



Regional development trends in the EU

WP1: Synthesis report

*Ex post evaluation of Cohesion Policy programmes
2007-2013, focusing on the European Regional
Development Fund (ERDF) and the Cohesion Fund (CF)*

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Abbreviations

CAP	Common Agricultural Policy
CEEC	Central and Eastern European Countries
DOMs	French Overseas Dominions
EAFRD	European Agricultural Fund for Rural Development
EAGGF	European Agricultural Guidance and Guarantee Fund
ERDF	European Regional Development Fund
EU	European Union
EU4	Four Southern EU15 Member States: Greece, Spain, Portugal, Italy
EU12	Member States which entered the EU in 2004 and 2007
EU15	Member States which entered the EU before 2004
GDP	Gross Domestic Product
GVA	Gross Value Added
NUTS	Nomenclature of Territorial Units
PPS	Purchasing Power Standards
R&D	Research and Development

Member states

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

1 Introduction

The report is divided into two main parts. The first part adopts a long-term perspective, examining the changes in regional disparities in economic performance across the EU over the period since 1980 – or at least up to 2011, the latest year for which the relevant data are available. Its concern is to put into perspective the changes which have occurred over recent years, particularly over the period since the financial crisis struck the global economy in 2008, leading to economic recession in Europe followed by a period of at best slow growth and at worst further falls in activity. It attempts, therefore, to distinguish the longer-term trends in regional disparities from what has happened during cyclical upturns and downturns, especially the most recent experience. This is important in order to have some idea of developments in the underlying disparities which Cohesion policy is attempting to tackle, to separate these out from the changes in the extent of disparities which are a consequence of the economic situation which has prevailed across the EU since 2008 and which could be reversed when and if a generalised economic recovery occurs.

The second part focuses on developments during the 2007-2013 period itself, again dividing regions according to the financial support received under Cohesion policy over the period as well as, in this case, their geographical location since this – and more particularly the country in which they are situated – tends to have a significant influence on their performance. The concern is to examine the comparative changes in both GDP per head and employment over the period in different groups of regions in relation to changes over previous programming periods to see to what extent there are differences in what happened. The purpose is mainly descriptive, though the urban or rural nature of regions and their characteristics in terms of the relative importance of different sectors of economic activity – i.e. whether they tend, for example, to be mainly industrial or mainly financial and business service regions – are also considered to see if there is any *prima facie* evidence of these affecting developments. In addition, disparities in ‘non-economic’ factors between the regional groups are examined too to see whether these vary in a similar way as the economic factors, though in practice, the factors concerned, though non-economic in a strict sense, are likely to have repercussions on the regional economy and to some extent may underlie the economic disparities which are observed. This is the case, in particular, with educational attainment levels or migration trends.

2 Part 1: Regional development trends in the EU over the long-term

2.1 Introduction

Cohesion Policy is designed to address regional disparities across the European Union and it is thus important to identify how large the disparities are and how they have been changing over time. The analysis presented in this section focuses specifically on disparities in GDP per capita across the regions of the Union and seeks to distinguish underlying trends from cyclical disturbances like the impact of the recent Financial Crisis. Where possible, a distinction has been made between Convergence, Transition and Competitiveness and employment regions¹.

The first section below considers the evidence on regional disparities in GDP per capita in 1980 and 2011 (the latest year for which data are at present available) across in the EU15 and in 1993 and 2011 across the countries in central and eastern Europe which entered the EU in 2004 and 2007. It examines how the growth of GDP per capita varied across the regions over the two periods and the extent to which there was convergence in regional GDP per capita.

The second section then considers the factors that directly affected the growth of regional GDP per capita and how they tended to vary across regions. This analysis is undertaken for three broad groups of regions; those regions with a GDP per capita of less than 75% of the EU average (the criterion for regions to qualify for the largest level of support under cohesion policy), those with a GDP per capita of more than 75% but less than the EU average (many of which receive Cohesion policy funding under the 'Transition' Objective – i.e. which are either 'phasing-in' or 'phasing-out' regions, though such assistance was not available throughout the period) and those with a GDP per capita of more than the EU average (i.e. which were eligible for support under the Competitiveness and Employment Objective in the 2007-2013 period).

The third section focuses specifically on the growth of productivity, how it has varied across regions and the evidence for convergence between them. An important factor in this regard is the impact of industrial structure and the relative weight of the traded and non-traded sectors and the section also considers this.

