

Chapter 4

Labour Markets: Structural Characteristics and the Impact of Two Crises

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Abstract This chapter covers labour market developments in the eight members of the Emerging European Economies (EEE) in Central and Eastern Europe from the financial crisis in 2008-2009 up to the pandemic in 2020. The emphasis is on the relevance of various structural characteristics (demography including gender and age aspects, labour migration, skills and sectoral employment structures, regional patterns, wage growth, income adequacy, etc.) which shaped how the economies were affected by the two crises.

4.1 Introduction

This chapter describes the labour market developments in the eight Emerging European Economies (EEE) in Central and Eastern Europe over the period spanning the beginning of the financial crisis in 2008 and reflecting the changes during the pandemic in 2020.¹

The focus in this chapter is on a comparative assessment of the two crises, i.e., the impact of the financial crisis and the impact of the pandemic. Naturally, there is an important difference: while we can follow the financial crisis in all its phases starting with the situation before the crisis, its immediate impact, and the subsequent phases of recovery, the pandemic is still unfolding at the time of writing. Hence the strategy followed in this chapter is to focus on longer-term structural characteristics of EEE labour markets as they entered the two crises, compare their development in the initial phase and finally to conjecture how the recovery from the Covid crisis might

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evolve. We highlight differences between the two crises in their starting positions, as well as in their qualitative characteristics. Finally, we evaluate the policy challenges the recovery from the current pandemic will pose.

Throughout this chapter we check on heterogeneity across the EEE as regards possible differences in structural characteristics and policy interventions, plus - at times - show comparisons with selected EU economies (Austria, Germany and Italy), as well as the entire EU. Before starting the analysis, we sketch the five structural characteristics that we cover in this chapter:

First, *demographic developments* are a defining feature of EEE, including a strong change in the age composition of their population. The transition from a planned to a market economy after the fall of the Iron Curtain in 1989 was marked by rapid political and societal changes. The economic hardship of the transition played a role in making people more sensitive to economic risk, and also increased demand for government protection, particularly in times of economic recession (Sirovátka, Guzi & Saxonberg, 2019). The population born in the late 1970s shifted childbearing to later years, which dramatically reduced fertility rates in the late 1990s (see Chapter 9). In addition to a ‘shock’ to the birth rate, the waves of net emigration also had a strong impact on population sizes and age structure (as migration is biased towards younger cohorts) in the EEE. Naturally, changes in population growth and in the population’s age composition influence the ‘potential labour force’ and dependency ratios, both of which are relevant for this chapter.

Second, *labour market participation*, i.e., the sections of the population that are active participants in the labour market. There are several aspects relevant here: retirement rates (Chapter 9), disparity in labour market prospects by educational attainment, and - particularly important - gender differences in participation over the life cycle.

Third, *skills and educational attainment*. It is well-known that labour market outcomes (both activity rates and employment rates) are strongly dependent on skills availability (measured traditionally by educational attainment levels). Tertiary attainment and digital skills among young cohorts in the EEE are high relative to older populations (Chapters 10 and 11). Hence, another dimension of the structural characteristics of the labour market that will be analysed refers to the skills composition of the labour force and how the groups of different skills fared in the economies during the different phases of the crises and the recovery.

Fourth, and related to the previous point, are longer-term changes in the *demand for different skills*, which are a function of technological change (digitisation, automation, etc.) and linked with it in work-organisation (e.g., the move towards tele-working) plus changes in final demand structures (such as increased demand for health and social care services, or for leisure activities; but also the impact of lock-downs on shopping and restaurants during the recent epidemic). Hence, there are both continuous and crisis-induced changes in the sectoral and occupational structures of economies that characterise labour market dynamics.

Fifth, there is the intra-country *regional dimension*: in general, there is spatial differentiation in the location and structure of economic activity within a country. In the case of the EEE, there are some specific features that we intend to emphasise

here: one is that the fall of the Iron Curtain in 1989 led to a significant geographic re-organisation of the economies, with a strong development of trade and other linkages with Western European economies. Another relevant feature is strong agglomeration processes in some economies where foreign direct investment (FDI) supported the development of clusters of manufacturing (such as the car and supplier industries). There is also the clustering of administrative, educational and business services in bigger cities (in particular, in capital cities), or of tourism in other regions.

In summary, we shall demonstrate in this chapter how these various structural features of the EEE were exposed to the impact of the two crises. We also bring the policy dimension into discussion, i.e., the longer-term policy frameworks that were/are in place in the different economies, the way they adjusted, and the discretionary measures used at different points of the crises to impact labour market developments.

4.2 Demography and Migration

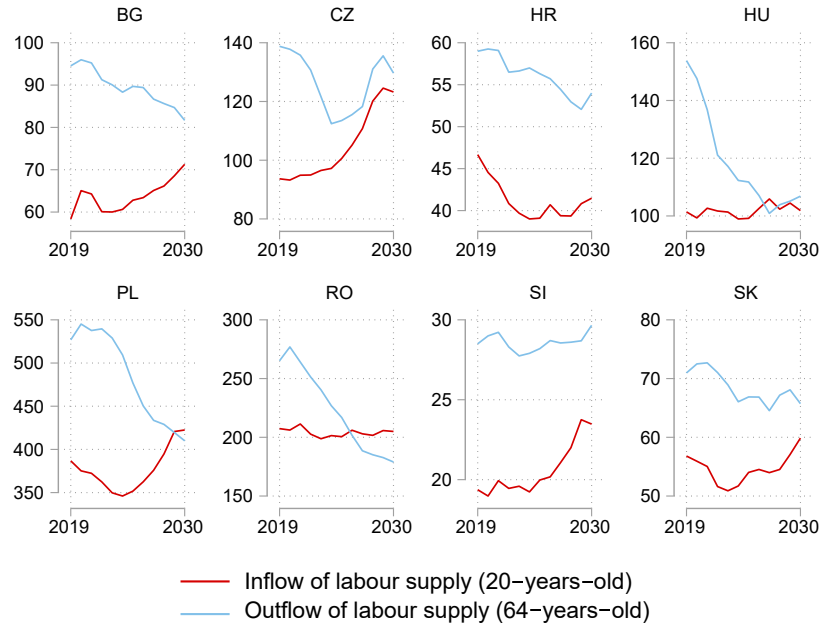
Prior to 1989, any movement of citizens across borders in post-communist countries was severely restricted. The collapse of communism also resulted in a substantial population movement and triggered a wave of East-West migration from Eastern Europe. Migration was driven by economic, political, and ethnic reasons. The reform progress during the transformation period generated positive effects on economic growth, job prospects and returns to education in the long-run and diminished incentives for emigration from the EEE (Guzi & Mikula, 2021).

Emigration from the EEE again intensified after EU enlargements in 2004 and 2007. Large economic disparities between countries triggered new waves of East-West and East-South migration (Kahanec, Pytlikova & Zimmermann, 2016; Kahanec & Pytliková, 2017). For example in 2004, Poland's GDP per capita was \$5,632, that is seven times lower than GDP in the United Kingdom (\$38,813) and nine times lower than GDP in Ireland (\$49,678), which are two of the main destinations for Polish workers. Similarly, in 2007 Romania's GDP per capita of \$8,061 was below the levels in Spain (\$32,460) and Italy (\$38,237), the main migration destinations for Romanians (Guzi, Kahanec & Ulceluse, 2021). The higher economic growth in the EEE relative to Western economies positively contributed to wage convergence between East and West, and hence somewhat reduced the benefits of work migration.

Demographic development in the EEE significantly impacts the size of workforce. The population is younger relative to the EU average but population ageing in some EEE is faster than in the EU as a whole (Chapter 9). The low number of births throughout the late 1990s and early 2000s reduced the inflows of 20-year-olds to the labour market seen over the last decade (Figure 4.1). Throughout the EEE the outflow of workers over the age of 64 exceeds the number of 20-year-olds entering the labour market (Lichner, Miklošovič, Radvanský & Štefánik, 2018). Before 2030, it is only in Hungary and Romania that the inflow of 20-year-olds is projected to outnumber

the outflow of 64-year-olds. The shrinking labour force will therefore contribute to the labour shortages in the coming years.

Fig. 4.1: Projection of labour supply in the labour market until 2030 (in thousands)
Data: Eurostat (2021h)
Note: Baseline population projections are assumed.



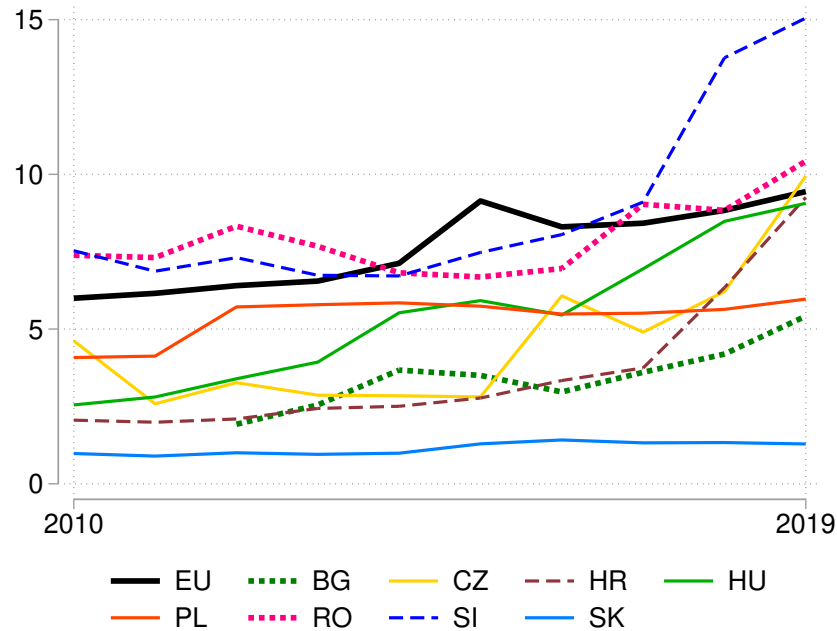
A well-designed immigration policy may be used as a tool to solve specific labour market shortages (Kahanec & Guzi, 2017; Guzi, Kahanec & Kureková, 2018). The inflow of foreign populations to the EEE, however, remained low in the years following the financial crisis and accelerated only in the economically successful years before the pandemic. For example, in Czechia the number of legally residing immigrants reached a historic high of nearly 600,000 in 2019 (5.6% of the Czech population). Immigrants are perceived to be highly entrepreneurial, contributing to economic growth and innovation. The Czech labour market in 2019 was characterized by low unemployment (the lowest in the EU for several years in a row) and a record-high number of job vacancies. The inflow of the migrant workforce therefore helped companies to fill open vacancies and boost economic activity (Guzi, Macková & Čech Valentová, 2021). In 2019, Czechia, Romania and Slovenia received more than ten immigrants per 1000 inhabitants, which is above EU levels (see Figure 4.2). In

contrast, the inflow to Slovakia remains the lowest among the EEE, staying below 1.5 immigrants per 1000 inhabitants over the last decade (Guzi & Fabo, 2021).

Fig. 4.2: Migration inflow per 1000 inhabitants

Data: Eurostat (2021c)

Note: Definition of a migrant is based on the country of birth.



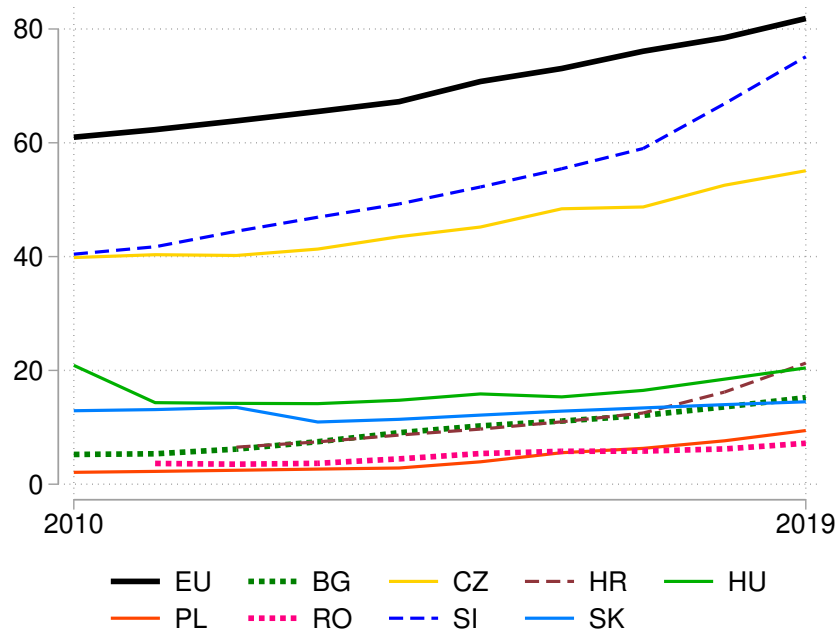
Most of the EEE countries are not typical destinations for immigrants, that is documented by the low number of foreigners per population compared to EU-27 levels (see Figure 4.3). Czechia and Slovenia host the most foreigners per population among the EEE, 55 and 75 foreigners per 1000 inhabitants, respectively. The migrant population in other countries is below 20 foreigners per 1000 inhabitants. At the same time, in 2015 the EEE were less affected by humanitarian migration flows relative to Austria or Germany.

