

Employment and labour markets
What just happened?
**COVID-19 lockdowns and change
in the labour market**



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Country codes

AT	Austria	ES	Spain	LV	Latvia
BE	Belgium	FI	Finland	MT	Malta
BG	Bulgaria	FR	France	NL	Netherlands
CY	Cyprus	HR	Croatia	PL	Poland
CZ	Czechia	HU	Hungary	PT	Portugal
DE	Germany	IE	Ireland	RO	Romania
DK	Denmark	IT	Italy	SE	Sweden
EE	Estonia	LU	Luxembourg	SI	Slovenia
EL	Greece	LT	Lithuania	SK	Slovakia

Executive summary

Introduction

The COVID-19 pandemic closed or limited many economic activities, which had a far-reaching impact on the labour market. Employment losses at the outset of the pandemic were sharper than those experienced during the global financial crisis of 2008–2010. Even greater declines in hours worked arose as a result of the widespread state-supported furloughing of workers. The physical distancing policies of governments led to another significant and largely ad hoc adjustment – the shift to mass remote working for those workers whose jobs allowed it.

This report describes the employment and working time developments in the EU through the first year of the crisis and examines how they differed by sector and occupation. It explores the categories of workers who were most affected – primarily temporary workers, young workers and low-paid female workers. It also assesses the extent to which remote working served as a buffer during the crisis, preserving jobs that might otherwise have been lost.

Policy context

The policy response to confront the crisis and deal with its socioeconomic impact has been wide-ranging. National and EU authorities launched a range of support measures to relieve the immediate pressure experienced in specific economic activities and to address the specific needs of small and medium-sized enterprises (SMEs), workers left jobless and the self-employed, among others. Eurofound's COVID-19 EU PolicyWatch database recorded over 1,300 interventions enacted since the outset of the crisis, including business-support measures, extended income support for laid-off workers (temporarily or otherwise) and employment-protection schemes (such as short-time working and wage subsidies).

EU institutional approval of the €672.5 billion Recovery and Resilience Facility opens up the prospect for EU Member States to avail of funding to support reforms and investments during the recovery from the crisis. The facility is closely linked to the Commission priorities for a greener, more digital Europe. Longer-term structural support of this type will assume more importance as the European economy emerges from the crisis and COVID-19-contingent initiatives wind down.

Key findings

- Employment fell sharply in the EU and across the Member States at the outset of the crisis in Q2 2020, but the decline tapered off subsequently. There were over five million fewer jobs in Q2 2020 than a year earlier; this reduced to a deficit of just over three million jobs by Q4 2020.
- The main component of declining labour inputs, however, was not headcount declines in employment but an increase in the share of employed workers not working (furloughed workers). This accounted for around two-thirds of the decline in hours worked at the peak of the crisis.
- Workers on temporary contracts accounted for over three-quarters of net employment losses in all quarters of 2020.
- The decline in employment headcount was sharpest among young workers and low-paid female workers (those in the bottom job-wage quintile). These were also the categories of workers most likely to be furloughed because of the pandemic.
- The aggregate EU unemployment rate has barely registered the impact of the crisis and is forecast to peak at 7.6% in 2021, less than 1 percentage point higher than its pre-crisis level in 2019. By comparison, the unemployment rate in the United States rose to over 14% following the crisis in Q2 2020, before dropping sharply in the succeeding two quarters.
- The sectors most affected by declines in headcount employment and hours worked were those where activity ceased as a consequence of government lockdown orders, for example hotels, restaurants and accommodation. The higher the share of a country's employment in such sectors, the greater was the decline in labour inputs; Greece, Italy and Spain, therefore, were badly hit. Surprisingly, sectors categorised as 'essential' – food production, health and utilities – or 'mostly essential' also shed employment.
- The share of workers working from home was many times higher than the relatively marginal share who did so regularly before the COVID-19 crisis. Live survey sources gave estimates of this proportion in the range of 20–60%, depending on the country. Official European Union Labour Force Survey (EU-LFS) data pointed to much more modest increases, with 21% of workers working from home at least some of the time in 2020.

- The most severe declines in working hours and headcount employment were recorded in non-teleworkable occupations such as services and sales jobs, elementary occupations and blue-collar occupations. Teleworkable white-collar occupational categories, with the exception of the managers category, were less affected by such declines.

Policy pointers

- As in the wake of the global financial crisis, state intervention and fiscal support proved indispensable to protecting economies and labour markets in the face of large, unanticipated shocks.
- There has been a significant emphasis in all Member States on preserving the employment relationship during the crisis in anticipation of an early recovery. Very modest increases in the unemployment rate at the aggregate EU level are, in large part, a consequence of the generalised implementation of employment-protection schemes (short-time working and furloughing), policies that had in the past been implemented in only some Member States.
- As economies continue to reopen, reports of labour shortages in sectors where activity was limited or stopped during the crisis suggest that mismatches between labour demand and supply will continue, even as labour markets are returning to more normal levels of operation. These may particularly affect activities characterised by low pay and precarious employment conditions.
- The categories of workers who were most vulnerable in the labour market before the pandemic have experienced a worsening of their socioeconomic conditions. While employment-protection and income-support measures were extended to cover, for example, some self-employed and temporary workers, such support was crisis-contingent and temporary. Broader and more inclusive social protection schemes could serve as a buffer against intermittent job recovery.
- As mass vaccination campaigns are completed, the policy focus will shift from short-term COVID-19 countermeasures to more traditional instruments used to anticipate and manage structural change.

Introduction

The COVID-19 pandemic has been, first and foremost, a global public health emergency. A highly contagious virus attacking the human respiratory system has caused over three million deaths globally and over one million in Europe since the first EU cases were confirmed on 24 January 2020 in France. Around 1 in 12, or 37 million, people had been diagnosed with the disease by September 2021 in Europe (ECDC, 2021).¹ As of June 2021, two economically advanced regions – Europe and the United States – with only 10% of the world's population, accounted for over two-thirds of global COVID-19 diagnoses and deaths.² The accelerated development and testing of vaccines against the virus in 2020 led to vaccination campaigns starting in December 2020 and, by the time of writing (September 2021), over 70% of the adult population in most EU Member States had been fully vaccinated. Given the rapid roll-out of vaccinations, and notwithstanding rising case numbers and the emergence of coronavirus variants that are even more contagious, the prospect of a return to something resembling pre-COVID-19 normality appears achievable by the end of 2022.³

This report takes stock of the impact of the public health crisis on the labour market and on the employment structure five quarters after the emergence of the virus. Of note is that the recessionary shock prompted by COVID-19 has been almost purely exogenous. COVID-19 is an epidemiological phenomenon, largely unrelated to underlying economic dynamics. For this reason, it is unlike the global financial crisis (2008–2010), the nearest comparator in terms of time and severity. It had its origins within the economic system, indeed rooted within the heart of that system, in financial services. The different genesis of these two global crises implies different intensities and durations of labour market effects in the aggregate as well as across productive activities and categories of workers. The fact that the 2008–2010 crisis was endogenous meant that the economic system itself needed to recover, while in an exogenous crisis such as the current one, once the solution of mass vaccination is administered, the return to normal life should occur more readily.

During the three waves of heightened disease spread (spring 2020, autumn 2020 and early 2021), national lockdown decrees sought to stem transmission through enforced closures or limitations of certain activities involving social interaction. As the vast majority of hours worked pre COVID-19 were habitually worked in communal workplaces, this has had a transformative impact on work and employment during the crisis.

In particular, the pandemic has negatively affected those work activities that most involve human contact and mobility, which have been on the front line of restrictions. These include a wide range of service sectors from arts, entertainment and leisure to transport, retail and accommodation. However, across the entire range of economic activities, the sectoral impacts of the crisis have been quite heterogeneous. The two sectors that suffered the brunt of the global financial crisis in advanced economies – manufacturing and construction – have been relatively less affected by COVID-19. In addition, some sectors – information and communications, computer programming and consultancy, and telecommunications – have experienced employment growth, as the pandemic has tended to lend urgency to, and accelerate, pre-existing digitalisation initiatives. This is clearly evident in recent announcements on restructuring in financial services (see Chapter 2).

As work in these latter sectors is largely of the 'symbolic analyst' type (Reich, 1991) – with a large share of work tasks involving processing and interpreting data – the mass recourse to working from home during the crisis has protected higher-level occupational groups (professionals), in particular, who make up much of the workforce in such sectors. Technological development and its cumulative adoption, together with the widespread roll-out of high-speed internet in the preceding 20 years, have been the prerequisite for 'business as usual' to continue in these sectors. Without that development, it is likely that many more jobs would have been lost during the crisis.

It is worth emphasising the asymmetric employment and working conditions effects of the crisis since its beginning. On the one hand, teleworkable jobs have proved more resilient and are characterised by better

1 This figure inevitably underestimates the actual incidence of the disease, given asymptomatic presentation in around one-fifth of cases and non-diagnosis in many others.

2 However, the comparability of case numbers between countries and regions is limited by different testing ratios.

3 However, a consensus is emerging that herd immunity may not prove possible for a variety of reasons: vaccine hesitancy, the emergence of new variants, evidence that vaccination may not prevent transmission and the fading effectiveness of vaccines over time. This implies that there will continue to be local surges of the disease, albeit at a much lower level, but still requiring the continuation, or periodical reapplication, of forms of non-pharmaceutical intervention (mask wearing, physical distancing and hand sanitisation) in addition to ongoing vaccination (Aschwanden, 2021).

working conditions and higher wages (Cetrulo et al, 2020). On the other hand, these workers still represent, at most, around a third of total employment. Essential workers cannot work from home because of the tasks they perform and the sectors in which they are mainly employed, and more often their working conditions are poorer and their wages lower, as was the case even during the pandemic. They are, at the same time, also those who have been most likely to be exposed to the risk of contagion (Lewandowski, 2021).

On the positive side, the COVID-19 economic crisis has been, at the aggregate level, less severe than anticipated at the outset. Output declines of nearly 15% quarter on quarter recorded in the second quarter (Q2) of 2020 (Eurostat, 2020) were without precedent but also predictable, given the wide-ranging impacts across sectors of the first round of lockdown measures. The Commission's spring 2020 economic forecast predicted a decline of 7.5% in gross domestic product (GDP) in 2020, a much sharper fall than occurred in any year of the 2008–2013 crisis (European Commission, 2020). By the time of the summer 2021 forecast, this figure had been revised to -6.0%. Meanwhile, projections for growth in 2021 and 2022 of over 4% per annum (European Commission, 2021a) signal a strong anticipated recovery as the vaccination campaign continues and restrictions are lightened or lifted. The recovery will also be buttressed by expanded fiscal measures at national and EU levels, notably the Recovery and Resilience Facility (RRF). Financial crises of the type experienced just over a decade ago tend to have more durable negative impacts on output (Reinhart and Rogoff, 2009).

Labour market data available at the time of writing cover three quarters (Q2 2020–Q4 2020) that bore the impact of the crisis. These data support the narrative of a brief, sharp shock with severe short-term impacts but also of an anticipated rapid recovery (although not quite a V-shaped recovery). It appears more or less certain, for example, that the peak employment impacts of COVID-19 occurred immediately after the first wave in Q2 2020, before abating thereafter. Job vacancy rates collapsed in Q2 2020 but were already increasing a quarter later (Eurostat, 2021). In mid-2020, media reports in some countries with lower-than-average unemployment rates began signalling labour shortages as an issue (Financial Times, 2021a), including in some sectors most affected by the crisis (for example, food and beverages and accommodation). This suggests that there will continue to be job-matching frictions, even as labour markets begin returning to more normal levels of operation. These may affect, in particular, sectors characterised by low pay and precarious employment conditions, possibly boosting pay and employment conditions.

Notably, the aggregate EU unemployment rate has barely registered the impact of the crisis and is forecast to peak at 7.6% in 2021 (European Commission, 2021a), less than 1 percentage point higher than its pre-crisis level in 2019. This is in large part a consequence of the policy response mobilised to protect labour markets. Short-time working schemes have been implemented for the first time across all Member States, maintaining employment relationships that might otherwise have been broken. This is a policy whose operation has been fine-tuned over recessions spanning decades in countries such as Germany. This time its application has been across the board, with commitments of EU funding through the Support to Mitigate Unemployment Risks in an Emergency (SURE) mechanism helping to defray some of the costs at national level. In addition, in around half of the Member States, such schemes explicitly included dismissal protection as a condition of accessing such allowances, with the aim being to increase the sustainability of the cushioning effect (Eurofound, 2021a).

Other measures have included temporary business support enabling firms to survive the periods of lockdown. For those who have lost their jobs, the replacement rate of income support has, in many cases, been increased and extended to groups previously less covered by such schemes such as workers on fixed-term contracts and the self-employed.

The employment-protective dimension of such policies is evident in the very modest increase in the aggregate EU unemployment rate. However, there are some important qualifications here. The first is that employment levels have decreased; there were three million fewer EU workers in employment at the end of 2020 (-1.5%) compared to a year earlier. Much of the increase in joblessness arose from transitions to inactivity rather than to unemployment. In a semi-closed labour market, actively seeking employment – a precondition of being considered unemployed – presented difficulties for many potential jobseekers, young labour market entrants and temporary workers, in particular. The second qualification is that by far the largest proportion of the decline in labour inputs came as a result of changes in the intensive margin – hours worked – rather than the extensive margin – headcount employment. This was the objective of the furloughing schemes. An indication that they were successful in this regard comes from the estimates in the EU that, in Q2 2020, working hour reductions accounted for over 80% of the decline in labour inputs, and less than 20% of the decline was attributable to headcount losses (Eurofound, 2021a). This was in contrast to the US, where policy has focused on temporarily strengthening the unemployment benefit system and accepting a sharp rise in unemployment, peaking at 14.8% in April 2020 (CRS, 2021).

The tentative labour market recovery starting in Q3 2020 should be consolidated as the vaccination campaign is extended and completed. Temporarily higher levels of growth are forecast in the short term as restrictions are lifted and surplus savings accumulated during the crisis are spent (European Commission, 2021a). However, it is not possible to put large parts of a complex and dynamic system in suspension for over a year without consequences.

In addition to pent-up demand, European economies will encounter problems of pent-up insolvency, on the one hand, and the scarring effect of over a year of inactivity or limited activity in some sectors. Many firms, especially smaller businesses in leisure, accommodation, and food and beverages, may not survive once current levels of state support are wound down. Similarly, employment relationships that have been sustained by furlough support may be sundered when that support is no longer available. A broad range of protective measures has been introduced by Member States since the outset of the crisis. Eurofound's COVID-19 EU PolicyWatch database lists and describes over 1,300 pandemic-related policy interventions as of early September 2021 (Eurofound, 2021a). Most of these measures are temporary and will be scaled down in 2021. As reliance on them weakens, a period of significant structural job reallocation is likely. Employment is likely to flow from activities bearing lasting scars from the crisis – including high-street retail, travel and accommodation – towards activities that prospered or came of age during the crisis – such as online retail, domestic delivery, logistics, data analytics and security. The NextGenerationEU instrument should also generate labour demand in new greening and digitalisation initiatives transversally across many sectors.

Report structure

This report is structured as follows.

Chapter 1 describes the methodology applied to analysing the employment impact of COVID-19. It briefly summarises the data sources used and discusses the problems of studying a large economic shock such as that caused by the pandemic and the extent to which commonly used labour market performance indicators and concepts are adequate for describing it.

Chapter 2 provides a descriptive summary of the labour market impacts of the crisis quarter by quarter for 2020, with breakdowns by Member State, job–wage quintiles and demographic variables, as well as the core variables used to describe the employment structure: sector and occupation. The chapter also summarises restructuring activity over the pandemic period as announced publicly by companies, based on European Restructuring Monitor (ERM) cases.

Chapter 3 presents a more detailed analysis of sector-level developments, in particular how different sectoral outcomes were directly or indirectly related to government decrees.

Chapter 4 explores the occupational dimension of 'teleworkability' and the extent to which it provided a labour market buffer during the crisis.⁴

Both Chapters 3 and 4 compare estimates from earlier in the crisis (Fana et al, 2020a, and Sostero et al, 2020, respectively) with European Union Labour Force Survey (EU-LFS) quarterly data now available for 2020 to see the extent to which predicted outcomes at the occupational and sectoral levels are consistent with what actually occurred during the crisis.

Chapter 5 focuses on policies to support restructuring processes that are likely to occur during the recovery from the pandemic. It is based on the two ERM qualitative databases that record restructuring support measures and legislative measures.

The final chapter draws several conclusions derived from the analyses in the report.

⁴ It should be noted that this report does not discuss the impact of telework on working conditions, job quality or employment relations. Pre-COVID-19 analysis is available from previous Eurofound research (see, for example, Eurofound, 2020c), and COVID-19-related developments will be discussed in specific forthcoming publications (Eurofound, 2021, forthcoming; Eurofound, 2022, forthcoming).

1 Methodology and data

Context

Crises, by their nature, are moments of rapid change. This creates difficulties for labour market surveys of a cross-national nature such as the EU-LFS, the main source for the analysis in this report. The collation and harmonisation of data from all Member State national statistical institutes takes time. Quarterly results are generally released three months after the end of each quarter. This is a big lag when trying to assess the dynamic impacts of a public health crisis with mandated restrictions on business opening and on individual mobility affecting substantial sections of the workforce.

The COVID-19 pandemic itself has created additional complications in carrying out EU-LFS fieldwork. Households remain in the EU-LFS sample for five quarters, and initial interviews are usually conducted face-to-face, with follow-up interviews conducted remotely. Face-to-face interviews became impossible during the crisis, necessitating a change of mode, with potential impacts on response rates and possibly also response quality (CSO, 2020).

Live or ad hoc surveys, including Eurofound's *Living, working and COVID-19* e-survey, have made a valuable contribution to fulfilling the need for more timely data addressing the challenges and novelties of the crisis, namely remote working and temporary joblessness of an unforeseen duration. However, the advantages of such surveys in terms of timely reporting come with a trade-off. By their very nature, e-surveys tend to exclude the offline population. In addition, more highly educated people tend to be overrepresented. Post-weighting adjustments may correct for some such biases but cannot do so for all.

Within the EU statistical system, there are indices that are more regularly updated, including the most commonly publicised metric of labour market performance, the unemployment rate. Here, the shortcoming is not process related, but conceptual. As an indicator, the unemployment rate has tended to conceal as much as reveal the real extent of labour market slack during the crisis. Most of those not working as a result of the crisis are officially considered as employed, if on furlough or on a temporary lay-off of a

short duration, or inactive, if on a longer-duration furlough or if they have lost their job but are not in a position to seek a new job owing to sector closures. Neither of these situations, which were both very prevalent during the crisis, are captured in the unemployment rate.

The approach in this report is to instead use data on employment levels and weekly hours worked and their year-on-year quarterly changes during the first quarters of the pandemic up to Q4 2020. Headcount employment and hours worked also have the advantage that they can be broken down so that differential impacts by sector, gender or contractual status, for example, can be highlighted.

Data

This report is based on EU-LFS quarterly data extractions, which have been kindly provided by Eurostat following ad hoc requests in April 2021 as soon as Q4 2020 data became available. The extractions cover key variables for assessing changes in labour input during the first two waves of the crisis (employment levels and actual weekly hours worked), as well as the categories of activity affected (occupation and sector), the main sociodemographic categories of individuals affected (age and gender, for example) and employment status. Owing to restrictions that have been operational since 2019 on the level of detail that can be requested,⁵ the analysis is based on different extractions with different permutations of a small number of variables. For this reason also, there are trade-offs in the descriptive analysis that follows. For more detailed analysis covering work and personal characteristics, outputs can be provided only at the aggregate EU level.

One shortcoming of the quarterly data extractions is that certain Member States cannot be covered, namely Germany, because 2020 data are not yet available, and Denmark, Ireland and Portugal, because the data are incomplete owing to the suppression of data considered unreliable because it is based on a limited number of observations. Aggregate EU figures do, however, where possible, cover the full EU27.

⁵ Ad hoc EU-LFS quarterly data extractions provided by Eurostat have, since 2019, been subject to restrictions on small-cell observations on anonymisation grounds. These restrictions limit extraction requests in practice to a small number of variables in any one extraction and therefore limit the depth of analysis in this report.

Approach

Most of the analysis follows an approach of comparing outcomes (employment levels and actual weekly hours worked) in Qx 2020 with those in the same quarter of the previous year (Qx 2019). This comparison, rather than simple quarter-on-quarter comparisons, is done for two reasons. First, it takes account of the strong seasonality of employment data. Employment levels tend to be higher in the second and third quarters every year and lower during the winter quarters. Second, it compares each of the ‘COVID-19 quarters’ (Q2 2020–Q4 2020) with a pre-COVID-19 baseline in the previous year, going some way to isolating specific COVID-19 impacts.

The analysis concentrates in particular on three indicators: employment level, temporary absences from work and actual weekly hours worked for those who remain employed. Specifically, it uses the headcount employment estimates for the first indicator. For the second indicator, it uses the share or headcount of those employed who report not working at all in the reference week. This indicator is interpreted as a proxy measure of the share of furloughed workers during the crisis when the customary share of workers in this category for other reasons, notably holidays, illness and labour disputes, among other things, is subtracted. For the third indicator, the analysis uses an approximation of the change in actual weekly working hours in the reference week based on a comparison of the cross-sectional data from Qx 2019 and Qx 2020.⁶

These measures are, to varying extents, proxies, but they capture the most important shifts in aggregate hours worked along both the extensive margin (how many workers are working) and the intensive margin (for how many hours per week, on average).

They do so avoiding some of the definitional dilemmas regarding employment status during the COVID-19 pandemic already mentioned. As and when detailed EU-LFS annual microdata are made available for 2020, some more precision in the estimates will be possible. The advantage of the current (admittedly crude) approach is to provide first estimates of the shifts in labour inputs and to do so at a quarterly frequency, capturing the initial impacts of the pandemic and how they changed over 2020.

The more detailed sector-level and occupation-level analysis in Chapters 3 and 4, respectively, builds on analytical work published early in the pandemic. Fana et al (2020a) developed a taxonomy of sectors (Nomenclature of Economic Activities (NACE) two-digit level) based on the extent to which national lockdown measures considered specific activities as ‘essential’ or ‘non-essential’ and restricted or stopped specific socially interactive activities as part of the broader public health imperative of ensuring physical distancing.⁷ Five broad sectoral categories were identified: ‘essential and fully active’, ‘active but via telework’, ‘mostly essential and partly active, not teleworkable’, ‘mostly non-essential and inactive, not teleworkable’ and ‘closed’.

Sostero et al (2020) developed an occupational teleworkability index based on an analysis of detailed task content (for 120 occupations) from the Italian *Indagine campionaria delle professioni*, with additional indicators from Eurofound’s European Working Conditions Survey (EWCS). The index values ranged from 0 for occupations that cannot be worked remotely at all to 1 for occupations that are entirely teleworkable. Chapters 3 and 4 show how employment outcomes varied for, respectively, sectoral and occupational groupings categorised in these ways.

⁶ The EU-LFS variable used for the second and third indicators is HWACTUAL, namely the actual hours worked by the respondent in the reference week. The report relies on a data extraction kindly provided by Eurostat, in which the relevant variable is banded in categories (namely, not working/zero hours, 1–19 hours, 20–34 hours, 35–40 hours, 41–47 hours and 48+ hours). It estimates average actual weekly hours by imputing the rounded average for each of the above categories based on the 2018 EU-LFS annual microdata (namely, for the non-zero categories, 11, 26, 39, 44 and 55 hours, respectively). Data in the extraction are not seasonally adjusted.

⁷ The methodology was developed using German, Italian and Spanish national decrees and then generalised to all EU Member States. For a detailed discussion on the methodology, see Fana et al (2020a), which includes a detailed table of the sectoral impacts of lockdown measures by Member State.

2 Employment shifts during the COVID-19 crisis

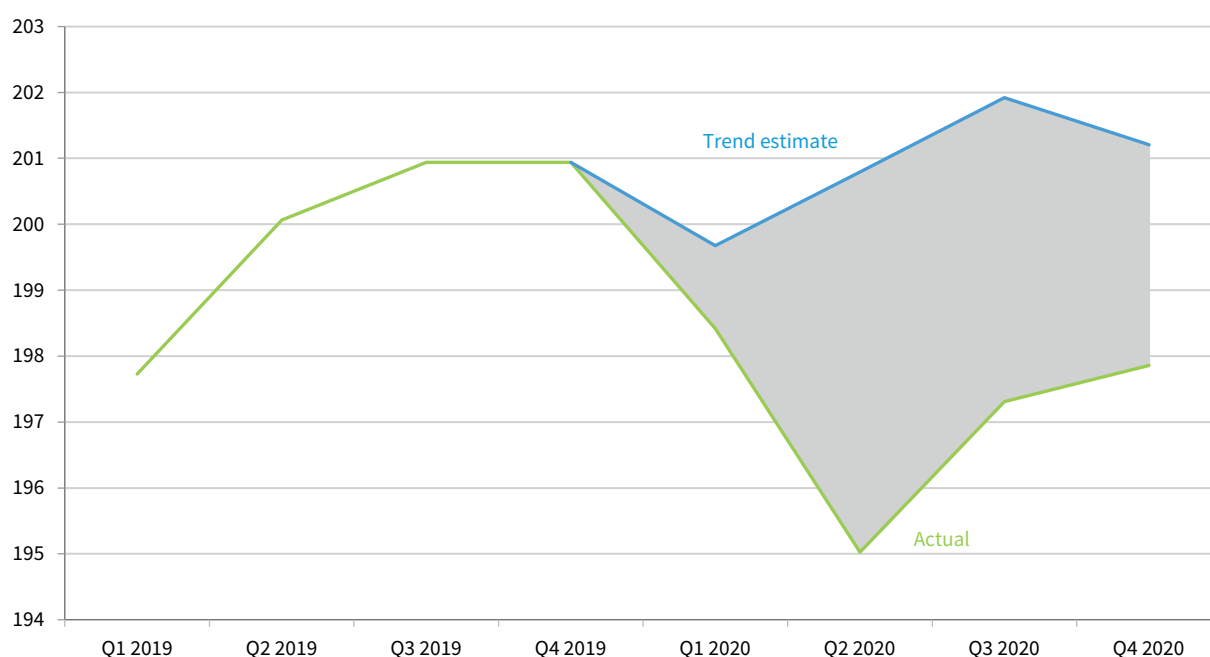
This chapter uses the three indicators outlined in Chapter 1 – employment levels, temporary absences from work and actual weekly hours worked for those who remain employed – to describe the employment shifts that occurred during the COVID-19 crisis up to the end of 2020. The central questions guiding the chapter are as follows. To what extent did the European labour market recover following the unprecedented decline in aggregate employment in the second quarter of 2020? What categories of workers were most affected by the crisis and are there differences across age, gender or contract status? In what Member States, sectors and occupations were the employment effects of the crisis felt the hardest? How did these effects change over time?

Movements in labour market indicators

Employment declines, then rebounds

Figure 1 shows that, in the first quarter of 2020, the EU employment level was already lower than the predicted trend in employment. Furthermore, the predicted seasonal increase in the second quarter did not occur. Instead, there were about 5.8 million fewer people in employment than the predicted trend in the second quarter of 2020 and about 5 million fewer employees than in the second quarter of 2019. The figure also shows that the employment level recovered in the subsequent quarters of 2020, with the fastest recovery being recorded between the second and third quarters amid the relaxation of pandemic-related restrictions. In Q3 2020, the European labour market recovered almost 2.3 million jobs, while in Q4, it gained an additional 0.5 million jobs, despite the seasonal decline predicted by the trend estimate. However, while the gap between actual and trend employment continued to

Figure 1: Actual and trend estimate of the employment level (millions), EU27, 2019–2020



Note: Data have not been seasonally adjusted. The trend estimate uses the Holt-Winters estimator, which accounts for the seasonality of employment data.

Source: Eurostat, Employment by occupation and economic activity (from 2008 onwards, NACE Rev. 2) – 1,000 [lfsq-eisn2] and authors' calculations

narrow, by the fourth quarter of 2020, there was still a difference of 3.4 million jobs between actual and predicted employment levels.

Small uptick in unemployment

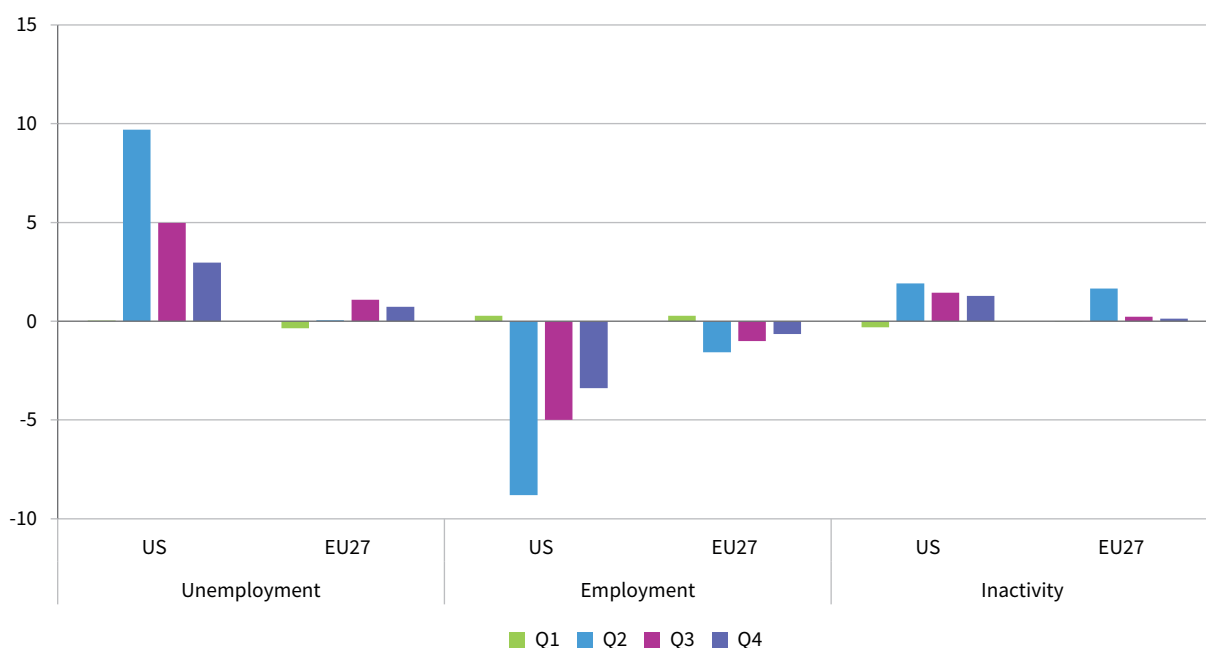
The primary indicator for reporting the state of the labour market during crises – the unemployment rate – showed less dramatic changes between Q3 and Q4 2020 or compared to the previous quarters of 2019. In the EU27, the year-on-year unemployment rate remained almost unchanged during Q2 2020 and subsequently increased in Q3 and Q4 by 1 percentage point and 0.7 percentage points, respectively (Figure 2).

In contrast, joblessness in the US increased much faster. Furthermore, the employment rate registered a much steeper and protracted decline in comparison to the EU. The divergent outcomes between the two regions are explained by the different strategies used to respond to the economic shock produced by the COVID-19 pandemic. The US relied on unemployment insurance benefits to protect the incomes of workers who lost

their jobs. As a result, in April 2020, the US unemployment rate reached the highest recorded level since 1948. How are the differing policy approaches of the EU and the US reflected in aggregate hours worked? According to estimates from the International Labour Organization (ILO), North America fared somewhat worse in this metric in Q2 2020 (-18.4%) than northern (-16.6%), western (-14.8%) and eastern Europe (-13.6%) but better than the hardest hit region, southern Europe (-23.9%), before recovering some ground in Q3 2020 (ILO, 2020a).

The comparatively smaller increase in the unemployment rate in the EU is explained by the policy convergence around the implementation of short-time working schemes and similar measures, with the explicit aim of preserving employment levels and avoiding unemployment. Short-time working schemes allowed companies in Europe to hoard labour and minimise dismissals during lockdowns. Emphasis was placed on maintaining employment and adjusting working time while preserving income from labour (see Box 1 for an overview of short-time working schemes).

Figure 2: Changes in unemployment, employment and inactivity rates (percentage points), year-on-year comparison by quarter, EU27 and the US, 2019–2020



Note: 15–64 years age group.

Source: OECD (2021)

Box 1: Short-time working schemes in Europe

Short-time working schemes are inspired by the German *Kurzarbeit* model and its success in preserving employment levels, in particular during the Great Recession. These schemes provide companies with a strategy to adjust labour inputs and costs in response to economic disruptions by reducing the working time (and hence labour costs) of existing employees rather than resorting to lay-offs.

To stem job losses during the pandemic and guarantee additional social protection to workers, several Member States introduced new short-time working schemes (for example, Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, the Netherlands, Poland and Slovenia).⁸ Others adjusted their existing short-time working or wage subsidy schemes to simplify access, extend coverage (to include non-permanent workers) or increase their generosity (for example, Austria, Belgium, Czechia, France, Germany, Italy, Malta and Spain). Short-time working provision has been implemented in most Member States during this crisis, in contrast to earlier crises when provision was more country-specific (Eurofound, 2021a).

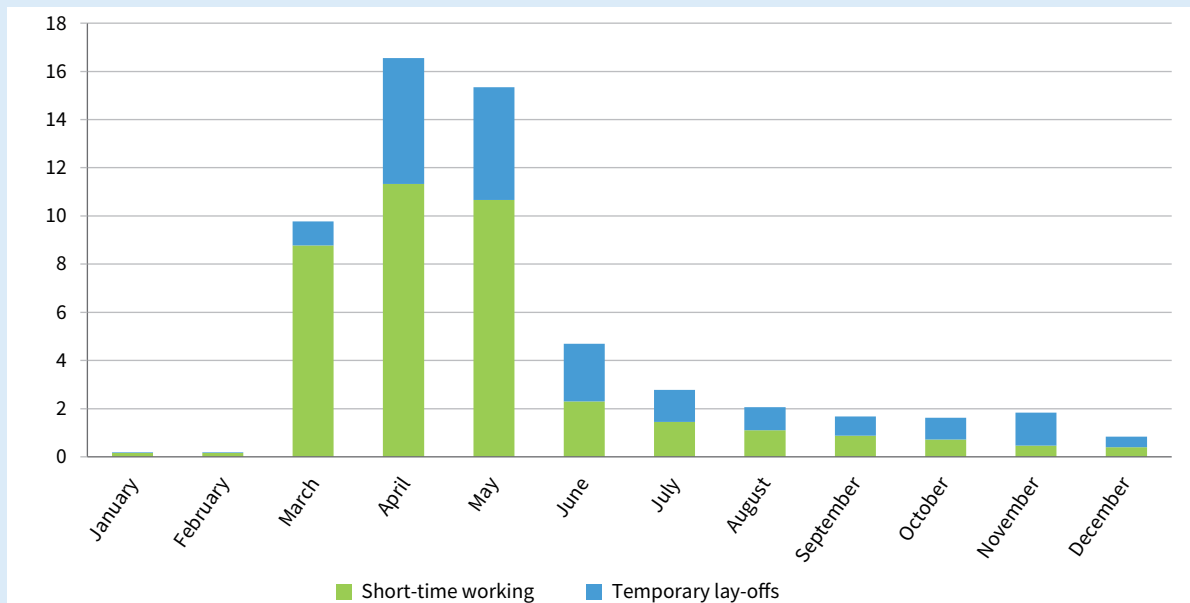
Compared to alternative measures such as the reliance on unemployment benefit schemes as automatic stabilisers during downturns, short-time working schemes have several advantages. For workers, they preserve employment and maintain employability, job security and incomes. For companies, they ensure continuity in the supply of labour and skills while allowing adjustments in production in line with demand. They also minimise costs associated with redundancy and recruitment and, if combined with training, can enhance the skills of employees. For governments, short-time working schemes reduce the fiscal burden on unemployment benefit systems and preserve social security contributions, thus reducing current and future deficits in the social security system. They do so, however, at some cost in terms of budget and potentially delayed labour market adjustments.