The fourth section concludes with an analysis of changes in regional employment adopting an approach originally used by Blanchard and Katz (1992). The focus is on identifying significant turning points in the growth of employment and GVA across regions in the EU that might plausibly be associated with the impact of major landmark legislation like the Single Market and Monetary Union² or with the effects of Cohesion Policy.

2.2 Regional variations in GDP per capita across the regions of the EU

Figure 1 shows how GDP per capita varied across the regions of the EU in the different countries in 1980 for the EU15 countries and in 1993 for the central and eastern European countries, the EU12, which joined the EU in 2004 and 2007. The Figure also shows the difference from the EU15 average which is set at 100. It is evident that there are very large differences between Member States, with all the EU12 countries tending

¹ The Transition regions represent 'phasing in' regions (those which were Objective 1 regions in the previous period but where GDP per head had risen above 75% of the EU average) and 'phasing out' regions (those with GDP per head above 75% of the EU-27 average but below 75% of the EU-15 average).

² Membership of the Union has increased significantly throughout the study period with the addition of Greece, Spain and Portugal, followed by Finland, Sweden and Austria and then, during the 2000s, countries from Central and Eastern Europe. There has also been major new initiatives at the EU level that include the Single Market which was formally introduced in 1992 and, in the early 2000s, the introduction of a monetary union that now covers 17 EU countries. Both of these measures have exposed the economies of the relatively weaker regions of Europe to more competition. To help them meet this challenge, the EU initially increased the resources devoted to regional policy, though these have been reduced in the present programming period.

to have GDP per head below the EU15 average. Nevertheless, there are even bigger variations between regions within Member States in some cases. This is especially so in the UK, in large part because of the very high GDP per head in London, which is artificially increased by substantial inward commuting³. It is least so in the Netherlands.

Figure 1 Regional Disparities in GDP per capita, 1980(93)