One tool to solve specific labour market shortages is the Blue Card. This is an approved EU-wide program allowing highly qualified non-EU foreign nationals to immigrate into the EU. To qualify for the EU Blue Card, immigrants have to prove they have a university education, three years' professional experience, an employment contract for a minimum of one year, and a salary above a defined threshold, typically 150% of the average income in the industry of their employment. During 2012-2019, Germany was the most successful country as it attracted more than 80% of all EU

Fig. 4.3: Migration stock per 1000 inhabitants

Data: Eurostat (2021g)

Note: Definition of a migrant is based on citizenship, i.e., migrants are not citizens of the country in which they reside, including persons of unknown citizenship and stateless persons.



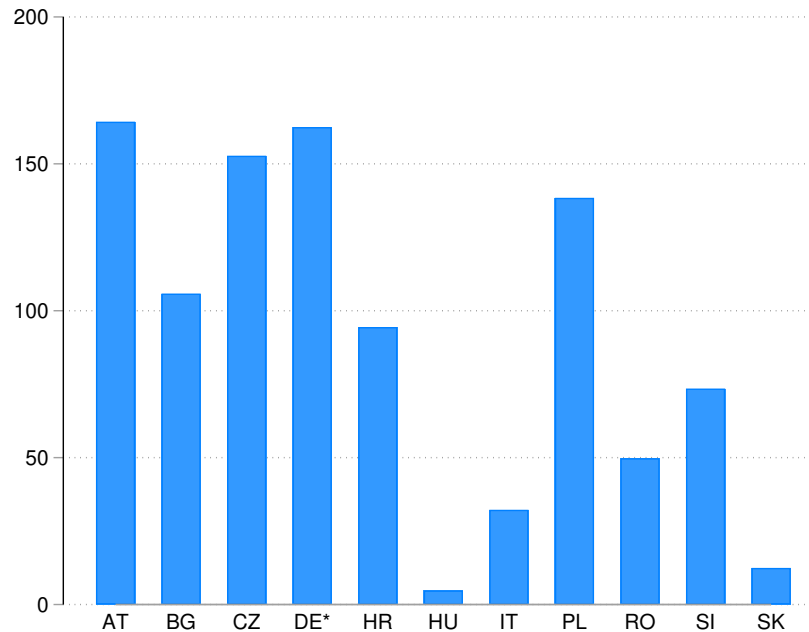
Blue Card holders in the EU. Austria, Bulgaria, Czechia and Poland are among the top ten countries with most EU Blue Card holders per population (see Figure 4.4). The rates for Hungary and Slovakia are among the lowest in the EU (Guzi & Fabo, 2021).

Many countries report difficulties related to the collection of data on emigrants when migrants are not obliged to report their moves. For example, the number of Slovaks living abroad is estimated from Slovak health insurance administrative data. Rizman and Sacherová (2018) estimated that 300,000 residents (5.5 % of the population) left Slovakia between 2002 and 2012. The chances to leave Slovakia are higher among medical graduates, and people from the eastern regions where job opportunities for university graduates are scarce. Rizman and Sacherová (2018) find that about half of those who left returned back home by 2015 and after 2016 more Slovaks returned home than left the country in the same year. Many Slovaks return home for family reasons and the majority remain in Slovakia for the long term. Interestingly, the Covid pandemic reversed the migration patterns in other countries

Fig. 4.4: EU Blue Cards granted per million population, 2012-2019

Data: Eurostat (2021a)

Note: *For Germany, the figure shows the number of cards per 100,000 population.



as well. Bulgaria, Poland and Romania have seen large number of nationals coming back home in 2020 (Economist, 2021). Government schemes to facilitate the return of skilled nationals may be therefore effective.

The labour market prospects of migrant workers in the EEE are favourable. In general migrants are more educated relative to the native population in the EEE and their participation rates are relative to natives (see Table 4.1). Migrant workers from EU countries are typically more employed in the high-skilled occupations than native workers in the EEE. In Hungary and Slovakia migrants of non-EU origin have higher incidence of high-skilled occupations relative to native workers. Guzi and Fabo (2021) find that migrants from EU countries are typically older, while migrants from countries outside the EU are younger, that may explain the success of EU migrants. For example, in Slovakia young migrants (below 30 years old) earn more than young Slovaks. This is because many young Slovaks seek better paid jobs abroad and their positions are filled with young migrants from countries outside the EU (Guzi & Fabo, 2021). In Austria, Germany and Italy, the educational attainment and labour market participation of migrants are lower relative to natives. In contrast

to the EEE, migrants in Austria, Germany and Italy are less likely to have high-skilled occupations.

Table 4.1: Characteristics of migrants relative to natives, 2019

Data: Own elaboration based on Eurostat Labour Force Survey database

Note: The ratio of tertiary education, participation rate and the incidence of high-skilled occupation respectively of immigrants of different origins relative to native population. The high-skilled occupation is defined by ISCO 1-3 classification. The migrant origin is defined by country of birth. Data do not provide reasonably reliable information about foreign-born populations in Bulgaria and Romania, which are not shown.

(the blue colour indicates the higher level for migrants, the green colour for natives and the white colour indicates only a narrow difference between natives and migrants)

Country	Tertiary Education		Participation Rate		High-skilled Occupation	
	EU	non-EU	EU	non-EU	EU	non-EU
CZ	1.26	1.57	1.02	0.97	1.08	0.89
HR	1.16	0.72	1.03	0.94	1.41	0.78
HU	1.25	1.50	1.07	0.94	1.11	1.26
PL	2.03	1.56	1.03	1.05	1.75	0.90
SI	0.94	0.31	0.98	0.92	1.00	0.36
SK	1.32	1.84	1.07	0.98	1.06	1.21
AT	1.03	0.86	0.97	0.90	0.62	0.69
DE	0.86	0.89	1.00	0.86	0.58	0.66
IT	0.50	0.70	1.03	1.00	0.31	0.33

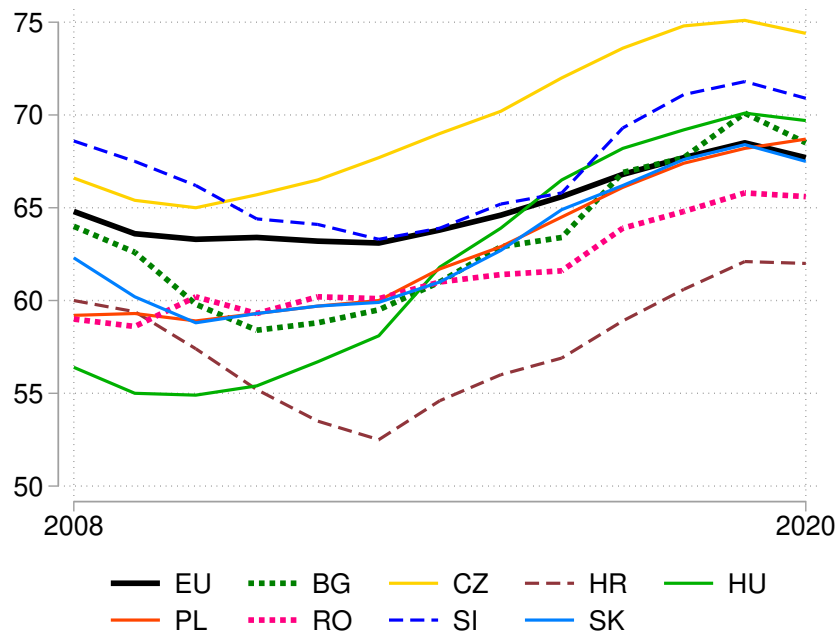
4.3 Employment Situation

The financial crisis reduced employment rates and increased unemployment in all EU countries. In most of the EEE, employment rates had been falling after 2008 and returned to pre-crisis levels by 2015 (see Figure 4.5). Employment grew strongly in the years before the pandemic, with employment rates in Bulgaria, Czechia, Hungary, and Slovenia climbing above EU-27 levels (68%). In 2019, employment rates in the EEE exceeded those in 2008. Overall, the general labour market situation was favourable before the Covid-19 pandemic.

In the EEE, workers with tertiary education coped better during the financial crisis, and their employment levels fell only minimally, while workers with lower

education fared worse. This is in contrast to the situation in Austria, Germany or Italy, where employment rates remained fairly flat throughout the period (see Figure 4.6). In the EEE, the incidence of employment for both men and women varies with the educational attainment more than in the EU. In the EEE, low-educated women are at least twice less likely to be in employment than tertiary-educated women. In Italy as well, we see a similarly big difference in employment rates by education among women. The economically successful years before the pandemic pulled up the employment rates of the least educated, particularly in Bulgaria, Croatia, Czechia, and Hungary.

Fig. 4.5: The share of 15-64 year-olds in employment, 2008-2020
Data: Eurostat (2021e)

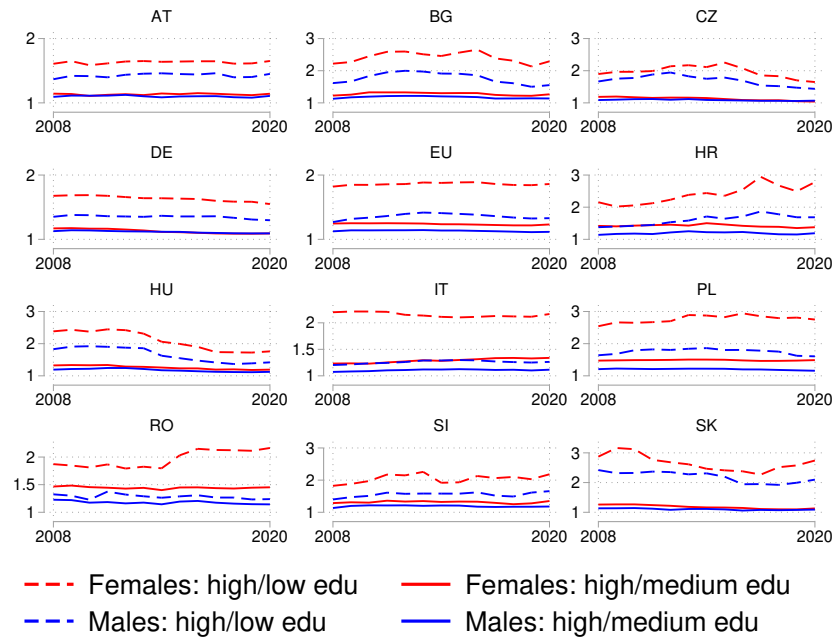


The financial crisis impacted workers in all countries, leading to higher unemployment, and many jobs have not recovered since. Unemployment in the EEE reached its peak around 2012 (see Figure 4.7). Workers with tertiary education were the least affected by the economic shock in 2008, with their unemployment rate remaining below 7%, except for Croatia where it rose to above 11%. The unemployment rate increased most for workers with lower than secondary education and reached levels of above 20% everywhere, while it remained below 10% in Romania. Interestingly, differences in unemployment rates are very small by education level in Romania (the

Fig. 4.6: Employment rates of workers with tertiary education relative to employment rates of workers with lower or medium educational attainment by gender, 2008-2020

Data: Eurostat (2021e)

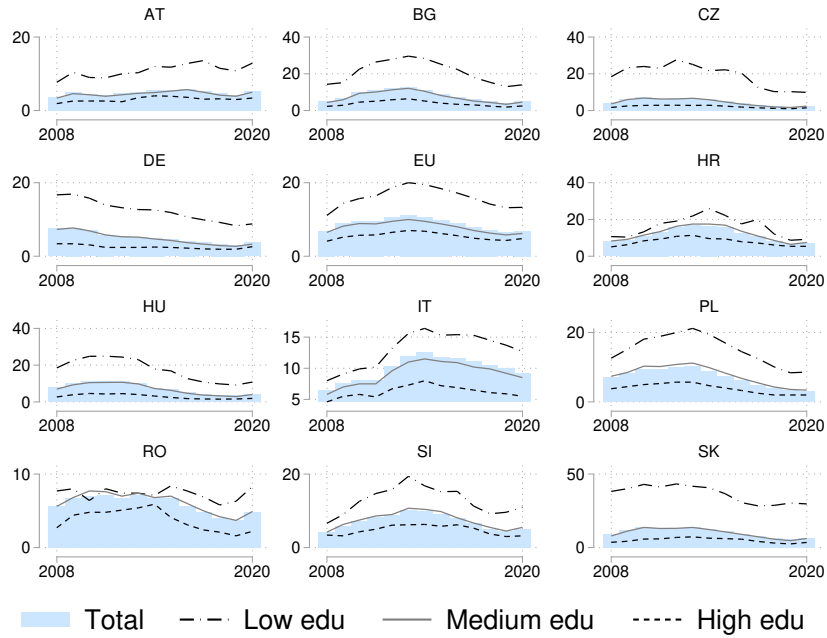
Note: Education categories: low (ISCED 0-2), medium (ISCED 3-4), and high (ISCED 5-6)



relatively large share of the rural population where official figures traditionally record low rates of unemployment might account for this). By 2015, the unemployment rate had moved back to pre-crisis levels in most countries, although this happened much later in Bulgaria, Czechia and Croatia, and in Slovenia unemployment remained above pre-crisis levels.

Structural problems in the labour market are illustrated by the rate of the young population (15-24 year-olds) not in employment, education, or training (NEET) in Figure 4.8, and the share of the active population unemployed for more than 12 months in Figure 4.9. Both indicators have followed an inverted U-shape pattern since 2008, indicating the worsening of the situation in the labour market after the financial crisis, and a full recovery in the years before the pandemic. The labour market situation in the EEE was more favourable in 2019 than in 2008, except in one case (Romania had higher NEET in 2019 than in 2008). Relative to the EU-27, the shares of the long-term unemployed were higher in several members of the EEE,

Fig. 4.7: Unemployment by educational attainment and total unemployment
Data: Eurostat (2021e)



but by 2020 they had largely decreased and fallen below EU-27 levels (except for Slovakia).

