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Research Report

Wage developments in the Central and Eastern European EU member states

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Wage Developments in the Central and Eastern European EU Member States

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Abstract

Labour markets in the Central and Eastern European member states of the EU (EU-CEE8) have improved significantly since the global economic crisis of 2008-2009. Unemployment rates have declined steadily, primarily due to adverse demographic trends and massive outward migration to the West, which have resulted in a decline in the working-age population. Nevertheless, until recently wage growth in EU-CEE8 was rather restrained, resulting in generally stable wage shares. The so-called 'Phillips curve', which represents a negative correlation between unemployment and wage growth, has not held for most of EU-CEE8 during this period – unlike, for example, for Austria or Germany. The main reasons for this have been the progressive flexibilisation and liberalisation of the labour markets of EU-CEE countries in the years since the economic crisis. In particular, wage negotiation mechanisms have been decentralised and the degree of coverage by collective-bargaining agreements has declined, in some cases dramatically. This has tended to weaken the negotiating position of employees, thereby counteracting the positive effects of the general improvement in the labour market situation.

Keywords: wages, wage share, demographic trends, migration, Phillips curve, wage-setting mechanisms

JEL classification: J11, J31, J4, J50

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Introduction

In this study, we analyse wage developments in the eight EU member states of Central and Eastern Europe (EU-CEE8: Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia) – countries that are important to Austria. This allows us to develop policy recommendations to help stimulate the economies of EU-CEE8 and to offer their populations the prospect of long-term and secure prosperity. Wages are the main source of income for the bulk of the population in the EU-CEE8 countries. In the four Visegrád countries (Poland, Slovakia, the Czech Republic and Hungary), they grew on average by almost 1 percentage point a year slower than gross domestic product (GDP) in 2000-2016 (real gross wages, according to the wiiw annual database). At the same time, unemployment has risen sharply on account of the economic crisis. In recent years, wage shares in the EU-CEE8 countries have slowly recovered and unemployment has fallen sharply. This has now led to a delayed rise in real wages. In addition, the emigration trend has continued, leading to a further shortage of labour. At the same time, however, labour market institutions have shifted from the macroeconomic/sectoral to the enterprise level, partly in response to the crisis. Increases in the minimum wage in many of the EU-CEE8 countries have led to a compression at the lower end of the wage distribution. However, these increases are no substitute for the important macroeconomic stabilisation functions of coordinating labour market institutions, which are of particular importance in view of the EU-CEE8-specific problems of emigration, productivity growth that is too slow to enable catch-up with Western Europe, an ageing population, and strong dependence on foreign demand.

The study is structured as follows. Section 1 describes wage developments by region and economic sector, as well as changes in wage structures over time. Moreover, wage developments are compared with developments in labour productivity, and the implications for the wage share are considered. Section 2 analyses the impact of demographic developments and migration on wages, with reference to current population growth projections. Section 3 examines the relationship between wages, employment and unemployment (including using the so-called 'Phillips curve'). Section 4 provides an overview of the institutional determinants of wage developments, with particular emphasis on the development of wage-setting mechanisms and labour market regulation, as well as social benefits and other social protection mechanisms. Finally, in Section 5 these qualitative and quantitative determinants of wage developments in EU-CEE8 are summarised, and conclusions and policy recommendations are derived with respect to competitiveness, foreign direct investment and possible balance of payments constraints.

1. Wages, wage structures and wage shares

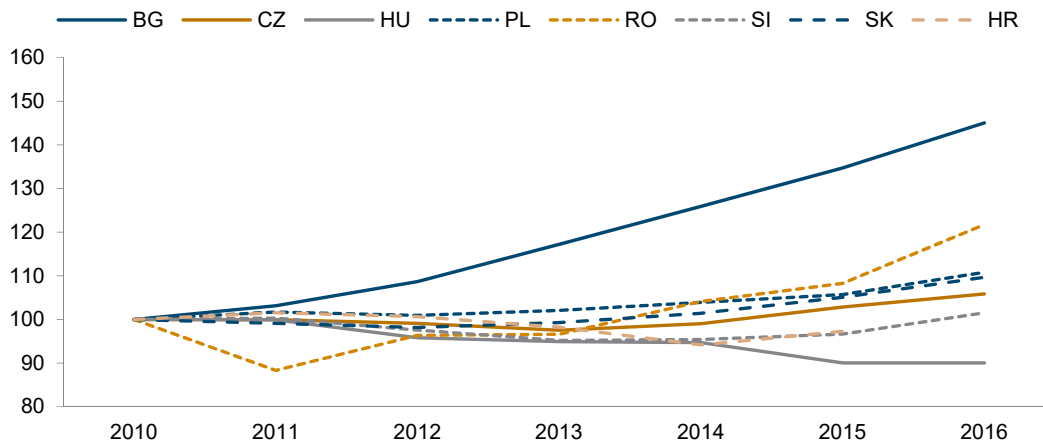
1.1. WAGE TRENDS IN GENERAL

The global economic crisis of 2008-2009 also left its mark on the EU-CEE8 region. All EU-CEE8 countries except Poland recorded a GDP recession in 2009. By contrast, Poland, being the largest country in the region, less affected by the slump in foreign demand and able to avoid the formation of credit bubbles in previous years, was able to maintain positive economic growth.

Even in the first few years after the crisis (2010-2013), economic growth in the EU-CEE8 was very subdued. It was slowed primarily by stagnating or declining domestic demand. One reason was the deleveraging of the private sector, as companies and private households had fewer funds left over for investment and consumer spending. In many countries, especially in the Czech Republic, government austerity packages also played a role, even though the fiscal imbalances in most of the EU-CEE8 (with the possible exception of Hungary) were generally of little concern. As a result, GDP growth was generally very low and almost exclusively driven by net exports.

Figure 1.1 / Real wage growth in EU-CEE8

Index, 2010=100



Note: Real hourly wage growth deflated by the consumer price index (CPI), NA data.

Source: Eurostat, wiiw calculations.

This growth model of earlier years has now largely changed. Since 2013-2014, economic growth in EU-CEE8 has increasingly been driven by private consumption, supported primarily by rising wages and household incomes in general. However, the detailed national accounts statistics, which allow hourly wage developments in the individual EU-CEE8 countries to be compared on a methodologically similar basis, show that wage increases were generally far less impressive than is suggested by company surveys. They also vary widely across countries (see Figure 1.1 and Box 1.1 for methodological details of the two data sources).

Among the EU-CEE8, Bulgaria has recorded by far the highest hourly wage growth – a total of 45% between 2010 and 2016, which corresponds to an average growth rate of about 7% a year. But Bulgaria is also the poorest country in the region, with the greatest catch-up potential. Even in Romania, the second-poorest country in the region, hourly wages have risen relatively strongly, by a total of 22% over the same period. However, the 12% wage growth in Romania in 2016 was mainly due to an increase in the minimum wage (see below).

In the remaining EU-CEE8 countries, however, wages have risen much less: by no more than 10% overall, corresponding to an average annual growth of less than 2%. In Hungary, the average real hourly wage has even fallen by 10% overall. At the same time, there has been a general acceleration in wage dynamics over time, especially since 2015; this has to do with the marked improvement in labour market conditions (see below). This trend continued in 2017 – see Box Table 1.1, which presents the dynamics of real gross monthly wages based on company surveys (national accounts statistics for 2017 are not yet available).

BOX 1.1 / METHODOLOGICAL DIFFERENCES IN THE RECORDING OF WAGE DEVELOPMENTS

The real wage data underlying this study are primarily derived from nominal wage statistics from national accounts (NA), deflated by the consumer price index (CPI). In principle, these are always *gross* wages, which include taxes and social security contributions payable by employees. NA statistics are supplied to Eurostat by each country and have the advantage of a common methodology across countries. NA statistics also provide data on employment and hours worked. This makes it possible to calculate the hourly wage, which we consider to be the most meaningful wage indicator. The disadvantage of NA data is that they are only available with a time lag. Therefore, our analysis is largely based on the period up to 2016, because data for 2017 are not yet available.

An alternative data source for wages is administrative data: enterprise surveys and tax records (for the public sector). Box Table 1.1 shows that some of the wage growth rates calculated from these data differ significantly from the NA data, and tend to be generally higher.

This deviation is primarily due to methodological differences between national accounts and enterprise surveys. The methodology of enterprise surveys varies from country to country, which makes country comparisons difficult. For example, in Hungary only companies with more than five employees are surveyed; in the rest of the EU-CEE8 all companies are available for survey. In Croatia, Slovakia and Slovenia, the wages of all employees are recorded statistically, whereas in Hungary, this is the case only for the wages of full-time employees; in the remaining countries (Bulgaria, Czech Republic, Poland and Romania) they are converted into full-time equivalents.

Box Table 1.1 / Real wage growth in per cent: national accounts versus enterprise surveys

| | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-----------|--------------------|------|------|-------|------|------|------|------|------|------|
| BG | National accounts | 12.0 | 8.9 | 3.1 | 5.4 | 7.8 | 7.4 | 7.0 | 7.7 | . |
| | Enterprise surveys | 8.8 | 3.9 | 1.5 | 3.5 | 5.1 | 7.5 | 7.0 | 8.9 | 8.0 |
| CZ | National accounts | 0.0 | 0.2 | -0.1 | -0.8 | -1.6 | 1.6 | 3.8 | 2.9 | . |
| | Enterprise surveys | 2.3 | 0.7 | 0.6 | -0.8 | -1.5 | 2.5 | 2.9 | 3.0 | 4.4 |
| HU | National accounts | . | . | -0.4 | -1.9 | 0.7 | -0.2 | -2.6 | 3.4 | . |
| | Enterprise surveys | -3.5 | -3.4 | 1.3 | -0.9 | 1.7 | 3.2 | 4.4 | 5.7 | 7.6 |
| PL | National accounts | -0.5 | 6.0 | 1.7 | -0.7 | 1.1 | 1.8 | 1.8 | 4.8 | . |
| | Enterprise surveys | 2.0 | 1.4 | 1.4 | 0.1 | 2.8 | 3.2 | 4.5 | 4.2 | 5.0 |
| RO | National accounts | -8.1 | 3.6 | -11.7 | 9.1 | 0.3 | 7.7 | 4.0 | 12.4 | . |
| | Enterprise surveys | -0.8 | -2.8 | -1.6 | 0.8 | 0.8 | 6.5 | 10.4 | 11.7 | 13.8 |
| SI | National accounts | 0.0 | 1.0 | 0.3 | -2.8 | -2.4 | 0.2 | 1.3 | 5.0 | . |
| | Enterprise surveys | 2.5 | 2.1 | 0.2 | -2.4 | -2.0 | 0.9 | 1.2 | 1.9 | 1.1 |
| SK | National accounts | 3.4 | 2.3 | -0.9 | -0.9 | 1.1 | 2.1 | 3.6 | 4.4 | . |
| | Enterprise surveys | 1.4 | 2.2 | -1.6 | -1.2 | 1.0 | 4.2 | 3.2 | 3.8 | 3.3 |
| HR | National accounts | -2.6 | -0.1 | 1.5 | -0.9 | -2.4 | -4.1 | 3.3 | . | . |
| | Enterprise surveys | -0.2 | -1.5 | -0.8 | -2.3 | -1.4 | 0.4 | 1.8 | 3.0 | 2.7 |

Note: NA data based on hourly wages.

Source: Eurostat and wiiw annual database, own calculations.

Overall, hourly wages in the EU-CEE8 countries remain significantly below those in Austria and Western Europe (Table 1.1). On the one hand, this is due to lower labour productivity in the EU-CEE8 region, mainly on account of the lower capital-to-labour ratio. On the other hand, the wage share (the share of wages in GDP) in the EU-CEE8 countries is also significantly lower than in Austria or Western Europe in general (for more information see below).

Table 1.1 / Average gross hourly wage (NA), in EUR

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|
| Bulgaria | 2.4 | 2.7 | 2.9 | 3.1 | 3.4 | 3.6 | 3.8 | 4.0 |
| Czech Republic | 6.1 | 6.5 | 6.8 | 6.9 | 6.6 | 6.4 | 6.7 | 7.0 |
| Hungary | 4.8 | 5.7 | 5.8 | 5.8 | 5.8 | 5.6 | 5.4 | 5.6 |
| Poland | 4.1 | 4.8 | 4.9 | 5.0 | 5.1 | 5.2 | 5.2 | 5.2 |
| Romania | 2.9 | 3.2 | 3.0 | 3.2 | 3.4 | 3.7 | 3.8 | 4.2 |
| Slovenia | 12.3 | 12.7 | 13.0 | 13.0 | 12.9 | 13.0 | 13.0 | 13.7 |
| Slovakia | 6.0 | 6.2 | 6.4 | 6.6 | 6.8 | 6.9 | 7.1 | 7.4 |
| Croatia | 7.0 | 7.2 | 7.3 | 7.4 | 7.3 | 7.0 | 7.2 | 7.3 |
| Austria | 20.5 | 20.7 | 21.1 | 21.9 | 22.5 | 23.0 | 23.9 | 24.3 |

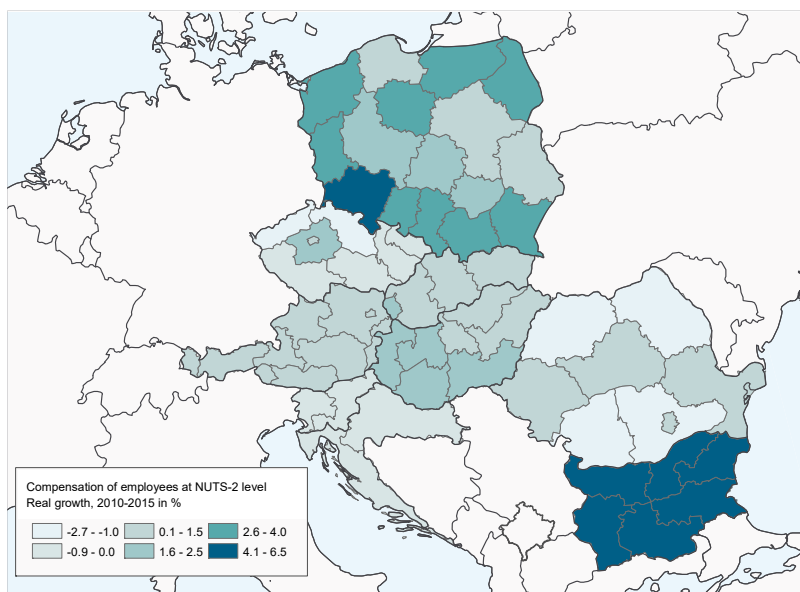
Source: Eurostat.

1.2. WAGE DEVELOPMENTS BY REGION

The statistics available for the EU-CEE8 countries at regional (NUTS-2) level show some significant regional discrepancies in wage developments (Figure 1.2).¹

Figure 1.2 / Compensation of employees per hour, by region (at NUTS-2 level)

Real growth in %, average of 2010-2015



Note: NA data. For Poland, Romania, Slovakia, Czech Republic and Hungary average of 2010-2014; for Romania compensation per employee. Regional data for Croatia are not available; the growth dynamics shown on the map apply to the whole of Croatia.

Source: Eurostat, wiiw calculations.

In many EU-CEE8 countries, wage growth has tended to be higher in regions close to richer neighbouring countries. For example, the region around Bratislava, bordering Austria, recorded average wage growth of 1.7% per year over the period 2010-2014, compared with only 1.1% for Slovakia as a whole. In Poland, too, the southwestern regions on the border with Germany and the Czech Republic recorded above-average wage growth. This is particularly true in Lower Silesia, where wages rose by an average of 4.3% a year, compared with 2.4% in Poland as a whole. Wage growth has also tended to be higher in the western provinces of Hungary than in the east of the country or in Budapest. In Romania, where most neighbouring countries tend to be even poorer, the central provinces and the Bucharest region have seen above-average wage increases. A notable exception is the Czech Republic: wages in Prague and Central Bohemia rose by an average of 1.4% and 2.5%, respectively, between 2010 and 2014, whereas in the Czech Republic overall they stagnated. Finally, in Slovenia and Bulgaria, the regional differences in wage growth are not very large (at least in relative terms in the case of Bulgaria).

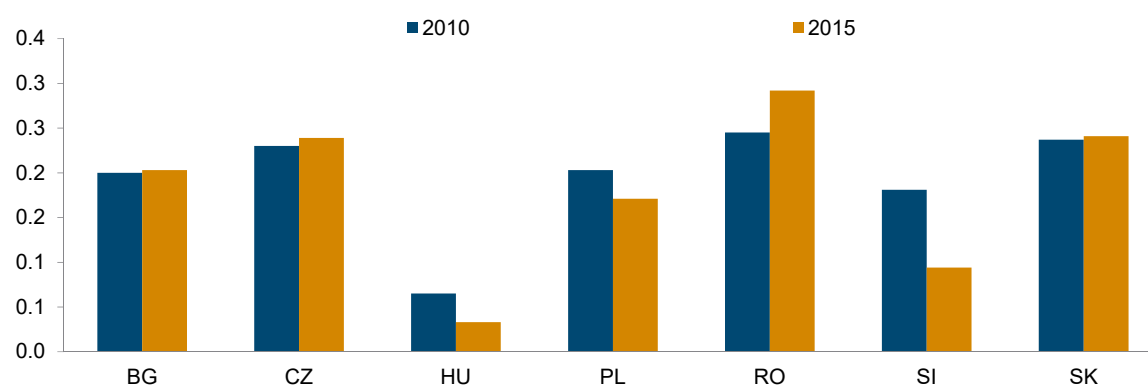
¹ At regional level, Eurostat only provides data on the compensation of employees, which includes not only gross wages, but also non-wage labour costs borne by the employer. No regional data are available for Croatia.

These regional differences in wage dynamics have led to a convergence of wages in several EU-CEE8 countries, reducing regional disparities. One indicator of regional wage disparities is the coefficient of variation c_v , which can be calculated for each country as follows:

$$c_v = \frac{\sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}}{\bar{x}}$$

where x_i is the average wage in region i , \bar{x} is the average wage throughout the country and n is the number of regions in that country. As can be seen from Figure 1.3, which shows the evolution of the coefficient of variation over time, regional wage differentials narrowed significantly between 2010 and 2015 in Hungary, Poland and Slovenia, which is an encouraging development. In the remaining EU-CEE8 countries, however, regional disparities either remained almost unchanged or increased slightly (Bulgaria, Czech Republic, Slovakia) or else increased significantly (Romania). In particular, wages in Bucharest, which were already relatively high at the beginning of the period, rose disproportionately between 2010 and 2015.

Figure 1.3 / Coefficient of variation of regional wage differentials, 2010 and 2015



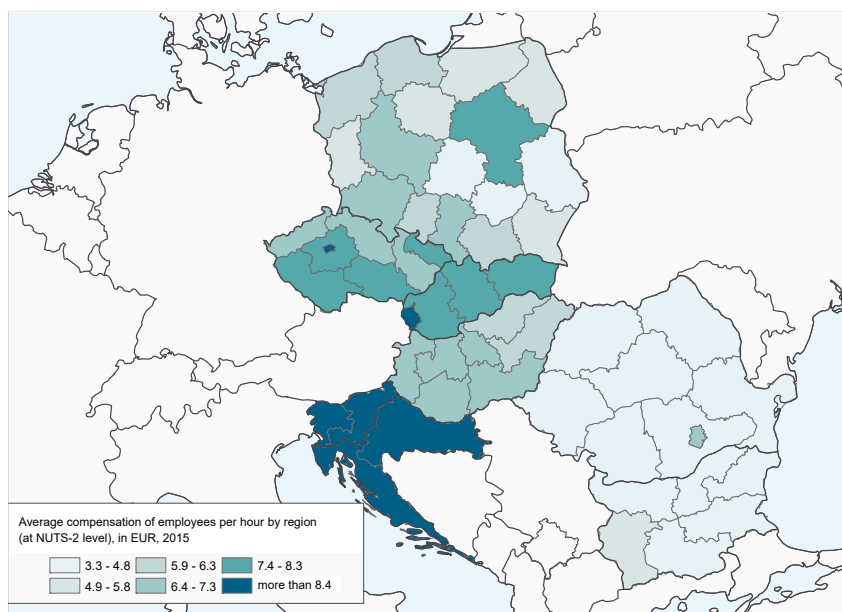
Note: NA data. Data for Poland, Romania, Slovakia, the Czech Republic and Hungary for 2014; for Romania monthly wages. Regional data for Croatia are not available.

Source: Eurostat, wiiw calculations.

In terms of absolute wage levels (Figure 1.4), the capitals or capital regions of the EU-CEE8 countries are still, for the most part, clearly at the top of the rankings. In Prague, for example, the average compensation of employees is EUR 12.80 per hour, compared to only EUR 8.40 in the Czech Republic as a whole. The situation is similar in Poland: the average compensation of employees in the area around Warsaw, at EUR 8 per hour, is significantly higher than the Polish average (EUR 6.20). In Slovakia, Romania and Bulgaria, wages in the capital regions also stand out, which corresponds to a pattern typical of many developing and emerging countries. However, higher wages in capital cities are not necessarily an expression of higher purchasing power: the cost of living, especially when it comes to services (rents, etc.), is usually also higher there. In Slovenia and Hungary, on the other hand, the wage gap between the capital and the provinces is less pronounced.

Figure 1.4 / Average compensation of employees per hour by region (at NUTS-2 level)

EUR per hour, 2015



Note: NA data. For Poland, Romania, Slovakia, Czech Republic and Hungary 2014. No regional data available for Croatia; the compensation of employees shown on the map applies to the whole of Croatia.

Source: Eurostat, wiiw calculations.

1.3. WAGE DEVELOPMENTS BY SECTOR

The aggregated wage dynamics presented in Section 1.1 are based on a variety of sector-specific developments, which also reflect different institutional frameworks, depending on the sector (more on this in Chapter 4). One way to capture this specificity is to aggregate wage developments in a particular sector across countries. Figure 1.5 shows the real wage growth in the (non-weighted) EU-CEE8 average for each sector at the NACE Rev. 2 1-digit level for the period 2010-2016.

