figure 10: Average annual change in employment rate, by age group, EU27, 2008–2019 (Q2) and 2019–2023 (Q2) (pp)



Source: Authors' elaboration, based on Eurostat [lfsq_ergan]

The largest changes occurred among the older cohorts, where the employment rates in particular of the pre-retirement cohorts (55–64) began to converge with those of workers of core age. This resulted in a per annum growth of over 1.5 pp in both periods for those in the 60–64 age group. Just over one in four in this age group were employed in 2008 (27.8%), while over half were employed in 2023 (50.9%). The greater probability of older workers being employed is to an extent a policy-generated outcome and resulted from increases in statutory pension ages in line with increasing longevity and a reduction in incentives for early retirement. It also reflects the increasing share of services employment and professional employment where both the incentives and the capacity to work into older age are better. For all 40+ age groups, there were increases in the employment rate during both periods. These were much larger for the older pre-retirement groups but from much lower starting rates, again indicative of the convergence of participation rates between older and core-age cohorts both before and after the pandemic.

By contrast, for younger cohorts up to the age of 40 years there has been a marked improvement in outcomes in the post-pandemic period, particularly among workers aged 20–24. Younger workers tend to fare worst in downturns, as lack of experience and a greater likelihood of being in more precarious forms of employment make them more vulnerable to involuntary job loss in times of economic stress. This was what occurred during the twin crises in 2008–2014, when the employment rate for 20- to 24-year-olds decreased from 53.2% to 45.5%. This was also the cohort on which COVID-19 had its largest immediate impact, reducing the employment rate by 4.5 pp in a single year, from Q2 2019–Q2 2020. Subsequently, however, tightening labour markets have drawn in younger workers from the margins, and employment rates for 20- to 24-year-olds have grown faster than for any other age group under 55 years of age.

So employment rates have been increasing across all age groups and the pace of the increases has quickened post-pandemic. The largest increases have been among younger and pre-retirement workers, as their rates converge on those of core-age workers: in Q2 2023, all five-year age cohorts from 25–59 had employment rates of 76–85%. This convergence of employment rates by age has been one of the biggest contributors to the EU closing in on its strategic target rate for 2030 (78% among those aged 20–64); it was 75.5% in Q2 2023, up from 73.2% in Q2 2019 notwithstanding the intervening pandemic shock.

Labour market segregation by gender

Despite a closing gap in employment rates for men and women, the majority of men and women continue to work in sectors and jobs that are either predominantly male (for example, construction and manufacturing) or predominantly female (for example, personal care and education). Recent research indicates that this occupational segregation by gender had largely persisted, with a declining share of EU employment in gender-mixed jobs (that is, occupation × sector cells where at least 40% of workers are male and at least 40% of workers are female) in 1998–2019 (Eurofound and European Commission Joint Research Centre, 2021). Table 5 updates the earlier analysis, focusing on 2011–2023, a period for which there are consistent classifications of both sector and occupation.

Table 5: Share of employment, by gender composition, EU27, 2011 and 2023

Gender composition	2011 (%)	2023 (%)	Change (pp)
Female dominated (> 80%)	11.5	12.0	0.6
Mainly female (60–80%)	26.2	27.9	1.7
Mixed (40–59%)	19.9	20.3	0.4
Mainly male (60–80%)	16.5	17.7	1.2
Male dominated (> 80%)	25.9	22.1	-3.8

Source: Authors' elaboration, based on the EU-LFS (data extracted by Eurostat)

The share of employment in gender-mixed jobs marginally increased over the period, but the biggest changes in employment composition were in gender-majority or gender-dominated jobs. There was a notable decline (3.8 pp) in the share of employment in male-dominated jobs, counterbalanced by increasing shares in both female- and male-majority (60–80%) categories.