Fig. 4.8: The share of young people (15-24 year-olds) neither in employment nor in education and training (NEET)

Data: Eurostat (2021e)

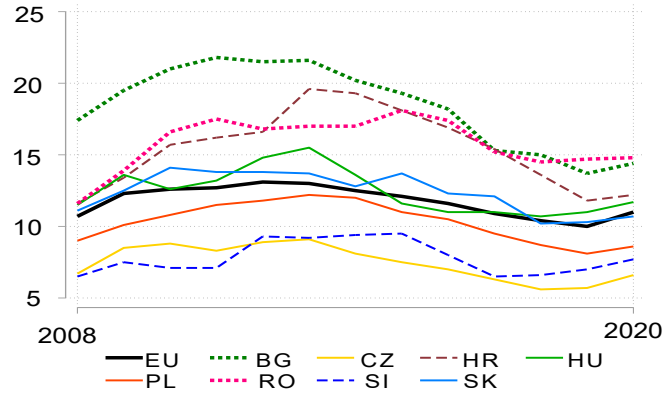
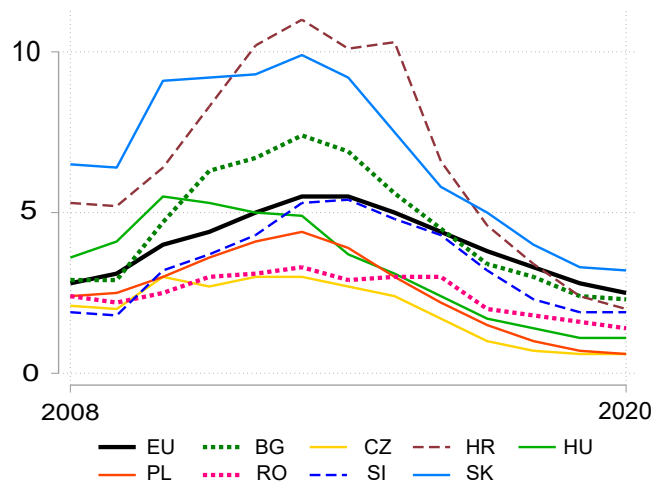


Fig. 4.9: The share of persons (20-64 year-olds) unemployed for 12 months or more in the total active population in the labour market

Data: Eurostat (2021e)



Unemployment statistics might underestimate the total unmet demand for employment, also called the 'labour market slack', which includes unemployed, discouraged, and underemployed workers. Discouraged workers (e.g., persons seeking work but

not immediately available, or persons available but not seeking work) are close to unemployment but are not included in unemployment statistics. Underemployment includes involuntary part-time workers who wish to work more hours. Figure 4.10 confirms that the labour market slack decreased in the EEE between 2008 and 2019, and except for Croatia, the levels are below the EU-27 average. This confirms that labour markets in the EEE were in a better condition in 2019 than in 2008 also in comparison to Austria or Italy. Also gender differences in the labour market slack became narrower in 2019, although the slack remains higher for women, except in Bulgaria and Romania. In all countries, the slack attains highest levels among young people (15-24 year-olds). Czechia ranks as the country with the lowest unemployment rate and labour market slack, while Croatia has the highest values.

Fig. 4.10: Labour market slack (percentage of extended labour force)

Data: Eurostat (2021e)

Note: The labour market slack is defined by discouragement and underemployment. Plotted are shares of 20-64 year-olds in the extended labour force.

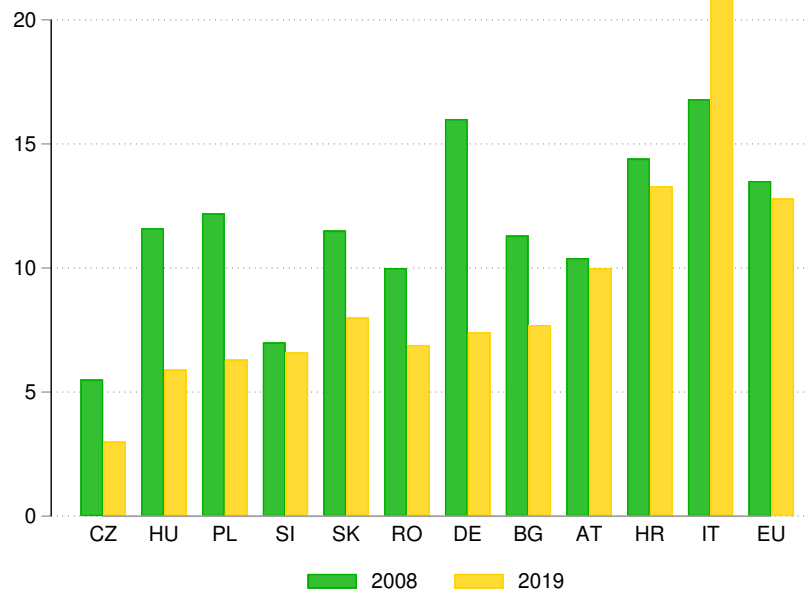
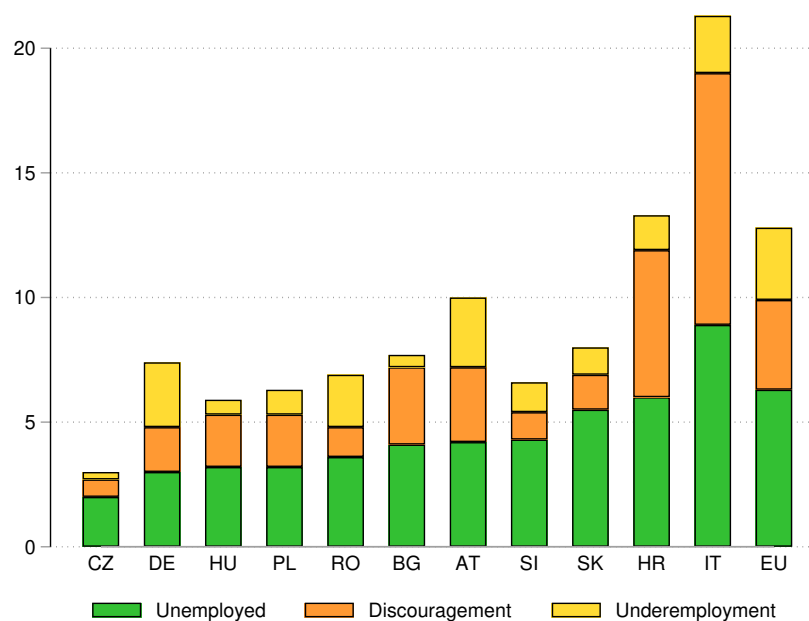


Figure 4.11 contrasts the relative importance of discouraged and underemployed workers with the number of unemployed. First, it follows that the unemployed make up a larger share of the labour force than the other two groups, except in Croatia. Second, the number of discouraged workers is typically larger than the group of

involuntary part-time workers (underemployment), except for Romania and Slovenia. Third, except for Croatia, labour market slack in the EEE remains largely below the EU-27 average.

Fig. 4.11: Unemployment, discouragement, and underemployment (as a percentage of extended labour force), 2019
Data: Eurostat (2021e)

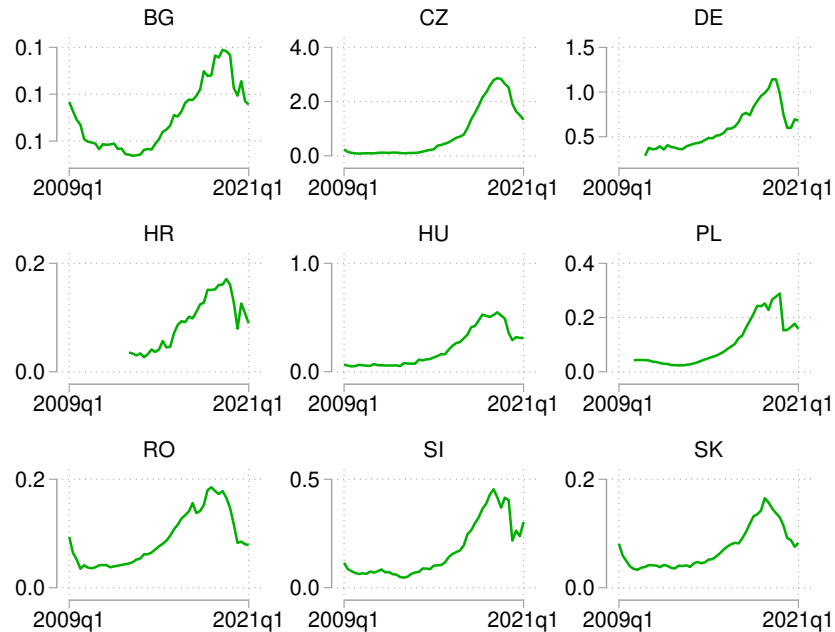


During a crisis, unemployment increases and job vacancies are scarce. The labour market thus becomes tighter, which is expressed by the number of jobs that firms are seeking to fill relative to the number of potential job applicants. The labour market tightness, defined as the ratio of vacancies to number of unemployed, illustrates the shortage of workers in the labour market. The statistics on the number of vacancies may underestimate the total demand for workers, since companies searching for more qualified employees may not approach the employment office. Figure 4.12 documents that since 2015 the number of posted vacancies has been sharply increasing in all countries. The rise was very steep in 2017 and 2018 throughout the EEE, and the labour market was tightest in Czechia (there were more than two vacancies for one job applicant).

Fig. 4.12: Labour market tightness, 2009-2021

Data: Eurostat (2021e, 2021d)

Note: Labour market tightness is the ratio of vacancies to the number of unemployed.



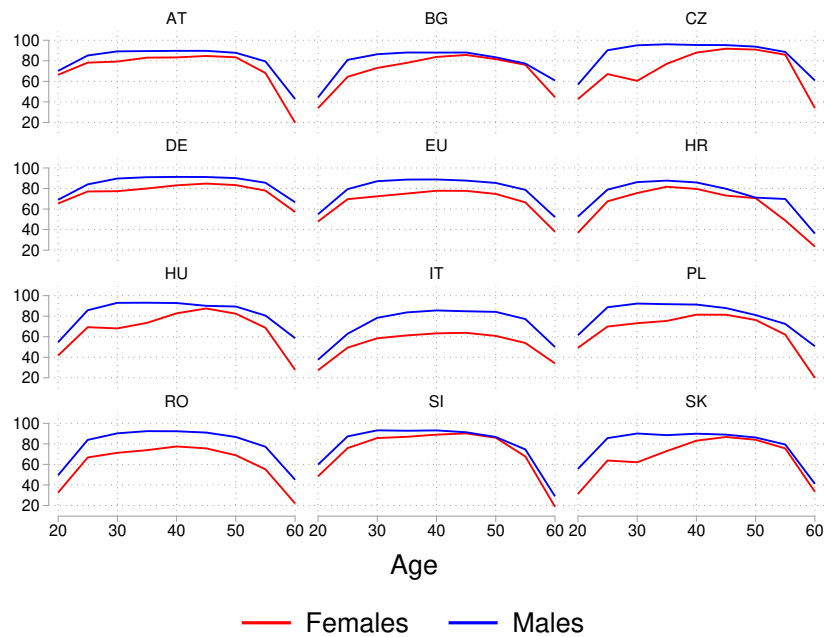
In all EU member states, young women (25-34 year-olds) have higher tertiary attainment levels than young men. Female attachment to the labour force is lower at childbearing age but long career breaks contribute to a higher gender wage gap and have subsequent impacts on pension rights. Countries where a high share of women permanently withdraw from the labour force after childbirth have higher gender differences in the labour market (Bičáková, 2016).

The gender gap in employment opens at childbearing age the most in Czechia, Hungary, Poland and Slovakia (see Figure 4.13). Later, around the age of 50, the gender gap in employment almost closes in Bulgaria, Croatia, Czechia, Hungary, Poland, Slovakia and Slovenia. In addition, in Czechia and Slovakia, the maternal employment rate of tertiary educated women is among the lowest in the OECD (OECD, 2019). In comparison, a drop in female employment at childbearing age is much lower in Austria and Germany.

When skilled labour is in short supply, taking advantage of female labour may provide a considerable boost to the economy. This would require adjusting family policies and institutions that affect mothers' transition from maternity leave to work,

and facilitating the family-work balance. For a start, reducing maximum parental leave, and expanding affordable and quality childcare may do the job in some of the EEE (OECD, 2019).

Fig. 4.13: Employment rates over the lifetime by gender, 2019
Data: Eurostat (2021e)



4.4 GDP and Employment Comparison

A comparison of GDP and employment developments over the period 2005q1 to 2020q4, i.e., covering the two crises and the recovery period in between (see Figure 4.14), gives rise to the following five observations:

- Firstly, there are two groups of countries amongst the EEE that differ with respect to patterns of recovery. One group, comprising Croatia, Hungary and Slovenia, went through a protracted and difficult phase of recovery from the financial crisis in 2008-2009. Other countries, foremost amongst them Poland, which hardly experienced a dip at all after the financial crisis, had a strong recovery, lifting

their GDP levels in 2019 to between 40% up to close to 80% above the GDP levels of 2005 (reference year).