There is considerable heterogeneity in the characteristics of short-time working schemes in the EU, which affects their performance. Differences between schemes relate to the circumstances that are covered, the eligibility criteria that govern access, the level of benefits and the duration of benefits. A distinction can also be made between schemes in which working time is reduced but employees still work on an ongoing basis and those in which temporary lay-offs are made, whereby workers do not work at all for a specified period of time, but their employment is maintained and they receive a certain level of income (Eurofound, 2021a).

In 2020, 35 million people benefited from short-time working schemes in the EU (European Commission, 2021a), many more than during the Great Recession. As shown in Figure 3, the number of jobs supported through short-time working schemes peaked during Q2 2020 and fell gradually in the subsequent quarters. Although the coverage of short-time working schemes is difficult to estimate owing to data limitations, preliminary assessments indicate a high degree of heterogeneity across Member States in terms of generosity, take-up and coverage (Eurofound, 2021a; European Commission, 2021a).

⁸ Pre-existing short-time working schemes in Ireland and the Netherlands were replaced by temporary wage subsidy schemes in response to the COVID-19 crisis.

Figure 3: Total number of jobs supported by government measures (millions), by month, EU27, 2020



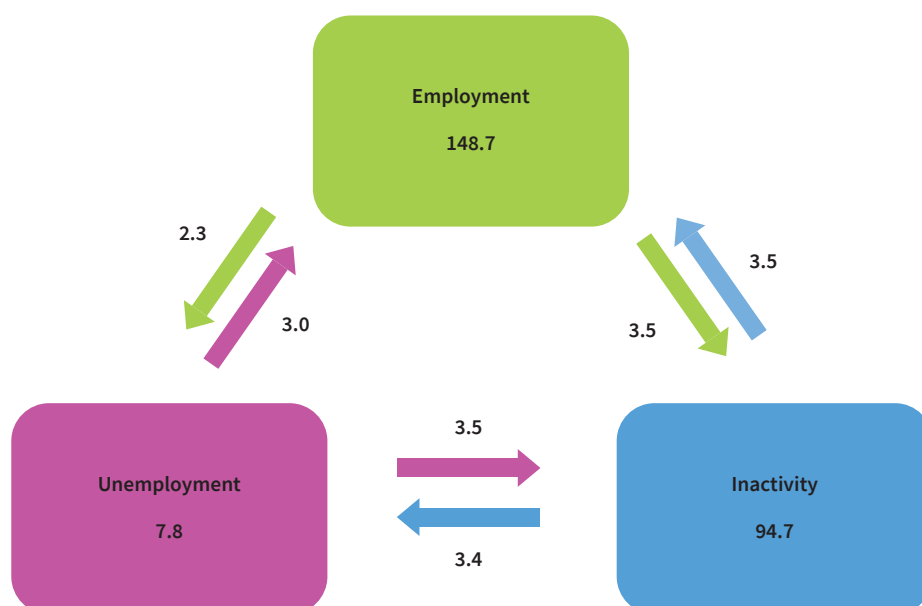
Source: Eurostat, Jobs benefiting from COVID-19 governmental support measures dataset

Labour market transitions indicate recovery

Labour market transitions data also capture the partial recovery of the European labour market in the final two quarters of 2020 (Figure 4). While in the second quarter, the net flow out of employment into unemployment (+1.2 million) and inactivity (+2.6 million) was the highest recorded for any quarter in the past decade (Eurofound, 2021a), by Q4 the data indicate a reduction

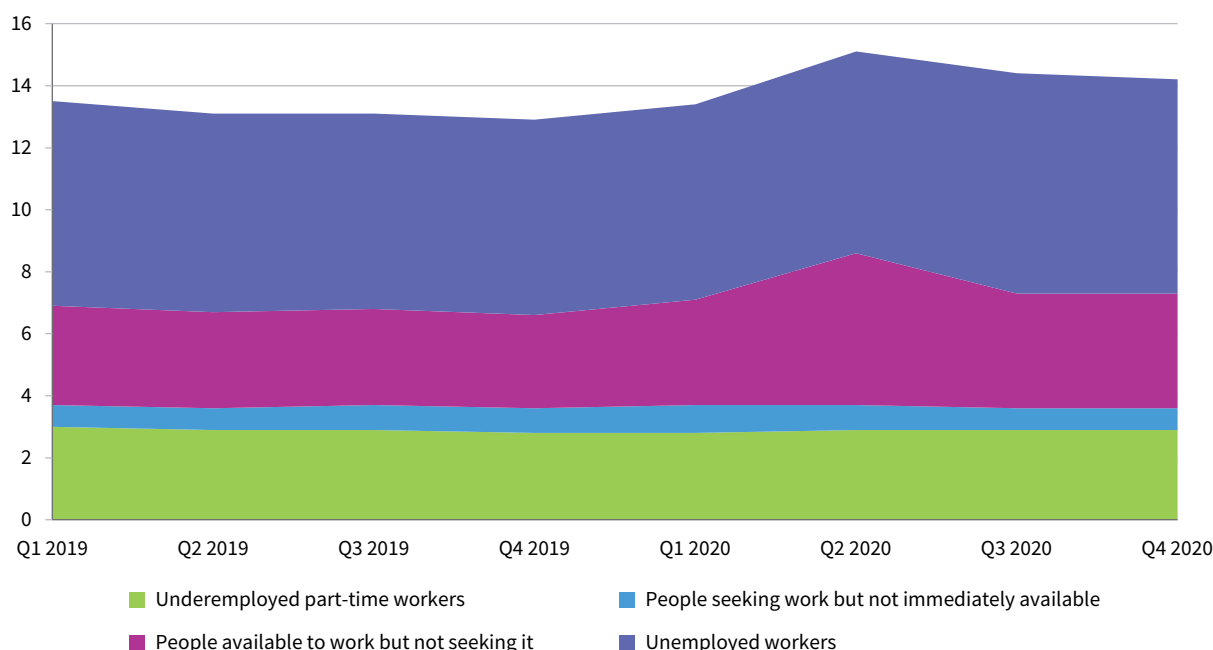
in the scale of transitions. Between Q3 and Q4, net flows out of unemployment into employment (+0.7 million) outpaced net flows from employment into inactivity, with the latter being employment neutral. Furthermore, transitions from unemployment into inactivity contributed to a slight increase in the rate of inactivity (+0.1 million). Compared to Q2, fewer people transitioned from employment to inactivity (-1.9 million) and more people went back to work from unemployment (+1.1 million) during Q4.

Figure 4: Transitions in labour market status (millions), EU27, Q3 2020–Q4 2020



Notes: Based on seasonally adjusted data; data exclude Germany.

Source: Eurostat (2021)

Figure 5: Changes in labour market slack (percentage points), EU27, 2019–2020

Source: EU-LFS quarterly data (authors' calculations)

Drop in labour market slack

The slight decline in the unemployment rate between Q3 and Q4 2020 has also contributed to a decline in labour market slack (unmet demand for employment) in the EU27.⁹ Figure 5 presents the evolution of all components of labour market slack from Q1 2019 to Q4 2020. The figure shows that two components, underemployed part-time workers and people seeking work but not immediately available, have remained largely unchanged since 2019. In contrast, the share of those available to work but not seeking it increased by 1.8 percentage points between Q2 2019 and Q2 2020, when it peaked at 11 million. By Q4 2020, the size of this group declined to 3.7% or 8.1 million people – a level similar to that registered in the aftermath of the global financial crisis. Therefore, the change in the share of people available to work but not seeking it has driven changes in labour market slack.

Changes in three indicators Q2–Q4 2020

Table 1 overleaf shows that the three indicators of declining labour input used in this report – employment level, actual weekly hours worked and temporary absences from work – recovered some ground between Q2 and Q4 2020 after suffering their sharpest falls year on year in Q2 2020.

Table 1 also shows that the drop in employment level varied by Member State and that those that experienced the largest declines in Q2 (Spain, Bulgaria, Estonia and Italy) continued to do so in Q4. Three – Luxembourg, Poland and Slovenia – registered increases in their employment levels in Q4, although in the last two, the increase was modest.

Actual weekly hours worked remained in decline in Q4 2020, a trend that began in Q2 2020. The number of hours worked declined by around 1.4% in the last quarter of 2020 compared with the previous quarter and was 5.3% lower in comparison with the last quarter of 2019 (European Commission, 2021b). The largest declines in working hours in Q4 were registered in Czechia (-2.8 hours per week), Austria (-1.8 hours per week)

⁹ Eurostat defines labour market slack as the total sum of all unmet employment demands and includes four groups: (1) unemployed people as defined by the ILO, (2) underemployed part-time workers (that is, part-time workers who want to work more), (3) people who are available to work but are not looking for it, and (4) people who are looking for work but are not available for it. In the Eurostat operationalisation of labour market slack, categories 3 and 4 are considered the 'potential additional labour force', that is, people who are not in the labour force but who have a stronger attachment to the labour market than other economically inactive persons. Importantly, this definition of slack does not include additional forms of slack that arose during the COVID-19 pandemic, such as those on short-time working schemes or those who were laid off temporarily. These additional categories are included in the broader definition of labour market slack developed by Eurofound (2017a) and are captured by the 'employed but not working' group in the analysis that follows.

Table 1: Changes in employment levels, weekly hours worked and share of employees temporarily absent from work, year on year by quarter, EU Member States, 2019–2020

Unit	Employment		Actual weekly hours worked		Temporary absences from work	
	%		Hours		Percentage points	
	Q2	Q4	Q2	Q4	Q2	Q4
Austria	-3.0	-1.3	-2.6	-1.8	4.6	5.0
Belgium	-1.9	-1.0	-1.4	-0.2	12.2	5.6
Bulgaria	-5.6	-3.0	-0.7	-0.3	5.6	1.6
Croatia	-0.6	-2.5	-0.9	0.2	7.2	2.8
Cyprus	-0.1	-0.4	0.2	-0.7	22.7	2.1
Czechia	-1.6	-1.6	-0.6	-2.8	7.2	4.0
Estonia	-3.6	-2.8	-1.1	-0.7	4.6	-1.1
Finland	-3.1	-1.4	0.4	0.3	3.4	-0.2
France	-1.8	-0.6	-1.1	0.3	13.6	2.1
Greece	-2.8	-0.6	-1.3	-0.3	20.3	8.9
Hungary	-2.3	-0.8	0.4	-0.9	5.7	2.1
Italy	-3.6	-1.8	-1.3	-0.7	16.3	3.7
Latvia	-1.5	-3.0	-0.2	-0.4	5.1	1.6
Lithuania	-2.2	-2.0	-0.7	-0.6	7.8	1.5
Luxembourg	0.0	3.0	-1.5	-0.4	5.8	1.9
Malta	2.8	-0.8	-0.3	-1.6	12.3	3.9
Netherlands	-0.6	-0.4	-0.8	-0.3	3.1	1.3
Poland	-1.3	0.5	-0.8	-0.1	5.9	1.6
Romania	-3.5	-1.7	-1.4	-0.3	8.6	0.5
Slovakia	-2.5	-2.0	0.0	-0.8	15.7	5.6
Slovenia	-2.3	0.4	0.0	1.0	10.7	4.1
Spain	-6.1	-3.2	-0.4	-0.4	20.6	2.5
Sweden	-1.8	-1.1	-0.5	-0.8	1.1	1.5
EU27	-2.5	-1.5	-0.9	-0.5	9.7	2.8

Note: Data not available for Germany; Denmark, Ireland and Portugal excluded because 2020 data are incomplete.

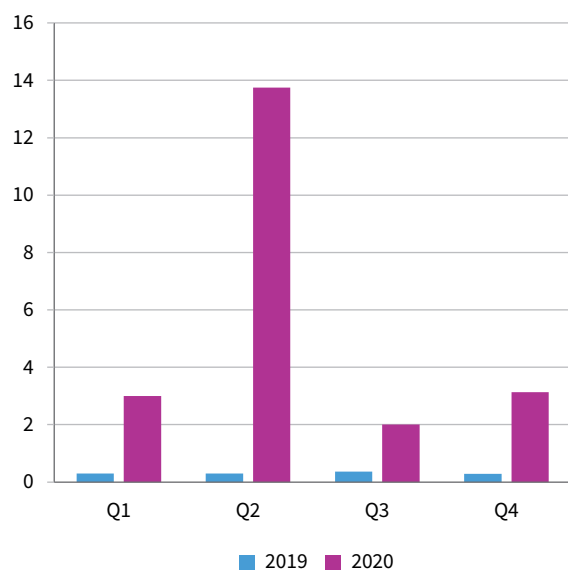
Source: EU-LFS quarterly data (authors' calculations)

and Malta (-1.6 hours per week). Austria was also one of the Member States that registered the largest year-on-year declines in hours worked during Q2 2020 (-2.6 hours per week). Several (Slovenia, Finland, France and Croatia) registered modest year-on-year increases in weekly hours worked in Q4.

During Q4 2020, 11% of employees were temporarily absent from work, an increase of 2.8 percentage points year on year. However, compared with Q2 2020, the share had declined by 6 percentage points. This indicator increased in all but two countries year on year to Q4 2020. In four Member States (Austria, Belgium, Greece and Slovakia), the year-on-year changes in the share of employees absent from work exceeded 5 percentage points during Q4 2020.

Trends in the share of employees temporarily absent from work are mainly driven by the number of temporary lay-offs. As Figure 6 demonstrates, the number of temporary lay-offs in 2020 far exceeded those in the previous year. In Q1 2020, 3 million people were absent from work owing to temporary lay-offs, a 2.7 million year-on-year increase. In Q2 2020, during the first wave of lockdowns, the number of temporary lay-offs exploded to 13.8 million. This was followed by a steep decrease in Q3 2020 to only 2 million and a rebound to 3.1 million in Q4 2020 as the second wave of lockdown measures was implemented across Member States.

Figure 6: Number of temporary lay-offs (millions), by quarter, EU27, 2019–2020



Source: Eurostat, Absence from work by main reason, sex and age group – quarterly data [lfsi_abs_q]¹⁰

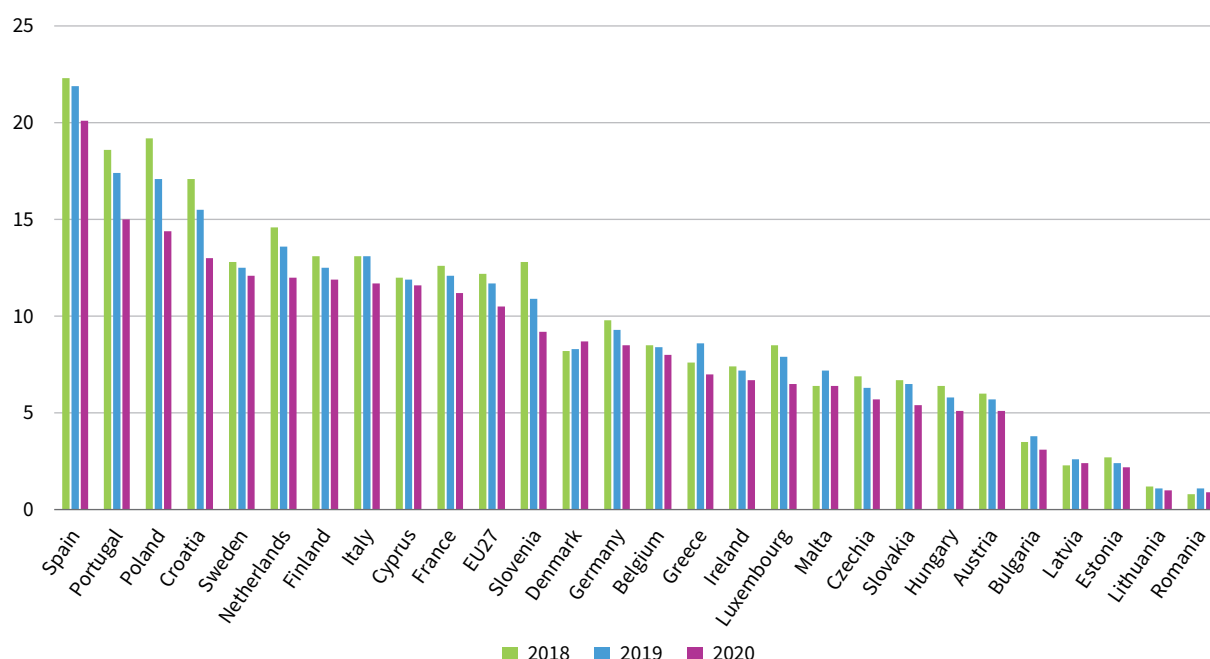
Differences by employment and demographic variables

Employment contract

Temporary workers have been disproportionately affected by the crisis. In the EU, in 2020, their numbers shrank by 5% year on year in Q1 (1.2 million jobs), 16% in Q2 (4.2 million jobs), 12% in Q3 (3.1 million jobs) and 10% in Q4 (2.5 million jobs). Overall, the loss of temporary contracts in 2020 accounted for 85% of the decline in aggregate EU employment. While the non-renewal of temporary contracts is a well-documented reaction to economic crises (Eurofound, 2021a), the scale of the job loss for temporary workers in 2020 was unprecedented. The loss in temporary employment was driven by net declines in several countries with large labour forces.

As Figure 7 demonstrates, except for Denmark, all Member States experienced a decline in temporary employment between 2019 and 2020. Five – France, Italy, the Netherlands, Poland and Spain – accounted

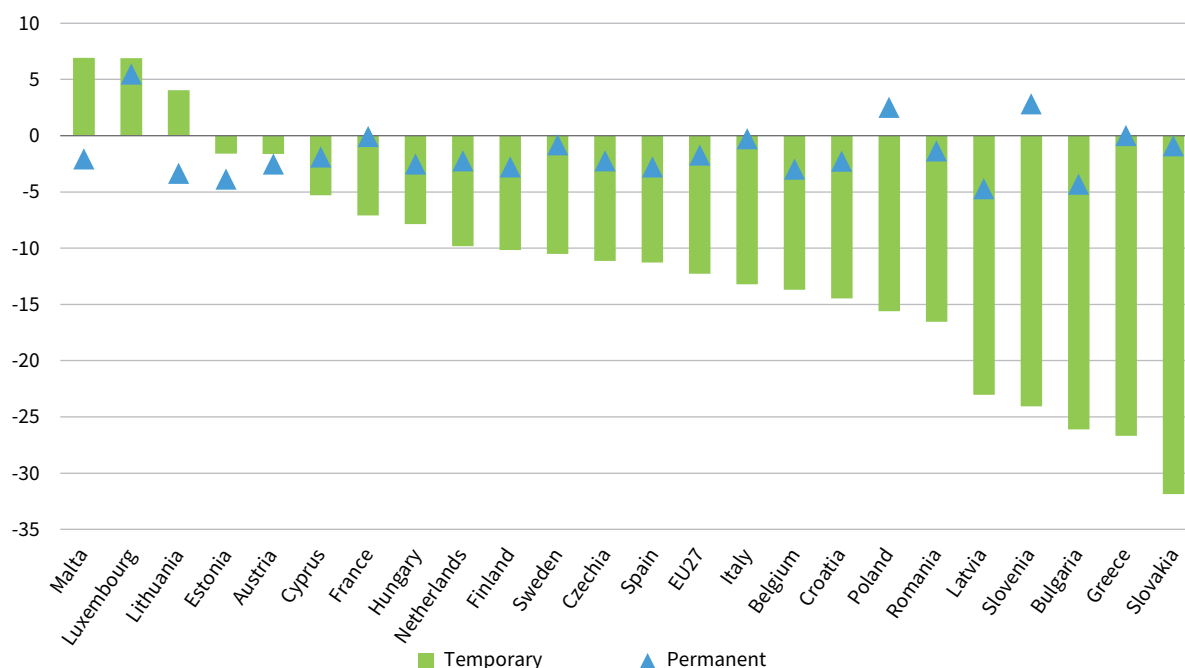
Figure 7: Temporary employees as a proportion of the total number of employees (%), EU Member States, 2018–2020



Note: 20–64 years age group

Source: Eurostat, Temporary employees as percentage of the total number of employees [tesem110]

¹⁰ To measure the impact of the COVID-19 pandemic on the labour market, Eurostat introduced additional labour market indicators that estimate absences from work. People absent from work are considered as employed if there is a formal attachment to the job. This can be, for example, the continued receipt of a wage or salary, combined with an assurance of a return to work (or an agreement on the date of return) following the end of the contingency. People can be absent from work for a number of reasons, among which are holidays, illness and temporary layoff. Those who have been laid off are classified as employed if they have an assurance of return to work within a period of three months or they receive at least 50% of their wage or salary from their employer.

Figure 8: Employment change (%), by employment contract, EU Member States, Q4 2019–Q4 2020

Note: Data not available for Germany; Denmark, Ireland and Portugal excluded because 2020 data are incomplete.

Source: EU-LFS (authors' own calculations)

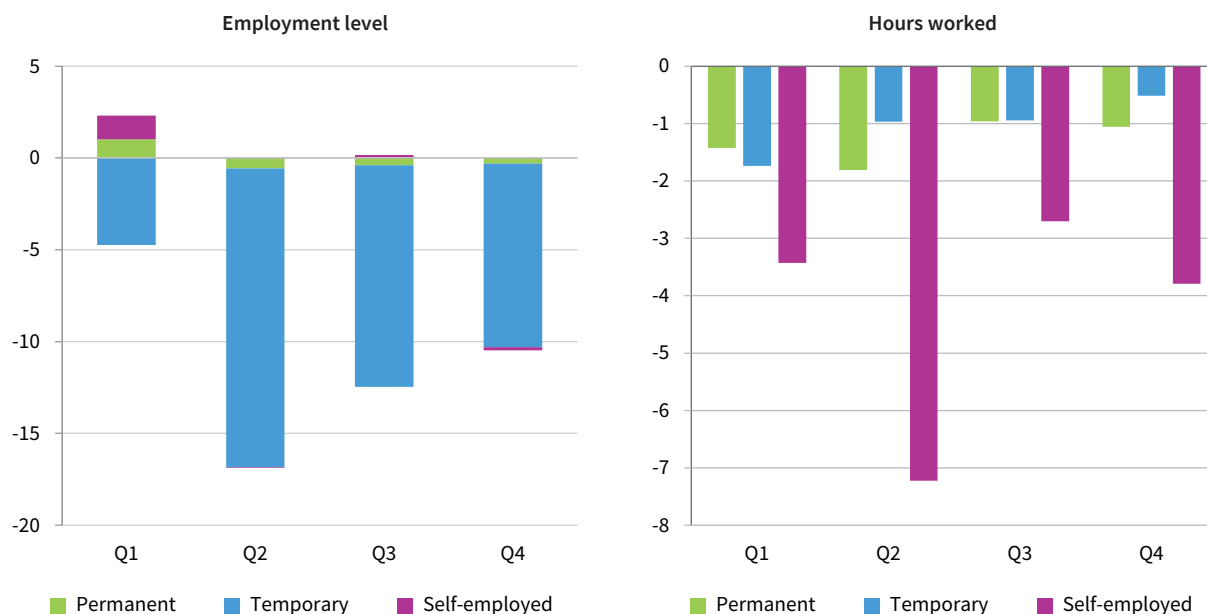
for 60% of total losses in temporary employment in the EU in 2020. Spain shed a net one million temporary jobs in the second quarter of 2020 and another million in the two subsequent quarters. Poland and Italy each lost 0.4 million temporary contracts or more in the last three quarters of 2020, while France lost half a million in Q2 and another half a million in the last two quarters of 2020. Smaller countries also registered sharp falls in temporary employment. On average, Bulgaria, Greece, Slovakia and Slovenia shed one-fifth of their temporary employment in 2020.

As shown in Figure 8, in all Member States but Austria, Estonia, Lithuania and Malta, relative employment declines have been substantially higher for temporary than for permanent employees. Compared to the relative change in temporary employment for the EU27 (-12%), that of the Member States ranges from -1.6% in Estonia to -31% in Slovakia. At the same time, permanent employment declined in relative terms by less than 1% in France, Greece, Italy, Slovakia and Sweden, compared to more than 3% in Bulgaria, Estonia, Latvia and Lithuania.

In contrast, employment levels for workers on permanent contracts and for the self-employed remained relatively stable in 2020 (Figure 9). In the case of dependent employees, this is probably influenced by the use of short-time working schemes and other government support measures that have targeted employment by subsidising shorter working hours. Indeed, as the right panel in Figure 9 demonstrates, workers on permanent contracts and the self-employed have registered larger declines in the number of hours worked than workers on temporary contracts.

Somewhat unsurprisingly, the contraction of hours worked was sharpest in the second quarter of 2020. The drop in working hours was particularly sharp for the self-employed, as the lockdown and social-distancing measures caused a demand shock in economic activities in which a large share of workers are self-employed (accommodation and food services, construction, arts and entertainment). In addition, notwithstanding the extension of income support by some governments to the self-employed, this group has less access to unemployment benefits and is more likely to maintain some work activity at reduced hours rather than cease activity altogether.

Figure 9: Change in employment levels and hours worked (%), by employment contract and self-employment, EU27, 2019–2020



Source: EU-LFS quarterly data (authors' calculations)

Age and gender

As previously noted by Eurofound (2021a), the crisis has disproportionately affected young workers. Youth joblessness has been a recurring consequence of recessions, as young people have lower levels of job security and are at greater risk of job loss. The slow pace of job creation for labour market entrants and the lack of a focused policy response were enough to take youth unemployment rates to record levels following the Great Recession. There were consequences in terms of long-lasting scarring effects from long-term unemployment and decreasing levels of optimism about future prospects (Scarpetta et al, 2010; Bell and Blanchflower, 2011; Eurofound, 2017b). This time is no different. As young workers are mostly employed in non-essential sectors, which were forced to close, or in occupations not compatible with remote working, the challenges facing them during the crisis were relatively greater. According to the *Living, working and COVID-19* e-survey, young people and those not working reported the lowest levels of mental well-being during the crisis (Eurofound, 2020b).

The 15–24 years age cohort experienced the sharpest reductions in employment year on year in both Q2 and Q4 2020, with the decrease in employment level being larger for women than for men (Table 2). The greater employment loss experienced by this cohort in Q4 was potentially driven by the second wave of lockdowns, which continued to have an impact on activity in the sectors that employ a large proportion of young workers (for example, hospitality and leisure).

Notwithstanding the variation in restrictive measures adopted across Member States, closed sectors included numerous service occupations with high female employment, such as jobs in hospitality and restaurants. With schools and day-care facilities closed, and taking account of the unequal distribution of childcare and domestic duties in families, the double burden on working mothers asserted itself with a vengeance during the crisis.

According to the latest round of the *Living, working and COVID-19* e-survey in March 2021, the proportion of working female parents reporting that they were too tired after work to do household chores ranged between 30% and 44%, depending on whether they worked from home or at their employer's premises and whether or not they had children under age 12. The equivalent figures for male parents were 7–24 percentage points lower (Eurofound, 2021b). This difference in work–life balance between men and women has been documented in all three rounds of the survey since April 2020 and was particularly high among parents of young children. As women also tend to have less stable employment conditions (they account for higher shares of part-time and temporary contracts) with lower pay, the crisis was likely to have affected them disproportionately compared to men, not only in its initial phases, but also in terms of their future employment opportunities (Alon et al, 2020a).

To what extent has this crisis been a 'shecession' (or 'she-recession'), in contrast to the Great Recession? While, in the latter, men were more negatively affected owing to their greater presence in production industries

Table 2: Change in employment levels, weekly hours worked and share of employees temporarily absent from work, year on year by quarter, by age and gender, EU27, 2019–2020

	Employment		Actual weekly hours worked		Temporary absences from work	
Unit	%		Hours		Percentage points	
	Q2	Q4	Q2	Q4	Q2	Q4
Men, 15–24 years	-9.5	-7.0	-0.1	-0.2	11.4	3.0
Women, 15–24 years	-10.2	-7.5	-0.2	0.2	12.7	4.3
Men, 25–54 years	-2.9	-1.9	-1.3	-0.8	8.9	2.5
Women, 25–54 years	-2.6	-1.4	-0.8	-0.3	10.7	3.4
Men, 55–64 years	1.5	0.7	-1.2	-0.7	8.4	2.4
Women, 55–64 years	1.4	1.7	-0.6	-0.4	9.4	2.2
Men, 65+ years	0.0	0.4	-1.0	-0.5	7.7	1.0
Women, 65+ years	-2.1	0.7	-0.8	0.1	9.5	1.9

Source: EU-LFS quarterly data (authors' calculations)

(Hoynes et al, 2012; Eurofound, 2017c), the initial impacts of the pandemic appeared to be worse for women than for men in terms of labour market outcomes (Adams-Prassl et al, 2020; Alon et al, 2020b; Fabrizio et al, 2020; Möhring et al, 2021; Reichelt et al, 2021). Data from later in 2020 show female employment levels recovering faster than male levels and, by Q4 2020, employment headcount declines during the crisis were greater relatively and absolutely for men than for women. However, headcount shifts represent just one aspect of the gender-related impact of COVID-19 on the labour market. Using German individual-level panel data for the first two waves of the crisis, Möhring et al (2021) found that women had a higher probability of being temporarily exempted from work, a lower probability of being on short-time working (with its associated benefits) and a higher probability of working 'on site' rather than at home (and therefore of COVID-19 exposure).

Table 2 shows that workers aged 25–54 years experienced much lower declines in employment than younger people. Although the differences in job loss between men and women were not as large as in the case of younger workers, for this age cohort, net job loss was larger for men than for women. For the post-retirement age cohort (65+ years), employment levels in Q2 2020 remained relatively stable for men, while, for women, they declined by 2%. In Q4 2020, employment levels for both men and women in the 65+ years cohort resumed their pre-pandemic expansion, although at a slower pace.

The largest reductions in weekly hours worked were experienced by men in the 25–54 years and 55–64 years age cohorts. In contrast, women were less likely to experience reductions in working time but were more likely to be temporarily absent from work, or

furloughed, than men. As Table 2 demonstrates, this was the case for nearly all age cohorts in both Q2 and Q4. However, emerging evidence from national data suggests that this effect might vary by Member State. For example, in Germany, women were more likely to lose their jobs and be on unpaid furlough than men (Möhring et al, 2021). In Ireland, more men than women received payments under both the Pandemic Unemployment Payment (PUP) and Temporary Wage Subsidy Scheme (TWSS), with women being more likely to be overrepresented among PUP recipients and men amongst TWSS recipients (Hennessy and McGauran, 2021). Gender differences across countries stem from the institutional characteristics of pandemic-support schemes and the mix of lockdown measures implemented by governments.

Gender and sector

Table 3 further disaggregates changes in employment levels, by gender and sector. As expected, the most significant relative losses in employment were experienced in female-dominated, contact-intensive sectors such as accommodation and food service activities and administrative and support service activities. In the accommodation sector, the year-on-year job losses for women approached 20% in both Q2 and Q4. On the other hand, in large male-dominated sectors such as manufacturing, construction, and transport and storage activities, the relative job losses across genders do not display a clear pattern. However, men have experienced a larger aggregate loss in employment. In the arts, entertainment and recreation sector, the scale of job losses for men and women varied by quarter. In Q2 and Q3, men registered more sizeable job losses, while, during Q4, employment declined for men by 8.6% and for women by 11.8%.

Table 3: Changes in employment (%), year on year, by gender and sector, EU27, 2019–2020

NACE sector	Q1		Q2		Q3		Q4	
	Men	Women	Men	Women	Men	Women	Men	Women
A – Agriculture, forestry and fishing	0.3	-3.9	-1.2	-2.8	-1.5	-3.2	-2.1	-3.2
B – Mining and quarrying	4.0	2.5	4.4	10.8	-2.6	4.2	-5.2	7.1
C – Manufacturing	1.9	-1.1	-0.9	-2.9	-1.9	-3.1	-0.9	-1.3
D – Electricity, gas, steam and air conditioning	2.4	-7.3	6.9	7.7	7.6	14.6	2.9	16.0
E – Water supply, sewerage, waste management	1.3	16.8	-1.9	-9.1	2.6	-6.1	-0.4	-11.7
F – Construction	-5.1	1.1	-6.7	-6.1	-3.3	-3.4	-3.8	0.3
G – Wholesale and retail trade	-3.7	-0.6	-7.7	-4.6	-6.1	-2.0	-4.6	-2.9
H – Transportation and storage	-2.6	-5.9	-7.1	-5.1	-5.3	-7.0	-4.4	-7.0
I – Accommodation and food service activities	-1.9	-3.6	-15.0	-19.7	-11.6	-15.2	-17.0	-19.6
J – Information and communication	5.7	8.5	9.5	9.0	10.7	4.7	10.1	11.1
K – Financial and insurance activities	5.6	4.9	1.4	0.6	0.7	1.6	3.3	2.2
L – Real estate activities	8.9	11.0	9.2	1.6	7.0	3.7	10.9	13.3
M – Professional, scientific and technical activities	1.2	2.7	2.9	0.9	-1.4	-0.4	-1.3	0.5
N – Administrative and support service activities	-5.9	-4.0	-10.4	-9.7	-8.0	-10.6	-8.9	-11.1
O – Public administration and defence	2.9	6.2	0.8	5.5	3.7	5.6	3.4	7.4
P – Education	1.7	0.9	2.9	0.6	3.7	-0.8	5.3	2.5
Q – Human health and social work activities	-0.2	-1.5	0.9	-1.8	-0.6	-1.6	-1.2	-1.2
R – Arts, entertainment and recreation	4.7	0.1	-8.8	-4.2	-6.8	-4.3	-8.6	-11.8

Source: EU-LFS quarterly data (authors' calculations)

In contrast, in some sectors where telework is possible (see Chapter 4 for a more detailed analysis), there was employment growth for both genders. For example, this was the case in the information and communications and financial and insurance activities sectors. Although the information and communications sector is male

dominated, during 2020, there was no clear gender pattern in employment growth. While, during Q1 and Q4, the relative employment of women increased more than that of men, in Q2 and Q3, the opposite was the case.

Summary: Employment impact on different groups of workers

Quarterly indicators demonstrate that the COVID-19 pandemic has generated severe shifts in employment at both the extensive (employment level) and intensive (hours worked) margins. The significant loss in aggregate employment during Q2 2020 was partially recovered in subsequent quarters, although not at a pace that would warrant calling the rebound of the labour market a V-shaped recovery. By the end of 2020, the European economy still registered a deficit of 3.4 million jobs compared with predicted trends.