The increase in female employment has, in particular, manifested itself in the growth of the 'care economy' (Dwyer, 2013; Dwyer and Wright, 2019), as many care activities previously provided informally within families have been marketed as paid services. These include many of the sectors with the highest rates of employment growth in developed economies over the past two generations and where due to demographic shifts demand is forecast to continue expanding in years to come, for example health and residential care. Table 6 shows changes in both headcount and women's share of employment in the jobs employing the most workers in the EU27 – disaggregated in the jobs approach by occupation (ISCO two-digit) and sector (NACE one-digit) – in 2011–2023. Only three of the jobs were gender-mixed in employment in 2023 according to the definition above.

Table 6: Share of women employed (%) and headcount (millions) in jobs employing the largest numbers of workers, EU27, 2011–2023

NACE sector	ISCO occupation	Women's share of employment				Employment			
		2011	2019	2023	Change 2011–2023 (%)	2011	2019	2023	Change 2011–2023 (%)
Retail trade	Sales workers	66.8	66.2	66.7	-0.2	11,610	11,620	10,919	-5.9
Education	Teaching professionals	71.6	71.7	73.7	2.1	8,185	8,598	9,498	16.0
Construction	Building and related trades workers	0.9	1.0	1.3	0.4	6,246	5,679	5,805	-7.1
Health	Health professionals	67.5	70.9	72.7	5.2	3,760	4,356	4,729	25.8
Health	Health associate professionals	83.9	82.5	82.2	-1.7	4,097	4,642	4,678	14.2
Transportation and storage	Drivers and mobile plant operators	4.8	4.9	5.8	1.0	4,114	4,461	4,454	8.2
Health	Personal care workers	89.2	88.1	87.4	-1.8	4,028	3,973	4,422	9.8
Accommodation and food services	Personal service workers	54.6	52.5	52.7	-1.9	4,329	4,895	4,241	-2.0
Manufacturing	Metal, machinery and related trades workers	5.0	6.5	5.7	0.7	4,520	4,528	4,238	-6.2
Agriculture	Market-oriented skilled agricultural workers	39.4	35.6	33.3	-6.1	6,268	4,779	4,176	-33.4
Manufacturing	Stationary plant and machine operators	33.7	33.9	33.8	0.1	3,946	4,015	3,953	0.2
Manufacturing	Science and engineering associate professionals	16.8	18.0	21.3	4.5	2,950	3,173	2,897	-1.8
Information and communication	ICT professionals	14.5	15.9	18.3	3.9	1,239	1,922	2,763	123.0
Manufacturing	Food processing and other craft and related trades workers	40.8	43.1	43.1	2.3	2,983	2,876	2,748	-7.9
Professional, scientific and technical activities	Science and engineering professionals	30.6	34.4	36.7	6.1	1,609	1,936	2,220	38.0
Retail trade	Business and administration associate professionals	37.4	38.7	40.4	3.0	2,230	2,148	2,165	-2.9
Administrative and support service activities	Cleaners and helpers	79.5	78.8	77.9	-1.6	1,854	2,023	2,140	15.4
Public administration	Business and administration professionals	59.6	59.1	60.4	0.8	2,625	2,603	2,112	-19.5
Manufacturing	Science and engineering professionals	19.0	21.8	22.3	3.2	1,441	1,656	2,091	45.1

Source: Authors' elaboration, based on the EU-LFS (data extracted by Eurostat)

Table 6 shows that the share of employment in some male-dominated, blue-collar jobs – for example, building workers in construction and metal/trades workers in manufacturing – decreased sharply. The largest absolute decline in employment by job was for the male-majority occupation of skilled agricultural workers, in which over two million jobs were lost over the period. However, the largest gain was also in a male-dominated job – that of ICT professionals in the information and communication sector. Headcount more than doubled for this job, adding around 1.5 million new jobs. A (slowly) growing share of workers are female (+3.9 pp), although women still account for less than one in five workers in this archetypal knowledge economy profession. Similar developments – rising shares of women in employment but from low bases – can be observed for science and engineering associate professionals in manufacturing and in professional, scientific and technical activities.

In professional female-dominated or female-majority jobs in the mainly public service sector, employment growth has been strong, and the female employment share increased further over the period, for example among teaching professionals and health professionals.