- Secondly, a distinct feature of the EEE in comparison to the EU is the rather large gap between GDP and employment developments (except Croatia, Hungary, and Slovenia), which reflects the relatively strong (labour) productivity catching-up – here shown at the aggregate level – of the EEE relative to the EU. The rather flat development of employment over a long period when the EEE experienced relatively high GDP growth could also be characterised as ‘job-less growth’. In other words, growth in the EEE is characterised by low ‘employment elasticity’.
- Thirdly, we see minimal differences between male and female employment trends in the EEE (exceptions are the better male-to-female employment developments in Poland and – more recently – in Croatia), while in the EU as a whole female employment levels showed a more positive trend than male employment over the period (a feature that has more recently also characterised Slovenia).
- Fourthly, the contraction in GDP during the recent pandemic is much stronger than in the initial phase of the financial crisis, which reflects the additional element of imposed ‘lock-downs’; this is shared by both the EU as a whole and the EEE who also share the typical ‘V-shaped’ recovery typical for the pandemic experience.
- Fifthly, in line with developments in the EU (but, as we shall see later, even more markedly), there is a shallow employment response to the ‘V-shaped’ GDP pattern in the recent pandemic - this will be further explored in section 4.9 of this chapter.

4.5 Sectoral Employment Structures and the Impact of Economic Recessions

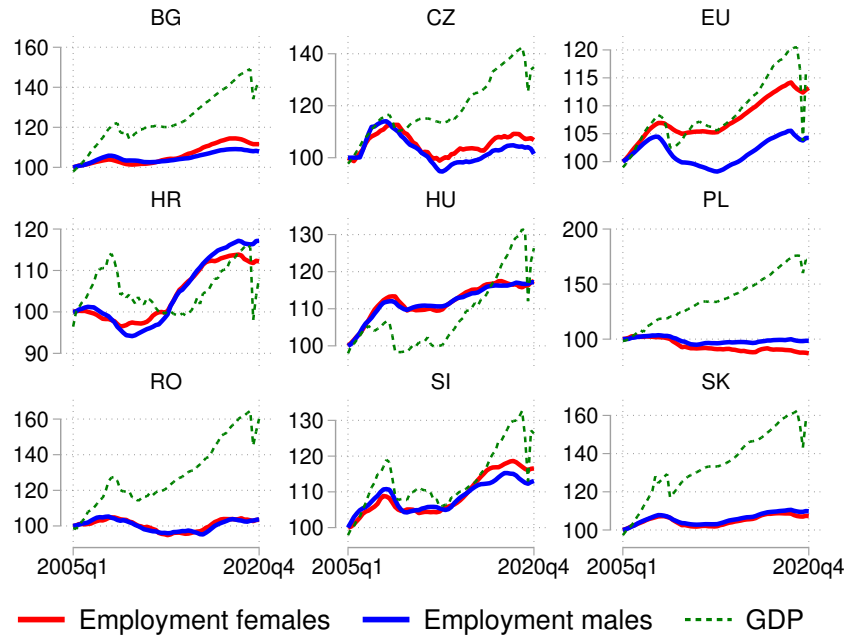
In this section, firstly, we intend to point to important characteristics of sectoral employment structures in the EEE and, secondly, analyse the dynamic contributions of sector-level employment to aggregate employment developments during the phases of crises and recovery.

Figure 4.15 illustrates features of sectoral employment structures in the EEE. We singled out Germany as the comparator Western European country, because it is the dominant EU economy that the EEE has strong economic connections with, and it is also an example of a highly developed EU economy with a strong manufacturing sector.

A number of interesting features emerge from the comparison of employment structures in the EEE and Germany, which also reveals some distinct differences amongst the members of the EEE:

- Even in comparison with an economy which has a strong manufacturing sector, such as the German economy, a major sub-group of the EEE (Czechia, Hungary, Slovakia, and Slovenia) shows a higher share of employment in manufacturing. In these economies, manufacturing employment features very strongly,

Fig. 4.14: Employment and GDP (2005=100), 2005-2020
Data: Eurostat (2021e, 2021b)



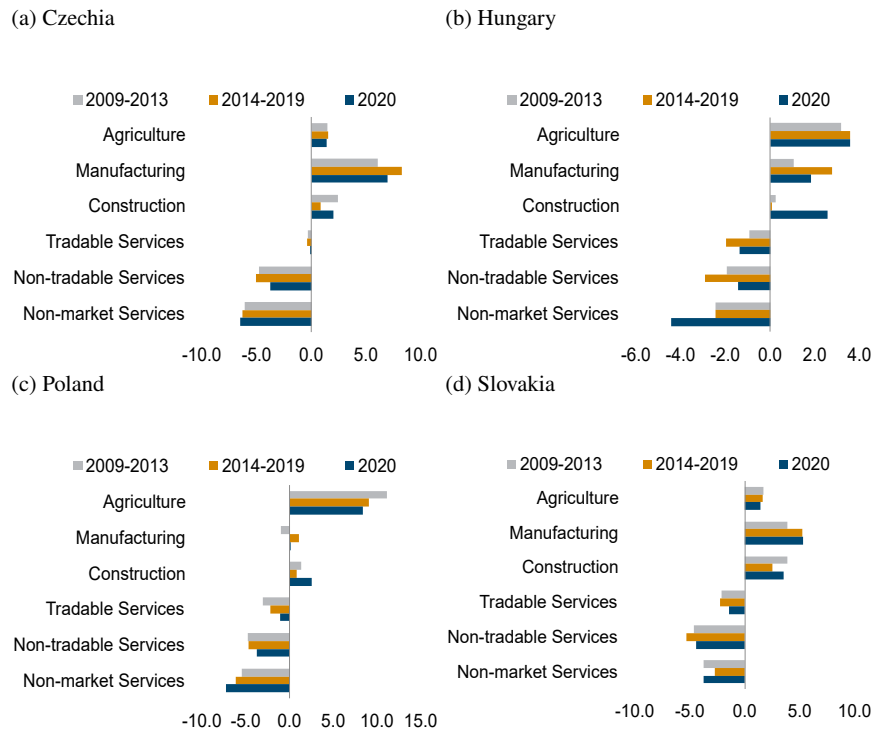
reflecting their strong position in European cross-border production networks (see Landesmann & Schröder, 2020). This is not, or much less, the case in the other group within the EEE, where the employment share in manufacturing is similar to that in Germany (Bulgaria, Poland, and Romania) or is below it (Croatia).

- As expected for lower income economies that still have a more significant rural sector, the share of persons employed in agriculture, forestry etc., is higher and, in some countries, significantly higher than in Germany (see particularly Bulgaria, Hungary, Poland, and Romania), although the share difference has narrowed over time in some of them (Croatia, Poland, Romania, and Slovenia).
- Further, given the past history during the Communist period when the services sector was particularly underdeveloped, in many of the EEE, the share of employment in a variety of services sectors is below that of Germany, although there are significant differences across these economies:
- In general, there is a stronger deficiency (compared to Germany) of employment in non-tradable services than in tradable services (in fact, Croatia, Czechia, and Slovenia are not dissimilar to Germany in the tradable sectors). Given the importance of tourism in Bulgaria and Croatia, we see large shares of ‘non-tradable’ service sector employment (accommodation, recreation, food services are in our

Fig. 4.15: Employment shares by sectors in the EEE relative to Germany, in percentage points

Data: own calculations based on WIIW (2021),

Note: The categories correspond to the following industry standard classification (NACE) Agriculture: A; Manufacturing: C; Construction: F; Tradable Services: H+J+K+M; Non-tradable Services: G+I+L+N+R+S+T; Non-market Services: O+P+Q



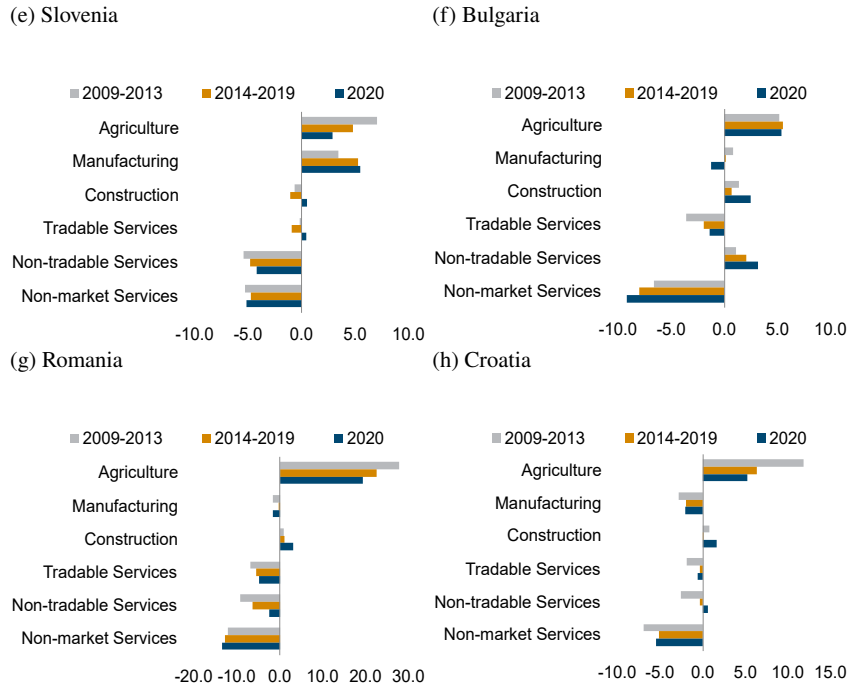
classification included in non-tradables, although the expenditure by tourists falls into this category and this contributes positively to the balance of payments; however, these activities also cater to the domestic population).

- It is interesting that there are large gaps of employment shares in non-market services (comprising public administration, education, and health) in all the EEE economies compared to Germany; moreover, in some these gaps have been growing over time.

Figure 4.16 looks at the same breakdown of employment across sectors, but focuses on employment developments in three phases: the 2009-2013 period immediately following the impact of the financial crisis, the 2014-2019 recovery period, and in 2020, when the Covid-19 pandemic hit. The figure shows the contributions to overall employment growth (or contraction) in the three periods in the different

Fig. 4.15: Cont. Employment shares by sectors in the EEE relative to Germany, in percentage points

Data: own calculations based on WIIW (2021)



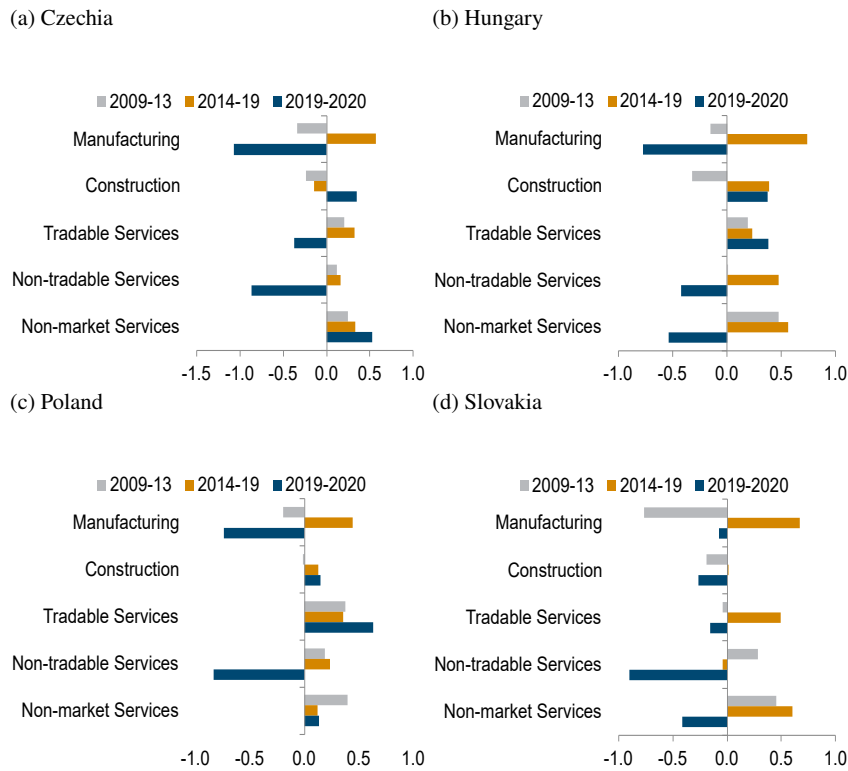
sectors (contributions to overall employment growth were calculated as percentage changes in employment multiplied/weighted by the share of that sector in overall employment). The following interesting features emerge:

- In a major sub-group of economies, we can see the great importance of the contribution of the manufacturing sector to overall employment in the recovery period; this is particularly true for Czechia, Hungary, Poland, Slovakia, and Slovenia, and much less for Bulgaria and Romania.
- There is an interesting differentiation in the contribution of the manufacturing sector to employment between the two crisis phases (2009-2013 and 2019-2020): in many members of the EEE, employment in manufacturing experienced a strong contraction during the phase following the financial crisis, which had a strong negative impact on overall employment. This was particularly true for some of the countries with a strong manufacturing sector (Czechia, Slovakia, and Slovenia), but also for those with a weaker manufacturing sector (Bulgaria, Croatia, and Romania).
- The pattern during the pandemic crisis repeats the negative contribution to total employment of the manufacturing sector in Bulgaria, Czechia, Hungary, Poland,

Fig. 4.16: Contributions to employment growth by sectors in the EEE relative to Germany, in percentage points

Data: own calculations based on WIIW (2021),

Note: The categories correspond to the following industry standard classification (NACE) Agriculture: A; Manufacturing: C; Construction: F; Tradable Services: H+J+K+M; Non-tradable Services: G+I+L+N+R+S+T; Non-market Services: O+P+Q

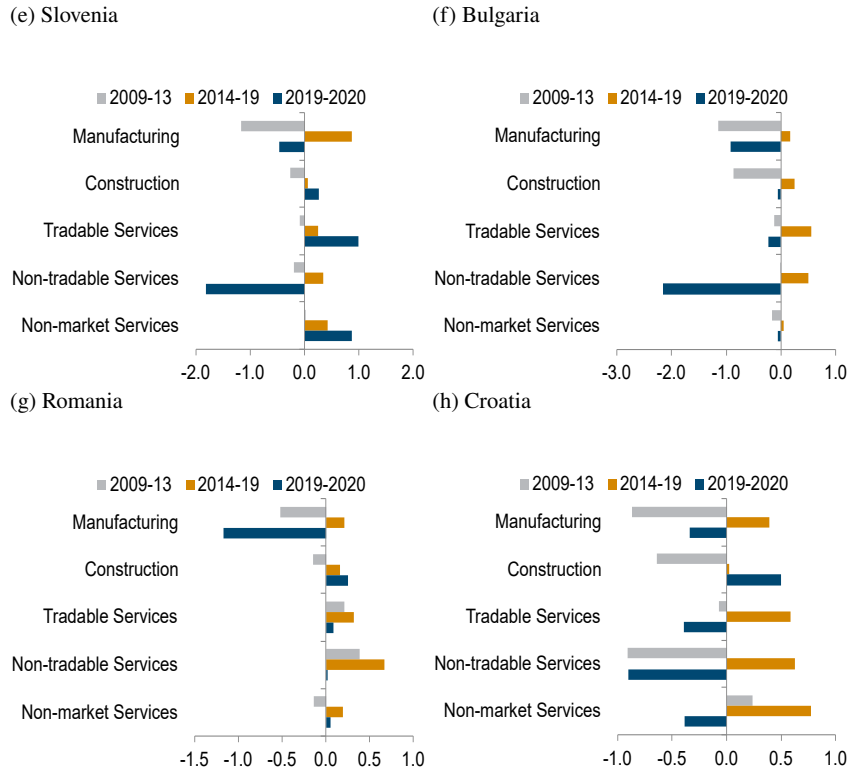


and Romania; but interestingly, much less so in Slovakia, which seems to have largely maintained employment levels in manufacturing in the first year of the pandemic.