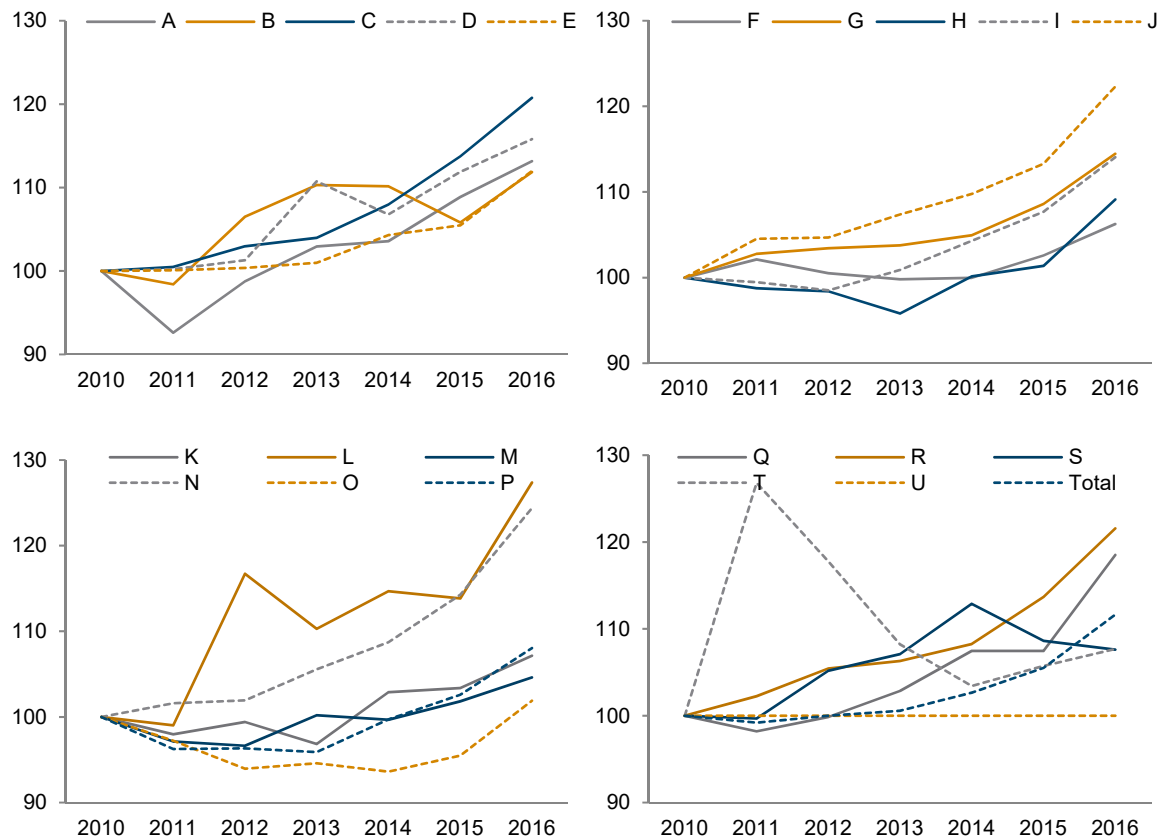
As can be seen from Figure 1.5, of all the sectors, wages in real estate (L) in the EU-CEE8 average rose fastest – by a total of 27% between 2010 and 2016, compared with 12% for the economy generally. Especially in Poland, Bulgaria and Romania, there was a strong wage increase in the real estate sector. At the same time, employment in this sector (as well as in construction) has declined in almost all EU-CEE8 countries – except Croatia and (to a lesser extent) Slovakia – suggesting staff reductions and related efficiency gains. Other sectors with a cumulative wage increase of more than 20% are other economic services (N) and information and communication (J). However, unlike the real estate sector, employment in these two sectors has risen sharply almost everywhere in the EU-CEE8 region, in some cases by 30-40%. This suggests that the disproportionate increase in wages has probably been due to increasing labour shortages, with labour supply not keeping pace with the expansion of the sector.

At the other end of the spectrum is public administration (O), with only 2% cumulative wage increases since 2010. Figure 1.5 suggests that this is attributable mainly to government austerity packages in the early years of this decade. Wage growth has also been very subdued in professional/technical services

(M), construction (F) and the financial sector (K), although in the latter case it started from a high level (see below for more).

Figure 1.5 / Real growth of hourly wages in the EU-CEE8 average, by economic sector at the NACE Rev. 2 1-digit level

Index, 2010=100



A Agriculture and forestry
 B Mining
 C Manufacture of goods
 D Energy supply
 E Water supply and waste management
 F Construction
 G Trade
 H Traffic
 I Accommodation and catering
 J Information and communication
 K Financial and insurance benefits

L Real estate activities
 M Professional/technical services
 N Other economic services
 O Public administration
 P Education
 Q Health and social work
 R Art, entertainment and recreation
 S Other services
 T Private households
 U Extraterritorial organisations
 Total

Notes: EU-CEE8 is the non-weighted average of Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia; 2016 data exclude Croatia. NA data.

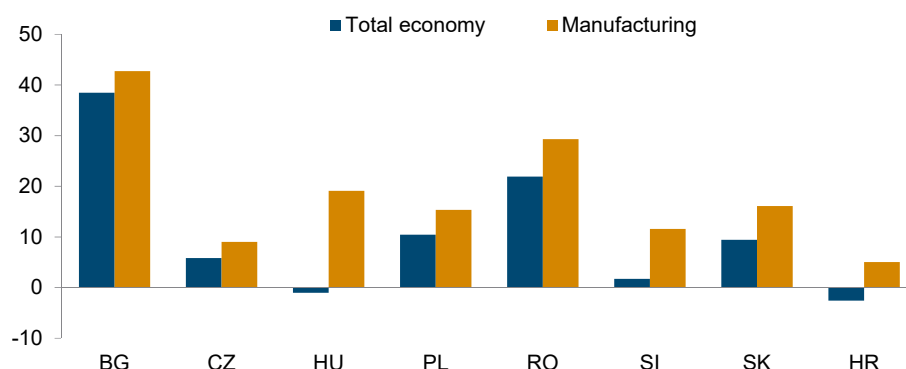
Source: Eurostat, wiiw calculations.

Wages in the manufacturing sector (C) grew by 21% on average in EU-CEE8, faster than in the services sector and the economy as a whole. This was true not only for the EU-CEE8 region as a whole, but also for each individual EU-CEE8 country (Figure 1.6). The above-average wage increase in manufacturing is all the more impressive as this sector is the most exposed to international competition. Thus, excessive wage increases in this sector could theoretically lead to a loss of competitiveness. This has

not happened, however; quite the opposite, in fact: the trade surpluses of the EU-CEE8 countries have risen, as wage increases have generally been offset by rising labour productivity, the improving non-price competitiveness of EU-CEE8 goods (e.g. quality improvements) and, in some cases (e.g. in Hungary), currency devaluations.

Figure 1.6 / Real growth of hourly wages, total economy vs. manufacturing industry

Cumulative real growth 2011-2016, in %



Notes: NA data. For Croatia, cumulated real growth for 2011-2015.

Source: Eurostat, wiiw calculations.

1.4. SECTORAL WAGE STRUCTURES

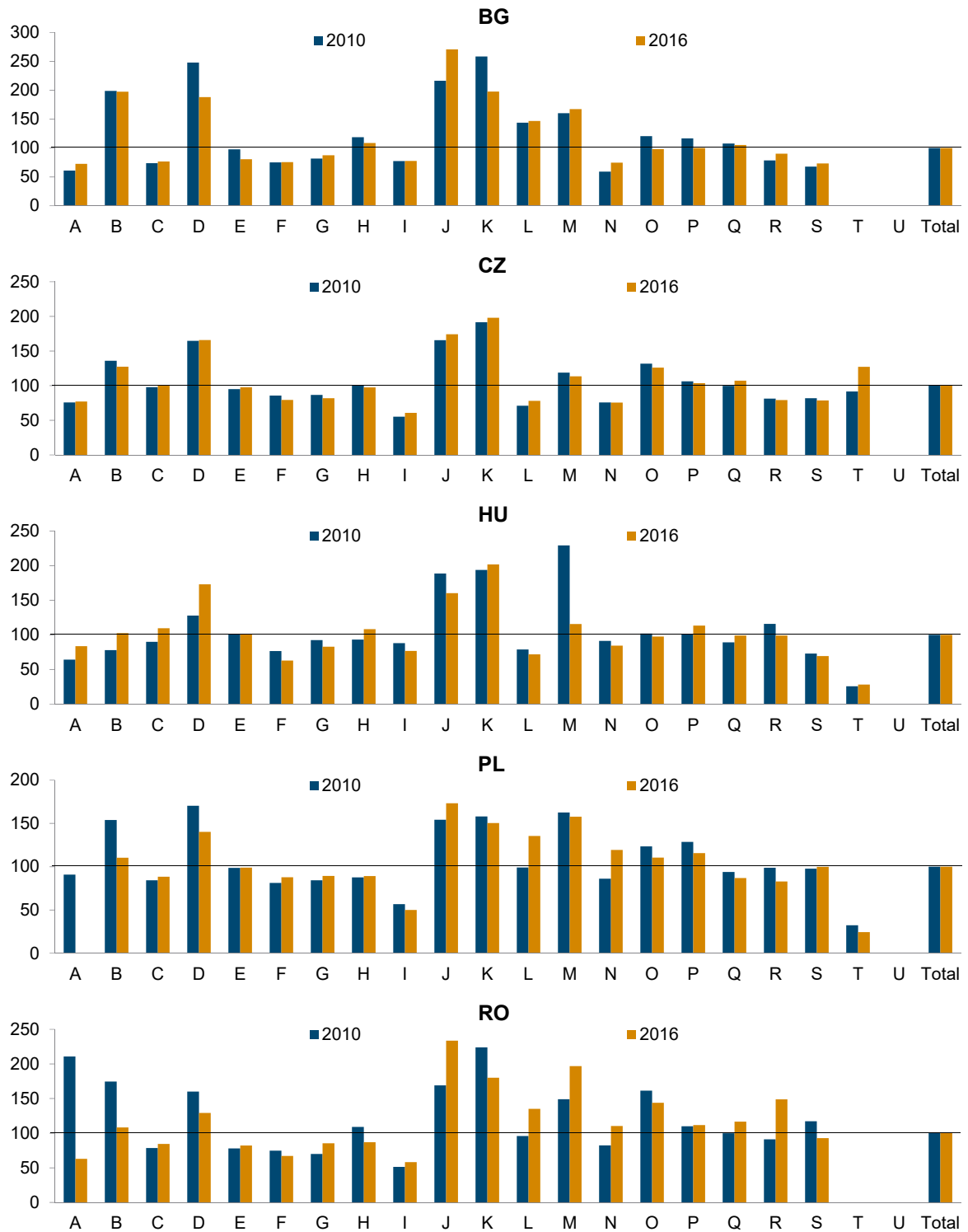
The sectoral wage structures of the EU-CEE8 countries show strong similarities (Figure 1.7). For example, energy supply (D), information and communication (J) and financial services (K) are among the best-paid jobs in almost every country. In several countries, mining (B) (in Bulgaria, the Czech Republic, Slovenia and Croatia) and professional/technical services (M) (in Poland and Romania) may be added to this list. The worst-paid jobs, on the other hand, are in accommodation and catering (I). Croatia deviates most from this 'typical' wage structure: unlike in other EU-CEE8 countries, jobs in the real estate sector (L) in Croatia are by far the best paid. This may have to do with the country's strong focus on tourism.

However, wage differences between sectors vary from country to country, and tend to correlate negatively with the level of development. They seem to be greatest in Croatia, where the financial sector, for example, offers wages some 3.5 times higher than the national average. In Bulgaria and Romania, too, the discrepancies are quite large: the best-paid sectors in those countries (such as financial services or energy supply) offer wages that are up to 2.5 times higher than the national average, while in Slovenia the best-paid sectors offer wages that are only 30-40% higher.

The different growth rates of wages by sector led to a shift in wage structures in the EU-CEE8 countries between 2010 and 2016 (Figure 1.7). The above-average wage dynamics in the manufacturing sector, for example, resulted in wages in that sector aligning themselves with the average wage in the respective country (Czech Republic, Slovenia) – or even exceeding it (Hungary, Slovakia). In the remaining EU-CEE8 countries, too, the wage gap between manufacturing industry and the national average has narrowed significantly (although it remains high in some countries: up to 23% in Bulgaria).

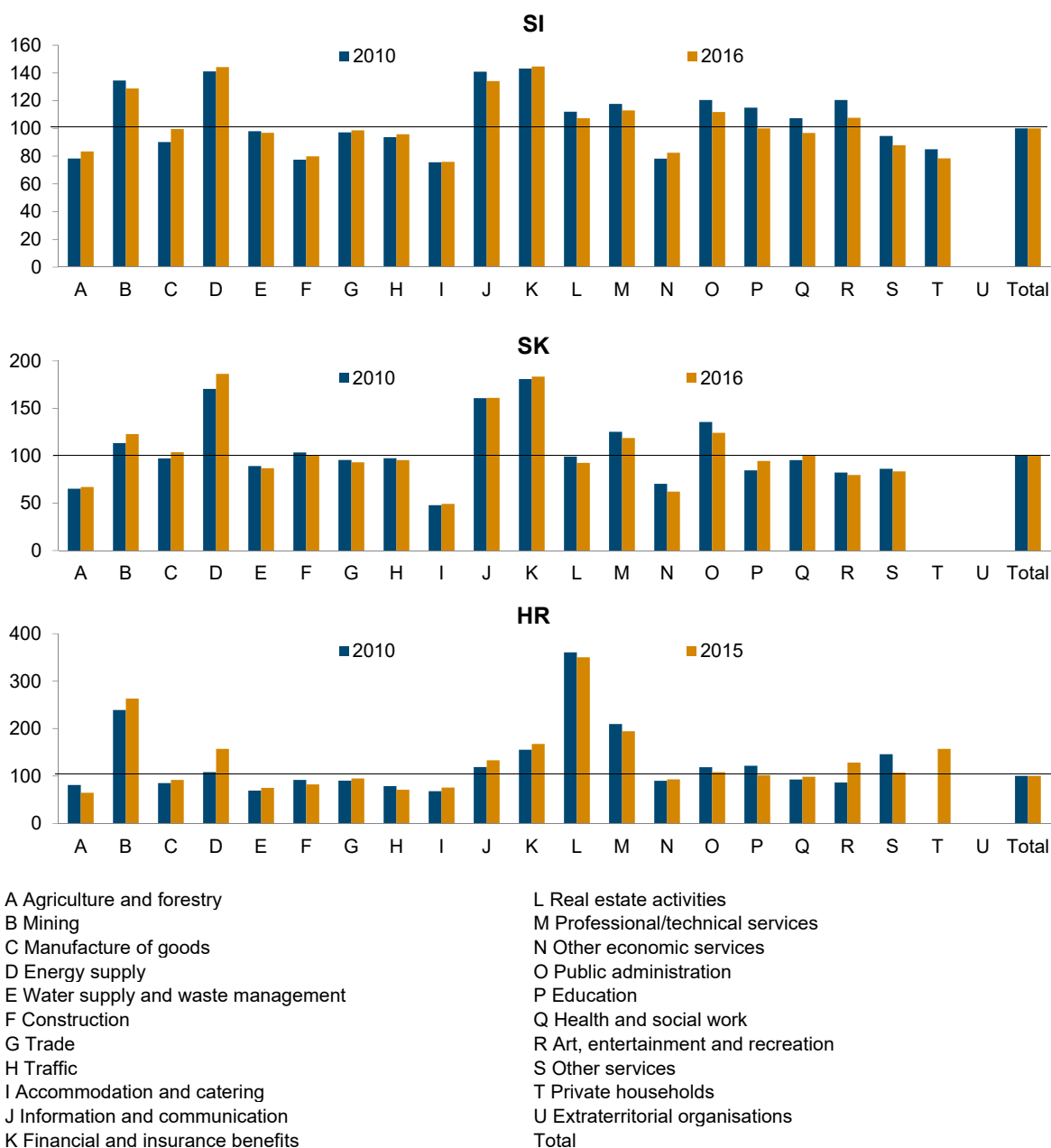
Figure 1.7 / Wage structure by economic sector

Hourly wages by sector at the NACE Rev. 2 1-digit level, as % of national average



(contd.)

Figure 1.7 / contd.



Source: Eurostat, wiiw calculations.

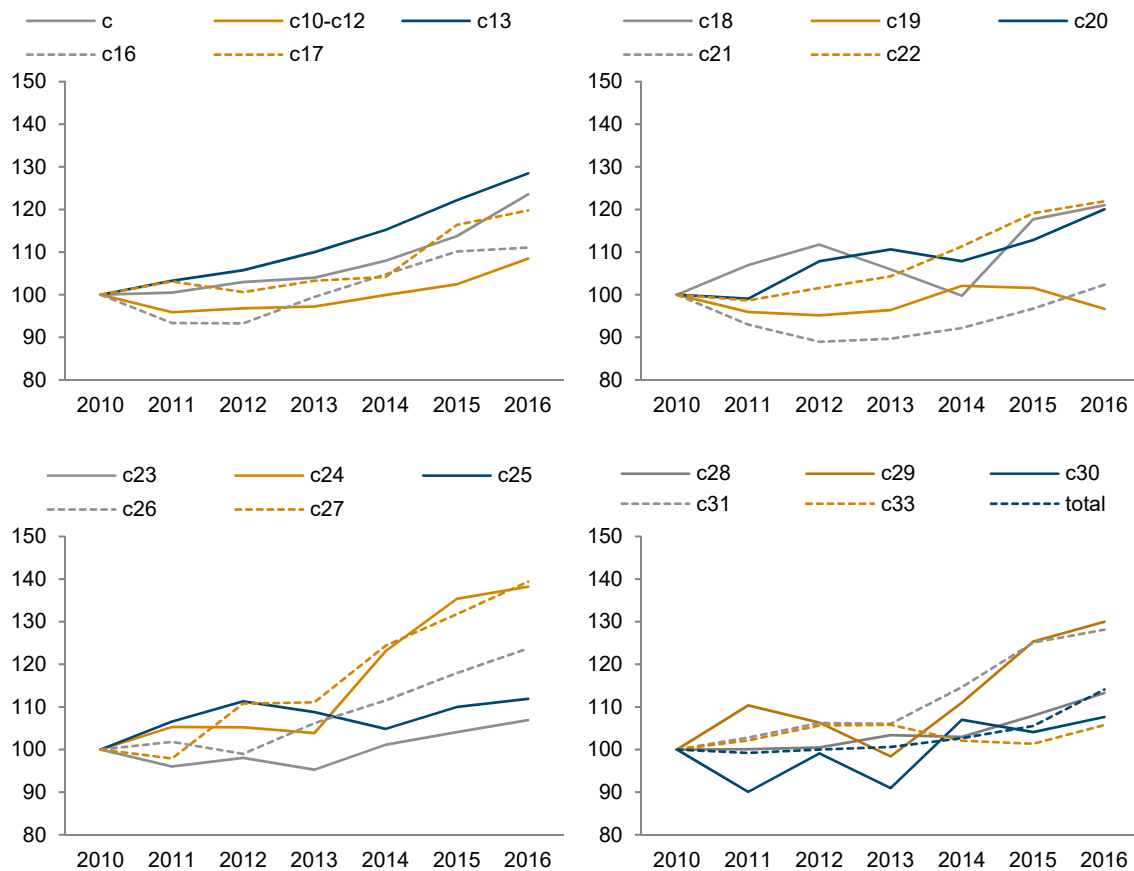
In general, however, wage convergence between the individual sectors in the EU-CEE8 countries over time is barely discernible. For example, wage dynamics in mining (B), one of the best-paid sectors, varied widely from country to country. In the other high-paying sector, information and communication (J), wage growth was above average in six countries. Finally, the subdued wage growth in the financial sector (K), which was characteristic of the EU-CEE8 region as a whole (Figure 1.5), was exclusively due to the relative declines in Bulgaria and Romania. Apart from these two countries (and Poland), wages in the financial sector of the remaining EU-CEE8 countries, which were already among the highest in 2010, rose above average in the years thereafter.

1.5. WAGE DEVELOPMENTS IN THE MANUFACTURING SECTOR

As was stressed above, wage developments in the manufacturing sector in all EU-CEE8 countries have been characterised by above-average growth. However, there is wide heterogeneity of wage dynamics across the individual manufacturing industries that can be analysed at the NACE Rev. 2 2-digit level. Figure 1.8 shows these dynamics for the (non-weighted) EU-CEE8 average for the period 2010-2016.

Figure 1.8 / Real growth of hourly wages in the EU-CEE8 average

By manufacturing industry at NACE Rev. 2 2-digit level
Index, 2010=100



| | | | |
|--------|---|--------|---|
| c | Manufacturing (M.) | c23 | M. of other non-metallic mineral products |
| c10-12 | M. of food products; beverages and tobacco products | c24 | M. of basic metals |
| c13-15 | M. of textiles, wearing apparel, leather and related products | c25 | M. of fabricated metal products, except machinery and equipment |
| c16 | M. of wood and of products of wood and cork, except furniture; m. of articles of straw and plaiting materials | c26 | M. of computer, electronic and optical products |
| c17 | M. of paper and paper products | c27 | M. of electrical equipment |
| c18 | Printing and reproduction of recorded media | c28 | M. of machinery and equipment n.e.c. |
| c19 | M. of coke and refined petroleum products | c29 | M. of motor vehicles, trailers and semi-trailers |
| c20 | M. of chemicals and chemical products | c30 | M. of other transport equipment |
| c21 | M. of basic pharmaceutical products and pharma. preparations | c31-32 | M. of furniture; other manufacturing |
| c22 | M. of rubber and plastic products | c33 | Repair and installation of machinery and equipment |
| | | total | Total - all NACE activities |

Notes: EU-CEE8 is the non-weighted average of Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia; 2016 data exclude Croatia, Romania and Poland. NA data.

Source: Eurostat, wiiw calculations.

Figure 1.8 shows that, of all manufacturing industries, the manufacture of electrical equipment (c27) and metal production and processing (c24) recorded the highest overall wage growth rates (around 35% between 2010 and 2016). By contrast, coking and refining (c19) was the only industry where real wages fell over the same period (by 3%). The pharmaceutical industry (c21) also recorded a very low wage increase (of only 3%), albeit starting from a high level. The car industry, which is important for many EU-CEE8 countries, recorded an overall increase in real wages of 29%, ranking third among the manufacturing industries.

1.6. WAGE STRUCTURES IN THE MANUFACTURING SECTOR

Figure 1.9 gives an overview of wage structures within manufacturing and their evolution over time for each industry (at the NACE Rev. 2 2-digit level).

As with the sectoral wage structure, there are strong similarities between the individual EU-CEE8 countries within the manufacturing sector. Wages in coke and refined petroleum products (c19) tend to be highest in most EU-CEE8 countries, with the exceptions of Slovenia and Croatia. In Poland and Romania, the repair/installation of machinery (c33) has a similarly high wage level. In Slovenia, on the other hand, it is the pharmaceutical industry (c21) and in Croatia the manufacture of computer equipment (c26) that offer the highest wages. At the other end of the spectrum, the manufacture of textiles (c13-15), wood products (c16) and furniture (c31-32) almost everywhere offers the lowest wages.

However, wage differentials within manufacturing are generally somewhat less pronounced than at the sectoral (NACE Rev. 2 1-digit) level (see Figure 1.9 compared to Figure 1.7). In the Czech Republic and Hungary, for example, the best-paid industry (coke and refined petroleum products) pays only around 60% more than the national average, while the best-paid sector outside manufacturing (financial services) pays twice as much. The ratio is similar in many other countries. The higher wage homogeneity within the manufacturing sector could be an expression of the greater job substitution opportunities (greater mobility between jobs). However, it could also be explained by the fact that wage-setting mechanisms are similar across industries, for example because wage demands are coordinated.