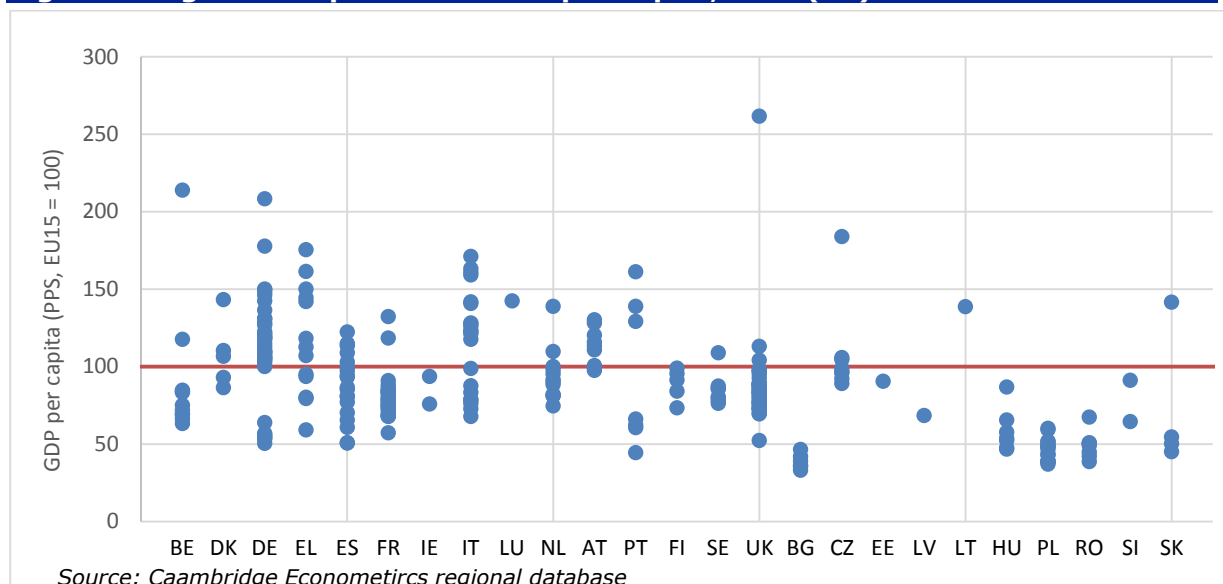
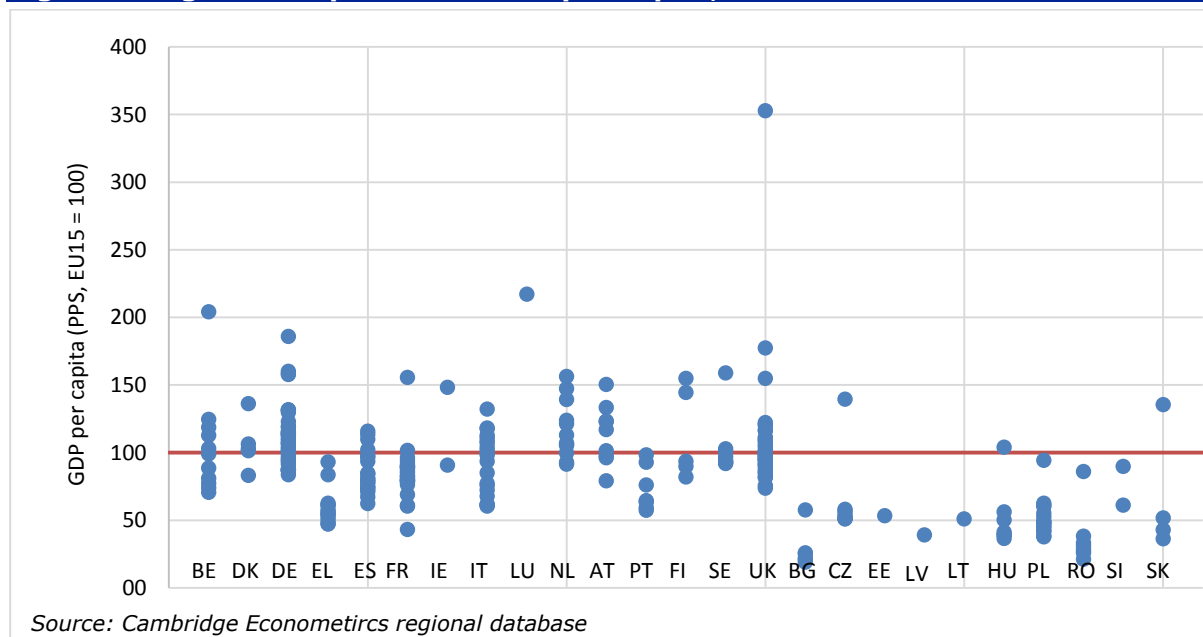


Figure 2 shows the position in 2011. The broad picture is much the same as in the earlier period, though there are some interesting differences, which reflect the experience of different countries in the intervening period. In particular, the spread between regions in the UK has widened, largely as a result of the increasing prosperity of London, while in the Netherlands it had narrowed and in the EU12 GDP per head in the capital city regions has moved above the EU15 average.

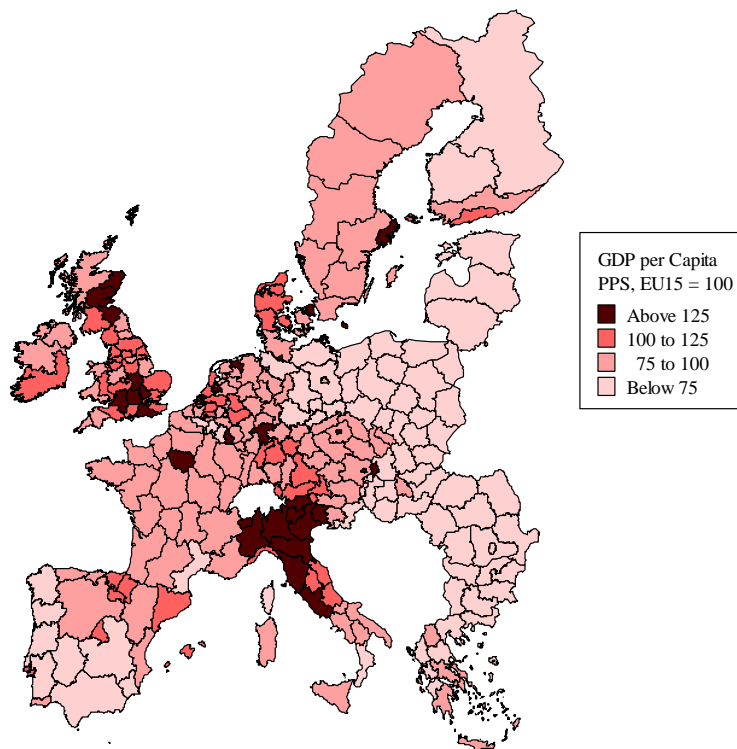
Figure 2 Regional Disparities in GDP per capita, 2011



³ Inward commuting adds to GDP but not to the population living in a region. It therefore, increases GDP per head in the region concerned and reduces it in the region which commuters live.