- As regards employment developments in the service sectors during the different phases (crisis and recovery), we see the following:
 - The marked difference between the Covid-19 crisis in 2020 and the previous episodes is clearly reflected in Figure 4.16 in that non-market services (that comprise amongst others wholesale and retail, recreation and food services) had a strongly negative impact on employment developments in all the economies (except for Romania), and this reflects the impact of the pandemic

Fig. 4.16: Cont. Contributions to employment growth by sectors in the EEE relative to Germany, in percentage points

Data: own calculations based on WIIW (2021)



through lock-downs, social distancing, a sharp fall in international travel, and other features.

- As regards the other two service categories (tradable services and non-market services), the picture is more mixed: tradable services play an important positive role in the recovery phase after the financial crisis in all economies, but during the recent Covid crisis the situation is more varied in that in some economies it has contributed positively to employment growth (Hungary, Poland, and Slovenia), while in others it has contributed negatively (Bulgaria, Croatia, Czechia, and Slovakia). In the latter case, it is likely that two factors play a role: whether an economy relies strongly on tourism (Bulgaria and Romania), and whether tradable services – just like manufacturing – suffered a downturn in international trade and its linkage with other tradables (e.g., with manufacturing, as in Czechia and Slovakia).
- The contribution of non-market services to employment growth also shows a differentiated picture, reflecting the heterogeneity within the sector, comprising

health and education (and public administration more generally). The former (health) was in very strong demand during the recent epidemic, while the latter (education) fell victim to lock-downs affecting educational institutions. The differentiation across economies, with positive contributions in some countries (Czechia and Slovenia) and negative ones in others (Croatia, Hungary, and Slovakia) might also reflect local fiscal policy stances and policy decisions.

4.6 Wage Growth, Minimum Wage, and the Cost of Living

Using Structure of Earnings Survey data from 2006, 2010, 2014, and 2018, we construct a relative comparison of hourly wage rates with German wages for different education groups. Figure 4.17 illustrates the convergence process in wages of the EEE, indicating the faster wage growth in the EEE compared to Germany. Similarly Austria and Italy saw higher wage growth than Germany (except for the last year in the comparison). The convergence process was stronger in countries with relatively low wages in 2006 (Bulgaria, Romania, and Slovakia). In this year, wages in these countries were at 10-15% levels relative to German wages, and increased to 20-30% by 2018. In Czechia, Hungary, and Poland, wages grew more slowly but reached 25-35% of the level of German wages by 2018. In contrast, in Croatia and Slovenia wages have not risen faster than in Germany, reflecting severe economic crises during this period.

Remarkably, wage growth was very similar for workers with different educational attainment. Wages paid to low-educated workers have increased slightly more in Czechia, Poland, Romania, and Slovakia, while in Hungary highly educated workers benefited from stronger wage growth. Wages are expressed in gross terms and, therefore, differences in mandatory payroll deductions (personal income tax is higher in Germany compared to the EEE) and differences in the cost of living are not accounted for. However, the overall picture illustrates very favourable developments in the labour markets in some of the EEE.

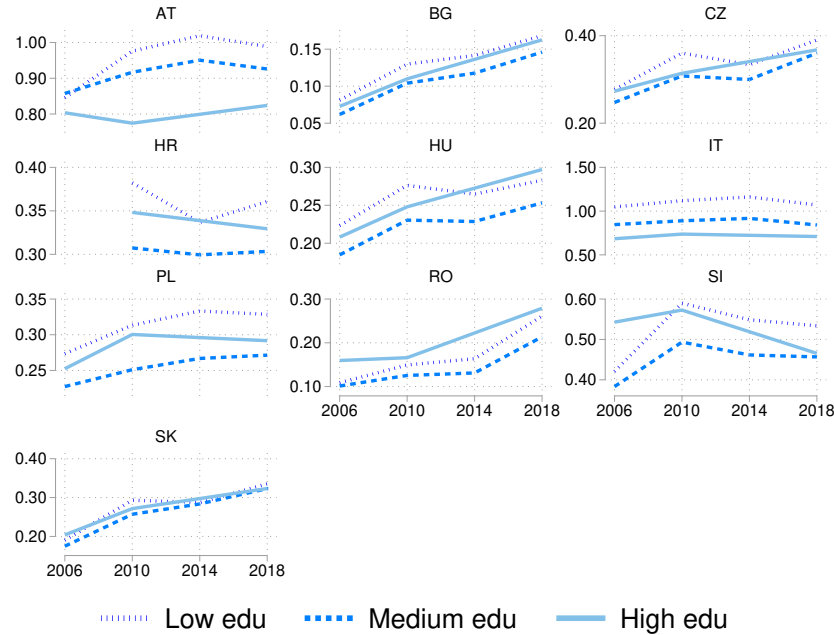
Besides wage growth the adequacy of wages is even more important. Adequate minimum income is one of the principles of the European Pillar of Social Rights. Guzi (2021) presents the latest calculation of the income level necessary to secure a decent standard of living for a standard family in EU-27 countries. It is based on approximately 300,000 prices of goods and services and 100,000 housing prices, collected through web-surveys in combination with the standard survey data. Because the concept of a living wage is normatively based, it offers an additional metric of economic adequacy that reflects the needs of workers and their families.

The living wage represents the amount of money sufficient to enable cultural and social participation in society. The calculation of the living wage is composed of components including food, housing, transportation, health, education, phone, clothing and footwear, personal care, recreation, culture, and restaurant costs (Guzi & Kahanec, 2019; Goedemé, Storms, Penne & Van den Bosch, 2015). The cost of living is assumed for a family with two adults and two dependent children. The family

Fig. 4.17: Comparison of hourly wages to German wages for different education groups, 2006-2018

Data: (Eurostat, 2021j)

Note: Education categories: low (ISCED 0-2), medium (ISCED 3-4), and high (ISCED 5-6)



employment rate is assumed at 1.8, which means one spouse is a full-time worker and the second spouse works four days a week (i.e., 80% part-time employment). The living wage is calculated in a way that the total disposable income earned by two adults working for a living wage is sufficient for a defined living standard.

Table 4.2 presents the living wage lower bound that assumes a cost-optimizing household seeking cheaper-than-average housing, food and other indispensable goods or services. Guzi (2021) also calculates the upper bound using prices taken at the 50th percentile (median). Living wages are presented as monthly gross amounts i.e., corrected for mandatory payroll deduction (personal income tax, and social contributions) to be directly comparable to minimum wage and real wages, which are gross earnings. The calculated living wages are presented together with national statutory minimum wages, aiming to increase awareness concerning the gaps between the two levels.

The minimum wage gap identifies the difference between the minimum wage and the living wage. When minimum wages are distant from living wages, low-income

households depending on minimum wages are likely unable to cover their living costs. The minimum wage gap is narrowest (below 10%) in Slovakia and Germany, while it is largest in Croatia approaching 77% (this means the minimum wage would need to increase by 77% to match the living wage). Minimum wage in Slovenia exceeds 1,000 EUR and is the highest among the EEE, yet the minimum wage gap is approaching 50%. The gap is similar in other members of the EEE, ranging between 40 and 60%.

Table 4.2: Living wage estimate in comparison with minimum wage (monthly gross amounts in EUR)

Data: Guzi (2021)

Country	Minimum Wage	Living Wage	Minimum Wage Gap
	(1)	(2)	(2-1/1)
BG	332	473	42%
HU	438	665	52%
RO	456	550	21%
HR	561	998	78%
CZ	581	887	53%
PL	608	962	58%
SK	623	684	10%
SI	1024	1510	47%
DE	1614	1640	2%
AT		1250	
IT		1290	

Income poverty assessments are favourable in the EEE (Chapters 1 and 9), but poverty indicators based on relative incomes do not inform whether household income levels are sufficient to make ends meet (Fabo & Guzi, 2019). In addition to determining the cost of a decent life, policies to boost the income of low-earning households should be adopted. Income adequacy will be considered in the process of setting minimum wage and tax policy instruments.

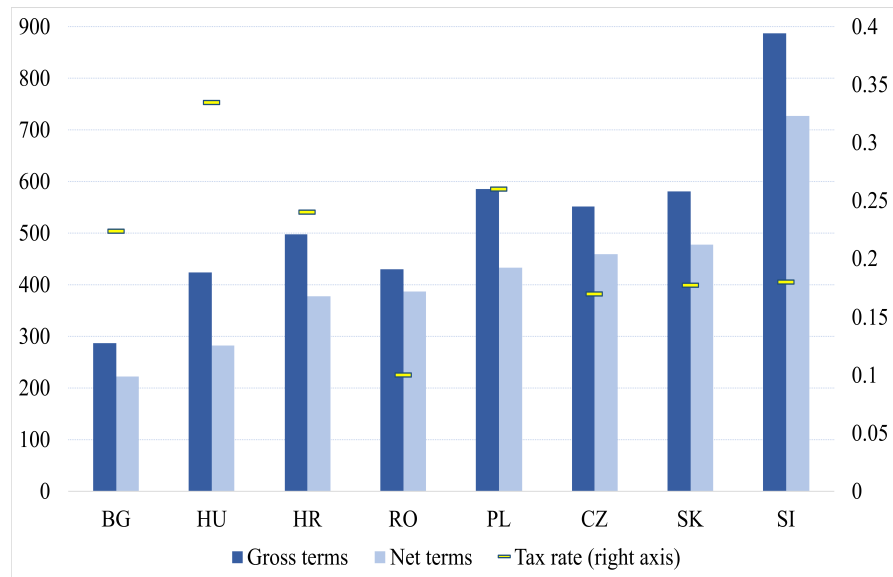
Yearly adjustments in statutory minimum wages are decided by governments after consultations with social partners. The presentation of the minimum wage in gross amounts and their comparison to average wages is less suitable for the assessment of wage adequacy. Minimum wages are subject to mandatory payroll deductions paid by employees. For illustration, Figure 4.18 shows the gross and net amounts expressed for a single minimum wage earner with no children. The tax rate (the share of gross minimum wage taken in tax and social security contributions) is highest in Hungary (35%), and the lowest in Romania (10%). Figure 4.18 further illustrates

that the order of countries varies if minimum wages are compared in gross or in net amounts. For instance, the gross minimum wage is higher in Poland than in Czechia and Slovakia, but the Polish net minimum wage is below Czech and Slovak net minimum wages. In some EEE, high income taxes and social security contributions significantly reduce the income of low-paid workers.

Fig. 4.18: Minimum wage in gross and net amounts for a single minimum wage earner with no children (EUR, 2020)

Data: own calculations based on Eurostat (2021f); iCalculator (2021); K&K Accounting (2021)

Note: National currency is converted to EUR using the annual average rate from Eurostat. The tax rate is the share of gross minimum wage taken in tax and social security contributions. Net minimum wage is calculated using online wage calculators for a single adult without children.



For illustration, the Slovak economy exhibits positive wage developments. The average gross monthly wage grew from EUR 824 to EUR 1,133 (or by 37%) between 2013 and 2020. Over the same period, the minimum gross wage grew by 71% from EUR 338 to EUR 580. In 2020, the minimum wage reached 51% of the average wage in gross terms, and 55% in net terms. These developments suggest the improvement of working conditions and income situation of all Slovak households. Using Slovak administrative records, Páleník (2019) observes that 10–15% of employees are formally employed on part-time contracts for pay below the mandatory minimum wage, and presumably receive unofficial income on the side. Furthermore the number of employees regularly paid below the minimum wage and without other legal income

doubled between 2012 and 2019 (Páleník, 2020). The practice is more widespread in accommodation and food, wholesale and retail, and construction sectors. The number of employees regularly receiving a salary below the minimum wage is higher in mostly rural areas with fewer job opportunities. These findings need to be further confirmed by labour inspections, but the government will observe and strengthen the protection of low-income workers, and their rights to decent work standards.