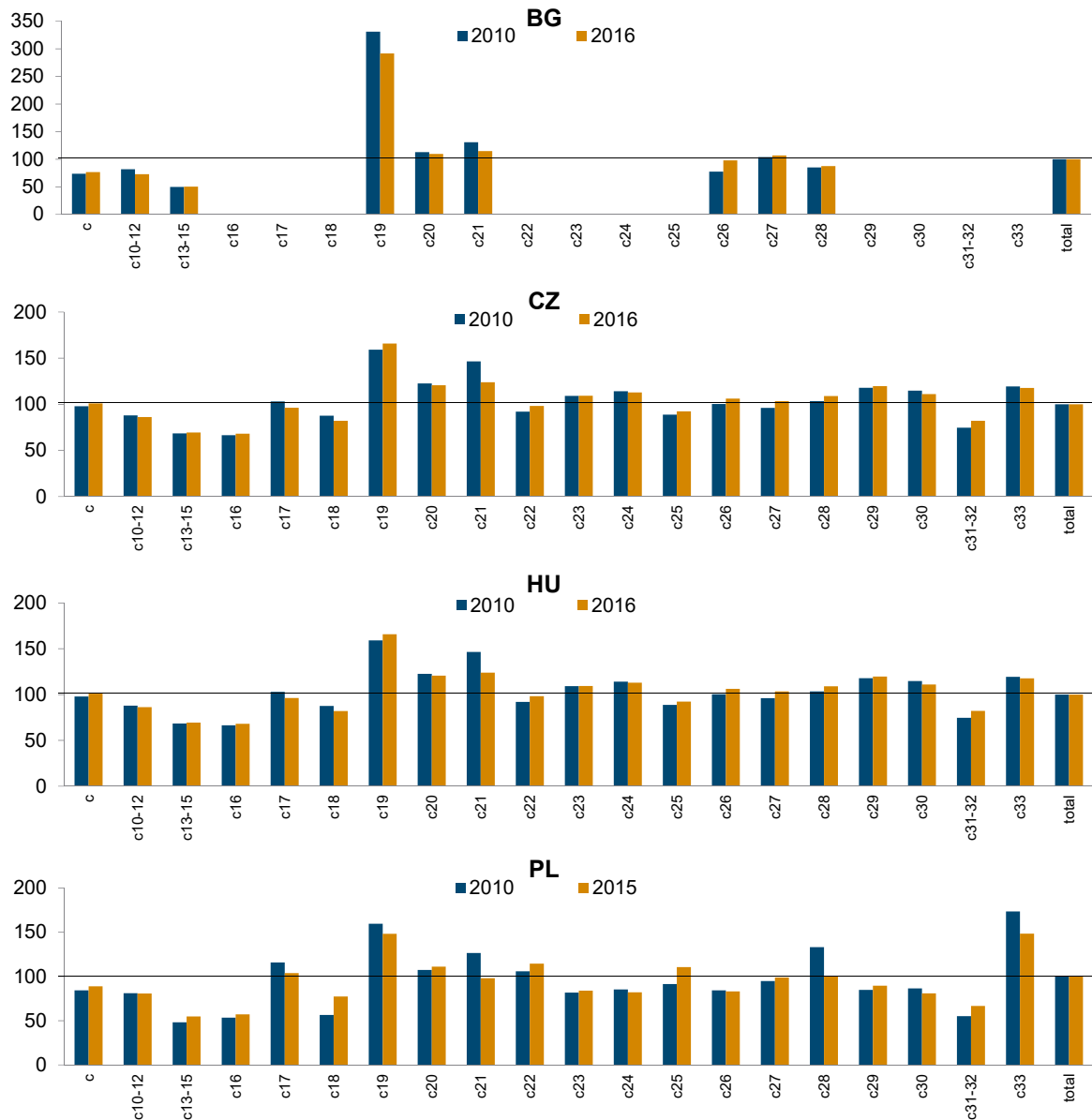
Only in Slovenia are wage differentials between individual industries within the manufacturing sector greater than between sectors. For example, the pharmaceutical industry, which offers the highest wages in Slovenia, pays 4.5 times as much as the coke and refined petroleum products industry, which offers the lowest wages. At the sectoral (NACE Rev. 2 1-digit) level, however, the corresponding wage differentials in Slovenia are at most double. The example of Slovenia also illustrates that the negative correlation between the extent of wage discrepancies within the manufacturing sector and the country's development level is less pronounced than at the sectoral level. In relatively poor Romania, for example, wage differentials are similarly large as in the richer countries of the Czech Republic and Hungary (although they are very large in Bulgaria).

Not only are wages relatively homogeneous within manufacturing, but they also tend to converge over time (see Figure 1.9). Wages in the lowest-paid industries, such as textiles (c13-15), wood products (c16) and furniture (c31-32), for example, rose disproportionately in all EU-CEE8 countries. In the

pharmaceutical industry (c21), which ranks among the top three best-paid industries almost everywhere in EU-CEE8, the opposite was observed.

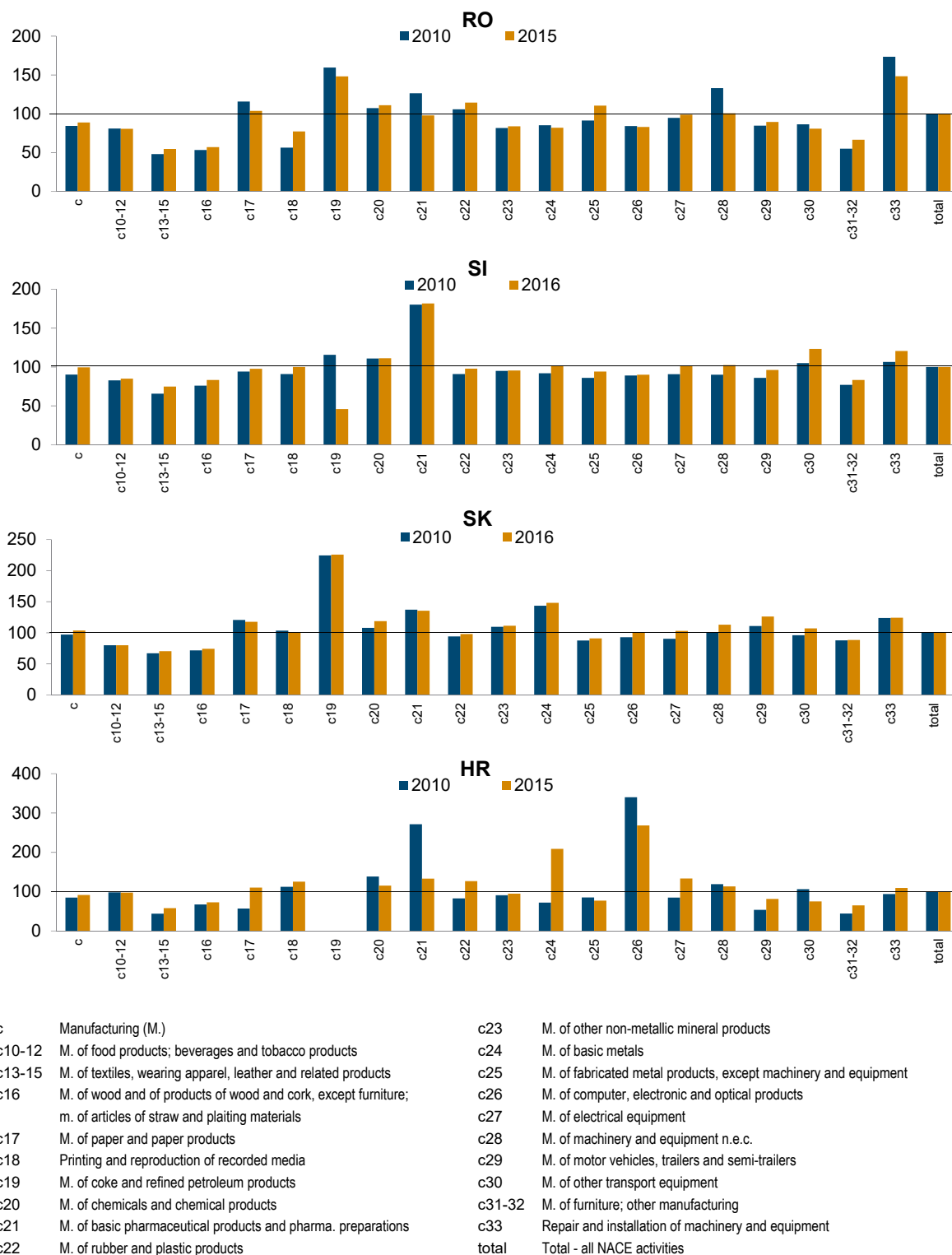
Figure 1.9 / Wage structure within the manufacturing sector

Hourly wage by industry at the NACE Rev. 2 2-digit level, as % of national average



(contd.)

Figure 1.9 / contd.



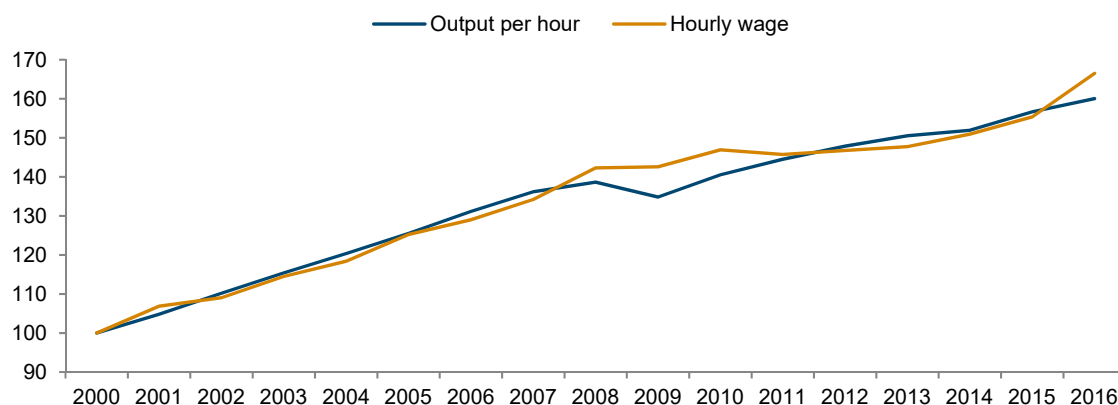
Source: Eurostat, wiiw calculations.

1.7. WAGES, LABOUR PRODUCTIVITY AND THE WAGE SHARE

For large closed economies, such as the USA, a decoupling of labour productivity and wage growth has been apparent since the early 1970s; the former tended to be higher than the latter. The reasons for this have probably less to do with technological progress than is commonly believed. Stansbury and Summers (2018) suggest that it was institutional and structural factors that were decisive. The result of these developments was a sharp fall in the US wage share as a percentage of GDP. What can be said in this respect about the EU-CEE8? Are these small, open economies following a similar path?

Figure 1.10 / Real output and real wages per hour, EU-CEE8

Index 2000=100, 2000-2016

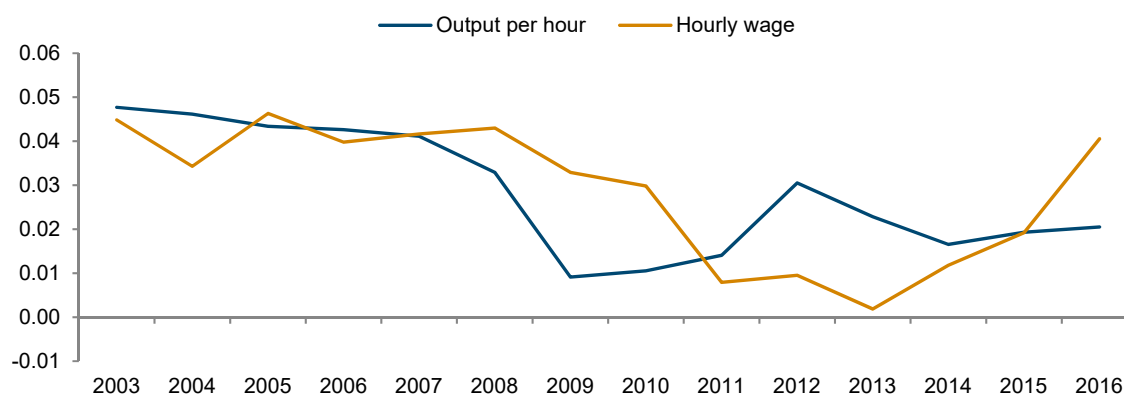


Note: Non-weighted average for EU-CEE8 countries for which data are available in a given year.

Source: Eurostat, own calculations.

Figure 1.11 / Real output and real wages per hour in EU-CEE8

Log change 3-year moving average



Note: Non-weighted average for EU-CEE8 countries for which data are available in a given year.

Source: Eurostat, own calculations.

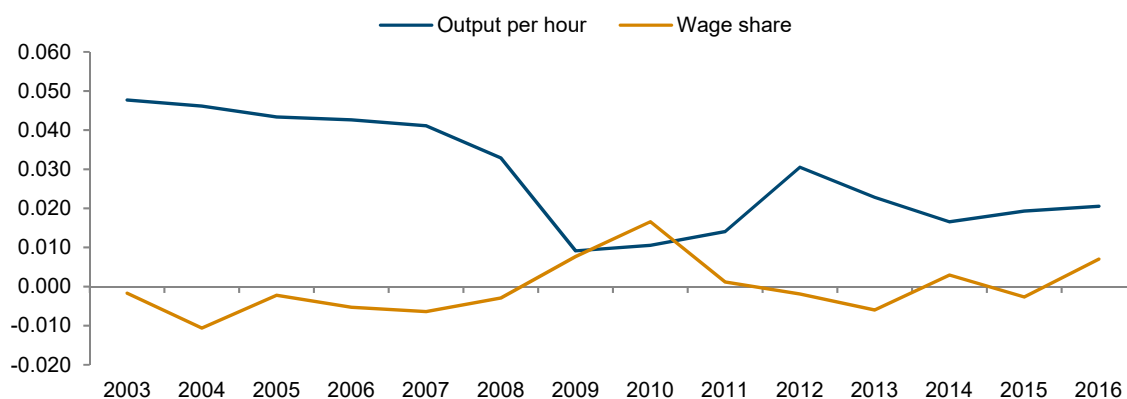
For the EU-CEE8 average, the opposite can be observed in the recent past: wages have tended to rise faster than labour productivity (Figure 1.10). A comparison of the development of real GDP per hour worked with that of wages per hour worked shows that wages grew much faster than productivity,

especially during and after the global financial crisis. Since most EU-CEE8 countries have current account surpluses (which are rising in several countries), this discrepancy is macroeconomically harmless for the time being. On the contrary, it reflects a welcome catching-up process for these countries.

Observing the change in the logarithmic data in the three-year moving average (Figure 1.11), it can be seen that the developments in productivity and wages are not completely detached from each other, but appear to be time delayed: wage developments follow the dynamics of labour productivity with a lag of several years. Nevertheless, it can also be seen here that in the EU-CEE8 countries wages rose faster than productivity in most years of the observation period (excluding the post-crisis period of 2011-2014). This suggests that in the EU-CEE8, wage formation is largely left to the free market, with regular over- and under-shooting, compared with productivity-oriented wage setting.

In this context, it is interesting to observe how the changes in productivity and the wage share (wages as a share of GDP) over time are clearly opposite to each other (Figure 1.12). This also documents, among other things, the high degree of downward wage rigidity. Overall, wage shares have hardly changed over the observation period. For the EU-CEE8 average, the wage share rose only marginally (from 34% in 2000 to 34.2% in 2016).

Figure 1.12 / Real output per hour and wage share, EU-CEE8, log change 3-year moving average



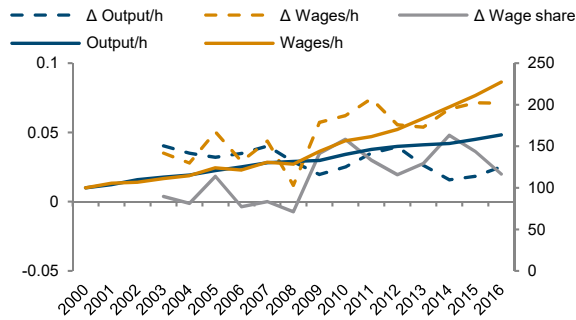
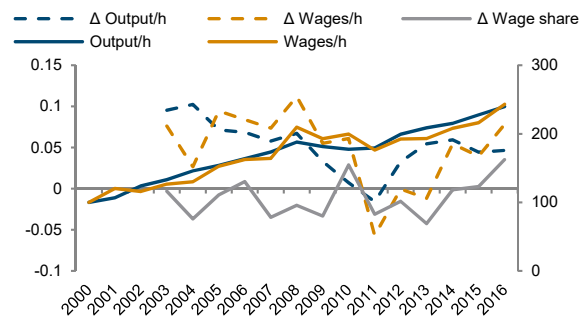
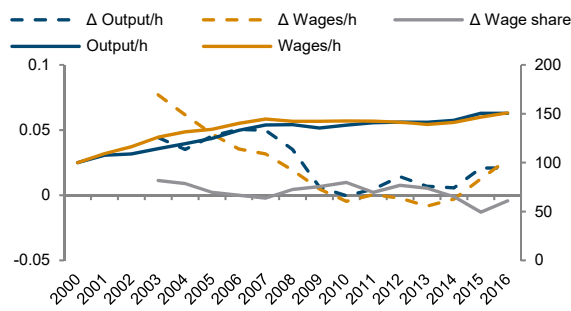
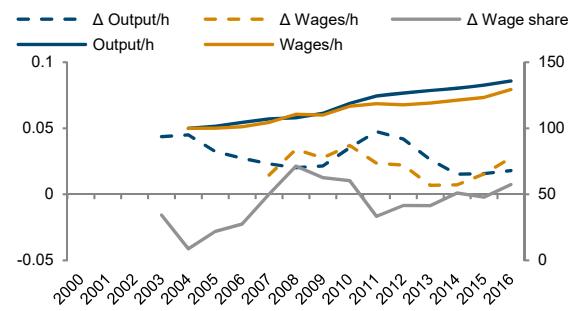
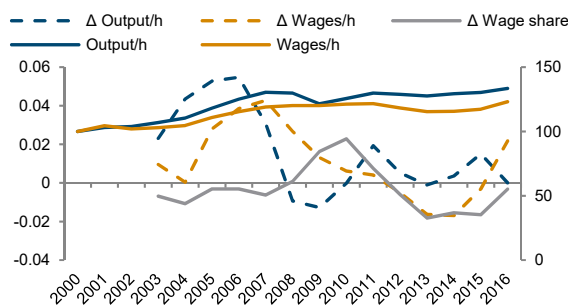
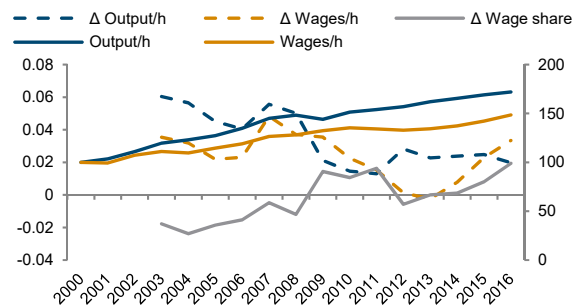
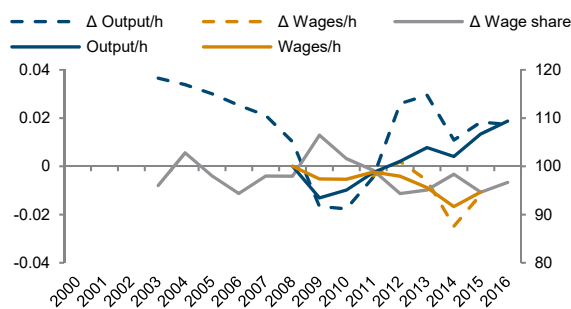
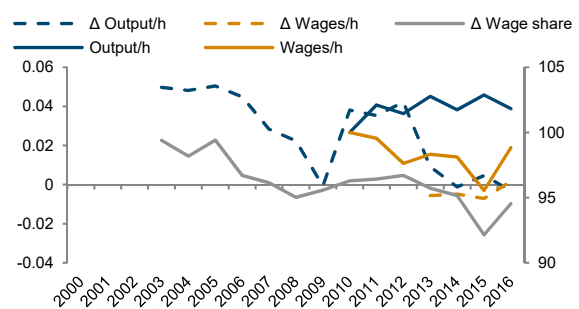
Note: Non-weighted average for EU-CEE8 countries for which data are available in a given year.

Source: Eurostat, own calculations.

Looking at the time series presented in Figures 1.10, 1.11 and 1.12 for individual EU-CEE8 countries (Figure 1.13), it can be seen that the divergence of wages from labour productivity starting from 2008 was driven, in particular, by developments in Bulgaria and Romania (in 2008-2010). In the case of the Czech Republic, Poland, Slovenia and (to some extent) Slovakia, labour productivity and wages have largely gone hand in hand. In Hungary, and later also in Croatia, labour productivity has increased even faster than wages. However, developments in those two countries are difficult to compare, due to shorter time series.

Figure 1.13 / Real output and real wages per hour, EU-CEE8

Index and log change 3-year moving average, wage share log change 3-year moving average, 2000-2016

BG**RO****CZ****PL****SI****SK****HR****HU**

Note: All real data deflated by the Harmonised Index of Consumer Prices (HICP).

Source: Eurostat, own calculations.

As with the average for the EU-CEE8 region, the (log) changes (in the three-year moving average) in productivity and wages also appear to have a time lag for the individual countries. However, the pattern is not completely uniform. The change in the wage share also generally (except for Hungary) seems to stand in contrast to the change in productivity – as with the average for the region. For the period 2000-2016, the wage share (as a percentage of GDP) has remained broadly stable in almost all countries in EU-CEE8. The exceptions are Bulgaria (+9 pp) and Croatia (-4 pp).

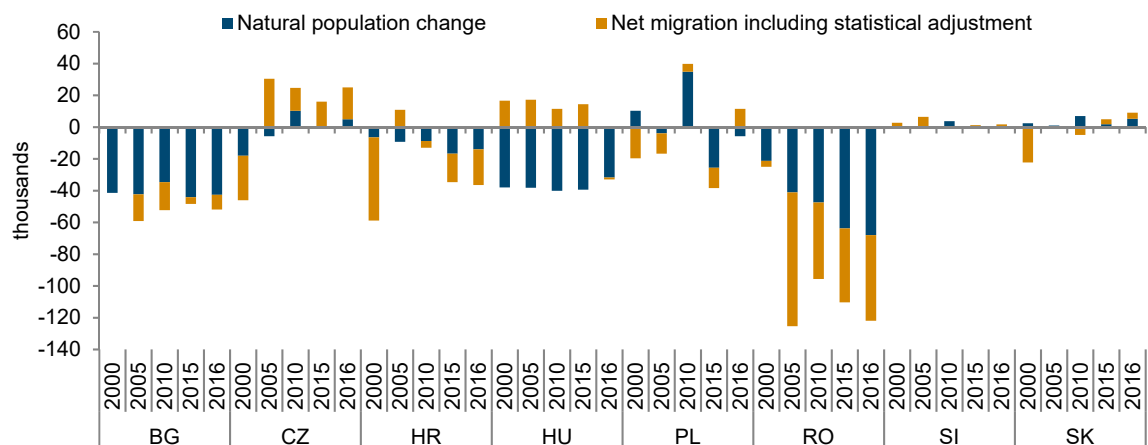
Over longer periods, however, it can be shown also for some other EU-CEE countries that labour income as a share of GDP has been on the decline. Data on the adjusted wage share from the annual macroeconomic database of the European Commission (AMECO) show dramatic declines over the very long term, for example, for Poland (1992: 62.8%; 2017: 47.7%). For the EU-CEE8 as a whole for the period 1996-2017, the wage share fell somewhat less: from 55.1% in 1996 to 51.2% in 2017. As Stansbury and Summers (2018) indicate, institutional and structural changes rank among the reasons for these long-term developments.

2. Migration, demographic developments and future prospects

2.1. MIGRATION AND DEMOGRAPHIC DEVELOPMENTS

The EU-CEE8 countries are on an encouraging growth path, which is likely to continue in the medium term (wiiw, 2017a). Labour market indicators have responded positively to these developments – especially unemployment rates, which between 2010 and 2016 fell by 4.5 percentage points on average, to 7.6%. Countries such as the Czech Republic and Hungary currently have unemployment rates of 4% and 5.1%, respectively, which points almost to full employment. Employment rates and wages have risen and the gap in GDP per capita between the EU-CEE8 and the EU15 countries has narrowed further (wiiw, 2017b).

Figure 2.1 / Natural change in population and net migration in EU-CEE8 countries, 2000-2016



Note: Population change - Population balance and gross data at national level [demo_gind], last updated 08.11.2017, extracted 21.02.2018, data source: Eurostat. Note: Natural change in population: the difference between the number of live births and the number of deaths during the year. A positive natural change (also known as natural increase) occurs when the number of live births exceeds the number of deaths. A negative natural change (also known as natural decrease) occurs when live births are less numerous than deaths. Net migration plus statistical adjustment: Net migration is the difference between the number of immigrants and the number of emigrants.