Meanwhile, in some low-paid jobs with a majority female workforce there has been a modest shift towards higher shares of male employment, for example among cleaners and helpers in administrative and support service activities, personal care workers in the health sector and personal services workers in the accommodation and food services sector.

In summary, a reducing gender employment gap reflects stronger structural growth in jobs where women are already a majority and weaker employment growth or contraction in mainly male jobs. Women have consolidated their numerical advantage in professional jobs in which they were already dominant. Working women have also made some small inroads to increased representation in some male-dominated science, technology, engineering and maths-related jobs, while the few jobs in which the male employment share has increased tend to be lower-paid service and agriculture jobs.

Conclusions

The post-COVID-19 labour market recovery continued apace in 2023. Employment levels in the EU27 had already surpassed their pre-COVID-19 levels by mid-2022. Increasing demand for labour has resulted in generationally low unemployment rates amid relatively rapid growth in participation. The paradigmatic focus of labour market policy in the previous generation – deficient demand and unemployment – has shifted to one of deficient supply and the need to increase the participation of underrepresented labour market groups to address labour shortages. An important backdrop to this change has been a demographic reversal (Goodhart and Pradhan, 2020). The working age population has become smaller in almost all Member States over the period covered in this paper (2008–2023), and this downward trend is set to continue. Labour markets may remain tight as a result. It has been observed that labour shortages are more acute in sectors and jobs with low overall job quality (high strain, low resources) (Eurofound, 2022; Eurofound, 2023c). As quantity-of-work considerations become less pressing, renewed attention will be paid to quality of work in all its various facets – with possible dividends for workers in terms of improvements in pay and employment conditions.

With regard to the structure of employment, the past 15 years have seen the consolidation of the services shift and of occupational upgrading in EU labour markets. Nearly three-quarters of employment (72%) was in service sectors in 2023, compared with 66% in 2008. This growth has been more or less equally shared between mainly public service sectors and mainly private service sectors. In line with the mass expansion of tertiary education, fresh cohorts of workers have boosted the number of graduates in the EU workforce from 48.7 million to 75.5 million (+55%), and this has fed the increasing professionalisation of employment. In contrast, sectors such as manufacturing and agriculture have continued their long-term decline in employment share, while the construction sector has not yet fully recovered from the major shock of the global financial crisis. These declines have had a disproportionate impact on blue-collar employment and on male employment.

What specific changes did the pandemic induce (or not) in these longer-term trends? This paper identified five developments.

First, **employment in the EU has grown faster post-2019 than pre-2019**. Year-on-year employment growth was on average over twice as fast after 2019 as in the preceding period, notwithstanding stronger demographic headwinds.

Second, **the sharpest changes in employment have been occupational rather than sectoral**, with an almost twofold increase in the pace of growth of professional employment in 2019–2023 compared with the previous decade. Among the fastest-growing occupations are ICT professionals and science/engineering professionals, which lends support to the case that the pandemic induced a ramp-up in organisations’ digitalisation plans and associated hiring. The wave of dismissals in big tech in 2022–2023 appears to have been only a minor correction after a period of enthusiastic expansion.

Third, **the jobs most negatively affected by pandemic restrictions tended to be lower-paid**, in-person services employment, given the implementation of physical distancing requirements. It was in sectors such as accommodation, food and beverages services and retail, and in associated occupations such as personal services workers and sales workers, that employment declined the most, with the trend previously having been towards growth. Even after the lifting of COVID-19 restrictions, employment only partially recovered in these jobs.

As a result of the rapid pace of professionalisation and falling employment in low-paid services, **recent aggregate employment shifts have shown an even clearer trend towards upgrading than was evident in 2011–2019**. During 2019–2023, nearly all net employment growth took place in the top quintile of jobs measured by mean hourly pay, and there were declines in the bottom two quintiles. This was the case both in expanding service sectors and in sectors such as manufacturing and construction with declining employment shares, where only top-quintile jobs recorded employment growth.

