

## ECONOMIC COHESION

- There has been remarkable convergence in GDP per head in the EU following the 2004 enlargement. In central and eastern Europe as a whole, income per head increased from 45 % of the EU average in 1995 to nearly 80 % today. Nevertheless, large differences persist; there is ample room for further upward convergence.
- Across the EU, regional disparities narrowed until the financial crisis but then stagnated, mostly because of slower growth of less developed regions in central and eastern Europe and the divergence of some less developed and transition regions, especially in southern Europe.
- By 2021, around a third of EU regions – less developed, transition, and more developed regions alike – have yet to see a return to 2008 levels of GDP per head. These are primarily in Italy, Spain, Greece and France, but also in Germany, Finland and the Netherlands. The slowdown in the pace of convergence after the 2009 crisis was associated with a relatively large fall in productivity, investment and employment in many previously converging regions.
- Growth of GDP per head in the EU averaged 1 % a year over the period 2001–2021, but in many regions it stagnated or even declined. In many cases, stagnation came along with little or no increase in household income and persistent inequalities, fuelling political discontent and a decline in support for democratic values and the EU.
- On the positive side, several regions escaped stagnation, using their local strengths to move to more complex economic activities and become integrated into European and global value chains.
- The recovery from the COVID-19 pandemic has been faster than after the 2009 recession, partly because of swift EU policy action, with the rapid mobilisation of Cohesion Policy and the adoption of NextGenerationEU. More recently, escalating geopolitical tensions, with war erupting on the EU's doorstep, and the surge in energy, raw materials and food prices have exacted a heavy toll on many EU regions.
- Looking ahead, disparities between EU regions and current candidate countries are large but not unlike those between the EU-15 and accession countries in 2004, suggesting that there is a very large untapped potential for further upward convergence.

# Chapter 1

## Economic cohesion

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### 1. Introduction

Reducing territorial disparities is a cornerstone of European integration, dating back to the Treaty of Rome, which sets the goal of ‘reducing the differences existing between the various regions and the backwardness of the less-favoured regions’. Accordingly, Cohesion Policy is not only the most visible expression of EU solidarity but also a central pillar of its Single Market and growth model<sup>1</sup>. Removing barriers to the free movement of goods, services, capital and workers has promoted a better allocation of resources across the EU and fostered the exchange of ideas and innovation. However, market forces alone do not ensure that everyone benefits from economic integration. By investing in infrastructure, innovation, education and other key areas, Cohesion Policy helps less developed regions directly and all other regions indirectly to reap the benefits and economies of scale created by the Single Market.

This report comes 31 years after the introduction of the EU Single Market, 25 years after the launch of the euro and 20 years after the historic EU eastern enlargement of 2004. It shows the remarkable economic convergence that eastern regions and countries have achieved since then. GDP per head in central and eastern Europe (shortened to ‘eastern Europe’ in this report) increased from around 45 % of the EU’s average in 1995 to 52 % at the moment of accession in 2004, to nearly 80 % in 2021. This is an extraordinary achievement of European integration and Cohesion Policy, which has invested nearly EUR 1 trillion to support balanced economic development in the EU since 2000.

Some parts of Europe, however, have found it more difficult to converge. As indicated in previous reports, GDP per head in some transition and less developed regions began to diverge from the EU average after the 2009 recession, revealing an increased likelihood of falling into what can be termed a ‘development trap’<sup>2</sup>, with implications for social and territorial cohesion (Chapters 2 and 3).

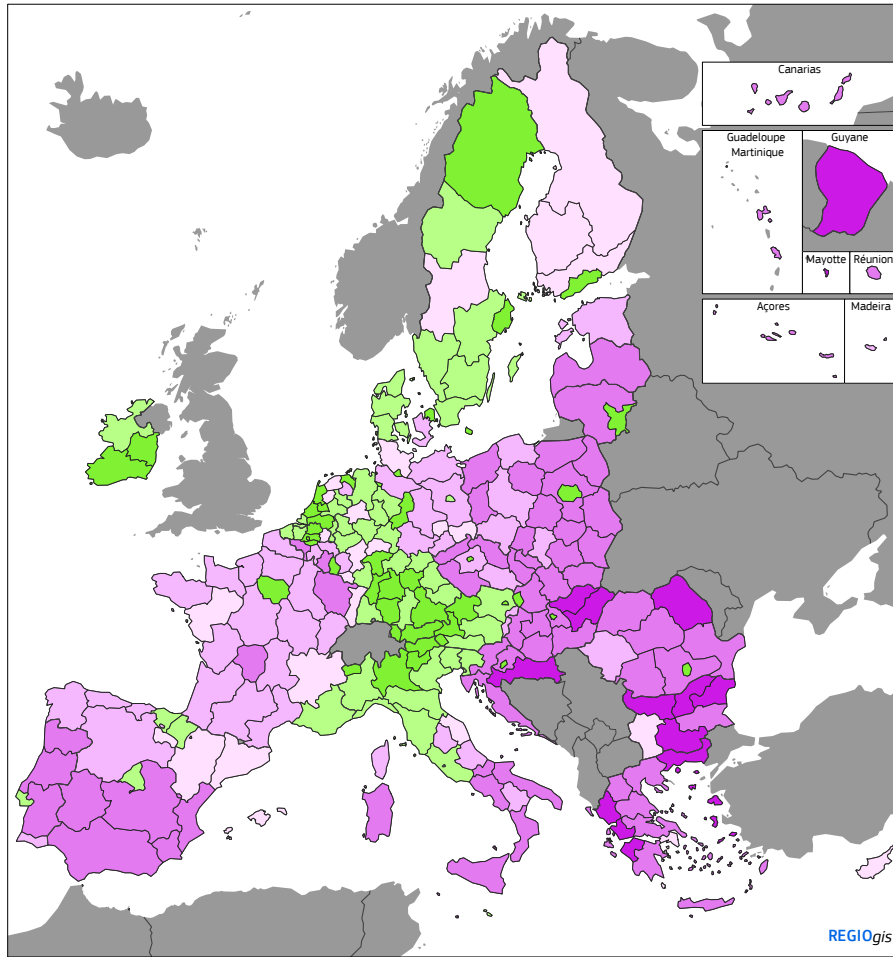
Most recently, the outbreak of the COVID-19 pandemic and escalating geopolitical tensions, with war erupting on the EU’s doorstep, have tested cohesion. The disruptions in global supply chains and the surge in energy, raw materials and food prices have exacted a heavy toll on households – especially the most vulnerable ones – and the economy at large. Despite encouraging signs of recovery, the long-term impact of these events on cohesion remains difficult to predict, especially in a context where secular structural challenges linked to the green and digital transitions are set to reshape much of the EU economy (Chapters 4, 5 and 6).

Against this background, this chapter provides an update of the state of economic cohesion in the EU by assessing long-term economic convergence between regions over the past 20–30 years and the short-term impact of the pandemic. Tapping into the growth potential of the 82 regions with GDP per head below 75 % of the EU average is key to fostering convergence and the prosperity of the EU. Accordingly, it indicates how productivity and competitiveness have evolved across regions and how they can contribute to economic cohesion going forward.

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1 See Box 1.6.

2 The likelihood of being in a development trap is measured by a composite indicator capturing a protracted period of low or negative growth, weak productivity increases and low employment creation. See: Diemer et al. (2022) and European Commission (2022a).



Map 1.1 GDP per head (PPS), 2021

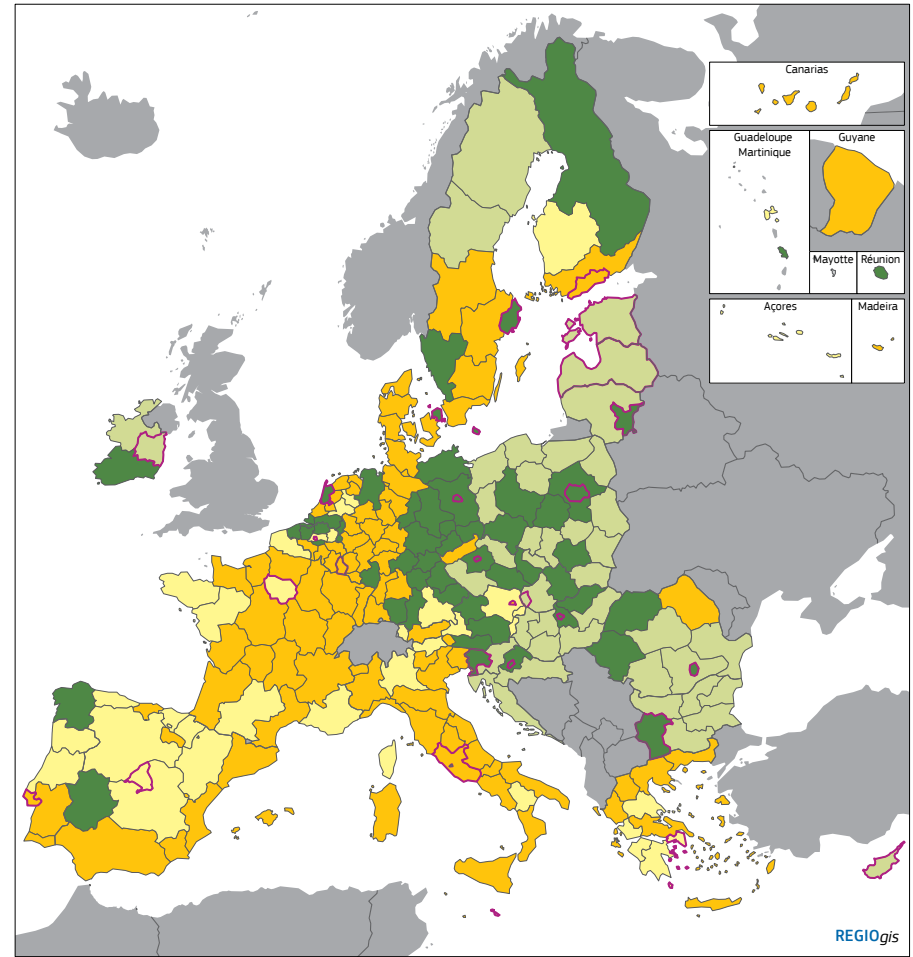
Index, EU-27 = 100

- < 50
- 50 – 75
- 75 – 90
- 90 – 100
- 100 – 125
- >= 125

Source: Eurostat [nama\_10r\_2gdp].

0 500 km

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Map 1.2 Regional growth of GDP per head compared with growth in the EU and Member States, annual average, 2001–2021

Category

- above EU average and above Member State average
- above EU average and below or equal to Member State average
- below EU average and above Member State average
- below EU average and below or equal to Member State average
- no data
- capital regions

Source: DG REGIO based on JRC annual regional database (ARDECO) data.

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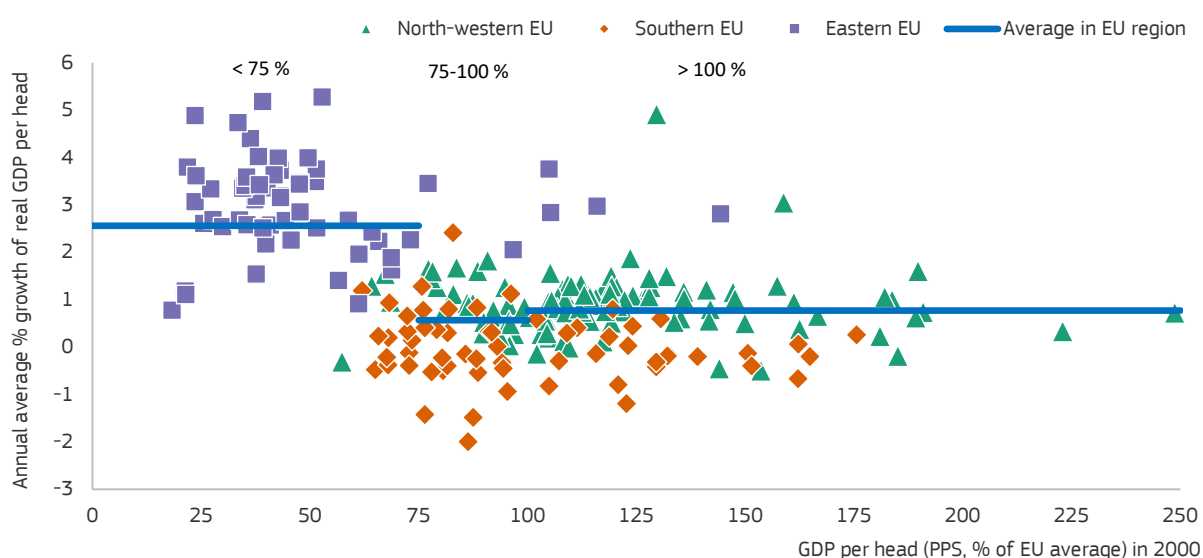
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## 2. Long-term trends in convergence and regional economic cohesion

Differences in regional GDP per head in the EU have steadily diminished over the past two decades but there is ample room for further upward convergence<sup>3</sup>. Some 20 years after the 2004 enlargement, the regions then entering the EU have achieved a remarkable economic convergence, with GDP per head in eastern Europe increasing from 50 % of the EU average in 2004 to nearly 80 % in 2021. However, there is still substantial scope for further convergence. Over 1 in 4 people in the EU (28 %) still live in regions with GDP per head below 75 % of the EU average in PPS terms<sup>4</sup>, most of them in eastern Member States, but also in outermost regions and increasingly in southern Europe (Map 1.1 and Chapter 3)<sup>5</sup>. In Bulgaria, for instance, GDP per head was below 50 % of the

EU average in all regions, except in Yugozapaden, the capital city region. To put this into perspective, differences in GDP per head across US states bottom out at about 60 % of the US average and only 1 in 12 people live in a state with GDP per head below 75 % of the US average<sup>6</sup>. This suggests that there is still a large untapped potential for upward convergence in GDP per head – and in living standards – within the EU. Moreover, in 2021 around a third of EU regions – with a similar share of EU population, around 150 million people in total – have a GDP per head that is yet to return to its 2008 level. These are equally divided between less developed, transition and more developed regions and are present in 11 Member States: Italy (19), Spain (15), Greece (13), France (10), Germany (4), Finland (4), the Netherlands (3), Portugal (3), Romania (3), Austria (2) and Belgium (1).

Figure 1.1 Annual growth in real GDP per head in EU regions by level of development, 2001–2021



Source: Eurostat [nama\_10r\_2gdp] and DG REGIO calculations.

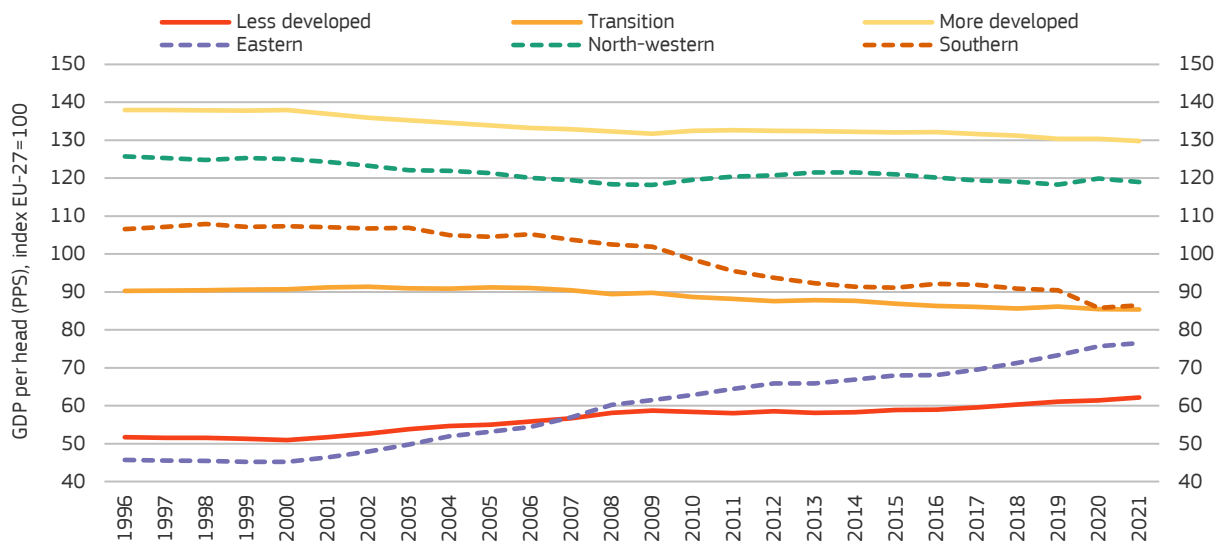
3 European Commission (2023).

4 GDP per head in PPS terms is the total value of goods and services produced per inhabitant adjusted for differences in price levels between countries. Regions here and throughout the chapter are defined at the NUTS 2 level.

5 The EU includes nine outermost regions: Guadeloupe, La Réunion, Mayotte, Guyane, Martinique and Saint-Martin (France), Madeira and Açores (Portugal) and Canarias (Spain). In the outermost region of Mayotte (France), for instance, GDP in PPS was as low as 28 % of the EU average in 2021.

6 Clearly the US is not comparable to the EU in political or historical terms but it remains the most comparable economic area in terms of market size, economic development, geographical area and population. It is therefore a relevant benchmark from an economic cohesion perspective: see Head and Mayer (2021). It should be noted, however, that EU NUTS 2 regions are on average smaller in size than US states, which in itself tends to increase disparities.

Figure 1.2 GDP per head in EU regions, PPS, 1995–2021, % of EU average



Source: Eurostat.

Growth of GDP per head over the past two decades has been robust in eastern regions but subdued in southern and some outermost ones. Over the 2001–2021 period, GDP per head in real terms increased in most EU regions, though by only 1 % a year or less in most north-western and southern regions. In line with standard economic convergence theory, regions with low levels of GDP per head experienced higher rates of growth on average (Figure 1.1). Per capita growth was particularly high in eastern regions (around 2.5 % a year on average)<sup>7</sup>. There are, however, exceptions. In most regions in Greece and Italy, in particular, GDP per head fell over this period. At the same time, growth was very low in transition regions in France and Spain and negative in a few more developed regions in north-western Europe (Figure 1.2). In the recent past, for the first time in the post-war period, nearly 1 in 6 regions in the EU, 38 in total with over 60 million people, experienced two decades in which GDP per head declined<sup>8</sup>. The next section

examines convergence dynamics further using a range of statistical indicators.

## 2.1 Key indicators of economic convergence

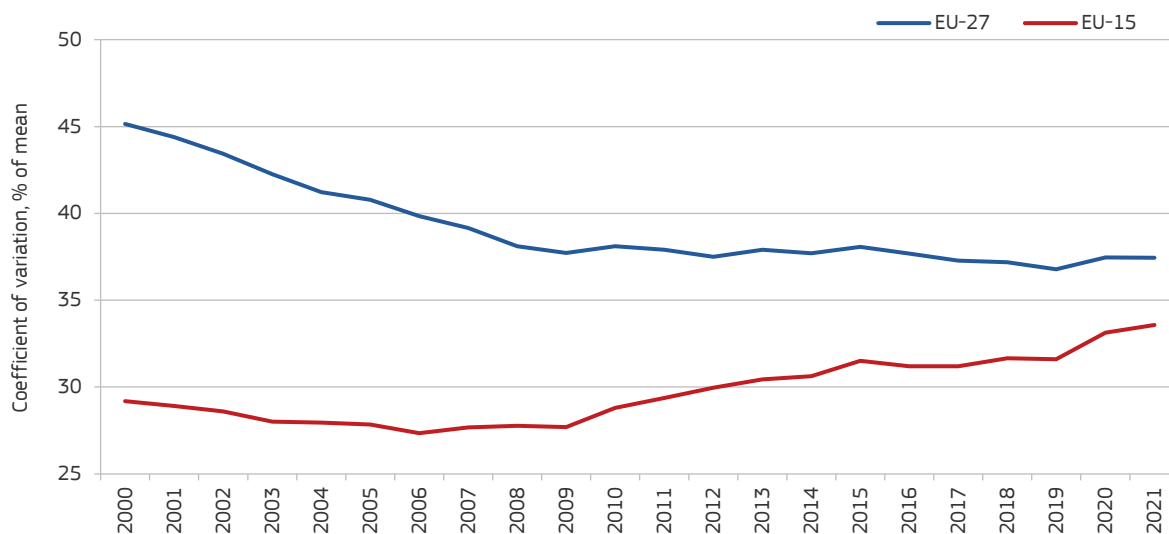
There are important differences in convergence dynamics between the EU-27 and the EU-15 (i.e. the 15 Member States before the 2004 enlargement). A commonly used statistical indicator to assess disparities in GDP per head is the coefficient of variation, which is a measure of its dispersion across regions (see Box 1.2)<sup>9</sup>. This indicator shows that disparities in GDP per head across EU regions declined sharply over the period 2000–2021 (Figure 1.3). On the one hand, this was largely driven by strong upward convergence of eastern regions. On the other hand, it is evident that convergence dynamics differ markedly between the EU-27 and the EU-15. In the former, regional disparities declined up until 2009 and stabilised afterwards.