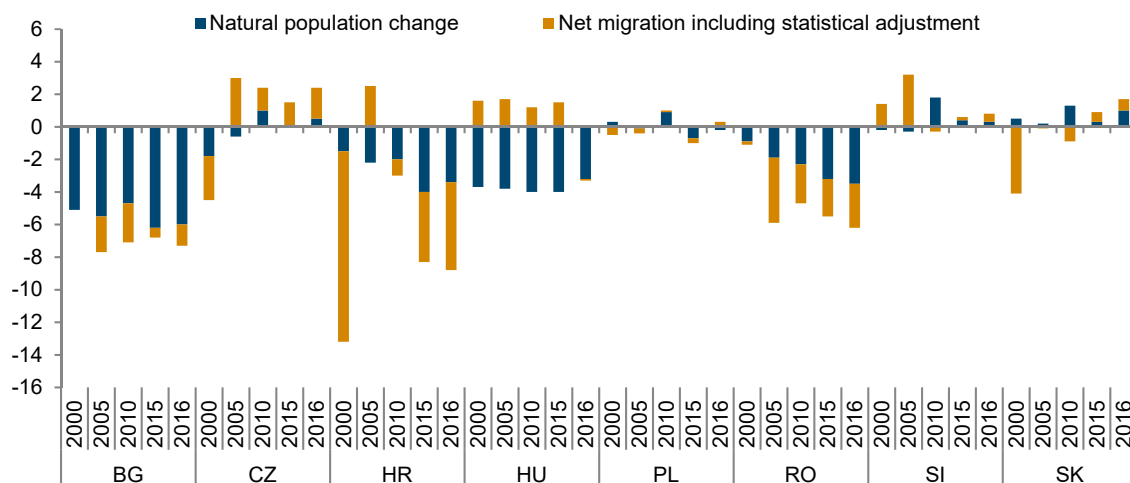
Source: Eurostat.

Alongside the positive labour market conditions, the demographic indicators suggest that the EU-CEE8 countries are continuing to experience declining population and negative net migration, as emigration tends to be higher than immigration (see Figure 2.1 and Figure A1 in the Annex for each country). Continuous emigration has further exacerbated population decline, as the migration of the youngest and most productive age group contributes negatively to birth rates. At the same time, immigration to the EU-CEE8 from neighbouring countries to the east and southeast has also recently gained momentum, mainly due to increasing labour shortages in the EU-CEE8. For example, Poland has recorded significant immigration from Ukraine; the Czech Republic from Slovakia and Ukraine; Hungary from

Slovakia and Romania (mainly the Hungarian-speaking minority); and Croatia from Bosnia and Herzegovina. Nevertheless, most EU-CEE8 countries remain net senders of migrants, as shown in Figure A2 in the Annex.

The comparison between individual EU-CEE8 countries shows different trends in natural population dynamics and net migration (Figure 2.1). In absolute terms, Romania and Bulgaria had the highest population decline between 2000 and 2016. In Romania, the magnitude of emigration was similar to that of negative natural population growth, so that both components contributed to population decline. In Bulgaria, on the other hand, it was mainly natural change that contributed to the downward trend in the population. The Czech Republic is the only country where both natural population growth and net migration were positive (although the latter was much larger than the former). In Hungary, net migration was positive until 2015, but turned negative in 2016, while the natural population growth was predominantly negative (albeit improving slightly over time). The trends for Poland have been contradictory, but for 2016 we find that net migration was positive and natural population growth slightly negative. This suggests that emigration from Poland has slowed down. In the case of Slovakia and Slovenia, natural population change and net migration were low. In Slovakia, however, both natural population growth and net migration were positive.

Figure 2.2 / Natural change in population and net migration in EU-CEE8 countries, 2000-2016, per thousand inhabitants



Source: Eurostat.

Expressed in relation to the population, the trends in natural population change and net migration are similar (Figure 2.2). The exceptions are Bulgaria and Croatia, which have been most affected by both negative natural population change and net migration.

The trends in natural population dynamics and net emigration in the EU-CEE8 countries were decisively influenced by EU enlargement: EU accession was followed by strong emigration, especially from Poland and Romania. Cross-border commuters also play a role (for more information see Box 2.1). In the other EU-CEE8 countries, net outward migration was much lower, but migration turnover – measured as the

flow of emigrants and immigrants within a year – indicates that mobility has increased significantly in the region (see Figure A2 in Annex).

BOX 2.1 / CROSS-BORDER COMMUTERS IN EU-CEE8

Cross-border workers are employed or self-employed in a country other than their country of residence. In 2016, about 1.4 million cross-border workers from the EU28 worked in another EU28 country. Hungary and Slovakia are two specific cases where the number of cross-border workers from those countries exceeds the number of long-term workers from those countries in the EU28.

The number of cross-border commuters to Austria was estimated at around 166,000 in 2016 (5% more than in 2015); this corresponds to 4% of total employment. Cross-border commuters in Austria come mainly from Hungary (31%), Slovakia (30%) and Germany (17%). Nevertheless, the number of cross-border workers from Slovakia (Bratislava and the Stredné Slovensko region) to the neighbouring regions of Austria (Lower Austria and Vienna) decreased between 2008 and 2015 (European Commission, 2018). This was partly due to the mobility restrictions applicable in Austria to the EU-CEE countries, which remained in force until 2011. Since 2011, free access to the labour market has made mobility to Austria easier for cross-border commuters. The higher income level in Austria compared to the neighbouring Czech Republic, Hungary and Slovakia is an important pull factor, with German language skills (rather than age or gender) playing a decisive role. The number of cross-border commuters from Slovakia to Austria, for example, is lower than to the Czech Republic; the long-term mobility of Slovaks to Austria is more pronounced.

In Germany, there were more than 364,000 commuters in 2016 (12% more than in 2015). The largest group of cross-border commuters in Germany came from Poland (28%), followed by Hungary, Romania and the Czech Republic (9% each), and Slovakia (8%). For Poland in particular, cross-border mobility to Germany is an important migration channel. But also in Poland (as in Slovakia) it has been shown that commuting within the country is more frequent than commuting to Germany, which could be explained by administrative, linguistic or cultural barriers (European Commission, 2018).

2.2. IMPACT ON WAGES

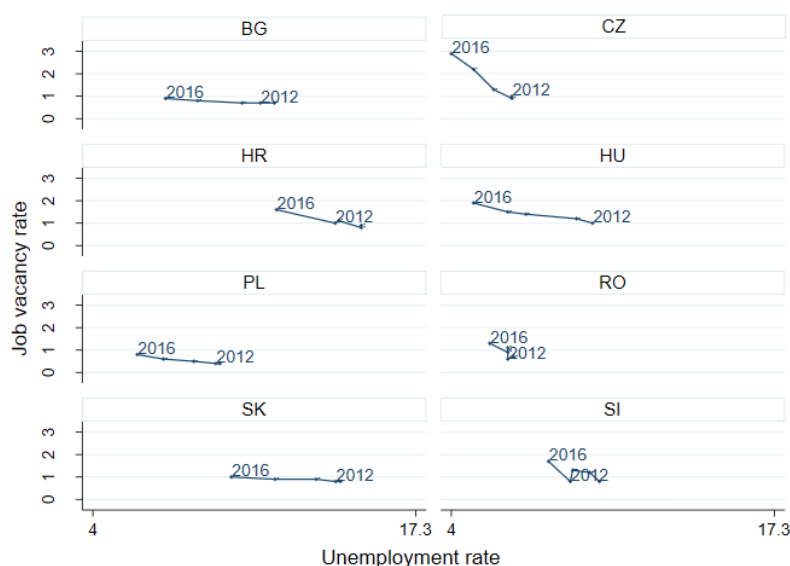
In the short term, emigration can certainly ease labour market tensions in countries where unemployment is high. In the long run, however, the fall in unemployment could lead to an increase in job vacancies, a shortage of labour and skills, rising wages and a deterioration in international competitiveness (Mishra, 2014).

The corresponding Beveridge curves² (Figure 2.3) – an indicator of labour market efficiency – show the adjustment between the demand and the supply sides in EU-CEE8 since 2012. In the Czech Republic and Hungary, the Beveridge curve has been downward-sloping: the labour market situation (which corresponds to a certain combination of the unemployment rate and the job vacancy ratio in Figure 2.3) has moved to the left and upwards. Low unemployment rates, combined with high job vacancy rates, are

² The Beveridge curve examines the relationship between the unemployment and the job vacancy rate, and is an indicator of labour market efficiency.

typical of tight labour markets, where labour demand is greater than labour supply. In Slovakia, Bulgaria and Poland, on the other hand, the Beveridge curve is flatter: unemployment rates have declined, but without a notable increase in job vacancy ratios. Low unemployment rates and low job vacancy rates in those countries indicate that labour demand is generally sufficient to meet labour supply. In Romania, too, the job vacancy rate has increased only slowly, although the unemployment rate has fallen markedly. It is important to stress that Romania and Poland are two countries that have experienced high emigration since EU enlargement, which may have reduced excessive labour supply and unemployment.

Figure 2.3 / Unemployment rate vs. job vacancy rate (Beveridge curve) in EU-CEE8, 2012-2016



Source: Own elaboration based on wiiw statistics.

Due to considerable emigration, private companies in particular (but also public enterprises) face difficulties in filling vacancies for both high- and low-skilled labour. Companies in EU-CEE8 experience difficulty in meeting demand not only quantitatively, but often also qualitatively. According to a recent study by the European Commission (2017a),³ EU-CEE8 countries report bottlenecks mainly in occupations such as cooks, doctors, blacksmiths and toolmakers (see Table 2.1 for details).

At the same time, the demand for unskilled labour is expected to increase, especially in Bulgaria, Hungary, Croatia and Slovenia. In contrast, skilled manual or non-manual work (ISCO 6) will be less in demand in almost all EU-CEE8 countries. The same applies to managers, especially in Bulgaria and Romania, but also in Hungary, Slovakia and Slovenia (wiiw, 2016a).⁴

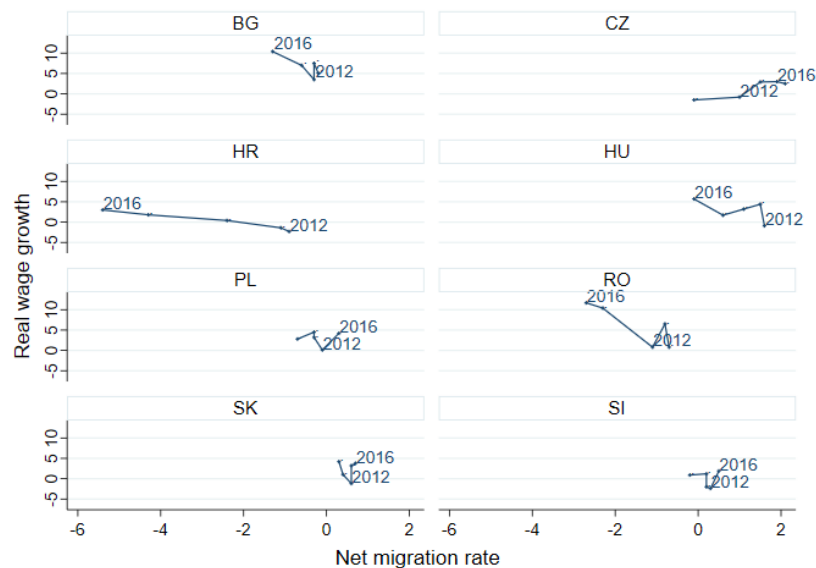
³ Information on occupational bottlenecks was collected through the public employment services of the EU28 countries.

⁴ ISCO 1 – Managers, ISCO 2 – Scientists, ISCO 3 – Technicians and associate non-technical occupations, ISCO 4 – Office workers, commercial clerks, ISCO 5 – Service and sales personnel, ISCO 6 – Agricultural and fishery professionals, ISCO 7 – Craft and related trades, ISCO 8 – Plant and machine operators and assemblers, ISCO 9 – Auxiliary workers, <http://www.ilo.org/public/english/bureau/stat/isco/>

Table 2.1 / Shortage occupations in EU-CEE8, as reported by public employment services, 2016

| | |
|--|----------------|
| Software and application developers and analysts | HR, PL, SI, SK |
| Commercial agents and brokers | HU, PL, SI, SK |
| Blacksmiths, toolmakers and related professions | BG, CZ, HR, SI |
| Building construction and related professions | HR, HU, SI |
| Medical doctors | BG, HR, SI |
| Sheet metal workers, founders and welders | BG, CZ, HR, SI |
| Electricians and workshops | BG, SI |
| Truck and bus drivers | BG, CZ, HR, SI |
| Building designers and related professions | HU, SI |
| Engineers (without electrical engineering) | BG, HR, SI |
| Nurses and midwives | BG, SK |
| Chefs | BG, SI, SK |
| Machine mechanics | SI, SK |
| Material and engineering specialists | SI, SK |
| Salesmen | SI, SK |
| Database and network specialists | PL, SK |
| Employees in food processing and related professions | HU, SI |
| Other health professions | SI |
| Healthcare nurses | HU, SI, SK |

Source: European Commission (2017a).

Figure 2.4 / Real wage growth vs. net migration rate in EU-CEE8, 2012-2016

Source: Own elaboration based on wiiw and Eurostat statistics.

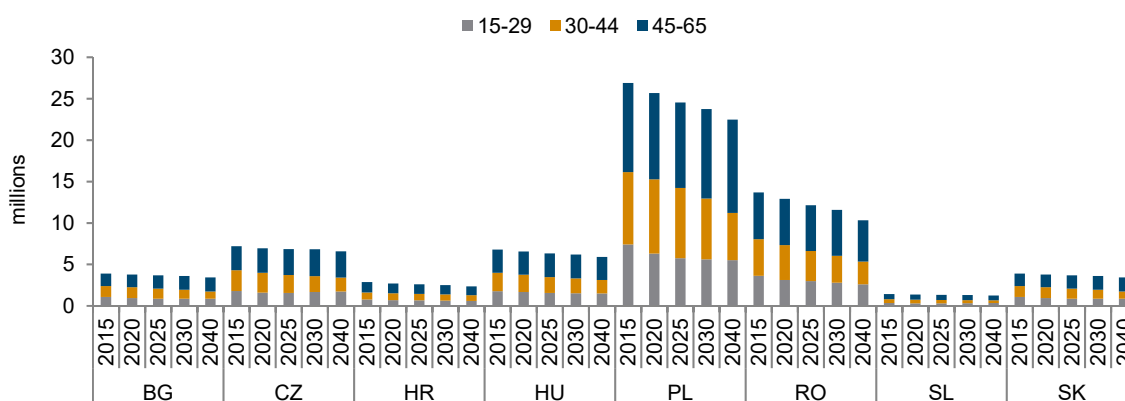
Looking at the link between real wage growth and net migration (Figure 2.4), it can also be seen that countries such as Bulgaria and Romania, which recorded the highest levels of emigration, recorded the highest wage increases. As argued in the literature, it is likely that emigration not only reduces the stock of available labour, but also leads to a higher inflow of remittances. This could drive up reservation wages, especially if emigration has involved highly skilled workers on a large scale. In Croatia, on the

other hand, although emigration has continued to increase, wage growth has been subdued, as the unemployment rate of 13.1% (in 2016) is still one of the highest in EU-CEE8.

2.3. POPULATION FORECASTS UP TO 2040

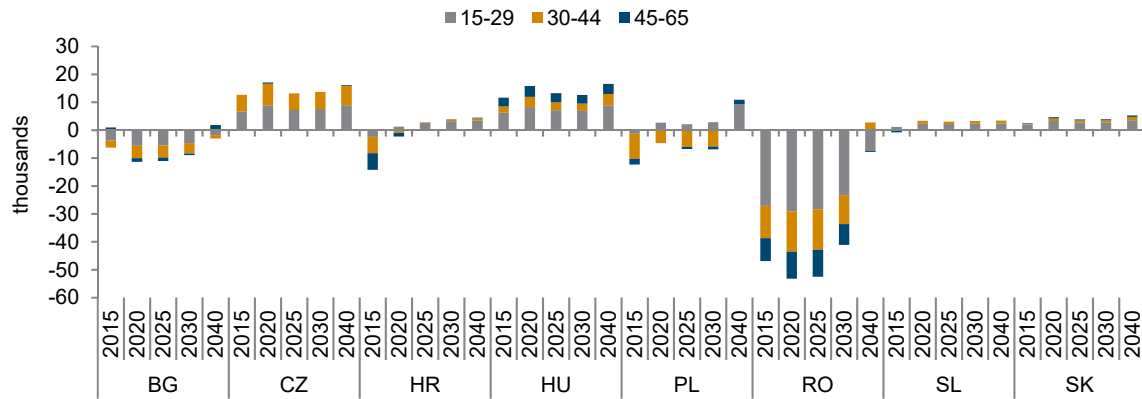
Do the EU-CEE8 countries, like the EU15, face an ageing and shrinking population due to low birth rates? The current population forecasts suggest that Poland and Romania, in particular, will experience a rapid decline in the working-age population up to 2040 (see Figure 2.5). Similar trends are expected for the Czech Republic and other EU-CEE8 countries, but the decline will be less marked than in Poland or Romania. The breakdown by age groups 15-29, 30-44 and 45-65 indicates that in Poland the first two groups will shrink markedly, while the third group is expected to expand. In Romania, all three age groups will decline, especially the younger ones. In the Czech Republic, the first age group of 15-29 years will remain broadly stable, while the age group 30-44 will decrease dramatically, and the age group 45-65 will grow. These trends suggest that it is above all the younger working-age population in the EU-CEE8 that is likely to shrink.

Figure 2.5 / Forecasts for working-age population in EU-CEE8, by age structure, 2015-2040

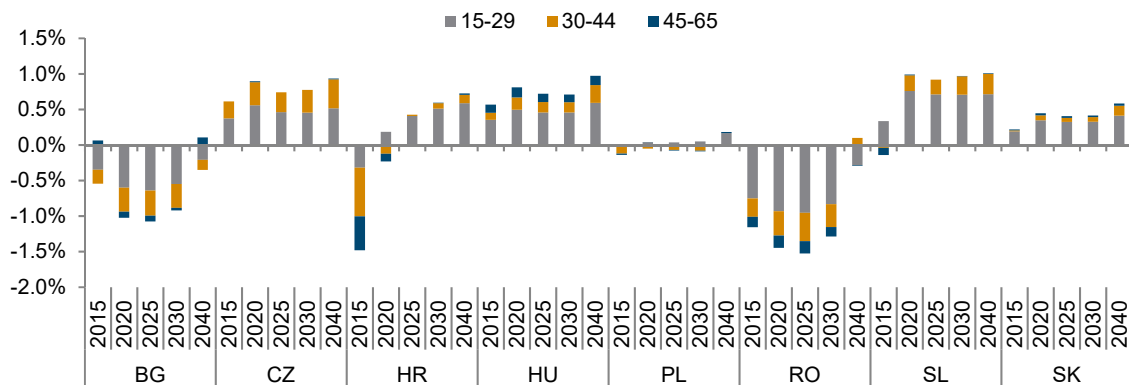


Source: Eurostat.

As regards migration projections (Figures 2.6 and 2.7), Romania and Bulgaria in particular will continue to experience net outward migration, both in absolute terms and as a share of the population. The negative net migration will be particularly high among the younger age cohorts. Not until 2040 is net migration expected to turn positive in Poland for all age groups; for the older age cohorts in Bulgaria; and for the 30-44 age group in Romania. In Croatia, after a high net outward migration in 2015, the negative trend is expected to switch to positive from 2020 onwards. In the Czech Republic, net migration is already positive, especially in the 15-29 and 30-44 age groups, and a similar trend can be observed for Slovenia and Slovakia. Hungary is also a net recipient of migrants; positive net migration in Hungary is expected to remain constant over time, as in the Czech Republic.

Figure 2.6 / Forecasts for net migration in EU-CEE8, by age structure, 2015-2040

Source: Eurostat.

Figure 2.7 / Forecasts for net migration as a share of population in EU-CEE8, by age structure, 2015-2040

Source: Eurostat.

2.4. IMPLICATIONS

A number of recent developments in EU-CEE8, such as high GDP growth and rising wages and employment, suggest that there will be fewer push factors for emigration in the future. Moreover, the pull factors are not expected to be as strong as before, as differences in per capita income and unemployment rates have narrowed.

At the level of individual countries and regions, the differences are still marked. Emigration from countries such as Bulgaria and Romania is expected to continue and increase, especially in the younger age groups. One consequence of persistent emigration will be the shrinking and ageing of the population of the EU-CEE8 countries, with a few exceptions such as Slovenia and Slovakia, which are better positioned demographically. At the same time, several countries in the region have become net recipients of migrants, mainly from Ukraine and other countries in the east.

3. Determinants of wage growth

3.1. INFLATION DEVELOPMENTS

Real wage dynamics in the EU-CEE8 countries in recent years should be seen against the background of very low inflation or even deflation (Table 3.1). The price stability that prevailed until recently strengthens the purchasing power of wage earners, all other things being equal. However, it cannot explain the high nominal wage growth in countries such as Bulgaria and Romania, which underlies the relatively high increase in real wages.

The influence of inflation on wage setting can be significant only in the short term. For example, in theory, a sudden drop in inflation can have a positive effect on real wage growth in the short run, because any wage agreement would have been negotiated when inflation and inflationary expectations were still high. However, a look at Table 3.1 shows that this has hardly applied to the EU-CEE8 region in recent years. The biggest sudden drop in inflation was observed in Hungary in 2012-2013; but, as mentioned above, Hungary has also been the EU-CEE8 country with the lowest wage growth.

Despite the recent slight acceleration in inflation (mainly due to higher energy prices), current inflationary expectations are still likely to be relatively low. Of course, this also plays a role in wage settlements.

Table 3.1 / Consumer price inflation (annual average), in %

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|----------------|------|------|------|------|------|------|------|------|------|
| Bulgaria | 2.5 | 3.0 | 3.4 | 2.4 | 0.4 | -1.6 | -1.1 | -1.3 | 1.2 |
| Croatia | 2.2 | 1.1 | 2.2 | 3.4 | 2.3 | 0.2 | -0.3 | -0.6 | 1.3 |
| Czech Republic | 0.6 | 1.2 | 2.2 | 3.5 | 1.4 | 0.4 | 0.3 | 0.6 | 2.4 |
| Hungary | 4.0 | 4.7 | 3.9 | 5.7 | 1.7 | 0.0 | 0.1 | 0.4 | 2.4 |
| Poland | 4.0 | 2.6 | 3.9 | 3.7 | 0.8 | 0.1 | -0.7 | -0.2 | 1.6 |
| Romania | 5.6 | 6.1 | 5.8 | 3.4 | 3.2 | 1.4 | -0.4 | -1.1 | 1.1 |
| Slovakia | 0.9 | 0.7 | 4.1 | 3.7 | 1.5 | -0.1 | -0.3 | -0.5 | 1.4 |
| Slovenia | 0.8 | 2.1 | 2.1 | 2.8 | 1.9 | 0.4 | -0.8 | -0.2 | 1.6 |

Source: wiiw annual database based on Eurostat statistics.

3.2. THE ROLE OF MINIMUM WAGES

The weakness of the social partnership structures in the EU-CEE8 countries (for more on this, see Section 4) means that minimum wage regulations in those countries are important for the income situation of a large part of the employed population (Drahokoupil, 2016). The setting of minimum wages is increasingly coming to serve as a way for governments to control general wage developments and household demand, and to reduce income poverty, which is high in some countries (IMF, 2016). Their influence on the general wage level is mainly due to institutional factors and varies from country to country. In some EU-CEE8 countries (e.g. Romania), wages in the public sector are officially linked to the minimum wage. Thus, a minimum wage increase in those countries has an impact on the overall wage level that is higher than in those EU-CEE8 countries where this is not the case (e.g. Poland). In

Austria, as is well known, the institution of the statutory minimum wage does not exist, as is the case in some other corporatist welfare states (e.g. the Scandinavian countries and Italy). In Germany, a minimum wage was introduced for the first time in 2015.