Figures 3 to 5 show how GDP per capita varied across the map of the EU in 1995, 2001 and 2011. In 1995 there was a broad core-periphery disparity with relatively high levels in Southern England, central Europe and Northern Italy. The impact of North Sea oil in pushing up GDP per head in the North East of Scotland is clear.

Figure 3 GDP per Capita across the EU regions, 1995



Source: Cambridge Econometrics regional database⁴

In 2001, a core-periphery difference remains but GDP per head in the Republic of Ireland and the North East of Spain has risen. In 2011 the broad pattern is still much the same, but in some areas, such as Northern Italy, GDP per head has fallen relative to the average. Over the 30- year period as a whole, some regions improved their relative position, others fell back. Although the broad picture did not change much, there are substantial differences in particular parts.

⁴ Note that all the maps, graphs and tables in this part of the report are based on the Cambridge Econometric regional database.

Figure 4 GDP per Capita across the EU regions, 2001

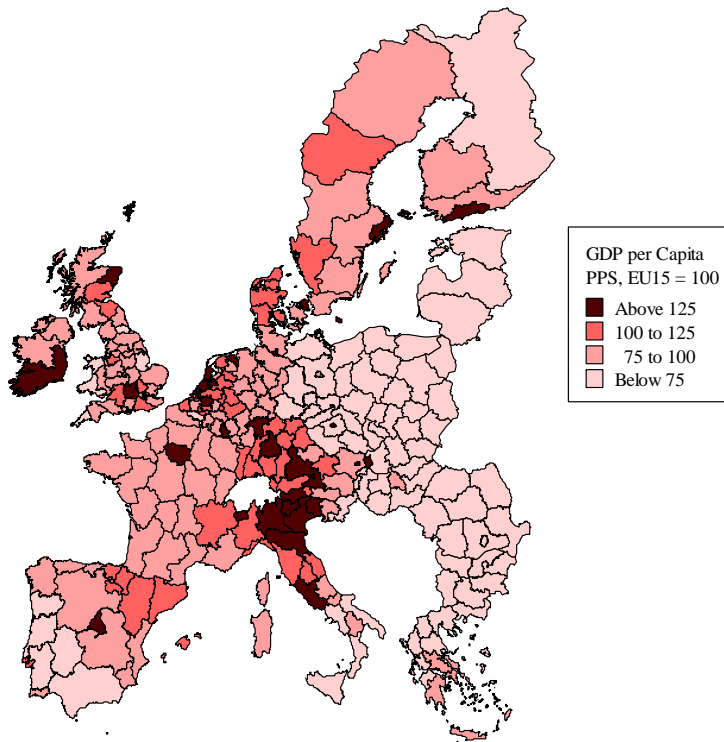
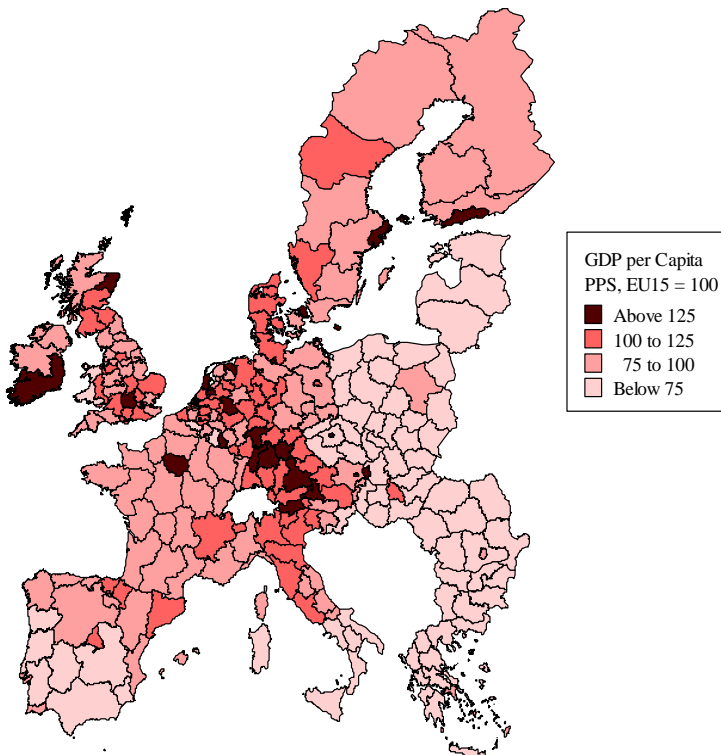