7 Many of the eastern Member States have witnessed significant outmigration during the past two decades, thereby lowering the denominator. This trend is of great social and economic importance and is analysed more in detail in Chapter 6. However, the results of exceptional economic convergence are confirmed when measured in terms of productivity or GDP per person employed (see Section 2), a measure that is not affected by net migration. It is also confirmed by indicators of household disposable income and investment. Despite the enormous progress made, this report shows that there remains ample room for forward upward convergence, and a large heterogeneity of income within countries and among households.

8 18 of the regions are in Italy, nine in Greece, four in Spain, two in France and one each in Portugal, the Netherlands, Finland, Austria and Belgium. From 2010 to 2021, GDP also fell significantly in some outermost regions – in Canarias from 83 % of the EU average to 62 %; in the Açores from 75 % to 66 %; and in Madeira from 81 % to 70 %.

9 The coefficient of variation is a way of quantifying the variability of a dataset in relation to its mean. It is calculated by dividing the standard deviation by the mean and then expressing this as a percentage, allowing for comparisons between datasets with different units or scales.

Figure 1.3 Regional (NUTS 2) disparities, EU-27 and EU-15, GDP per head (PPS)



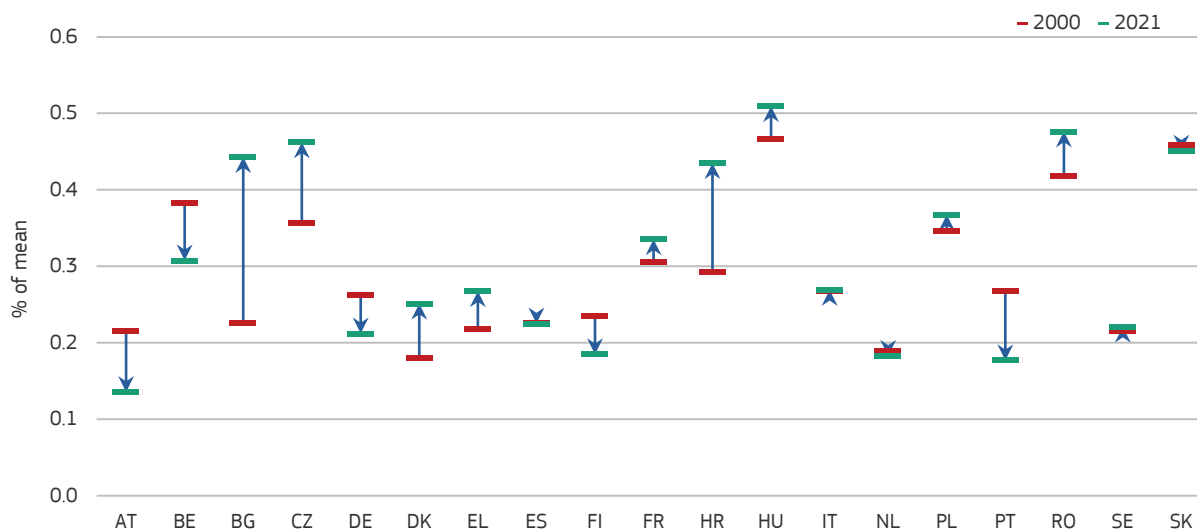
Source: DG REGIO calculations based on Eurostat data.

In the EU-15, disparities declined up until 2006 and at a much slower pace and began to increase after 2009. The coefficient of variation indicates that regional disparities in the EU-27 were still some 30 % larger in 2021 than those in the EU-15 in 2004, suggesting that ample room for upward convergence remains.

Regional disparities are wide in many Member States and have tended to widen further in most

of them since 2000 (see also Chapters 2 and 3). In Member States with more than four regions, regional disparities in GDP per head increased in 11 of the 19 Member States concerned between 2000 and 2021 (Figure 1.4). Increases were largest in Bulgaria, Croatia and Czechia, but there were also increases in the EU-15, in Denmark, Greece and France. On the other hand, disparities declined in Portugal, Austria, Belgium and Germany. The drivers of within-country regional disparities

Figure 1.4 Coefficient of variation within Member States, GDP per head (PPS), NUTS 2 regions, 2000 and 2021



Source: DG REGIO calculations based on Eurostat data.

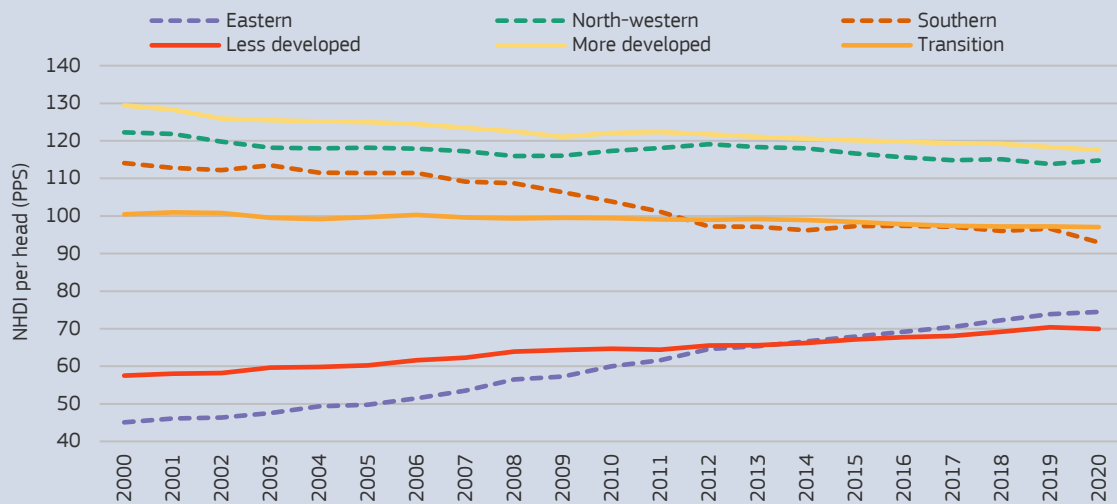
### Box 1.1 Household disposable income and economic cohesion

Household income per head can be used to show how convergence in GDP per head is reflected in people's income (Figure 1.5). As for GDP per head, there are large regional differences in growth rates of household income. Net household disposable income (NHDl) per head relative to the EU average increased steadily between 2000 and 2020 in eastern regions (from 45 % to 75 %) and, to a lesser extent, in less developed regions as a whole (from 60 % to 70 %). On the other hand, it declined substantially in southern regions between 2000 and 2012 (from 115 % to below 100 %) and remained unchanged up until 2020, when it fell (to 95 %) because of the effect on their economies of the COVID-19 pandemic.

GDP and household income per head are key indicators for assessing economic convergence and disparities across regions, but do not shed light on the extent to which the benefits of growth are shared among people within regions. There were large regional differences in growth rates of mean equivalised household income across the EU (Figure 1.6).

Over this period, two thirds of regions experienced growth in mean household income, whereas the rest registered no growth or a decline. Many of the high-growth regions are in eastern Europe, while many of those with no growth or a decline are in southern Europe. However, a number of advanced economies from north-western Europe (France, Austria, Belgium and Denmark) also saw mean household income stagnate during this period. The largest differences in growth rates occur between and not within countries. An exception is France, with some regions experiencing sustained growth and others a decline, including some of the outermost regions<sup>1</sup>. Moving beyond average income, the European Commission found that high-income households in the EU have benefited most from income growth in countries where growth was above the EU average over the period 2007–2017 (largely catching-up countries)<sup>2</sup>. Conversely, in countries where income declined, the decline was more equally distributed.

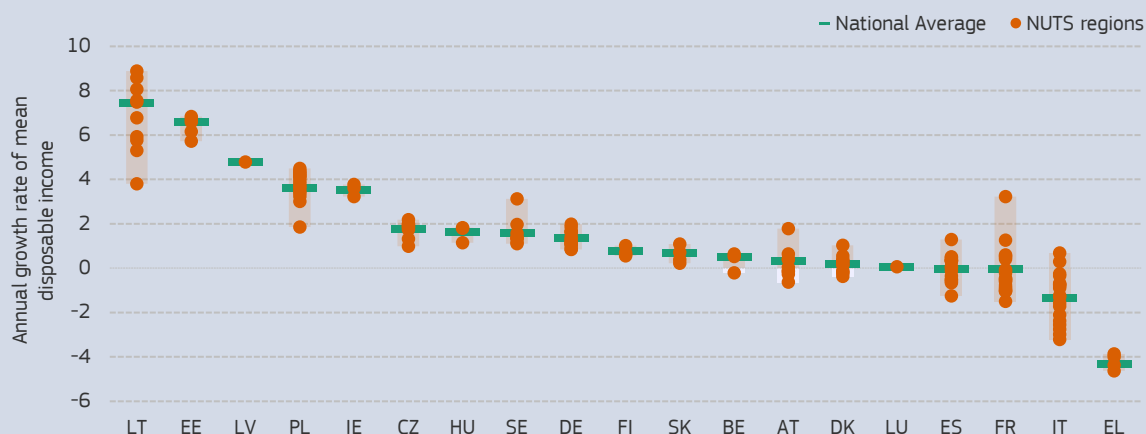
**Figure 1.5 Net households disposable income per head in PPS, % of EU average, by group of NUTS 2 region, 2000–2020**



Source: Eurostat.

- 1 Significant differences in disposable income persist between some French outermost regions and mainland regions. In Mayotte, the yearly median disposable income was EUR 3 140 in 2019, far below the national average of EUR 21 680.
- 2 European Commission (2020).

Figure 1.6 Growth in mean equivalised disposable household income, 2010–2019



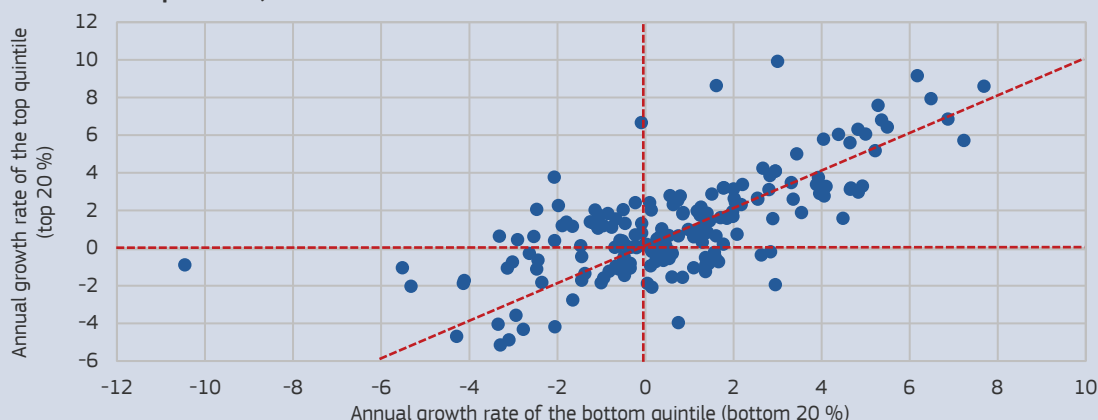
Note: NUTS 3 regions for DK, EE, LT, and SK, NUTS 2 regions for AT, CZ, ES, FI, FR, IE, LU, LV, and PL, and NUTS 1 for the remaining countries. Households are defined as one or more persons living in the same dwelling. Disposable income is defined after taxes and transfers. This is equivalised by dividing the total disposable income of the household by the square root of the number of household members.

Sources: OECD computations based on microdata from the Luxembourg Income Study (LIS) and EU Statistics on Income and Living Conditions (EU-SILC).

Survey-based data shed light on the distribution of regional income between households. Inequalities tend to be persistent and high in EU regions<sup>3</sup>. The top 20 % of households in EU regions, in terms of income, received on average almost 5 times (4.7) more than the bottom 20 % in 2019, an increase of 5 % from 2010. However, increased inequality was not common to all regions. Only in a

small majority of regions (54 %) did top incomes grow more, or decline less, than bottom incomes, and in the rest income inequality narrowed (Figure 1.7). In regions with increasing household income inequality, this was driven by low-income households becoming poorer rather than high-income ones becoming richer.

Figure 1.7 Growth in mean equivalised disposable household income for the top and bottom quintiles, 2010–2019



Note: NUTS 3 regions for DK, EE, LT, and SK, NUTS 2 regions for AT, CZ, ES, FI, FR, IE, LU, LV, and PL, and NUTS 1 for the remaining countries. Households are defined as one or more persons living in the same dwelling. Disposable income is defined after taxes and transfers. This is equivalised by dividing the total disposable income of the household by the square root of the number of household members.

Sources: OECD computations based on microdata from the Luxembourg Income Study (LIS) and EU Statistics on Income and Living Conditions (EU-SILC).



These results indicate the importance of regional statistics on income distribution and the need to extend their coverage. This can be achieved by using additional sources of data to measure inequalities more accurately and at more detailed spatial levels<sup>4</sup>. Making progress on this is important for several reasons. Firstly, it would help to throw further light and on categories of people in particular places that have benefited most from regional convergence or

suffered most from recessions or shocks. Secondly, persistent or expanding pockets of poverty and social exclusion can limit opportunities for people, so reducing the growth potential of regions, such as through lower employment rates. Thirdly, if growing inequalities are compounded by a broader worsening in living standards, this can lead to discontent, and so a decline in regional cohesion and a more polarised political landscape<sup>5</sup>.

4 E.g. Königs et al. (forthcoming); Bauluz et al. (2023).

5 Dijkstra et al. (2020); 2023; Rodríguez Pose (2018); Lee et al. (2023).

are quite heterogeneous across Member States. More developed regions (typically capital city regions) are generally widely outperforming other regions in eastern Member States such as Bulgaria or Romania. In other Member States, such as Portugal, the decline in regional disparities is due to low growth in some developed, previously dynamic, regions. In France, instead, internal disparities increased because growth of GDP per head in regions with low levels was particularly slow. Differences in GDP per head within Member States are often as large as between Member States, indicating that important regional variations are often hidden by national averages. The same holds for disparities in employment rates and in a number of social indicators, including between rural and urban areas (Chapters 2 and 3)<sup>10</sup>. Convergence trends in household disposable income show some similarities with those of GDP per head but also differences (see Box 1.1).

GDP per head in less developed regions grew, on average, faster than in other regions before the 2009 recession but not after it. Another widely

used indicator of convergence is the beta coefficient (see Box 1.2), which shows the tendency for lower-income economies or regions to grow faster than higher-income ones, narrowing disparities over time. As seen above, this has indeed happened since 2000, especially among less developed regions in eastern Europe. However, in the EU-15, though regions with lower GDP per head grew faster than those with higher levels over the 12 years 1996–2008, their growth was lower in the 12 years 2009–2021<sup>11</sup>. The estimated beta coefficient of convergence indeed turned from negative (Figure 1.8) to positive after the global recession (Figure 1.9). In the EU-12 (those before 1995), GDP per head in lower-income regions grew faster than in higher-income ones throughout the period, but not to the same extent after the global recession. The estimated beta coefficient, indeed, remained negative, as expected, but declined by a third<sup>12</sup>. This tendency is consistent with a larger fall than elsewhere in investment and total factor productivity in many of the countries concerned after the global recession<sup>13</sup>.

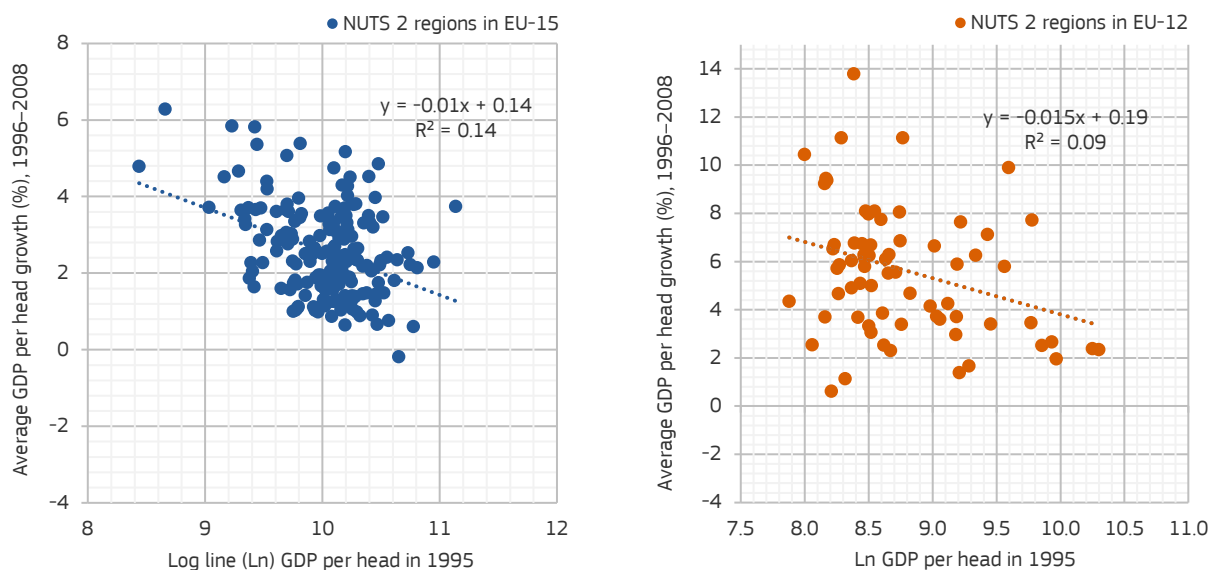
10 Participation rates, for instance, are very high in some Member States (e.g. 82 % in the Netherlands, and almost 90 % in Åland in Finland), but much lower in Greece (63 %), as low as 44 % in Sicilia, and under 40 % in Mayotte.

11 The beta coefficient remained more stable in the NUTS 2 regions in the EU-12. As expected with logarithmic functional forms and standard economic theory, it flattened slightly over time, reflecting assumed decreasing returns to scale and a slowdown in the pace of convergence the closer a region gets to the technological frontier.

12 A significant decline is also found for other estimates of the beta coefficient over time (through rolling regressions) for the EU as a whole. See: Monfort (2020).