The pandemic has been felt disproportionately by different groups of workers. Workers on temporary contracts accounted for the large majority of employment losses in all quarters of 2020. The recovery in employment levels for this group was muted, while they were less likely to be protected by pandemic support schemes (Eurofound, 2021a; European Commission, 2021a). Women, young workers and low-paid service workers were also disproportionately affected by the pandemic. Although the long-term impact of this crisis is difficult to predict, an unbalanced recovery could contribute to increasing the existing labour market inequalities.

Employment shifts across the job–wage distribution

This section uses the ‘jobs approach’ methodology of the European Jobs Monitor (Eurofound and European Commission Joint Research Centre, 2019) to analyse employment shifts across the job–wage distribution during the early phases of the crisis. 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 a health professional in the health sector or a sales assistant in the retail sector. Ranking jobs defined in this way by mean or median hourly wage allows us to see where in the wage distribution employment is being created or, as in the current recession, being destroyed.

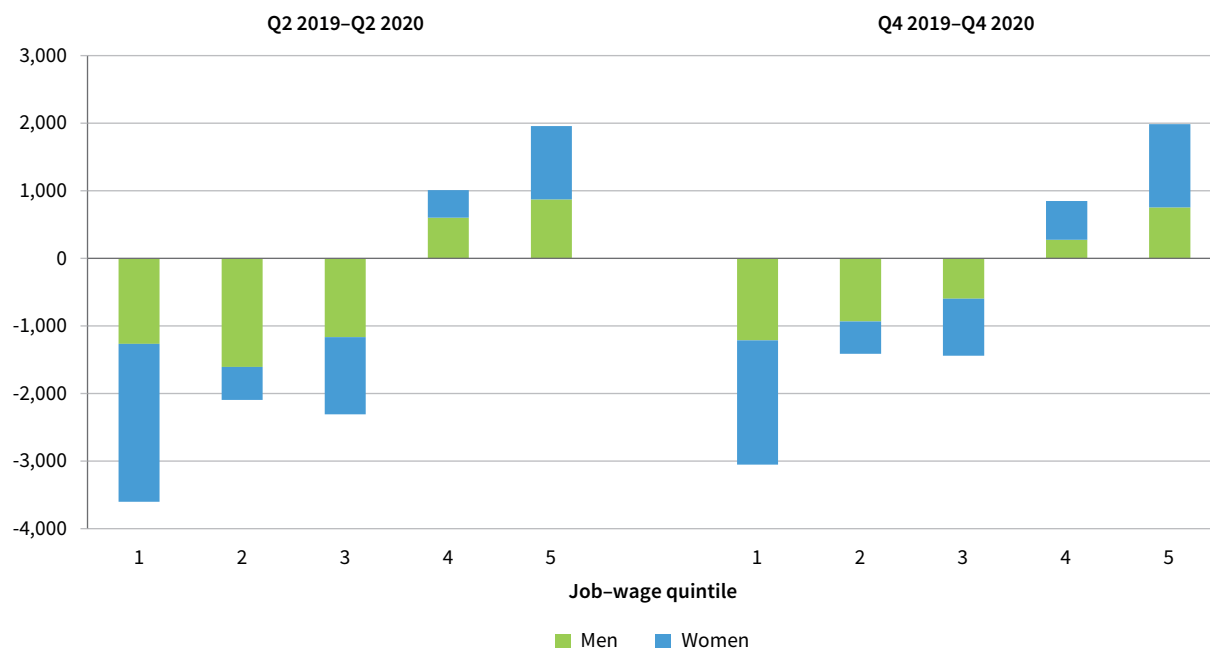
In an earlier analysis in 2021, a comparison of the initial impacts of COVID-19 (up to Q2 2020) with those of the global financial crisis a decade earlier showed that employment loss was concentrated in the lowest job–wage quintile and especially among low-paid female workers (Eurofound, 2021a). By contrast, the financial crisis induced the sharpest losses in the middle

of the job–wage distribution, with much more severe impacts on male employment. These differences, in large part, reflect the different sectors that were most affected by the different crises – construction and manufacturing in the aftermath of the financial crisis and accommodation, transport, food and beverages, and others during the pandemic.

As Figure 10 illustrates, job losses were very much bottom-skewed in the wage distribution. Net employment losses were sharpest in bottom-quintile jobs and occurred only in the bottom three quintiles. Employment grew in the top two quintiles, again with a strong skew toward the best-paid, top-quintile jobs.¹¹ Women accounted for a roughly equal share of job loss compared to men in the initial phase of the pandemic (-2.5 million versus -2.6 million to Q2 2020) but somewhat less in the remainder of 2020 (-1.4 million versus -1.7 million in the 12 months to Q4 2020). Female employment was more sharply ‘upgrading’ than male employment, with stronger growth in well-paid jobs but also greater employment loss in low-paid jobs; women tend to be overrepresented in sectors with a high level of social contact and thus were most affected by lockdown measures.

¹¹ One consequence of this is that average wages are likely to have increased for purely compositional reasons.

Figure 10: Employment shifts (thousands), year on year, by job-wage quintile and gender, EU27, 2019–2020 (Q2 and Q4)

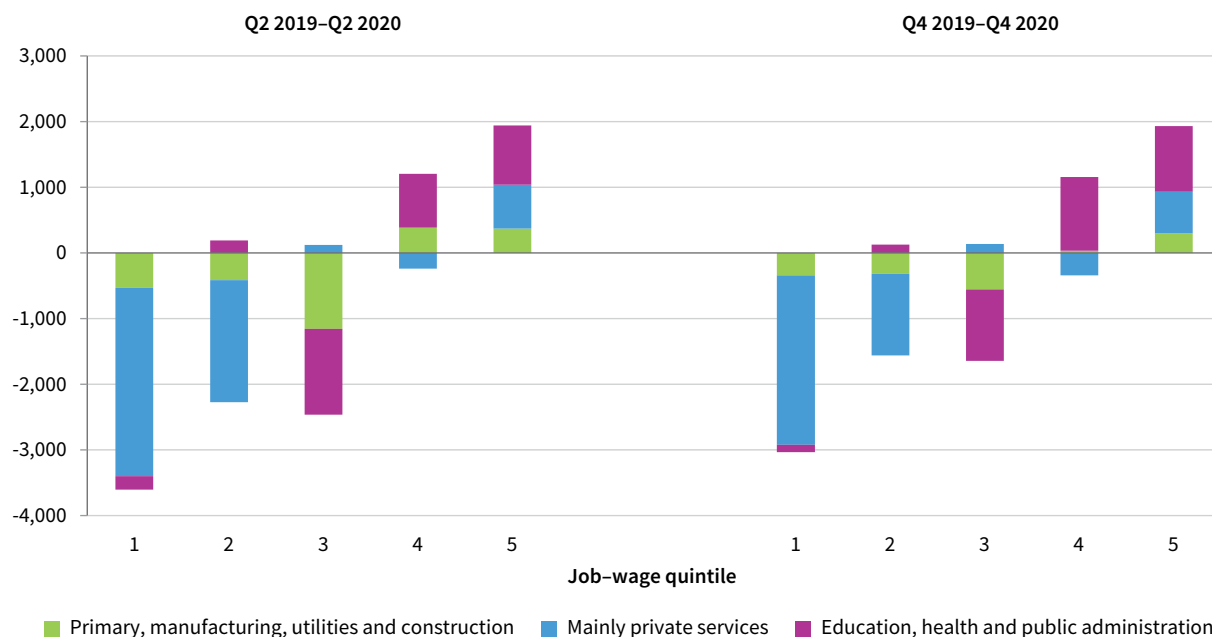


Source: EU-LFS and Structure of Earnings Survey (SES) (authors' calculations)

However, the patterns of job loss by quintile changed very little between the periods of the first and second waves of the pandemic. It was the same jobs, occupations and sectors that were initially most affected by the crisis that were most likely to record year-on-year declines in employment, albeit at a lower level, until the end of 2020.

Employment continued to grow in jobs accounting for the best-paid 20% of employment (those in the top quintile), with nearly two million net new jobs created in both periods. There was also significant growth in employment in the second quintile. Over all recent periods since the 1990s, aggregate employment growth in the EU during both recessions and periods of expansion alike has been relatively strongest in well-paid jobs (Eurofound and European Commission Joint Research Centre, 2019).

This structural growth in well-paid employment may have weakened in absolute terms during the crisis – owing to curtailed economic activity more generally – but appears to have strengthened in relative terms vis-à-vis the rest of the employment structure. As shown in Figure 11, predominantly state-funded sectors (education, health and public administration) in particular contributed to growth in the top two quintiles (while shedding employment in mid-paid jobs). The primary, construction, manufacturing and utilities sectors shed employment in mid- and low-paid jobs (but on nothing like the scale of losses experienced during the global financial crisis). These combined sectors also posted modest gains in well-paid, professional jobs. Meanwhile, the sharpest employment losses were experienced in private services sectors, which accounted for over 80% of jobs lost in the two lowest paid quintiles. These sectoral patterns of relative employment shifts were consistent throughout 2020. The modest recovery from the sharp falls in the initial phase of the downturn was attributable mainly to reduced employment losses in low- and mid-paid jobs.

Figure 11: Employment shifts (thousands), year on year, by job-wage quintile and broad sector, EU27, 2019–2020 (Q2 and Q4)

Source: EU-LFS and SES (authors' calculations)

The single job affected most by the pandemic has been personal service workers in the accommodation and food service activities sector (Table 4). This is a low-paid, bottom-quintile job, typically with limited entry requirements in terms of qualifications – but it also has a relatively high education profile because it is a ‘young’ sector and can serve as a stepping-stone job for labour market entrants, including those with third-level qualifications. Given the high levels of social contact involved, activity has been severely curtailed for job holders since the advent of the pandemic. This job alone accounted for nearly one million job losses year on year, with only a marginal improvement registered

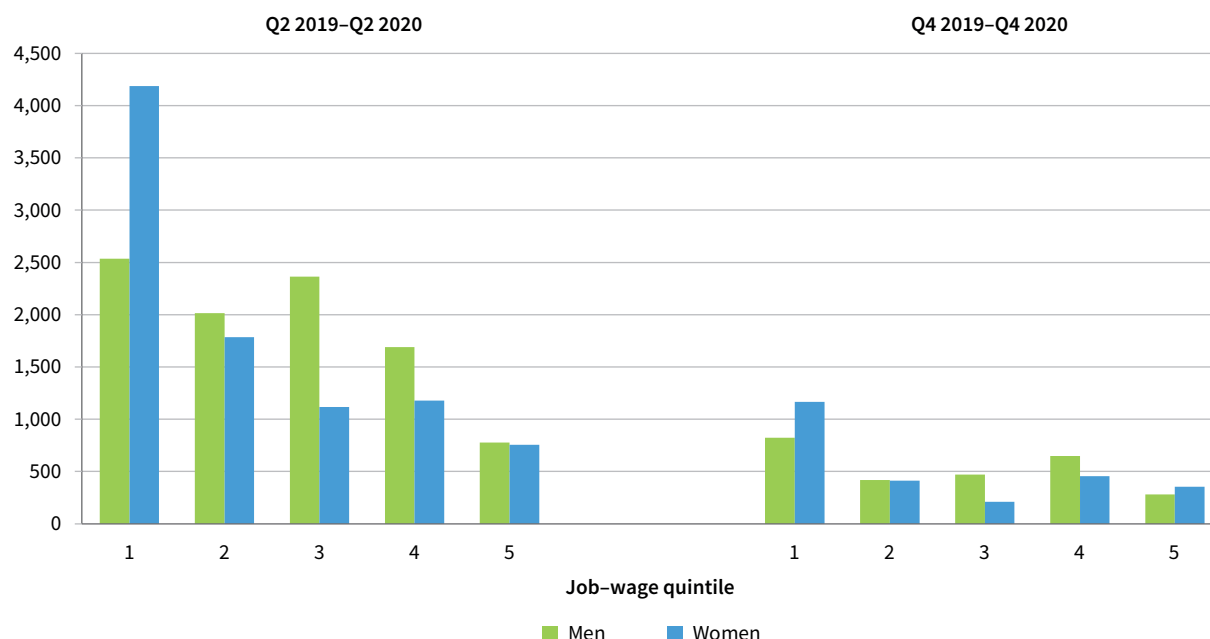
between Q2 2020 and Q4 2020. Female workers accounted for a somewhat greater share of these losses than their proportion of employment in the job (where they make up 51%). Retail sales workers – the largest employing job in the EU27, accounting for 1 in 20 workers – is the other job that recorded very high employment losses for both men and women. The closure of much non-essential retail during waves one and two of the crisis induced just under a million job losses year on year in Q2 2020, reducing to around 750,000 by the end of 2020. Losses were greatest among female workers in this predominantly female job (where they account for 66% of employment).

Table 4: Top three jobs with biggest employment losses, by gender, EU27, 2019–2020 (Q2 and Q4)

Occupation	Sector	Wage quintile	Employment change (thousands)	
			Q2 2019–Q2 2020	Q4 2019–Q4 2020
Women				
Personal service workers	I – Accommodation and food service activities	1	-522	-525
Sales workers	G – Wholesale and retail trade	2	-570	-506
Business and administration associate professionals	O – Public administration and defence	4	-314	-303
Men				
Personal service workers	I – Accommodation and food service activities	1	-432	-359
Drivers and mobile plant operators	H – Transportation and storage	2	-379	-291
Sales workers	G – Wholesale and retail trade	2	-393	-246

Source: EU-LFS (authors' calculations) and SES for wage quintiles

Figure 12: Change in number of workers temporarily absent from work (furloughed) (thousands), year on year, by job-wage quintile and gender, EU27, 2019–2020 (Q2 and Q4)



Source: EU-LFS and SES (authors' calculations)

As already indicated, the largest decline in labour inputs in the initial phase of the pandemic arose as a result not of job loss but of temporary lay-off, or furlough. There were over 18 million more workers employed but not working during Q2 2020 than in the same quarter a year earlier and just over 5 million more in Q4 2020. As Figure 12 confirms, furloughing was heavily concentrated in lower-paid jobs and especially among lower-paid women. Half of female furloughed workers (4.2 million) in Q2 2020 were working in the lowest-paid 20% of jobs compared with less than 30% of male furloughed workers; for men, furloughing was more evenly distributed across quintiles 1 to 4 (low-paid through to mid-high-paid).

Although the scale of furloughing had declined markedly by Q4 2020, it was still low-paid (especially female) workers who were more likely to be on furlough in Q4 2020. By this stage, the incidence of furloughing was less obviously skewed towards lower-paid workers. The comparatively low increases in the top quintile in both periods are consistent with the ability of many

well-paid workers to work from home, which, as Chapter 4 highlights, was much more likely among professional and managerial occupations.

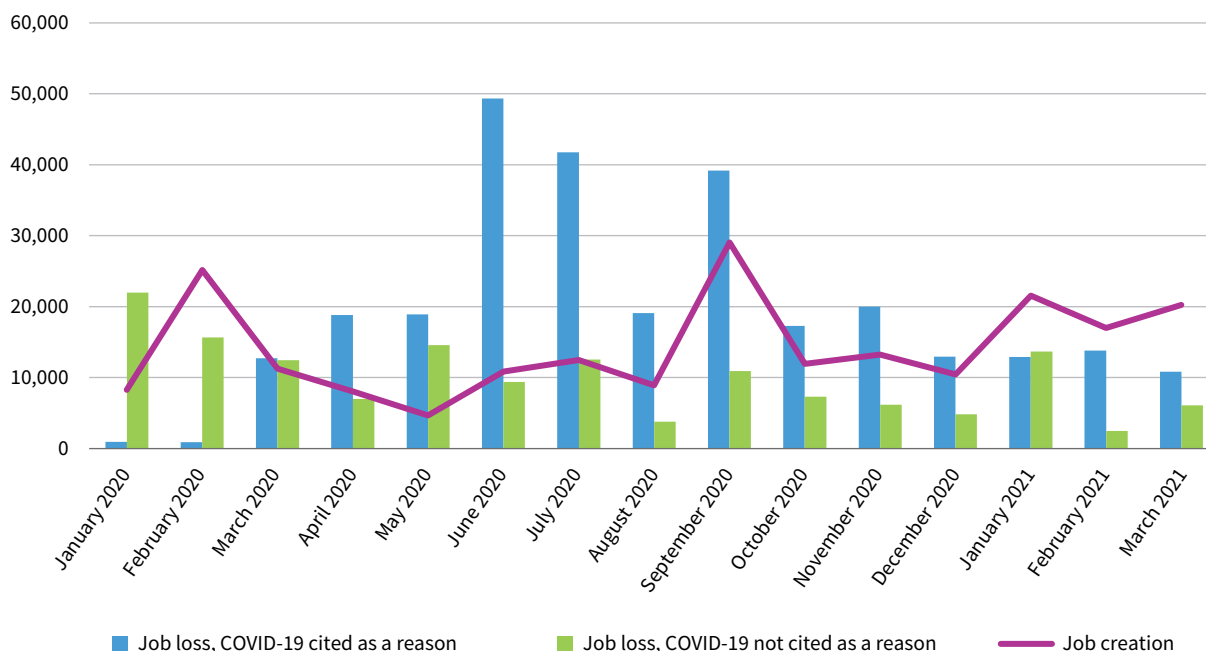
Restructuring activity in the pandemic period

This section focuses on large restructuring events in the EU27 and Norway using data from the ERM. The ERM database records restructuring announcements that entail at least 100 job losses or involve at least 10% of a workforce of 250 employees.¹² This online database has been in existence since 2002 and includes over 27,000 individual company or organisation restructuring cases.

The ERM recorded 1,371 restructuring events in the period from the start of Q1 2020 to the end of Q1 2021 across the EU27 and Norway. Of these, there were 860 announcements of job loss, 488 announcements of job creation and 23 announcements entailing both job creation and job loss. Ninety-two transnational cases were also recorded.

¹² The ERM records cases of net job loss or job creation in announced restructurings, based on reporting in the principal media sources in each country, collected by the Network of Eurofound Correspondents and assisted by an automated, keyword-based system of digital media monitoring. Cases must result in employment contraction or expansion at the company or organisational level. Routine replacement hiring of departing or retiring staff and filling of existing public vacancies are not included. More information on the ERM database is available at <https://www.eurofound.europa.eu/observatories/emcc/erm/factsheets>

Figure 13: Announced restructuring job loss, according to whether or not COVID-19 was cited explicitly as a reason, and announced restructuring job creation, EU27 and Norway, Q1 2020–Q1 2021



Source: ERM

Pandemic-related restructurings

To disentangle the impact of COVID-19 from restructuring for other reasons, the ERM added a marker in 2020 to cases in which the reporting of the case or company announcement indicated that the reorganisation was due, mostly or in part, to COVID-19. During the period from Q1 2020 to Q1 2021, the ERM recorded 573 restructuring events that were clearly attributable at least partly to the pandemic,¹³ of which 485 were cases of job loss, 80 were cases of job creation and 8 entailed both job creation and job loss. The pandemic was therefore associated with over half of job loss restructuring events announced in the period in question, but also with around one in five job creation cases.

As Figure 13 highlights, total job loss in announced restructuring events peaked in June–July 2020, and the majority of these were attributed to COVID-19. While the pandemic continued to be cited as a cause for the majority of job loss until March 2021 (with a single

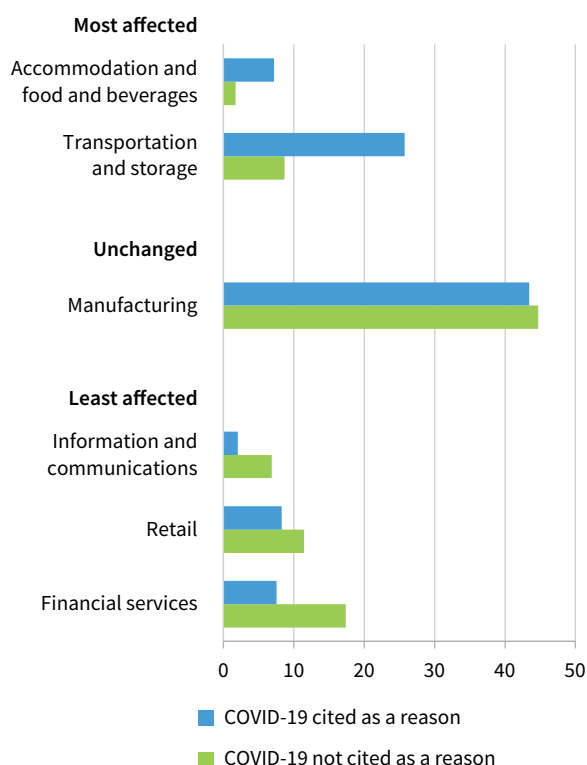
monthly exception: January 2021), case reporting and associated job loss declined sharply after November 2020. As evidence of a nascent recovery, cases of job creation began to outnumber cases of job loss in 2021.

Sector overview

Some sectors that, before the pandemic, accounted for a small share of restructuring activity were especially affected by lockdown measures imposed during the pandemic (Figure 14). These were sectors reliant on travel and social contact. In the accommodation sector and the food and beverages sector, as well as in transportation and storage, most announced restructuring job losses during the pandemic period (March 2020 onwards) were attributed to COVID-19. By contrast, in knowledge-intensive sectors such as information and communications and financial services – and also retail – COVID-19 was less likely to be cited as a cause of job loss. For manufacturing – which, owing to its high share of high-headcount establishments, is overrepresented in the ERM database relative to its

¹³ This is a conservative estimate, as it is based on the short case narrative provided for each restructuring case by the relevant national correspondent. Additional cases may also have been attributable to COVID-19.

Figure 14: Sectoral breakdown of announced job loss (%), according to whether or not COVID-19 was cited explicitly as a reason, EU27 and Norway, March 2020–March 2021



Source: ERM

weight in overall employment – there was little difference; COVID-19-attributed job loss was marginally lower (less than 2 percentage points) than non-COVID-19-attributed job loss.

Transportation and storage

The transportation and storage sector was severely hit by airlines, ferry operators and other forms of passenger transport reducing headcount owing to the decline in travel and the fall in passenger numbers. The International Air Transport Association (IATA) stated that, in 2020, global air passenger numbers fell by 65.9% compared to 2019, the biggest year-on-year decline in airline traffic in aviation history. For European carriers, traffic fell even more severely, by 73.7% (IATA, 2021).

In total, 99 restructuring events, amounting to 72,357 job losses, took place in the period from Q1 2020 to Q1 2021. Of these, nearly half (41 events) were concentrated in Q2 2020, at the outset of the crisis. These job reductions affected 15 air passenger transport companies (involving 9,479 job losses). Among them, four companies declared bankruptcy in Q2 2020, with a total of 1,003 job losses: Norwegian Air Resources Finland, OSM Aviation Finland, Jet Time (Denmark) and Pilot Services (Sweden). Lufthansa, however, announced the largest collective job cut of the period (see Box 2).

Box 2: Lufthansa

The largest single case of job loss in transportation took place in Q3 2020 when Lufthansa announced 11,000 job losses in Germany and a further 26,000 job cuts worldwide as part of a three-year restructuring programme. The company also plans to downsize its air fleet from 760 to 660 aircraft. The programme envisages rapid utilisation of state loans made available by the German government, a reduction of executive positions within the entire Lufthansa Group by 20%, the loss of 1,000 jobs in administration and the reduction of planned investments until 2023.

The impact of COVID-19 on airlines provoked a ripple effect along the supply chain. Upstream, a decrease in orders resulted in manufacturers of aircraft and related machinery announcing 36 large-scale dismissals (with the loss of 19,528 jobs) in the period from Q1 2020 to Q1 2021.

Accommodation and food and beverages

According to EU-LFS data, the accommodation sector and the food and beverages sector were among the most affected sectors in terms of declining labour

inputs. Physical distancing mandates meant that most businesses in these sectors had to close or to operate at reduced capacity. The employment effect is not strongly captured in the ERM owing to the focus on large restructuring events and the small scale of many of these establishments, but 39 cases (involving 19,589 announced job losses) were recorded, mainly involving hotel chains, restaurant chains and catering companies. The largest of these job loss announcements was issued by Nordic Choice Hotels, described in Box 3.

Box 3: Nordic Choice Hotels

Nordic Choice Hotels, one of the largest hotel chains in Scandinavia, announced the dismissal of up to 4,500 employees in Sweden, approximately half of its staff, in March 2020. According to the company, it was forced to take this step as booking rates had reached an all-time low. The company sought to find ways to retain personnel; for instance, 500–600 staff were temporarily outsourced and employed by PostNord, a Nordic postal operator.

The accommodation and food and beverages sectors are linked to tourism, which has also been damaged by the crisis. Eight large restructuring cases were recorded involving travel agency and tour operator activities, with 1,245 job losses. The worldwide online travel operator Booking.com announced that a quarter of its staff were to be cut owing to the pandemic. Between 4,000 and 5,000 employees out of a total workforce of 17,500 worldwide lost their jobs. In the EU, job cuts took place at the group's headquarters in Amsterdam. Other online platforms such as Airbnb and TripAdvisor also announced plans to lay off approximately 25% of their workforce globally.

Retail

Some retail businesses expanded during the pandemic. These were mainly supermarkets – benefiting from their status as an essential service – and companies that sell via mail order or via the internet – benefiting from the shift from high-street to online shopping. The two largest announcements came from Amazon in France, for positions related to last-mile delivery and warehousing jobs at all levels, and PAM supermarkets in Italy; each company plans to create 3,000 jobs. At the same time, announcements of workforce reductions by retailers Grūstė in Lithuania and Gebr. Heinemann in Denmark cited drops in food sales owing to a lack of customer footfall in airports' tax-free areas. Similarly, Grensemat, one of the largest Swedish grocery store chains, located near the border with Norway, cut jobs because of reduced cross-border activity.

Clothes, footwear and sports shops and other retail considered non-essential found it difficult to cope with the effects of the pandemic and decided to furlough workers, reduce their workforce or close in an effort to move their activities partially or entirely online, an

operation that in some cases was already planned but was accelerated by the pandemic. These restructuring events accounted for a total of 21,475 job losses in the entire period, of which nearly half (10,879) were in Q2 2020.

Financial services

In the financial services sector, workforce reductions have tended to be achieved through voluntary redundancies or departure. There has also been a trend of hiring specialist information technology (IT) and data science professionals to advance banks' digitalisation efforts, as transactions progressively shift online and away from branch networks. In total, the ERM recorded 63 cases of job loss (amounting to 49,069 jobs) and 17 cases of job creation (7,725 jobs). Rabobank was responsible for the largest case of job loss (Box 4).

On the job creation side, Mastercard, the global financial services company, announced the creation of 1,500 new jobs in Dublin, expanding its workforce in Ireland to over 2,000. The new positions are in software engineering, artificial intelligence, cybersecurity, blockchain and data. The second largest business expansion in the sector, creating 400 jobs, was made by the Stellant group in France, which specialises in consultancy and insurance services. The Austrian financial technology (fintech) company Bitpanda, which provides a platform for cryptocurrency, was the third largest creator of new jobs (300) in the period Q1 2020–Q1 2021. The openings were for IT specialists, especially programmers and engineers, and were based at its innovation and technology centre in Kraków (Poland). Bitpanda closed its series B funding round, raising \$170 million (€141.67 million), and gained the status of 'unicorn start-up' with a valuation of \$1.2 billion (€1 billion).

Box 4: Rabobank

Rabobank, the Dutch cooperative bank, announced 5,000 job cuts in the Netherlands. The bank made a profit of €1 billion in 2020, 50% lower than its profits in 2019. Low interest rates were given as the most significant cause of reduced profitability. Most job cuts will occur at the bank's local offices, with the number of offices being reduced from 230 to 130 by 2026. The bank will focus more on digital services, a strategy already adopted before the pandemic but that has been accelerated by COVID-19 physical distancing requirements.

In March 2021, the fintech company/online bank Revolut announced the creation of at least 200 new positions at its unit in Kraków as part of a global business expansion entailing 1,200 new jobs. The company is to hire 120 employees in its financial crime operations department and 80 employees in the customer support department serving the European and US markets. Another ‘disruptor’ firm fared less well, however, for reasons entirely unrelated to the pandemic. During the summer of 2020, the Germany-based fintech star Wirecard collapsed and filed for bankruptcy, with the loss of 730 jobs, following the discovery of a huge internal fraud. The enquiry into the case was still ongoing as of May 2021.

Information and communications

The information and communications sector benefited from increased demand, partly as a result of work

reorganisation in the shift to remote working. The ERM recorded 86 business expansions creating a total of 22,383 new jobs. The highest number of cases took place in France and Poland (19 in each) and in Ireland (10). The largest announcement, creating 1,000 jobs, was made by Stripe, a fast-growing online payment company in Ireland.

One example of how digital business was able to assist in the efforts to deal with the pandemic was the French online and mobile booking platform Doctolib, which makes it easier for doctors to organise appointments via appointment-scheduling software, available to patients 24 hours a day. In May 2020, the company announced the recruitment of 500 employees over the coming three years at its new regional headquarters in Nantes, France. The new positions offered were for IT developers and for administrative and commercial functions.

Summary: Restructuring events in 2020

COVID-19 had an impact on restructuring activities across the EU27 and Norway, which were particularly visible in commercial aviation and other transport activities, as well as in the accommodation and food and beverages sectors. It created new challenges for sectors undergoing transformation, such as the acceleration of existing digitalisation efforts in the financial services sector. The crisis underlined the interconnectedness of the economy, with spillover effects seen from sectors that were directly affected to other sectors, due to a decline in orders, which were exacerbated by uncertainty over the duration of the pandemic.

3 COVID-19 lockdowns and employment: Sectoral analysis by Member State

This chapter analyses employment shifts across Member States and economic sectors between 2019 and 2020, with a particular focus on the second and fourth quarters, using an ad hoc extraction of quarterly EU-LFS data. The data are examined at the NACE Rev. 2 two-digit level by Member State to investigate if and to what extent employment changes differed across economic sectors that have been unevenly affected by national lockdown measures.

Sectoral classification

Using the classification developed by Fana et al (2020a), this analysis distinguishes between the following sectors (see Annex 2 for a full list of sectors).

Essential and fully active: Sectors including food production, utilities, health and all other sectors identified as essential in all Member States. In these sectors, most employment continued operating normally.

Active but via telework: These sectors include education, most of public administration, finance, insurance and telecommunications, and professional, scientific and technical activities. Most employment in these sectors was maintained even in strict lockdown by workers teleworking.

Mostly essential and partly active, not teleworkable: These sectors include a significant portion of retail and manufacturing of chemicals and paper, which remained active to some extent even in strict lockdown.

Mostly non-essential and partly active, not teleworkable: These sectors include the majority of manufacturing not previously mentioned, as well as some machine- and computer-repair activities and construction. These activities are neither essential nor teleworkable; however, as they generally do not involve direct interaction with clients, in lockdown situations, they have often been allowed to continue (under strict conditions).

Closed: These sectors include hotels, restaurants and accommodation, estate and travel agencies, and leisure and recreation services. These are not essential and were explicitly closed by all the lockdown decrees analysed, and they could not continue to function through telework.

This classification was created to study the potential employment impact of the first lockdown measures in spring 2020. Different waves of the pandemic over the year led to reimpositions of economic lockdowns and variations in the extent to which a specific sector was obliged to close or was partially active across countries (see Box 5). From the second wave, starting in the autumn of 2020, the dichotomy between essential and non-essential sectors partly disappeared, except for those activities related to accommodation, leisure and restaurants, were forced to close almost everywhere during the entire period.

Box 5: Sectoral coverage of lockdown measures during the first pandemic wave

Nearly all Member States took legislative or regulatory action to contain the virus spread by ruling whether specific economic activities were essential or had to be closed or restricted during the pandemic. Although, in some rare cases, restrictions were implemented in a loose way, referring only to large gatherings of people (as in Sweden), most Member States enacted such restrictions by sector name or by NACE sectoral classification, at various levels of detail.

Eurofound has gathered information through its Network of Eurofound Correspondents across EU Member States on the policies regulating the closure of different economic sectors, capturing the timing of these closures across countries during the first two waves (although no exact definition of the first and second waves of the virus exists). It should be noted that this information captures closures and other forms of restriction, not operation under enhanced security and hygiene standards. For instance, a restaurant fully closed or providing only takeaway food is considered a closure, but if serving food outdoors is permitted, then it is not a closure; neither is a retail shop providing click-and-collect services or facing shorter opening hours considered a closure. Capturing and comparing these realities is complex, as closures in a given sector varied in degree and there were many exceptions, which differed across Member States.

Taking into account these caveats, when comparing national situations, a clear picture emerges regarding the lockdowns and their different sectoral impacts. **Manufacturing** (NACE 10–33) has continued operating during the pandemic and has not faced closures (either because industry sectors have been explicitly defined as essential or because they have not been included among the sectors whose activity was to be restricted). The same can be said about the **primary sector** (NACE 1–9), although in this case with some limited exceptions: mink farming was discontinued in Denmark, as an outbreak of COVID-19 originated there, while hunting was explicitly restricted in Ireland and Latvia. **Service sectors** have been the main focus of the closures associated with the pandemic, as was to be expected, since they include many activities characterised by close physical contact between workers and clients. The following have been the activities most generally affected in Member States.

- **Entertainment** (NACE 90), **cultural events** (NACE 91), **gambling and betting** (NACE 92) and **sports and recreation** (NACE 93) have generally been severely affected, as they attract the largest gatherings of people. Closures have been widespread, but the cross-country picture differs widely in terms of the extent to which outdoor activities have been regulated and the limits imposed on the maximum numbers of people permitted together. Other services characterised by close proximity and indoor operation, such as **personal service activities** (NACE 96: beauty treatments, spas and hairdressers), have been subject to closures across most Member States as well.
- **Food and beverage services** (NACE 56) have been widely affected. Closures have been common across Member States, although in some cases only partial closures limiting opening hours or requiring a lower capacity for operations (as in Hungary) were implemented, while takeaway and delivery services have generally been permitted. In some cases, outdoor serving has been permitted as well, although this has typically been part of a reopening schedule and before indoor dining has been allowed. **Accommodation** (NACE 55) and eating in such establishments has been limited, either because of specific legislation or regulations or because in practice the restricted mobility of people during the pandemic has restricted their operation.
- **Retail** (NACE 47) has also been widely affected across Member States, but several exemptions have been granted. Exceptions to closures have covered many types of shops considered essential retail (typically supermarkets, food stores, pet food stores, pharmacies, newsagents, petrol stations and telecommunications stores, among many others). Moreover, in some Member States (Bulgaria, Denmark, Poland and Romania), only very large shopping malls were closed, while, in others, retailers were obliged only to reduce opening hours (Estonia and Hungary) or were allowed to offer delivery and pick-up services for online sales (Hungary). Finland and Sweden did not regulate specific closures for retail operations.
- **Education** (NACE 85) has been affected across all Member States during the pandemic. Public education has been typically ordered to close to avoid the spread of the virus (although the timing of restrictions varied widely across countries). However, education services were defined as teleworkable, and online teaching was provided whenever possible (at least at secondary and tertiary levels). The same occurred in different areas of **public administration** (NACE 84), where telework took place whenever possible (in local government, for instance, and even in institutions dealing with the administration of justice). Even **human health activities** (NACE 88) were restricted in many cases in hospitals (prioritising COVID-19-related treatment), and general health services were provided by telephone.