4.7 Unit Labour Costs and Their Decomposition: Dynamics Over Crisis and Recovery Phases

Unit labour costs (ULC) are defined as the ratio of labour compensation (cost of labour) to output produced. It is often used as a measure of ‘cost competitiveness’ or of the ‘real exchange rate’, although it does not include all cost components or any measures of the mark-up, which also relevantly impact ‘price competitiveness’. For this chapter on labour market developments, however, ULC reflect two decisive components, i.e., wages (or, better, labour compensation) and labour productivity, and it also takes account of the interplay between these two variables and the exchange rate. In the following, we show through a decomposition how the different components of ULC behaved in the pre-crisis, crisis and post-crisis phases in the EEE.

ULC calculated at international exchange rates can thus be decomposed into compensation per employee (in short ‘wages’ but also including other labour costs such as social security contributions), labour productivity (the inverse of labour input per unit of output), and the nominal exchange rate.

$$ULC = Exch * W * \frac{1}{Prod} \quad (4.1)$$

where *Exch* refers to the nominal exchange rate (EUR per 1 unit of domestic currency); *W* to hourly compensation per employee; *Prod* to labour productivity level, i.e., output per employee. The decomposition into these three components is shown in Figure 4.19 in the first (left-hand) group of column diagrams.

Figure 4.19 plots also a further ULC decomposition by distinguishing further the two components of labour productivity, i.e., output and employment. This is shown in the second (right-hand) group of column diagrams:

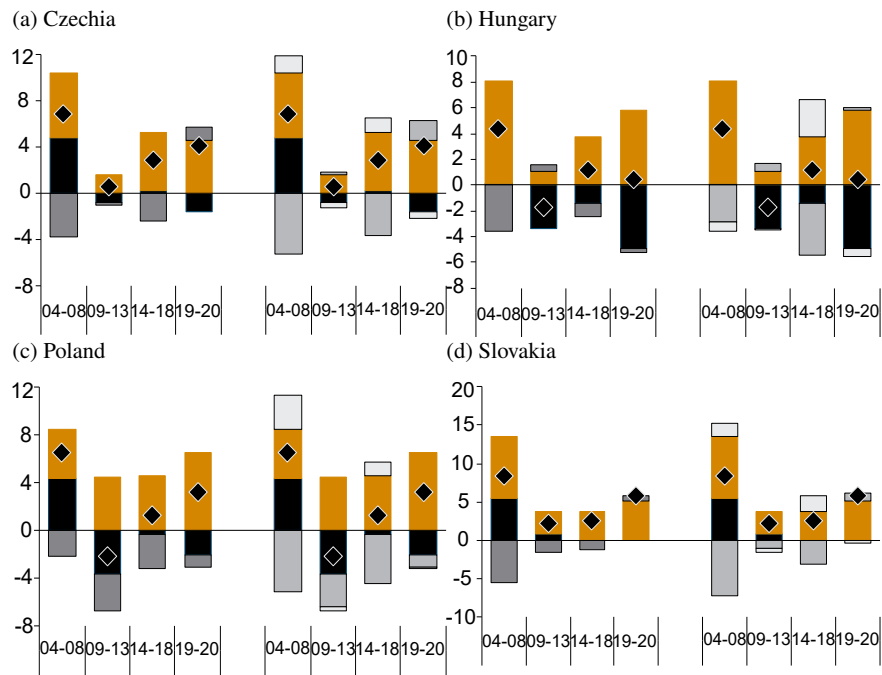
$$ULC = Exch * W * \frac{Emp}{Out} \quad (4.2)$$

In fact, what is really shown in Figure 4.19 is the changes of ULC and their decompositions over the different periods, calculated as follows:

$$\Delta ULC = \Delta Exch + \Delta W - \Delta Prod = \Delta Exch + \Delta W + \Delta Emp - \Delta Out \quad (4.3)$$

Variables W , $Prod$, and Out are first expressed in national currencies, and through multiplication with $Exch$ are converted into an international currency (i.e., EUR).

Fig. 4.19: Changes in the components of unit labour costs over periods: 2004-2008, 2009-2013, 2014-2018, and 2019-2020
Data: own calculations based on WIIW (2021)



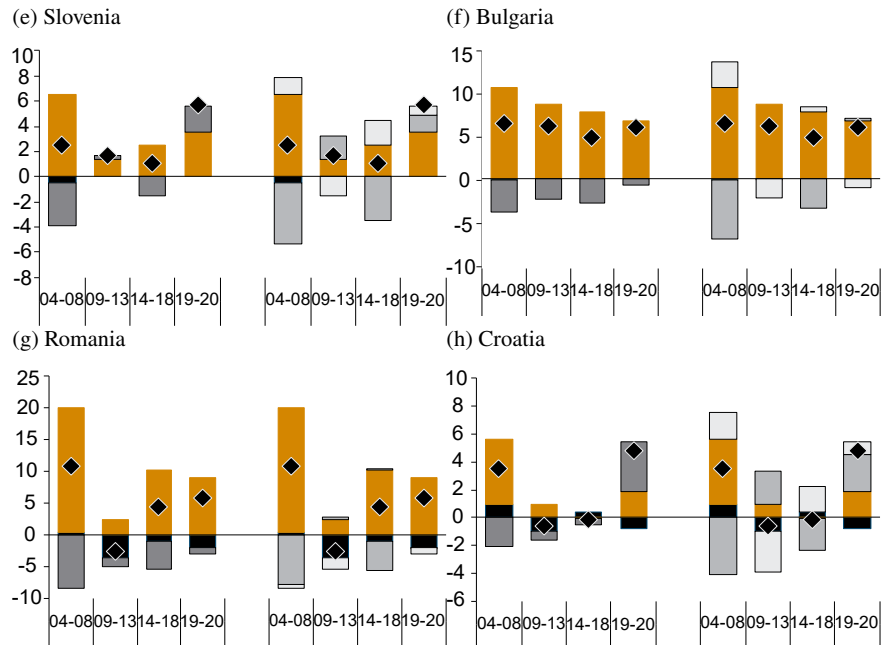
For interpretation of the figures (and the above formula): an appreciation of the currency *ceteris paribus* increases ULC, as does an increase in the wage rate, while an increase in productivity reduces ULC; further, with productivity changes decomposed into output growth and employment growth, the first reduces ULC, while an increase in the latter increases ULC. We keep this in mind when we interpret the sets of diagrams in Figure 4.19:

- In the pre-financial crisis period (2004-2008), we would expect - and also see - the typical picture of ‘normal times’: an increase in wage compensation increases ULC, and productivity growth reduces ULC; on top of this, many of the EEE experienced an appreciation of their currency (in relation to the EUR). We can also see the differentiation with respect to exchange rate regimes, such as Bulgaria - which had (and still has) a currency board (i.e., a very extreme form of a ‘hard peg’ to the EUR) - showing no movement in the exchange rate throughout the period; while Slovenia and Slovakia, which joined the euro-system just before the

financial crisis, show no movements in the exchange rate after the first period. Growth in wage compensation was particularly high in Romania and outstripped by far the productivity growth in the pre-financial crisis period, which was also the case in some other economies (Bulgaria, Hungary, Slovenia, and Croatia) and much less in others (Czechia, Poland, and Slovakia).

- Comparing the pre-financial crisis period (2004-2008) with the recovery period (2014-2018), we see in general a more moderate growth in productivity in the latter period (with the exception of Poland, which continued with relatively high output growth and more moderate employment growth than in the pre-crisis period).
- In the two crisis periods (i.e., the immediate period after the impact of the financial crisis, 2009-2013, and the pandemic, 2019-2020), in countries which kept flexibility in their exchange rates, currency depreciation played an important role in the fall in ULC or led to more moderate increases in ULC than these economies would have had without exchange rate flexibility (the role of exchange rate flexibility in crisis periods is/was particularly marked in Hungary, Poland and Romania; while Czechia showed much more moderate exchange rate adjustments). As mentioned earlier, Slovenia and Slovakia had joined the euro-system by then and the option of exchange rate adjustment was no longer open to them. One question which could be further explored is whether this loss of exchange rate flexibility changed the behaviour with respect to wage bargaining, and hence to what extent it might have brought wage growth more in line with (labour) productivity growth. We shall, however, not pursue this issue further (for an analysis of this issue, see Astrov et al., 2021).
- We also examine the behaviour of the two variables determining (labour) productivity growth, i.e., output and employment growth (or contraction) over the two crisis periods. In a number of countries, the two variables switch during crisis periods and become a mirror image of how they contribute to ULC growth in periods of expansion: thus while in periods of expansion, output growth contributes to ULC growth and employment growth negatively, in crisis periods with output contracting and employment contracting as well, these two variables switch roles regarding their impact on ULC, with output contraction increasing ULC and employment contraction reducing ULC. This is the picture we observe in many economies during the most recent epidemic (Bulgaria, Czechia, Hungary, and Slovakia), while in other countries this pattern might be true for one of the two variables but not necessarily for both, thus output contraction affecting ULC negatively in Croatia and Slovenia, and employment contraction affecting ULC positively in Romania, and marginally in Poland. The relative movements of output and employment determine in turn whether (labour) productivity impacts ULC positively or negatively. This is a theme which will be interesting to observe also in the course of the post-Covid recovery, as it pertains to the extent employment growth will expand in line with output growth.

Fig. 4.19: Cont. Changes in the components of unit labour costs over periods: 2004-2008, 2009-2013, 2014-2018, and 2019-2020
Data: own calculations based on WIIW (2021)



4.8 Regional Disparities in Labour Markets

High and persistent regional disparities in the labour market are of particular concern to policy makers both for their impact on social cohesion and the productivity of the economy. Large differences across regional labour markets suggest a low internal migration of workers and problems in the supply and demand for work. For example, the high rate of regional long-term unemployment points to areas where individuals have inadequate skills to find a job. The following figures present the regional variation in educational attainment levels of the working age population, in participation, unemployment, NEET, and long-term unemployment. Plotted are ratios of maximum and minimum regional characteristics over time.

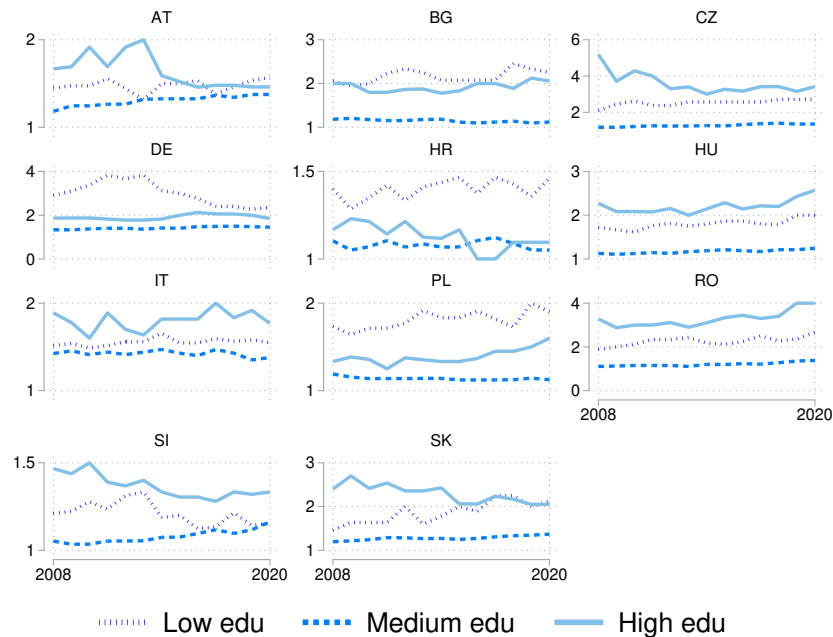
In most members of the EEE, the regional variation of the working age population with low (lower secondary) and high (tertiary) education is significant, while the population with secondary education is typically spread evenly between regions (see Figure 4.20). The share of population with tertiary education in Czechia and Romania is more than three times higher than in the regions with the lowest number of the tertiary educated. Over the last decade, regional variation in education has increased in Hungary, Poland, and Romania, while it has decreased in Czechia. Smaller states,

such as Croatia, Slovakia and Slovenia, have four and fewer NUTS 2 regions, thus the regional variability is difficult to evaluate².

Fig. 4.20: Regional variation in education of working age population (15-64 year-olds)

Data: Eurostat (2021i)

Note: Plotted are ratios of maximum and minimum regional values. Number of NUTS 2 regions varies between countries: AT (8), BG (6), CZ (8), DE (37), HR (2), HU (7), IT (21), PL (15), RO (8), SI (2), SK (4). Education categories: low (ISCED 0-2), medium (ISCED 3-4), and high (ISCED 5-6)



The regional variation in unemployment follows different patterns in the two crises (Figure 4.21). In Germany and Italy, regional dispersion increased both after the financial crisis and during the outbreak of Covid-19, which indicates that crises impacted more regions with higher unemployment. In Bulgaria, Czechia, and Poland, the financial crisis impacted more regions with higher unemployment, while the pandemic impacted more affluent regions with lower unemployment, therefore in 2020 regional variation in unemployment declined. Hungary shows the opposite pattern.

² Eurostat publishes regional disparities only for countries with more than four regions.

In all countries except for Poland, the regional disparity in participation rates declined in both crises, meaning that the crises impact more intensively regions with higher labour market activity.