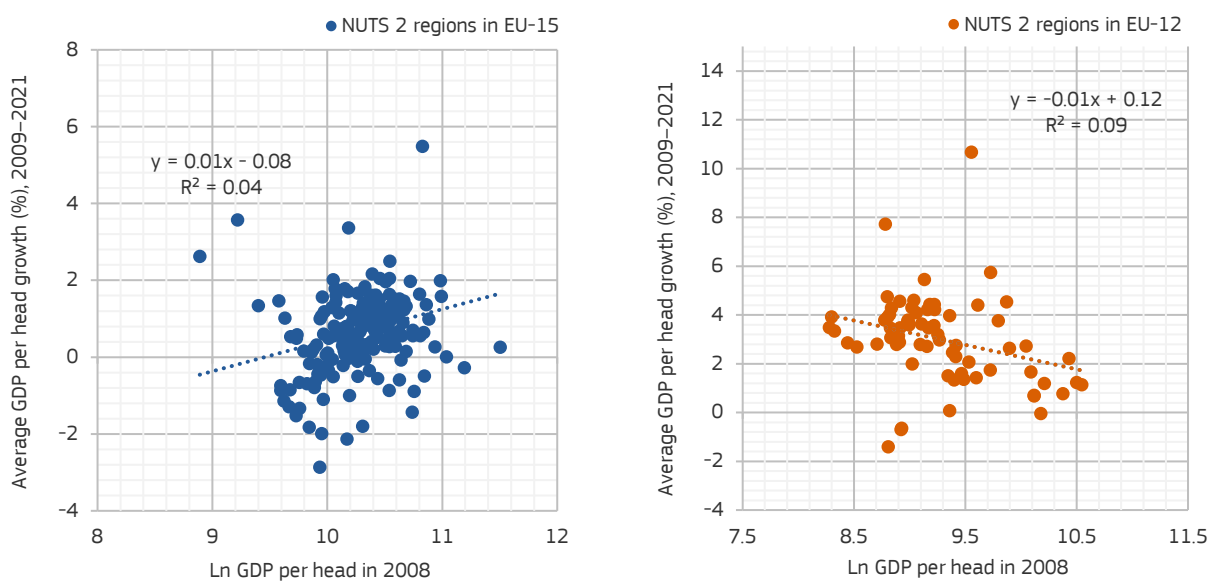
13 Through an analysis of conditional beta convergence (see Box 1.2), Licchetta and Mattozzi (2022) find that limited productivity catch-up is a major explanation for the lack of convergence, especially of southern regions. However, they also note that capital accumulation was particularly sluggish in the euro area in the decade following the global recession and gross fixed capital formation (GFCF) took 10 years to return to its pre-recession level. This was in sharp contrast to the period before 2008, where growth in GFCF was higher than average in many euro area converging countries, although largely (and arguably excessively) concentrated in the construction sector, where it declined markedly afterwards.

Figure 1.8 Estimated beta-coefficient for NUTS 2 regions in the EU-15 and EU-12, 1996–2008



Source: DG REGIO calculations based on Ardeco data.

Figure 1.9 Estimated beta-coefficient for NUTS 2 regions in the EU-15 and EU-12, 2009–2021



Source: DG REGIO calculations based on Ardeco data.

Differences in economic structure and geographical features can partly explain differences in the pace of convergence. A recent statistical approach is built around the notion of ‘club convergence’<sup>14</sup>.

The clubs or clusters concerned may have a common economic structure, geographical features or other characteristics that affect the pace of convergence. One study<sup>15</sup> employs this approach

14 In this context, measures of club convergence, such as pair-wise statistical convergence, enable convergence, or divergence, to be examined between pairs of countries or regions, rather than examining entire groups simultaneously as with sigma and beta convergence: see Pesaran (2007). The measure, therefore, complements these more traditional indicators by allowing for the identification of patterns of convergence within the sample analysed.

15 Arvanitopoulos and Lazarou (2023).

## Box 1.2 Three indicators of statistical convergence: sigma, beta and club convergence

These three concepts are often used in empirical research to assess dynamics of economic development and convergence among different countries or regions and to explore whether disparities are diminishing, how fast convergence is occurring, and whether different types of economies exhibit different convergence patterns.

### Sigma ( $\sigma$ ) convergence

Sigma convergence refers to a situation where the dispersion or inequality of income, or other indicators, between countries or regions declines over time. Accordingly, it indicates that the standard deviation – a measure of dispersion around the mean – is narrowing, pointing to a reduction in disparities. In this report, the coefficient of variation, which expresses the standard deviation as a percentage of the mean, is used to examine the presence of sigma convergence.

### Beta ( $\beta$ ) convergence

Beta convergence is an indicator of the rate at which different economies are approaching a common ‘steady state’ of economic development or income<sup>1</sup>. It shows whether lower-income countries or regions grow at a faster pace than higher-income ones, leading to a reduction in disparities between them. A related concept is that of conditional beta convergence, as used, for instance, in the study by Licchetta and Mattozzi referenced above. This starts from beta convergence but enables account to be taken of the influence of specific conditions or features on the rate of convergence in addition to initial levels

of GDP per head. Conditional beta convergence allows for a more nuanced analysis of convergence dynamics by recognising that factors such as investment, education or governance can also affect the rate at which economies catch up with others.

### Club convergence

Club convergence refers to the notion that groups or ‘clubs’ of countries or regions may exhibit distinct patterns of economic convergence<sup>2</sup>. These may have a common economic structure, geographical features or other characteristics that can at least partly explain different paces of convergence. Within this, pair-wise statistical convergence is a method that assesses the convergence or divergence between pairs of countries or regions, rather than looking at entire groups simultaneously as with sigma and beta convergence<sup>3</sup>. The method is often used to identify and analyse distinct groups of economies that exhibit similar convergence patterns (club convergence). It allows researchers to determine which countries or regions are moving closer together and which are not, so increasing understanding of differences in convergence patterns within a broader group of economies. Overall, the results for EU regions found by Arvanitopoulos and Lazarou are broadly in line with those obtained by Pesaran for the world economy. While technological progress seems to have been spreading reasonably widely across economies, there are important geographical and structural factors that mean there are differences in GDP per head that remain persistent.

1 Barro and Sala-i-Martin (1992).

2 Quah (1996).

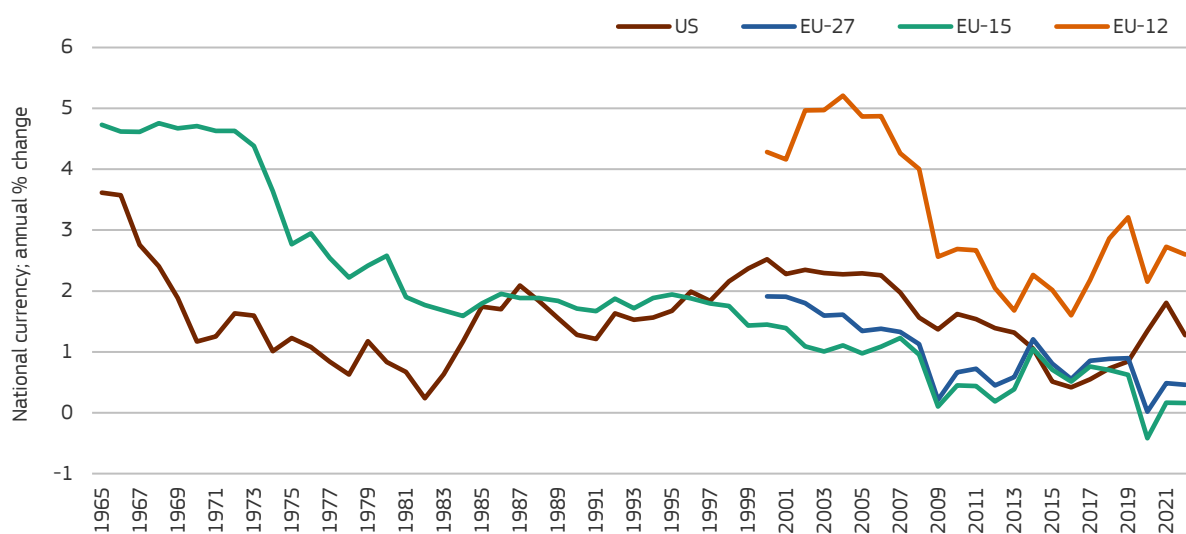
3 Pesaran (2007).

to identify pairs of EU regions that exhibit similar growth dynamics over the period 1980–2018<sup>16</sup>. In broad terms, their results suggest that geography matters. In the EU, there is consistent evidence of convergence between regions that share similar geographical features, such as being metropolitan,

coastal or mountainous (club convergence). Results for urban and rural areas, however, are mixed as no common pattern is identifiable<sup>17</sup>. As regards economic structure, there is consistent evidence of similarity in sectoral specialisation having a sizeable negative effect on club convergence dynamics.

16 Arvanitopoulos and Lazarou (2023).

17 As analysed in more detail in Chapter 3, remote rural regions are falling behind compared with other type of regions.

**Figure 1.10 Productivity slowdown in the US, EU-27, EU-15 and EU-12, 1965–2021**

Note: Five-year averages of the growth rate of real GDP per worker.  
Source: Ameco.

Regions with similar sectoral specialisation tend to diverge, while the opposite is the case for regions with different specialisations<sup>18</sup>. This result is consistent with the growing interdependence of economies across the world having a differentiated regional impact within the Single Market<sup>19</sup>. While some regions have been well positioned to take advantage of the new opportunities offered, others have suffered shrinking market shares, job losses, and stagnating wages (see also Section 4 on the development traps).

## 2.2 Productivity and economic cohesion in the EU

Productivity dynamics play a prominent role in determining economic, social and territorial cohesion patterns across regions. Productivity is a major determinant of economic growth and prosperity. As countries and regions become more productive, they generate higher income, which can be

redistributed both spatially and between people to improve infrastructure, education, healthcare and other public and social services. Higher productivity, indeed, is positively correlated with higher educational attainment and increased life expectancy<sup>20</sup> and can contribute to social cohesion and equity. While uneven productivity growth can lead to increased territorial inequality<sup>21</sup>, there is also evidence of it having positive spatial spill-overs. Indeed, the latest regional competitiveness index (RCI) shows strong performance of large metropolitan areas but also an improvement of less developed regions (see Section 5).

Productivity growth has consistently slowed down in all advanced economies since the late 1960s, raising concerns about the possibility of having entered a period of secular stagnation<sup>22</sup>. Despite tumultuous events and wars, industrialised economies witnessed a significant increase in output and productivity during the first half of the

18 This result is also found by Cavallaro and Villani (2021).

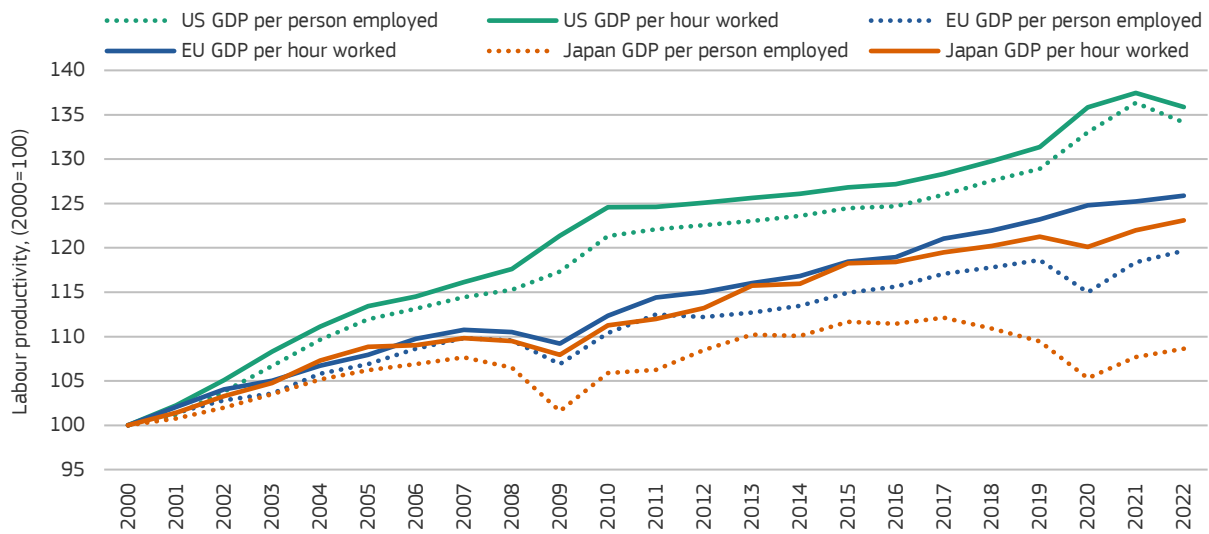
19 European Commission (2017).

20 Barro (2001); Cervellati and Sunde (2013).

21 Krugman (1991).

22 Gordon (2015) has made a strong case for the 'secular stagnation' hypothesis. This view, however, is countered by those who point to the opportunities that may lie ahead in terms of new disruptive technologies such as artificial intelligence, robotics and ever increasing computing capacity. According to this more optimistic view, these innovations may be able to reverse the long-run slowdown in productivity growth by extending the technological frontier (Brynjolfsson and McAfee, 2014).

Figure 1.11 Labour productivity in the EU, US and Japan, 2000–2022 (2000=100)



Note: Index of real GDP per person employed and of real GDP per hour worked.  
Source: Ameco.

20<sup>th</sup> century<sup>23</sup>. The post-World War II period saw an even more rapid acceleration, marked by annual growth rates of 3 % to 5 %<sup>24</sup>. However, since the late 1960s, productivity growth has steadily declined, and today the norm is an annual growth rate of around 1 % or below (Figure 1.10). In a context of declining productivity growth, the gap between the EU and the US also widened in the period 1995–2005<sup>25</sup>, as well as in the immediate aftermath of the 2009 recession<sup>26</sup> (Figure 1.11).

The general downward trend in productivity growth conceals significant differences across the EU. The largest decline in productivity growth in the EU-15, measured in terms of GDP per person employed, seems to have taken place around the turn of the century. Over the period 1980–2000, it averaged around 1.5 % a year, but fell to 0.5 % a year in the period 2001–2021. In the 1980s, less developed regions had higher productivity growth, on

average, than other types of regions, whereas since the 1990s more developed regions have had the higher growth.

The picture is more positive for the EU-27. Over the 2001–2021 period, the increase in GDP per head in the wider EU was largely associated with growth of both productivity and employment (Table 1.1 and Map 1.3)<sup>27</sup>. Many less developed regions, especially those in the eastern Member States, had above-average productivity and employment growth, offset only slightly by a decline in the working-age population as a share of the total, so that growth of GDP per head was above the EU average<sup>28</sup>. The overall picture, however, masks the fact that in a number of regions, especially in the south, GDP per head fell over this period, with productivity declining or increasing very little.

23 Maddison (2007).

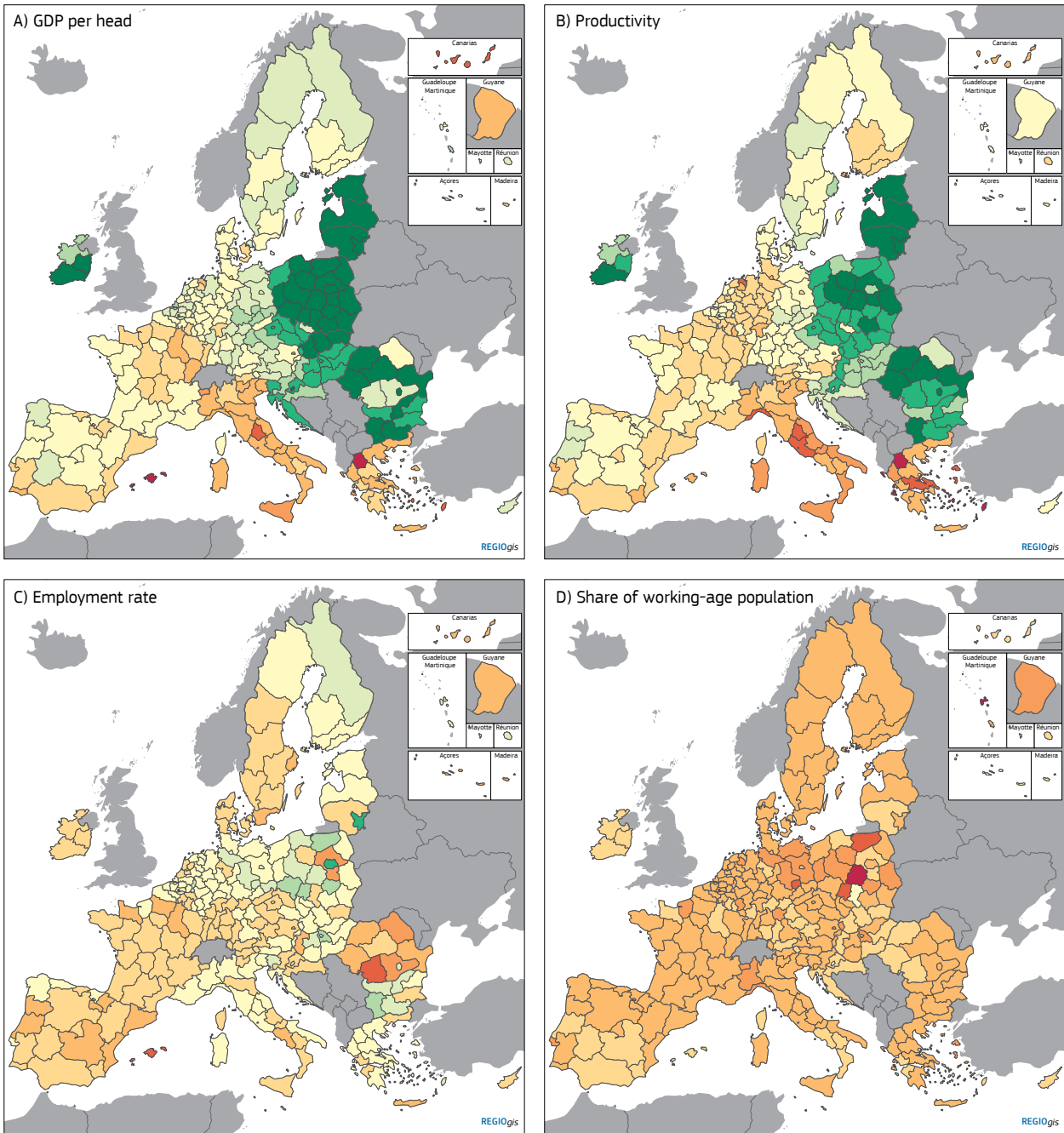
24 Eichengreen (2007).

25 Gordon and Sayed (2019).

26 After a prolonged period of modest productivity growth after the industrial crisis of the 1970s, the US exhibited a substantial increase, surpassing both the EU and Japan. Moreover, in the two years following the 2009 recession, the US experienced a surge in output per hour worked, primarily attributable to a sharper decline in employment offset by a stronger rebound in hours worked per employee (Figure 1.11). However, after the global recession, US productivity growth has closely mirrored that of the EU.

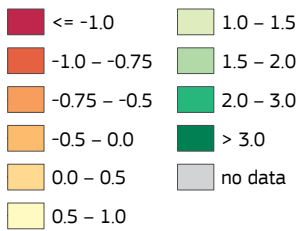
27 Note that productivity growth on this measure does not reflect the reduction in average hours worked per person employed over the period.

28 The working-age population (defined as those aged 20–64) as a share of the total decreased slightly in the EU and in most regions over this period.



**Map 1.3 Growth of GDP per head, productivity, employment rate and working-age population, 2001–2021**

Average percentage change on the preceding year



Employment rate defined as workplace-based employment divided by population aged 20–64.

Source: DG REGIO based on JRC-ARDECO and Eurostat [lfst\_r\_lfsd2pop] data.

### 2.3 Cohesion shocks and cycles in the 2000s

In terms of the dynamics of economic convergence and productivity examined above, the past two decades can be divided into four sub-periods: the ‘convergence years’ of 2000–2008, the ‘low employment’ period of 2009–2013, the ‘delayed recovery’ of 2014–2019 and the ‘quick rebound’ of 2020–2021 (Map 1.4).

Between 2001 and 2008, nearly all regions experienced growth in GDP per head, with average rates of over 5 % a year in many eastern regions<sup>29</sup>. Productivity growth in the transition and more developed regions was, however, already below 1 % a year. The five years following the 2009 recession brought a major blow to convergence, signalling the beginning of a phase of divergence for less developed and transition regions in southern Europe and some in eastern Europe, especially those in countries affected by financial and banking instability. Importantly, the 2009–2013 period in southern Europe was the only one in which the decline of GDP per head was accompanied by mass unemployment, rather than slower productivity growth. In fact, productivity growth in southern Europe was, on average, higher in this recessionary period than in the relatively expansionary 2000–2008 one. The 2014–2019 period finally brought recovery from the Great Recession. Almost all regions experienced growth in GDP per head, though at a lower rate than in the pre-recession period. As a result, 10 years after the 2009 recession, over a quarter of the EU population (100+ million) still lived in regions where real GDP per head had not returned to the pre-recession level (see Box 1.3 for further details).