More details regarding the sectoral closures across Member States are presented in Annex 3, which is available separately on the publication's web page.

Rationale for using the selected classification

The choice to maintain the classification developed by Fana et al (2020a) to evaluate the employment effect one year after the outbreak of the COVID-19 pandemic has different motivations. First, using actual data, it enables a comparison with early estimates made by Fana et al (2020a) across sectors and Member States. Second, most of the Member States introduced economic lockdowns and confinement measures between the end of the first and the beginning of the second quarter of 2020, disrupting both EU aggregate

demand and supply at the same time. Moreover, although new measures were introduced during the second half of the year and especially since the beginning of Q4 2020, they were not necessarily as generalised or as strict as during the first wave, and they may not have been imposed simultaneously across Member States.

Regardless of the specific national or local measures taken during the second half of 2020, many manufacturing activities and sectors defined here as 'mostly non-essential' were able to revive production, although at lower levels. Physical distancing and

health-and-safety measures, which potentially involved modifying workspaces and the pace of work, continued to apply in Q1 and Q2 2021, making it difficult to maintain production at pre-COVID-19 levels. Moreover, grouping together most of the manufacturing sectors helps to detail the employment effect within and between integrated industries at European level. In contrast, closed sectors were mostly those that produce and distribute services at country level, with a limited degree of productive integration across different countries (that is, tourism and leisure). For this reason, the burden of the pandemic has been asymmetric across Member States, reflecting significant heterogeneity in post-industrial economies, labour market institutions and their productive specialisations (Fana et al, 2020a; Torrejón Pérez et al, 2020).

To overcome the effects of the Great Recession, southern European economies focused on a deindustrialisation growth strategy prioritising less knowledge-intensive sectors. These sectors are marked by flexible working arrangements where a large share of workers have short-term, fixed-term contracts with low pay and more limited coverage by social protection. They employ a large share of workers negatively affected by the employment effects of the current crisis. As the pandemic forced national governments to adopt safety measures to stop the virus spreading, the closure of service sectors, mostly less knowledge-intensive sectors, further penalised such workers.

This is less the case for activities related to manufacturing, which are, to a greater extent, integrated in supply chains, both regionally and globally. Disruptions in one point of the supply chain, because of decreasing final demand or because of economic lockdown, have an impact on the same industry or related sectors elsewhere. From this perspective, it is interesting to further detail the impact on these sectors not only by country, but also by broader region (central, eastern or southern Europe) to get a first insight of co-movements along European value chains (Villani and Fana, 2020). Looking forward, each country's position in the international division of labour will play a key role in the medium term, as productive structures are highly integrated in complex value chains. This is an issue of particular sensitivity for southern and eastern European Member States, given their dependence on central European economies led by the German productive model (Simonazzi et al, 2013; Villani and Fana, 2020).

The third reason to use the classification is that, although the nature and extent of economic lockdowns changed after the first wave of the pandemic, sectors initially classified as essential continued to play a pivotal role, such as health, utilities and telecommunications. Therefore, it is of interest to investigate whether their dynamics show positive

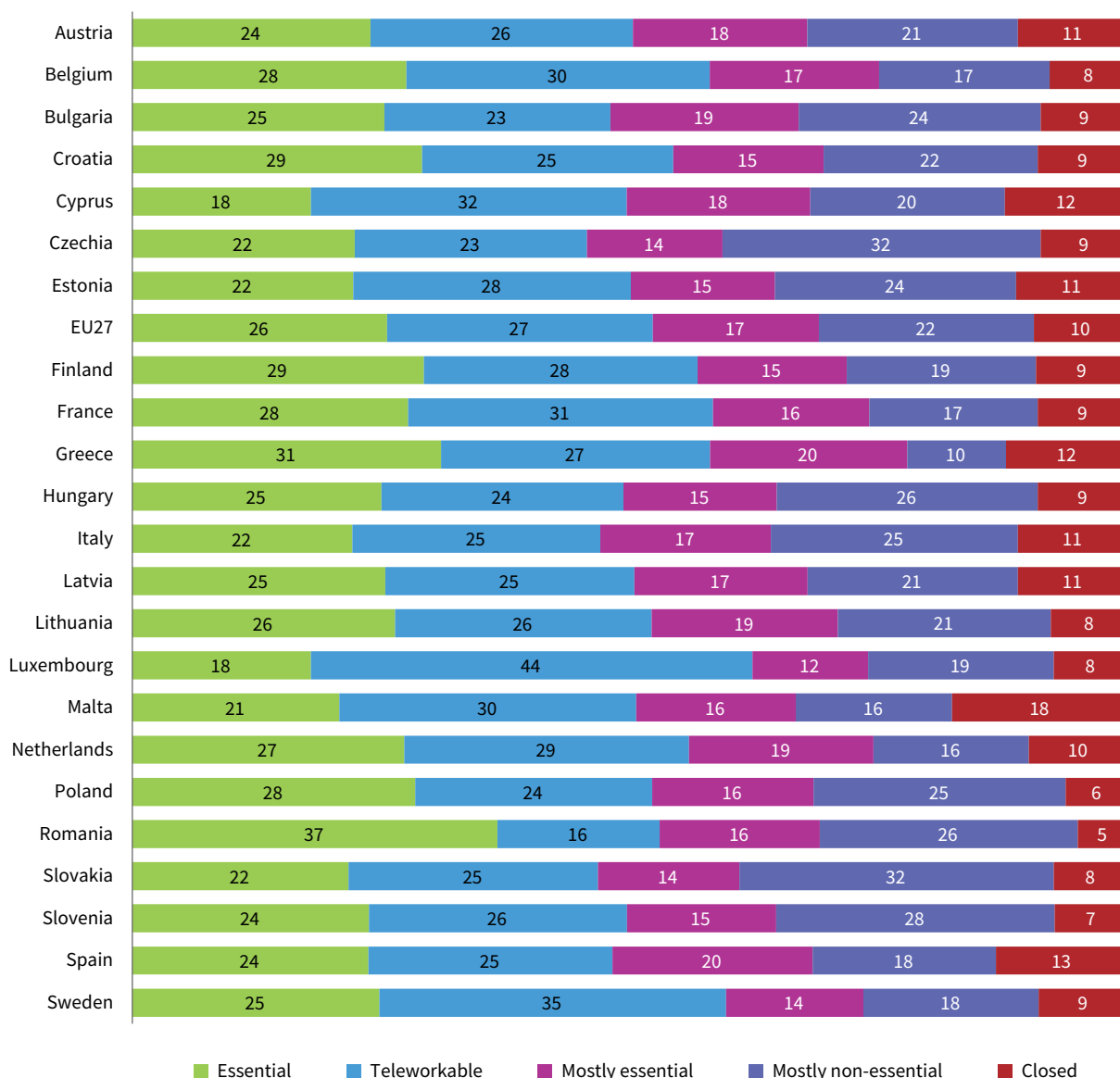
employment trends or if employment contracted in line with the rest of the economy.

Finally, as already noted in Fana et al (2020a), the employment impact of COVID-19 lockdowns strongly depended on the segmentation of the labour market and how forms of standard and non-standard work are distributed across sectors. The effects of the lockdowns across and within Member States were felt hardest by labour markets that were already vulnerable before the crisis, which were those characterised by precarious work and high unemployment rates. National economies with a high share of travel- or tourism-related employment, notably in southern Europe, were disproportionately hit by the crisis (Doerr and Gambacorta, 2020; Fana et al, 2020a).

Although most Member States introduced exceptional forms of social protection forestalling unemployment and income loss, they are, in most cases, not universal: while permanent employees may be protected from lay-off (by furlough or dismissal-protection schemes), temporary workers and the self-employed might be eligible only for forms of income protection and might not retain employment in the case of contract expiry. There has been substantial variation in the type, duration and coverage of policy responses to the risks of unemployment and income insecurity across Member States. As documented by Eurofound (2021a), most Member States extended or introduced new policies that, in some cases, also covered workers on non-standard contracts. However, as the generosity and duration of such schemes strongly depend on previous contractual and economic conditions, they do not offer the same benefits to workers under different contractual and economic statuses. Ad hoc mechanisms have been and still are temporary in the vast majority of cases; therefore, their medium-term effectiveness will be strongly correlated with the duration of the socioeconomic crisis.

Employment distribution in Q1 2020

Using the taxonomy developed by Fana et al (2020a), in the first quarter of 2020, 53% of workers in the EU27 were employed in essential and teleworkable sectors, 22% in mostly non-essential sectors, 17% in mostly essential sectors and slightly less than 10% in closed sectors. The distribution across Member States varied significantly, which highlights different patterns of economic specialisation (Figure 15). Austria, Cyprus, Estonia, Greece, Italy, Latvia, Malta and Spain were characterised by a higher share of employment in closed sectors than the EU27 average, while in Belgium, Croatia, Finland, France, Greece, the Netherlands, Poland and Romania, employment was higher in sectors defined as essential.

Figure 15: Employment distribution across sectoral categories (%), EU Member States, Q1 2020

Note: Data not available for Germany; Denmark, Ireland and Portugal are excluded because 2020 data are incomplete.

Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

Generally, non-essential sectors were relatively more pronounced in eastern European Member States where, as already noted in Eurofound and European Commission Joint Research Centre (2019), the share of manufacturing and related activities is higher than for the EU27 as a whole.

The way countries cluster is not straightforward: southern European Member States, while relatively more specialised in closed economic activities, are, in some cases (notably Italy), also traditionally strong manufacturing countries. At the same time, the central European Member States that have a relatively higher share of essential sectors across the total economy are those in which there exists a strong health sector (not necessarily in the public domain) and which are

leaders in utilities production at the same time; this is also the case for France.

Eastern European Member States are an interesting case: the increasing share of employment in manufacturing may result from the reconfiguration of the European value chains in leading sectors (automotive and textiles). However, for some of them, a significant share of employment is in essential sectors (such as agriculture in Romania).

In addition to complex and different economic structures, the variety of national policy responses to the crisis during 2020–2021 and the differences in labour market institutions and the employment distribution across sector types by country suggest that

employment shifts in some Member States were more marked than in others. Member States specialised in low value-added services such as accommodation and food and beverages, for example, were more vulnerable to lockdown measures.

Employment change in Q2 and Q4 2020

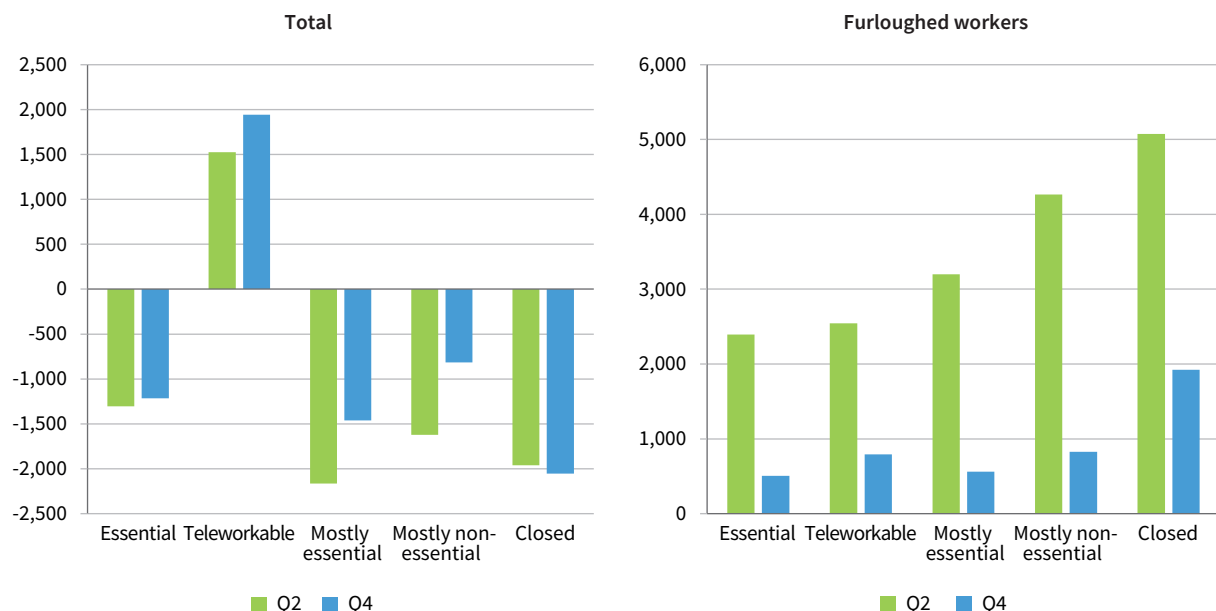
At EU27 level, employment changes were positive only in sectors classified as teleworkable both in Q2 2020 and in Q4 2020 compared to the same periods in 2019 (Figure 16). Less expected was the decline in employment in essential sectors, which lost one million jobs from Q2 2019 to Q2 2020 and which recovered only slightly by Q4 2020. The year-on-year difference for both mostly essential and mostly non-essential sectors showed a more pronounced recovery during the last quarter of 2020. The employment in closed sectors did not recover in Q4 2020 and of all five sectoral categories exhibited the sharpest drop (a decrease of around two million) at the end of 2020 compared to the same quarter one year before.

The figures are even more striking for those workers employed but not working (furloughed) during the reference week, especially in Q2, when there were over

15 million furloughed workers in the EU27. As shown in the right panel of Figure 16, the increase in the number of furloughed workers appears to be strongly associated with the severity of closures at sectoral level. Over the course of 2020, there was a clear decline in recourse to furloughing in all categories, but to a lesser extent in closed sectors.

Moving the analysis from the European to the national level, Table 5 overleaf shows the distribution of headcount employment changes by sectoral category across Member States in the two quarters under scrutiny (Q2 and Q4), year on year. France, Italy, Romania and Spain experienced the largest drops in employment (in absolute terms) in the second quarter. In all Member States except for Estonia, Luxembourg and Malta, closed sectors experienced the highest relative declines in both the second and fourth quarters of 2020 compared to the same period one year earlier. On average in Q2 2020, the employment drop in closed sectors in the EU27 amounted to -10%, with the greatest national decline being -23.9% in Bulgaria (followed by around -17% in Cyprus, Lithuania and Spain) and the lowest being -2% in Croatia and Luxembourg. By the end of the year, employment continued to decline in the closed sectors of several countries spanning all European regions.

Figure 16: Employment change, year on year (thousands), by sectoral category, total and furloughed workers, EU27, 2019–2020 (Q2 and Q4)



Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

Table 5: Employment change by sectoral category (%), EU Member States, 2019–2020

Member State	Q2 2019–Q2 2020					Q4 2019–Q4 2020				
	Essential	Teleworkable	Mostly essential	Mostly non-essential	Closed	Essential	Teleworkable	Mostly essential	Mostly non-essential	Closed
Austria	-2.3	3.3	-2.9	-5.1	-14.9	0.5	1.5	-0.5	0.4	-16.5
Belgium	-2.1	4.8	-5.3	-5.8	-8.6	-0.7	4.7	-8.9	0.4	-8.3
Bulgaria	-2.9	-0.7	-5.2	-6.1	-23.9	-2.0	-2.4	-2.2	-0.7	-14.9
Croatia	-1.2	-1.4	-1.8	3.3	-2.0	-4.2	-3.5	4.5	1.3	-15.6
Cyprus	6.0	0.6	-6.0	13.7	-17.2	-2.9	7.0	3.5	4.4	-25.1
Czechia	-3.1	3.2	-2.8	-0.9	-10.2	-1.3	3.4	-3.0	-3.0	-8.4
Estonia	-7.0	-1.0	-3.5	-3.8	-2.3	-7.6	2.9	-1.9	-1.0	-12.9
Finland	-3.2	4.0	-7.6	-3.9	-13.0	-5.7	8.9	-3.9	-0.8	-11.8
France	-0.7	2.5	-3.2	-5.3	-7.6	-3.3	3.8	0.1	-2.6	-3.4
Greece	-1.9	-0.2	2.2	-5.0	-15.3	-5.7	9.3	1.6	-5.6	-7.8
Hungary	-2.4	1.0	-2.3	-3.9	-6.4	-2.1	5.2	-2.5	-3.7	-2.3
Italy	-2.2	-0.5	-5.9	-2.5	-11.2	-0.3	1.1	-1.8	-1.0	-12.2
Latvia	-2.2	3.2	-4.3	-2.4	-3.5	-2.2	0.8	-5.3	-7.5	-4.2
Lithuania	-0.9	3.6	-0.8	-6.0	-17.5	-5.8	7.2	-6.4	-4.6	0.2
Luxembourg	-9.4	12.7	-2.7	-11.6	-2.0	-6.1	9.2	13.8	1.2	12.3
Malta	-5.5	11.0	-1.1	4.3	2.7	11.5	1.4	-8.4	-3.7	-9.9
Netherlands	-1.2	2.7	-3.7	-0.1	-6.4	0.4	3.9	-0.8	-6.0	-10.1
Poland	1.5	-1.5	-2.7	-1.7	-7.2	5.5	3.2	-5.1	-1.8	-7.0
Romania	-4.3	-0.3	1.9	-5.6	-14.0	-1.5	-0.6	2.3	-4.2	-6.9
Slovakia	-1.4	0.7	-3.2	-4.3	-7.7	-4.8	0.1	0.8	-0.5	-12.0
Slovenia	-2.1	6.1	-2.7	-5.0	-16.3	10.7	8.9	-12.2	-4.0	-16.8
Spain	-0.6	-3.0	-5.8	-8.8	-17.2	-0.2	1.7	-2.9	-2.6	-17.2
Sweden	-1.0	0.3	-1.5	-3.7	-11.8	-1.7	-0.2	-0.6	-0.2	-11.5
EU27	-2.5	3.0	-6.3	-3.8	-10.2	-2.3	3.8	-4.3	-1.9	-10.8

Note: Data not available for Germany; Denmark, Ireland and Portugal excluded because 2020 data are incomplete.

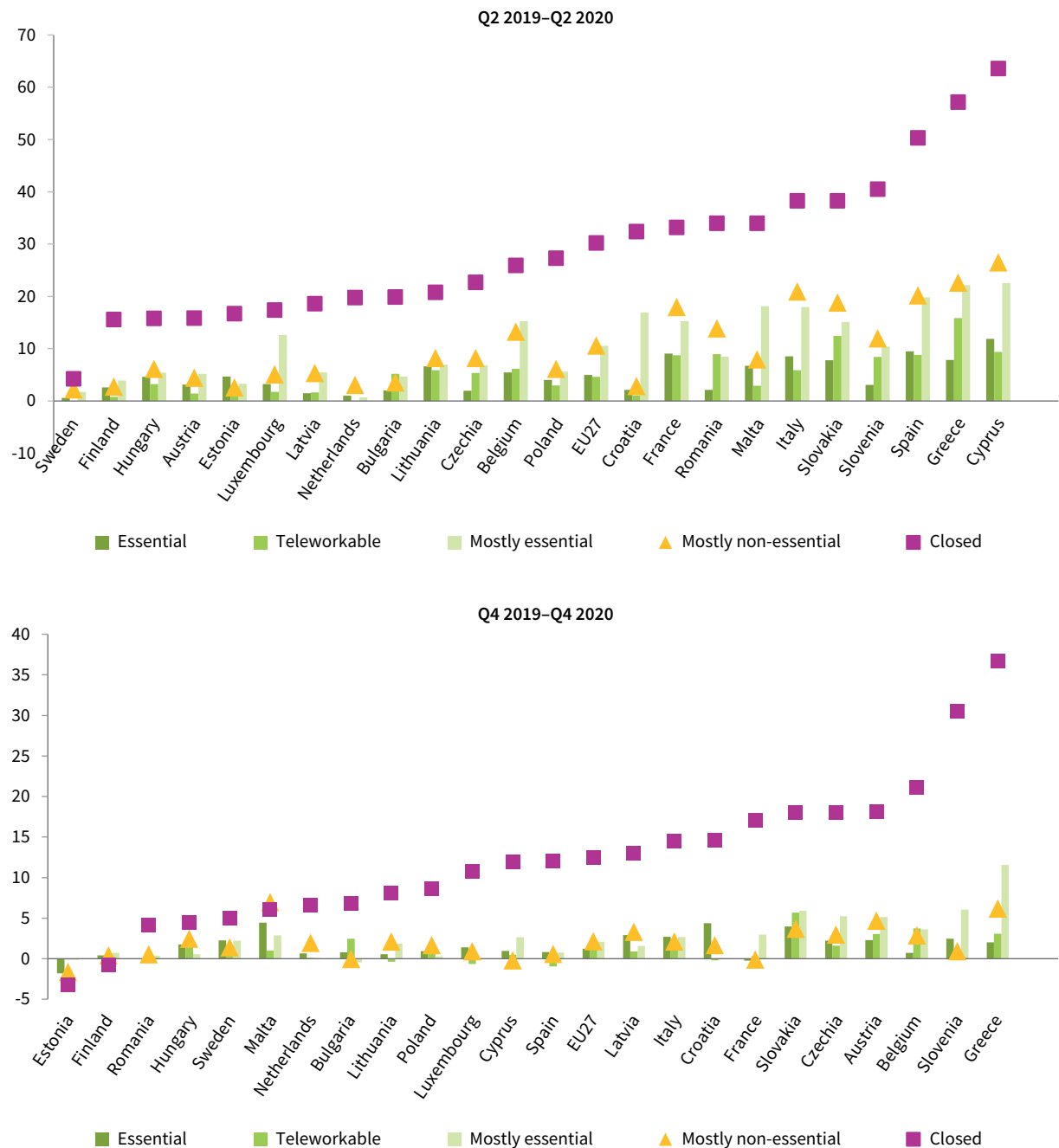
Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

In line with the aggregate EU27 figure, employment declined year on year in essential sectors in Q2 2020 in the Member States, with the exception of Cyprus and Poland. The initial decline in essential sectors ranged from -9.4% in Luxembourg to -0.6% in Spain. However, while employment in these sectors also fell in most Member States in Q4 (with the exceptions of Austria, Malta, the Netherlands, Poland and Slovenia), the negative impact was smaller than in Q2 in several. France shows a peculiar trend: the increase during Q4 in teleworkable activities was almost offset by a decline in essential activities in absolute terms. A similar pattern is also apparent in Greece and Lithuania.

Finally, in both mostly essential and mostly non-essential sectors, the employment decline was significant in the initial phase of the pandemic, although less severe than for closed sectors. Employment only partially recovered in these two sectors at the end of the year, with substantial variation across countries.

Consistent with the EU27 figures, quarterly headcount changes (year on year) in national employment only partially explain the shifts in hours worked that occurred during the period. The share of people furloughed increased in all categories (Figure 17). It rose most dramatically in closed sectors during the first lockdown compared to a year previously, ranging from +4 percentage points in Sweden to +63 percentage points in Cyprus. Increases are also apparent in mostly essential and mostly non-essential sectors and varied hugely across the Member States.

Figure 17: Change in share of furloughed workers (percentage points), year on year, by sectoral category, EU Member States, 2019–2020 (Q2 and Q4)



Note: Data not available for Germany; Denmark, Ireland and Portugal excluded because 2020 data are incomplete.

Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

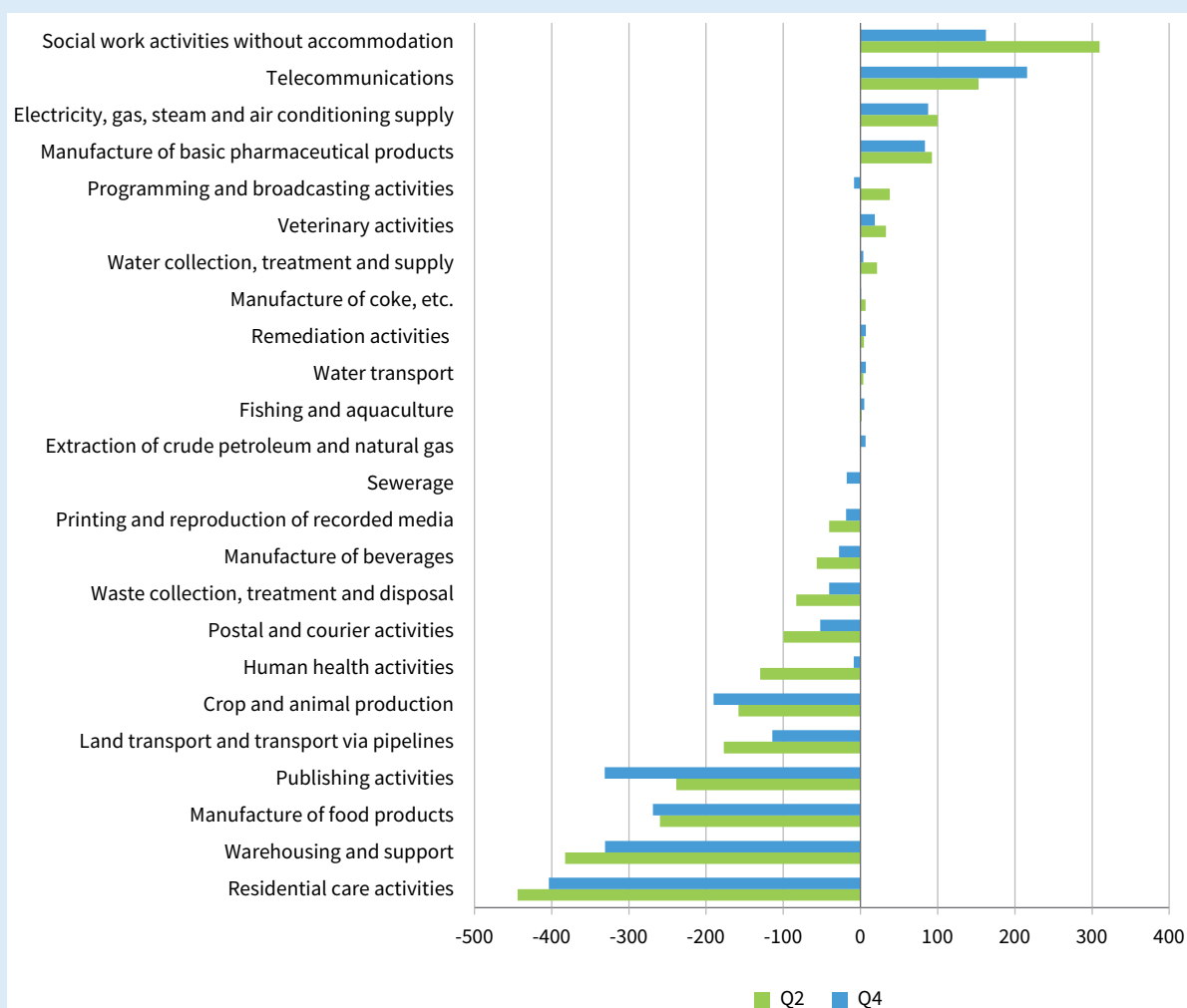
Similar patterns across categories emerge in Q4, although the magnitudes are smaller. Year-on-year changes in furloughing in closed sectors range from -3 percentage points in Estonia to +36 percentage points in Greece. For mostly non-essential sectors, the share of furloughed workers was five times lower in Q4 than in Q2. From a country perspective, it is interesting to note that in Spain and Romania, the increase in furloughed workers in Q2 was above the EU27 average, while in Q4, it fell below the average in both. However, in both

Member States, the number of jobs lost in closed sectors did not contract as much. Taken together, this suggests transitions to inactivity after individuals exited more protective welfare schemes. Finally, several Member States (Finland, Hungary, Lithuania, Poland and the Netherlands) make up a cluster, in both quarters, in which the increase in the share of people furloughed was relatively low compared to the EU27 average.

Box 6: Detailed employment changes within essential and mostly non-essential categories

The evidence of headcount decline in employment by type of sector does not necessarily confirm that this shortfall is strictly the result of lockdown measures. Indeed, the unexpected drop in employment experienced by essential sectors across different quarters could have more complex explanations. Interesting findings emerge from the breakdown of employment changes within the essential category at NACE Rev. 2 two-digit level (Figure 18). Very different activities form the cluster of those that experienced the largest employment declines: residential care activities, warehousing and support, manufacture of food products and publishing activities. For example, evidence related to warehouse activities suggests that these activities are highly integrated within traditional manufacturing value chains, which in turn are classified as mostly non-essential and therefore were not fully operational during the entire period. A similar interpretation can be applied to the manufacture of food products, which involves production not only for household consumption but also for several closed sectors (restaurants, canteens, and hotels and accommodation).

Figure 18: Employment change (thousands), year on year, across essential sectors at NACE Rev. 2 two-digit level, EU27, 2019–2020 (Q2 and Q4)

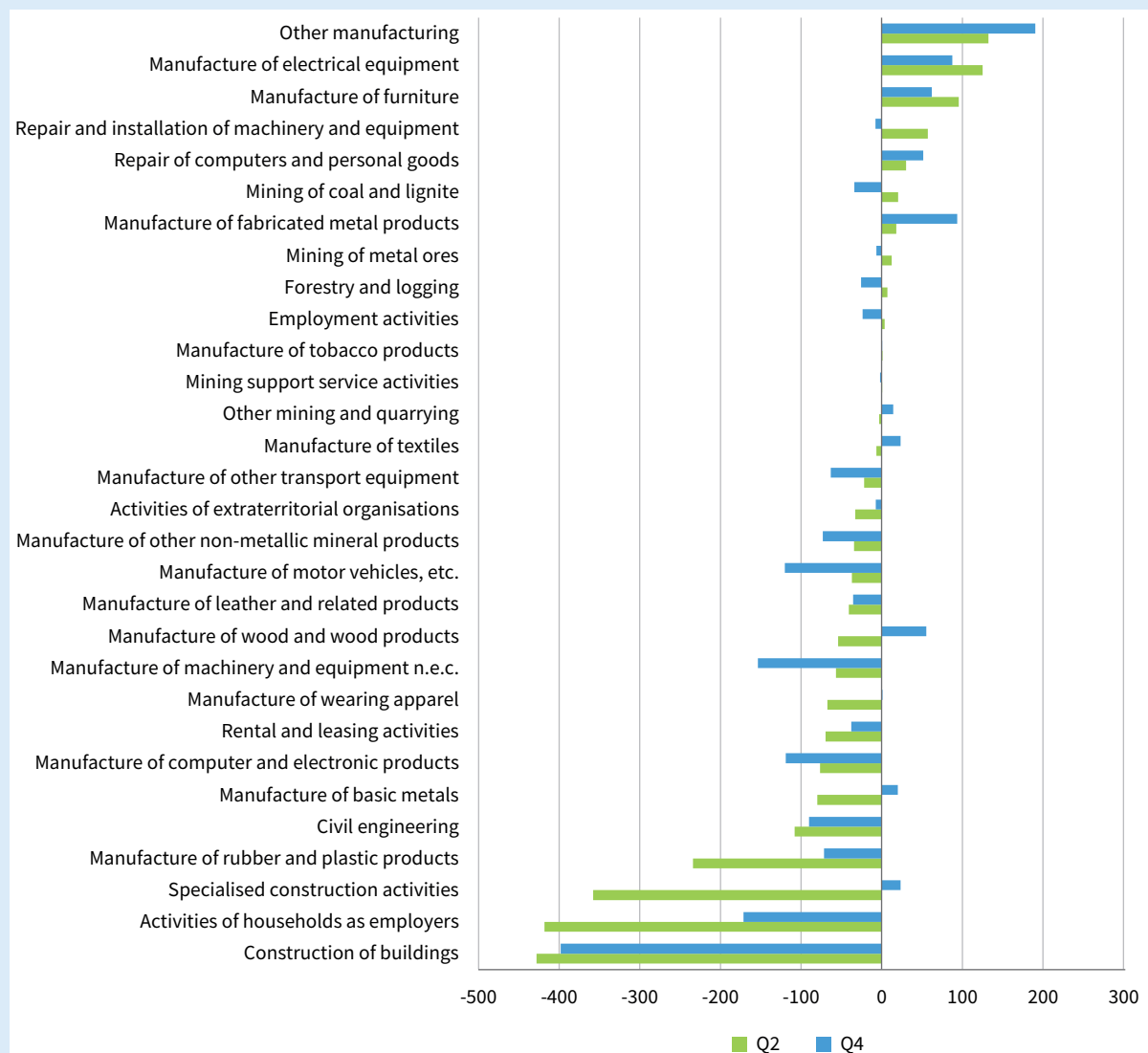


Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

Employment in human health activities declined by more than 130,000 in Q2 2020 with respect to the same period in 2019, but had recovered almost entirely by the end of the year. Nonetheless, this marks a departure from strong preceding, secular growth in this sector. Employment grew even throughout the 2008–2010 economic crisis, which makes it surprising that a crisis centred on a public health emergency has not sparked greater employment growth in the health and care sectors. Conversely, the manufacture of basic pharmaceuticals – a key sector involved in the response to the crisis – was one of the few manufacturing sectors in which employment growth was recorded. Telecommunications, utilities and social work activities also saw an increase in employment, with telecommunications expanding even more in the last quarter of 2020 than in Q2.

Within mostly non-essential sectors, only a few experienced an increase in employment in both quarters, but generally increases were greater at the end of the year (Figure 19). They include the manufacture of electrical equipment, the manufacture of fabricated metal and the manufacture of furniture, as well as computer and machinery repair. These are activities that serve as intermediate or supporting functions in other industries operating during the entire period. For example, the repair of computers (within the broader category of the

Figure 19: Employment change (thousands), year on year, across mostly non-essential sectors at NACE Rev. 2 two-digit level, EU27, 2019–2020 (Q2 and Q4)



Source: EU-LFS (authors' calculations) ; Fana et al (2020a) for sector classification

repair of both computers and personal and household goods) was a pivotal function in the massive shift towards remote working. At the same time, the repair and installation of new machinery is important for refitting workplaces and shopfloors to comply with new rules (for example, on social distancing and air recycling).

The opposite pattern occurred in the construction of buildings, specialised construction activities and activities of households as employers sectors, which experienced the sharpest drops during the first lockdown phase compared with the same period in 2019. However, employment recovered at the end of the year in specialised construction activities and in households as employers. While the recovery in the latter was still partial, it suggests that there is demand for domestic and care work in the market and that it plays an essential role in households.

Finally, using the third indicator, average weekly hours worked, additional detail emerges reflecting changes in the intensive margin on a quarterly basis from a sectoral point of view (Table 6). In line with previous findings, closed sectors show the biggest change in almost all Member States, both during the initial outbreak of the pandemic and in the last quarter of 2020, compared to 2019.

However, cross-quarter changes vary substantially across Member States. For example, in Czechia, working hours declined more in the last quarter in all sectoral categories. In Lithuania, Slovakia, Slovenia and Sweden, the biggest drop in hours worked occurred in closed

sectors, and reductions in other sectors were less substantial. Croatia, Finland, France and Slovenia were characterised by an increase in average weekly hours worked in the last quarter in all but closed sectors, despite a substantial decline in headcount employment in all sectoral categories. One possible interpretation of this diversity is that lockdown measures in the second half of the year were more stringent in the former group of Member States (Lithuania, Slovakia, Slovenia and Sweden) than in the latter group. It is also possible that, for those Member States where hours worked increased, this was related to changes in the mix of employment protection schemes between the first and second periods.