Fig. 4.21: Regional variation in participation and unemployment

Data: Eurostat (2021i)

Note: Plotted are ratios of maximum and minimum regional values. Number of NUTS 2 regions varies between countries: AT (8), BG (6), CZ (8), DE (37), HR (2), HU (7), IT (21), PL (15), RO (8), SI (2), SK (4). Education categories: low (ISCED 0-2), medium (ISCED 3-4), and high (ISCED 5-6)

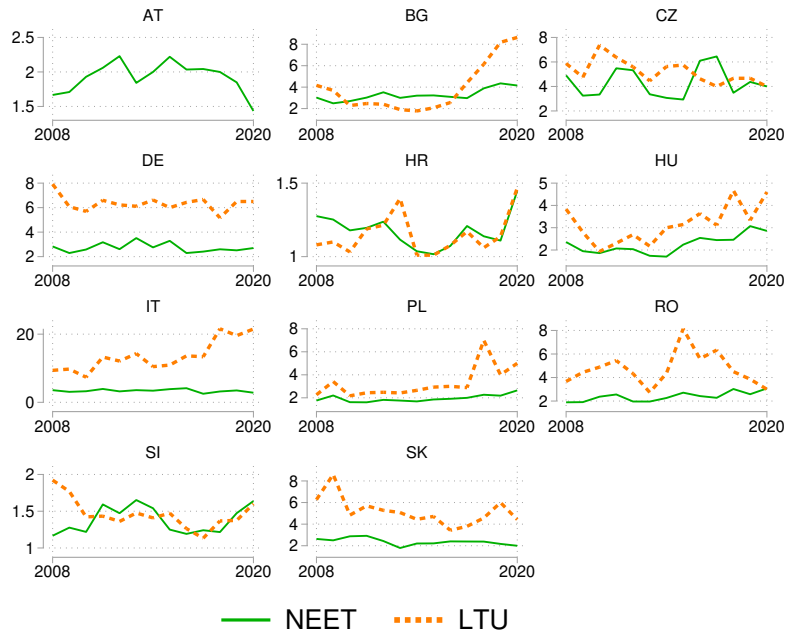


Regional variation in the share of long-term unemployment (as a percentage of total unemployment) is large and has increased since the financial crisis in Bulgaria, Hungary, and Poland (although less dramatically than in Italy) even though they encountered a positive growth in employment over the same period. This may be related to the lower employability of low-educated people (see Figure 4.22), who are concentrated in a few regions in these countries. It seems that growing employment has also reduced the regional variation in long-term unemployment in Czechia and Romania. The regional disparity in NEET rates is the highest in Czechia and exhibits an increasing trend in the other members of the EEE.

Fig. 4.22: Regional variation in NEET and long-term unemployment (as a percentage of total unemployment)

Data: Eurostat (2021i)

Note: Plotted are ratios of maximum and minimum regional values. Number of NUTS 2 regions varies between countries: AT (8), BG (6), CZ (8), DE (37), HR (2), HU (7), IT (21), PL (15), RO (8), SI (2), SK (4). Education categories: low (ISCED 0-2), medium (ISCED 3-4), and high (ISCED 5-6)



4.9 The Effects of the Covid Shock

As shown in section 4.4, the EEE underwent a similar ‘V-shaped’ pattern of GDP development but with milder aggregate employment responses than were experienced in other EU economies. Section 4.5 showed sectoral employment patterns during the first year in which the pandemic hit the economies with significant differences in employment impacts across sectors (non-tradable market services being hit strongly and, in a number of economies, falling trade and vulnerability of cross-border production networks hitting manufacturing).

Here we intend to explore further the difference between the impact of the 2008-2009 financial crisis and the Covid crisis by showing the differences in pre- and post-crisis patterns on a number of labour market variables.

Figure 4.23 allows a comparison of both GDP and employment developments in the course of the two crises: each time the variables are indexed to the beginning of the respective crisis (financial crisis 2008q3=100; Covid crisis 2019q4=100), and we also show a few comparator countries (Austria, Germany, Italy, and the EU-27 as a whole). In order to develop some conjectures regarding possible features after the immediate crisis impact, the lines are drawn for the financial crisis period for 12 quarters, while for the Covid crisis only five quarter figures are available.

The following features emerge from Figure 4.23. The much sharper fall in GDP than in employment is common to all the economies in the initial phase of the Covid crisis. This is also true, but in a more protracted way, during the early phase of the financial crisis. As we have also remarked, in a number of EEE we see a very limited response of employment levels during the Covid crisis, while GDP follows a sharp 'V-shaped' pattern (Czechia, Croatia, and Poland; plus very mild employment responses in Hungary and Slovakia). Employment developments after the financial crisis are different in the sense that they follow quite a smooth downward path (with the exception of Poland), in some countries continuing to decline even after 12 quarters (Bulgaria, Croatia, and Romania), while in the others employment decline levels off, but remains lower at the end of the first three years after the crisis (between 3 and 7 percentage points).

If on this basis we want to make a conjecture about future employment trajectories following the Covid crisis, we could say that employment follows output with a lag. Consequently, over time the fall in GDP will lead to a significant fall in employment, and this fall will in the medium-term be more pronounced after the Covid crisis than after the financial crisis, because the furlough and subsidised short-term working schemes were operating at much higher levels during the Covid crisis. Moving from the medium-term to the longer-term impact, we expect a markedly differentiated pattern to evolve across the EEE, the way we saw it happen in other EU economies after the financial crisis. We conjecture that this differentiation could be highly pronounced. It will depend on a number of diverse structural characteristics within the EEE to what extent each economy will benefit from a general recovery in the European and global economy through its trade and production linkages, to what extent it is able to cope with the speeding up of technological (digitisation, robotisation) and fundamental structural changes, and to what extent policy measures (overall fiscal stance, but also direct employment-supporting policies) are used to support a labour market recovery.

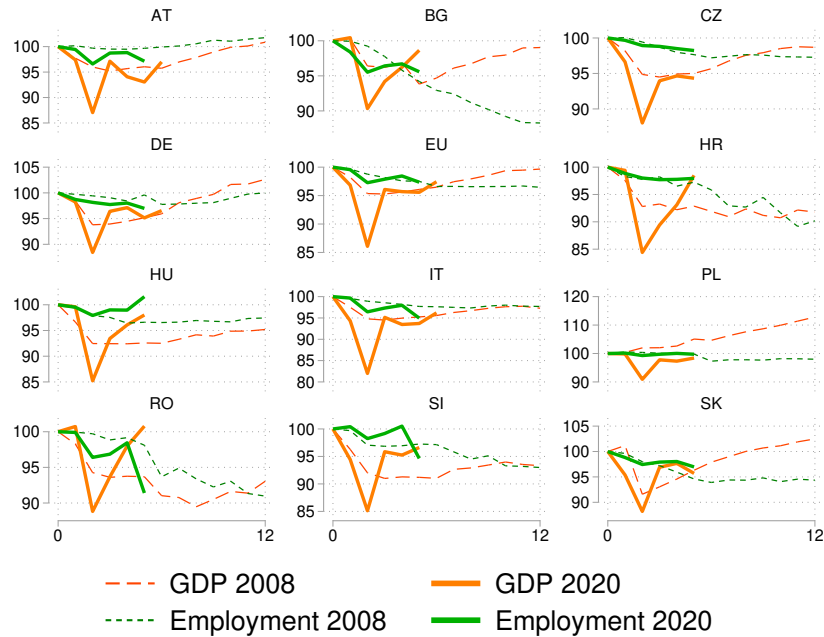
Next, we look at developments in unemployment rates, comparing again the patterns of the two crises (the financial crisis and the Covid crisis) and also looking at differentiated gender patterns (see Figure 4.24).

What seems to emerge as a significant differentiating feature is that after the financial crisis, there was a much stronger increase in the unemployment rate of males than of females: this was the case in the EU-27 and the comparator countries in Western Europe (Austria, Germany, and Italy), as well as in the overwhelming majority of the EEE (Bulgaria, Croatia, Czechia, Hungary, Poland, Slovakia, and less so in Slovenia), with the only exception being Romania.

Fig. 4.23: GDP and employment developments following the start of the crisis (2008q3=100, 2019q4=100)

Data: Eurostat (2021e, 2021f)

Note: Quarterly data. The quarter zero indicates 2008q3 for the financial crisis and 2019q4 for the Covid-19 pandemic.



During the first phase of the Covid crisis, on the other hand, unemployment rates grew faster for women than for men, both in Germany and in many members of the EEE (Bulgaria, Czechia, Romania, and Slovakia); the only exception being Poland; while in the other economies (Austria and Italy, and amongst the EEE, Croatia, Hungary, and Slovenia) the increase in male and female unemployment rates was fairly similar.

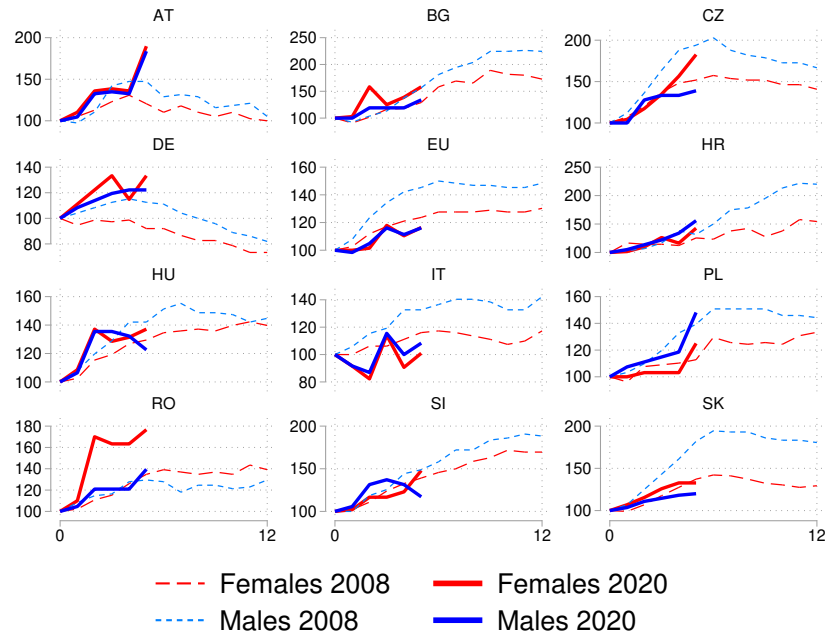
The overall increase in unemployment rates between the two crises (as can be compared for the first phases of the financial and the Covid crises) was not markedly different, although there are some exceptions (Romania showing a much sharper rise in female unemployment during the current Covid crisis than in the previous financial crisis; this is also the case in Hungary, as well as in the two comparator countries Austria and Germany, but not in Italy).

While Figure 4.25 shows unemployment rates in index form (e.g., an unemployment rate increase from an initial level of 100 to 200 means a 100% rise in unemployment rates), we should keep in mind that unemployment varied by coun-

Fig. 4.24: Changes in unemployment following the start of crisis by gender (2008q3=100, 2019q4=100)

Data: Eurostat (2021e)

Note: Quarterly data. The quarter zero indicates 2008q3 for the financial crisis and 2019q4 for Covid-19 pandemic.



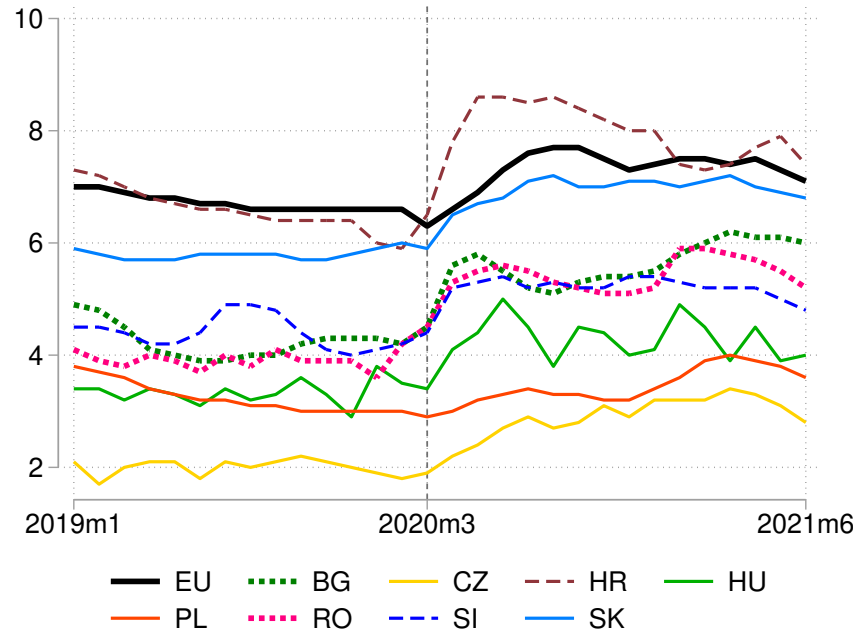
try, which we can see in Figure 4.25 for the Covid experience alone. Here, we see that different countries within the EEE moved into the Covid crisis with different levels of unemployment rates (Czechia, Poland, and Hungary well below 4%; Bulgaria, Slovakia, and Slovenia around 4%; Romania and Croatia around 6%), and the immediate impact was also quite different, with a strong surge in Hungary, Bulgaria, Slovakia, and Croatia, more moderate and more stretched increases in Czechia, and Romania, and a delayed and rather mild increase in Poland. Again, we point to structural characteristics and differences in policy actions that account for these, without being able to quantitatively evaluate the impact of different factors in detail.