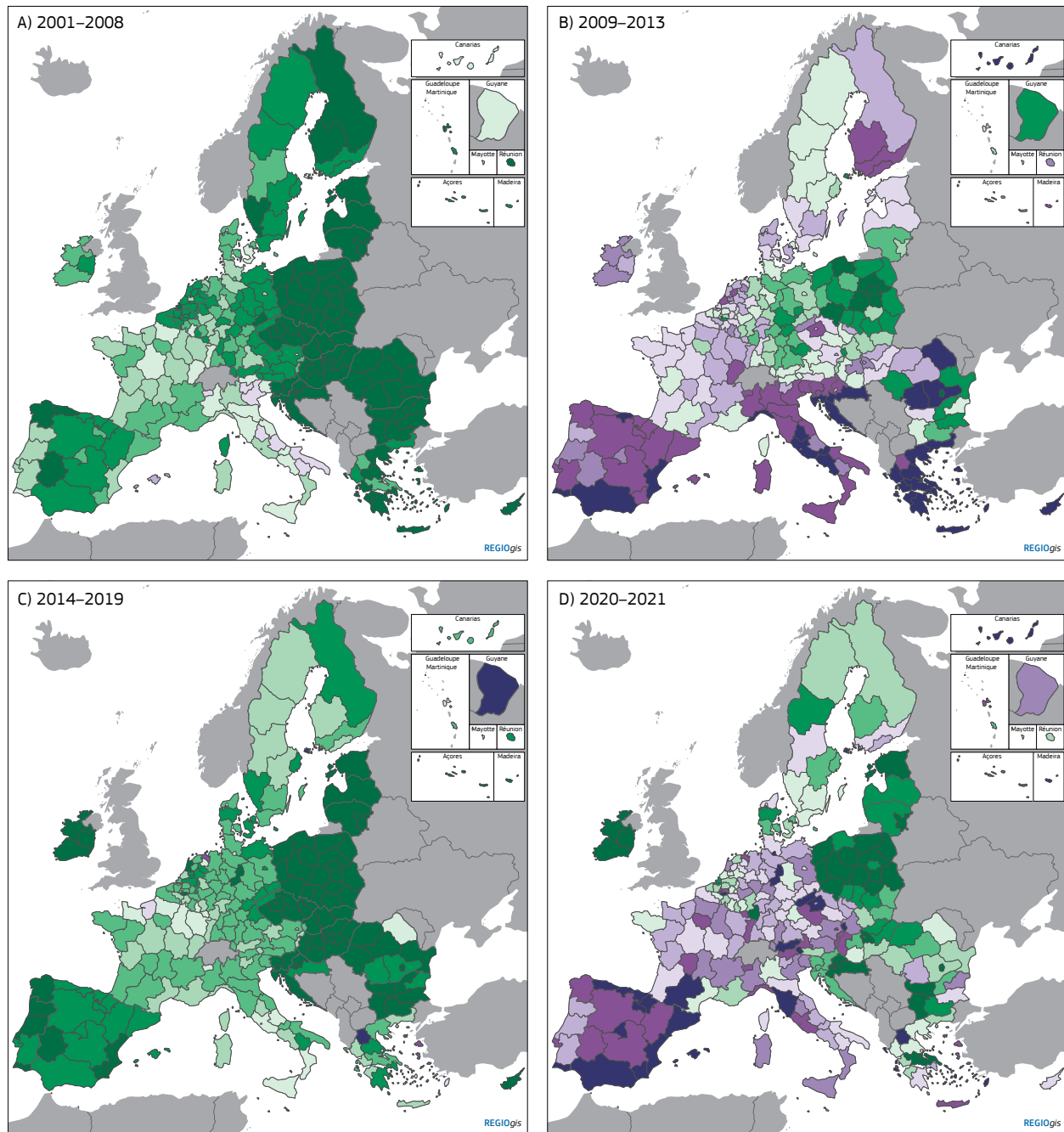
The COVID-19 pandemic in 2020 brought another major recession in all regions. Although it is too early to assess its structural impact and that of the subsequent Russian war of aggression in Ukraine on economic cohesion, economic recovery in 2021 was quite broad-based from a regional perspective. As shown in the next section, both less developed and transition regions have rebounded much more strongly than after the 2009 recession.

High productivity growth in less developed eastern regions partly stems from structural changes in their economies and investment dynamics (Table 1.2). The latter have differed greatly across the EU. In eastern Europe, investment increased at an average rate of 3.5 % a year over the period 2001–2021 – over 3 times the EU average (1.1 %) and over twice that in more developed regions (1.4 %). Eastern regions have also had a larger share of investment in industry, with both industry and services generating value-added as employment in agriculture declined<sup>30</sup>. Investment in more developed and transition regions is instead mainly led by the financial sector, which was responsible for 40 % of the total over the five years 2016–2020. Transition and more developed regions are also more comparable in terms of the division of employment, with the largest share in services.

Southern Europe, however, stands out in terms of investment dynamics. Investment declined by 0.5 % every year between 2001 and 2021, stagnating or declining in all sectors except agriculture. Employment in industry declined in all three types of regions, though much less so than in agriculture. By contrast, employment and gross value added (GVA) in services increased in all regional groups over the period, particularly in financial activities, and especially so in less developed regions. (There are large differences in economic structural dynamics at a more detailed territorial level – see Chapter 3.)

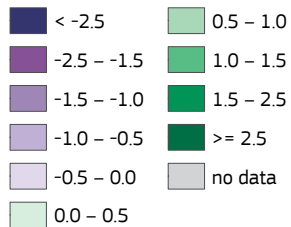
29 Some less developed regions, however, did not share this benign economic cycle and actually saw income per capita declining even during these relatively buoyant years (e.g. south of Italy).

30 Regions at different levels of development tend to have different economic structures. Employment in agriculture fell between 2001 and 2020 in the EU, especially in the less developed regions, reflecting their economic restructuring and agricultural modernisation. Nonetheless, less developed regions still tend to have relatively large shares of employment in agriculture. GVA per person employed in agriculture is also lower than in more developed regions, implying untapped potential for productivity increases.



**Map 1.4 Growth of GDP per head in real terms 2001–2021, main sub-periods**

Average percentage change on the preceding year



Source: DG REGIO based on JRC-ARDECO data.



Table 1.1 Decomposition of annual average change in GDP per head, 2001–2021 and sub-periods

	GDP per head	Productivity	Employment	Share of working-age population		GDP per head	Productivity	Employment	Share of working-age population
<i>Average percentage change on the preceding year</i>					<i>Average percentage change on the preceding year</i>				
200–2021					200–2021				
EU-27	1.06	0.74	0.51	-0.19	EU-27	1.06	0.74	0.51	-0.19
Less developed regions	1.55	1.32	0.31	-0.08	Eastern	3.46	2.94	0.65	-0.15
Transition regions	0.77	0.50	0.53	-0.25	Southern	0.11	-0.08	0.36	-0.17
More developed regions	0.88	0.55	0.56	-0.23	North-western	0.97	0.68	0.51	-0.23
2001–2008					2001–2008				
EU-27	1.68	1.08	0.44	0.16	EU-27	1.68	1.08	0.44	0.16
Less developed regions	2.76	2.21	0.00	0.54	Eastern	5.10	4.30	0.15	0.61
Transition regions	1.56	0.89	0.44	0.22	Southern	0.92	-0.01	0.88	0.05
More developed regions	1.34	0.78	0.67	-0.12	North-western	1.41	1.08	0.34	-0.01
2009–2013					2009–2013				
EU-27	-0.41	0.44	-0.53	-0.31	EU-27	-0.41	0.44	-0.53	-0.31
Less developed regions	-1.17	0.39	-1.37	-0.19	Eastern	0.68	1.51	-0.48	-0.34
Transition regions	-0.69	0.29	-0.57	-0.41	Southern	-2.16	0.14	-2.02	-0.28
More developed regions	-0.31	0.17	-0.14	-0.34	North-western	0.07	0.12	0.27	-0.31
2014–2019					2014–2019				
EU-27	1.91	0.87	1.49	-0.46	EU-27	1.91	0.87	1.49	-0.46
Less developed regions	2.69	1.42	1.88	-0.61	Eastern	4.23	2.92	2.09	-0.79
Transition regions	1.46	0.58	1.52	-0.63	Southern	1.62	0.07	1.84	-0.29
More developed regions	1.70	0.77	1.19	-0.26	North-western	1.49	0.87	1.00	-0.38
2020–2021					2020–2021				
EU-27	-0.30	-0.28	0.47	-0.48	EU-27	-0.30	-0.28	0.47	-0.48
Less developed regions	0.23	-0.14	1.05	-0.68	Eastern	1.70	1.20	1.23	-0.73
Transition regions	-0.71	-0.79	0.70	-0.62	Southern	-1.90	-1.41	-0.06	-0.44
More developed regions	-0.41	-0.12	0.02	-0.30	North-western	-0.15	-0.13	0.37	-0.39

Note: Growth in GDP per head can be broken down into three main components: changes in productivity (GDP per person employed), changes in the employment rate (employment relative to population of working age) and changes in the share of the working-age population in the total. Accordingly, the following identity holds:

$$\frac{\text{GDP}}{\text{Total population}} = \frac{\text{GDP}}{\text{Employment}} \times \frac{\text{Employment}}{\text{Working-age population}} \times \frac{\text{Working-age population}}{\text{Total population}}$$

The same identity can be expressed in terms of changes: the change in GDP per head is the sum of the changes in productivity, in the employment rate and in the share of the working-age population.

Green bars indicate positive changes, red bars negative changes. Workplace-based employment is divided by the population aged 20–64. Less developed regions exclude Mayotte.

Source: Eurostat [nama\_10r\_3empers], ARDECO, Cambridge Econometrics, AMECO, DG REGIO calculations.

**Table 1.2 Investment (GFCF) in the EU at the NUTS 2 level, 2001–2021, by economic activity (NACE<sup>1</sup>), category of development and geographical region**

<i>Average shares in 2016–2020 (%)</i>	Less developed	Transition	More developed	Eastern	North-western	Southern	EU-27
A: Agriculture, forestry and fishing	5.9	3.3	1.5	4.4	1.8	3.2	2.4
B-E: Industry (except construction)	27.4	22.1	21.8	28.2	21.2	23.6	22.4
F: Construction	4.3	2.8	2.3	5.1	1.6	4.5	2.6
G-J: Wholesale and retail trade, et al.	20.7	15.6	19.9	24.0	17.5	21.5	19.0
K-N Financial and insurance activities, et al.	25.6	39.5	41.0	24.8	42.8	33.7	39.0
O-U: Public administration, et al.	16.0	16.8	13.6	13.4	15.1	13.5	14.6
Total	100	100	100	100	100	100	100

<i>Average % change on the preceding year, 2001–2020</i>							
A: Agriculture, forestry and fishing	1.7	-0.1	0.7	3.3	0.2	0.2	0.7
B-E: Industry (except construction)	1.2	0.7	1.4	2.8	1.4	0.0	1.2
F: Construction	0.6	0.1	1.2	5.0	1.0	-1.0	0.8
G-J: Wholesale and retail trade, et al.	1.3	1.0	1.5	2.8	2.0	-0.5	1.4
K-N Financial and insurance activities, et al.	-0.3	0.4	1.4	4.1	1.3	-0.7	1.0
O-U: Public administration, et al.	0.8	0.4	1.4	4.3	1.3	-0.8	1.0
Total	0.7	0.5	1.4	3.5	1.4	-0.5	1.1

Source: DG REGIO calculations on ARDECO data.

1 Nomenclature statistique des activités économiques (statistical classification of economic activities).

### Box 1.3 Cohesion cycles in the 2000s: a regional snapshot

In broad terms, four cohesion sub-periods can be distinguished in the two decades 2001–2022.

#### The ‘convergence years’ (2001–2008)

Between 2001 and 2008, nearly all regions experienced growth in GDP per head. Overall, growth was above average in both the less developed and the transition regions, with rates of over 5 % a year in many eastern Member States. This is in line with traditional economic growth theories, which predict that growth will tend to be higher the lower the initial level of GDP per head. Most of these regions are in less developed and moderately developed Member States, where for the most part growth was faster than the EU average. In Romania and Bulgaria, where growth was particularly high, catching-up was not uniform across the country but was driven by the capital city region. Regions in southern Italy, however, did not follow this pattern of catching up. They already experienced a decline in GDP per head in the 2000s even though their GDP per head was well below the EU average.

#### The ‘low employment period’ (2009–2013)

The global recession of 2009 led to GDP per head in the EU declining between 2009 and 2013, with many of the less developed and transition regions growing more slowly (or shrinking more quickly) than the EU average, so reversing the earlier tendency towards convergence. Around 60 % of the EU population lived in regions with a declining GDP per head. The regions hit hardest were mainly in the southern EU, though also in Romania, Ireland and Finland. In most Greek regions, the reduction in GDP per head averaged over 3 % a year. Notable exceptions were most regions in Poland and some in Bulgaria and Romania.

#### The ‘delayed recovery’ (2014–2019)

The 2014–2019 period shows a clear recovery from the Great Recession. Almost all regions experienced growth in GDP per head, though at a lower rate than in the pre-recession period. High growth rates were restored in most eastern regions, so leading again to convergence. Growth in many north-western regions also remained below pre-crisis rates, Ireland being the main exception. In many regions in the hard-hit southern Member States, especially in Portugal and Spain, growth rates recovered, but in Greece and many regions in Italy growth remained low. Overall, 10 years after the 2009 financial crisis, over a quarter of the EU population still lived in regions where real GDP per head had not returned to pre-crisis levels. This includes the entire population of Greece and Cyprus, 80 % of the population of Italy and a third of that of Spain, but also 75 % of the population of Finland and over a third of that of Austria. In most of the eastern Member States, GDP per head had returned to pre-crisis levels in all or nearly all regions. However, in Romania and Croatia, 40 % and 25 % of the population, respectively, lived in regions where this was not the case.

#### The ‘quick rebound’ (2020–2022)

The 2020–2022 period is characterised by the double shock of the COVID-19 pandemic and Russia’s war of aggression in Ukraine. Due to the nature of these shocks, they affected some regions more than others and – within them – some workers and sectors more than others (e.g. tourism, cultural activities, and industries affected by supply chain disruptions and high energy prices). Again, southern Europe was on average more heavily affected. However, as discussed below, the ensuing economic recovery was faster and more broad-based than after the 2009 recession.

### 3. The short-term impact on economic cohesion of the COVID-19 pandemic

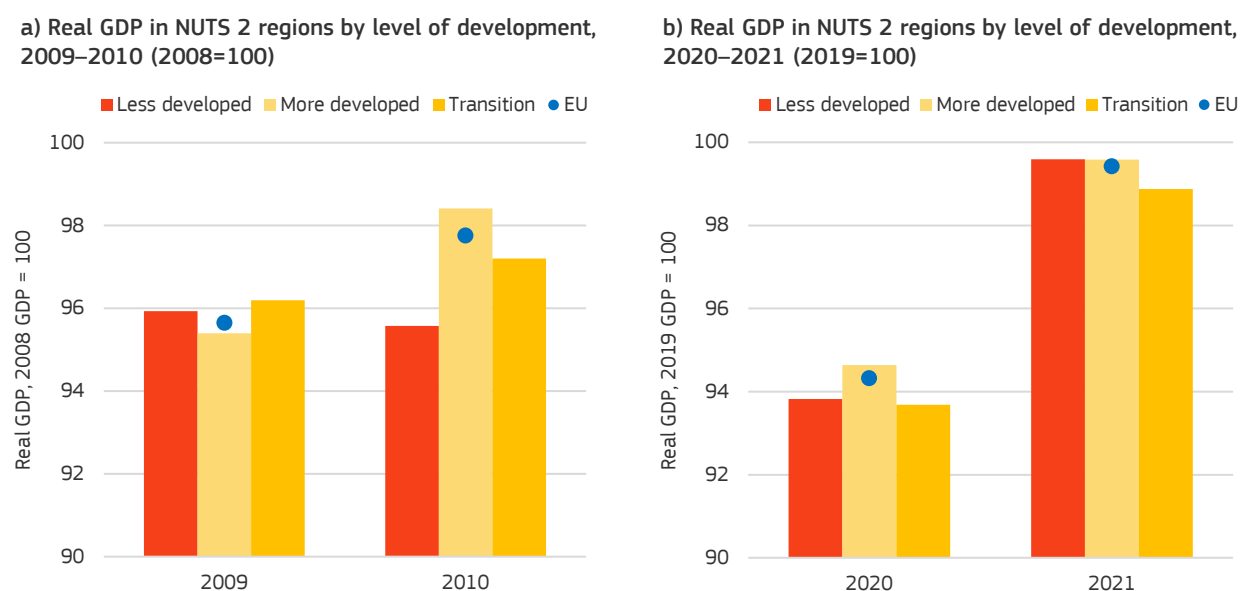
The COVID-19 outbreak had a severe impact on the EU economy and society, but GDP rebounded strongly in 2021 after a massive downturn in 2020. GDP fell in all but three EU regions. The unprecedented, bold and co-ordinated economic policy actions taken, including through Cohesion Policy, mitigated the economic and social impact of the pandemic. GDP at EU level already exceeded the pre-pandemic level by the last quarter of 2021, whereas it took seven years for it to exceed the pre-recession level after 2009. The regional data also indicate a more broad-based recovery in 2021, with less developed, transition and more developed regions all rebounding (Figure 1.12).

Southern Europe, however, was more heavily affected by the 2020 recession, with GDP falling by 10%. Despite a stronger rebound, GDP in 2021 was still 5% below the pre-COVID peak. North-western and, more especially, eastern regions have fared

significantly better than southern ones in terms of GDP in the wake of the two crises. However, this has not prevented GDP in the EU as a whole falling behind that of the US and other advanced economies (Figure 1.13).

It is too early to be able to fully assess the longer-term impact of the COVID-19 outbreak on economic cohesion, but so far less developed regions have recovered more quickly than from the 2009 recession. The data available confirm the substantial size of the shock in 2020. Overall, the fall in GDP was much larger than during the recession of 2009. As already highlighted in the 8<sup>th</sup> Cohesion Report<sup>31</sup>, some regions were hit more than others and – within them – some workers and sectors (such as tourism, cultural activities, and industries affected by supply chain disruptions) more than others. However, the ensuing economic recovery was more broad-based and faster than in 2010, when GDP continued to fall in around a quarter of EU regions (Figure 1.14). In 2021, this was the case in only four regions<sup>32</sup>. In 2010, the decline was largest in less developed and transition

**Figure 1.12 Real GDP in NUTS 2 regions by level of development, 2009–2010 (2008=100) and 2020–2021 (2019=100)**

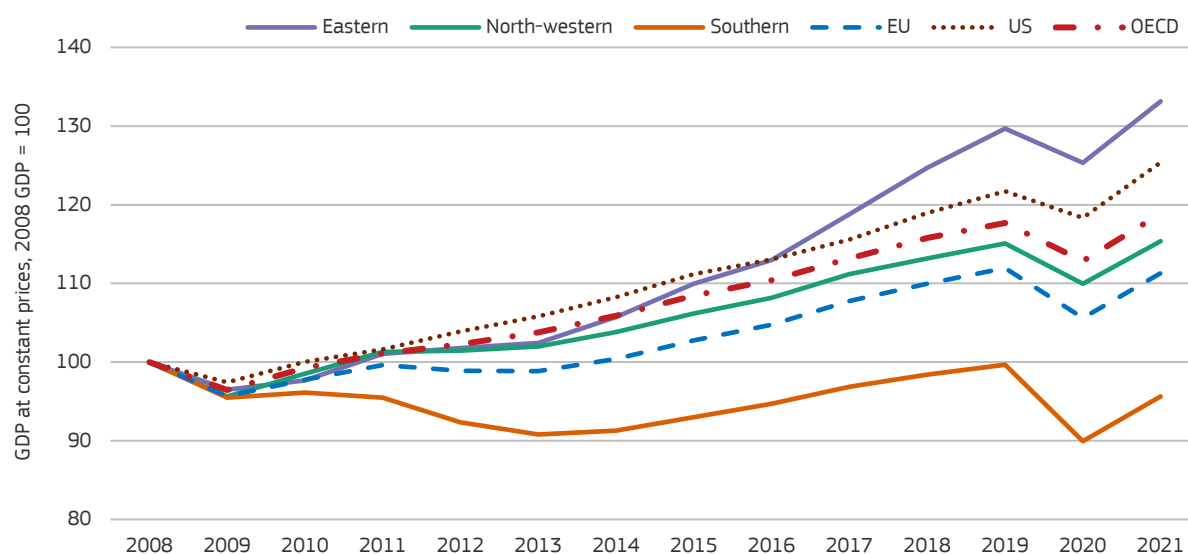


Source: Eurostat and Ardeco.