Traditionally, the ratio of the minimum wage to the average wage in the EU-CEE8 (2008: 37% on average) has been much lower than in more prosperous EU countries (2008: 43% on average). Wage dispersion has thus been higher, especially in the lower income brackets. It is noteworthy that, especially from 2010 onwards, minimum wages in the Central and Eastern European region rose much more strongly than average wages, and approached the relative level seen in Western Europe (see Table 3.2).⁵ In Slovakia and the Czech Republic, however, minimum wages are still less than 40% of the average wage. The Slovenian government, on the other hand, set the statutory minimum wage in 2010, in the wake of the economic crisis, at the highest relative level in the EU: 51% of the average wage. An automatic annual indexation was also instituted.

Table 3.2 / Statutory minimum wage, gross per month

| | in EUR ¹⁾ | | as % of average wage ²⁾ | |
|----------------|----------------------|------|------------------------------------|------|
| | 2008 | 2016 | 2008 | 2016 |
| Bulgaria | 112 | 215 | 40 | 43 |
| Croatia | 380 | 408 | 36 | 40 |
| Poland | 313 | 434 | 39 | 46 |
| Romania | 139 | 232 | 30 | 42 |
| Slovakia | 241 | 405 | 35 | 39 |
| Slovenia | 539 | 791 | 41 | 51 |
| Czech Republic | 300 | 366 | 35 | 36 |
| Hungary | 272 | 351 | 39 | 45 |
| Germany | . | 1440 | . | 41 |
| France | 1280 | 1467 | 47 | 47 |
| United Kingdom | 1242 | 1512 | 38 | 44 |

Note: ¹⁾ As of 1 January. Croatia 1 July. ²⁾ Economic sectors NACE Rev. 2 B-S.

Source: Eurostat database.

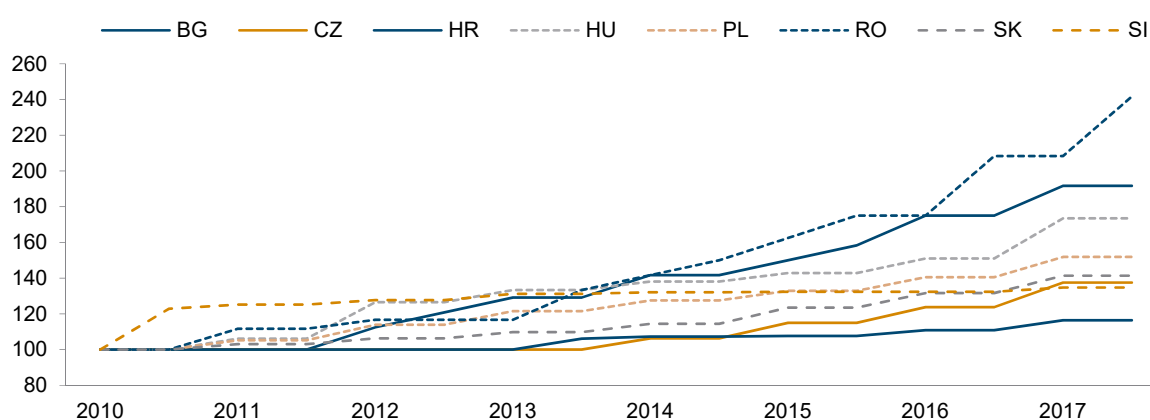
In addition to the direct microeconomic effects of minimum wages on employment security, they also have indirect macroeconomic effects. The dynamics of statutory minimum wages are related in particular to the government's general fiscal policy stance. As Figure 3.1 shows, all EU-CEE8 countries, for example, lowered their minimum wages in 2013 as part of the governments' austerity packages. Since 2014, however, there has been a trend reversal: most EU-CEE8 countries have significantly raised the minimum wage in several steps. This has accelerated general wage growth, which in turn has supported household consumer demand, and thus economic growth and employment. This indirect factor – which has had an impact on the reduction in the unemployment rate in the EU-CEE8 – is highlighted by wiiw (2016b). Of particular importance for this study is the proven influence of minimum wages on general wage developments. Based on calculations by the IMF (2016), an increase in minimum wages of 1% led to an increase in average wages of 0.15% for the EU-CEE8 as a whole over a period of two years.

⁵ The International Monetary Fund has described a level of 45% as definitely harmless with regard to possible negative employment effects (IMF, 2016). However, the results of the studies on possible negative employment effects are contradictory (Stoviček, 2013; IMF, 2016).

The largest increase in the minimum wage has been undertaken in Romania (38% since the beginning of 2016 alone), followed by Bulgaria. These two countries have also recorded the highest overall real wage growth in EU-CEE8. At the same time, however, Romania was also the country with the lowest minimum wage level in 2008 (30% of the average wage, Table 3.2) of all the EU-CEE8 countries, so that there was some scope for catching up. In Slovenia, on the other hand, where the minimum wage was originally the highest in relative terms, a particularly restrictive wage policy has been pursued: the minimum wage in that country is currently still close to the 2010 level (Figure 3.1).

Figure 3.1 / Nominal statutory minimum wage, gross per month

Index, January 2010=100



Source: Eurostat.

3.3. WAGE GROWTH AND LABOUR MARKET CONDITIONS

Unemployment and wage growth

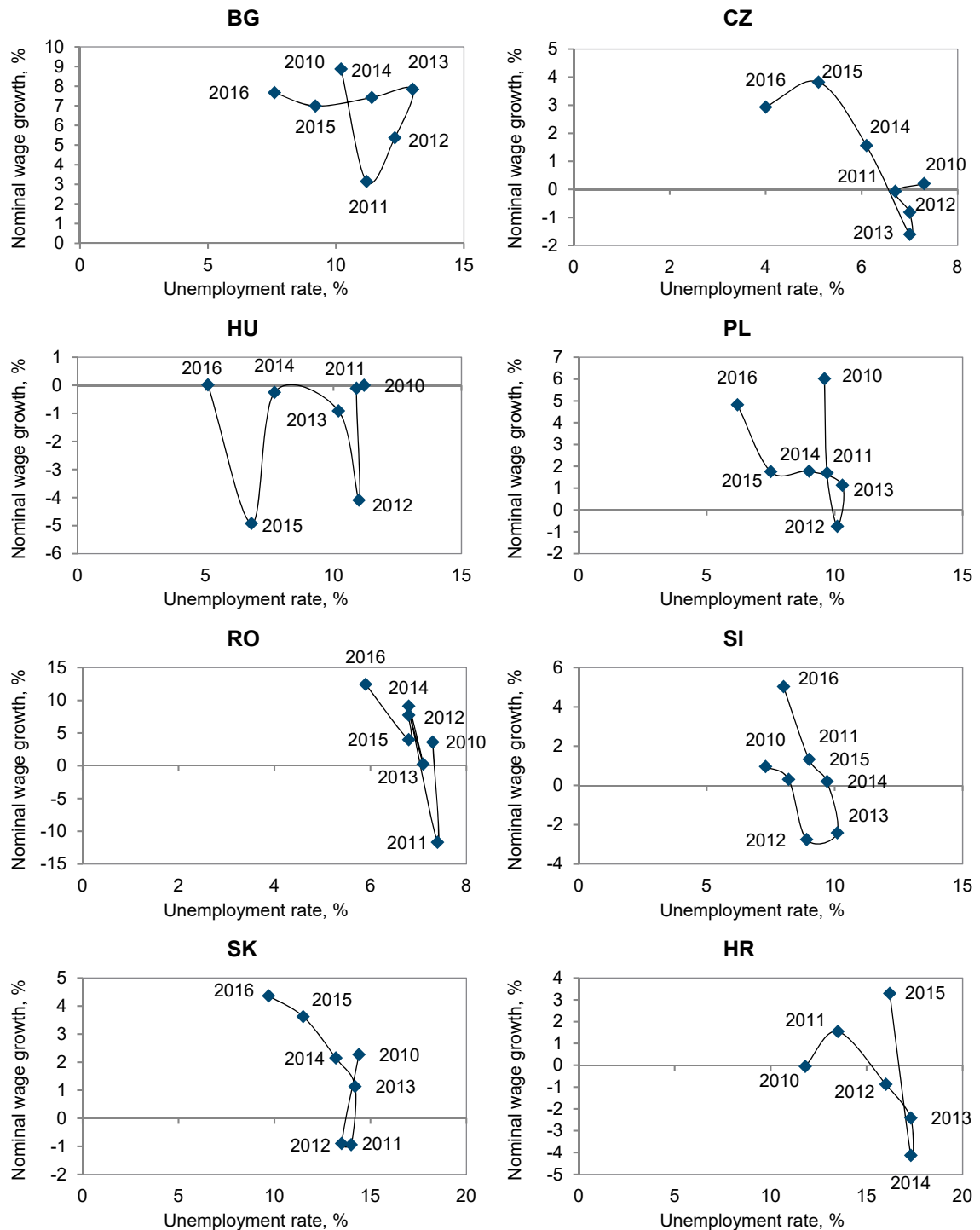
Wage dynamics in the EU-CEE8 countries must also be seen against the background of the general improvement in labour market conditions in recent years. As discussed in Section 2, unemployment has fallen across the region, in some cases significantly. In theory, this should improve the bargaining power of workers. The question therefore arises as to why wage growth in most EU-CEE8 countries – with a few exceptions, such as Bulgaria and Romania – has been relatively subdued, despite the improvement in labour markets, and why the wage share has barely risen (see Section 1.7).

The so-called ‘Phillips curve’ shows the relationship between the level of unemployment and *nominal* wage growth (Phillips, 1958). In the ‘classic’ Phillips curve, this correlation is negative (i.e. the curve runs from top left to bottom right). The causality between the two indicators can go in either direction. On the one hand, if the unemployment rate falls, bargaining power can be expected to shift in favour of workers, which should lead to better wage settlements. On the other hand, it is also conceivable that higher nominal wages – if they are not (or not entirely) ‘eaten up’ by higher inflation – will drive private consumption and GDP growth, and thus contribute to a decline in the unemployment rate.

However, this demand-side effect, which suggests a negative relationship between wage growth and unemployment, may be countered by a supply-side effect, which might run in the opposite direction (i.e.

result even in a positive relationship between nominal wage growth and unemployment). It is conceivable, for example, that if labour costs go up, entrepreneurs may be forced to lay workers off, which may lead to an increase in unemployment.

Figure 3.2 / Nominal wage growth and unemployment rate (Labour Force Survey), in %



Note: Nominal wage growth based on national accounts statistics.

Source: wiiw annual database based on Eurostat statistics.

Until the early 1970s, the Phillips curve in developed countries such as the USA or Western Europe had the 'classic' downward slope, suggesting a trade-off between wage growth/inflation and unemployment in practical economic policy. But in subsequent years, and especially after the oil crises of the 1970s, this negative statistically significant correlation ceased. In recent years, the classic Phillips curve has hardly been seen in developed countries (European Commission, 2017b). Nor is the classic curve much in evidence in the EU-CEE8 countries (see Figure 3.2).

Unemployment and unit labour costs

An alternative to the classical Phillips curve is to empirically identify the relationship between unemployment and nominal unit labour costs (instead of wages) for each EU-CEE8 country over time (see Box 3.1 for a methodological explanation). It is conceivable, for example, that higher wages do not necessarily automatically translate into higher labour costs, if labour productivity also increases and unit labour costs remain constant.

BOX 3.1 / UNEMPLOYMENT AND UNIT LABOUR COSTS: ECONOMETRIC METHODOLOGY

One way to capture the above-mentioned theoretical effects underlying the Phillips curve is via econometric Vector Auto Regression (VAR) estimation, which takes account of endogeneity and dynamic effects.

The following VAR model was estimated:

$$d(U)_t = a_0 + a_1 d(W)_{t-1} + a_2 d(U)_{t-1} + u_t$$

$$d(W)_t = c_0 + c_1 d(U)_{t-1} + c_2 d(W)_{t-1} + v_t,$$

where $d(U)$ is the change in the unemployment rate and $d(W)$ is the change in nominal unit labour costs. For almost all countries, the optimal lag length proved to be 1, i.e. both $d(U)$ and $d(W)$ are best explained by $d(U(-1))$ and $d(W(-1))$ and the constant. The data are taken from the EU AMECO database.

Table 3.3 summarises the results of the estimates for 2000-2017. The coefficient reflecting the impact of unemployment on the level of unit labour costs (in the following period) (c_1) is, as expected, clearly negative for most EU-CEE8 countries, with the exception of Romania and Slovakia.⁶ However, it is statistically significant only for the Czech Republic and Slovenia (the most developed of EU-CEE8), and for the selected developed countries, including Austria, which are also presented in Table 3.3. (In Slovenia, the coefficient c_1 is particularly high: a 1% fall in the unemployment rate causes unit labour costs to rise by 1.7%.) This may indicate that the Phillips curve mechanism, which transmits declining unemployment to wage growth (measured in terms of unit labour costs), is not yet mature in the less-developed EU-CEE8 countries.

⁶ In the case of Romania, the positive coefficient could be due to the existence of a large traditional agricultural sector, which may feed unemployment, irrespective of what happens to wages and unit labour costs in the other sectors. Moreover, the mechanism of the Phillips curve in Romania may be overshadowed by other dominant factors, such as the rapid increase in minimum wages (not included in the model).

The second coefficient (a_1), which reflects the impact of changes in unit labour costs on the level of unemployment in the following period, is positive and statistically significant in most EU-CEE8 countries (Table 3.3). This could be seen as confirmation of the above-mentioned supply-side mechanism, by which enterprises respond to wage cost increases with redundancies.

Table 3.3 / Unemployment and nominal unit labour costs: estimation results for 2000-2017

| | a_1 | c_1 |
|----------------|--------------|---------------|
| Bulgaria | 0.245 | -0.196 |
| Croatia | 0.266 | -0.731 |
| Czech Republic | 0.273 | -0.707 |
| Poland | 0.306 | -0.358 |
| Romania | 0.073 | 1.397 |
| Slovenia | 0.147 | -1.703 |
| Slovakia | 0.296 | 0.079 |
| Hungary | 0.081 | -0.416 |
| Austria | 0.070 | -1.673 |
| Germany | 0.041 | -1.422 |
| France | 0.426 | -0.904 |
| USA | 0.803 | -0.764 |

Note: The bold coefficients are statistically significant at 5%.

Source: Own calculations.

Unemployment and the wage share

Finally, the relationship between unemployment and the wage share in the EU-CEE8 countries was also examined econometrically. Unlike wage growth, the wage share is also affected by the level of employment. An increase in employment – such as has been seen in most EU-CEE8 countries in recent years – leads to an increase in the wage bill, even if wages remain constant. But the higher wage bill does not automatically lead to an increase in the wage share, if GDP rises even faster than the wage bill. Even if falling unemployment, combined with rising wages, leads to an increase in the wage share in a given year, it is by no means clear that this increase will not later be undermined.

The results of the econometric estimates for 2000-2017, methodologically similar to the estimate of the relationship between unemployment and unit labour costs (see Box 3.1),⁷ are presented in Table 3.4. (For a detailed description of the dynamic effects within the model – i.e. the impulse-response function for the Czech Republic – see Box 3.2.)

As can be seen from Table 3.4, in the EU-CEE8 countries – in contrast to Austria or Germany, for example – there is scarcely any positive effect of the falling unemployment rate on the wage share in the subsequent period. The respective coefficient is nowhere significant, with the exception of the special case of Romania. Instead, in several EU-CEE8 countries the rising wage share certainly does have a positive effect on the unemployment rate (in the subsequent period). Overall, these results are in line with those mentioned above.

⁷ Instead of nominal unit labour costs, another variable, the wage share (s), is used. Unlike Box 3.1, the optimal lag length varies between 1 and 4, depending on the country.

Table 3.4 / Unemployment and the wage share: estimation results for 2000-2017

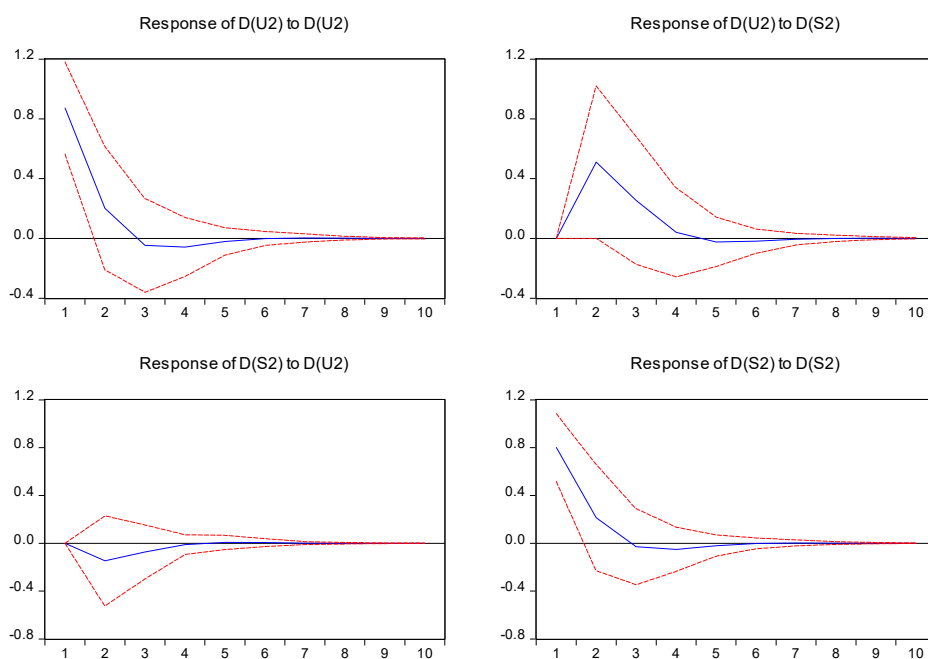
| | a₁ | c₁ |
|----------------|----------------------|----------------------|
| Bulgaria | 0.302 | -0.083 |
| Croatia | 0.347 | -0.222 |
| Czech Republic | 0.637 | -0.169 |
| Poland | 0.698 | -0.225 |
| Romania | 0.206 | -0.549* |
| Slovenia | 0.345 | -0.480 |
| Slovakia | 0.494 | -0.148 |
| Hungary | 0.361 | -0.075 |
| Austria | 0.102 | -0.856 |
| Germany | -0.472 | -1.276** |

Note: The bold coefficients are statistically significant at 5%. * Sum of two statistically significant coefficients for the first and fourth lag. ** Coefficient for the second lag with the highest statistical significance.

Source: Own calculations.

BOX 3.2 / IMPULSE-RESPONSE FUNCTION, USING THE EXAMPLE OF THE CZECH REPUBLIC

Box Figure 3.1 / Response to non-factorised one S.D. innovations ± 2 S.E



Note: The blue line indicates the impulse-response function, the red dotted lines the confidence interval based on two standard errors in either direction.

Two panels are relevant for the current analysis: the upper right and the lower left. The first panel shows that a positive shock to the wage share leads to an increase in unemployment in the three years thereafter, with the largest increase in the second year. The latter panel shows that a positive shock to the unemployment rate has only a small but otherwise widely dispersed impact on the wage share. Over time, the shocks diminish and eventually disappear.

3.4. CONCLUSION

In general, it can be said that – unlike in Germany or Austria – the transmission mechanism underlying the Phillips curve is hardly present in most EU-CEE8 countries. The improvement in labour market conditions in these countries – with the exception of the relatively advanced Czech Republic and Slovenia – has not led to higher wage settlements. Instead, the opposite seems to have occurred: higher wage settlements, for whatever reason (e.g. thanks to minimum wage hikes – for more on that, see below), have slowed the decline in unemployment, presumably due to redundancies in response to increased labour costs. This means that without this effect, the improvement in labour market conditions in most EU-CEE8 countries would have been even more impressive than it actually was.

Rather than improved labour market conditions, it was the hikes in the statutory minimum wage that were an important factor behind the overall wage developments in the EU-CEE8 countries. The majority of EU-CEE8 governments have used minimum wage hikes as a means of combating income inequality and stimulating domestic demand in recent years. At the same time, the rises have not placed a heavy burden on government budgets. The throughput effect of the minimum wage hikes on the rise in the overall wage level has been proven. However, this effect is smaller than that of collective bargaining in a leading sector in corporatist systems, such as Austria's.

4. Institutional factors of wage developments

The following section presents some of the institutional framework conditions of the labour markets in the EU-CEE8 that are important for wage formation; we also compare the situation in Austria. Obviously, the possibility of collective wage setting improves the bargaining position of individual workers, reduces wage dispersion and leads to more stable income dynamics, even in times of economic downturn (Sections 4.1 and 4.2). The design of employment and social protection (Sections 4.3 and 4.4) has a major influence on reservation wages, and thus on the levels of unemployment and wages. With lower social protection, the unemployed are forced to take up employment more quickly, whatever the conditions. This could be a further reason why unemployment in EU-CEE8 has fallen more than in Austria in recent years, but wage increases have remained relatively subdued. The greater importance of the informal sector in the EU-CEE8 (Section 4.5) may have an impact on the documented wage developments in several respects. Finally, in Hungary there is a specific case of direct government intervention in the labour market (Section 4.6), where the duration of receipt of unemployment benefits is linked to participation in municipal employment programmes. The relative size of the second labour market thus created in Hungary (compared to other countries) is important for the wage developments, especially of poorly educated workers.

4.1. THE DEVELOPMENT OF SOCIAL DIALOGUE

In most countries of Northern and Western Europe, wage policy is shaped by institutionalised, well-developed social dialogue. Employers' associations and trade unions, especially in Austria, usually agree on wages and working conditions in the form of collective agreements at the level of the economic sector. By contrast, in most EU-CEE8 countries wages are set at company level. Only in Slovenia are collective agreements reached at sectoral level. In Slovakia, Croatia and Bulgaria, there is a mixed system, in which wages in certain industries are set at sectoral level; in other countries, they are negotiated only at company level (European Commission, 2015a, 2016b, 2016c; Visser, 2016). Slovenia is the only country in which individual sectors coordinate wage negotiations, e.g. trade and tourism, the metal and electrical industries, foundries, paper producers and graphic companies. However, there is no wage leadership in a particular sector. Nor is there any evidence of wage leadership in wage agreements at individual companies in the EU-CEE8 (Eurofound, 2017).

In general, the decentralisation of wage negotiations gained momentum as a result of the economic crisis in the EU countries (Eurofound, 2014, 2016). In the EU-CEE8, the most significant structural changes have taken place in Romania, Slovenia and Slovakia. In Romania, collective bargaining at the national level – a practice that was prevalent in earlier years – was abolished in 2011. In addition, negotiations at sectoral level have fallen sharply, as the law has placed severe restrictions on employers' and workers' organisations reaching collective agreements that are generally binding on all employees in a sector. At company level, trade unions can only enter into negotiations if the absolute majority of employees are trade union members. As a result, the share of employment relationships governed by collective agreements has declined sharply within a short space of time (see Table 4.1 below). According to an International Labour Organization study, these changes in the framework

conditions have had a negative impact on wages and working conditions in Romania (Chivu et al., 2013; Glassner, 2013).

Until the early 2000s, Slovenia had a social partnership system with a high degree of organisation among workers and employers. Employment contracts were almost always governed by collective agreements. But the last decade has seen significant changes: while collective agreements continue to be centrally negotiated in the public sector, wage negotiations in the private sector have increasingly shifted to enterprise level. With the introduction of flexibility clauses as part of the 2013 labour market reforms, collective agreements at company level (e.g. with respect to working hours) can also involve unfavourable deviations from statutory regulations.