Table 6: Relative change in weekly hours worked (%), year on year, by sectoral category, EU Member States, 2019–2020 (Q2 and Q4)

Member State	Q2					Q4				
	Essential	Teleworkable	Mostly essential	Mostly non-essential	Closed	Essential	Teleworkable	Mostly essential	Mostly non-essential	Closed
Austria	-4.1	-5.5	-9.0	-8.2	-20.5	-3.9	-4.1	-5.8	-5.4	-13.3
Belgium	-2.6	-3.5	-3.9	-5.4	-6.5	-0.3	-0.2	-0.9	-1.4	-2.7
Bulgaria	-1.3	-0.9	-2.4	-1.1	-5.1	0.3	0.1	-0.7	-1.6	-2.5
Croatia	-1.6	-1.3	-2.6	-4.2	-5.8	0.9	0.6	1.6	0.3	-1.8
Cyprus	2.6	-1.3	1.6	3.3	-2.4	1.1	-2.2	0.4	-1.3	-10.7
Czechia	0.6	-0.3	-2.0	-2.5	-5.4	-4.2	-6.4	-8.0	-8.1	-13.8
Estonia	-3.2	-2.1	-0.6	-1.0	-13.4	-2.1	0.1	-1.6	-2.0	-7.2
Finland	0.7	3.0	0.2	1.6	-3.6	0.8	1.1	0.8	0.7	-2.0
France	-0.5	-3.6	-2.9	-3.9	-8.6	1.6	1.6	-0.1	1.4	-5.1
Greece	-2.6	-4.4	-0.4	-2.7	-4.9	0.1	-0.5	0.7	-0.6	-1.2
Hungary	2.7	3.1	-0.5	0.5	-6.2	-1.7	-2.5	-1.4	-2.3	-5.6
Italy	-1.9	-1.7	-6.1	-4.2	-7.1	-0.5	-1.1	-3.5	-2.3	-5.6
Latvia	-0.5	-0.1	-1.3	-1.4	1.2	0.9	-2.5	-2.9	-0.2	-0.8
Lithuania	-0.7	-0.1	-3.1	-3.5	-2.8	-2.1	0.7	-0.5	-1.9	-6.1
Luxembourg	-6.2	-4.1	0.1	-3.8	-10.1	-1.4	-1.1	-0.3	1.5	-10.1
Malta	-0.7	1.1	-2.7	1.5	-6.2	0.6	-6.1	-1.3	-5.2	-10.4
Netherlands	-3.6	-3.0	-3.0	-2.4	-5.8	-0.6	-1.0	-3.3	-1.3	-2.2
Poland	0.0	-1.4	-3.7	-3.6	-6.5	-0.1	0.6	0.1	-1.2	-0.8
Romania	-2.7	-2.9	-2.8	-4.8	-9.9	0.0	-0.1	-1.6	-1.6	-2.9
Slovakia	1.5	1.9	1.0	-1.9	-4.6	-1.5	-1.2	-1.9	-2.2	-5.8
Slovenia	-0.1	0.9	-0.6	-0.8	-3.9	2.9	2.3	2.8	3.0	-4.6
Spain	-1.1	1.1	-3.0	-2.5	-6.5	-1.0	0.9	-0.9	-1.7	-5.9
Sweden	-1.5	1.2	-4.7	-3.2	-5.8	-0.9	-2.2	-2.2	-2.1	-8.1
EU27	-1.3	-1.5	-3.5	-2.8	-8.5	-0.6	-0.6	-1.9	-1.7	-5.4

Note: Data not available for Germany; Denmark, Ireland and Portugal excluded because 2020 data are incomplete.

Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

Breakdowns by work arrangements and employee characteristics

Employment contract

Up to this point, the analysis has broken down employment change mostly by sector and Member State. It is useful, however, to further narrow the focus of the analysis, breaking down change by contractual arrangements. Temporary workers have been the group most affected by the economic lockdowns, regardless of the sectoral category (Fana et al, 2020a). As expected, and especially during the initial phase of the pandemic, the decline in temporary workers was sharper in closed and mostly non-essential sectors (Figure 20). However, although the size of the decline had halved in the mostly non-essential category by the end of the year, it constituted almost the entire fall in employment.

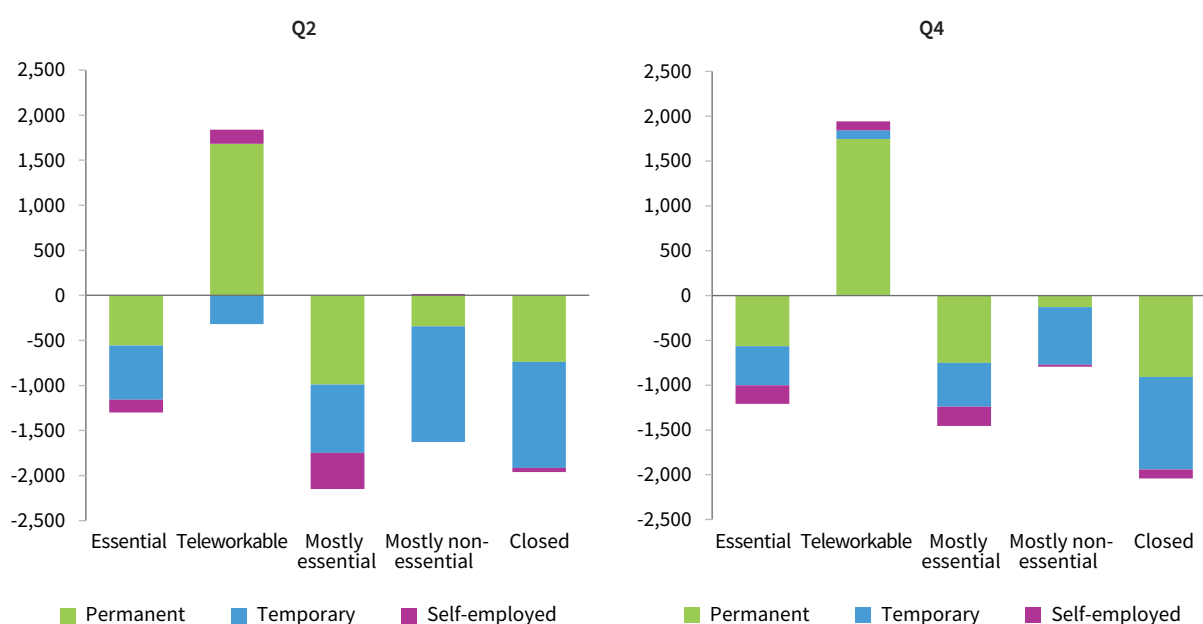
Examining the data for the Member States individually highlights important differences. For example, Latvia and Malta registered a drop in temporary employment equal to around 60% in closed sectors against an increase of 3% in Hungary. In Greece and Slovakia, around 40% of temporary workers in mostly non-essential sectors lost their employment, while, by contrast, an increase in employment of 39% was seen among temporary workers in Lithuania. Regarding mostly essential sectors, temporary employment decreased most in certain eastern European Member States (Latvia, Romania and Slovakia) and southern European Member

States. Within the essential sectors, a few Member States showed an increase in temporary employment (Latvia, Lithuania and the southern European Member States Cyprus and Spain, as well as Austria and Czechia).

Not surprisingly, employment loss among temporary workers was most severe in closed sectors (-31.4% at EU level), given their overrepresentation compared with other sectors. Table 7 illustrates the substantial differences across countries. The employment decline among temporary workers in closed sectors was above 40% in Bulgaria, Croatia, Cyprus, Latvia, Malta, Slovenia and Spain, while it affected around one-third of temporary workers in Austria, Belgium, Czechia, Greece, Italy and Slovakia.

Moreover, and more interestingly, the severity of the impact on temporary workers is also observed in other sectoral categories, notably in the mostly non-essential sector, especially in those Member States where temporary workers made up a relatively high proportion of total employment pre COVID-19 (Croatia, France, Poland and Spain). Italy is similar, where the share of temporary workers within the mostly non-essential sector was lower than their average share across the whole economy before the pandemic. More precisely, in the EU27 on average, temporary employment declined by 13% in the mostly non-essential sector and by 11% in the mostly essential sector, compared with a decrease of only 0.4% and 3%, respectively, in these sectors for those working under permanent contracts (Table 7).

Figure 20: Employment change (thousands), by employment contract and self-employment and sectoral category, EU27, 2019–2020 (Q2 and Q4)



Source: EU-LFS (authors' calculations); Fana et al (2020a) for sectoral classification

Table 7: Relative employment change (%), by employment contract and sectoral category, EU Member States, Q4 2019–Q4 2020

Member State	Permanent					Temporary				
	Essential	Teleworkable	Mostly essential	Mostly non-essential	Closed	Essential	Teleworkable	Mostly essential	Mostly non-essential	Closed
Austria	-1.2	2.8	-2.0	0.9	-13.2	18.6	-2.8	12.8	1.0	-37.7
Belgium	-0.3	5.0	-11.3	0.3	-8.7	-16.0	4.5	-12.3	-6.4	-38.2
Bulgaria	-0.6	-3.4	-3.1	1.4	-15.8	-25.4	-37.2	-11.5	-11.7	-44.7
Croatia	-3.6	-3.5	4.2	2.7	-11.1	-26.0	3.2	5.6	-7.5	-47.5
Cyprus	-2.2	8.5	3.9	5.0	-24.7	6.5	-4.2	10.8	4.1	-43.6
Czechia	-1.8	4.5	-0.2	-4.1	-9.6	2.3	-12.0	-11.8	-1.0	-33.1
Estonia	-7.6	2.8	-1.4	-2.3	-10.8	-0.5	10.4	0.6	-7.7	-10.8
EU27	-1.6	4.4	-3.0	-0.4	-8.1	-6.8	1.6	-11.8	-13.9	-31.4
Finland	-4.8	8.2	-4.0	0.3	-13.5	-8.9	16.6	-16.7	-18.8	-23.1
France	-1.4	4.0	0.6	-1.3	-2.4	-5.1	1.3	-5.4	-10.6	-15.7
Greece	-2.1	9.9	2.9	-7.2	-3.5	-27.5	3.8	-34.9	-40.4	-34.3
Hungary	-1.7	8.2	-4.1	-5.6	-9.5	-24.3	-16.3	-7.2	5.2	3.3
Italy	2.3	1.2	4.0	-0.3	-8.6	-5.9	7.3	-16.4	-13.1	-37.8
Latvia	1.9	-2.3	-8.2	-7.4	-7.6	16.7	-36.0	-33.8	1.6	-63.7
Lithuania	-7.8	6.8	-2.7	-5.8	-7.3	8.5	-38.6	-23.5	39.8	34.0
Luxembourg	-8.7	11.0	17.0	0.6	7.4	-9.4	-2.6	22.3	-23.2	47.4
Malta	13.6	2.9	-21.0	-3.4	-2.7	-8.0	-18.2	116.4	8.5	-64.1
Netherlands	-0.7	3.4	-1.3	-3.0	-9.6	0.0	5.4	-6.0	-20.3	-28.2
Poland	6.5	6.6	-3.9	0.1	3.2	-8.4	-13.9	-12.0	-17.2	-26.5
Romania	2.0	-0.8	3.1	-4.1	-7.1	-29.0	-25.4	-22.1	-20.6	14.3
Slovakia	-2.0	3.2	4.3	1.8	-11.9	-32.7	-21.5	-31.0	-40.9	-33.1
Slovenia	12.2	12.7	-6.2	-3.7	-0.8	-1.8	-15.8	-41.1	-9.6	-51.9
Spain	-0.6	1.3	-1.5	-0.2	-13.0	1.9	1.0	-8.7	-9.8	-40.8
Sweden	-0.2	0.2	0.5	0.4	-5.1	-2.4	-2.9	-8.5	-11.1	-27.6

Notes: Employees only. Data not available for Germany; Denmark, Ireland and Portugal excluded because 2020 data are incomplete.

Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

Narrowing the analysis to the NACE two-digit level, data reveal that at EU level, the increase in temporary workers within the essential sector was generally in the utilities and mining sectors and, to a lesser extent, in human health activities.

To complement this analysis, it is useful to assess how the number of furloughed workers changed across sectors by employment status. According to EU27 aggregate data, furloughed workers are mainly permanent, regardless of the sector in which they work. As a share of the total increase in furloughed workers, temporary workers represent at most less than 10% across all sectoral groups.

This bundle of evidence points to an asymmetric effect independent of the lockdown measures, where temporary workers are more vulnerable to negative employment effects compared to workers on standard contracts, notwithstanding the introduction or extension of ad hoc schemes to the former group during the pandemic. At the same time, the long-term progress towards more flexible labour markets, which strengthened during the Great Recession, especially in southern and eastern European Member States, may have played a major role in weakening the overall social protection of temporary workers. Similarly, fiscal consolidation measures that reduced the share of public employment led to a less resilient labour market, as it scaled back on a large share of employment in teleworkable occupations.

Finally, different employment impacts across types of contractual arrangements suggest that more precarious or non-standard contracts are often used by firms to adjust primary variable costs to the business cycle.

Working time and employment contract

Looking further into the composition of employment trends, it is also possible to rearrange the data to describe the combined effect of both contractual and working time arrangements, focusing on employees only. From a methodological point of view, the following descriptive analysis simplifies the classes of hours worked into a broader working time measure, distinguishing between part-time and full-time, while excluding furloughed workers. For consistency with the previous section, the analysis that follows is detailed across sectoral category and by Member State.

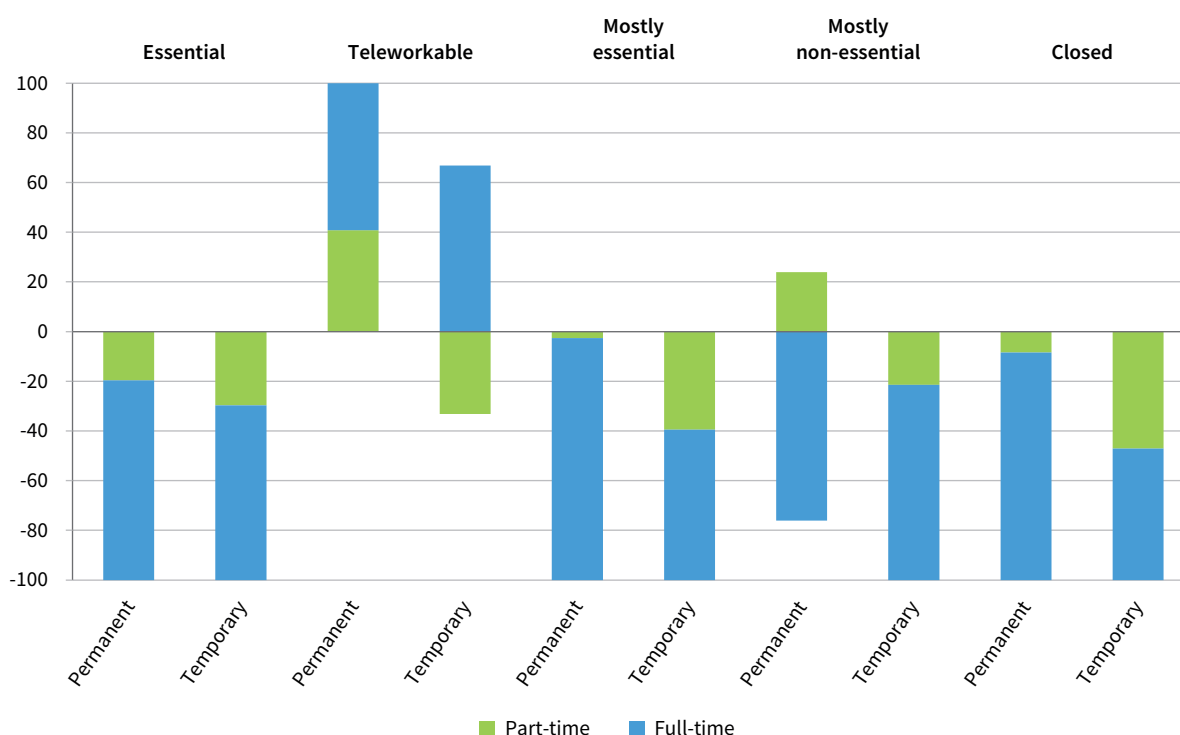
Year-on-year employment shifts point to the pivotal role played by the reduction in full-time employment, which explains most of the negative change across Member States, except in Croatia, Finland, France, Hungary, Poland and Slovenia, where the downturn was driven by declines in part-time employment.

Figure 21 shows the composition of employment change by contract and working time across sectoral categories at EU27 level. Except for the closed sectors and, to a lesser extent, the mostly essential sectors, more than 80% of employment decline is accounted for

by full-time workers, regardless of contractual arrangements. In the other cases, more than 40% of the reduction in temporary employment is constituted by part-time workers. Therefore, the reduction in part-time temporary workers far outweighs their proportion of total employment, which was 26% in the last quarter of 2019. Moreover, the relative decline in temporary employees working part-time is higher than their share in total employment in each sectoral category. Consequently, the main conclusion is once again that vulnerable workers, in compound non-standard forms of employment – combining both part-time and temporary status – have accounted for a disproportionate amount of the employment decline across the five sectoral categories.

A peculiar pattern characterises teleworkable sectors in that almost half the increase in permanent employment relates to part-time workers, while employment declined among part-time temporary workers. A mixed hiring strategy may explain this pattern. On the one hand, firms that find it convenient to hire permanent workers could gain flexibility by adjusting hours worked using part-time arrangements. On the other hand, temporary workers best suit short-term needs following an increase in production, without firms having to make a commitment over the duration of a contract and therefore undertaking higher dismissal costs. Both strategies rationally fit firms' attempts to use labour input in the most flexible way. At the same time, the

Figure 21: Employment change (%), by working time and employment contract, across sectoral categories, EU27, Q4 2019–Q4 2020



Note: Furloughed workers are excluded.

Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

increase in part-time arrangements may simply be the result of a revival in weekly hours worked of those under temporary lay-off during previous weeks. This scenario may account for positive changes, namely partial recovery, in hours worked, rather than employment expansion at the extensive margin.

Gender

Pre pandemic

At the end of 2019, while the employment distribution by gender across sectoral categories varied across Member States, similarities can be highlighted. Female workers were underrepresented in mostly non-essential sectors (which are biased towards manufacturing activities), where they account for 25% of employment, against 47% overall in the EU27 (Table 8). As already pointed out by Fana et al (2020a), women are by contrast overrepresented in the closed sectors, especially in Austria, Finland and the eastern European

Member States. In addition, the share of female workers in the essential sectors is above the EU27 average in Austria, Belgium, Finland, France, the Netherlands and Sweden. Using economic lockdown as the main potential explanation of an asymmetric employment impact by gender would result in female workers being more vulnerable in those countries where they are overrepresented in closed sectors, while they should be less affected if mainly employed in more resilient sectors.

Impact of the pandemic

As is already evident in this section, sectoral specialisation and gender concentration across economic activities is only part of the story of the heterogeneous impact by gender both within and between Member States. On the one hand, labour market institutions shape employment resilience, something that applies across sociodemographic

Table 8: Proportion of female employment in sectoral categories (%), EU Member States, 2019

Member State	Essential	Teleworkable	Mostly essential	Mostly non-essential	Closed	All sectors
Austria	53	53	54	20	61	48
Belgium	56	53	47	21	53	46
Bulgaria	42	56	55	34	62	50
Croatia	45	57	54	22	58	47
Cyprus	43	56	48	29	54	46
Czechia	48	55	52	26	61	49
Estonia	50	60	55	24	66	51
EU27	51	53	48	25	57	47
Finland	61	53	46	18	63	48
France	56	54	46	24	55	47
Greece	41	48	43	19	50	40
Hungary	44	58	52	26	58	47
Italy	42	50	42	29	54	44
Latvia	48	65	59	20	70	52
Lithuania	48	63	54	29	70	53
Luxembourg	52	45	51	36	50	47
Malta	40	51	40	23	38	39
Netherlands	62	45	43	21	55	45
Poland	44	58	55	21	65	49
Romania	42	50	54	29	62	48
Slovakia	48	59	55	23	63	50
Slovenia	47	59	52	25	60	49
Spain	46	51	51	29	56	46
Sweden	58	56	42	19	53	45

Note: Data not available for Germany; Denmark, Ireland and Portugal excluded because 2020 data are incomplete.

Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

groups. On the other hand, social and economic policies in place during the pandemic interacted with pre-existing cultural norms and forms of inequality. For example, Member States in which domestic work is disproportionately allocated to women over men are also those in which women are more likely to drop out of paid work to take care of children at home because of school closures. This type of household response to the shock may be correlated with welfare policies implemented at the national level both before and during the pandemic. Bearing this in mind, in the rest of this section, a detailed descriptive analysis of employment change by gender across sectors and over different quarters of 2020 is presented.

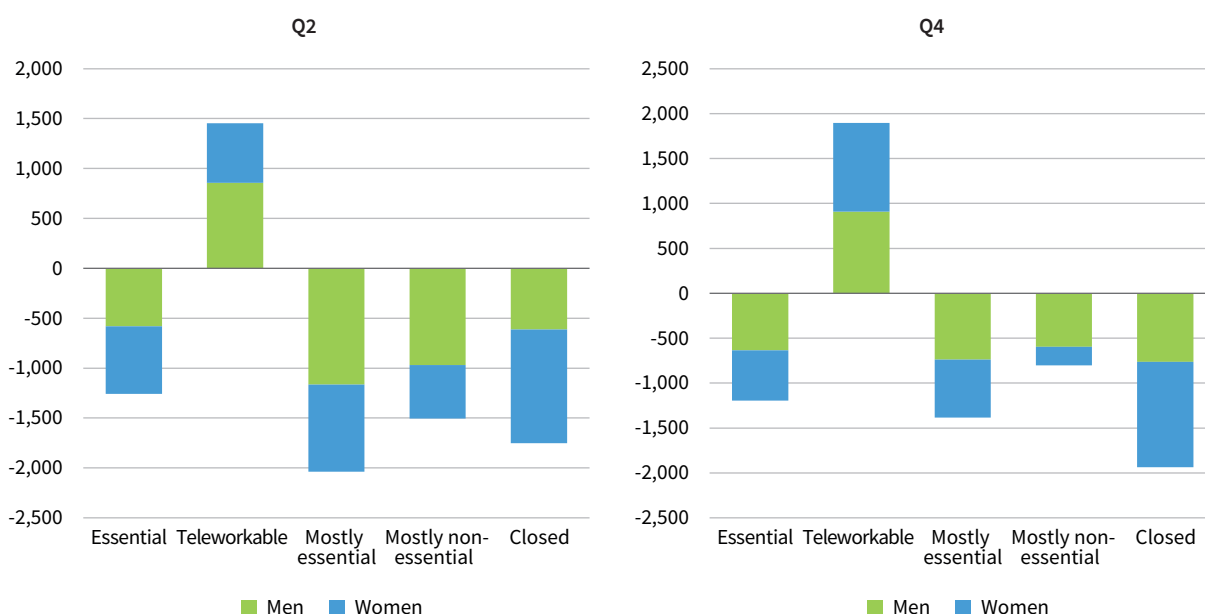
A first look at aggregate European figures shows that the hypothesis of a ‘shecession’, that is, an asymmetric employment effect affecting women more than men, exists marginally and only at the outset of the pandemic (Q2) on a year-on-year basis. This effect is mostly driven by the negative trend characterising the closed sectors, which hit women more than men, and to a lesser extent by the drop in female employment in mostly non-essential sectors, as these sectors accounted for a relatively high proportion of female employment pre COVID-19. Indeed, employment loss among female workers accounted for 35% and 65% of the total drop in mostly non-essential and closed categories, respectively. However, comparing the fourth quarters of 2019 and 2020, men suffered the most employment loss, regardless of the sectoral category.

The breakdown of employment change by gender within each sectoral category illustrates where changes occurred (Figure 22). When the focus is placed on

essential sectors at NACE Rev. 2 level, mixed patterns emerge across these sectors and across periods (Q2/Q4 2019 to Q2/Q4 2020). Of the four most affected sectors – residential care activities, manufacture of food products, warehousing and support, and publishing activities – female employment declined more than male employment in the first two, a shift that is in line with the employment composition before the pandemic. Residential care activities is a feminised sector, as is the manufacture of food products. By contrast, publishing activities and telecommunications, where women are underrepresented, experienced an increase in employment last year. However, at the end of 2020, compared to one year earlier, employment changes in essential sectors negatively affected men more than women, with job losses of 635,000 and 557,000, respectively, in the EU27. This is in line with the pre-COVID-19 gender distribution in essential sectors (54% versus 46%, respectively).

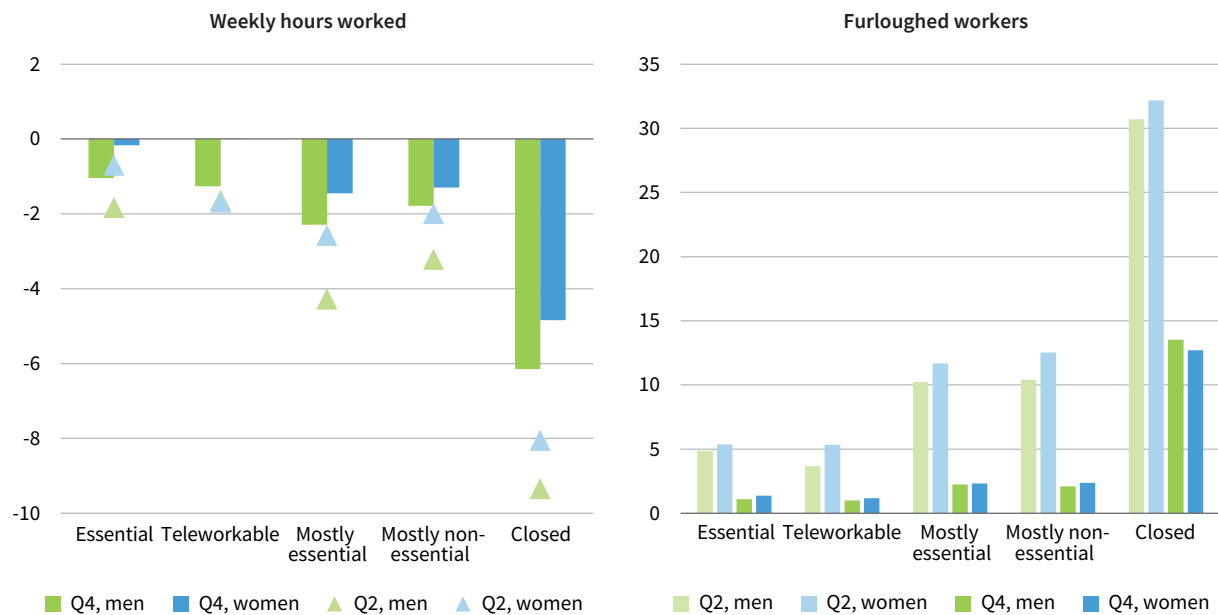
As regards mostly non-essential sectors, the sharp decline in female employment was almost entirely driven by negative changes in activities of households as employers – a decline that more than halved between the second and fourth quarters of 2020 (-352,000 in Q2 compared with -141,000 in Q4, year on year). Conversely, core manufacturing and construction activities experienced a substantial decline in male employment. This was more pronounced at the end of the year owing to a severe drop in employment in the manufacture of computer and electronic equipment, the manufacture of motor vehicles, and the manufacture of other transport equipment, but also in the repair and installation of machinery sector, where employment had expanded in the second quarter.

Figure 22: Employment change (thousands), year on year, by gender and sectoral category, EU27, 2019–2020 (Q2 and Q4)



Source: EU-LFS (authors' calculations); Fana et al (2020a) for sectoral classification

Figure 23: Change in weekly hours worked (%) and share of furloughed workers (percentage points), by gender across sectoral categories, EU27, 2019–2020 (Q2 and Q4)



Note: In the Teleworkable category, the values for men and women in Q2 overlap, hence the marker for 'Q2, men' is not visible.

Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

Looking at the decline in hours worked by gender, Figure 23 shows that men were affected more than women by reductions in working time across all sectoral categories. This evidence may hide the different distribution of male and female employment by working time, with women being more likely to be employed part-time.

As for the distribution of furloughed workers, no relevant gender effect emerges from the data: the change in the proportion of individuals employed but not working in Q2 2020, compared with the same period one year earlier, was around 5% for both men and women in the essential sector, versus around 31% in closed sectors.

Finally, breaking down the data by Member State, gender and sectoral category, Table 9 overleaf shows the relative female employment change between

Q4 2019 and Q4 2020. As expected, in most Member States, the relative decline in female employment was larger in closed sectors than in the rest of the economy. It is worth noting that these are not necessarily countries that had higher shares of female employment in closed sectors prior to COVID-19 than the EU27 average.

Belgium and Slovenia experienced the sharpest relative decline in the mostly essential sectors (-10.7% and -16.1%, respectively). As regards essential sectors, female employment declined by more than 10% in Estonia and Lithuania, whereas in the EU27, the average drop was 2.1%. While, in these two Member States, women were underrepresented in essential sectors before the pandemic, it cannot be concluded that employment composition by gender was a major driver in explaining the patterns of employment change during the first year of the pandemic.

Table 9: Change in female employment across sectoral categories (%), EU Member States, Q4 2019–Q4 2020

Member State	Essential	Teleworkable	Mostly essential	Mostly non-essential	Closed
Austria	0.8	1.3	2.2	4.8	-17.1
Belgium	-2.1	6.8	-10.7	11.2	-4.7
Bulgaria	-4.1	-0.6	-3.4	1.6	-13.4
Croatia	-7.6	-1.3	5.0	-7.6	-6.5
Cyprus	-1.1	7.8	3.7	2.9	-31.6
Czechia	2.2	-0.4	-4.9	-5.4	-8.1
Estonia	-12.2	3.6	4.1	-0.1	-10.0
EU27	-2.1	3.6	-3.9	-2.0	-11.1
Finland	-7.4	6.1	-2.3	9.8	-13.5
France	-3.2	5.1	-2.0	-1.1	-4.4
Greece	-2.3	10.3	-0.5	-14.4	-9.6
Hungary	-0.7	4.3	-3.8	-10.8	-3.0
Italy	0.8	3.3	-1.1	-4.5	-12.4
Latvia	-10.4	0.2	-7.8	13.2	-15.2
Lithuania	-10.6	2.8	-9.2	1.3	-2.0
Luxembourg	1.2	12.9	3.3	1.6	13.8
Malta	7.2	-5.8	-6.7	16.3	5.9
Netherlands	-2.2	4.1	3.0	-4.2	-9.6
Poland	5.6	3.6	-3.0	-0.7	-5.8
Romania	-1.4	-4.7	2.8	-6.4	-6.9
Slovakia	-6.4	-0.9	2.6	6.0	-15.7
Slovenia	11.8	4.8	-16.1	-7.6	-17.4
Spain	2.3	1.1	-2.5	-5.7	-15.6
Sweden	-0.9	-2.5	-3.0	0.4	-11.5

Notes: Data not available for Germany; Denmark, Ireland and Portugal excluded because 2020 data are incomplete.

Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

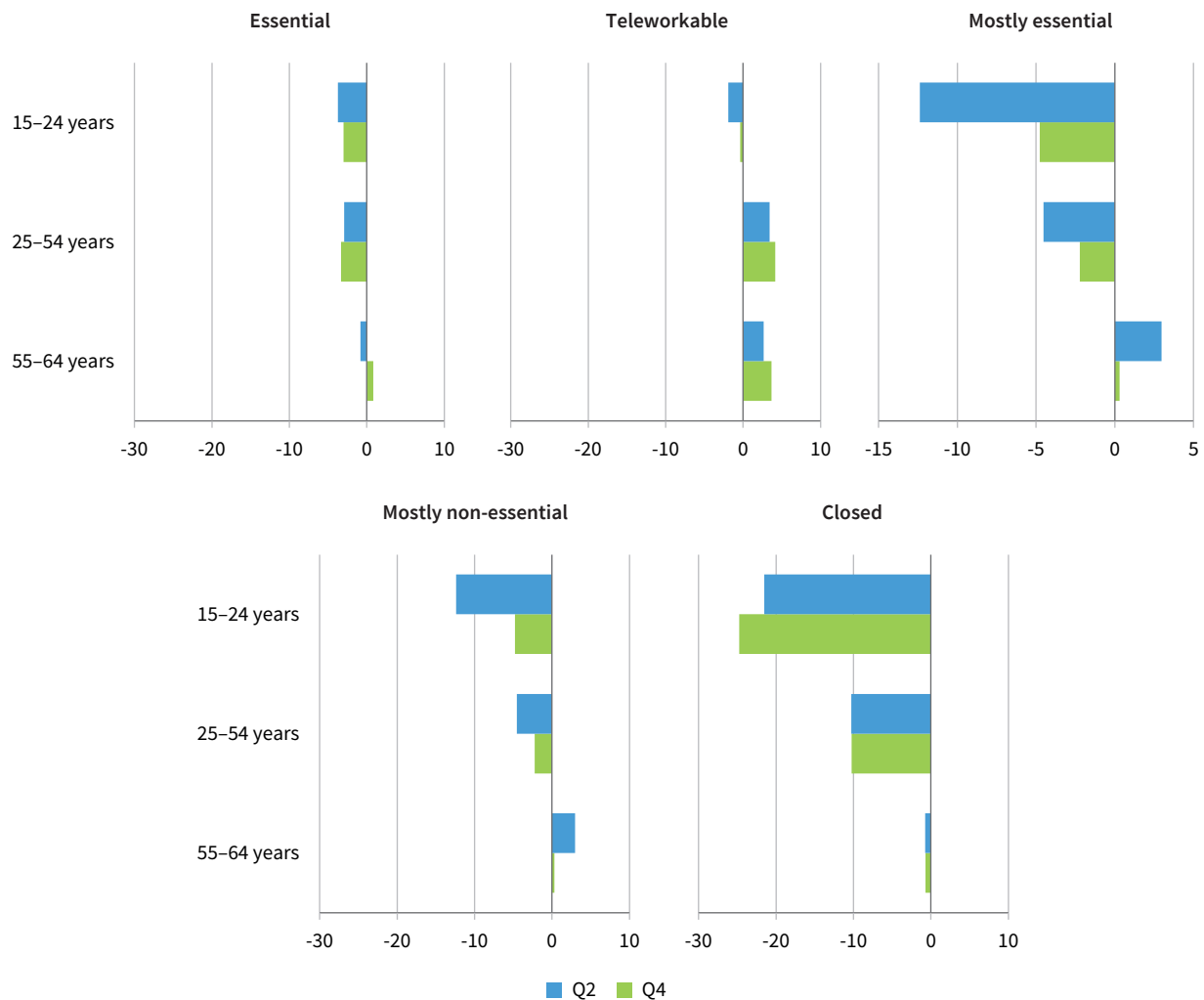
Age

The final layer of analysis of the employment impact of COVID-19 concerns its distribution across age classes. On average, young workers are more likely to be employed in non-standard forms of work and in more vulnerable and low value-added sectors than older workers. That is why, according to the analysis on the potential impact, Fana et al (2020a) refer to the youngest cohort as being more at risk in the short and medium terms as a result of the pandemic.