31 European Commission (2022).

32 There is even a slightly negative correlation between regional growth rates in 2020 and 2021, meaning that regions experiencing a deeper fall in GDP in 2020 were, on average, also the ones that experienced a stronger rebound in 2021 (Figure 1.16).

Figure 1.13 GDP at constant prices in the EU, US and OECD, 2008 GDP=100



Source: Ameco.

regions. In 2021, the regions where GDP fell by most in 2020 were, on average, the ones where the rebound was strongest<sup>33</sup>.

Despite the broad-based recovery, there are again very large differences in growth rates across regions (last panel in Map 1.3). These may reflect differences in the structure of economies, with sectors more heavily affected by restrictions and supply chain disruptions taking longer to recover. Despite the strong rebound, the impact of the crisis on economic cohesion was severe and will need to be monitored in the future together with the effect on overall growth in the EU.

The pandemic reduced employment in all regions, but this was largely offset by a strong rebound in 2021. The reduction in the number employed in more developed regions was similar (1–2 %) in both 2009 and 2020 (Figure 1.15 and Figure 1.16). However, eastern, southern and less developed regions still had 5 % fewer people in employment one year after the global recession. This was not the case in 2021 and 2022. Employment in the regions most affected began to recover sooner

and it had already reached its pre-crisis peak in 2021 in nearly all of them. Thanks to job-retention schemes and other policy initiatives, the negative impact of the pandemic on employment was much smaller too than in 2009<sup>34</sup>. Indeed, the rapid economic recovery led to labour shortages reaching or even exceeding pre-pandemic levels in several Member States by the end of the year<sup>35</sup>. This is in stark contrast with the employment dynamics after the 2009 recession, where employment continued to decline in eastern and southern Europe two years after the recession.

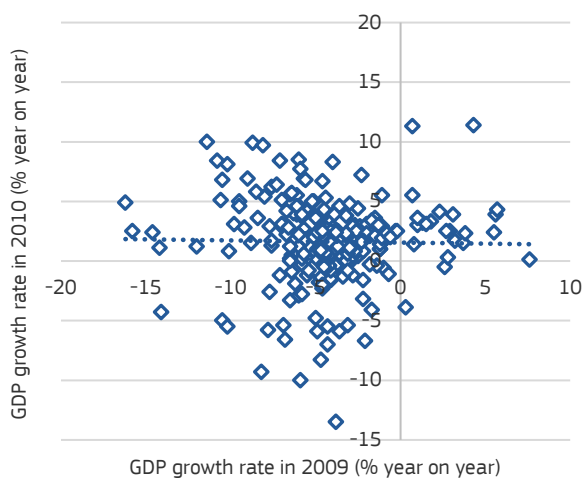
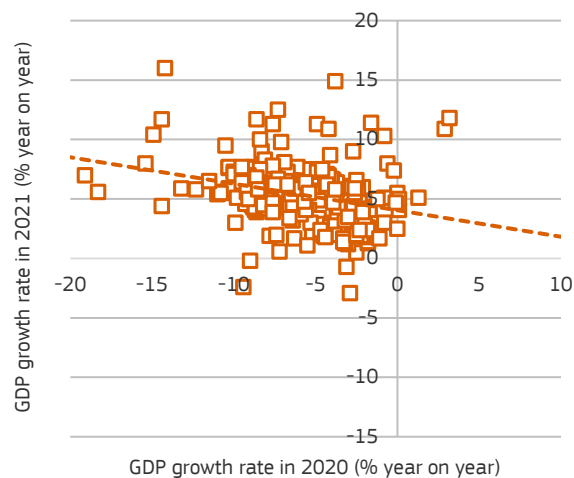
Both the 2009 recession and the 2020 pandemic hit household income in southern EU regions in particular (Figure 1.17). Unlike GDP and employment, household income did not decline markedly in the two periods in the EU as whole, suggesting that automatic stabilisers and discretionary measures played an important role in cushioning the impact<sup>36</sup>. However, there are large differences across the EU. Southern regions experienced a significant decline in household disposable income in the two years following the global recession (2010 and 2011). In the rest of the EU, by contrast, it was

33 This is suggested by the slightly negative correlation between regional growth rates in 2020 and 2021.

34 Giupponi et al. (2022).

35 European Commission (2022) and Chapter 2 of this report.

36 Bökemeier and Wolski (2022).

**Figure 1.14 Real GDP growth rate in 2009 and 2010, 2020 and 2021, NUTS 2 level, year on year % change****a) Real GDP growth rate in 2009 and 2010****b) Real GDP growth rate in 2020 and 2021**

Note: data for Polish regions are not yet available and not included.

Source: Eurostat.

above the pre-recession level. In 2020, the year of the COVID-19 outbreak, household income continued to grow during the recession in eastern and north-western regions. Southern regions, on the other hand, were hit particularly hard, with a larger decline in household income than in 2009, reflecting the much larger impact on GDP (5 % in 2009 against 10 % in 2020). The post-pandemic recovery in household income in the southern EU, however, was stronger in 2021, whereas in 2010 income continued to decline. Nevertheless, in 2022 it declined again, largely because of high inflation and a slower adjustment of wages than in the rest of the EU.

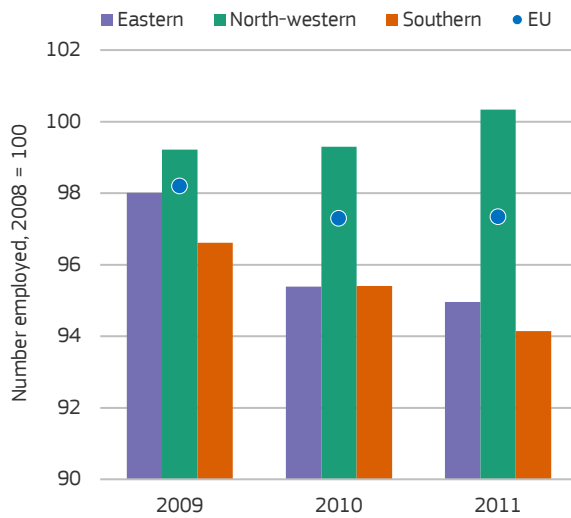
The post-pandemic rebound in investment was exceptionally strong, especially in less developed and southern European regions. The fall in investment in 2020, though large (around 5 %), was less than half of that in 2009 (11 %) (Figure 1.18). This contrasts with the contraction in GDP, which was larger in 2020. The difference was even larger in the year following the recession. Investment remained some 11 % below the pre-recession level in 2010, whereas it rebounded to nearly reach the pre-recession level in 2021. Significantly, less developed and transition regions performed, on average, better than more developed regions after the pandemic, while the opposite was the case after 2009.

The difference in the two periods partly reflects the exceptional nature of the 2009 recession, when the decline in investment was deeper and more persistent than in previous ones (Figure 1.19) and the rebound much slower than in the US and other advanced economies (Figure 1.20).

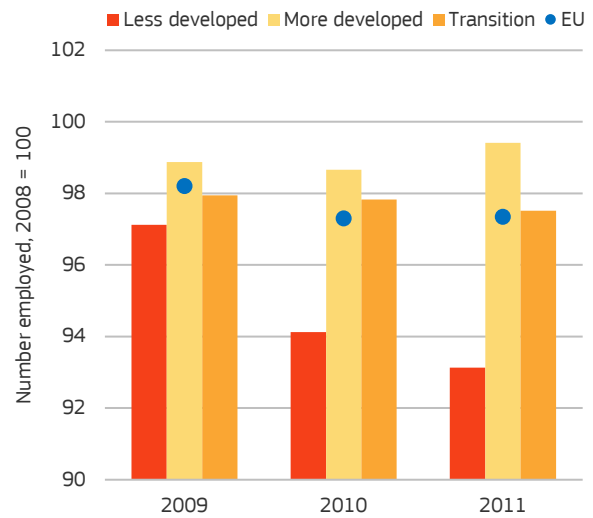
Both recessions had a substantial adverse impact on fiscal balances in the short term, but the COVID-19 pandemic was followed by a more modest increase in public debt over the subsequent three years (Figure 1.21). During the period 2009–2011, public debt relative to GDP went up by 17 pp in the EU (15 pp in the eastern EU, 13 in the north-western EU, and 24 in the southern EU). By contrast, the increase between 2020 and 2022 was a much smaller 6 pp (6 pp in the eastern EU, 7 in the north-western EU, and 8 in the southern EU). In both periods the US and Japan adopted a more expansionary fiscal stance, resulting in larger and more protracted fiscal deficits (Figure 1.22), which ultimately led to an increase in public debt relative to GDP of 51 pp and 78 pp, respectively, between 2008 and 2022 (Figure 1.23). This contrasts with a more restrained 20 pp increase in the EU over the same period, though in the southern EU the increase was 49 pp (as against 12 in the eastern EU and 18 in the north-western EU). Although

Figure 1.15 Number employed, by geographical area and level of development 2009, 2010 and 2011, 2008=100

a) Number employed by geographical area



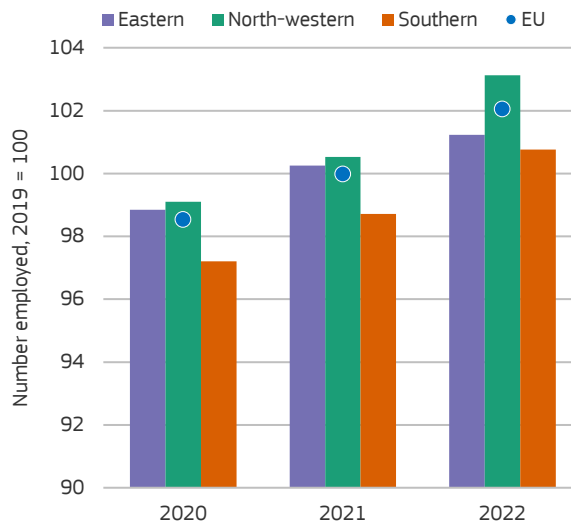
b) Number employed by level of development



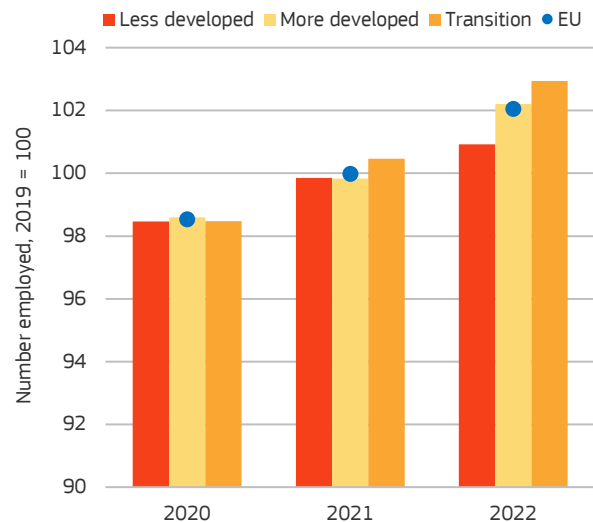
Source: Eurostat and Ardeco.

Figure 1.16 Number employed, by geographical area and level of development, 2020, 2021 and 2022, 2019=100

a) Number employed by geographical area



b) Number employed by level of development



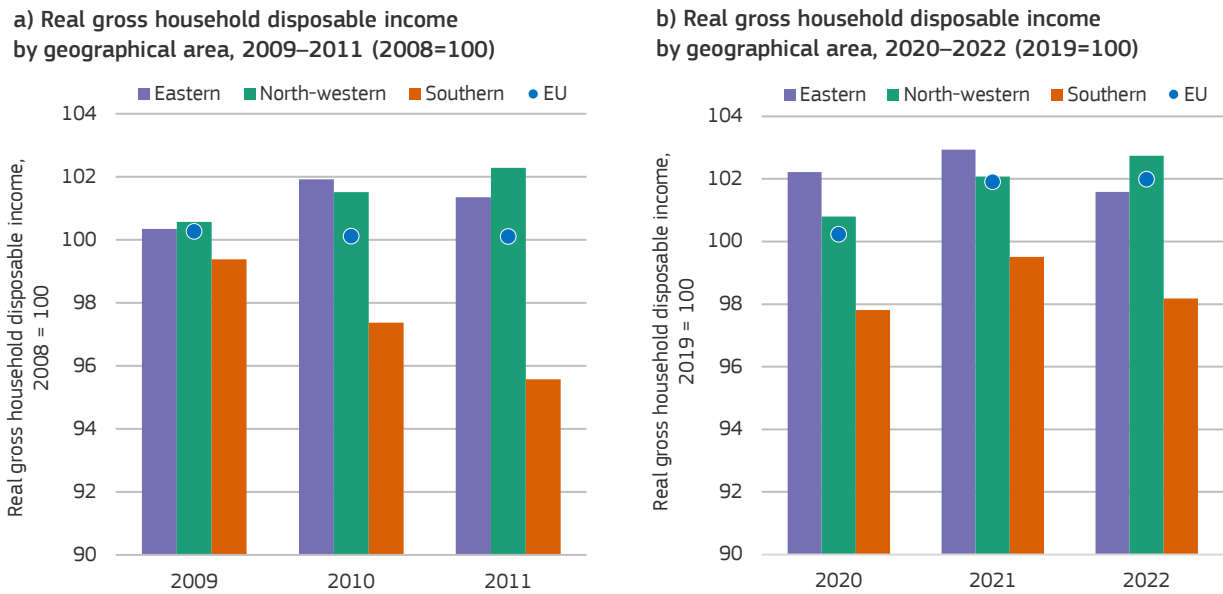
Source: Eurostat and Ardeco.

the increase in the southern EU was much the same as in the US, it was not associated with the same economic performance. Following the 2010 recovery, several EU Member States front-loaded fiscal consolidation measures in an attempt to curtail budget deficits. This yielded mixed results, as

GDP often failed to rebound as forecast<sup>37</sup>. However, in the wake of the 2020 COVID-19-induced recession, the EU introduced the NextGenerationEU scheme, making available financial aid of some EUR 750 billion to Member States severely affected by the crisis to support cash-strapped national

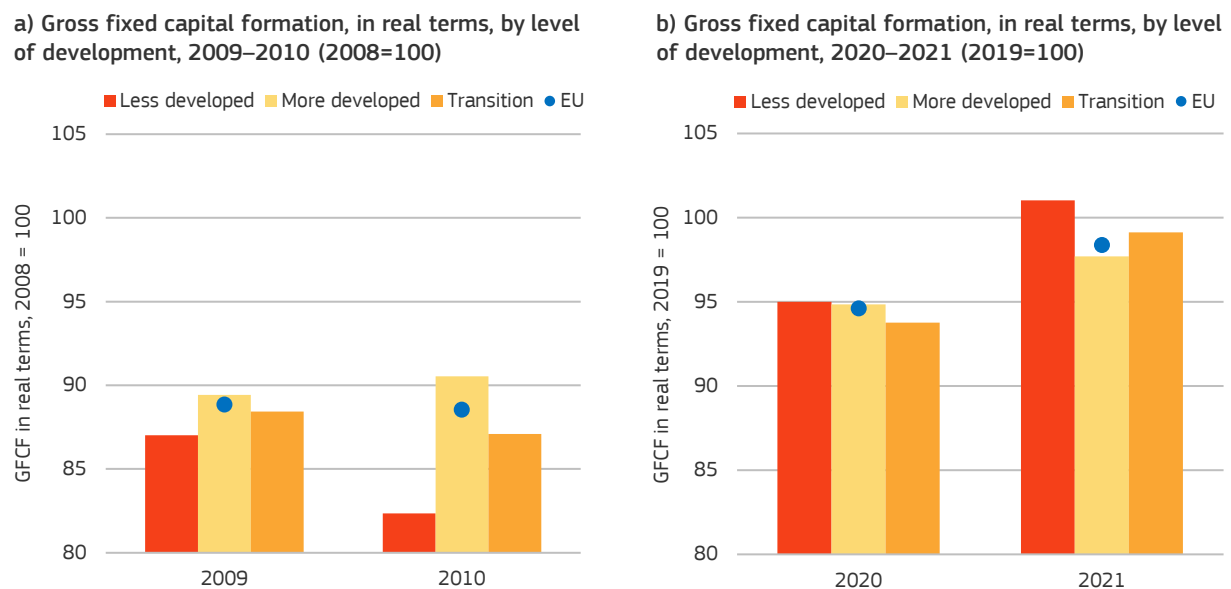
37 Blanchard and Leigh (2013).

Figure 1.17 Real gross household disposable income by geographical area, 2009–2011 (2008=100) and 2020–2022 (2019=100)



Note: Income is deflated by the harmonised consumer price index; data for MT and BG are missing. Source: Ameco.

Figure 1.18 Gross fixed capital formation, in real terms, by level of development, 2009–2010 (2008=100) and 2020–2021 (2019=100)



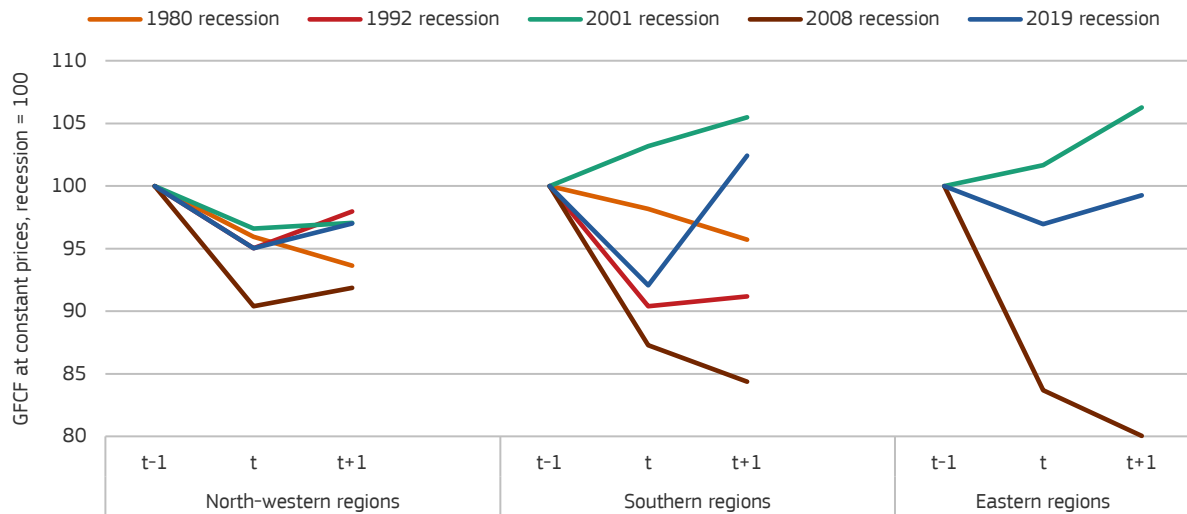
Source: Eurostat, Ameco and Ardeco.

budgets and to stimulate positive expectations for the economy. This collective response appears, so far, to have not only spurred a stronger recovery and mitigated any widening of disparities than after previous recessions but also restrained the increase in public debt.