A fourth development of note in 2019–2023 was the relatively **brisk recovery of youth employment rates, in contrast to their sharp falls during the global financial crisis and persistent low levels in its aftermath**. Lower unemployment and tighter labour markets more generally appear to have drawn in workers with traditionally weaker labour market attachment, including younger people. There was no crisis of youth unemployment, as was the case a decade ago.

Finally, **European labour markets are becoming more equal in terms of gender participation, with women accounting for nearly two-thirds of net employment growth over the past two decades.** In part, this relates to higher employment growth in mainly public sector jobs with majority female workforces, such as medical, care and educational (associate) professionals. While the immediate impacts of the pandemic heavily

reduced low-paid female employment in in-person service sectors, by 2023 the pattern of female employment growth outstripping male employment growth had reasserted itself. The contracting gender employment gap has not, however, resulted in any meaningful decline in gender segregation; employment growth has continued to be highest in jobs with majority male or female workforces.

References

All Eurofound publications are available at www.eurofound.europa.eu

ACEA (European Automobile Manufacturers' Association) (2023), 'Fact sheet: EU–China vehicle trade', Brussels.

Autor, D., Katz, L. and Kearney, M. (2006), 'The polarization of the U.S. labor market', *American Economic Review*, Vol. 96, No. 2, pp. 189–194.

Conefrey, T., Keenan, E., O'Grady, M. and Staunton, D. (2023), *The role of the ICT services sector in the Irish economy*, Quarterly Bulletin 01, Central Bank of Ireland, Dublin.

Dwyer, R. E. (2013). 'The care economy? Gender, economic restructuring, and job polarization in the US labor market', *American Sociological Review*, Vol. 78, No. 3, pp. 390–416.

Dwyer, R. E. and Wright, E. O. (2019), 'Low-wage job growth, polarization, and the limits and opportunities of the service economy', *RSF: The Russell Sage Foundation Journal of the Social Sciences*, Vol. 5, No. 4, pp. 56–76.

EFFAT (European Federation of Food, Agriculture and Tourism Trade Unions) (2022), *EFFAT position paper: Fight labour shortages in hospitality-tourism by improving the attractiveness of jobs*, Brussels.

ELA (European Labour Authority) (2022), *EURES: Report on labour shortages and surpluses 2022*, Publications Office of the European Union, Luxembourg.

Eurofound (2022), *Working conditions in the time of COVID-19: Implications for the future*, European Working Conditions Telephone Survey 2021 series, Publications Office of the European Union, Luxembourg.

Eurofound (2023a), 'Big tech dismissals: What is the impact in the EU?' news article, 5 July.

Eurofound (2023b), *Fit for 55 climate package: Impact on EU employment by 2030*, Publications Office of the European Union, Luxembourg.

Eurofound (2023c), 'EU lack of labour won't be solved by skills alone: Improving job quality is key', blog post, 27 March.

Eurofound (undated), *Restructuring events database*, web page, available at <https://www.eurofound.europa.eu/en/resources/europe-an-restructuring-monitor/restructuring-events-database>, accessed 27 February 2024.

Eurofound and European Commission Joint Research Centre (2021), *European Jobs Monitor 2021: Gender gaps and the employment structure*, European Jobs Monitor series, Publications Office of the European Union, Luxembourg.

European Commission (2023), *Employment and social developments in Europe*, Publications Office of the European Union, Luxembourg.

Fernández-Macías, E. and Hurley, J. (2017), 'Routine-biased technical change and job polarization in Europe', *Socio-Economic Review*, Vol. 15, No. 3, pp. 563–585.

Goodhart, C. A. E. and Pradhan, M. (2020), *The great demographic reversal: Ageing societies, waning inequality, and an inflation revival*, Palgrave Macmillan, London.

Goos, M., Manning, A. and Salomons, A. (2009), 'Job polarization in Europe', *American Economic Review*, Vol. 99, No. 2, pp. 58–63.

Hotrec (2022), *Labour shortages in the hospitality sector: Forward thinking and practices sharing*, Brussels.

Irish Times (2023), 'Opportunities for growth in developing tech sectors, says banking union', 29 June.