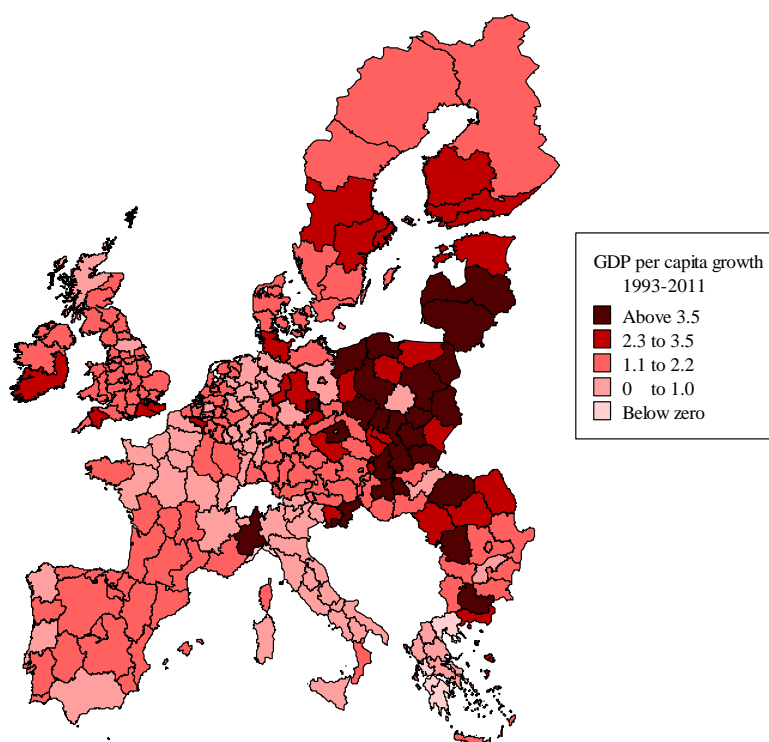
Figure 5 GDP per Capita across the EU regions, 2011



Source: Cambridge Econometrics regional database

These differences are reflected in the marked variations in the growth of GDP across the EU over the period (Figure 6). Growth was especially high over much of central and the Eastern Europe.

Figure 6 Growth in real GDP per capita, 1993-2011



Source: Cambridge Econometrics regional database

Despite the fact that many of the regions showing the highest growth were those with low levels of GDP, disparities in GDP per capita between regions have tended to persist. Regional GDP per head in 2001, therefore, was relatively closely correlated with that in 1980 in the case of the EU15 and that in 1993 in the case of the EU12 (the correlation coefficient is 0.74, Figure 7). Extending the period to 2011, however, reduces the correlation (to 0.65, Figure 8).

Figure 7 Persistence of regional disparities in economic prosperity across the Union, 1980(93)-01