In sum, the immediate impact of the two recessions was deep and broadly similar as regards the macro-economic effects. But the recovery of GDP, employment, household income and investment was stronger and more regionally balanced after the pandemic. The main proximate reason for this



**Figure 1.19** Gross fixed capital formation in the EU after the five major recessions since 1980, in real terms, by geographical area, year of recession=100

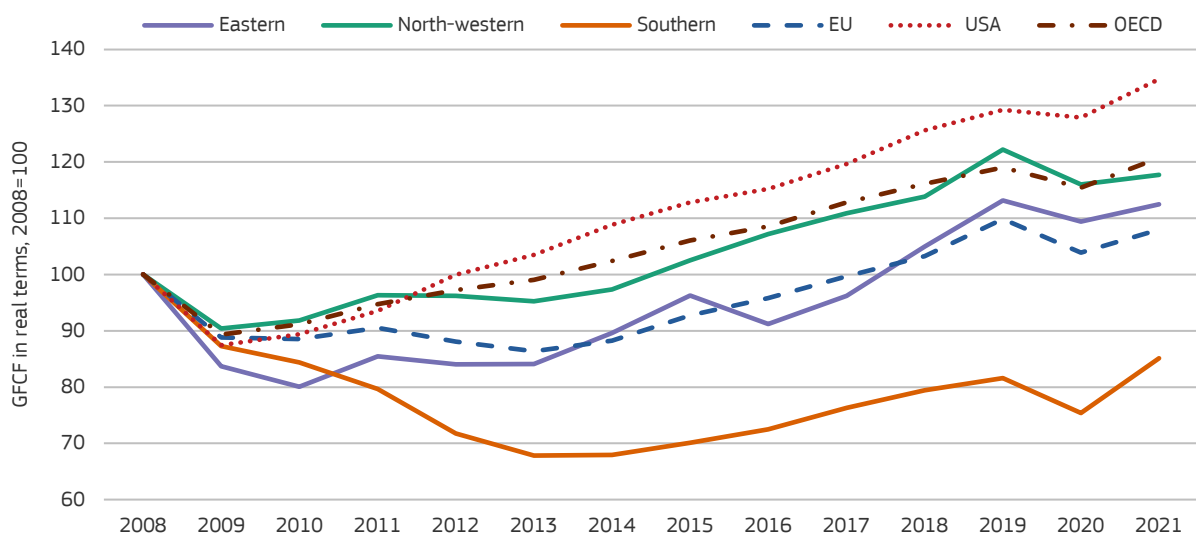


Source: Eurostat, Ameco and Ardeco.

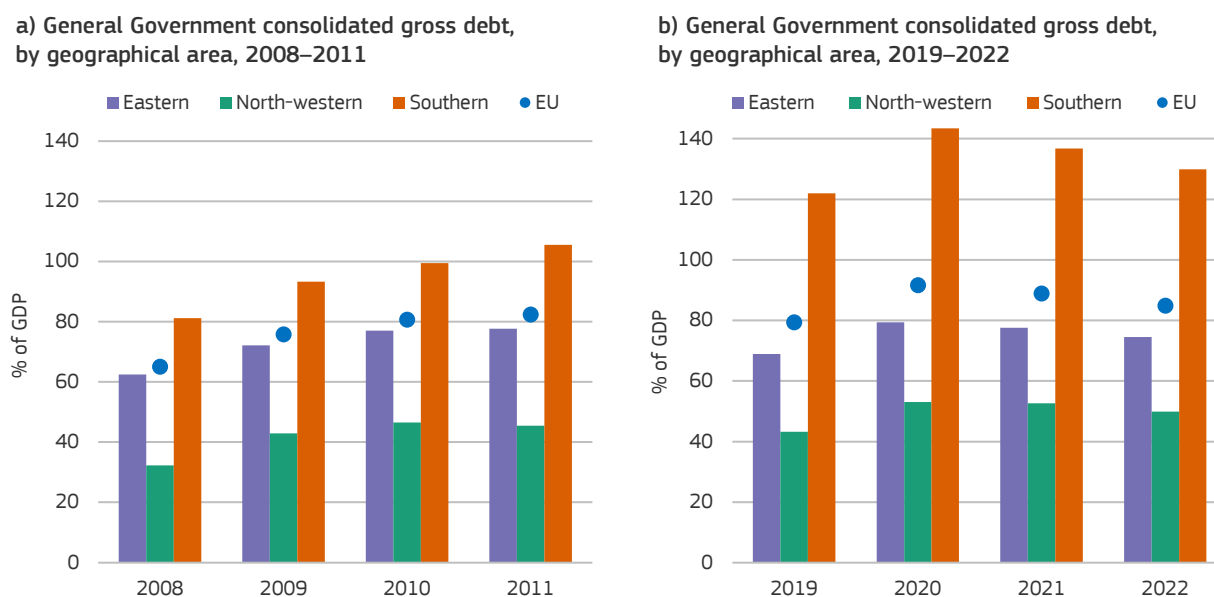
is that the performance of eastern, and more especially southern, regions was more similar to that of north-western ones. This, in turn, is partly due to the different nature of the two shocks. The 2009 recession stemmed from a global financial crisis, with a severe impact on the banking sector hampering the credit channel in the midst of a major de-leveraging process from both the private and the public sector. This, in turn, exerted a prolonged drag on real economic activity, investment, prices

and household income. This was the case throughout the EU, especially as compared with the more robust recovery in the US, and especially in EU regions most exposed to the twin de-leveraging process. By contrast, the 2020 recession was triggered by a different kind of external shock, the spread of a pandemic. The restrictions and disruptions to supply chains that ensued proved more transitory than the 2009 financial crisis. In line with the different nature of the two shocks, the price dynamics during

**Figure 1.20** Gross fixed capital formation, in real terms, by geographical area, 2008=100



Source: Eurostat, Ameco and Ardeco.

**Figure 1.21 General Government consolidated gross debt, by geographical area, 2008–2011 and 2019–2022**

Source: Ameco.

the recovery phase were also different. In addition, novel and swift policy action – the rapid deployment of Cohesion Policy, new instruments such as SURE (Support to Mitigate Unemployment Risks in an Emergency) and the NextGenerationEU recovery fund – helped to prevent a protracted reduction in investment. Together, they made available up to EUR 750 billion in financial support to Member States severely affected by the 2020 recession.

The longer-term prospects for economic cohesion, however, remain hard to predict. The additional shocks that have occurred since the COVID-19 pandemic pose potentially longer-term challenges to the EU growth model. It is too early to fully assess the regional dimension of these shocks, partly because of a lack of regional statistics in many of the areas affected. Several regions, economic sectors and categories of workers have suffered significantly and the current situation remains fragile and volatile, with a risky and uncertain economic outlook. But there are also opportunities. For instance, regional economic disparities between the EU-27 and current candidate countries point to a large potential for upward convergence in the

future; see Maps 1.5 and 1.6 comparing the 2004 enlargement with the current relative position of candidate countries vis-à-vis EU regions.

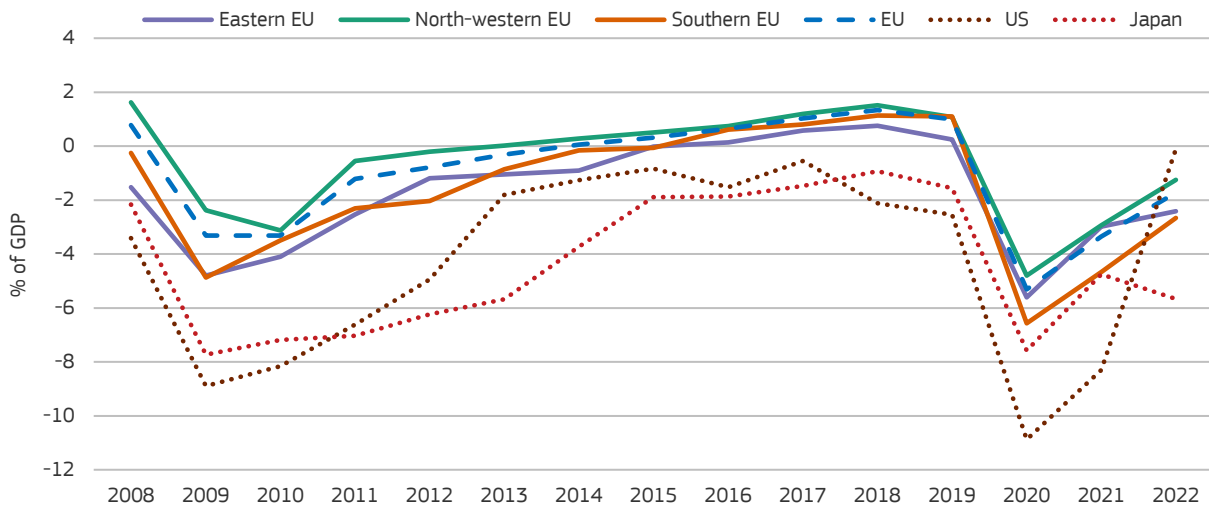
#### 4. The geography of growth, stagnation and discontent: high-growth paths and development traps in Europe

Over the past two decades many regions have experienced a prolonged period of economic stagnation leading to growing popular discontent. The regions concerned seem to have fallen into a development trap, a state of sub-par performance of GDP, productivity and employment<sup>38</sup>. Such a state is empirically correlated with an increase in political discontent and a decline in support for democratic values and the EU<sup>39</sup>. Regional development traps are not just an economic concern. The sub-par economic performance and lack of job opportunities have social costs and give rise to political resentment towards what is increasingly regarded as a system that leaves many people behind.

38 European Commission (2022).

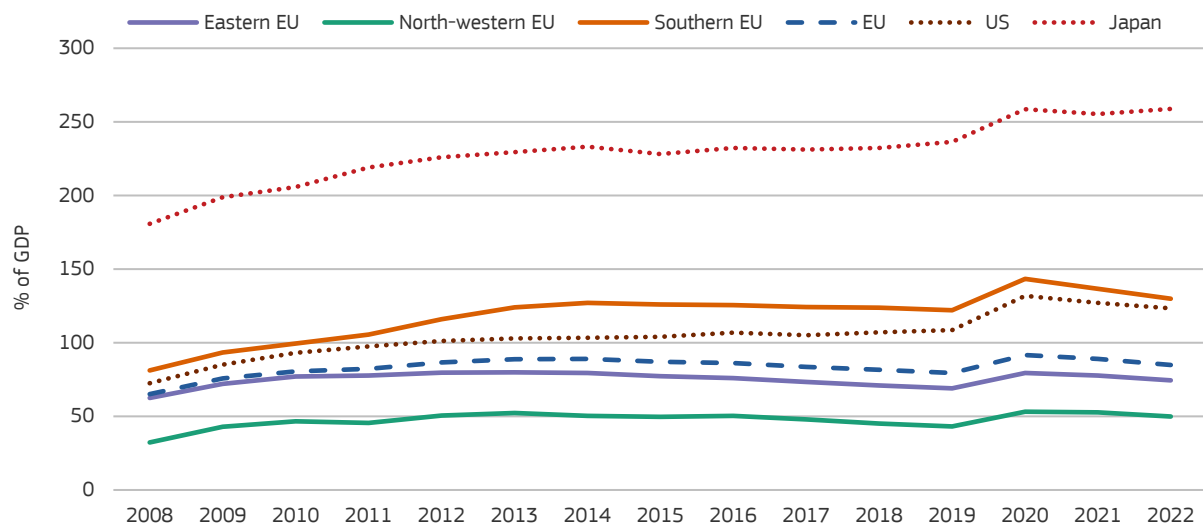
39 Dijkstra et al. (2020, 2023b).

**Figure 1.22 General Government net lending (+) or net borrowing (-), excluding interest payments, 2008–2022**



Source: Ameco.

**Figure 1.23 General Government consolidated gross debt**



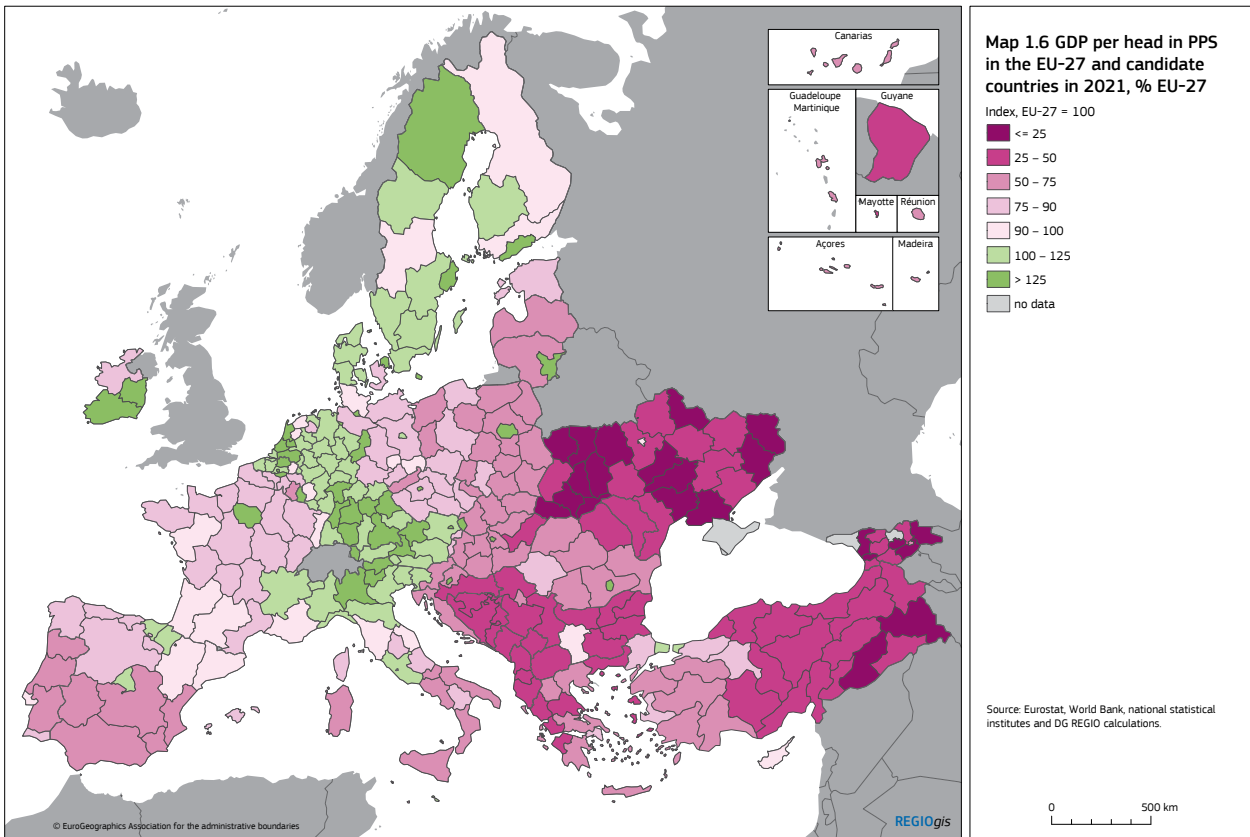
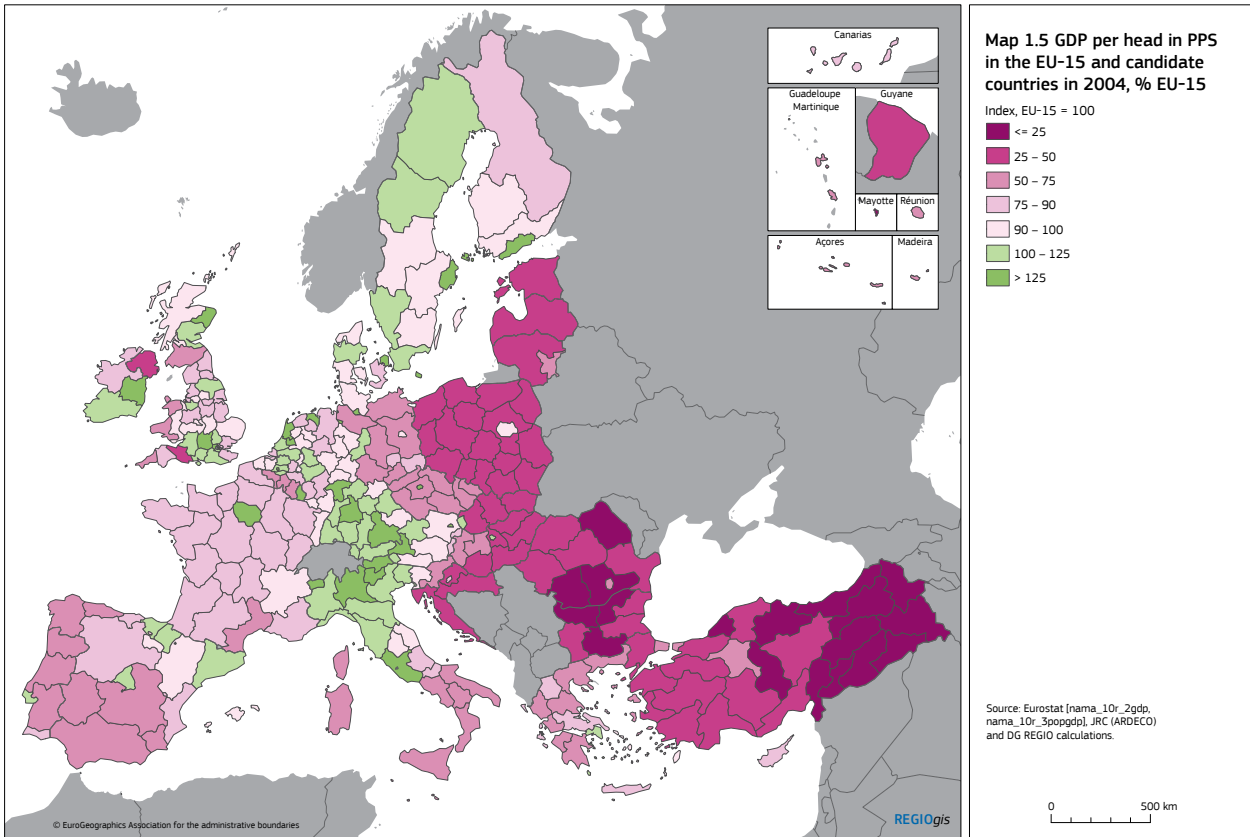
Source: Ameco.

On the positive side, though many regions have been persistently trapped, several have succeeded in moving from a low-growth to a high-growth development path. This has generally coincided with a shift of specialisation towards more complex economic activities linked to local strengths and characteristics, often through integrating into global value chains (see Chapter 5). This section

builds on the concept of a development trap presented in the 8<sup>th</sup> Cohesion Report<sup>40</sup> and extends it in three ways. First, it develops a high-growth path index to identify the best regional performers. Second, it presents a novel approach to determining the characteristics of regions stuck in a development trap and the ways of escaping from it<sup>41</sup>. Third, it sets out evidence linking the risk, intensity,

40 European Commission (2022).

41 Balland et al. (2019).



### Box 1.4 Regional cohesion and Russia's war of aggression against Ukraine

Russia's war of aggression against Ukraine sent shockwaves throughout the EU. Some of the EU's poorer regions are likely to be more affected. This box discusses three reasons: the concentration in richer regions of the economic contribution of working-age refugees; the vulnerability of poorer, rural areas to the sharp increase in energy and food prices; and the rise in geopolitical uncertainty, which has pushed up military spending particularly in poorer countries in eastern Europe.

The integration of refugees will probably raise average growth in the EU, but not regional cohesion. Immigration tends to benefit host regions that successfully integrate refugees in local labour markets. Under the Temporary Protections Directive, Ukrainian refugees can choose in which EU country to work, and most choose countries with an existing Ukrainian diaspora and dynamic labour markets: Germany, Poland and Czechia. Working-age Ukrainians added on average 2.5 % to the labour force aged 20–65 in eastern Europe, 1 % in western and northern Europe, and 0.5 % in southern Europe<sup>1</sup>. Taking into account that language barriers inhibit their integration into labour markets – surveys point to employment rates of about one third – Ukrainian refugees are likely to contribute on average about 0.5 % to the GDP of eastern countries in the short term, and somewhat less in the rest of the EU. The longer these refugees stay, and the better the policies facilitating their integration, the more likely their labour market participation is to rise. For example, as of August 2022, half of the working-age refugees had found employment in Poland, which currently hosts close to a million Ukrainian refugees, who can benefit from a particularly large existing diaspora and relatively low language barriers.

Even though eastern countries' living standards tend to lie below the EU average, it is mostly the richer regions that are likely to benefit from their integration into local labour markets. Refugees tend to settle in the dynamic regions with better employment

prospects within those countries, such as Prague or Warsaw, whose GDP per capita already substantially exceeds the EU average.