Jaimovich, N. and Siu, H. E. (2020), 'Job polarization and jobless recoveries', *Review of Economics and Statistics*, Vol. 102, No. 1, pp. 129–147.

Oesch, D. and Piccitto, G. (2019), 'The polarization myth: Occupational upgrading in Germany, Spain, Sweden and the UK, 1992–2015', *Work and Occupations*, Vol. 46, No. 4, pp. 441–69.

UNI Global Union (2023), *First Google European works councils to increase worker representation*, web page, accessed 27 February 2024.

Annexes

Annex 1: NACE/ISCO correspondence

Sectors (NACE Revision 2.0)

Primary/extractive/utilities: A – Agriculture, forestry and fishing; B – Mining and quarrying; D – Electricity, gas, steam and air conditioning supply; E – Water supply; sewerage, waste management and remediation activities.

Manufacturing/construction: C – Manufacturing; F – Construction.

Mainly private services: G – Wholesale and retail trade; repair of motor vehicles and motorcycles; H – Transportation and storage; I – Accommodation and food service activities; J – Information and communication; K – Financial and insurance activities; L – Real estate activities; M – Professional, scientific and technical activities; N – Administrative and support service activities; R – Arts, entertainment and recreation; S – Other service activities; T – Activities of households as employers.

Mainly public services: O – Public administration and defence; compulsory social security; P – Education; Q – Human health and social work activities; U – Activities of extraterritorial organisations and bodies.

Occupations (ISCO-08)

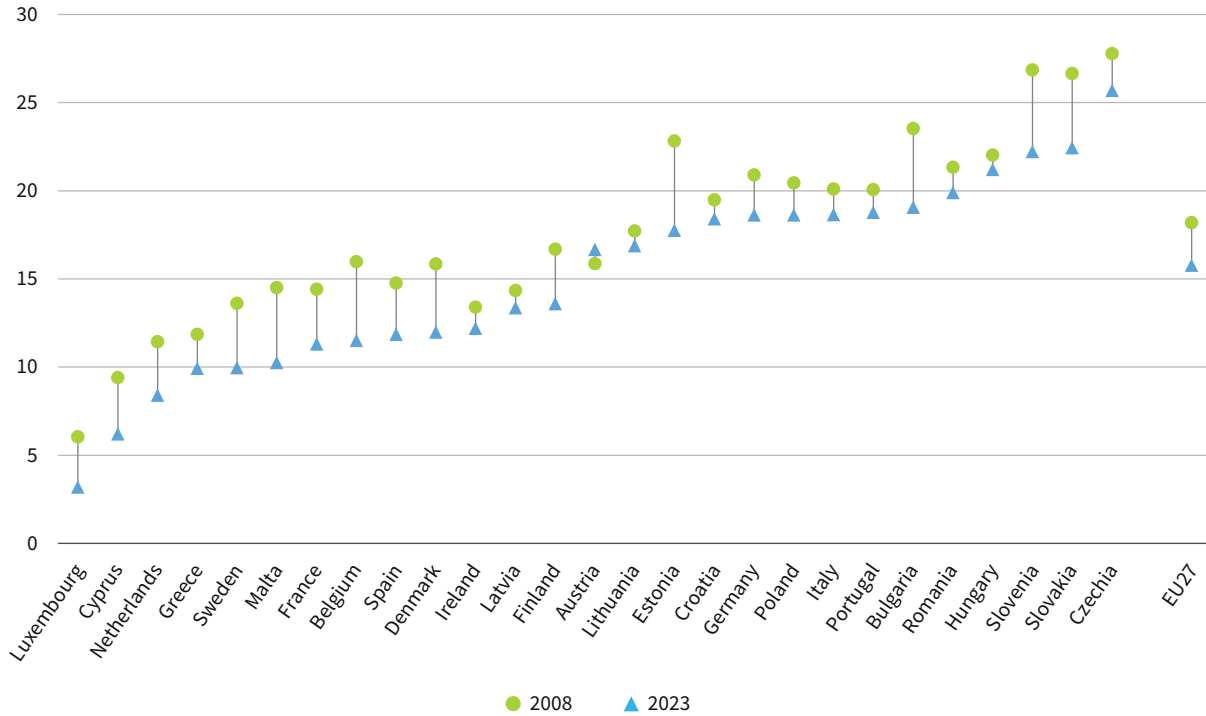
White collar, highly skilled: Legislators, senior officials and managers; professionals.