By breaking down the data by sectoral category and age class (Figure 24), this analysis confirms that at EU27 level, during both the second and the fourth quarters,

the relative change in employment has been most severe for the youngest cohort (15–24 years old). In this age group, employment contracted by -22% in closed sectors during the first quarter compared to -10% among prime-age workers (25–54 years old) in the same sector and period. Significant job decline can be observed for the youngest workers also in the mostly essential and mostly non-essential sectors (greater than -10%). However, in those two sectoral categories, the negative impact had reduced by Q4, whereas it had not done so in closed sectors. Moreover, the youngest cohort has benefited the least from the increase in employment in teleworkable sectors.

Figure 24: Relative employment change (%), by age group across sectoral categories, EU27, 2019–2020 (Q2 and Q4)

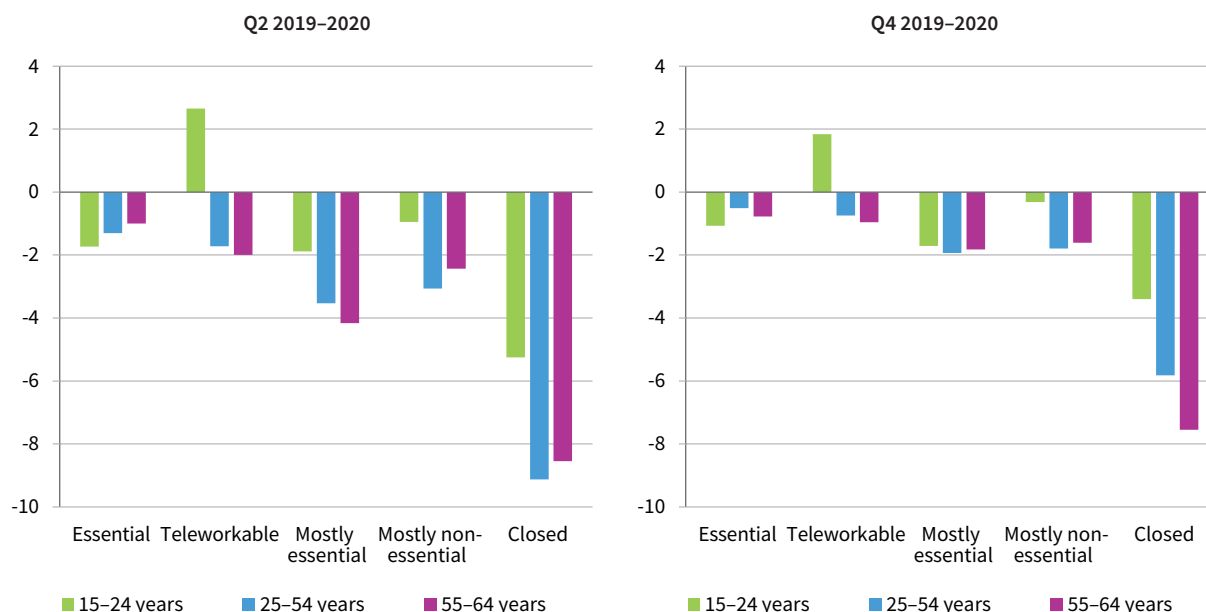


Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

Changes in weekly hours worked by age cohort and sectoral category highlight an overall major drop in closed sectors in both quarters (Q2 and Q4) on an annual basis, but the decline among young workers in this case is smaller than for other age groups (Figure 25). Hours worked increased only for people aged 15–24 years in teleworkable sectors, while they declined more within closed activities in absolute terms and in essential sectors relative to the other cohorts. This heterogeneous evidence may be related to the distribution of the cohort across working time

arrangements before COVID-19. In particular, changes in hours worked are negatively correlated with the share of part-time workers across sectors.

Overall, the analysis by age cohorts highlights that the huge change in employment headcount year on year in closed sectors has a strong age gradient, with younger workers most affected. This is also the case in the mostly non-essential category. However, working time reductions in both of these categories were much less severe for younger workers and much greater for prime-age and older workers.

Figure 25: Change in weekly hours worked (%), by age group across sectoral categories, EU27, 2019–2020 (Q2 and Q4)

Note: Those who were employed but not working in the reference week are excluded.

Source: EU-LFS (authors' calculations); Fana et al (2020a) for sector classification

Summary: Consequences for employment of COVID-19

The analysis in this chapter highlights a major pandemic-related employment decline in closed sectors, which were forced to remain shut most of the time, even when confinement measures and economic lockdowns had been relaxed nationwide. While the level of this negative impact decreased between Q2 and Q4 2020, it remained significant. Its severity followed, to some extent, Member States' economic specialisation: the higher the share of workers employed in closed sectors before the pandemic, compared with the EU27 average, the greater the employment decline. However, there were employment declines in almost all non-teleworkable sectors and Member States, even in those sectors considered essential. The main message from this part of the analysis is that, among essential economic activities, those more integrated with other sectors suffered the most. For instance, the manufacture of food products was linked to restaurants, which have been closed or operating partially for much of the time.

Some interesting findings emerge when looking at mostly non-essential sectors, which include the majority of the manufacturing sector, which was partly closed during the first wave of lockdowns. These sectors experienced a significant negative impact, which mainly affected eastern European Member States, suggesting that there was significant disruption among the important European supply chains to which these countries contribute as producers of intermediate inputs (Villani and Fana, 2020). This finding is corroborated at the detailed sectoral level, as the sectors that did not recover or recovered less than the average were highly integrated sectors (as in the case of automotive manufacturing).

Labour market institutions appear to be an important mediator of employment change not only during expansion but also during economic downturns. Indeed, being a temporary rather than a permanent worker substantially increased a person's likelihood of job loss, regardless of the sectoral category. At the same time, job-protection schemes, whether adopted or extended during 2020, mitigated the negative employment impact, as evidenced by the substantial increase in the number of furloughed workers. However, while these ad hoc employment-protection schemes have in most Member States been extended to workers in non-standard forms of employment, these schemes are of a temporary nature and are not enough to compensate for the greater vulnerability of these workers compared with those working under standard contractual arrangements.

Finally, headcount measures of employment changes do not highlight a generalised asymmetric impact by gender, with the partial exception of the closed sectors. By Q4 2020, however, the negative employment shock for men was more pronounced than for women, both in manufacturing sectors and especially in highly integrated sectors (the automotive sector and the manufacture of other transport equipment).

4 The telework buffer: An occupational analysis

COVID-19 and the public health response to the pandemic has resulted in sharp declines in labour inputs, especially in the second and third quarters of 2020, immediately after the onset of the pandemic in Europe. However, one important buffer preventing further job loss and declines in working hours has been provided by telework, the capability of a significant minority of workers to work from home. This enabled several forms of productive activity to continue largely unhindered by the public health requirements of social distancing that were designed to prevent the spread of the coronavirus. The effects of the current crisis on labour markets could have been more severe without government recommendations to prioritise telework and companies' readiness and capability to adopt remote working as a temporary measure.

Initially, this manifested as a huge ad hoc social experiment, as thousands of workplaces permitted their workers to work from home, while most governments recommended working from home for all workers whose jobs allowed them to do so during periods of lockdown. In particular, most computer-reliant, office-based work shifted from the office to workers' homes, using existing information and communications technology (ICT) infrastructure to this end.

Teleworkable share of employment

There remains wide variation in the estimates of how many people have worked from home in 2020–2021, but there is more convergence in relation to the potential share of teleworkable employment.

Many studies have estimated the potential effect of the supply shock caused by the adoption of restrictive lockdown measures, calculating various indexes of

teleworking at an occupational level. Initial estimates based on the theoretical feasibility of remote working and using a job-task analysis were that 18% of global employment and 27% of advanced economy employment could be carried out remotely (ILO, 2020b). Using the Occupational Information Network (O*NET) database for the US, Dingel and Neiman (2020) found that 37% of jobs could be performed entirely from home in the US.

Sostero et al (2020) estimated that a similar proportion, 37%, of EU employment was technically teleworkable, following an analysis of occupational tasks and 2018 EU-LFS estimates. While, before COVID-19, there was a gender balance in the trend of working from home, the authors found that teleworkable positions in Europe have usually been held by older workers with higher levels of education and predominantly by women (Box 7).

These estimates of the share of employment that is technically capable of being carried out remotely can be compared with data from live surveys – with the caveat that these are rarely based on representative samples and estimates are likely to be biased. More recently, at the time of writing (May 2021), however, estimates can be assessed against the first indications from official, representative household surveys.

Around one-third (34%) of employees in the EU were estimated to be working exclusively from home in July 2020, with another 14% working partially from home, according to the online *Living, working and COVID-19* survey (Eurofound, 2020b). First estimates from official household surveys indicate that around 35% of US workers were working from home in Q2 2020, as were 25% of workers in other high-income countries, including five EU Member States (Soares et al, 2021). The percentage of hours worked from home was even

Box 7: Teleworkable employment predominantly female

According to the estimates of Sostero et al (2020), the share of women in teleworkable occupations in the EU was 45%, compared to 30% for men. The gender difference in teleworkability relates, in part, to patterns of sectoral segregation. Men are overrepresented in sectors with limited teleworkability potential such as agriculture, mining, manufacturing, utilities and construction, where tasks involving physical handling are prevalent. However, even in these male-dominated sectors, the teleworkable share of female employment tends to be high. In construction, only 6% of male employment is teleworkable, compared to 69% of female employment, for example. Women tend to work in different jobs from men in these sectors and these jobs tend to be the more teleworkable ones – office based, secretarial or administrative in nature, with a lower share of physical-handling tasks.

higher, nearly 50%, in one US study (Barrero et al, 2020a), reflecting the fact that hours worked declined much more sharply in jobs that could not be teleworked. While EU-LFS annual 2020 data provide more modest estimates of the share of employees working from home (19% working either usually or sometimes from home in the EU27), all indications are that the number of people working from home was many times higher than pre-COVID-19 levels as a result of the pandemic. Prior to COVID-19, only 3% of employees worked from home regularly.

These findings invite reflection on what exactly it is that makes some occupations amenable to telework, while others not. Sostero et al (2020) argued that the ultimate determinant of occupational teleworkability is the lack of physical-handling tasks. Occupations rich in such tasks – those, for example, of nurses, production line workers in manufacturing and farmers – simply cannot be performed remotely with the available technologies. In principle, all other jobs may be performed remotely or from home, with varying degrees of difficulty. There are additional factors that either constrain or qualify the ability to telework, such as the extent of social interaction required in a job, while other factors facilitate telework, such as the infrastructure for ICT connectivity in computer-facing knowledge-based work. However, the main impediment to teleworkability are physical-handling tasks that can only reasonably be performed in specific locations.

Based on a detailed analysis of occupational task content from Italian survey data and the EWCS, it was estimated that 37% of EU employees worked in occupations that were teleworkable. Considered a type of forecast and put side-by-side with estimates from live survey sources, it appears that the majority of workers who could telework were teleworking during lockdown periods in 2020–2021.

Two important qualifications are worth noting. First, many occupations that are considered teleworkable using this approach have a high share of social interaction tasks, which meant that remote working was suboptimal. A case in point is teachers giving lessons online. While customary during the crisis, this is unlikely to remain the case post crisis. If occupations such as these are excluded, the share of employment in ‘wholly teleworkable’ occupations reduces to 13%. Second, beyond the purely technical assessment of teleworkability, dimensions of work organisation – notably hierarchical control, work autonomy and levels of trust – have also played an important role controlling access to remote working (Eurofound, 2020c; Fana et al, 2020b). Pre-crisis occasional teleworking tended to be a

privilege of professional occupations, even though technically many clerical white-collar occupations are more teleworkable, based on a tasks analysis. Access to telework has hitherto been determined by a worker’s position in the occupational hierarchy and the associated privileges, more than by the task composition of the job (for a fuller discussion on work hierarchy and teleworking, see Sostero et al, 2020).

Steep wage and education gradient of teleworkability

Teleworkable occupations tend to be those with many labour market advantages – less physically arduous working conditions, higher pay and greater job security (Adams-Prassl et al, 2020). Jobs that can be teleworked are generally ‘good jobs’. The strongest determinants of teleworkability are the education level of workers doing the job and what it pays; 75% of those in the top job–wage quintile can telework, compared with fewer than 5% of those in the lowest job–wage quintile. Over 60% of workers with third-level qualifications are in teleworkable occupations (Sostero et al, 2020).

According to the second round of the *Living, working and COVID-19* e-survey (conducted in July 2020), an even higher share of employees with tertiary qualifications (74%) were working from home in July 2020, compared with 34% of those with secondary qualifications and 14% of those with primary education only.

The aim of the analysis in this chapter is to explore to what extent a telework buffer can be inferred from the variation in the employment impacts of the crisis in different occupations. Initial indications from EU-LFS data for Q2 2020 suggest that telework did protect jobs (Eurofound, 2021a). Employment in largely teleworkable sectors such as computer programming and consultancy, information services and financial services grew, while many service sectors suffered steep declines in headcount or working hours (or both). According to the first wave of Eurofound’s *Living, working and COVID-19* e-survey in April 2020, people working from home were less likely to have experienced job loss and a decline in working hours and were more likely to be confident about retaining their job over the next three months (Eurofound, 2020b). Working from home contributed to the resilience of employment by facilitating employment continuity in a context of widespread workplace closures.¹⁴

The following analysis compares occupational employment shifts following the onset of the COVID-19 pandemic based on three measures – employment

¹⁴ However, as noted, the types of jobs in which telework is most prevalent – higher-skilled, knowledge-based services work – tend to be those with more secure employment relationships.

headcount, share of workers employed temporarily absent from work (furloughed) and weekly (actual) working hours. By using EU-LFS quarterly data (provided in extraction format by Eurostat) up to Q4 2020, the analysis is based on the most representative, up-to-date labour market data available at the desired level of detail (the International Standard Classification of Occupations (ISCO) at the three-digit level). The comparisons are year on year by quarter rather than quarter on quarter, to take account of the strong seasonality of the EU-LFS data. In addition to describing employment shifts by occupational category, the main question explored is whether those occupations that were identified as teleworkable enjoyed better outcomes than jobs considered less teleworkable or not teleworkable at all.¹⁵ The hypothesis is that occupations that are teleworkable enjoyed some shelter from the impacts of the lockdowns and were less likely to suffer from job loss or a decline in working hours, as they were location independent and could be performed at home.

As Table 10 demonstrates, there is a stark difference in the degree to which employment in broad occupational groupings is teleworkable. At least half of employment in each of the first four white-collar ISCO one-digit categories can be performed remotely, but this is true of less than 1 in 10 of the remaining white-collar category

(services and sales workers, 8%) and of only a very marginal share of the occupational groupings that are mainly blue collar and production based.

It was also the blue-collar and production-based occupational categories that were more affected by the crisis, in particular in its first, more severe, phase in Q2 2020. Each of the blue-collar or more basic occupational categories experienced falls in headcount throughout 2020, namely craft and related trades workers, plant and machine operators, and elementary occupations. The sharpest declines in headcount were among services and sales workers – including retail assistants, restaurant servers, travel- and leisure-related service workers, and security and buildings maintenance workers. These are largely non-teleworkable occupations that predominate in sectors that were, following the classification in Chapter 3, either closed, essential or mostly essential. The timing of the declines by quarter shows that that these sectors were especially exposed to the effects of the pandemic. A sharp fall in headcount occurred in Q2 2020, and this level of decline persisted until the end of the year, although with some lessening of the negative impacts experienced over time.

The largest and fastest growing occupational category has been that of professionals, both in structural terms over recent decades and during the period being

Table 10: Main broad occupational employment trends, year-on-year shifts (%) by quarter, EU27, 2019–2020

Occupation (ISCO one-digit level)	Shifts in dependent employment in 2020 compared with 2019				Proportion of employment	Teleworkable proportion
	Q1	Q2	Q3	Q4		
Managers	2.5	2.3	2.4	2.3	4.4	74
Professionals	2.4	1.3	3.0	4.3	20.2	71
Technicians and associate professionals	1.7	-0.3	-0.4	0.3	16.1	52
Clerical support workers	0.8	-2.7	-1.0	-0.3	10.3	86
Services and sales workers	-0.9	-8.3	-6.5	-6.6	16.6	8
Skilled agricultural, forestry and fishery workers	2.0	-6.7	-4.8	-5.2	1.0	0
Craft and related trade workers	-1.3	-5.2	-3.0	-3.6	11.2	1
Plant and machine operators and assemblers	-1.0	-4.0	-3.7	-3.3	9.1	1
Elementary occupations	-0.4	-7.2	-5.7	-5.6	10.2	2
All	0.5	-3.3	-2.0	-1.6	100.0	38

Source: EU-LFS (authors' calculations); Sostero et al (2020) for teleworkable share by occupation (at EU27 level)

¹⁵ For this exercise, the data available (EU-LFS quarterly data to Q4 2020) at the time of writing were used. Unfortunately, the most relevant EU-LFS variable (HOMEWK) is available only in the annual EU-LFS data files, which became available only after completion of this chapter. Therefore, directly linking the incidence of working from home during the pandemic with labour market outcomes for specific occupations was not possible. The assumption is that comparatively better outcomes for teleworkable occupations are at least in part attributable to their teleworkability. Of course, many such jobs are also those experiencing structural growth, for example professional occupations in knowledge-intensive service sectors.

analysed. Professionals account for one-fifth (20.2%) of EU27 employment. Along with the category of managers, this was the only group in which net new employment was consistently created throughout 2020 compared with the previous year. Year-on-year growth rates were in the range of 1.3–4.3%, with the pace of employment creation picking up during 2020.

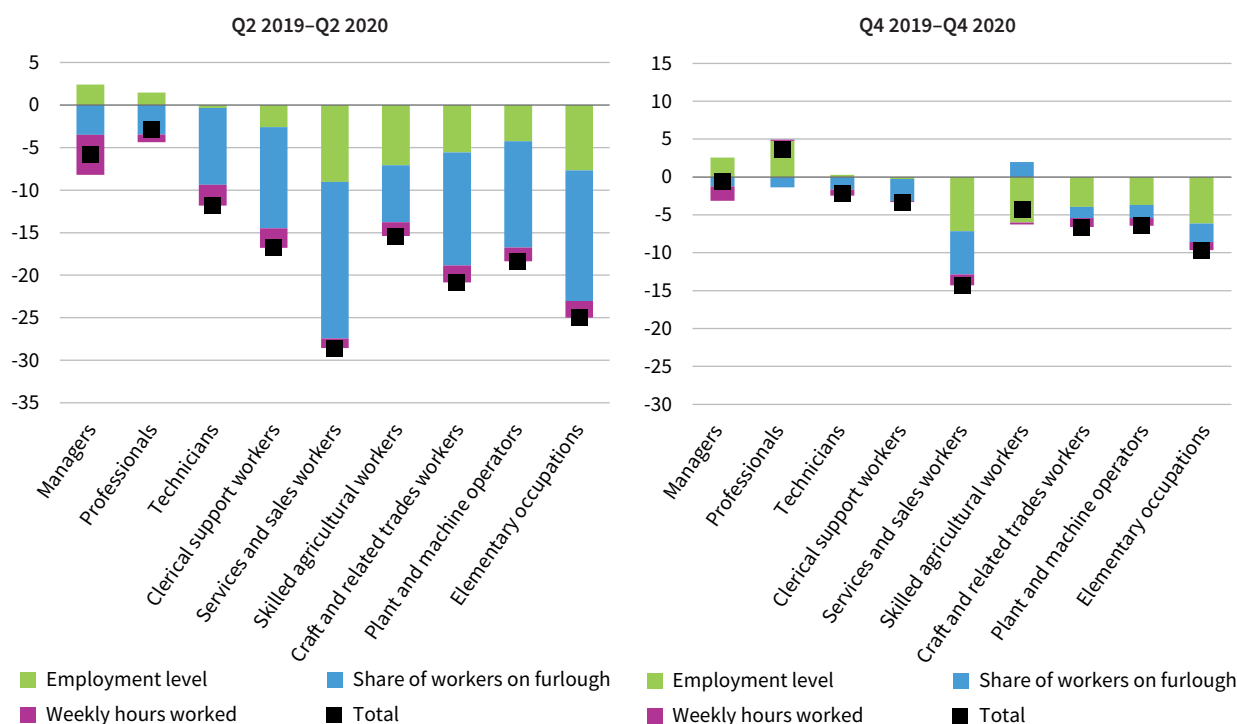
Professional occupations are mainly teleworkable (71% of employment – Sostero et al, 2020). This lends some support to the case for teleworkability offering some protection against COVID-19's employment impacts. Employment in managerial occupations, which are also highly teleworkable, also grew throughout 2020. There were, however, job losses, albeit limited, in the category of clerical support workers, the group with the highest share of teleworkable employment, based on task analysis (86%).

As the two panels in Figure 26 demonstrate, the very sharp immediate labour market impacts of the pandemic experienced in Q2 2020 tended to abate over the remainder of the year. The main form that these impacts took was a reduction in the share of workers temporarily absent from work (furloughed). This reflects some normalisation of economic activity in the second half of 2020 or at least intermittent periods of generally lighter and more localised restrictions after the more severe lockdown experienced in March–May 2020. Declines in the share of furloughed workers were noteworthy, in particular in the blue-collar occupational

categories (elementary occupations, craft and related trades workers, and plant and machine operators), although each of these groupings continued to see a decrease in employment headcount throughout the year. This suggests that furlough-type support that was initially made available to workers in these groups may have expired or may not have been sustained for a longer duration.

The decline in average weekly hours worked accounts for the smallest share of overall decline in labour inputs. It was nonetheless a substantial contributor in Q2 2020. This was especially the case for managers, whose customary long working weeks contracted most at the onset of the crisis (nearly 6%), one possible benign outcome of managing a workforce remotely. One explanation from in-depth qualitative interviews is that workers self-organised at the beginning of the pandemic as work tasks shifted away from the workplace, and so there was less for managers to manage (Fana et al, 2020b). Other research suggests that remote working required greater levels of monitoring, not less, once organisations began to reassert control of the work process as the pandemic persisted (Lamorgese et al, 2021). By Q4 2020, weekly hours worked had largely normalised for each occupational grouping, although there were still marginal declines year on year (in the range -0.4% to -1.5%), while managers' working weeks were still some 3% shorter. As the main vector of the pandemic's impact was sectoral rather than occupational, the

Figure 26: Declines in working hours by broad occupation (%), year on year, according to indicator, EU27, 2019–2020 (Q2 and Q4)



Source: EU-LFS (authors' calculations); Sostero et al (2020) for teleworkable share by occupation (at EU27 level)

Box 8: What makes an occupation teleworkable?

For this analysis, teleworkability is defined as ‘the technical possibility of providing labour input remotely into a given economic process’. The teleworkability index values for each occupation (see Annex 1) are based on an analysis of their task content, following the conceptual framework and taxonomy of tasks for occupational analysis developed in Fernández-Macías and Bisello (2020) and implemented using data from European surveys. This framework distinguishes between three different task types, which, given the state of existing technology, can be differentiated in terms of their teleworkability as follows:

- **physical tasks**, which generally cannot be provided remotely with existing technologies and thus are the real bottleneck for the teleworkability of occupations
- **social interaction tasks**, which, unless they require physical contact, can be provided remotely but with a significant loss of quality
- **information-processing tasks**, which can in general be provided remotely with hardly any loss and can be easily identified by their use of computers

The key determinant of teleworkability, therefore, is the absence of physical handling tasks. If a job has a significant amount of task content that requires the physical manipulation of objects or people, it is classified as not teleworkable. This binary and negative approach to assessing teleworkability is similar to that adopted by Dingel and Neiman (2020) for the US, which also arrives at a similar estimate for the share of US employment that can be carried out from home (37%).

If we take a more restrictive approach, only 13% of employment is in occupations that are teleworkable **and involve limited social interaction**. In these occupations (for example, finance professionals), computer use is more intensive than in teleworkable jobs with extensive social interaction (for example, secondary school teachers) and is much more intensive than in non-teleworkable occupations. As indicated in Sostero et al (2020, p. 50), ‘prospectively it is in these latter occupations where, if there is a general increase in teleworking post-COVID, it could be expected to occur earliest and fastest’.

heterogeneity of working hour shifts during the pandemic was stronger across sectors.

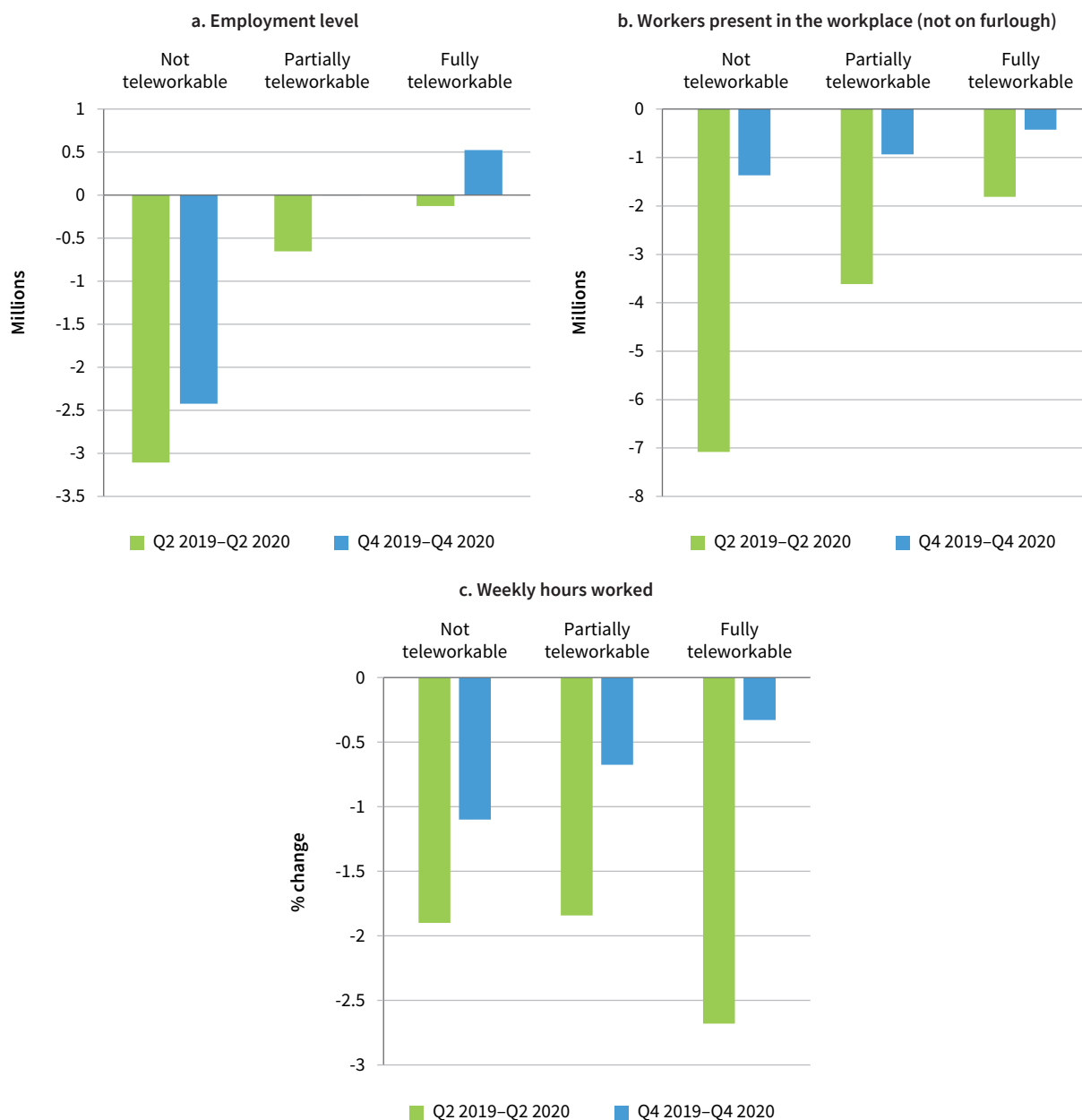
The occupational teleworkability index (see Box 8 for a description) outlined by Sostero et al (2020) was developed at a more detailed level covering 120 occupations (ISCO three-digit level – itself derived from an even more detailed ISCO five-digit source). This, for example, breaks down the professionals category into 27 individual occupations. Examples include medical doctors (ISCO 221), finance professionals (ISCO 241), and authors, journalists and linguists (ISCO 264; see the full list in Annex 1). For each of these 120 occupations, the teleworkability index shows the share of employment at the ISCO three-digit level considered teleworkable. For the above occupations, the index values are, respectively, 0.39, 1 and 1 – the last two occupations are fully teleworkable, that is, all suboccupations at the most detailed level can be teleworked, while only 39% of employment in the suboccupations making up the category of medical doctors is. Veterinarians and midwifery and nursing professionals are examples of non-teleworkable jobs, namely jobs with physical task requirements and that are largely place dependent. These have an indicator value of 0.

Labour input declines in non-teleworkable occupations

Figure 27 summarises quarterly employment shifts in the EU27 based on whether occupations are wholly teleworkable (index = 1, $n = 26$), partially teleworkable (index = 0.01–0.99, $n = 37$) or not teleworkable at all (index = 0, $n = 57$).

Jobs categorised as fully teleworkable suffered only marginal employment loss year on year during the peak crisis quarter, Q2 2020, before experiencing strengthening employment growth by the end of 2020. Net employment impacts were somewhat negative in the partially teleworkable category, although greater than average employment growth in each period suggests that even partially teleworkable jobs were less likely to experience employment loss than non-teleworkable jobs. All net employment loss in both periods was concentrated in non-teleworkable occupations. This is a first indication that teleworkable occupations provided some shelter from the upheaval caused by COVID-19.

Figure 27: Shifts in employment levels, share of workers on furlough and weekly hours worked, year on year, by occupational teleworkability, EU27, 2019–2020 (Q2 and Q4)



Notes: Weekly hours worked panel excludes those who did not work in the reference week, that is, those in panel b. Dependent employment only.
Source: EU-LFS (authors' calculations); Sostero et al (2020)

The biggest impact of the pandemic has been seen in the level of workers on furlough. Panel b of Figure 27, depicting year-on-year changes in workers on furlough, shows that non-teleworkable occupations took the brunt of these impacts, in particular in Q2 2020. There were over seven million extra workers in this category than in the previous year. The levels of furloughed workers in partially teleworkable occupations increased by 3.5 million and by just under two million in fully teleworkable jobs. By the final quarter of 2020, these figures had declined markedly, but across the three

categories, there were still year-on-year declines in labour input or increases in the share of furloughed employees.

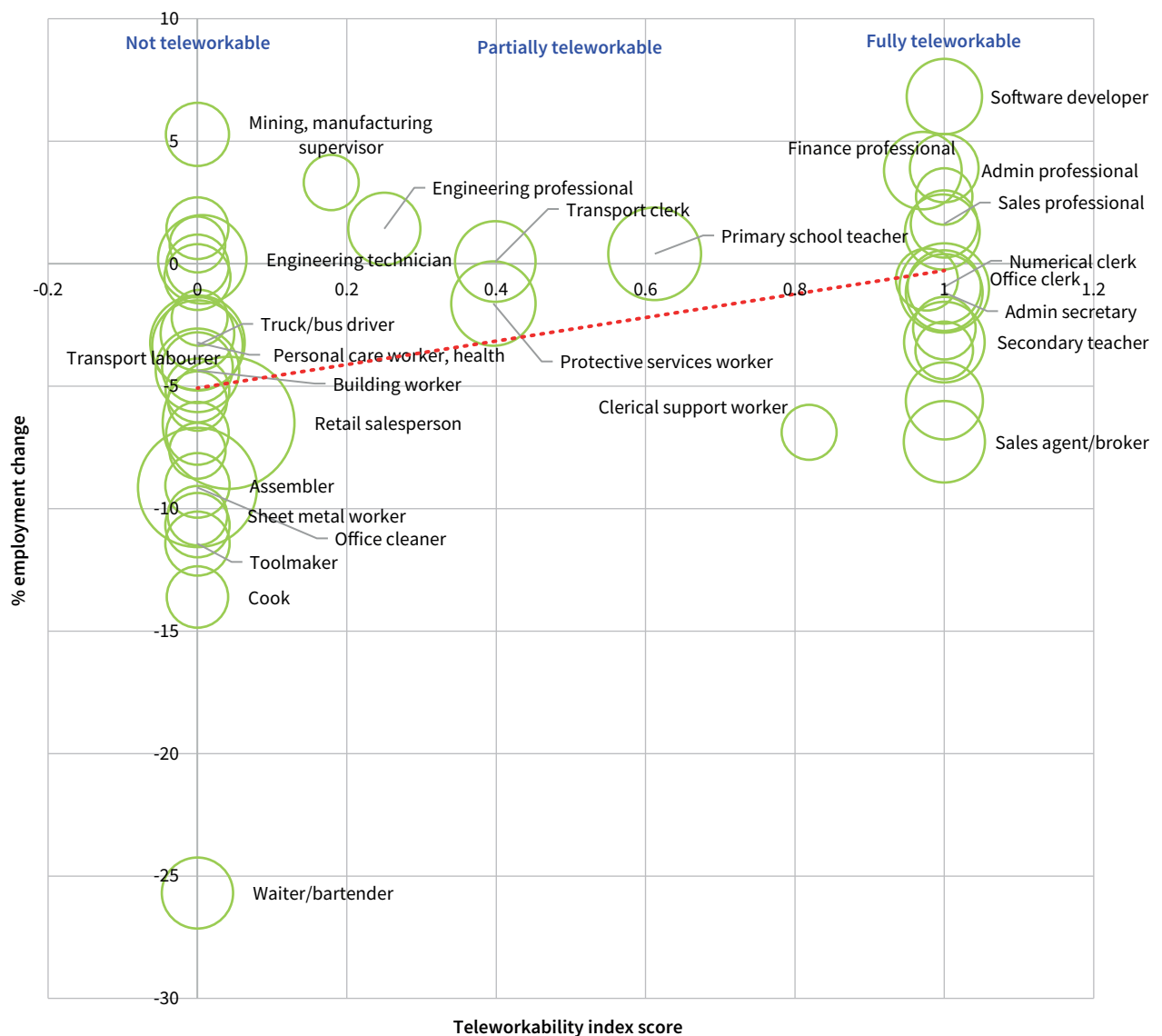
Weekly hours worked were also reduced on average for all three categories, but here the main impacts were on teleworkable (partially or wholly) occupations. More modest reductions in weekly hours worked for workers in non-teleworkable occupations may relate to the higher share of workers in essential services categories, where work continued more as normal or in some cases with longer hours.

Looking in more detail at the individual occupations (at the ISCO three-digit level) hints at a small positive association ($r^2 = 0.22$) between teleworkability and employment change in the early phase of the pandemic (Figure 28). Fully teleworkable occupations were more likely to have grown employment while a large majority of non-teleworkable occupations shed employment. Nonetheless, the association is not so strong, and there are a number of fully teleworkable jobs that sustained employment losses. These were often routine white-collar occupations – administrative and specialised secretaries, numerical clerks, and client information workers, for example. The sharpest losses were, however, in basic maintenance or people-facing

service occupations in closed sectors, for example waiters and bartenders, shop salespersons, and cleaners. These are clearly non-teleworkable jobs.