Table 4.1 / Coverage by collective agreements

Share of employees whose employment contract is subject to a valid collective agreement, in %

| | 2000 | 2008 | 2013 |
|----------------|-----------|-----------|-----------|
| Bulgaria | 40 | 35 | 29 |
| Croatia | . | 60 | 53 |
| Poland | 25 | 16 | 15 |
| Romania | 98 | 98 | 35 |
| Slovakia | 51 | 40 | 25 |
| Slovenia | 100 | 92 | 65 |
| Czech Republic | 48 | 50 | 47 |
| Hungary | 37 | 37 | 23 |
| Austria | 98 | 98 | 98 |
| Germany | 68 | 61 | 58 |
| France | 98 | 98 | 98 |
| United Kingdom | 36 | 34 | 30 |
| Greece | 90 | 88 | 59 |
| Italy | 80 | 80 | 80 |
| Portugal | 79 | 84 | 72 |
| Spain | 85 | 81 | 80 |

Note: In some countries, due to lack of data availability for the years indicated, the information for the nearest year has been used.

Source: Visser (2016).

In Slovakia, there has been a struggle in recent years over collective agreements that are universally binding for all employees in a sector. Prior to 2006, such agreements could be reached voluntarily, but then the social democratic government decided to allow the Ministry of Labour and Social Affairs to issue universal, binding declarations from 2007. In 2010, the regulation was abolished by the incoming conservative government, only to be reintroduced in 2013 by a new social democratic government. Nevertheless, the number of collective agreements, especially at sectoral level, is declining due to the increasing fragmentation of interest groups on the side of both employers and employees.

In the years since 2000, the proportion of those whose employment is based on a collective agreement has fallen steadily in the EU-CEE8. Whereas in Austria, collective agreements cover almost all employment contracts (as in the Scandinavian countries), in the EU-CEE8 in 2013 the share ranged from 15% in Poland to 65% in Slovenia. In most Northern and Western European countries,⁸ the

⁸ This includes Denmark, Finland, France, Italy, the Netherlands, Austria and Sweden (Visser, 2016).

coverage of employees by collective agreements has remained relatively stable compared to the EU-CEE8. However, a decline could be observed in the UK and in Greece in the wake of the economic crisis. But this was also the case in Germany: the share of employment contracts covered by collective agreements fell from 68% in the early 2000s to 58% in 2013. In many of the countries considered, the coverage by collective agreements is very different in the public and in the private sector: in the public sector in Slovenia and Croatia, it is still almost 100%, whereas in the private sector in 2013 it was only around 45% in Slovenia and 36% in Croatia.

4.2. DEGREE OF UNIONISATION

Shifting negotiations from sectoral to company level usually weakens the bargaining power of trade unions. It is therefore not surprising that the trend towards liberalising labour legislation should also have been accompanied by a decline in the degree of union organisation in most EU countries. As is shown in Table 4.2, the rate of organised labour fell in all EU-CEE8 countries – from an average of 31% in 2000 to 17% in 2013. The sharpest falls have occurred in Romania and Slovenia (due to the break-up of the collective agreement structure in those two countries). But during this period, trade union density fell by more than 15 percentage points in Hungary, Slovakia and the Czech Republic, too.

Table 4.2 / Level of unionisation

Share of trade union members in total employees, in %

| | 2000 | 2008 | 2013 |
|----------------|-----------|-----------|-----------|
| Bulgaria | 23 | 17 | 18 |
| Croatia | 37 | 34 | 31 |
| Poland | 18 | 16 | 13 |
| Romania | 45 | 36 | 20 |
| Slovakia | 32 | 17 | 13 |
| Slovenia | 42 | 27 | 21 |
| Czech Republic | 27 | 17 | 12 |
| Hungary | 28 | 15 | 11 |
| Austria | 37 | 29 | 27 |
| Germany | 25 | 19 | 18 |
| France | 8 | 8 | 8 |
| United Kingdom | 30 | 27 | 26 |
| Italy | 35 | 34 | 37 |

Note: In some countries, due to lack of data availability for the years indicated, the information for the nearest year has been used.

Source: Visser (2016).

In parallel with the low level of employee organisation in the EU-CEE8, the proportion of enterprises that belong to employers' organisations is also relatively low – i.e. below 40% – and has fallen sharply in Romania and Slovenia, as a result of the reforms of recent years. According to Visser (2016), in Slovenia, where membership was compulsory until 2007, by 2013 only 60% of employees worked in companies that belonged to an association. The declining degree of organisation of employers makes it difficult for employee organisations to find representative partners for collective agreements. It is therefore less likely that a sector-wide agreement with general validity can be reached.

4.3. EMPLOYMENT PROTECTION

During the economic crisis of 2008-2009, the European Commission began to exert more political pressure over employment protection regulations. Among other things, this was triggered by rising unemployment. The liberalisation of labour legislation was particularly recommended to Southern and Eastern European member states. The argument was that reducing the costs associated with terminating employment increases employer flexibility, which should lead to an increase in new hires (European Commission, 2016a). In the EU-CEE8 countries, protection for permanent employees fell between 2008 and 2013, according to the Organisation for Economic Co-operation and Development (OECD) employment protection indicators (see Table 4.3). This was especially the case in Slovenia, Slovakia and (to a lesser extent) the Czech Republic. In the Czech Republic and Croatia, protection against dismissal is stricter than in Austria; in Hungary and Slovakia it is more liberal. The regulations governing mass layoffs have been tightened in Hungary and relaxed in Slovakia. At the same time, protection against dismissal for temporary employees has been extended in Slovakia and the Czech Republic, but has become more circumscribed in Slovenia.

A recent OECD analysis on the liberalisation of employment protection shows that the reduction in employment protection has led to an increase in unemployment in the short term; but in the medium term, especially in Slovenia, the share of permanent contracts in employment has increased. Overall, the easing of employment protection has led to greater wage flexibility downwards and weaker wage dynamics at times of rising employment. In the medium term, the OECD also expects positive effects on employment levels, but does not take into account secondary macroeconomic effects (OECD, 2016).

Table 4.3 / OECD employment protection indicators

| | Individual dismissals permanent employment | | Mass layoffs | | Temporary employment | |
|------------------------|---|------------|--------------|------------|-------------------------|------------|
| | 2008 | 2013 | 2008 | 2013 | 2008 | 2013 |
| Croatia ¹⁾ | . | 2.3 | . | 2.3 | . | 2.9 |
| Poland | 2.2 | 2.2 | 2.9 | 2.9 | 2.3 | 2.3 |
| Slovakia | 2.2 | 1.8 | 3.8 | 3.4 | 2.2 | 2.4 |
| Slovenia ²⁾ | 2.4 | 2.0 | 3.4 | 3.4 | 2.5 | 2.1 |
| Czech Republic | 3.0 | 2.9 | 2.1 | 2.1 | 1.9 | 2.1 |
| Hungary | 1.8 | 1.5 | 3.4 | 3.6 | 1.9 | 2.0 |
| Austria | 2.1 | 2.1 | 3.3 | 3.3 | 2.2 | 2.2 |
| Germany | 2.5 | 2.5 | 3.6 | 3.6 | 1.5 | 1.8 |

Notes: ¹⁾ Data for 2015 instead of 2013; ²⁾ Data for 2014 instead of 2013.

Source: OECD Employment Protection Legislation Database.

4.4. UNEMPLOYMENT BENEFITS AND SOCIAL ASSISTANCE

Unemployment benefit schemes vary from country to country, in particular with respect to the minimum duration of previous employment subject to compulsory insurance, the maximum period of eligibility, and the amount of unemployment benefit in relation to previous earnings (net replacement rate). The level and maximum duration of benefits are usually more favourable for older employees. Table 4.4 gives a brief overview of the income replacement rates for the unemployed in the EU-CEE8 countries, Austria

and Germany for varying durations of unemployment. Data for 2008 and 2016 are presented, in order to show the changes in recent years.

Table 4.4 / Net replacement rates through social assistance

for single households with average earnings before job loss

| | Unemployment benefit | | | | | | Unemployment benefit, housing allowance & social assistance | | | | | |
|----------------|--------------------------|-----------|-----------|-----------|-----------|-----------|--|-----------|-----------|-----------|-----------|-----------|
| | Duration of unemployment | | | | | | Duration of unemployment | | | | | |
| | 2 months | | 7 months | | 13 months | | 2 months | | 7 months | | 13 months | |
| | 2008 | 2016 | 2008 | 2016 | 2008 | 2016 | 2008 | 2016 | 2008 | 2016 | 2008 | 2016 |
| Bulgaria | 47 | 77 | 47 | 77 | 6 | 0 | 47 | 77 | 47 | 77 | 15 | 10 |
| Croatia | . | 75 | . | 37 | . | 37 | . | 75 | . | 37 | . | 37 |
| Poland | 29 | 30 | 29 | 24 | 0 | 0 | 45 | 46 | 45 | 41 | 24 | 23 |
| Romania | 43 | 31 | 43 | 31 | 0 | 0 | 43 | 31 | 43 | 31 | 8 | 7 |
| Slovakia | 65 | 65 | 0 | 0 | 0 | 0 | 65 | 65 | 19 | 17 | 19 | 17 |
| Slovenia | 64 | 66 | 64 | 66 | 0 | 0 | 64 | 66 | 64 | 66 | 33 | 35 |
| Czech Republic | 50 | 65 | 0 | 0 | 0 | 0 | 53 | 72 | 30 | 37 | 30 | 37 |
| Hungary | 59 | 45 | 31 | 0 | 0 | 0 | 59 | 45 | 33 | 12 | 24 | 12 |
| Austria | 55 | 55 | 55 | 55 | 51 | 51 | 55 | 55 | 55 | 55 | 51 | 51 |
| Germany | 60 | 59 | 60 | 59 | 26 | 17 | 60 | 59 | 60 | 59 | 44 | 30 |

Note: The table shows the income from state aid to one-person households in relation to net income before job loss for average earners. The first six columns show the ratio of income from unemployment benefits for 2-month, 7-month and 13-month spells of unemployment. The right-most six columns show the net replacement rates from three types of benefits: unemployment benefit, housing allowance and social assistance.

Source: DG ECFIN - Tax and benefits indicators database, February 2018.

A significant difference between Austria and EU-CEE8 is that in the latter, the maximum duration of unemployment benefit is much shorter: after 13 months of unemployment only in Croatia is unemployment benefit available – and then the replacement rate is only 37%. Meanwhile, in Austria the replacement rate is 51% (although in Germany, following the cuts in 2008, it is only 17%, with an additional 13% from social assistance).

The main change regarding unemployment benefits in EU-CEE8 was the 2012 reduction by the Hungarian government in the maximum period of eligibility to three months. In the Czech Republic, the period of eligibility remains unchanged at five months, and in Slovakia – six months. In all other EU-CEE8 countries, the support period is between 9 and 14 months (Croatia) (European Commission, 2015b). In Hungary and Romania, the level of unemployment benefits was also cut; a significant increase was recorded in Bulgaria, and a slight increase in Poland and the Czech Republic. The data on net replacement rates from additional benefits, in particular social assistance, show that the welfare state network is very loose in most EU-CEE8 countries.

A comparative study carried out by the European Social Policy Network (ESPN) in 2016 assesses the level of basic income from social assistance and similar benefits in most EU-CEE8 countries as very inadequate for securing a livelihood. Based on 2013 data, social assistance for single-person households was less than 30% of the poverty line (according to the EU definition of 60% of the national median income) in Bulgaria, Poland and Romania; in Slovakia, the figure was 35%; in Hungary and Slovenia between 40% and 60%; and in the Czech Republic, the estimated level was 67% – just below

the Austrian level of 74%. In all countries, the basic income through social assistance is higher in relation to the poverty line in the case of families with children. Eligibility for social assistance in Bulgaria, Romania and Croatia is very limited. Between 2009 and 2015, the basic provision in terms of eligibility and level has deteriorated, particularly in Romania and Hungary, while improvements have been made in Slovenia, Croatia and Poland (Frazer and Marlier, 2016).

The relatively low (compared to Austria) net replacement rates for the unemployed in the EU-CEE8 countries, especially in the case of longer-term unemployment, mean that the unemployed are forced to take employment sooner, regardless of the conditions. This also means that, after phases of rising unemployment – such as after the start of the economic crisis – a more rapid decline in unemployment rates is to be expected, and accelerated wage development only occurs with some delay.

4.5. INFORMAL SECTOR

The term informal (or shadow) economy refers to economic activities that are carried out informally, mostly to avoid taxes. This is very different from the definition of informal employment. The latter includes employed persons (also in family businesses) and self-employed persons who are economically active without an employment contract, and thus also without social security. Schneider (2015) estimates the size of the informal economy in Bulgaria and Romania at about 30% of the official gross domestic product in 2015 (see Table 4.5). At 23% on average, the level of the shadow economy in the EU-CEE8 countries is about 8 percentage points higher than in other EU states. Schneider (2015) estimates that the shadow economy in the EU has reduced noticeably in size since 2003, and that the volume of informal activities has not increased as a result of the economic crisis. In his study of informal employment, Hazans (2011a, 2011b) comes to a slightly different conclusion in terms of country rankings. Using survey data from the European Social Survey (ESS), he finds that informal employment is increasingly prevalent in certain sectors, such as agriculture (particularly at harvest time), tourism, construction, and household services. Hazans (2011a) finds the highest rates of informal employment among migrants in Southern European countries.

Table 4.5 / Estimation of the informal sector in a country comparison

| | Informal economy as % of GDP | | informal employment, as % of the active population |
|----------------|------------------------------|----------|---|
| | 2003 | 2015 | 2007/2009 |
| Bulgaria | 36 | 31 | 13 |
| Croatia | 32 | 28 | . |
| Czech Republic | 20 | 15 | 13 |
| Hungary | 25 | 22 | 9 |
| Poland | 28 | 23 | 22 |
| Romania | 34 | 28 | 12 |
| Slovenia | 27 | 23 | 14 |
| Slovakia | 18 | 14 | 12 |
| EU-CEE8 | 27 | 23 | 12 |
| Austria | 11 | 8 | 20 |
| Germany | 17 | 12 | 12 |

Source: Schneider (2015), Hazans (2011a).

By combining the two statistics, the nature of informal activity in EU-CEE8 can be understood better. The avoidance of the tax burden in some of these countries is increasingly achieved by so-called 'envelope payments' – people are officially employed on a low wage, while a portion of their wages is handed over in cash. At the same time, however, studies show that this practice has declined sharply in the last decade, especially in those EU-CEE8 where it was most widespread, such as Romania, Bulgaria and Poland (Horodnic, 2016).

The extent of informal activity has little impact on the official unemployment rate, according to the EU Labour Force Survey. This only asks about the extent of employment: no supplementary questions are asked about work in the formal or informal sector. If individuals switch between the two, this does not lead to any change in the unemployment rate. However, the documented wage evolution varies, depending on the relative share of income from formal work.

In EU-CEE8, (potentially) unemployed people were less inclined to respond to the fall in demand in the wake of the economic crisis by moving into classic sectors of the subsistence economy (e.g. agriculture). Instead of hidden unemployment, we find adjustments via 'envelope payments' and wage reductions. Moreover, in the EU-CEE8 there was a stronger emigration of job seekers than in Southern Europe, for example. Only in Hungary (see Section 4.6) was a state subsistence sector created through direct employment programmes.

4.6. MEASURES FOR DIRECT JOB CREATION

Active labour market policy measures include packages to improve the skills of job seekers or provide incentives to take up employment. One form of active labour market policy is the direct creation of jobs (especially for hard-to-place people) for charitable or socially useful purposes. These jobs would not otherwise exist without state intervention. If employment schemes are implemented on a large scale and the receipt of welfare benefits is closely linked to compulsory participation, this undoubtedly has an impact on reservation wages and thus on overall wage developments.

As Table 4.6 shows, the number of persons employed in this way in most EU-CEE8 countries accounts for less than 0.5% of the labour force (the sum of the employed and the unemployed).

Table 4.6 / Ratio of persons participating in direct employment programmes to total number of employees, in %

| | 2005 | 2010 | 2015 |
|----------------|-------------|-------------|-------------|
| Bulgaria | 1.98 | 0.59 | 0.33 |
| Czech Republic | 0.20 | 0.27 | 0.37 |
| Germany | 0.79 | 0.71 | 0.25 |
| Croatia | . | . | 0.25 |
| Hungary | . | 2.77 | 5.23 |
| Austria | 0.15 | 0.21 | 0.20 |
| Poland | 0.07 | 0.11 | 0.07 |
| Romania | 0.27 | 0.09 | 0.02 |
| Slovenia | 0.38 | 0.50 | 0.39 |
| Slovakia | 4.82 | 1.83 | 0.62 |

Source: Eurostat, own calculations.

BOX 4.1 / PUBLIC EMPLOYMENT PROGRAMME IN HUNGARY⁹

The public employment programme was introduced in Hungary in 2011, after the Orbán government took office. The rationale was that the long-term unemployed should be integrated into the labour market through activating measures. In short, it obliges the long-term unemployed to carry out allocated 'charitable activities', under the threat of the withdrawal of state aid. All persons who have been unemployed for more than three months can be covered by this measure; thus, it includes all those who stand little chance in the primary labour market due to their age, education, health or other circumstances and cannot find employment. In addition, a marginalised group of Hungarian society is particularly affected: Roma in rural and backward regions.

The programme comprises the following key elements:

- › It provides temporary employment for 12 months, though this may be extended by a further 6 months.
- › The remuneration for this type of work is much lower than the minimum wage. This puts pressure on the salaries of workers in the low-wage segment of the primary labour market.
- › Employees who carry out these assigned jobs are covered by social security and pension insurance, and their pay is higher than social assistance. At the same time, however (see Section 4.4), social assistance has been reduced to a level that is not adequate for subsistence.
- › The assigned community service work must be accepted, regardless of the qualifications and previous experience of the unemployed person, if the withdrawal of state aid is to be avoided.
- › Community service work includes employment in local institutions, activities on small projects (e.g. agriculture, road maintenance) or national public employment schemes (inland water drainage, sewerage maintenance, agricultural water supply, forest management, etc.).

In recent years, the number of people employed under the programme has increased significantly. Between 2011 and 2016, the number of registered participants rose from 75,810 to 223,469. In 2017, a slight decrease (to 179,492) was recorded for the first time. Those employed in the programme are typically men, people aged 26-50 and with at most primary education. One of the direct effects of the measure was that in 2016 only about 50% of the unemployed received state unemployment benefits. Marginalised groups in Hungarian society (in particular Roma) are obliged to accept employment in the secondary labour market created by the government, in order to secure their livelihoods. This type of direct employment measure is generally considered ineffective in terms of sustainably improving the labour market situation of the long-term unemployed; moreover, in the case of Hungary, the programme has come in for criticism on account of its negative impact on low wage earners and the Roma (see Byrne, 2015).

An outlier in this respect is Hungary (see Box 4.1), where in 2011 the government decided to link the receipt of unemployment benefits from the third month onwards to an obligation to participate in public employment programmes. A similarly intensive use of a direct state employment programme was made by the Slovak government in the mid-2000s. It turned out, however, that not only was this programme

⁹ <https://kozfojlalkoztatas.kormany.hu/information-on-the-current-status-of-public-work-scheme-pws-in-hungary>

very cost intensive, but it did nothing to improve the labour market chances of participants (compared to unemployed people who were not involved) – and in some cases even reduced them (OECD, 2014; Harvan, 2010). In general, direct employment measures are described in the literature as a rather ineffective instrument for increasing the employment chances of participants in the longer term (Card et al., 2010). A secondary, precarious labour market often emerges; meanwhile, relatively few unemployed participants in direct employment programmes manage to switch over to the primary labour market, and the simple activities provided by the employment programmes mean that qualified participants tend to lose their skills.

4.7. CONCLUSION

Analysis of the institutional framework conditions of the labour markets of the EU-CEE8 countries has shown that collective-bargaining mechanisms are much weaker than, for example, in Austria. Although social partnership structures have also come under strong pressure in Southern Europe, the situation there (e.g. with regard to collective-bargaining coverage – see Section 4.1) is, with the exception of Greece, much more stable than in EU-CEE8. Moreover, in some of the EU-CEE8 countries steps were taken in the course of the economic crisis to further liberalise labour market regulations. In both Romania and Slovenia, collective bargaining at both national and sectoral level has been severely circumscribed. In Hungary and Bulgaria, too, the coverage rate of collective agreements fell from around 40% to below 30%. These liberalisations were accompanied by a reduced degree of organisation among both employees and employers. Such developments have contributed to a weakening of the bargaining position of workers and can explain the less dynamic wage growth (relative to productivity growth) in EU-CEE8 than in Western European countries.

The maximum duration of unemployment benefits in the EU-CEE8 countries is considerably shorter than in Austria. Replacement rates (including other forms of social assistance) are much lower and do not provide a livelihood. Thus, the reservation wage of those seeking employment is considerably lower. There has been a sharp reduction in the duration and amount of unemployment benefits, combined – particularly in Hungary – with an obligation to accept work on municipal projects. These measures have created a secondary labour market, which has a direct negative effect on the wages of poorly educated people, in particular. In general, the lower social security for unemployed persons – especially in the event of longer spells of unemployment – favours a more rapid decline in unemployment rates in the EU-CEE8 than in Austria. At the same time, wage increases are delayed during the subsequent economic upturn.

The shadow economy in EU-CEE8 is much larger than in Western Europe, and especially Austria. However, it has shrunk since the beginning of the 2000s. The documented unemployment rates based on the EU Labour Force Survey remain virtually unaffected by the size of the shadow economy, as people working in the informal sector are recorded as being employed, rather than unemployed. However, a large informal sector, especially in the form of untaxed additional payments to employees – as is still widespread in some EU-CEE8 countries – tends to have a negative impact on the documented wage level. The actual income of employees is thus higher than the official wage statistics of companies might suggest.

5. Policy recommendations

The aim of this study has been to analyse wage developments in the eight EU member states of Central and Eastern Europe – countries that are important to Austria. Although average real gross hourly wages stagnated after the beginning of the global financial and economic crisis, a positive dynamic has emerged in recent years. Since countries with lower wages have experienced above-average growth, there has also been a general convergence of wage levels in recent years.

In macroeconomic terms, the wage increases of recent years have had only positive effects. In principle, wage increases in excess of productivity growth carry the risk of balance-of-payments difficulties. However, most EU-CEE8 countries have pronounced and competitive export industries, which, driven by demand in the wake of the upswing in Western Europe, can offset any consumption-driven negative effects of rising wages on the balance of payments. Consequently, no balance-of-payments difficulties are expected, at least in the short to medium term. Bulgaria could be an exception, as wage increases there have been well above productivity growth, and its export sector is weak. Moreover, Bulgaria's trade deficit was 20% of GDP before the crisis. Although this deficit was eliminated when the crisis broke, structural deficit-promoting factors must be expected to persist.