White collar, medium/low skilled: Technicians and associate professionals; clerks; service workers; shop and sales workers.

Blue collar: Skilled agricultural and fishery workers; craft and related trades workers; plant and machine operators and assemblers; elementary occupations; armed forces.

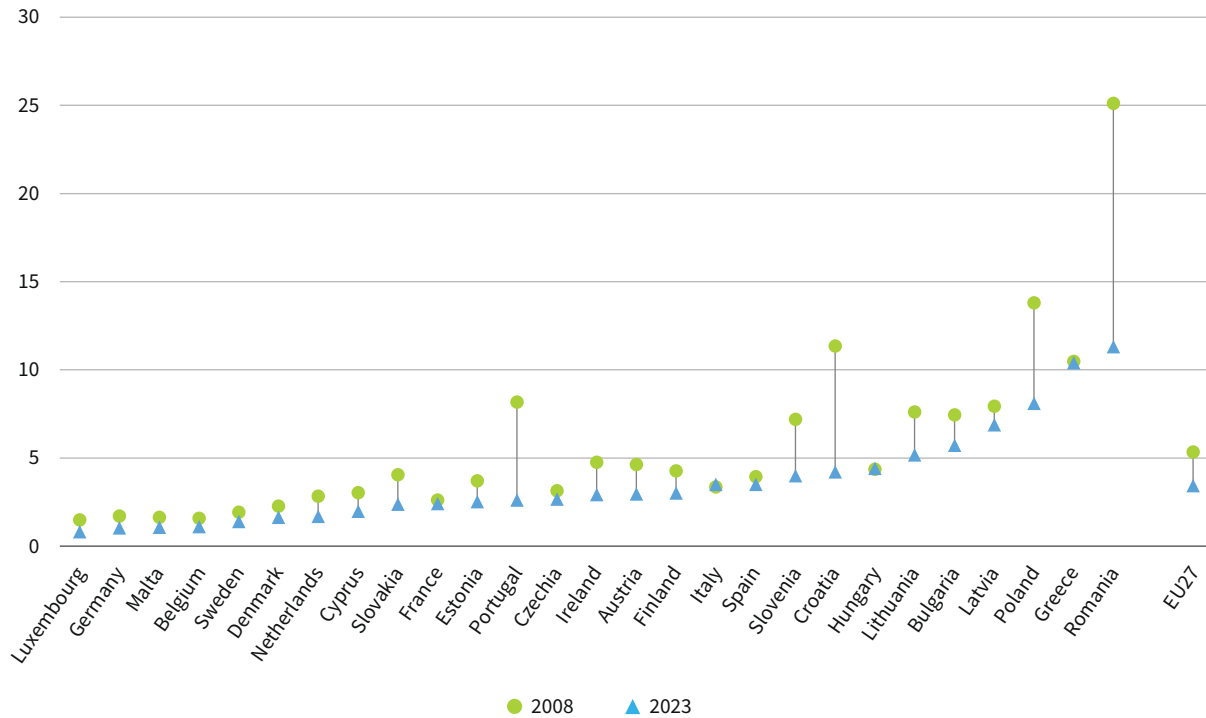
Annex 2: Employment shares in selected sectors

Figure A1: Share of employment in the manufacturing sector, 2008–2023 (%)