An important observation in Sostero et al (2020) was that some occupations that are highly teleworkable tended to have low incidences of remote working pre COVID-19 relating to work hierarchies. The capacity to telework for dependent employees has been a privilege granted, more than a right freely available. For dependent employees, an employer has to give permission for them to work remotely. More experienced, older workers whose jobs are largely autonomous were most likely to be extended this privilege and to report working from home pre COVID-19.

Figure 28: Employment shifts (%), by occupational teleworkability and detailed occupation, EU27, Q2 2019–Q2 2020



Notes: Bubbles are scaled to employment size in Q2 2020; includes occupations with over one million workers (EU23, $n = 45$), which account for 72% of total employment. Selected occupational labels only.

Source: EU-LFS (authors' calculations); Sostero et al (2020)

However, in 2018, less than 20% of ICT technicians and 10% of general keyboard clerks and other clerical support workers had experienced some form of telework. These are occupations with a high intensity of computer use, which in principle should facilitate working from home, and task analysis showed that technically these were the types of jobs most capable of being done remotely. According to the task analysis, the most teleworkable group of occupations is not the higher skilled white-collar categories of professionals and managers but the lower-skilled category of clerical support workers. Yet, before the COVID-19 crisis, mid- and low-level clerical groups had a much lower incidence of telework than managers and professionals, while junior or associate professionals had much lower frequencies of telework than their counterparts in more senior positions.

The quarterly EU-LFS data used for the preceding analysis in this chapter do not include data on 'working from home' – these are available only in the annual EU-LFS data – which limits an assessment of the extent to which remote working was extended to younger workers. Real-time survey sources, however, suggest that this indeed was the case. According to the second round of Eurofound's *Living, working and COVID-19* e-survey (conducted in July 2020), the highest share of working from home in July 2020 was reported in the 18–34 years age group (EU27, 41% working exclusively from home). Around one-third (32%) of those who had never worked from home previously did so for at least some of the time as a result of the pandemic, and younger workers accounted for the biggest share of this group.

Teleworkability by Member State

The first official EU-LFS data on remote working during the crisis period in 2020 became available as this report was being finalised. Respondents were asked whether they worked from home 'usually', 'sometimes' or 'never'. The estimates reported are significantly lower than those that emerged from most live survey sources. This may reflect some positive bias in the more ad hoc survey sources but also possible underestimation in the EU-LFS data as a result of survey timing. When the reference week was in Q1 2020 or Q3 2020, for example, with fewer restrictions on public mobility or physical distancing requirements, one would expect lower levels of working from home than in Q2 2020.

Figure 29 shows the share of employees, by Member State, working from home usually in 2019 and compares that with the incidence during 2020, as well as the teleworkable share of employment based on the occupational task analysis in the core reference (Sostero et al, 2020). There was a sharp three-fold rise in the share working from home usually in 2020 compared

to a year earlier but from low levels (from 3.2% of working-age employees to 10.8% in 2020 in the EU27).

According to additional information not shown in Figure 29, the share of employees working from home less regularly ('sometimes') remained the same year on year (7.9%). While the incidence of working from home usually increased for all age groups, it was highest in 2020 among core-age workers (25–49 years, 11.6%) and older workers (50–64 years, 10.4%) and lower among younger workers (15–24 years, 5.8%). It was also higher among female employees (11.7%) than male employees (9.9%).

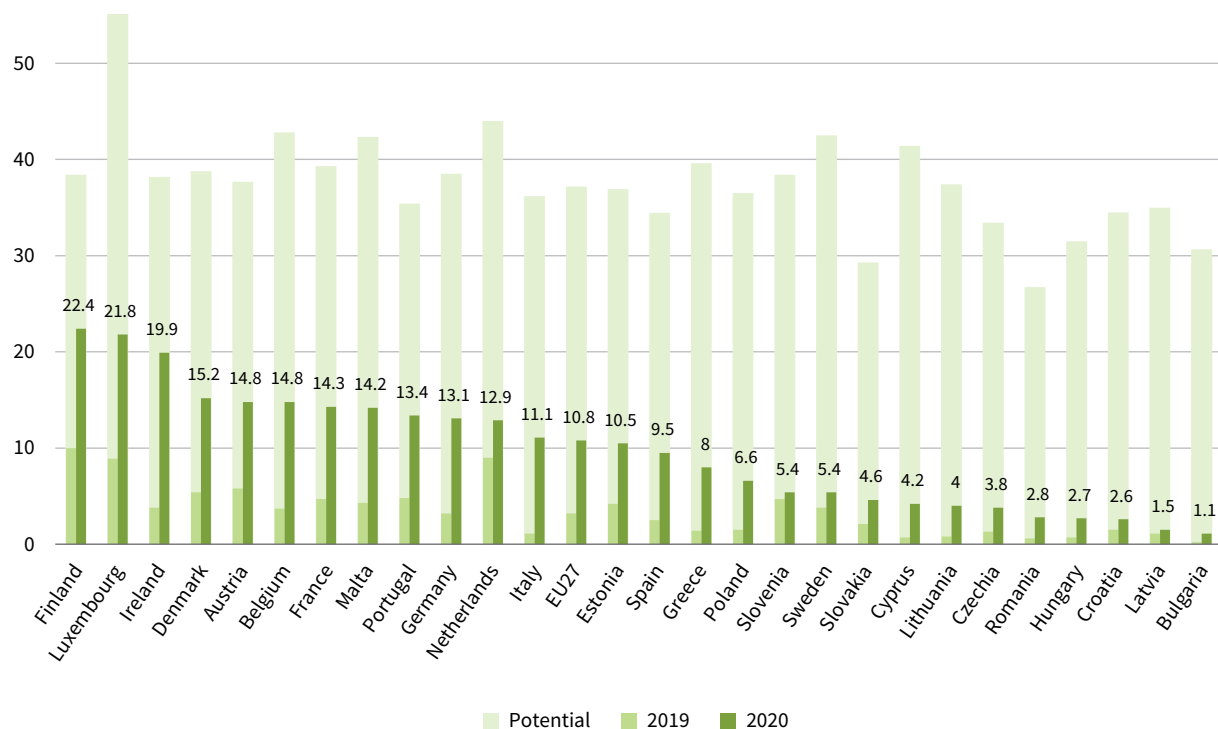
Pre crisis, higher shares of working from home were observed in northern European Member States, with lower levels in southern and especially eastern European Member States. In only one Member State (Finland) did at least 1 in 10 employees work usually from home pre crisis, while the shares were marginal in Bulgaria, Cyprus, Italy and Romania (1% or less). The increase in incidence in 2020 occurred in all Member States, but the largest increases (in percentage point terms) tended to be in those countries with higher pre-crisis levels of remote working. Partial exceptions to that rule are Ireland (+16 percentage points), where pandemic restrictions were among the most severe (Hale et al, 2021), and Italy (+10 percentage points, with a very low pre-COVID-19 incidence of working from home), where the early onset of the crisis in February and March 2020 induced an earlier shift to remote working than in other Member States.

The incidence of working from home varied widely between Member States, from 22% in Finland to just over 1% in Bulgaria, echoing similar findings in live surveys, although as indicated the shares tended to be much higher in these non-official sources. For example, in the April 2020 round of the *Living, working and COVID-19* e-survey, the share of those who had 'started to work' at home varied between 19% in Romania and 61% in Finland.

Figure 29 also shows the potential share of teleworkable employment by Member State based on Sostero et al (2020). The differences between countries in respect of this indicator are directly based on the different occupational structures of dependent employment in each Member State, with Luxembourg, for example, having the highest share (53%), almost twice as great as that in Romania (27%). Even during the crisis, with many employees compelled to work from home, there remained a large share of teleworkable work that was not carried out from home.

In summary, estimates of pandemic period working from home vary broadly between sources and across Member States. While live survey sources estimated that between 20% and 60% of workers were likely to have been working from home during the pandemic,

Figure 29: Proportion of employees usually working from home before (2019) and during (2020) the pandemic compared with the potential proportion of remote working (%), EU Member States



Source: Eurostat, Employed persons working from home as a percentage of the total employment, by sex, age and professional status (%) [lfsa_ehomp]; Sostero et al (2020)

the range across Member States in official EU-LFS data is much lower (from 1% to 25% usually working from home). A higher incidence of working from home was associated with a higher share of employment in teleworkable occupations at national levels.

The protective effect of telework was partially observed in differentials of occupational employment growth. The most severe declines in hours worked and employment level were recorded in non-teleworkable occupations such as services and sales workers, elementary occupations, and blue-collar occupations, while, with the exception of the managers category, teleworkable white-collar occupational categories were less affected. That said, the association between the teleworkability index and employment growth during the pandemic at the detailed occupational level was modest rather than strong, and the most 'teleworkable' category based on task analysis – clerical workers – experienced marginal employment decline in contrast, for example, with employment growth recorded among professional and managerial categories. The secular increase in professional employment was not only unimpeded by the crisis, but if anything reinforced. As a consequence, COVID-19 has had contrasting impacts between higher and lower occupational categories and between white-collar and blue-collar jobs, and this was at least in part mediated by the capacity of many in the former groups to perform their work remotely.

Remote working post COVID-19 – Some discussion points

The experience of working from home during the COVID-19 crisis appears likely to presage a growth of remote working when the crisis abates, based on both the forecasts of employers and the expressed wishes of employees in surveys carried out during the crisis. The ad hoc adaptation to mass teleworking that has taken place in 2020–2021 has proved, if nothing else, that such a radical change in work organisation was technically feasible. Existing ICT infrastructure, notably prevalent broadband internet access, network software and laptops, facilitated this change, as did the rapid development and spread of video meeting and online collaboration software. The fact that the technical adaptation proved possible is likely to have removed some employer reluctance that may have previously been attached to remote working (Barrero et al, 2021).

This section summarises briefly some of the issues at stake in the broader uptake of remote working, based on recent research and company and social partner practice. Much has been written about remote working over the last year. What follows does not purport to be anything like a systematic overview but refers to some important or provocative emerging elements of the debate on the future of remote working.

Hybrid working preference of workers who can telework

In the second wave of the Eurofound *Living, working and COVID-19* e-survey carried out in July 2020, 78% of employees indicated a preference to work from home at least occasionally if there were no COVID-19 restrictions. The modal category of teleworking preference was several times a week (32%), with only 13% indicating that they would like to telework daily. The preferred teleworking arrangement for most employees therefore entailed a significant continuing presence at the workplace.

As the occupational teleworkability analysis in this chapter confirms, for most workers, working remotely may not yet be a practical option; their work involves physical task requirements that oblige them to be carried out in specific places, such as hospitals, factories, shops and warehouses. Nearly half of working respondents to the e-survey who had not been working from home said that they preferred not to work at all from home after COVID-19 restrictions are lifted.

Spatial redistribution of work

For jobs that do technically allow it, the indicated preference for a hybrid mix of working from home and from the workplace appears to align with employers' assessment of post-COVID-19 remote working prevalence (Lund et al, 2020). Estimates from a US employer survey in May 2020 suggest that 16.6% of paid hours would be worked remotely post COVID-19, compared to 5.5% pre COVID-19 (Barrero et al, 2020b). Subsequent estimates from the same authors revised this figure upwards to 22% (Barrero et al, 2021). This three- to four-fold increase in home-worked hours would have disproportionate impacts on the economies of large metropolitan centres that have higher shares of teleworkable jobs, reducing the demand for commercial and residential property and reducing spending and demand in ancillary services in business districts, for

example. Countervailing benefits will include declines in commuting time – with potential associated environmental benefits – and the shift of demand and spending to local economies, in suburbs and towns closer to where workers reside. There are, however, grounds for scepticism that there will be a simple transfer of demand for specific types of services (for example, bars and restaurants) on a one-to-one basis from busy city centres to suburbs or regional towns. Consumption habits may change as location changes; remote workers may be more likely to consume at home, for example.

Many employers have already announced changes in spatial work organisation prompted by changes experienced during the pandemic. Allied Irish Banks was reported to be closing three of its six Dublin headquarter sites, as staff would be allowed to work from home two or three days per week (RTÉ, 2021). Plans also included an extension of a network of local work hubs, generally on the outskirts of cities and larger towns, to facilitate employee meetings with clients or other staff. Belgian chemicals multinational Solvay announced a new global 'work from anywhere' policy in 2020 and formalised a framework agreement with French unions regarding implementation. The Solvay agreement is described in Box 9.

Agreements such as this may directly involve changes in the way work at premises is organised, as well as changes to employment and working conditions. On the one hand, employment in services related to building maintenance, canteens and cleaning activities may be especially vulnerable. Occupations that are often low paid and more likely to involve temporary outsourcing contracts may become even more precarious. In offices, spatial reorganisation in emerging 'hybrid' models may also have an impact on worker well-being through more transient desk or office assignment and an 'impersonalisation' of the working space.

Box 9: The Solvay agreement

The Solvay agreement underlines the voluntary and reversible nature of remote working arrangements – although a manager must justify in writing any revocation of the right to work from home. Three different remote working regimes are foreseen. Each involves at least one day in the office per week. The options are:

- a fixed weekly schedule of up to four days' remote working per week
- an allocation of 16 days per month, which can be taken in half or full days, is set in agreement with a manager and can be varied from month to month
- for workers whose jobs require a greater workplace presence, an allocation of 30 days per year set in agreement with a manager.

Training in collaborative tools is expected. So too is training for managers, given their new responsibilities in administering remote work. An equipment allowance (of up to €300) and a small taxable teleworking allowance (of up to €80 per month) are foreseen (Planet Labor, 2021).

Increased remote working will also inevitably entail increased cross-border virtual working. Digital nomadism is being actively encouraged by potential beneficiary states (Financial Times, 2021b), with free visas and income tax breaks. This represents a challenge to labour market regulation, which is jurisdiction bound. It also complicates fundamental state prerogatives as regards taxation. Questions that have become topical and urgent regarding capital and corporate income taxes (that is, to which jurisdiction should taxes fall due) may increasingly be raised as regards personal taxation. Where are labour taxes paid when a web designer in Brazil does work for an agency in Lisbon?

The feasibility of remote working may foster employment offshoring. However, it is relevant to recall that technically this was already possible pre COVID-19. Its marginal incidence in practice suggests that organisational practices do not solely or primarily rely on technical considerations but also, for example, on hierarchical relations within organisations (Bisello et al, 2021). At the same time, despite similar levels of economic development and occupational structures, heterogeneity in institutions and social relations across countries may lead to very different remote working practices (Fana et al, 2020c).

The right to disconnect

The Solvay agreement also acknowledges employees' 'right to disconnect'. Prior to the pandemic, four Member States – Belgium, France, Italy and Spain – had already legislated on this issue in view of increasingly blurred boundaries between work and non-working life resulting from the ubiquity of electronic communications. Working from home in the COVID-19 era has foregrounded the need for regulation in this area. Over one-fifth of teleworkers during the COVID-19 period reported working during their free time every day or every other day, compared to 6% of those who worked only at their employer's premises or locations outside the home (Eurofound, 2020b). Up to 10 other Member States are now considering legislative proposals (Eurofound, 2020d) and, in many cases, newly expanded or formalised rights to telework (or to request telework) drawn up during the pandemic are accompanied by right to disconnect provisions and/or individual 'digital rights', including rights protecting workers against intrusive surveillance or monitoring (Eurofound, 2020e).

Remote working and productivity

Initial evidence on the productivity of those working from home during the pandemic is highly varied, generally based on self-reporting by employees or subjective employer assessment, and is therefore inconclusive. The comparator in most cases is working at the workplace in 'normal times'. Barrero et al (2020a), based on a survey of US individuals, found an increase

in self-reported productivity; Etheridge et al (2020), among a UK worker sample, found no difference; and Morikawa (2020), among a Japanese employee sample, found a shortfall of nearly 40% in self-reported productivity for those working from home. A similar 32% decline was found by the last researcher based on employer survey responses (Morikawa, 2021). Using in-depth semi-structured interviews, Fana et al (2020b) showed that changes in individual productivity were not straightforward and strongly depended on the prevailing type of tasks characterising the job, the household's composition and the division of domestic labour, as well as the household's dwelling and equipment.

Productivity arising from COVID-19 remote working can also be assessed at the enterprise or aggregate economy-wide level. Bloom et al (2020), based on UK firm data, estimated the decline in total factor productivity to be 5% in the UK private sector in Q4 2020, arising mainly as a result of increased business costs related to measures introduced in response to the crisis.

Looking to the post-COVID-19 period, perhaps the most important considerations come from the literature on 'agglomeration economies' (Glaeser, 2012). This has demonstrated the importance of social proximity for innovation and creativity. This underpins the economic dynamism of both successful firms and large cities. An increasing share of employment and a concentration of knowledge-intensive services in metropolitan centres was one result pre COVID-19 (Eurofound and European Commission Joint Research Centre, 2019). Corporate scepticism about working from home often hinges on the challenges for collaboration, teamwork and networking that remote working may involve (Teevan et al, 2021). Many businesses have announced new working from home dispensations during the crisis, some even announcing the possibilities of working from home 'forever', but there are others calling employees back to the office because of productivity concerns. There is a strand of research that argues that the issue of contention here is the limited ability of managers to exert direct control over and to supervise remote workers, of bosses to be bosses (Dimitrova, 2003; Felstead et al, 2003; Aguilera et al, 2016).

Pay and tax adjustments for working from home

The US company Facebook was among the first to indicate that employees could face a trade-off if they took up the offer to work remotely. Employees choosing to work from home permanently in lower-cost regions – that is, outside the metropolitan areas where the company and most similar companies base most of their workplaces – would be subject to cuts in pay reflecting their assumed lower costs of living. Equal pay norms and legislation are stronger in the EU and may

limit employers' scope for manoeuvre in this regard. Another consideration is that the actual cost of living may not decline if telework is still occasional and workers end up having to defray greater fixed costs.

The capacity to work remotely is strongly skewed towards those with higher qualifications and earnings, while a higher incidence of remote working will mean 'remote workers are contributing less to the infrastructure of the economy whilst still receiving its benefits' (Templeman, 2020). One socially responsible solution, according to Deutsche Bank economists, is to levy a 5% surplus tax on those who elect to work remotely post pandemic, with the revenue used to support grants for low-income or essential workers (on the order of €1,500 annually per recipient) (Templeman, 2020). However, this proposal raises many concerns. First, this would be a redistribution among workers that would take no account of savings made by employers or of the fact that economic gains during the pandemic have been strongly concentrated in favour of the wealthiest. Second, as telework is expanding across mid-paid occupations, a proposal of flat contributions will end up being regressive, as the same rate applies to workers regardless of wage levels. The provocative proposal has also been criticised on the grounds that it would tax a positive externality – the reduced carbon footprint arising from less commuting – while being impractical to implement (Graupner, 2020).

A new digital divide?

Working from home offered shelter from the labour market turbulence caused by the pandemic. It was a shelter primarily for privileged workers, generally well qualified, well paid and more likely to be in secure employment. Job loss and insecurity were much lower among workers for whom a high share of work tasks could be performed remotely. These advantages accrued dynamically as those working from home learnt to do an increasing share of tasks from home during the crisis (Adams-Prassl et al, 2020).

The divide between 'remotes' and 'essentials' (Reich, 2020) that has arisen is likely to persist post COVID-19, adding yet another dimension to the debate on growing inequality. This is one that may have continuing social, as well as political and electoral, resonance, analogous to the debate over regional or place-based inequalities over the last decade. Indeed, intersections between these two dimensions of inequality – regional and occupational – probably sharpened as a result of the pandemic. US research highlights the high correlation between access to a high-speed internet connection and the ability to self-isolate during the crisis and, therefore, to work from home (Chiou and Tucker, 2020). Such connectivity – which is more or less a prerequisite of working from home for most knowledge-based workers – tends to be more widely available and of higher quality in more densely populated, metropolitan areas.

5 Supporting recovery in Member States: From emergency to structural interventions

As soon as the COVID-19 health crisis hit Europe in Q1 2020 and it was predicted to bring about substantial economic and labour market disruptions, the EU and the Member States started providing support to businesses, workers and citizens to cushion its negative consequences (Eurofound, 2021a). Measures aimed at keeping businesses afloat (mainly financial subsidies or payment deferrals) and at employment retention (notably short-time working and temporary lay-off schemes; see Box 1) were most prominent in the various phases of reduced economic activity mandated by governmental decrees.

As labour markets emerge from the crisis, it becomes more likely that governments and the social partners will have to reduce such emergency measures and revert to long-standing instruments traditionally used to anticipate and manage structural change in the labour market and company restructuring (European Commission, 2021b; see Box 10 for definitions of ‘anticipation’ and ‘management’ of structural change). This may ensure that the sectoral and occupational reallocation of employment required to maintain and improve competitiveness and innovation is not delayed or blocked (European Commission, 2021b). In this context, the EU’s Recovery and Resilience Facility (RRF) supports Member States’ plans to mitigate the medium-term impact of the COVID-19 crisis with €672.5 billion in loans and grants.

Illustrative examples of such structural interventions are compiled in the support instruments database¹⁶ and in the legislation database¹⁷ of Eurofound’s ERM. This chapter describes a selection of the types of such structural tools that could be used by the Member States to facilitate the recovery or to assist employers and employees affected by the crisis. It first illustrates instruments that support the anticipation of change, against a background of recovery discussions that are widely associated with the aim of preparing both businesses and workers for the twin transition towards a digital and climate-neutral economy – which is also a particular focus in the EU’s RRF. This is followed by examples of support for managing change, that is, help given to employers and employees in implementing restructuring.

Anticipating restructuring

Provision of information and advice

Access to forward-looking information, notably on expected economic and labour market developments, is an important precondition for employers and employees to make decisions on, for example, business or career strategies or investments in production systems or training. At the European level, the European Centre for the Development of Vocational Training provides various tools to anticipate future skills needs and trends in the labour market, accessible through its Skills Panorama (Cedefop, 2021).

Box 10: Defining ‘anticipation’ and ‘management’ of restructuring

The anticipation of restructuring refers to activities that help to prepare workers, companies or regions for change. As such, it has a proactive character in terms of investigating potential future changes at the macroeconomic or microeconomic level (trends and their potential effects) and both identifying and implementing the means for adaptation before the change occurs.

The management of restructuring comprises activities to handle a current restructuring event operationally, including seeking solutions to minimise social costs. It deals with shaping a specific organisational change process, hence the individual steps involved in the realisation of the company restructuring.

¹⁶ <https://www.eurofound.europa.eu/observatories/emcc/erm/support-instrument>

¹⁷ <https://www.eurofound.europa.eu/observatories/emcc/erm/legislation>

Box 11: Providing labour market intelligence

The Czech *Moravsko-slezský pakt zaměstnanosti* (the Moravian-Silesian employment pact (MSEP))¹⁸ is a strategic regional partnership to improve the labour market situation of the Moravian-Silesian region. The approach of the partnership, which includes about 80 experts participating in various working groups, has been identified as one of the key strengths of the initiative. As one of the objectives of the partnership is to anticipate changes in the labour market, it has, among other things, established a regional observatory of competitiveness and the labour market and a regional network of career consulting centres. Two specific examples of projects run by the MSEP are as follows:

- a labour market barometer aiming to forecast future national and regional labour market trends
- the project Competencies 4.0, analysing the future competency needs of the labour market through a New Skills Monitor and competency pyramids for key sectors

In Luxembourg, the *Qualifications de demain dans l'industrie* (Skills of Tomorrow in Industry) survey and the *Qualifications de demain dans les Technologies de l'Information et de la Communication* (Skills of Tomorrow in Information and Communication Technology) survey¹⁹ explore companies' needs for employees and their expected skills levels. They aim to provide guidance to young people and their parents when they are considering education pathways, and to public authorities and training providers attempting to align training curricula with business needs. As an outcome of the surveys, specific training programmes have been, in several instances, designed and implemented through schools, universities and other training providers, in cooperation with public authorities and the social partners.

Across the Member States, several observatories, surveys and administrative data repositories have been established to map supply and demand in the labour market, and have a forward-looking perspective in terms of anticipating future skills needs. While these initiatives tend to be run by public authorities (such as ministries or ministerial bodies and public employment services), in several cases, they involve a partnership with employer or worker representative bodies (examples of which are given in Box 11).

To provide businesses and workers with more operational support, information provision in several cases is combined with advice from experts, tailor-made to the specific needs of their target group. Across the Member States, there exist a few examples of consultation programmes that aim to assist companies in identifying early that the business is at risk or in ensuring it remains sustainable in economically difficult times (Box 12).

Box 12: Advice to companies to prepare for change

The Austrian *Impulsberatung für Betriebe* (Impulse Consulting for Companies)²⁰ provides vocational education and training and advice on job protection in periods of economic fluctuation. Since 2020, the programme has also had a specific focus on consulting for COVID-19-related issues, such as teleworking. It is financed by the public employment service, which funds up to 12 consulting days provided by professional consultancy companies to enterprises.

In Belgium, the Walloon Agency for Enterprise and Innovation initiated the Early Warning Scan²¹ in 2018. This online survey for business owners covers aspects of business such as planning, finance, human resources and business relations, the aim being to detect early signs that a business might be at risk. After the test, the business owner can approach an adviser to jointly analyse the points for improvement and develop an action plan.

18 <https://www.eurofound.europa.eu/restructuring-support-instruments/82739>

19 <https://www.eurofound.europa.eu/restructuring-support-instruments/82402>

20 <https://www.eurofound.europa.eu/restructuring-support-instruments/100893>

21 <https://www.eurofound.europa.eu/restructuring-support-instruments/94178>

In Germany, during a downturn, small and medium-sized enterprises (SMEs) can apply for financial support for consultation services in the framework of the *Förderung unternehmerischen Know-hows* (Promotion of Entrepreneurial Know-how).²² The support covers 90% of the cost of a certified consultant, up to €2,700. In 2020, this was extended to 100% and a maximum of €4,000 as a response to COVID-19, and the available funds have quickly been exhausted. The programme was set up by the Federal Ministry for Economic Affairs and Energy and co-funded by the European Social Fund.

The Spanish *Servicio de Asesoramiento Financiero* (Financial Advisory Service)²³ provides Catalan companies with access to experts who evaluate the financial situation of the company, recommend the most appropriate types of financing and explain the steps required to obtain the finance. In the context of COVID-19, ACCIÓ, the public agency administering the service, set up online meetings to assess the extent to which the economic crisis has affected each company, to be followed by the standard advice programme. Several hundred companies benefited from the preparation of contingency plans and advice on liquidity and financing problems in 2020.

Access to finance

Access to finance is often an important precondition for businesses to expand or diversify, notably as regards engagement in future-oriented business activities. Across Europe, a wide array of anticipatory financial-support instruments exists, such as grants or loans. These can be generic or may address a specific purpose (for example, research and development, innovation, digitalisation, decarbonisation or internationalisation) or target group (for example, SMEs, start-ups or certain sectors).

Business angels promoted by public bodies or the social partners represent a relatively budget-neutral approach to providing businesses with the required funds to future-proof their economic activities (Box 13). These are private investors who provide companies not only with finance, but also with management and

product- or sector-specific expertise and access to business networks.

Preparing for the twin transition

For several years, EU policies have focused on the digital and green transition, with the European Green Deal recently established as the EU's growth strategy. In addition, the RRF requires Member States to include measures capitalising on the opportunities and addressing the challenges of the twin transition in their national recovery plans. A minimum of 20% and 37% of expenditure, respectively, must be spent on fostering the digital transition and supporting climate investments and reforms.

Innovation support is a traditional 'tool' in the Member States to ensure the sustainable competitiveness of companies – an important precondition for job creation

Box 13: Business angels as an alternative form of finance

The Federal Ministry for Economic Affairs and Energy supports the Business Angels Network Germany,²⁴ which brings SMEs and private investors together, organises workshops and the exchange of experiences, and provides information about funding programmes. The combination of providing finance and sharing business knowledge is deemed as a strength of business angels, as is the fact that investment tends to be more flexible and less costly than other types of finance.

Spanish Law No. 14/2013²⁵ established various fiscal incentives for business angels and entitles them to a deduction of 30% (up to a maximum of €6,000 in 2020) of their investment from their personal income tax. Data from 2016–2018 show that the investment capacity of business angels ranges from €5,000 to €5 million, and that the ICT, financial services, consultancy and biotechnology/pharmaceutical sectors are the most popular for business angel investments (AEBAN, 2016, 2017, 2018, 2019).

22 <https://www.eurofound.europa.eu/restructuring-support-instruments/82611>

23 <https://www.eurofound.europa.eu/restructuring-support-instruments/100211>

24 <https://www.eurofound.europa.eu/restructuring-support-instruments/82519>

25 <https://www.eurofound.europa.eu/restructuring-support-instruments/82531>

and retention and for maintaining and enhancing employment and job quality – and employees’ employability. In addition to financial support for research and development (grants, loans and tax incentives), other common support measures in this context include the provision of advice and consultancy, training and assistance in networking, and establishing cooperation across companies, between companies and research centres, and between companies and education providers.

With the transition to the digital age, an even more specific focus on technological advancements is emerging in innovation support, applying the same mechanisms as described above, but with technological modernisation as a stronger eligibility criterion (Box 14). In the national recovery and resilience plans, some specific focus on support for SMEs in their digitalisation activities can be found. Some of the specific measures available assist companies in assessing their readiness for digitalisation and in establishing a restructuring plan for this, which might be particularly useful for SMEs that have less in-house capacity to do so.

Box 14: Encouraging digitalisation

In Croatia, the state provides tax incentives to companies for investment in technology.²⁶ Microenterprises that invest more than €50,000 and larger firms that invest more than €150,000 in technological modernisation resulting in the creation of three or five new jobs, respectively, within three years of making the investment benefit from a reduction of the statutory income tax rate to 50% for five years from the initial investment. The reduction is increased for higher investments and larger job creation.

The Estonian *Digidiagnostika* (Digital Diagnostics)²⁷ provides a grant to companies to assess their readiness and potential for digitalisation, and to fund steps to develop their production processes towards the digital age. The diagnostic tool identifies the bottlenecks in strategic management and the business model, assesses the priority of solving the bottlenecks, and estimates the costs of the required solutions and their impact on the company’s economic performance. The grant is worth €5,000–15,000, depending on the company’s sales revenue and covers 70% of the costs of the diagnosis.

The German go-digital²⁸ programme funds consultancy (50% of the costs) for companies with fewer than 100 staff on digital business processes (for example, the introduction of e-business software solutions or of secure electronic and mobile processes), digital market development (for example, online marketing strategies and solutions) and IT security (including risk analysis or IT security management). The strengths of the programme are the low administrative burden for the beneficiary companies, the opportunity to receive support along various steps of the digitalisation process, the accessibility of the consulting services all over Germany, and the cooperation of the expert consultants with research institutes and universities.

The Italian Atlante i4.0²⁹ is a national database providing information on around 600 organisations in the field of digitalisation, such as digital innovation hubs, technology transfer centres, additive manufacturing laboratories, training institutes and chambers of commerce. It aims to be a one-stop-shop for information for companies, and SMEs in particular, digitalising their processes.

In Spain, Industria Conectada 4.0³⁰ (Connected Industry 4.0) provides an online tool allowing companies to self-assess their level of digitalisation. Furthermore, a specialised and tailored advisory programme supports companies in this process and helps them to establish a transformation plan that identifies the digital enablers necessary in this process, as well as a roadmap for its implementation. The facilitation of collaboration between start-ups and large established industrial companies is seen as a strength of the programme.

The Swedish *Genomföra ett program för ett robotlyft riktat till små och medelstora industriföretag* (Investments in Robotisation and Automation for SMEs in Manufacturing)³¹ is part of the new industrialisation strategy Smart Industry. It aims to enhance automation in SMEs through, for example, knowledge transfer meetings, support when applying for automation checks and for the automation checks themselves, and education in ordering automation solutions.

26 <https://www.eurofound.europa.eu/restructuring-support-instruments/82706>

27 <https://www.eurofound.europa.eu/restructuring-support-instruments/100203>

28 <https://www.eurofound.europa.eu/restructuring-support-instruments/100104>

29 <https://www.eurofound.europa.eu/restructuring-support-instruments/101509>

30 <https://www.eurofound.europa.eu/restructuring-support-instruments/100182>

31 <https://www.eurofound.europa.eu/restructuring-support-instruments/100098>

Box 15: Transforming businesses and their outputs towards a climate-neutral economy

The Austrian *aws Energie & Klima* (aws Energy and Climate)³² programme subsidises the introduction of energy management systems in SMEs by €50,000. The grant covers the costs of consultancy, training, measurement systems and certifications.

In Wallonia, Belgium, SMEs can benefit from the *Chèque éco-circulaire* (Eco-circular Cheque),³³ which covers 75% of expert advice (up to €45,000 over three years) related to eco-design, the development of sustainable products and services, and the optimisation of industrial procedures and processes, notably with a view to becoming part of the circular economy.

The Czech *Úvěr z programu ENERĚ Českomoravské rozvojové a záruční banky* (loan from the ENERĚ programme of the Czech-Moravian Guarantee and Development Bank)³⁴ offers a preferential interest-free loan to companies to cover the costs of an energy assessment and the implementation of energy-efficient solutions, such as the insulation of business premises or the modernisation of energy production facilities for the companies' own consumption. The loan can cover up to 70% of the project's eligible expenditure up to about €73,000.

The Dutch Energy Investment Tax Credit³⁵ allows companies to deduct 11% tax on investments in energy-saving techniques and approaches to producing sustainable energy, plus up to 45% of taxes on profits generated through such energy savings or renewable energy activities. An evaluation in 2018 showed that, from 2012 to 2017, this tax credit supported the investment of €4.4 billion in energy savings and renewable energy (CE Delft, 2018). While the measure contributed to energy savings and the reduction of carbon emissions, more progress is still to be made.

Similarly, public programmes assist enterprises in their transition to a climate-neutral economy through advice and consultancy and financial support targeting the development of sustainable products or services and 'greening' business infrastructure and processes (Box 15).

Managing restructuring

Rescue procedures to avoid insolvency

As the COVID-19 pandemic and the related governmental decrees have resulted in substantially reduced business activity, at least for some sectors, it is likely that, in spite of public and social partner-based support, some enterprises are experiencing financial difficulties that are challenging their capacity to satisfy their creditors to the extent that they face the threat of insolvency. All Member States have introduced legislation to protect businesses in such a situation from closure, particularly when the cause of these difficulties was outside their control and the company shows promising signs of economic viability if given a 'second chance'.³⁶

In general, the regulatory framework allows for a company to be granted 'restructuring' status (also referred to as examinership or receivership). Instead of closing the company, which occurs in the case of insolvency, this status aims to achieve business continuation, with the company undertaking modified operations following a restructuring plan approved by the creditors. This often comes with the appointment of an external restructuring administrator (frequently by a court) to monitor the implementation of the restructuring plan, to ensure that the medium- to long-term interests of the creditors are considered.

To be eligible for such an option, companies have to be able to satisfy a certain share of their liabilities (for example, 20–30%) and receive approval from the majority of their current creditors.