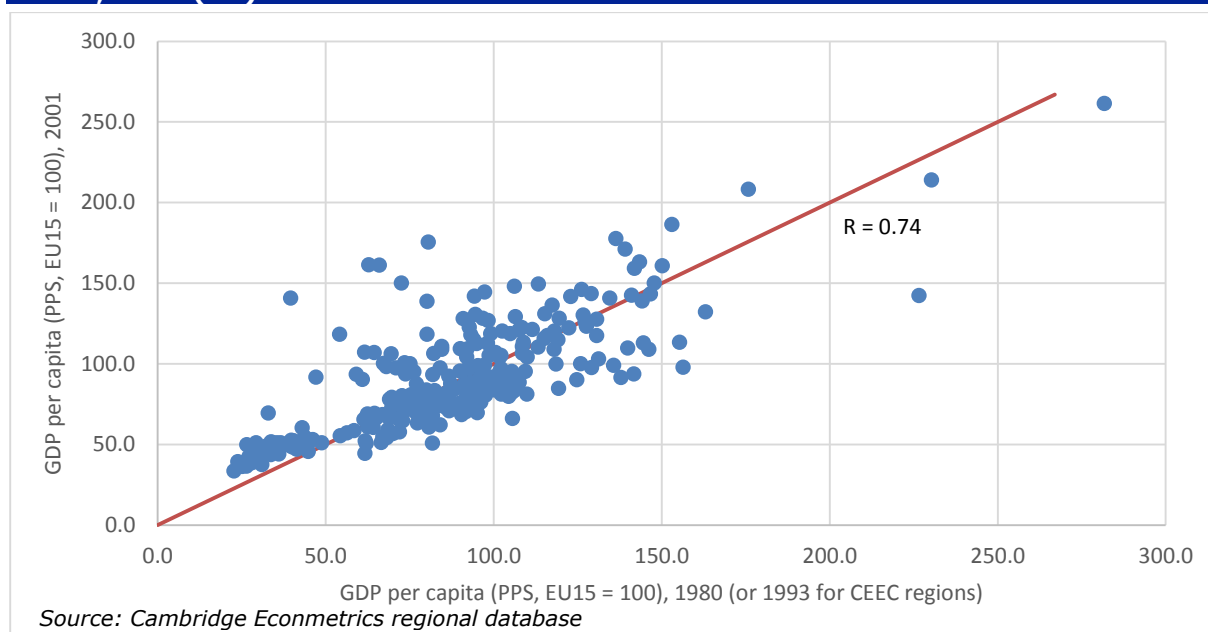
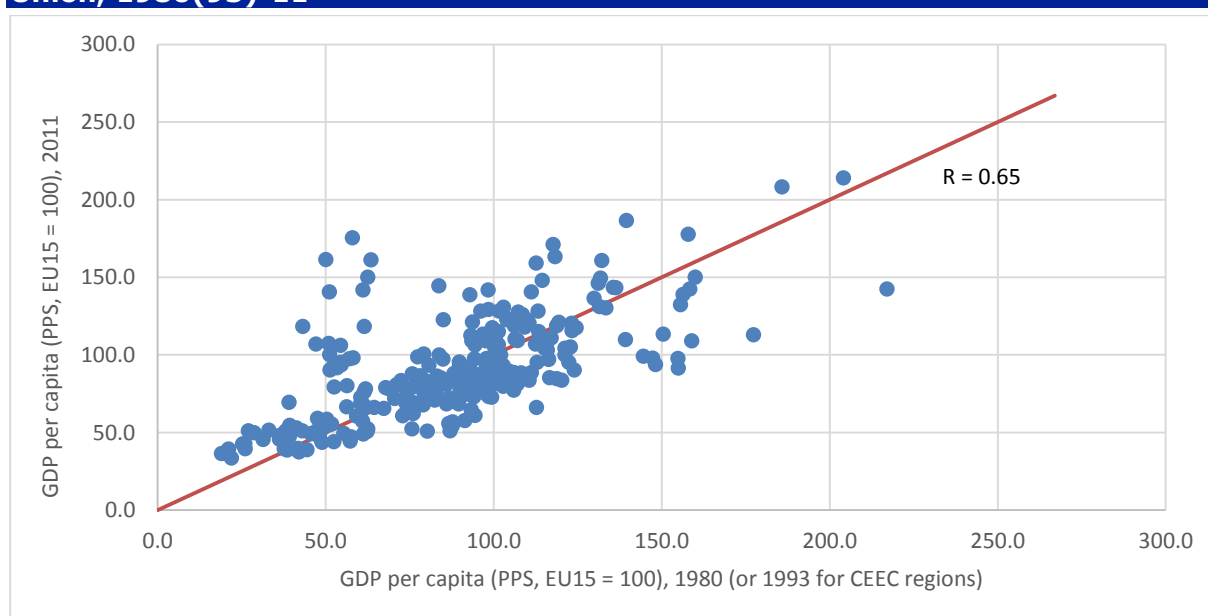


Figure 8 Persistence of regional disparities in economic prosperity across the Union, 1980(93)-11



Evidence for regional convergence in GDP per capita

The relative persistence in regional disparities in GDP per capita across regions in the EU suggests at best relatively weak regional convergence. In practice (as indicated by a 'Barro-type' regression mode (Barro and Sala-I-Martin, 1995), the rate of convergence in GDP per head averaged around 0.7% a year over the period 1981-2011 for EU15 regions and 1993-2011 for EU12 ones (Figure 9).