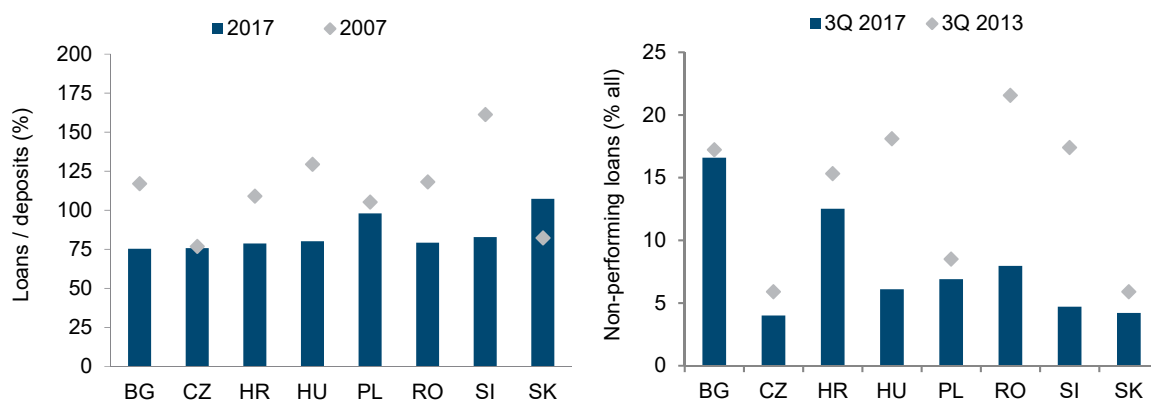
In the context of the balance-of-payments difficulties mentioned above, the setting of a competitive real exchange rate is important for EU-CEE8. Devaluations to maintain competitiveness are not an option for some of the EU-CEE8 countries: the euro is already the official currency in some (Slovakia and Slovenia); is the basis for a currency board (Bulgaria); or (alongside other currencies, such as the Swiss franc) accounts for a substantial share of bank deposits and loans (Romania, Croatia). In this last case, it should be borne in mind that devaluation would increase the debt burden of foreign currency loans for households and the public sector. In addition, devaluation has a negative wealth effect, as the EU-CEE8 countries have been net capital importers (due to their degree of economic development); in some cases have historically run large current account deficits; and have consequently accumulated negative foreign assets. On the other hand, countries such as the Czech Republic, Poland and Hungary could use this instrument relatively easily.

The years after the crisis were marked by a restructuring of private finances in the EU-CEE8 countries (as indeed in most of the rest of the EU). The corporate sector and households steadily reduced their debts, which had built up over the course of the consumption boom in the pre-crisis years. Most of this restructuring has now been completed, although the share of non-performing loans is still high in Bulgaria and Croatia (see Figure 5.1).

In the long term, the promotion of export capacity is of key economic policy importance for the EU-CEE8 countries. For historical reasons, their export industries are mainly upstream of production in Western Europe. Although this subcontracting function enabled rapid integration into global production networks, the rigid structure of the networks limits the scope for the EU-CEE8 countries to aspire to activities with greater added value. Industrial policy could have a supporting role here: the encouragement and promotion by countries and regional agglomerations of upstream and downstream industrial sectors;

training initiatives for those young people and unemployed people with poor or obsolete qualifications, to turn them into skilled workers; intensification of public and private sector innovation; and improvement of infrastructure in remote regions to promote their integration into production networks.

Figure 5.1 / Loan-to-deposit ratio (left) and share of non-performing loans to private customers (> 90 days late payment), in %



Source: wiiw (2018).

Such instruments would have the added value of mitigating regional disparities. However, the historically persistent agglomeration effects, which favour the economic development of areas close to more prosperous, industrialised regions and capital cities, probably require special economic policy measures in the form of transfers and regional policies. The EU's industrial policy – which can largely be regarded as innovation policy and which targets already highly specialised regions on the 'frontier' – should be rethought, and peripheral countries should become targets of industrial policy. Macroeconomic policy should also pursue industrial policy objectives. Macroeconomic stability of the exchange rate should be maintained and abrupt fluctuations in capital flows (both to and from the country) should be avoided, in order to facilitate long-term integration into world markets and production networks (Landesmann and Stöllinger, 2019).

The dynamics of employment and wages are strongly determined by the underlying population trends. Here, Central and Eastern Europe is in a unique position in the world, following decades of emigration, predominantly to Western Europe. The population of the EU-CEE8 countries is stagnating or falling – dramatically in the cases of Bulgaria and Romania. A brief look at the EU's latest population projections shows that this process is likely to continue in coming decades. Table 5.1 shows the forecast for the working-age population (aged 20-64) for the EU-CEE8 countries, with the exception of Croatia. A decline from the 2015 figure is forecast in all countries: in the Czech Republic, Hungary, Slovakia and Slovenia, the working-age population will fall by 15-18% by 2045; in Poland by 22%; and in Bulgaria and Romania by 30-33%. According to the forecast, this trend will continue beyond 2045 in most countries.

The negative trend in the working-age population could, in principle, be compensated for by an increase in the participation rate, which is traditionally low in the EU-CEE8 countries. (This increase, however, requires a corresponding – and, above all, skills-based – increase in employment.) By way of example, Table 5.2 shows that even with moderate employment growth of 0.5% per year, an increase in the participation rate to an ambitious 75% will not be sufficient to prevent labour market bottlenecks. In all

EU-CEE8 countries, except Croatia, the number of the unemployed would have to be negative (that is, the number of employed persons would have to be *higher* than the available labour force) to meet labour demand. In Croatia, even under these very optimistic assumptions, labour supply would be exhausted by 2030.

Table 5.1 / Forecast for working-age population (aged 20-64), 2015 = 1

| | 2015 | 2025 | 2035 | 2045 |
|----|------|------|------|------|
| BG | 1.00 | 0.86 | 0.77 | 0.67 |
| CZ | 1.00 | 0.93 | 0.91 | 0.85 |
| HU | 1.00 | 0.93 | 0.89 | 0.82 |
| PL | 1.00 | 0.90 | 0.85 | 0.78 |
| RO | 1.00 | 0.89 | 0.79 | 0.70 |
| SI | 1.00 | 0.92 | 0.87 | 0.83 |
| SK | 1.00 | 0.94 | 0.89 | 0.82 |

Source: wiiw (2018).

Table 5.2 / Forecast for the hypothetical ratio of unemployed to employed persons

| | 2019 | 2021 | 2023 | 2025 | 2027 | 2029 | 2031 | 2033 | 2035 |
|----|------|-------|-------|-------|-------|-------|-------|-------|-------|
| BG | 0.04 | 0.01 | -0.03 | -0.06 | -0.10 | -0.13 | -0.16 | -0.18 | -0.21 |
| CZ | 0.00 | -0.02 | -0.04 | -0.06 | -0.07 | -0.09 | -0.10 | -0.12 | -0.13 |
| HU | 0.03 | 0.00 | -0.02 | -0.04 | -0.05 | -0.07 | -0.08 | -0.10 | -0.13 |
| PL | 0.08 | 0.07 | 0.03 | 0.00 | -0.03 | -0.05 | -0.06 | -0.08 | -0.10 |
| RO | 0.06 | 0.04 | 0.00 | -0.03 | -0.06 | -0.08 | -0.10 | -0.13 | -0.17 |
| SI | 0.05 | 0.02 | -0.01 | -0.03 | -0.06 | -0.08 | -0.10 | -0.11 | -0.13 |
| SK | 0.07 | 0.05 | 0.02 | -0.00 | -0.03 | -0.05 | -0.06 | -0.08 | -0.10 |
| HR | 0.16 | 0.14 | 0.10 | 0.07 | 0.04 | 0.02 | -0.00 | -0.03 | -0.05 |

Note: The forecasts are based on the assumption of 0.5% employment growth per year, the EU's projections of working-age population, and an increase in the participation rate to 75%.

Source: wiiw (2018).

The migration dynamics in the EU-CEE8 countries to date have been primarily driven by the economically most relevant group of 18-30-year-olds with relatively high levels of education. This has led EU-CEE8 countries to experience a rapid ageing of their populations. Although this has reduced the oversupply of labour, and has thus contributed to more rapid wage growth (and will continue to do so on the basis of the above forecast), in general this development needs to be viewed critically. The brain drain of younger, better-educated workers reduces the growth potential of the EU-CEE8 countries and their opportunities to move up in global production networks. Skills shortages in the existing labour force also reduce the attractiveness for foreign direct investment. This calls for an active labour market policy that gives (especially older) workers an opportunity to further their education (in the workplace). Otherwise, the stagnation in labour productivity and the increasing wage pressure (due to the shrinking labour supply) threaten to result in macroeconomic imbalances, probably manifesting themselves in a continuous deterioration in the balance of payments. The problem of declining labour supply will become even more acute in the coming years and will require a coordinated economic and social response, aimed at keeping as many workers in the economy as possible, for as long as possible. This would require things to be made easier for older workers, as well as measures to reconcile work and family life (the latter would also have a positive effect on birth rates).

The relationship between supply and demand in the labour market and wages is determined by the specific shape of the relevant institutions. These institutions are increasingly shifting from the macroeconomic/sectoral to the company level. The share of employees whose employment contract is subject to a valid collective agreement has fallen in all EU-CEE8 countries, to between 15% (Poland) and 65% (Slovenia). Although many countries have rigorous protection against dismissal for certain employment contracts, and although minimum wages have been raised in recent years (in a budget-friendly manner), the labour markets in EU-CEE8 have been liberalised and wages are therefore subject to greater fluctuations between supply and demand than they are in Western Europe. The resulting wide wage range across sectors and skill levels is reinforced by the low unemployment benefits and their short duration. Overall, it can therefore be seen that the important macroeconomic stabilisation functions of labour market institutions are lacking, even though these are important – especially in view of the problems of emigration, low productivity growth, population ageing and a strong dependence on foreign demand, all of which are characteristic of the EU-CEE8 countries.

Looking ahead, it is worth mentioning that this study has not addressed the nature of employment, although the development of part-time and precarious employment and the disaggregation of wage trends by gender, age and skills are highly relevant from a labour and social policy perspective, and also in view of the further decline in the (young and well-educated) labour supply. Moreover, wage policy in EU-CEE8 is typically not coordinated with other social policy areas (in the sense mentioned above). Such coordination should be extended to, for instance, social housing, the elderly care system and public transportation. Wage developments in the EU-CEE8 countries are increasingly shaped by the free interplay of the labour market. Should the demographic trends continue in the near and medium term, this will pose even greater social and labour market challenges for the EU-CEE8 countries.

References

- Byrne, A. (2015), Hungary under fire over growing use of public works labourers, *Financial Times*, 13.08.2015.
- Card, D., J. Kluge and A. Weber (2010), Active labour market analysis policy evaluations: A meta analysis. *Economic Journal*, 120.
- Chivu, L., C. Ciutacu, R. Dimitriu and T. Țiclea (2013), The impact of legislative reforms on industrial relations in Romania. International Labour Office, Industrial and Employment Relations Department (DIALOGUE), Decent Work Technical Support Team and Country Office for Central and Eastern Europe, Budapest.
- Clauwaert, S., I. Schömann and N. Büttgen (2016), The crisis and national labour law reforms: a mapping exercise. Country report: Slovenia. European Trade Union Institute, Brussels.
- Drahokoupil, J. (2016), What role can minimum wages play in overcoming the low-wage model in Central and Eastern Europe? Working Paper 2016.09. European Trade Union Institute, Brussels.
- Eurofound (2014), Impact of the crisis on industrial relations and working conditions in Europe. Dublin.
- Eurofound (2016), Mapping key dimensions of industrial relations. Publications Office of the European Union, Luxembourg.
- Eurofound (2017), EurWORK's database on wages, working time and collective disputes, version 1.1, October.
- European Commission (2013), Industrial Relations in Europe 2012. Directorate-General for Employment, Social Affairs and Inclusion, Brussels.
- European Commission (2015a), Industrial Relations in Europe 2014. Directorate-General for Employment, Social Affairs and Inclusion, Brussels.
- European Commission (2015b), Unemployment benefits with a focus on making work pay, European Semester thematic fiche, 26.11.2015, Brussels.
- European Commission (2016a), Employment protection legislation, European Semester thematic fiche, 4.5.2016, Brussels.
- European Commission (2016b), Employment and Social Developments in Europe 2015. Directorate-General for Employment, Social Affairs and Inclusion, Brussels.
- European Commission (2016c), Employment and Social Developments in Europe: Annual Review 2016. Directorate-General for Employment, Social Affairs and Inclusion, Brussels.
- European Commission (2017a), A comparison of shortage and surplus occupations based on analyses of data from the European Public Employment Services and Labour Force Surveys, February, <https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=7997&furtherPubs=yes>
- European Commission (2017b), Autumn economic forecast, 2017, https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/autumn-2017-economic-forecast_en
- European Commission (2018), 2017 annual report on intra-EU labour mobility, Final Report. Directorate-General for Employment, Social Affairs and Inclusion, Brussels.
- Frazer, H. and E. Marlier (2016), Minimum income schemes in Europe: A study of national policies 2015. European Social Policy Network (ESPN), commissioned by the Directorate-General for Employment, Social Affairs and Inclusion, Brussels.
- Glassner, V. (2013), Central and Eastern European industrial relations in the crisis: National divergence and path-dependent change. *Transfer: European Review of Labour and Research*, Vol. 19, No. 2, 155-169.

- Harvan, P. (2010), Evaluation of efficiency and effectiveness of spending on active labour market policies. *Economic Analysis*, No. 22. Financial Policy Institute, Bratislava.
- Hazans, M. (2011a), Informal workers across Europe: Evidence from 30 countries. IZA DP No. 5871, July. Institute of the Study of Labor (IZA), Bonn.
- Hazans, M. (2011b), What explains prevalence of informal employment in European countries: The role of labor institutions, governance, immigrants, and growth. IZA DP No. 5871, July. Institute of the Study of Labor (IZA), Bonn.
- Horodnic, I.A. (2016), Cash wage payments in transition economies: Consequences of envelope wages. *IZA World of Labor* 2016: 280.
- International Monetary Fund (IMF) (2016), Cross-country report on minimum wages, Country Report 16/151. IMF, Washington, DC.
- Landesmann, M. and Stöllinger, R. (2019), Structural change, trade and global production networks: An 'appropriate industrial policy' for peripheral and catching-up economies. *Structural Change and Economic Dynamics*, Vol. 48(C), 7-23.
- Mishra, P. (2014), Emigration and wages in source countries: A survey of the empirical literature. IMF, Washington, DC.
- OECD (2014), OECD Economic Surveys: Slovak Republic 2014. OECD Publishing, Paris.
- OECD (2016), OECD Employment Outlook 2016. OECD Publishing, Paris.
- Phillips, A.W. (1958), The relationship between unemployment and the rate of change of money wages in the United Kingdom 1861-1957. *Economica*, 25(100), 283-299.
- Schneider F. (2015), Size and development of the shadow economy of 31 European and 5 other OECD countries from 2003 to 2014: Different developments?, *Journal of Self-Governance and Management Economics*, Vol. 3, No. 4, 7-29.
- Stansbury, A. and L. Summers (2018), On the link between US pay and productivity, VOX – CEPR Policy Portal, 20 February, <https://voxeu.org/article/link-between-us-pay-and-productivity>
- Stoviček, K. (2013), Minimum wages in Slovenia: Reducing employment but not poverty? ECFIN Country Focus, Vol. 10/4, June. European Commission, Brussels.
- Visser, J. (2016), ICTWSS data base. version 5.1. Amsterdam: Amsterdam Institute for Advanced Labour Studies (AIAS), University of Amsterdam, September.
- wiiw (2016a), Growth stabilises: Investment a major driver, except in countries plagued by recession: Economic analysis and outlook for Central, East and Southeast Europe. wiiw Forecast Report Spring 2016. Vienna Institute for International Economic Studies (wiiw), Vienna.
- wiiw (2016b), Labour shortages driving economic growth? Economic analysis and outlook for Central, East and Southeast Europe. wiiw Forecast Report Autumn 2016. Vienna Institute for International Economic Studies (wiiw), Vienna.
- wiiw (2017a), Cautious upturn in CESEE: Haunted by the spectre of uncertainty: Economic analysis and outlook for Central, East and Southeast Europe. wiiw Forecast Report Spring 2017. Vienna Institute for International Economic Studies (wiiw), Vienna.
- wiiw (2017b), CESEE back on track to convergence: Economic analysis and outlook for Central, East and Southeast Europe. wiiw Forecast Report Autumn 2017. Vienna Institute for International Economic Studies (wiiw), Vienna.
- wiiw (2018), Riding the global growth wave: Economic analysis and outlook for Central, East and Southeast Europe. wiiw Forecast Report Spring 2018. Vienna Institute for International Economic Studies (wiiw), Vienna.

Annex

Table A1 / Real output, real wages and wage shares, EU-CEE8

Real output per hour, 2000=100

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Bulgaria | 100 | 104 | 110 | 113 | 115 | 121 | 125 | 130 | 132 | 133 | 140 | 146 | 150 | 152 | 154 | 159 | 164 |
| Czech R. | 100 | 108 | 109 | 114 | 119 | 125 | 133 | 139 | 139 | 135 | 138 | 141 | 141 | 141 | 143 | 150 | 150 |
| Croatia | . | . | . | . | . | . | . | . | 100 | 93 | 95 | 99 | 101 | 104 | 102 | 107 | 109 |
| Hungary | . | . | . | . | . | . | . | . | . | . | 100 | 102 | 101 | 103 | 102 | 103 | 102 |
| Poland | . | . | . | . | 100 | 102 | 105 | 107 | 108 | 112 | 119 | 125 | 127 | 129 | 130 | 133 | 136 |
| Romania | 100 | 107 | 124 | 133 | 146 | 154 | 164 | 173 | 188 | 181 | 177 | 179 | 199 | 209 | 215 | 227 | 240 |
| Slovenia | 100 | 103 | 104 | 107 | 111 | 118 | 125 | 131 | 130 | 122 | 126 | 130 | 129 | 128 | 130 | 130 | 134 |
| Slovakia | 100 | 103 | 111 | 120 | 123 | 127 | 135 | 145 | 148 | 144 | 151 | 154 | 157 | 162 | 165 | 169 | 172 |

Real wage per hour, 2000=100

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Bulgaria | 100 | 106 | 107 | 111 | 115 | 124 | 121 | 131 | 128 | 144 | 157 | 162 | 170 | 184 | 197 | 211 | 227 |
| Czech R. | 100 | 109 | 116 | 126 | 131 | 134 | 140 | 145 | 142 | 142 | 143 | 142 | 141 | 139 | 141 | 147 | 151 |
| Croatia | . | . | . | . | . | . | . | . | 100 | 97 | 97 | 99 | 98 | 96 | 92 | 95 | . |
| Hungary | . | . | . | . | . | . | . | . | . | . | 100 | 100 | 98 | 98 | 98 | 96 | 99 |
| Poland | . | . | . | . | 100 | 100 | 101 | 104 | 111 | 110 | 117 | 119 | 118 | 119 | 121 | 123 | 129 |
| Romania | 100 | 120 | 116 | 127 | 130 | 153 | 162 | 164 | 210 | 193 | 200 | 176 | 192 | 193 | 208 | 216 | 243 |
| Slovenia | 100 | 105 | 102 | 103 | 105 | 111 | 115 | 119 | 120 | 120 | 121 | 122 | 118 | 115 | 116 | 117 | 123 |
| Slovakia | 100 | 99 | 107 | 111 | 110 | 114 | 119 | 127 | 128 | 132 | 135 | 134 | 133 | 134 | 137 | 142 | 148 |

Share of wages in GDP¹⁾, in %

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Bulgaria | 26.9 | 27.4 | 26.7 | 27.2 | 27.3 | 28.2 | 26.9 | 27.3 | 27.6 | 29.8 | 31.2 | 30.3 | 31.6 | 33.8 | 35.0 | 35.3 | 35.9 |
| Czech R. | 29.0 | 29.1 | 29.9 | 30.0 | 29.9 | 30.1 | 30.0 | 29.7 | 30.5 | 30.6 | 30.6 | 30.7 | 31.3 | 31.1 | 30.6 | 30.1 | 30.7 |
| Croatia | 43.3 | 40.9 | 42.0 | 42.3 | 41.6 | 41.5 | 40.9 | 41.1 | 41.0 | 42.5 | 41.5 | 40.8 | 41.1 | 40.3 | 40.4 | 39.8 | 39.5 |
| Hungary | 32.9 | 34.0 | 33.5 | 35.2 | 35.5 | 35.9 | 35.7 | 35.6 | 35.2 | 35.4 | 35.8 | 35.5 | 35.9 | 35.6 | 34.9 | 33.2 | 34.6 |
| Poland | 34.4 | 35.1 | 33.6 | 32.8 | 31.0 | 30.9 | 30.7 | 31.0 | 32.9 | 31.9 | 32.0 | 31.3 | 31.1 | 31.2 | 31.4 | 30.9 | 31.7 |
| Romania | 30.8 | 33.8 | 32.6 | 30.5 | 30.3 | 31.9 | 31.3 | 27.1 | 30.1 | 28.4 | 29.6 | 27.4 | 27.1 | 26.1 | 27.3 | 27.3 | 29.0 |
| Slovenia | 43.8 | 44.3 | 43.3 | 42.9 | 42.9 | 42.9 | 42.5 | 42.1 | 43.0 | 44.6 | 45.1 | 44.0 | 43.8 | 42.7 | 42.0 | 41.7 | 42.3 |
| Slovakia | 30.9 | 30.1 | 29.9 | 29.3 | 28.0 | 28.3 | 28.0 | 27.6 | 27.3 | 29.2 | 28.5 | 28.7 | 28.7 | 28.5 | 28.8 | 29.4 | 30.2 |

Adjusted wage share²⁾, in %

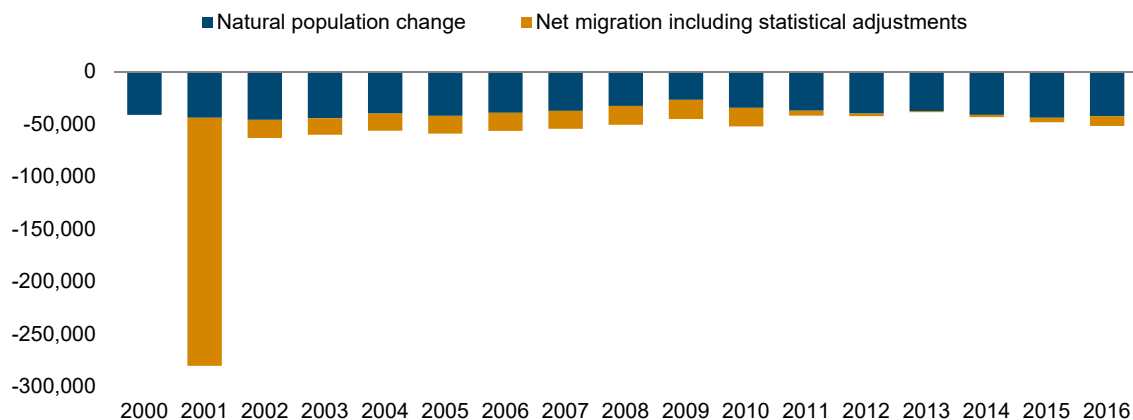
| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Bulgaria | 49.7 | 50.8 | 49.1 | 48.9 | 47.4 | 46.7 | 44.9 | 43.8 | 45.7 | 48.4 | 49.9 | 48.2 | 49.9 | 53.9 | 56.2 | 56.2 | 56.3 |
| Czech R. | 45.0 | 45.0 | 46.8 | 47.7 | 47.2 | 46.9 | 46.8 | 46.3 | 47.0 | 47.0 | 47.8 | 48.1 | 48.8 | 48.4 | 47.4 | 46.5 | 47.4 |
| Croatia | 67.1 | 63.0 | 64.5 | 64.6 | 63.2 | 62.9 | 61.3 | 60.8 | 60.5 | 62.9 | 62.1 | 61.0 | 59.5 | 57.3 | 55.8 | 55.4 | 53.8 |
| Hungary | 52.6 | 52.6 | 51.6 | 52.6 | 52.5 | 52.8 | 51.9 | 51.6 | 51.3 | 50.7 | 49.4 | 49.1 | 49.2 | 48.2 | 47.3 | 45.3 | 46.9 |
| Poland | 56.8 | 58.5 | 56.0 | 53.9 | 50.6 | 49.7 | 48.5 | 48.3 | 50.1 | 48.7 | 49.0 | 47.9 | 47.8 | 47.7 | 47.8 | 47.2 | 48.2 |
| Romania | 71.8 | 75.7 | 61.5 | 60.1 | 53.8 | 58.5 | 55.4 | 49.1 | 52.5 | 51.2 | 54.4 | 48.8 | 48.0 | 46.1 | 47.3 | 44.6 | 45.5 |
| Slovenia | 61.7 | 61.9 | 61.0 | 60.3 | 60.4 | 60.4 | 59.8 | 58.9 | 60.0 | 63.0 | 64.0 | 62.8 | 63.0 | 62.3 | 61.0 | 60.7 | 61.1 |
| Slovakia | 44.6 | 43.7 | 43.8 | 43.1 | 41.7 | 42.3 | 41.7 | 41.4 | 41.9 | 45.1 | 44.3 | 44.0 | 43.9 | 43.8 | 44.1 | 44.9 | 45.7 |

Note: ¹⁾ Annual wages and salaries in relation to GDP at market prices (Eurostat); ²⁾ Compensation of employees per employee as a ratio of GDP to market prices per person employed (AMECO).