Finally, let us refer to the importance of the changes in work organisation that have taken place during the current pandemic. The pandemic forced many employers to adopt remote work arrangements as a common form of work. Before the pandemic, in some members of the EEE the right to teleworking was based exclusively on a mutual agreement between the employee and the employer. The expansion of teleworking largely depends on employment structure and sectoral specialisation. Whereas many

Fig. 4.25: Differentiated country experiences of unemployment rates during the Covid crisis

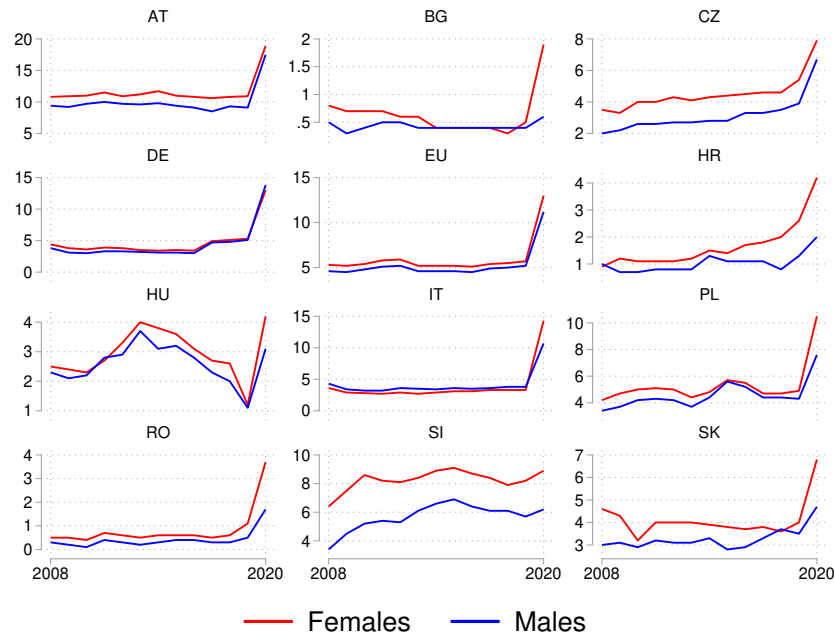
Data: Eurostat (2021e)

Note: Monthly data. The vertical line indicates the start of Covid-19 pandemic (2020m3).



high-skilled jobs in knowledge and ICT-intensive services could be done at home, very few jobs in agriculture, manufacturing, and the service sector are of the same nature. Dingel and Neiman (2020) estimate that with existing technologies, 36% of jobs could be done from home at the EU-27 level, while the estimates are lower for economies with a large manufacturing sector. Before the pandemic, the share of employees usually working from home was below 1% in Bulgaria and Romania, and only Slovenia reached a rate of above 5% (the EU-27 average). Teleworking has shown an increasing trend over the last decade, but as expected, it increased massively during the pandemic (Figure 4.26). Interestingly, the prevalence of teleworking is higher among women in the entire EEE.

Fig. 4.26: Employees usually working from home as a percentage of total employment by gender, 2008-2020
Data: Eurostat (2021e)



4.10 Impact of the Covid-crisis on Occupations

In this section, we examine the impact of the Covid crisis on people employed in different occupations and in different sectors of the economy. This analysis is based on detailed Labour Force Survey data looking at two dimensions: employment in a particular sector, and employment in a specific occupation. We looked at the most important occupation-sector combinations for the overall employment situation in the entire EU-27.

In Table 4.3 we present the number of workers in 2019, the shares in total employment in 2019, and employment growth rates over the 2011-2019 and 2019-20 periods comparing the EU and the EEE. To facilitate the comparison, only the major occupations employing the most workers in the EU economy are presented (although these are not necessarily the same in each country).

The three main occupational-sector groupings in the European Union are *service and sales workers in wholesale and retail trade*, *workers in craft and related trades in manufacturing*, and *professionals working in the educational sector*. In Central and South-Eastern European countries, the first two groups also feature among those

with the highest employment shares. Beyond that, there are some differences: in a number of economies, there is another group of manufacturing workers, i.e., *plant and machine operators and assemblers in manufacturing*, featuring among the top three, revealing again the strong position that manufacturing employment has in many members of the EEE; in some, there is also the group of agricultural workers, which features prominently particularly in the populous states of Poland and Romania. In many members of the EEE, professionals in the educational sector also feature high on the list, and in Slovenia and Croatia in the top three.

We also intend to point to *gender differences* in employment shares across occupational-sector groupings (not shown in tables): one feature is the much stronger representation of females among wholesale and retail sector employees (on average a difference of about 4-5 pppts between females and males). On the other hand, males are much more strongly represented in manufacturing, both among craft workers and machine operators and assemblers (a difference of about 6-8 pppts between males and females) in the same way as also among construction workers. On the other hand, female representation is much more prominent among professionals in the education sector (a difference of about 5 pppts) and in health and social work activities (a difference of about 1.5-2.0 pppts between females and males).

Table 4.3 shows the annual growth rates in employment over the pre-pandemic period (2011-2019), which can be compared to the employment developments in the first year of the Covid crisis (2019-2020). It shows both dimensions: occupations and the sectors in which they are employed. Identifying the two dimensions shows quite clearly that employment developments are determined both by changes in the occupational mix (workers, technicians, professionals, etc.) and by the sectoral employment impacts of trends and crises.

As we can see in Table 4.3, the occupational grouping that was most (negatively) affected by the Covid crisis was service and sales workers in the accommodation and food services industry. In wholesale and retail trade, we see that the crisis had a strongly (negative) impact on services and sales workers, as well as on workers in craft and related trades in the European Union as a whole, while the picture is mixed in the EEE, with some countries experiencing strong job losses in some of the occupational groupings in this sector, while others experiencing job growth. We also see some strong negative employment impacts in manufacturing on workers (craft and related trades, and machine operators and assemblers) in some economies of the EEE (Bulgaria, Czechia, Hungary, Romania, and Slovakia), which reflects the strong impact of the crisis on cross-border production networks. On the positive side, we see that professionals, especially in information and communications and also in scientific and technical activities, recorded strongly positive employment growth. Somewhat surprisingly, the employment picture is mixed during the first year of the Covid crisis in the health and social work activities sector, both for technicians and professionals.

Table 4.3: Employment share and growth in occupations with most workers by economic sectors, EU
Data: Eurostat (2021e)

Occupation	Economic sector	EU		
		Empl. share 2019	Growth 2011 to 2019	Growth 2019 to 2020
Service and sales workers	Wholesale and retail trade	6.1	1.7	-6.2
Craft workers	Manufacturing	5.0	-0.2	-5.1
Professionals	Education	4.8	7.8	9.2
Craft workers	Construction	3.8	-3.8	-6.0
Plant and machine operators	Manufacturing	3.3	4.3	-5.3
Associate professionals	Human health	3.3	18.1	-8.8
Professionals	Human health	3.2	20.5	5.4
Skilled agricultural workers	Agriculture	3.1	-21.1	-2.3
Professionals	Scientific and technical activities	2.8	32.9	3.0
Service and sales workers	Accommodation and food service	2.8	16.6	-13.3
Associate professionals	Manufacturing	2.6	8.5	3.3
Plant and machine operators	Transportation and storage	2.3	12.0	-6.5
Service and sales workers	Human health	2.3	0.4	-3.4
Associate professionals	Public administration	1.8	4.0	-9.0
Professionals	Information and communication	1.7	43.3	9.6
Associate professionals	Wholesale and retail trade	1.6	1.5	-0.9
Professionals	Manufacturing	1.6	24.3	12.9
Craft workers	Wholesale and retail trade	1.4	9.4	-9.7
Associate professionals	Scientific and technical activities	1.3	13.3	-4.8
Professionals	Public administration	1.3	12.7	10.5

As for gender differences (not shown here), one might want to point out that in general, females in the health and social work sector lost their jobs (at all levels: workers, technicians, and professionals) less in the EEE than in the EU as a whole, and some groups even experienced substantial employment gains in this sector. On the other hand, females in the accommodation and food services sector were severely affected in some members of the EEE (Bulgaria, Czechia, Slovakia, and Slovenia). As regards male employment, it is interesting that workers in the construction industry were less (negatively) affected in the EEE than in the EU as a whole, possibly reflecting the overhang of EU-financed construction projects.

Table 4.3: Cont. Employment share and growth in occupations with most workers by economic sectors, EEE

Data: Eurostat (2021e)

Occupation	Economic sector	EEE		
		Empl. share 2019	Growth 2011 to 2019	Growth 2019 to 2020
Service and sales workers	Wholesale and retail trade	6.9	-2.8	-1.7
Craft workers	Manufacturing	7.5	0.6	-5.4
Professionals	Education	4.6	7.2	-0.1
Craft workers	Construction	4.5	5.5	1.8
Plant and machine operators	Manufacturing	5.7	2.7	-6.1
Associate professionals	Human health	1.6	4.5	5.2
Professionals	Human health	2.5	5.8	-0.5
Skilled agricultural workers	Agriculture	7.5	-7.7	-0.3
Professionals	Scientific and technical activities	2.0	11.2	7.2
Service and sales workers	Accommodation and food service	2.1	3.5	-14.1
Associate professionals	Manufacturing	2.4	11.3	1.9
Plant and machine operators	Transportation and storage	3.3	8.3	-0.8
Service and sales workers	Human health	1.1	14.6	-1.2
Associate professionals	Public administration	1.5	-5.5	-1.5
Professionals	Information and communication	1.6	29.3	9.4
Associate professionals	Wholesale and retail trade	1.5	2.0	-2.2
Professionals	Manufacturing	1.6	15.9	0.8
Craft workers	Wholesale and retail trade	1.3	12.3	-1.9
Associate professionals	Scientific and technical activities	0.9	4.0	0.3
Professionals	Public administration	1.5	5.3	0.8

4.11 Long-term Prospects and Policy Recommendations

In comparison with some of the other EU member countries which encountered difficult labour market situations and were heavily impacted by both the financial and the Covid crises (in particular Greece, Italy, Portugal, and Spain in Southern Europe) the EEE showed relatively good recovery from the financial crisis although it was lengthier in Croatia, Hungary, and Slovenia. From a structural point of view, people with low educational attainment levels had worse labour market prospects, and regional differences are large in several EEE regarding a number of labour

market indicators (particularly Bulgaria, Hungary, Poland, Romania, and Slovakia). The unemployment of the low-educated is related to geographical agglomeration effects, linked particularly to clusters of manufacturing activities generated by (FDI-driven) cross-border production linkages, as well as the strong agglomeration of business and administrative services in capital cities and other major towns. As regards the strong variation of the labour market across skills groups, this points to insufficient matching between educational/training structures and the requirements of the labour market. Lack of sufficient cross-regional mobility may contribute to sustaining regional disparities over time in labour market indicators; the selection effect of cross-regional mobility may, on the other hand, also contribute to increasing cross-regional disparities as younger, more active and better skilled workers leave peripheral regions for more dynamic regions.

Accelerated trends towards digitisation, changes in the structures of employment demand and in work organisation will require enhanced attention in the post-Covid period: the trends towards digitisation and robotisation will have strong employment (and skills) implications in the economies that were successful in attracting FDI and building strong manufacturing capacities; however, these are also increasingly affecting other sectors and occupations that were traditionally less affected by these technologies (Baldwin, 2019). Furthermore, changes in work organisation that got a strong push during the Covid-shock phase are likely to lead to an acceleration of the digitisation trends, making different impacts on occupations (see section 4.10) and people with higher and lower skills levels. Thus, differentiation of labour market prospects by skills and in different occupations will proceed and likely accelerate.

Furthermore, the period since the financial crisis has dampened foreign direct investment, and the discussion on the future of EEE development (see Gattini, Gereben, Kollár, Revoltella and Wruuck (2021)) has increasingly emphasised the need to move towards a 'new growth model'. This would rely less on foreign direct investment and more on an upgrading of the country's own capacities to move towards the 'technological frontier', by building R&D capacities, better educational and training institutions and making an effort to 'move upstream' in the context of the 'functional specialisation' of EEE businesses in international production networks (IPNs) and cross-border value chains (for the latter, see Stöllinger (2021)). All these developments will push towards further differentiation regarding the employment prospects of different skills groups and the specific skills required in different occupations.

Another issue emphasised in this chapter (see section 4.2) is the likelihood of labour shortages as the legacy of the 'post-transition demographic shock' (reduced birth rates) and the fairly high net migration rates of the young have led to a switch in the labour market from an 'excess' towards a 'labour shortage' characterised by shortages of specific skills. The Covid crisis aggravated shortages in specific areas, especially of doctors, nurses, and other health personnel. An important new area in which considerable expansion can be envisaged and which has already taken hold in quite a few members of the EEE is the increase in 'tele-working' and 'tele-migrants' (i.e., persons working for international corporations but resident in the country they are already located in). Particularly in the IT sector, tele-working has become very

important, and major hubs have developed in many members of the EEE. This again points towards the need to further strengthen training/education in this specific area, which is vital for new labour market entrants but also for the skills renewal of the older work force. Life-long learning is still underdeveloped in the EEE educational system (compared to more advanced Western and Northern European EU member states).

The restrictive stance towards migration in quite a few members of the EEE (Hungary being the most extreme example) is not particularly helpful to alleviate the labour shortage, which became evident during the Covid recovery phase (see also Astrov et al. (2021)). Adjusting the migration policy framework towards an efficient monitoring of labour market requirements and attempts to keep in contact with people studying, working, and training abroad, coupled with incentives to return or develop joint business ventures would definitely be helpful in the current EEE context. In the same way, coordination of educational and training programs with some of the main neighbouring host countries (Austria, Germany, Italy, and Scandinavian countries) would also encourage circular and return migration and potential joint business development.

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