Little seems to be known across the Member States on the uptake and outcome of this option. In general such rescue options are seen as beneficial for both the business and its employees, as well as for the creditors, as was found, for example, in Germany in an evaluation by Jacoby et al (2018) but also mentioned for Ireland

32 <https://www.eurofound.europa.eu/restructuring-support-instruments/101189>

33 <https://www.eurofound.europa.eu/restructuring-support-instruments/94177>

34 <https://www.eurofound.europa.eu/observatories/emcc/erm/support-instrument/energy-loan>

35 <https://www.eurofound.europa.eu/restructuring-support-instruments/99980>

36 For an overview of national legislation across the Member States see <https://bit.ly/3fQObZU>.

and Italy. Anecdotal evidence from, for example, Czechia, Greece and Malta, however, suggests such options are rarely used. In Finland, reorganisation tends to start too late and with expectations that are too ambitious. Against this background, only about one-third of reorganisation applications are approved by the courts, and only about half of them are successful. A similar success rate was observed in Lithuania and Sweden (Creditsafe, 2016).

Wage guarantee for workers in the case of employer insolvency

If insolvency cannot be avoided, all Member States have established some form of a wage guarantee fund that ensures that workers' outstanding financial claims are satisfied, independently from the company funds available to satisfy creditors' claims more generally. In most cases, these funds follow Directive 2008/94/EC on the protection of employees in the event of insolvency of their employer (European Parliament, 2008).

These funds cover employees (irrespective of their tenure and type of contract, in most Member States), who, in most cases, have to apply to the administering body within a certain time horizon after the company has filed for insolvency or after the court decision. In some Member States, public-sector employees and those who have a decisive role in the company or some stake in its ownership (shareholders and family members of an owner-manager) are excluded from eligibility.

Eligible claims generally refer to wages, holiday and severance payments, as well as other claims against the employer (for example, company pensions, daily allowances and compensation for damages). The claims tend to be limited to some maximum amounts, as regards either monthly wages or the total of the claims.

These measures are financed by public funds and, in most Member States, also by employer contributions levied on the salaries of employees (for example, 0.1% in Poland, 0.16% in Lithuania, 0.2% in Cyprus and Italy, 0.25% in Romania, 0.35% in Austria and up to 0.5% in Bulgaria). Employees are also entitled to claim the benefits if their employer has not (adequately) contributed.

Not surprisingly, available data show an increase in the number of applications and payments from the funds in times of economic downturn. The first evidence, for example from Denmark and Germany, indicates that COVID-19 has already had an impact on demand for such wage guarantees.³⁷

While the funds are an effective tool to ensure that workers' claims are satisfied, some available assessments show potential for improvement as regards awareness raising and the provision of information to employees. Beneficiaries sometimes do not receive the full benefit of these funds, and there is a need to reduce the administrative burden and the time until payments are made (for example, Cour des comptes, 2019). Furthermore, the purpose of the funds is to protect workers' access to accumulated entitlements from the employment relationship, but they cannot be considered a mid- to long-term means of preventing a reduction in living standards and poverty among workers who lose their job owing to employer insolvency.

Supporting transitions

Like any economic and labour market crisis, COVID-19 will result in a situation in which not all jobs can be retained. Some companies will fully stop their activities and others will downscale or reorganise, resulting in job loss. At the same time, there is evidence that even in economic downturns new jobs are created, either through start-ups or in existing companies. In the current context of the twin transition, it can be assumed that policymakers are putting even more emphasis on job creation in 'future-proof' activities as a means of recovery than they have in previous crises. This implies that supporting transitions is essential, to help workers who lose their jobs to find new employment. From a European perspective, the RRF and the European Globalisation Adjustment Fund for Displaced Workers (EGF) can play a role. The EGF is a long-standing instrument aimed at helping workers who have lost their job because of restructuring to find new employment. For 2021–2027, the EGF has a budget of €210 million that can be used to fund 60–85% of the costs of projects targeting redundant workers (Directorate-General for Employment, Social Affairs and Inclusion, undated).

As experience shows that job-to-job transitions are most effective in terms of maintaining labour market integration, Member States might want to focus on instruments that support workers who will be affected by forthcoming redundancy before they become unemployed. Potential pathways for such support are, for example, assistance in job searches, matching and networking among employers and jobseekers, supporting workers' occupational and geographical mobility (including through training and skills development), and providing employment incentives to companies. All of these types of interventions also fall within the traditional scope of the EGF and the RRF.

37 <https://www.eurofound.europa.eu/observatories/emcc/erm/legislation/denmark-wage-guarantee-in-case-of-insolvency>

Box 16: Specialised job-matching schemes

In Estonia, *Kollektiivsetele koondamistele reageerimise teenus* (Response Service to Collective Redundancies),³⁸ among other measures, helps employees faced with collective dismissals to search for new jobs and passes on the details of redundant workers to regional employers that are in the process of recruiting. The service can also arrange meetings between potential employers and employees. The support provided to workers to help them improve their chances of finding work and the flexibility of the instrument have been identified as success factors. At the same time, however, the flexibility required from the partners involved is sometimes difficult to achieve in a redundancy situation when quick action is required.

In Italy, *Borsa Continua nazionale del lavoro* or *Cliclavoro* (National Labour Exchange)³⁹ is a web portal that connects regional databases on vacancies and on jobseekers. It allows employers and labour market intermediaries to post vacancies, while jobseekers can upload their CVs. Both employers and workers can browse the database and contact the other party.

The Lithuanian *Mini darbo birža* (Mini Labour Exchange)⁴⁰ involves a specialist from the public employment service visiting a company that has announced collective dismissals and providing consultations to the affected employees. The specialist also organises visits by employees to other companies or visits from other companies, to establish more and better contacts and to encourage better exchanges on the qualifications required, which is expected to increase transition opportunities.

The Maltese redundancy intervention⁴¹ fast tracks employees' registration process once the employer notifies the public employment service of anticipated redundancies. Each worker is profiled and offered information on registration for alternative employment, the creation of an online account to facilitate job matching, tips to prepare their CV, mock interviews and tailored training opportunities.

A first step in facilitating labour market transitions is assisting workers faced with redundancy to identify potential new employers and to prepare for job interviews. While this is a traditional statutory task of public employment services or similar institutions across the Member States, some countries have introduced special programmes (Box 16). These are, for example, characterised by allowing workers access to job search support before they actually become unemployed, by quicker service provision, or by offering more targeted and tailor-made support, such as addressing the specific needs of the employees of a particular company.

To support workers' mobility, a few Member States have established specialised tools or bodies that provide workers faced with or affected by redundancy with a comprehensive support package (Box 17). Over a long period of time, participants are assisted with the provision of labour market information, preparing their CVs and other job application documents, job searches, preparing for job interviews, psychological support, reskilling and upskilling, and financial support. Such instruments are targeted either on the employees of a single (large) company or a group of employees from different enterprises, sometimes with a regional or sectoral focus. In general, these types of intervention tend to receive positive assessments as regards their effectiveness in supporting transitions, with the varied and long-lasting support identified as a key strength.

38 <https://www.eurofound.europa.eu/restructuring-support-instruments/82392>

39 <https://www.eurofound.europa.eu/restructuring-support-instruments/82679>

40 <https://www.eurofound.europa.eu/restructuring-support-instruments/82483>

41 <https://www.eurofound.europa.eu/restructuring-support-instruments/93593>

Box 17: Comprehensive transition support packages

In Belgium, the *Tewerkstellingscel/Cellule de Reconversion* (reconversion cells)⁴² assist workers affected by collective dismissals to find new jobs. A reconversion cell can be specific to a large company or can bring together workforces from different companies in the same area. The support provided includes establishing contacts and meetings with employment advisors, ongoing psychological support, assistance in social and administrative affairs, support in developing CVs, access to and funding for vocational training, and a financial allowance while participating, which can last one or two years. The programme has a high reintegration rate, with more than 50% of participants finding employment, mostly with open-ended contracts. The psychological support and creation of a collective spirit among participants helps to cushion the shock of job loss and to avoid the erosion of social ties. However, the measure could be even more effective if participation was started upon the announcement of dismissals, not just when people are actually laid off.

In Finland, *Muutosturva* (Change Security scheme)⁴³ addresses employees who have been made redundant or are at risk of redundancy or temporary lay-off for economic reasons. In addition to a personalised reemployment plan drafted by the public employment service, eligible employees are entitled to coaching, training or education, as well as to occupational healthcare services, all provided through the employer. A study from 2013 on this initiative showed that 53% of eligible workers found employment within a year of having been made redundant, and that a marginal proportion of workers who participated remained outside the labour force (Ålander et al, 2013). The early intervention is considered a key strength of the model, as it contributes to maintaining workers' engagement. The challenges identified are the limited awareness of this scheme among employers (notably SMEs) and employees and the resource-intensiveness for public authorities.

In the Dutch *Mobiliteitscentra* (mobility centres),⁴⁴ public and private regional stakeholders cooperate to help employees who face unemployment to find new employment and to access training. The centres actively contact regional employers to identify their staff needs and to discuss options for posting workers and providing training. The multistakeholder cooperation and the tailor-made support are seen as the main strengths of the instrument. However, its effectiveness is questioned, considering that the establishment and operation of mobility centres requires initiative from private or local-level public organisations.

The Swedish *Trygghetsråden* (job security councils)⁴⁵ are non-profit foundations jointly governed by the social partners. They provide workers affected by collective dismissals with advice, labour market information, training or start-up support. The support provided normally starts before the dismissals take place and is flexibly designed to take into account the individual needs, characteristics and preferences of workers. On average, the support is provided for six to eight months but can last for several years. As of 2019, 90% of the beneficiaries found a new job, began studies or became self-employed within seven months after their first contact with a job security council. As an early effect of the COVID-19 crisis, between March and May 2020, job security councils have seen the number of applications doubling.

Mobility support can also have a spatial component. Workers made redundant in a region in which it might be difficult to find alternative employment are incentivised to consider job offers in other regions. Such incentives generally refer to the coverage of commuting costs, whole or partial, or of costs related to a change in the place of residence (for example, removal costs or rent costs). An example of such an instrument is the Latvian *Nodarbināto personu reģionālās mobilitātes veicināšana* (Promoting the Regional Mobility of

Unemployed People for Work Reasons),⁴⁶ which provides financial support of up to €600 to people who have been unemployed for at least two months and take on employment of at least eight months that is located no closer than 15 kilometres from their declared place of residence. The subsidy, which is administered by the state employment agency, is to compensate for the cost of regularly commuting to work or for apartment rental and for one trip per month from the declared place of residence to the workplace. A recent

42 <https://www.eurofound.europa.eu/restructuring-support-instruments/82449>

43 <https://www.eurofound.europa.eu/restructuring-support-instruments/82415>

44 <https://www.eurofound.europa.eu/restructuring-support-instruments/82369>

45 <https://www.eurofound.europa.eu/restructuring-support-instruments/82382> and <https://www.trr.se/>

46 <https://www.eurofound.europa.eu/restructuring-support-instruments/82482>

evaluation shows that the programme has positive effects on the geographical mobility of unemployed people, but flags that the subsidy is too low for families to move and that it should be available without the ‘waiting period’ of two months’ unemployment (OECD, 2019).

The provision of education and training⁴⁷ can also play an important role in supporting workers’ transitions. Accordingly, one of the priorities of the RRF is reskilling and upskilling and the adaption of education systems to support digital skills and educational and vocational training for all. Across the EU, Member States assist workers with identifying their development potential, the skills the labour market is looking for, suitable training providers and financial support to engage in reskilling and upskilling. Supported skills development can relate to specific occupational skills or transversal skills (such as communication skills), and delivery mechanisms cover a wide variety, from short workshops to long education programmes. Similarly, there are a range of training providers, including companies (for example, companies providing internships or on-the-job training), universities and other education providers, or freelance specialists and consultants. In some cases, the worker is free to choose the training and the provider (sometimes from a list of certified or approved providers), while in other cases the public employment service makes the decision. Several programmes allow for

longer or more comprehensive skills development if the jobseeker has lower educational attainment or belongs to a group identified as vulnerable in the labour market. There is some evidence to show that programmes that take into consideration the particularities of the local labour market and the individual beneficiary, as well as those that are implemented through a partnership approach, are more effective. A recurring bottleneck is the availability and sustainability of funding.

Another common tool used by governments to support transitions is offering employment incentives⁴⁸ to companies recruiting workers who have lost their previous job. These may provide a wage subsidy or a reduction in employers’ social security contributions for a certain period of time. In some Member States, different levels of employment incentives are available, depending on the employer’s characteristics (for example, higher for smaller companies or employers in certain regions or sectors) and workers’ characteristics (that is, higher for more vulnerable groups on the labour market). The available evaluations of such schemes tend to question the effectiveness of employment incentives, as companies base their recruitment decisions on aggregate demand rather than the availability of subsidies (and therefore there is some likelihood of deadweight loss), and job retention is often related to the duration of the subsidy (and therefore sustainability is limited) (Eurofound, 2017a).

Key take-aways and policy pointers

- While public and social partner-based emergency measures in the first year of the COVID-19 pandemic worked well to cushion its negative impact on the labour market, in the medium to long term, instruments of a more structural type will be required to ensure Member States’ economic and labour market recovery.
- To support this endeavour, Member States can draw on the EU’s RRF, which, among other things, requires them to work towards the twin transition. Furthermore, funds from the EGF could be used to facilitate the labour market transitions caused by redundancy.
- From a forward-looking perspective, instruments providing employers and workers with data and information on expected economic and labour market developments are useful to guide their decisions, for example as regards investments or training activities. Anecdotal evidence suggests that such instruments are most effective when accompanied by tailor-made advice.
- Finance tends to be an enabler of the economic success of enterprises, and lack of it a bottleneck, and so it is a precondition for job retention and creation. For that reason, a wide variety of financial support instruments exists across Europe. Nevertheless, alternative forms of support, notably those that combine access to finance with access to advice, expertise or business-relevant networks – such as business angels – could be promoted further.
- To directly support companies’ transition to a digital and climate-neutral economy, specific attention could be paid to assisting SMEs, as suggested in the updated EU Industrial Strategy, in diagnosing their digitalisation or ‘greening’ readiness, establishing action plans for the transition, and funding investments for future-proof products and services and in-house processes and infrastructure.

⁴⁷ For illustrative examples of national training support related to the management of restructuring, see <https://bit.ly/3uwRU4j>

⁴⁸ For illustrative examples of national employment subsidies, see <https://bit.ly/2TkPSXT>

- In the field of managing restructuring, legal frameworks providing options to avoid insolvency through alternative rescue procedures are available in all Member States. However, little monitoring and evaluation data are available to allow assessments to be made of their effectiveness. Such assessments would be useful to ensure that these regulations are well designed and to allow for cross-country exchanges of the lessons learnt.
- In contrast, there is a comparatively solid database related to wage guarantee funds that ensure that workers' claims are settled in the case of employer insolvency. These data indicate that such tools are generally effective. The potential for improvement exists nevertheless as regards awareness-raising and the administrative burden.
- As regards supporting workers who have lost their jobs because of restructuring to transition to alternative employment, the available evidence suggests that comprehensive support packages providing a multitude of tailor-made services over a long period of time are most effective. Ideally, the support starts at the time that lay-offs are announced, rather than when workers have already become unemployed, and it should be provided through a multistakeholder approach.

6 Conclusions

The global COVID-19 pandemic has led to a socioeconomic crisis that has persisted since the end of Q1 2020. The manifestations of the crisis on EU labour markets have been severe, as governments have mandated closures of activities, restricted mobility and imposed physical distancing norms to stem the transmission of the virus.

Headcount employment losses in the first quarter of the crisis (Q2 2020) were similar to those experienced over the two years of the global financial crisis (2008–2010). However, job losses represented only around one-fifth of the overall decline in hours worked. The weekly hours worked of those still working also contracted, and the biggest contributor to declining labour inputs at the peak of the crisis was the furloughing of employees. Businesses and individuals received state support to cushion the drops in income suffered as a result of the temporary cessation or slowdown of economic activity. Employment protection through short-time working and related schemes became part of a generalised European policy response to the crisis. This ensured that sharp falls in output and hours worked did not translate into corresponding increases in unemployment.

The descriptive analysis carried out in this report confirms a strong asymmetric effect both within and between Member States. As expected, one of the main findings is the disproportionate decline in employment that occurred in those sectors that were ordered to close (that is, the leisure, accommodation, restaurant and non-essential retail sectors). Even though these measures were relaxed to some extent in the third and fourth quarters of 2020, mobility restrictions and a decline in household consumption have continued to reduce the potential of the short-term recovery. Member States characterised by relative productive specialisation in the most affected sectors (for example, Italy and Spain) were also those that experienced the sharpest employment declines. However, employment losses spread across all types of activities, affecting not only those categorised as closed but also those considered essential. Only those sectors that remained active through telework posted net employment gains during 2020. The share of people working from home was many times higher than the relatively marginal share of the workforce that did so regularly pre COVID-19 (although emerging official data point to a lower incidence than observed in ‘live’ survey sources).

A second main finding of the analysis relates to the occupational distribution of employment declines. Grouping occupations by their potential to work from

home, the analysis shows greater resilience to the economic downturn among those who were able to work remotely. As already pointed out in recent studies (Sostero et al, 2020; Cetrulo et al, 2021), teleworkable occupations tend to enjoy better wages and employment conditions, and teleworkability has a strong positive correlation with education levels. The ability to work from home during the crisis provided an additional level of defence against negative labour market outcomes. However, it also highlighted the divide between ‘remote’ workers, on the one hand, and ‘essential’ workers or those who lost their jobs in closed sectors, on the other.

Whether or not mass telework endures post COVID-19 remains an open issue and will not be driven by purely technical considerations (Fana et al, 2020b). Changes in work organisation induced by the broad deployment of digital tools are not straightforwardly positive in terms of working or employment conditions. The increase in remote control and surveillance practices and other forms of bureaucratic control, as well as increasingly blurred boundaries between work and personal life, are concerns that have been made more pressing and relevant by the crisis and the broad take-up of remote working. These give further momentum to ongoing legislative efforts on the ‘right to disconnect’ (Eurofound, 2020d). There are also health and safety issues regarding the ergonomic suitability of many home offices, as well as potential psychosocial stressors resulting from higher levels of isolation or work intensity in remote working.

A third main finding concerns labour market institutions, which appear to be an important mediator of employment change. Temporary workers – around 15% of dependent employment – accounted for over three-quarters of net employment declines during 2020. Their likelihood of job loss was much higher across the sectoral categories than for permanent employees. Even when social protection schemes have been extended to temporary workers, in most cases these have been implemented as income support and extended unemployment benefits. As the generosity and duration of such schemes strongly depend on previous employment history, income-replacement rates tend to be lower for those on temporary contracts than for employees with permanent contracts. At the same time, these measures are temporary, contingent on the crisis, and their protective coverage is likely to be finite in duration. From a policy standpoint, precarious employment should be of strong concern not only in the crisis but especially during the recovery phase.

A fourth main finding is that declining labour inputs were sharpest among younger workers and those in low-paid jobs, especially low-paid female service workers. Like temporary workers, younger workers are more vulnerable in a downturn. They are more likely to lose their jobs because of limited experience or tenure. Because of the nature of the COVID-19 crisis, many of the sectors in which they are overrepresented were more likely to be partially or wholly closed. In addition, the possibility of taking up employment among labour market entrants was sharply reduced, as was the possibility of finding alternative employment when they lost their jobs. Net employment declined by over 10% for younger workers at the outset of the crisis and an even higher share were on furlough.

While the situation improved somewhat in the second half of 2020, the spectre of the youth unemployment crisis following the Great Recession should serve as a reminder that it is younger workers at the start of their working lives that are most marked by long periods of involuntary joblessness.

Fifth, EU-LFS data do not support early descriptions of the crisis as a 'shecession'. Employment declines in the initial phase of the crisis were more or less equally distributed by gender, and the tentative recovery in late 2020 was observed more in female than in male employment. However, female workers in low-paid, bottom-quintile jobs were much more likely than their male counterparts to lose their jobs, and female workers more generally were more likely to be on furlough. Live survey evidence indicates that the work-life balance of female workers was more negatively affected than that of male workers, as the habitually unequal allocation of domestic and caring responsibilities (the double burden) was further exacerbated by school closures and childcare.

A concluding positive message is that the crisis – to date – has not been as destructive of employment or economic activity as was initially feared. There has been no further decline in hours worked after the deep trough in Q2 2020 during the first wave. The EU employment level is still some three million short of what it was

before the crisis, but the direction of travel in 2020 was positive and continued to be positive into early 2021. COVID-19-related restructuring job loss peaked in mid-2020 but, by the end of Q1 2021, there were more cases of job creation announced by companies than job loss. European labour markets have shown some resilience to date, notably in suppressing the rise of unemployment. They have been helped by a range of emergency measures designed to cushion the impact of suppressed economic activity on both businesses and individual workers and households. However, as mass vaccination campaigns are completed, the focus of policymakers may return to older and more traditional instruments used to anticipate and manage structural change. Examples from Member States – such as Swedish job security councils, Germany's 'go digital' funding for SMEs and Belgian reconversion cells – provide opportunities for policy learning. Some of these initiatives will probably draw EU-level funding from the NextGenerationEU programme.

However, as the findings of this research confirm, the more vulnerable labour market categories before the pandemic were also those that experienced a worsening of their socioeconomic conditions. Existing instruments alone may not be adequate to sustain a strong employment recovery, enabling these workers to escape the vicious circle of social insecurity. This is all the more the case as these more vulnerable workers are not only those most affected by the COVID-19 crisis, but also those who will face more challenges in adjusting to the digital and green transition. Public and social partner-based support should take this into account, which might require new instruments or the reorientation of existing instruments.

Especially in the sectors most affected by the crisis, business survival may still be in question, and the prospect of a return to pre-crisis levels of activity remains uncertain. Broader and inclusive social protection schemes could serve as a buffer against intermittent job recovery. More generally, innovative forms of public and social partner-based support will be required in the recovery, just like in the crisis itself.

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Annexes

Annex 1: Index of occupational teleworkability

The technical teleworkability index in Table A1 is based primarily on the *Indagine campionaria delle professioni* (ICP), an Italian occupation survey that closely follows the structure of the US O*NET survey. This analysis used the detailed information on tasks in this survey to classify fine-grained occupations (over 750 five-digit occupations in the ICP) as technically teleworkable or not, based on the amount of physical interaction captured by six variables, covering most of the spectrum of physical tasks. The approach is based on the framework and taxonomy of tasks for occupational analysis developed in Fernández-Macías and Bisello (2020). The index values in Table A1 are employment-weighted averages of the indicator values at the five-digit level when aggregated to three digits. In addition to the six physical interaction variables contained in the ICP, the analysis also drew from the EWCS to add an additional (negative) teleworkable variable providing information on another type of physical interaction not covered in the ICP, namely the frequency of lifting or moving people. For more details on the construction of the index, see Sostero et al (2020).⁴⁹

Table A1: Values of the technical teleworkability and social interaction indices for ISCO-08 three-digit occupation groups

ISCO-08 code	Occupation title	Technical teleworkability index value	Social interaction index value
111	Legislators and senior officials	1.00	0.68
112	Managing directors and chief executives	1.00	0.69
121	Business services and administration managers	1.00	0.61
122	Sales, marketing and development managers	1.00	0.65
131	Production managers in agriculture, forestry and fisheries	0.00	0.62
132	Manufacturing, mining, construction and distribution managers	0.18	0.62
133	Information and communications technology service managers	1.00	0.57
134	Professional services managers	1.00	0.67
141	Hotel and restaurant managers	0.97	0.63
142	Retail and wholesale trade managers	0.07	0.67
143	Other services managers	0.89	0.61
211	Physical and earth science professionals	0.23	0.45
212	Mathematicians, actuaries and statisticians	1.00	0.59
213	Life science professionals	0.26	0.54
214	Engineering professionals (excluding electrotechnology)	0.25	0.50
215	Electrotechnology engineers	0.00	0.51
216	Architects, planners, surveyors and designers	0.38	0.36
221	Medical doctors	0.39	0.79
222 ^a	Nursing and midwifery professionals	0.00	0.94
225	Veterinarians	0.00	0.64
226	Other health professionals	0.59	0.75
231	University and higher education teachers	0.49	0.80
232	Vocational education teachers	1.00	0.76
233	Secondary education teachers	1.00	0.77

⁴⁹ The table is available in csv format at <https://github.com/m-sostero/telework-occupations>. The occupations not covered are armed forces and subsistence agricultural workers.

ISCO-08 code	Occupation title	Technical teleworkability index value	Social interaction index value
234	Primary school and early childhood teachers	0.61	0.78
235	Other teaching professionals	0.86	0.74
241	Finance professionals	1.00	0.46
242	Administration professionals	0.97	0.57
243	Sales, marketing and public relations professionals	1.00	0.56
251	Software and applications developers and analysts	1.00	0.46
252	Database and network professionals	1.00	0.41
261	Legal professionals	1.00	0.43
262	Librarians, archivists and curators	1.00	0.51
263	Social and religious professionals	0.98	0.67
264	Authors, journalists and linguists	1.00	0.43
265	Creative and performing artists	0.34	0.54
311	Physical and engineering science technicians	0.01	0.45
312	Mining, manufacturing and construction supervisors	0.00	0.57
313	Process control technicians	0.02	0.38
314	Life science technicians and related associate professionals	0.63	0.35
315	Ship and aircraft controllers and technicians	0.09	0.60
321	Medical and pharmaceutical technicians	0.00	0.39
322	Nursing and midwifery associate professionals	0.00	0.94
324	Veterinary technicians and assistants	0.00	0.39
325	Other health associate professionals	0.35	0.66
331	Financial and mathematical associate professionals	1.00	0.41
332	Sales and purchasing agents and brokers	1.00	0.66
333	Business services agents	1.00	0.52
334	Administrative and specialised secretaries	1.00	0.53
335	Regulatory government associate professionals	0.53	0.57
341	Legal, social and religious associate professionals	1.00	0.74
342	Sports and fitness workers	0.04	0.67
343	Artistic, cultural and culinary associate professionals	0.11	0.48
351	Information and communications technology operations and user support technicians	0.93	0.43
352	Telecommunications and broadcasting technicians	0.00	0.32
411	General office clerks	1.00	0.39
412	Secretaries (general)	1.00	0.44
413	Keyboard operators	1.00	0.29
421	Tellers, money collectors and related clerks	0.93	0.50
422	Client information workers	1.00	0.48
431	Numerical clerks	1.00	0.26
432	Material-recording and transport clerks	0.40	0.42
441	Other clerical support workers	0.82	0.40
511	Travel attendants, conductors and guides	0.73	0.78
512	Cooks	0.00	0.48
513	Waiters and bartenders	0.00	0.56

ISCO-08 code	Occupation title	Technical teleworkability index value	Social interaction index value
514	Hairdressers, beauticians and related workers	0.00	0.58
515	Building and housekeeping supervisors	0.00	0.70
516	Other personal services workers	0.32	0.55
521	Street and market salespersons	0.00	0.84
522	Shop salespersons	0.04	0.80
523 ^b	Cashiers and ticket clerks	0.10	0.51
524	Other sales workers	0.33	0.50
531 ^c	Childcare workers and teachers' aides	0.00	0.75
532	Personal care workers in health services	0.00	0.54
541	Protective services workers	0.40	0.57
611	Market gardeners and crop growers	0.00	0.43
612	Animal producers	0.00	0.33
613	Mixed crop and animal producers	0.00	0.36
621	Forestry and related workers	0.00	0.46
622	Fishery workers, hunters and trappers	0.00	0.41
711	Building frame and related trades workers	0.00	0.27
712	Building finishers and related trades workers	0.00	0.38
713	Painters, building structure cleaners and related trades workers	0.00	0.31
721	Sheet and structural metal workers, moulders and welders, and related workers	0.00	0.38
722	Blacksmiths, toolmakers and related trades workers	0.00	0.32
723	Machinery mechanics and repairers	0.00	0.33
731	Handicraft workers	0.00	0.36
732	Printing trades workers	0.33	0.30
741	Electrical equipment installers and repairers	0.00	0.40
742	Electronics and telecommunications installers and repairers	0.00	0.42
751	Food processing and related trades workers	0.00	0.50
752	Wood treaters, cabinet-makers and related trades workers	0.00	0.37
753	Garment and related trades workers	0.00	0.36
754	Other craft and related workers	0.00	0.36
811	Mining and mineral processing plant operators	0.00	0.27
812	Metal processing and finishing plant operators	0.00	0.33
813	Chemical and photographic products plant and machine operators	0.00	0.30
814	Rubber, plastic and paper products machine operators	0.00	0.28
815	Textile, fur and leather products machine operators	0.25	0.31
816	Food and related products machine operators	0.00	0.33
817	Wood processing and papermaking plant operators	0.00	0.35
818	Other stationary plant and machine operators	0.00	0.29
821	Assemblers	0.00	0.26
831	Locomotive engine drivers and related workers	0.00	0.18
832	Car, van and motorcycle drivers	0.00	0.52
833	Heavy truck and bus drivers	0.00	0.18
834	Mobile plant operators	0.00	0.25

ISCO-08 code	Occupation title	Technical teleworkability index value	Social interaction index value
835	Ships' deck crews and related workers	0.00	0.26
911	Domestic, hotel and office cleaners and helpers	0.00	0.32
912	Vehicle, window, laundry and other hand cleaning workers	0.00	0.45
921	Agricultural, forestry and fishery labourers	0.00	0.24
931	Mining and construction labourers	0.00	0.19
932	Manufacturing labourers	0.00	0.24
933	Transport and storage labourers	0.00	0.20
941	Food preparation assistants	0.00	0.26
951	Street and related service workers	0.00	0.43
952	Street vendors (excluding food)	0.00	0.71
961	Refuse workers	0.00	0.29
962	Other elementary workers	0.28	0.36

^aThe values in this row are duplicated from 322, 'Nursing and midwifery associate professionals', because the official ICP-ISCO mapping does not distinguish between the two.

^bThe values for the main subgroup (ICP 5.1.2.4.0) were changed manually from teleworkable to non-teleworkable.

^cThe values were just below the threshold, so were changed from teleworkable to non-teleworkable.

Annex 2: Sectoral classification

Table A2: Classification of sectors during lockdown, based on Fana et al (2020a)

NACE category	Sector	Classification no.	Classification
1	Crop and animal production, hunting	1	Essential
2	Forestry and logging	4	Mostly non-essential
3	Fishing and aquaculture	1	Essential
5	Mining of coal and lignite	4	Mostly non-essential
6	Extraction of crude petroleum, etc.	1	Essential
7	Mining of metal ores	4	Mostly non-essential
8	Other mining and quarrying	4	Mostly non-essential
9	Mining support service activities	4	Mostly non-essential
10	Manufacture of food products	1	Essential
11	Manufacture of beverages	1	Essential
12	Manufacture of tobacco products	4	Mostly non-essential
13	Manufacture of textiles	4	Mostly non-essential
14	Manufacture of wearing apparel	4	Mostly non-essential
15	Manufacture of leather and related products	4	Mostly non-essential
16	Manufacture of wood, etc.	4	Mostly non-essential
17	Manufacture of paper and paper products	3	Mostly essential
18	Printing and reproduction of recorded media	1	Essential
19	Manufacture of coke and refined petroleum	1	Essential
20	Manufacture of chemicals and chemical products	3	Mostly essential
21	Manufacture of basic pharmaceutical products	1	Essential
22	Manufacture of rubber and plastic products	4	Mostly non-essential
23	Manufacture of other non-metallic minerals	4	Mostly non-essential
24	Manufacture of basic metals	4	Mostly non-essential
25	Manufacture of fabricated metal products	4	Mostly non-essential
26	Manufacture of computer, electronic goods, etc.	4	Mostly non-essential
27	Manufacture of electrical equipment	4	Mostly non-essential
28	Manufacture of machinery and equipment	4	Mostly non-essential
29	Manufacture of motor vehicles, trailers	4	Mostly non-essential
30	Manufacture of other transport equipment	4	Mostly non-essential
31	Manufacture of furniture	4	Mostly non-essential
32	Other manufacturing	4	Mostly non-essential
33	Repair and installation of machinery	4	Mostly non-essential
35	Electricity, gas, steam utilities	1	Essential
36	Water collection, treatment and supply	1	Essential
37	Sewerage	1	Essential
38	Waste collection, treatment and disposal	1	Essential
39	Remediation activities and other waste	1	Essential
41	Construction of buildings	4	Mostly non-essential
42	Civil engineering	4	Mostly non-essential
43	Specialised construction activities	4	Mostly non-essential
45	Wholesale and retail trade, etc.	3	Mostly essential
46	Wholesale trade	3	Mostly essential

NACE category	Sector	Classification no.	Classification
47	Retail trade	3	Mostly essential
49	Land transport and transport via pipelines	1	Essential
50	Water transport	1	Essential
51	Air transport	3	Mostly essential
52	Warehousing and support activities	1	Essential
53	Postal and courier activities	1	Essential
55	Accommodation	5	Closed
56	Food and beverage service activities	5	Closed
58	Publishing activities	1	Essential
59	Motion picture, video and television	3	Mostly essential
60	Programming and broadcasting activities	1	Essential
61	Telecommunications	1	Essential
62	Computer programming, consultancy, etc.	2	Teleworkable
63	Information service activities	2	Teleworkable
64	Financial service activities	2	Teleworkable
65	Insurance and pension funding	2	Teleworkable
66	Activities auxiliary to financial services	2	Teleworkable
68	Real estate activities	5	Closed
69	Legal and accounting activities	2	Teleworkable
70	Activities of head offices, etc.	2	Teleworkable
71	Architectural and engineering activities	2	Teleworkable
72	Scientific research and development	2	Teleworkable
73	Advertising and market research	2	Teleworkable
74	Other professional, scientific and technical activities	2	Teleworkable
75	Veterinary activities	1	Essential
77	Rental and leasing activities	4	Mostly non-essential
78	Employment activities	4	Mostly non-essential
79	Travel agencies, tour operators, etc.	5	Closed
80	Security and investigation activities	2	Teleworkable
81	Services to buildings and landscape activities	3	Mostly essential
82	Office administration, office support, etc.	5	Closed
84	Public administration and defence, etc.	2	Teleworkable
85	Education	2	Teleworkable
86	Human health activities	1	Essential
87	Residential care activities	1	Essential
88	Social work activities without accommodation	1	Essential
90	Creative, arts and entertainment activities	5	Closed
91	Libraries, archives, museums, etc.	5	Closed
92	Gambling and betting activities	5	Closed
93	Sports activities and amusement and recreation	5	Closed
94	Activities of membership organisations	2	Teleworkable
95	Repair of computers, etc.	4	Mostly non-essential
96	Other personal service activities	5	Closed
97	Activities of households as employers	4	Mostly non-essential
98	Undifferentiated goods and services, etc.	5	Closed
99	Activities of extraterritorial organisations	4	Mostly non-essential

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The COVID-19 pandemic closed or limited many economic activities in 2020, with far-reaching impacts on the labour market. Employment losses at the outset of the pandemic were sharper than those experienced during the global financial crisis. Even greater declines in hours worked arose as a result of the widespread state-supported furloughing of workers. The physical distancing policies of governments led to another significant and largely ad hoc adjustment – the shift to mass remote working for those workers whose jobs allowed it.

This report describes the employment and working time developments by sector and occupation through the first year of the crisis. It explores which categories of workers were most affected – primarily temporary workers, the young and low-paid women. It also assesses the extent to which remote working served as a buffer during the crisis, preserving jobs that might otherwise have been lost.

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.