The energy and food price shocks triggered by the war have lowered wealth throughout the EU, but poorer, rural areas were more affected. Prices for energy and food have declined from their peaks, but have had a significant impact on real disposable income. Since rural regions within the EU tend to be poorer than urban ones, households living in rural areas tend to spend relatively more on transport, and those that are poorer spend relatively more on energy and food. For example, households in rural areas in Bulgaria spend 35 % of their consumption on food, those in Bulgarian cities 23 %.

Finally, eastern countries bordering Russia, Ukraine or Belarus have raised their military spending more than other Member States since Russia's invasion of Crimea. With a GDP per head about half that of countries in the north and west, these countries raised their military spending by 0.7 % of GDP between 2014 and 2022, twice as much as those in the west and north. This increase risks crowding out spending that could have been used to advance regional cohesion. Being more intertwined with the Russian economy before the war, these economies are more affected by the sanctions imposed on Russia. The war has been a major disruption to the implementation of cohesion programmes, notably Interreg programmes. External border regions, in Finland and the Baltic States, as well as some Polish border regions, have lost their cross-border co-operation partners. Previous exchanges and cross-border flows have been replaced by closed borders and no co-operation. The Commission introduced changes allowing for the integration of these regions into other co-operation programmes, but the negative border effect is stronger than ever and they must be further supported to look for other co-operation and development opportunities.

<sup>1</sup> All figures referenced in this box stem from Eurostat as well as various reports from the International Organization for Migration (<https://dtm.iom.int/reports?search=ukraine>).

and length of regional development traps to the rise of political discontent in the EU<sup>42</sup>.

#### 4.1 Regions on high-growth trajectories

The picture of convergence shown by the indicators above gives an overall view of macro-regional developments, but it does not lend itself to identifying specific features and success stories at a more detailed level. To shed light on these, the methodology used to determine the regions stuck in a development trap also enables us to calculate an economic development index (EDI) for regions that have persistently outperformed others<sup>43</sup>. A large number of EU regions, defined here at the NUTS 3 level, have been on a high-growth trajectory (EDI above 0.5 in Map 1.7) over the past two decades. As expected, these are disproportionally located in eastern Europe, reflecting higher growth during the catching-up phase noted above (beta convergence). However, regional success stories are not limited to this broad area of the EU. Indeed, most EU Member States have at least one NUTS 3 region on a high-growth path over the period 2001–2021 (EDI higher than 0.5). This is true not only of most capital city regions, but also of some regions in centre-north Portugal, north-western Spain, coastal France and, to a lesser extent, Italy and Greece, as well as some more developed regions in Germany, Belgium, the Netherlands and Sweden. Overall, this confirms that economic performance has varied substantially across the EU and within countries<sup>44</sup>.

#### 4.2 Regions in a development trap

A novel approach to determining the characteristics of regions in a development trap has shed light on possible links with a new typology of economic complexity traps<sup>45</sup>. In addition to the standard characteristics of regions in a development trap<sup>46</sup>, self-reinforcing dynamics could limit the capacity of regions to innovate and develop new growth paths<sup>47</sup>. Regions might become trapped in low-complexity activities because of a lack of capability to develop highly complex products<sup>48</sup>. An analysis of the structural evolution of development traps over a long period of time has provided systematic empirical evidence on how many regions in the EU fail to overcome a ‘low-complexity’ structure, on the extent to which these are high- or low-income regions, and the kinds of traps they have fallen into. The definition of ‘evolutionary traps’ centres around the structural inability of regions to develop new activities, because their capabilities prevent them from moving into new and more complex activities that could increase their prosperity. Based on this, it identifies regions that once performed well but have become trapped, as well as those that have managed to escape from being so and how<sup>49</sup>.

The characteristics of regions in a development trap are highly varied in terms of development levels, but the limited capacity of a region to educate people and retain them is a common feature across all levels of development. The reasons for falling into a development trap differ between

42 Dijkstra et al. (2023b).

43 Using the methodology to measure the likelihood of being in a development trap developed by Iammarino et al. (2020), high-growth paths are identified when regions have outperformed their peers in terms of GDP, productivity and employment growth (when the likelihood of so doing is greater than 50 %). The conventional development trap indicator denotes when a region's growth of GDP per head, productivity and employment is lower than that of the EU, its country, or the region itself over the previous five years. A region scores 1 for each time its growth is higher than the three benchmarks. The score between 0 and 9 is then rescaled to 0 and 1. To identify regions on high-growth paths, the inverse of the average yearly development trap score of each region is taken over the period 2001–2021. This ensures consistency and symmetry with the analysis based on the development trap indicator, while pointing to regions outperforming their peers.

44 In eastern Member States, economic performance has been strong in capital regions but also across the majority of other regions. In southern Europe, regions outperforming their peers are mostly located in Spain and Portugal – cases of catching up again because they were relatively poor regions – but there are positive examples also in Greece and Italy. Coastal regions in France have also generally performed much better than central ones (except for the capital city region). In the rest of Europe, there is a broadly balanced presence of regions in terms of their economic performance.

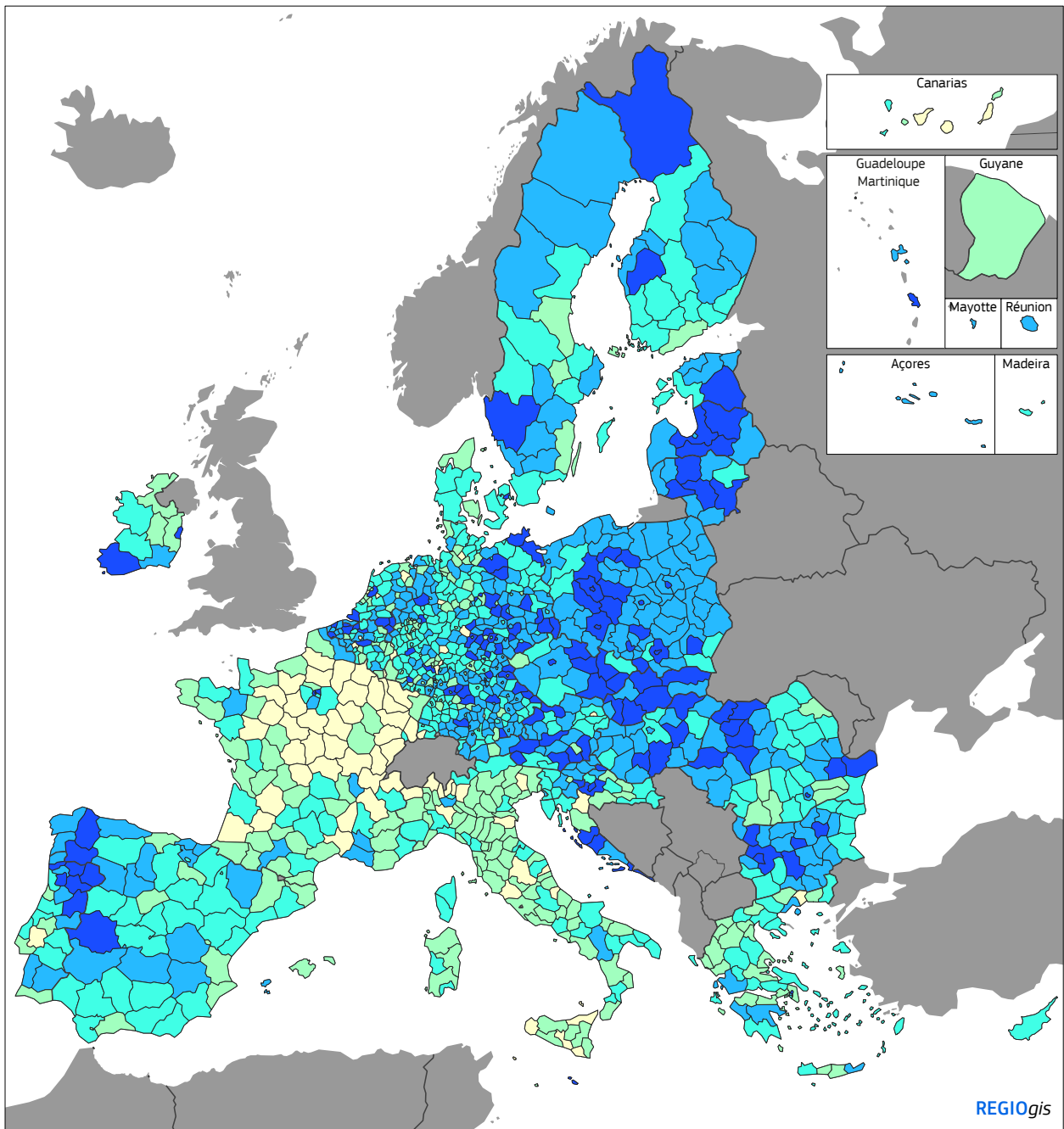
45 Balland et al. (2019).

46 Iammarino et al. (2022).

47 Arthur (1994).

48 Pinheiro et al. (2022).

49 Balland et al. (forthcoming).



**Map 1.7 Economic development index at NUTS 3 level, 2001–2021**

Likelihood of being in a high-growth trajectory

- < 0.3
- 0.3 – 0.4
- 0.4 – 0.5
- 0.5 – 0.6
- > 0.6
- no data

This index measures if a region's growth is higher than that of the EU, of its country, or of the region itself during the previous five years. It considers growth of GDP per head, productivity, and employment per head over a five-year period.

A region scores 1 for each time its growth is higher. This score between 0 and 9 is then rescaled to 0 and 1.

Source: DG REGIO calculations based on JRC and Eurostat data.

0 500 km

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**Table 1.3 Socio-economic characteristics of ‘development-trapped’ and other regions, average 2003–2021, by level of GDP per head, 2003**

	Development trapped?	GDP/head (PPS) in 2003, index EU-27 = 100			
		< 75 %	75 - 100 %	>= 100 %	All
% of industry in GVA	Yes	21.5	14.8	18.8	18.1
	No	26.3	18.1	20.9	21.0
R&D expenditure as % of GDP	Yes	0.4	1.2	2.0	1.8
	No	0.9	1.5	2.5	2.1
% of population 25–64 with tertiary education	Yes	12.1	20.2	27.0	23.9
	No	20.9	27.7	30.9	27.2
Institutional quality index	Yes	-1.6	-0.5	0.3	-0.1
	No	-0.8	0.1	0.6	0.1
% of population (2021) by GDP/head level		23.3	22.5	54.2	100.0
% of population (2021) in trapped regions		2.4	7.3	18.6	28.4

Note: Socio-economic characteristics are average values of all available reference years in period 2003–2021.

Source: Eurostat [rd\_e\_gerdreg, lfst\_r\_lfsd2pop], JRC (ARDECO), University of Gothenburg, DG REGIO calculations.

regions depending on the initial level of development, geographical features, the macro-economic environment, the global economic context and structural characteristics. However, there are a number of common traits in terms of the quality of institutions, innovation capacity and importance of manufacturing that vary between trapped and non-trapped regions to differing degrees depending on the level of development. As indicated in the previous section, geographical characteristics, sectoral specialisation, productivity and investment dynamics affect beta or ‘club’ convergence. However, one common feature of persistently trapped regions at all levels of economic development is lack of human capital (Table 1.3).

This suggests that having in place the conditions and opportunities for investing, attracting and retaining people with tertiary education is a consistent feature of regions that have managed not to fall into a development trap for a large number of years and can reduce the likelihood of becoming trapped (see Chapter 6)<sup>50</sup>. Past performance is no guarantee of future performance. And not all

regions can have a large share of tertiary-educated workers, but – at any level of development – a people-centred differentiated place-based approach in line with the potential and characteristics of the region may reduce the likelihood of experiencing a persistent period of stagnation (see Chapter 5).

### 4.3 Regions in a development trap and the geography of discontent

Regional development traps are not just an economic matter. Sub-par economic performance and lack of employment opportunities give rise to social costs and can cause political resentment towards what is increasingly regarded as a system that leaves people behind, leading to a growing geography of discontent<sup>51</sup>. An econometric analysis of the link between the risk, intensity and length of regional development traps and the rise of discontent in the EU, proxied by the support for Eurosceptic parties in national elections between 2014 and 2022, found a strong connection between being stuck in a development trap and support for

50 This is also the case for regions in a ‘talent development trap’, a composite indicator related to the development trap but in the demographic domain. European Commission (2023) shows that 46 regions in the EU with over 70 million inhabitants are in a talent development trap. These regions had an accelerating decline of their working-age population, and a low and unchanging number of people with tertiary education between 2015 and 2020. It also identifies a second group of 36 regions (with nearly 60 million inhabitants) that are at risk of falling into a talent development trap in the future, because they are strongly affected by the outward movement of people aged 15–39. This group accounts for 13 % of the EU population.

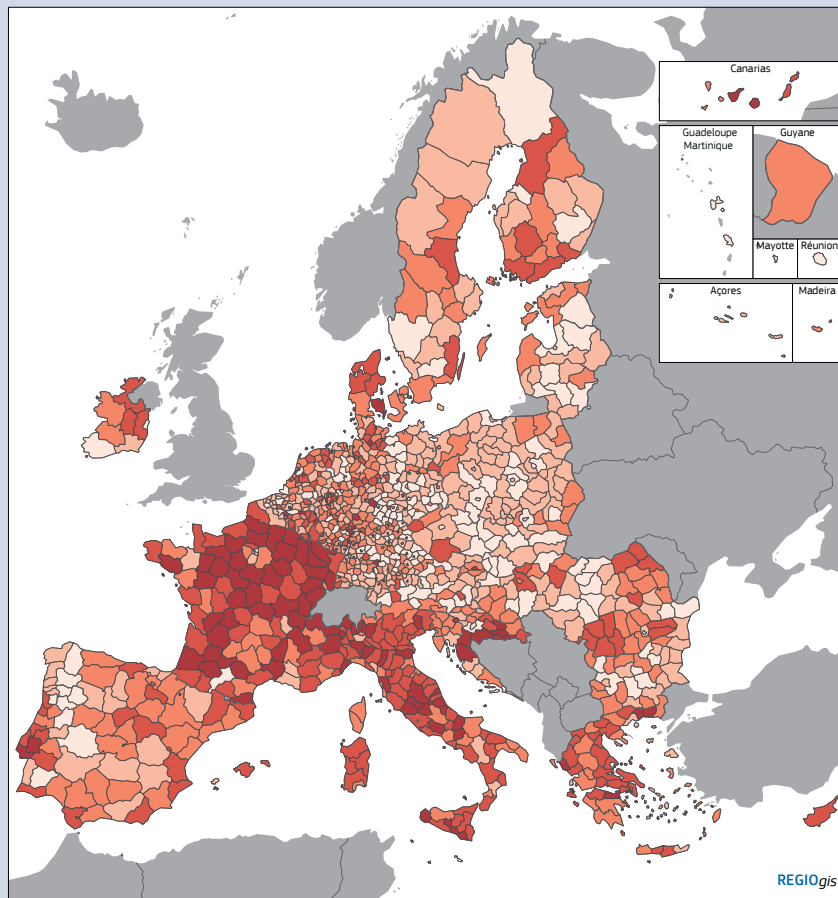
51 See Dijkstra et al. (2021 and 2023), who show that political discontent with the EU in Member States and regions is linked to an important extent to economic and industrial decline and being in a development trap.



### Box 1.5 The geography of EU discontent and the regional development trap

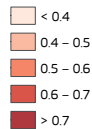
In recent years, popular discontent has been brewing in many parts of the world, including in many countries in Europe<sup>1</sup>. This rising wave of dissatisfaction with a ‘system’ that many feel no longer benefits them is manifested in different ways, from declining levels of participation in elections to low levels of engagement in civil society. The dissatisfaction can also be seen in a growing tendency to support more extreme, often

populist, options at the ballot box; and in increasing signs of distress and outright revolt by those disaffected by the system<sup>2</sup>. In the EU, this disaffection is reflected in the rise of Euroscepticism<sup>3</sup>. Since the 2008 financial crisis, the share of votes in national legislative elections for ‘hard’ Eurosceptic<sup>4</sup> parties has risen from under 5 % to 14 % in 2022, and for all Eurosceptic parties from 7 % to 27 %.



**Map 1.8 Development trap index 1 at NUTS-3 level, 2001–2018**

Likelihood of being in a development trap



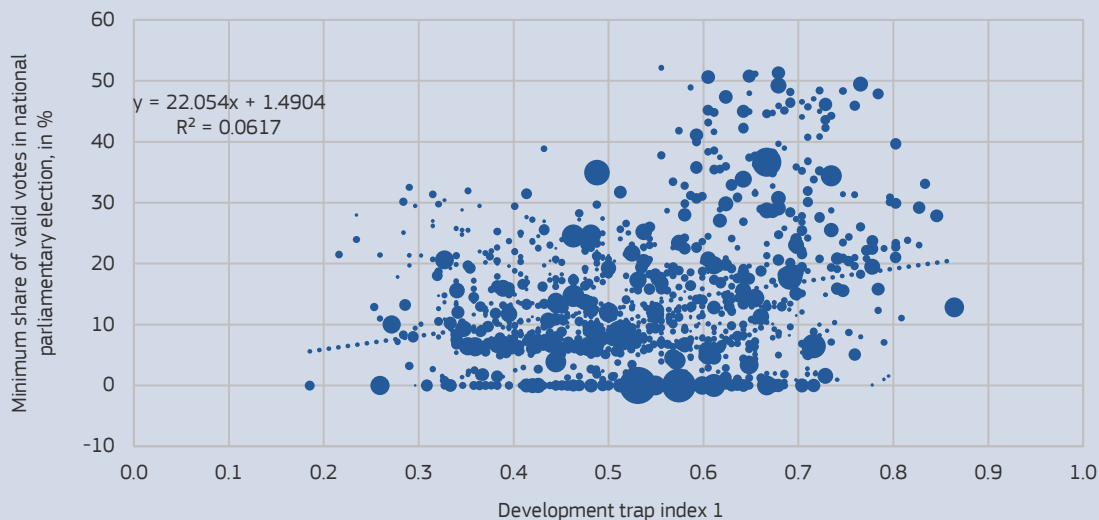
This index measures if a region's growth is lower than that of the EU, of its country or of the same region during the previous 5 years. It considers growth in GDP per head, productivity and employment over a five-year period. A region scores 1 for each time its growth is lower. This score between 0 and 9 is then rescaled to 0–1. Source: DG REGIO calculations based on JRC and Eurostat data.

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- 1 Greven (2016); Zakaria (2016); Hawkins et al. (2019); Hopkin (2020).
- 2 Rodríguez-Pose (2018); Kitschelt (2022).
- 3 Torreblanca and Leonard (2013); Dijkstra et al. (2020).
- 4 Eurosceptic parties are defined based on the Chapel Hill Expert Survey.

**Figure 1.24 Correlation between being development trapped and the hard Eurosceptic vote for NUTS 3 regions, 2018–2022**



Note: Bubble area size reflects population in 2021.

Source: Dijkstra et al. (2023b).

The rise of Euroscepticism is not an isolated phenomenon. It is instead part of a broader recent increase in the popularity of anti-system, or populist, parties<sup>5</sup>. Explanations can be classified as cultural or economic, or both<sup>6</sup>. People living in places in decline frequently feel trapped in regions they think no longer matter and where they perceive they have no future<sup>7</sup>. They feel ignored, neglected and marginalised by a distant and aloof elite<sup>8</sup>, and are ill at ease with a changing world that threatens their identity and security.

A study<sup>9</sup> finds that much of the rise in discontent is concentrated in places that have been in a development trap<sup>10</sup>. The classic example of a region in a development trap is one that initially experienced a spurt in growth allowing it to attain middle-income

levels, but subsequently got stuck without managing to reach high income levels<sup>11</sup>. However, many regions in Europe have stagnated – and even declined – at all levels of development. The risk of becoming stuck in a development trap is higher in middle-income regions, but can occur in all regions. The same study finds that falling into a development trap is a major factor in understanding why Eurosceptic voting in national elections has been on the rise across EU regions. People living in regions in a development trap are far more likely to be tempted by Eurosceptic political parties and to support them in elections. The authors also show that factors such as the risk, intensity and length of time spent in a development trap significantly increase the share of the Eurosceptic vote.