Source: Authors' elaboration, based on EU-LFS

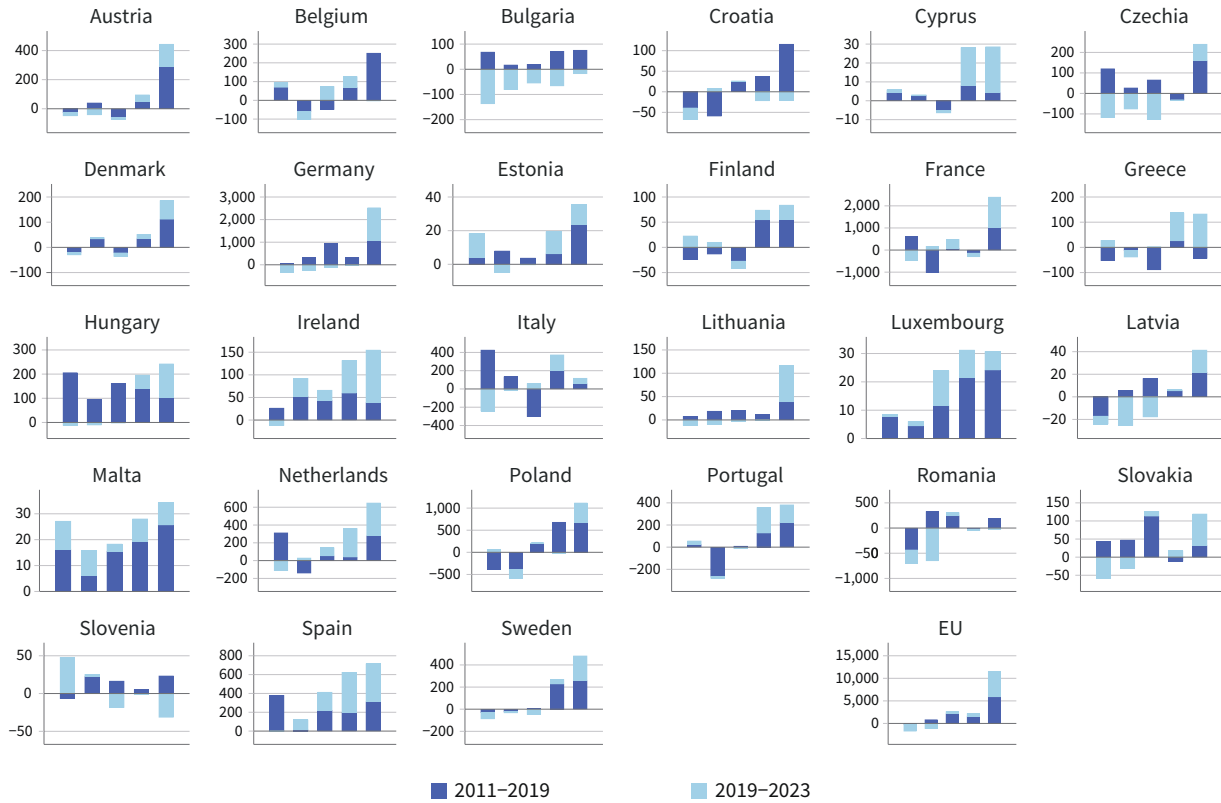
Figure A2: Share of employment in the agriculture sector, 2008–2023 (%)



Source: Authors' elaboration, based on EU-LFS

Annex 3: Changes in employment by job–wage quintile

Figure A3: Changes in employment by job–wage quintile, EU Member States, 2011–2019 (Q2) and 2019–2023 (Q2), in thousands



Note: The far-left bar represents employment growth in jobs accounting for the lowest-paid 20% of employment in the start year (2011), and the far-right bar represents employment growth in jobs accounting for the highest-paid 20% of employment.

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Employment levels in the EU27 recovered from the effects of the COVID-19 pandemic in 2020–2021 much faster than they did after the global financial crisis in 2008–2010. This was despite the immediate job loss effects of the two crises being of comparable scale. Demographic change is affecting labour supply, as the EU’s working age population has been contracting since 2010. This paper summarises structural developments in European labour markets over a period spanning the two crises and the subsequent recoveries (2008–2023). It relies mainly on EU Labour Force Survey data to show how recent developments appear to have stimulated processes of occupational upgrading while disproportionately reducing employment in low-paid services jobs.

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency established in 1975. Its role is to provide knowledge in the area of social, employment and work-related policies according to Regulation (EU) 2019/127.