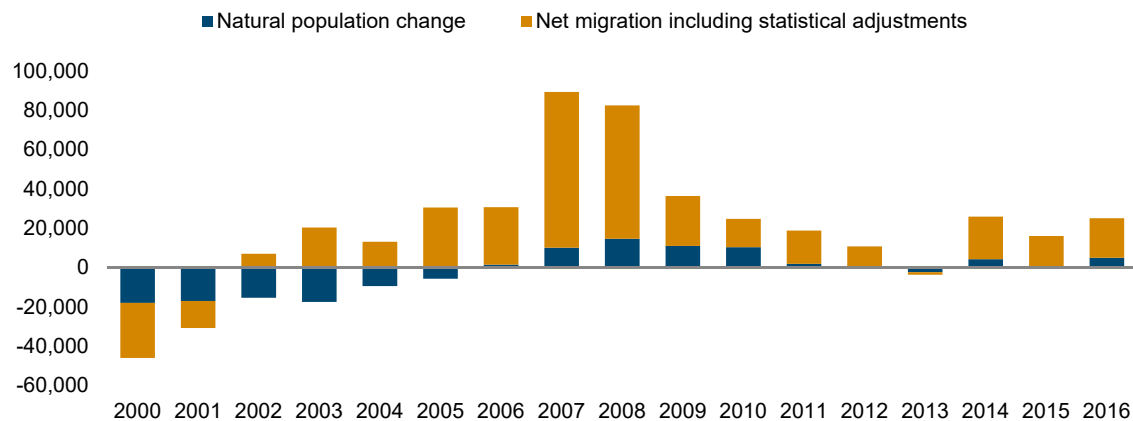
Source: Eurostat and own calculations.

Figure A1 / Natural change in population and net migration, by EU-CEE country

Bulgaria



Czech Republic



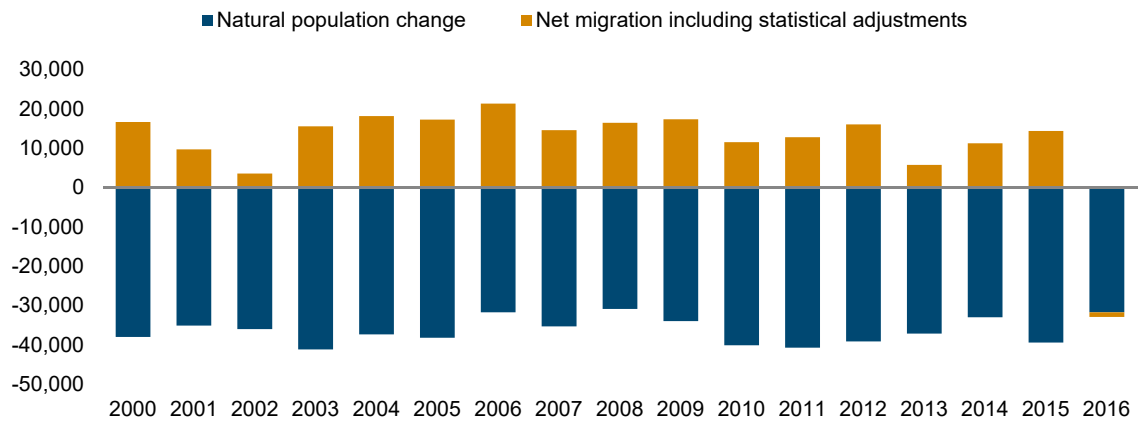
Croatia



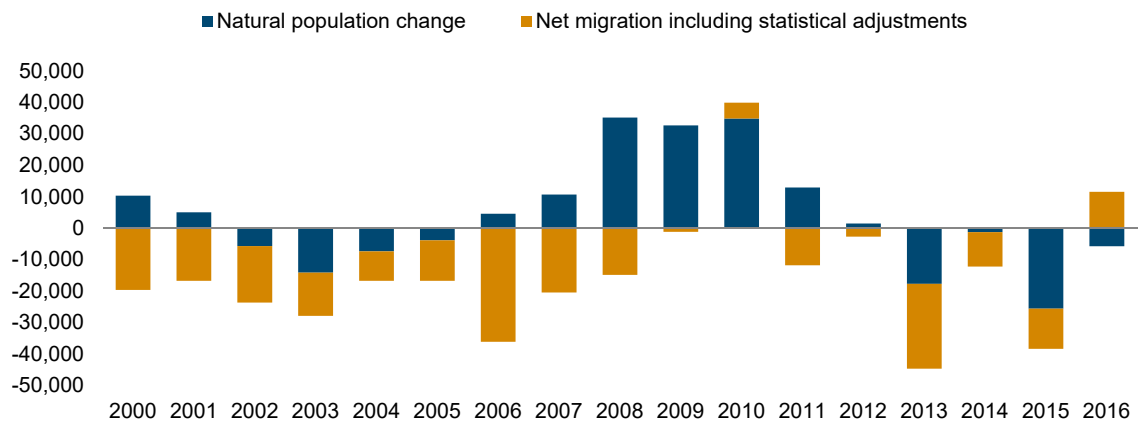
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Figure A1 / contd.

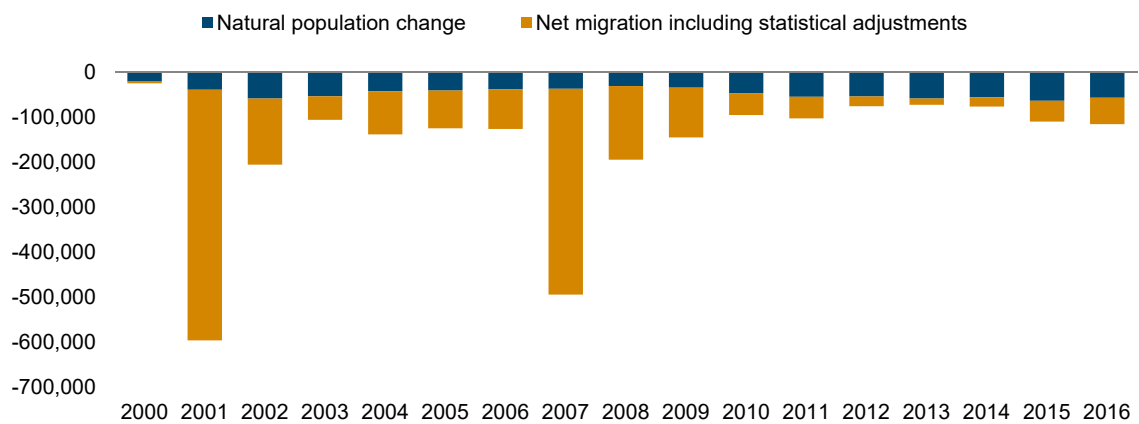
Hungary



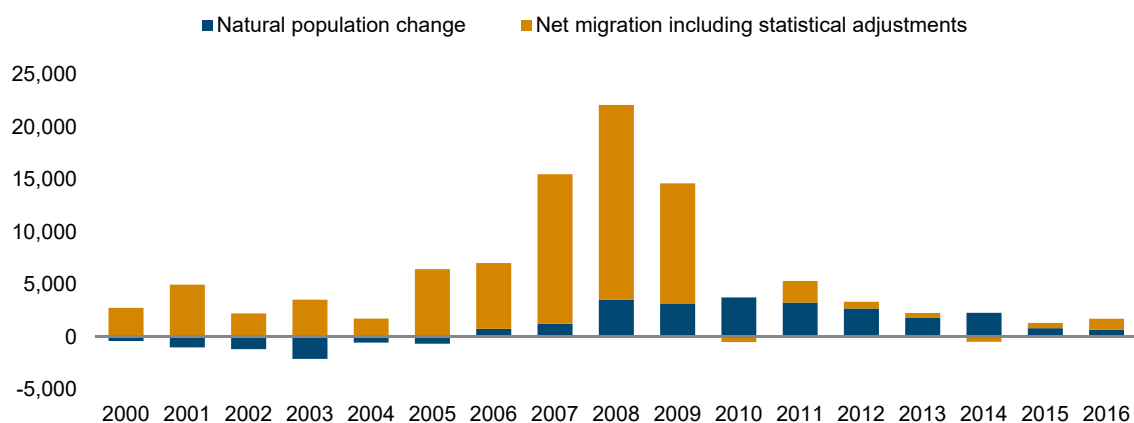
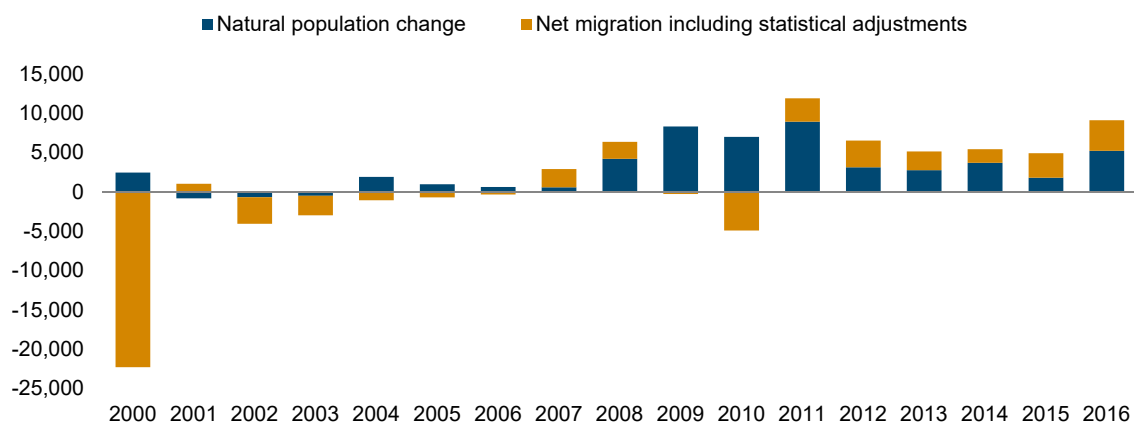
Poland



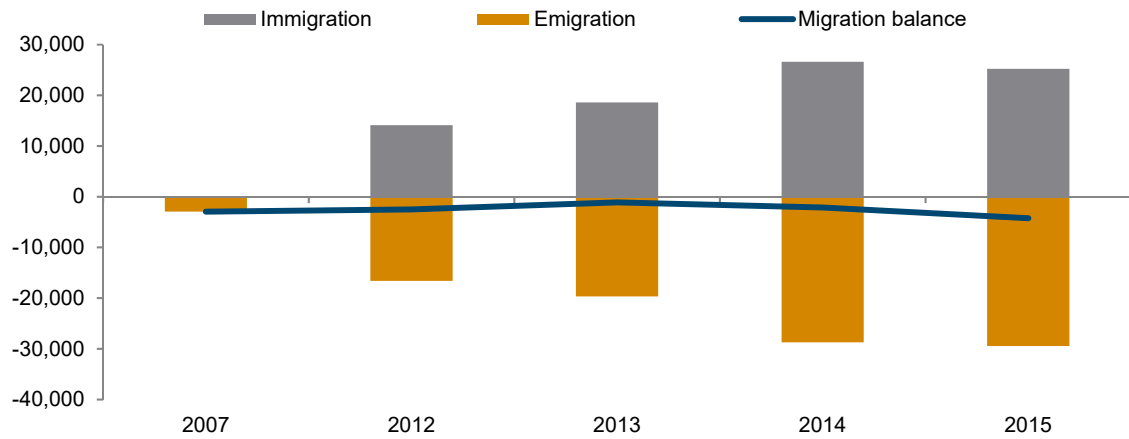
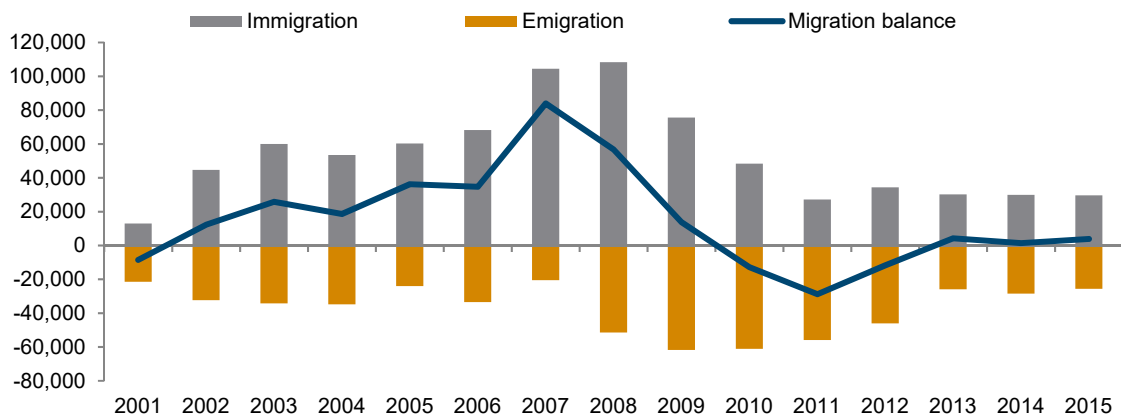
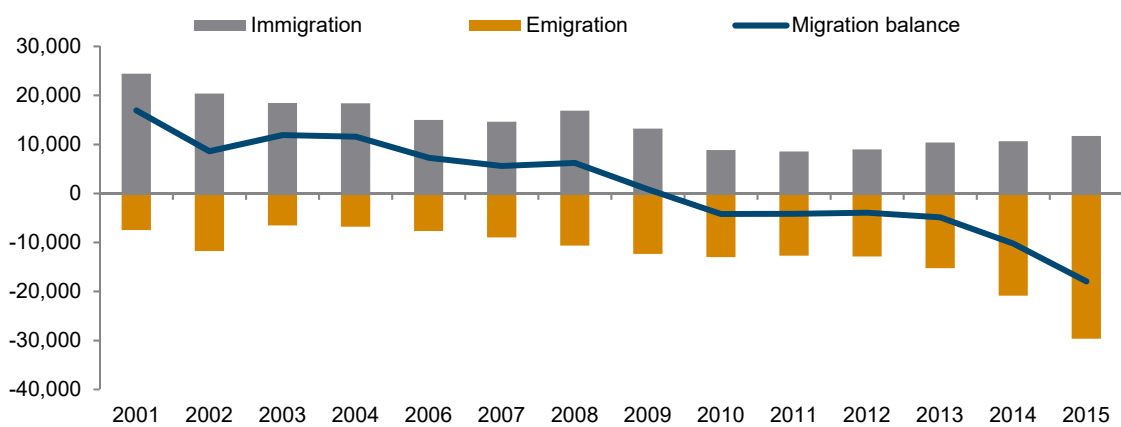
Romania



contd.

Figure A1 / contd.**Slovenia****Slovakia**

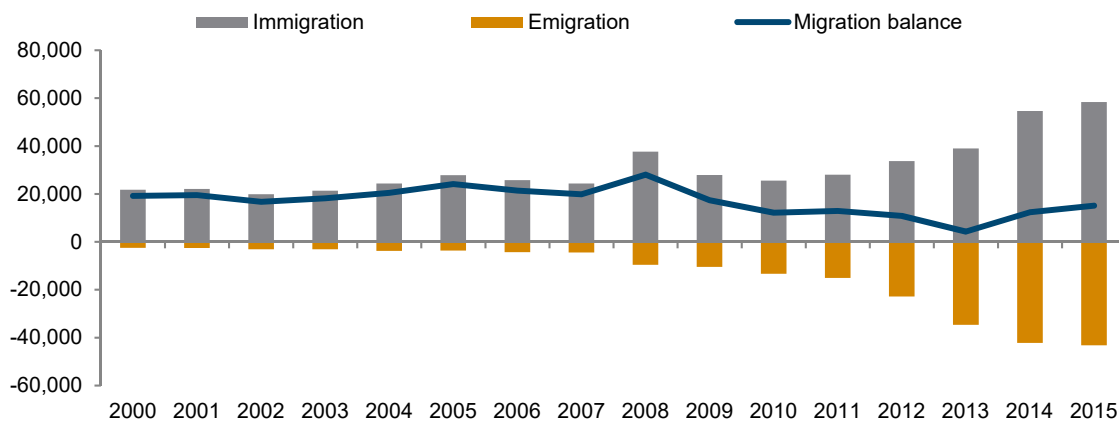
Source: Eurostat (2018).

Figure A2 / Migration turnover, by EU-CEE country**Bulgaria****Czech Republic****Croatia**

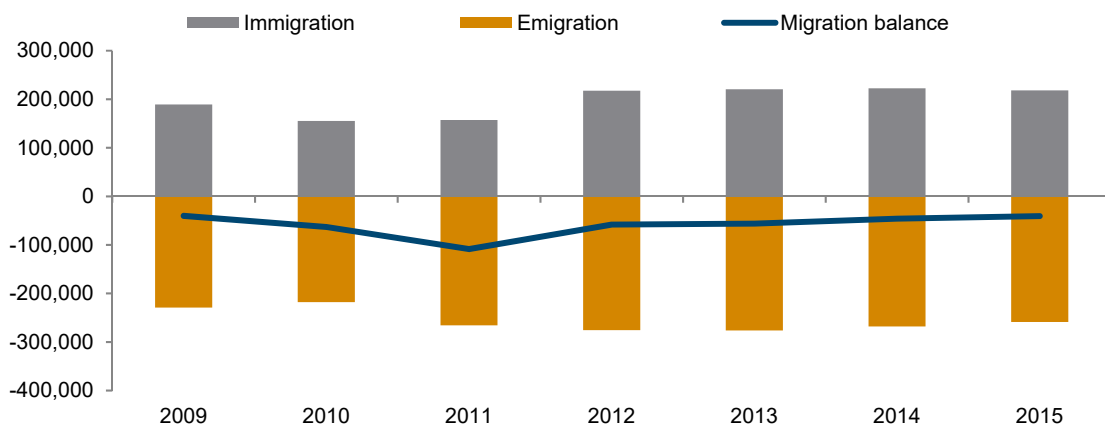
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Figure A2 / contd.

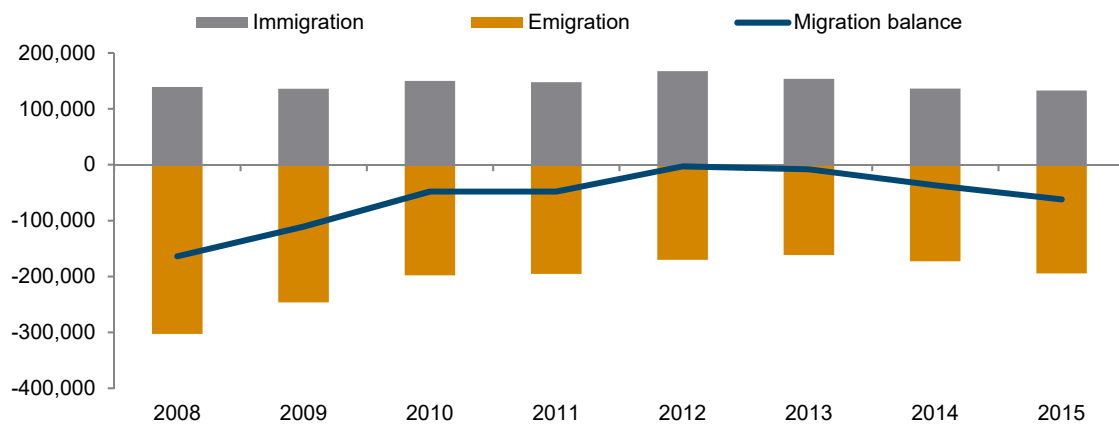
Hungary



Poland



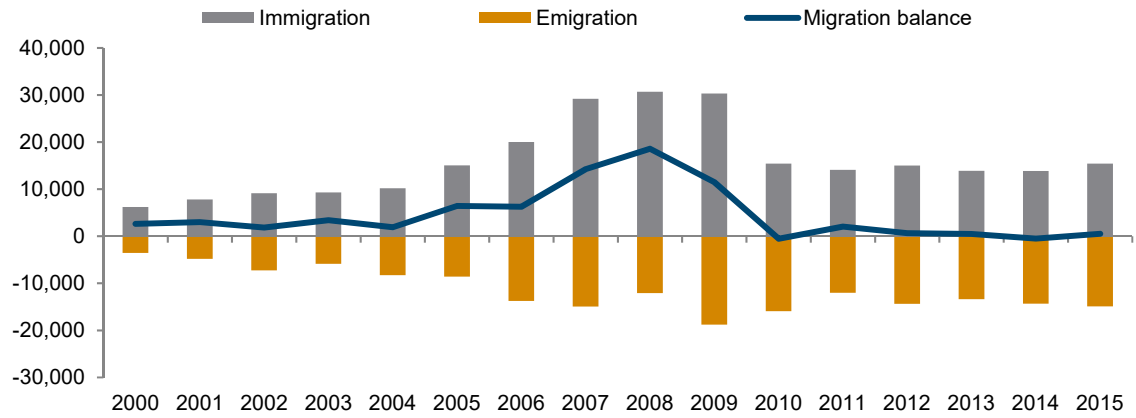
Romania



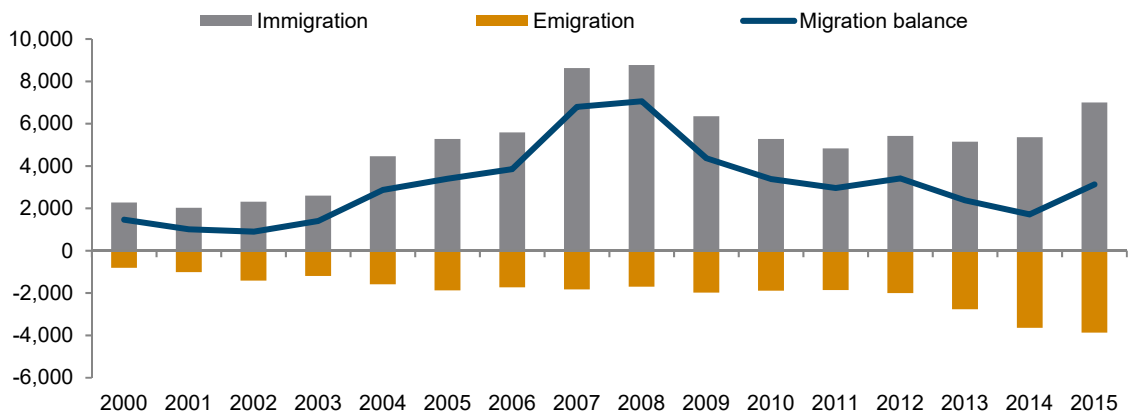
contd.

Figure A2 / contd.

Slovenia



Slovakia



Source: Eurostat (2018).

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