The rate of regional convergence tended to change according to phases of the business cycle over the period (Figure 10). Over the first two cycles, the convergence rate was relatively stable at around 2.5% a year. More recently, however, there has been a sharp weakening of convergence and in the present crisis, there has actually been divergence.

Figure 9 Convergence in real GDP across the regions of the Union 1980(93)-2011

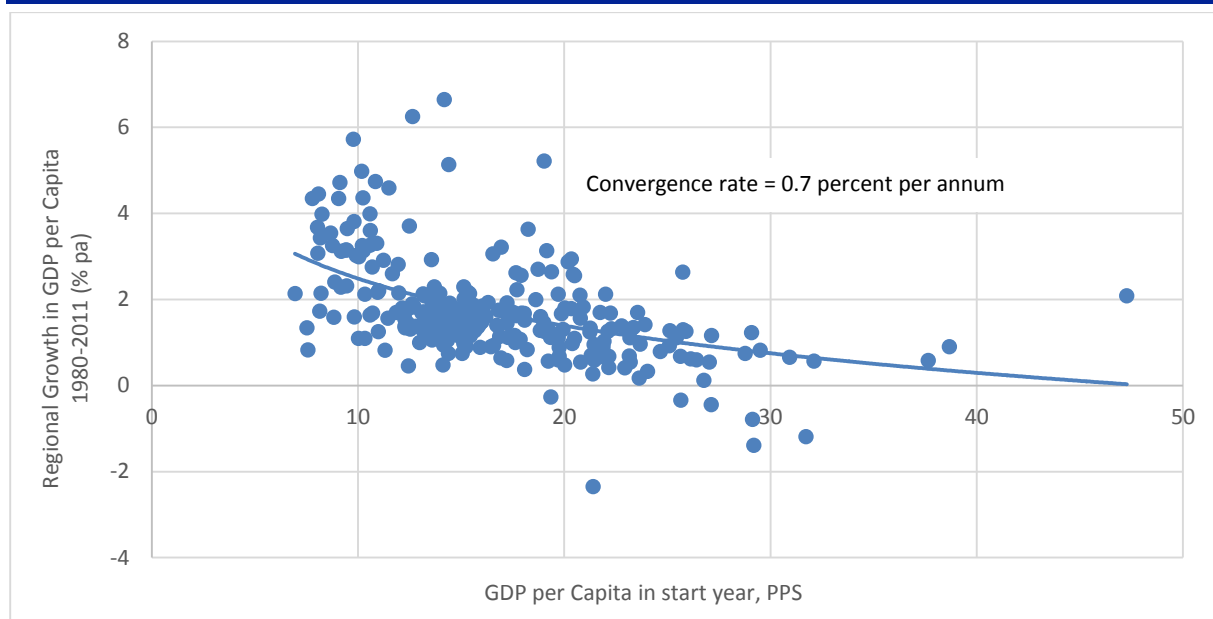
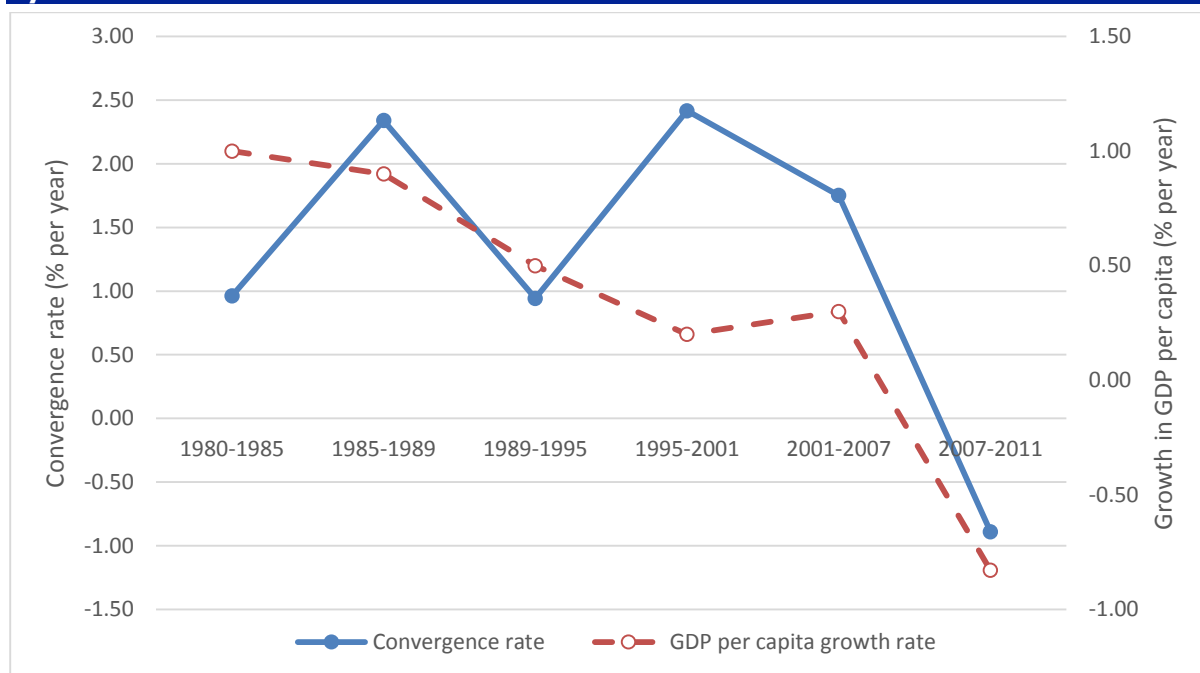