5 Hopkin (2020).

6 Noury and Roland (2020); Schmid (2022).

7 Rodríguez-Pose (2018 and 2020); Lenzi and Perucca (2021).

8 McKay et al. (2021).

9 Dijkstra et al. (2023).

10 The methodology to calculate the development trap is the same as that used in European Commission (2022).

11 Kharas and Kohli (2011).

Eurosceptic parties<sup>52</sup>. It also found that the longer the period of stagnation, the stronger the support for parties opposing European integration. Since development traps can occur at different levels of development, but appear to be a particular risk for transition regions, they may require policy responses that go beyond support for less developed regions. Assisting all regions that are development-trapped to become more dynamic should help to reduce regional inequalities and counter the threat of rising discontent in EU societies.

## 5. Economic cohesion and competitiveness to harness the benefits the Single Market

The productivity dynamics examined above are reflected in a broader measure of sub-national performance, the RCI. This is a composite indicator designed to capture the 11 main dimensions of competitiveness of EU NUTS 2 regions: institutions; macro-economic stability; infrastructure; health; basic education; higher education; training and lifelong learning; labour-market efficiency; market size; technological readiness; business sophistication; and innovation<sup>53</sup>. The 2022 RCI shows a polycentric pattern, with strong performance of regions with large urban areas, which benefit from agglomeration economies, better connectivity and higher levels of human capital. The index is above the EU average in all regions in Austria, the Benelux countries, Germany and the Nordic Member States. (Map 1.9, left panel). By contrast, all eastern regions, except most capital city ones, score below the EU average. Southern regions also score below the average, except for Cataluña, Madrid and País Vasco in Spain, Lombardia in Italy and Lisboa in Portugal. Ireland and, especially, France have a mix of regions above and below the EU average.

Less developed regions, however, have improved markedly over time. In the six years since the indicator was first developed in 2016, there has been a clear process of catching up in eastern regions combined with an improvement in southern ones,

as they recovered from the economic and financial crisis (Map 1.9, right panel).

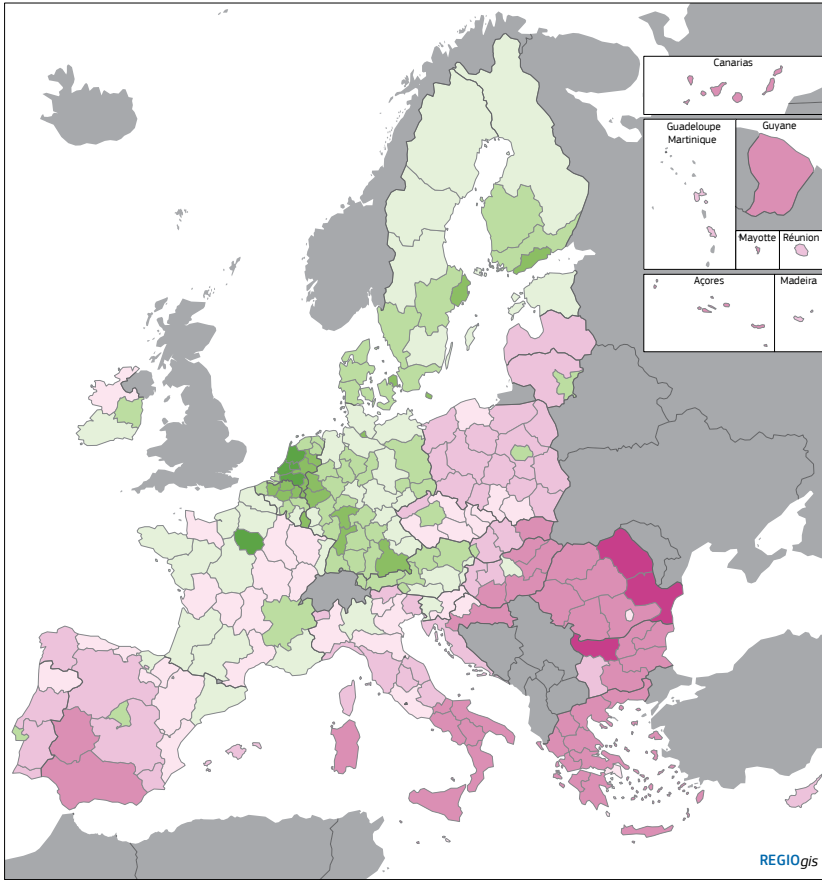
Between 2019 and 2022, the RCI improved by 10 index points or more in the capital city region in Lithuania (+20 points), Norte in Portugal (+14), the capital city region in Poland (+13), the Portuguese outermost region of Madeira (+13), and Illes Balears in Spain and Śląskie in Poland (both +10).

Within Member States, capital city regions tend to be the most competitive ones. The gap between the capital city region and the others is particularly wide in France, Spain, Portugal and many of the eastern EU Member States. This can be a reason for concern as it increases pressure on resources in the capital city region while possibly leaving them under-utilised elsewhere. In three countries, however, the Netherlands, Italy and Germany, the capital city region is not the most competitive. In the Netherlands, Utrecht remains the best-performing region (at 151, the EU average being 100), followed by Zuid-Holland which includes Rotterdam and The Hague (at 142). In Italy, Lombardia, which includes Milan, continues to be the best-performing Italian region (at 103), while in Germany this remains Oberbayern, which includes Munich (at 130), and several other regions also outperform Berlin and Brandenburg.

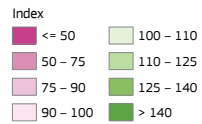
52 Dijkstra et al. (2023b).

53 See Dijkstra et al. (2023a).

Map 1.9 RCI: latest values (2022) and change since the first edition in 2016



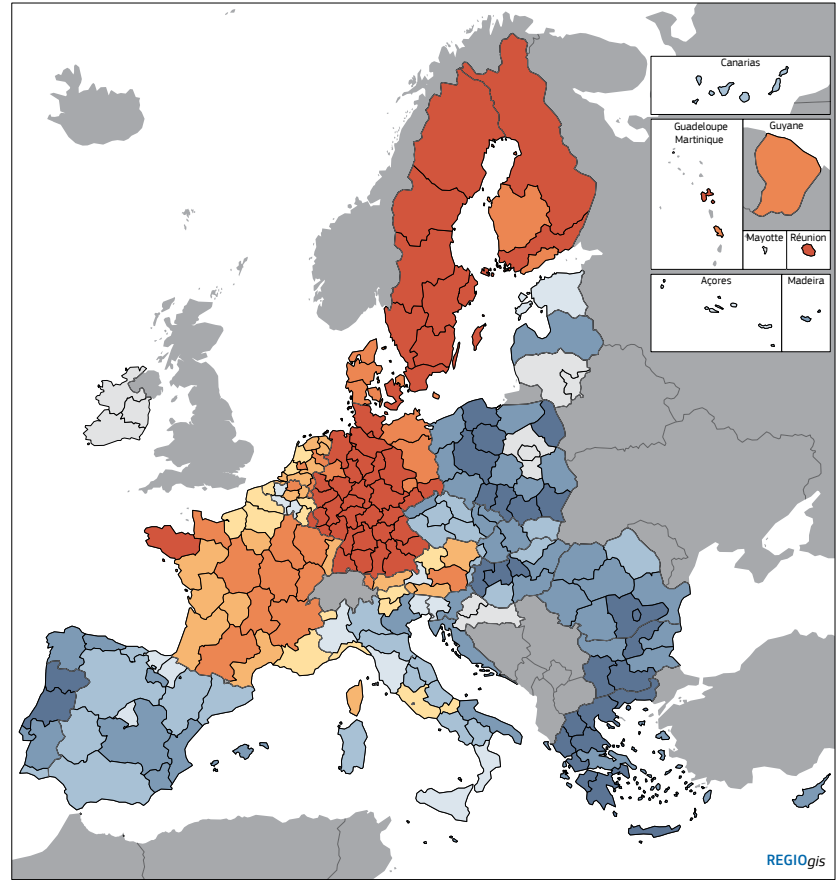
2022 edition



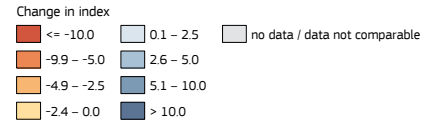
Revised, May 2023.  
EU-27 = 100



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Change between 2016 edition and 2022 edition



Revised, May 2023.  
Data for some regions cannot be compared due to changes in the NUTS classification (RCI 2.0, 2022: PL91 and PL92).



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### Box 1.6 Competitiveness, the EU Single Market and Cohesion Policy

The Single Market is a cornerstone of EU integration and competitiveness and goes hand in hand with Cohesion Policy. Removing barriers to the free movement of goods, services, capital and workers has promoted a better allocation of resources across the EU and fostered the exchange of ideas and innovation. However, market forces alone do not ensure that everyone benefits from economic integration. In fact, this report highlights significant territorial disparities linked to the different levels of development of countries and regions, their specific geographical features and their economic structure. These disparities, though tending to diminish, translate into different levels of competitiveness – as captured, for instance, by the RCI – which in turn may lead to fragmentation within the Single Market. Left alone, the free mobility of labour and capital in the context of uneven levels of competitiveness risks damaging cohesion. Cohesion Policy, along with other policies, notably State-aid rules, helps to create a level playing field essential for the Single Market to function fairly, while supporting less developed regions to develop.

By investing in infrastructure, innovation, education and other key areas, Cohesion Policy helps less developed regions directly and all other regions indirectly to reap the benefits of the Single Market. The latter occurs because of spill-over and scale effects linked to the policy and the Single Market<sup>1</sup>. A more competitive and integrated Single Market gives businesses access to a larger customer base and enables economies of scale to be realised. The proper functioning of the Single Market, however, requires that producers and consumers throughout Europe have equal access to it, so that it can ensure the effective matching of supply and demand and the efficient allocation of resources across the EU as a whole, in the long as well as the short term. But access cannot be taken for granted – thus need to support investment where access is limited, especially in the less competitive and less developed regions.

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1 Crucitti et al. (2023).

## References

- Alvaredo, F., Atkinson, A., Chancel, L., Piketty, T., Saez, E. and Zucman, G. (2016), *Distributional National Accounts (DINA) guidelines: Concepts and methods used in WID. world*.
- Arthur, W. B. (1994), *Increasing Returns and Path Dependence in the Economy*, University of Michigan Press, Ann Arbor.
- Arvanitopoulos, T. and Lazarou, N. (2023), The determinants and dynamics of regional convergence in the EU, *JRC Working Papers on Territorial Modelling and Analysis*, 06/2023, European Commission, JRC133733.
- Balland, P.A. and Boschma, R. (forthcoming), *Structural Traps or Complexity Loops? An Evolutionary Approach to Regional Development Paths in Europe*.
- Balland, P.A., Boschma, R., Crespo, J. and Rigby, D. (2019), 'Smart specialization policy in the EU: Relatedness, knowledge complexity and regional diversification', *Regional Studies* 53 (9), pp. 1252-1268.
- Barro, R. J. (2001), 'Human Capital and Growth', *American Economic Review*, 91(2), pp. 12–17.
- Barro, R.J. and Sala-i-Martin, X. (1992), *Convergence*, *Journal of Political Economy*, 100(2), pp. 223–251.
- Bauluz, L., Bukowski, P., Fransham, M., Lee, A., Lopez Forero, M., Novokmet, F., Breau, S., Lee, N., Malgouyres, C., Schularick, M. and Verdugo, G. (2023), 'Spatial wage inequality in North America and Western Europe: changes between and within local labour markets 1975–2019', *CEPR Discussion Paper No 18381*.
- Blanchard, O.J. and Leigh, D. (2013), 'Growth Forecast Errors and Fiscal Multipliers', *American Economic Review*, 103 (3), pp. 117–120.
- Brynjolfsson, E. and McAfee, A. (2014), *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*, W. W. Norton & Company.
- Bökemeier, B. and Wolski, M. (2022), 'This Time is Different: Fiscal Response to the Covid-19 Pandemic among EU Countries', *International Economics*, 172, pp. 217–226.
- Cavallaro, E. and Villani, I. (2021), 'Club Convergence in EU Countries: A Sectoral Perspective', *Journal of Economic Integration*, 36(1), pp. 125–161.
- Cervellati, M. and Sunde, U. (2013), 'Life Expectancy, Schooling, and Lifetime Labor Supply: Theory and Evidence Revisited', *Econometrica*, 81(5), pp. 2055–86.
- Crucitti, F., Lazarou, N.J., Monfort, P. and Salotti, S. (2023), 'Where does the EU cohesion policy produce its benefits? A model analysis of the international spillovers generated by the policy', *Economic Systems*, 47(3), p. 101076.
- Diemer, A., Iammarino, S., Rodríguez-Pose, A. and Storper M. (2022), 'The Regional Development Trap in Europe', *Economic Geography*, 98(5), pp. 487–509.
- Dijkstra, L., Papadimitriou, E., Cabeza Martínez, B., De Dominicis, L. and Kovacic, M. (2023a), 'EU Regional Competitiveness Index 2.0 2022 edition', European Commission, DG Regional and Urban Policy, Working Paper No 01/2023.
- Dijkstra, L., Poelman, H. and Rodríguez-Pose, A. (2023b), The geography of EU discontent *and the regional development trap in Europe*, DG Regional and Urban Policy, Working Paper 03/2023, *European Commission, Brussels*.
- Dijkstra L., Poelman, H. and Rodríguez-Pose, A. (2020), 'The geography of discontent', *Regional Studies*, 54(6), pp. 737–753.

Eichengreen, B. (2023), *The European Economy since 1945: Coordinated Capitalism and Beyond*, Princeton University Press.

European Commission (2017), *Reflection Paper on Harnessing Globalisation*, Publications Office of the European Union, Luxembourg.

European Commission (2020), Science, research and innovation performance of the EU: A fair green and digital Europe, Publications Office of the European Union, Luxembourg.

European Commission (2020), 'Chapter 3: Inclusive growth and solidarity in the EU: challenges, policy levers and the way forward', *Employment and Social Developments in Europe*, Publications Office of the European Union, Luxembourg.

European Commission (2022a), *8th Cohesion Report on Economic, Social and Territorial Cohesion*, Publications Office of the European Union, Luxembourg.

European Commission (2022b), *Labour market and wage developments in Europe – Annual review 2022*, Publications Office of the European Union, Luxembourg.

European Commission (2023), *Regional Trends for Growth and Convergence in the European Union*, SWD(2023) 173 final.

Giupponi, G., Landais, C. and Lapeyre, A. (2022), 'Should We Insure Workers or Jobs during Recessions?', *Journal of Economic Perspectives*, 36(2), pp. 29–54.

Gordon, R. J. (2015), 'Secular Stagnation: A Supply-Side View', *American Economic Review*, 105(5), pp. 54–59.

Gordon, R. J. and Sayed, H. (2019), 'The Industry Anatomy of the Transatlantic Productivity Growth Slowdown: Europe Chasing the American Frontier', *International Productivity Monitor*, 37, pp. 3–38.

Greven, T. (2016), *The rise of right-wing populism in Europe and the United States: A Comparative Perspective*, Friedrich Ebert Foundation, Washington DC, pp. 1–8.

Guzzo, F. and Gianelle, C. (2021), *Assessing Smart Specialisation: Governance*, Publications Office of the European Union, Luxembourg.

Hawkins, K. A., Aguilar, R., Silva, B. C., Jenne, E. K., Kocijan, B. and Rovira Kaltwasser, C. (2019), *Measuring populist discourse: The global populism database*, EPSA Annual Conference in Belfast, UK, June.

Head, K. and Mayer, T. (2021), 'The United States of Europe: A Gravity Model Evaluation of the Four Freedoms', *The Journal of Economic Perspectives*, 35(2), pp. 23–48.

Hegyí, F.B., Guzzo, F., Perianez-Forte, I. and Gianelle C. (2021), *The Smart Specialisation Policy Experience: Perspective of National and Regional Authorities*, Publications Office of the European Union, Luxembourg.

Hopkin, J. (2020), *Anti-system politics: The crisis of market liberalism in rich democracies*, Oxford University Press, Oxford.

Iammarino, S., Rodríguez-Pose, A. and Storper, M. (2017), *Why Regional Development Matters for Europe's Economic Future*, DG Regional and Urban Policy, Working Paper 07/2017, European Commission.

Iammarino, S., Rodríguez-Pose, A. and Storper, M. (2020), *Falling into the Middle-Income Trap? A Study on the Risks for EU Regions to be Caught in a Middle-Income Trap*, Publications Office of the European Union, Luxembourg.

Kharas, H. and Kohli, H. (2011), 'What Is the Middle Income Trap, Why do Countries Fall into It, and How Can It Be Avoided?', *Global Journal of Emerging Market Economies, Emerging Markets Forum*, 3(3), pp. 281–289.

- Kitschelt, H. (2002), 'Popular Dissatisfaction with Democracy: Populism and Party Systems'. In: Mény, Y. and Surel, Y. (eds), *Democracies and the Populist Challenge*, Palgrave Macmillan, London.
- Krugman, P. (1991), 'Increasing returns and economic geography', *Journal of political economy*, 99(3), pp. 483–499.
- Königs, S. et al. (forthcoming), *The geography of income inequalities in OECD countries: Evidence from national register data*, OECD Publishing, Paris.
- Lee, N., Rodríguez-Pose, A. and Terrero-Davila, J. (2023), 'Left-behind vs. unequal places: interpersonal inequality, economic decline, and the rise of populism in the US and Europe', *Papers in Evolutionary Economic Geography (PEEG) 2306*, Utrecht University, Department of Human Geography and Spatial Planning, Group Economic Geography, revised March 2023.
- Lenzi, C. and Perucca, G. (2021), 'People or places that don't matter? Individual and contextual determinants of the geography of discontent', *Economic Geography*, 97(5), pp. 415–445.
- Licchetta, M. and Mattozzi, G. (2022), 'Convergence in GDP per capita in the euro area and the EU at the time of COVID-19', *Quarterly Report of the Euro Area (QREA)*, 21(3), pp. 7–18.
- Maddison, A. (2007), *Contours of the World Economy, 1–2030 AD: Essays in Macro-Economic History*, Oxford University Press, Oxford.
- McKay, L., Jennings, W. and Stoker, G. (2021), 'Political Trust in the Places That Don't Matter', *Frontiers in Political Science*, 3, 642236.
- Monfort, P. (2020), *Convergence of EU regions redux: Recent trends in regional disparities*, WP 02/2020, Publications Office of the European Union, Luxembourg.
- Noury, A. and Roland, G. (2020), 'Identity politics and populism in Europe', *Annual Review of Political Science*, 23, pp. 421–439.
- OECD (2022), *OECD Regions and Cities at a Glance 2022*, OECD Publishing, Paris.
- OECD (2023), *OECD Regional Outlook 2023: The Longstanding Geography of Inequalities*, OECD Publishing, Paris.
- Pesaran, M. H. (2007), 'A pair-wise approach to testing for output and growth convergence', *Journal of Econometrics*, 138(1), pp. 312–355.
- Pinheiro, F.L., Balland, P.A., Boschma, R. and Hartmann, D. (2022), 'The dark side of the geography of innovation: Relatedness, complexity, and regional inequality in Europe', *Regional Studies*, 51 (12), pp. 125–168.
- Prognos and CSIL (2021, forthcoming), *Study on Prioritisation in Smart Specialisation Strategies in the EU*.
- Quah, D. (1996), 'Convergence Empirics Across Economies with (Some) Capital Mobility', *Journal of Economic Growth*, 1(1), pp. 95–124.
- Rodríguez-Pose, A. (2018), 'The revenge of the places that don't matter (and what to do about it)', *Cambridge Journal of Regions, Economy and Society*, 11(1), pp. 189–209.
- Schmidt, V. A. (2022), 'The discursive construction of discontent: varieties of populist anti-system ideas and discursive interactions in Europe', *Journal of European Integration*, 44(2), pp. 165–182.
- Torreblanca, J. I. and Leonard, M. (2013), *The continent-wide rise of Euroscepticism*, European Council on Foreign Relations.
- Zakaria, F. (2016), 'Populism on the March: Why the West is in Trouble', *Foreign Affairs*, 95(9).