Figure 10 Regional GDP per capita convergence in the EU15 over economic cycles



2.3 The factors that contribute to regional prosperity (GDP per capita)

The proximate reasons for the pattern of change in regional disparities in GDP per head can be examined by decomposing GDP per head into four components: productivity (GDP per hour worked), the employment rate (the number employed relative to working-age population), the dependency rate, or more precisely its inverse (the number of people of working age relative to the total population) and the average length of

working time (total hours worked relative to the total number of people employed). These together determine GDP per head.

Tables 1 and 2 show these four components of GDP per capita in three broad groups of regions; those with per capita GDP of less than 75% of the EU15 average (the traditional threshold for eligibility for the largest amount of Structural Fund support), comprising between 44 and 48 regions depending on the year, those with per capita GDP of between 75% and 100% of the EU15 average, comprising between 74 and 78 regions, and those with per capita GDP above the EU15 average, of which there are 92 regions.

Table 1 Components of GDP per capita by relative level of regional prosperity across the EU, 2001 (EU15=100)

Regional GDP per capita group	No of regions	GDP per capita	Labour productivity	Average hours worked	Employment rate	Dependency rate
Less than 75% EU average	48	62.8	81.3	109.1	92.0	92.6
More than 75% but less than EU average	74	90.1	97.7	97.5	96.0	99.1
More than EU average	92	125.3	108.6	98.6	106.0	106.0

Table 2 Components of GDP per capita by relative level of regional prosperity across the EU, 2011 (EU15=100)

Regional GDP per capita group	No of regions	GDP per capita	Sectoral productivity	Sectoral hours worked	Employment rate	Dependency rate
Less than 75% EU average	44	58.0	76.1	107.9	91.0	91.4
More than 75% but less than EU average	78	88.8	97.3	98.8	95.2	99.9
More than EU average	92	127.1	110.9	98.9	107.5	104.8

In 2001, GDP per capita in the most prosperous regions of the Union was around twice the level in the least prosperous regions (Table 1). In 2011, the difference had widened by a further 20% or so. Average productivity in the most prosperous regions was 34% above that in the least prosperous in 2001 but this had risen to 46% above 10 years later. The employment rate was 15% higher in the former regions than the latter in the earlier year and 18% above in the later year. Working-age population was also higher in the most prosperous regions (by around 15% or so) and this was much the same in 2011. By contrast, average hours worked were more in the least well-off -regions than in the most prosperous (by around 10%), which might be thought of as offsetting in part their lower employment rate. The difference was marginally smaller in 2011.

Productivity and the employment rate, are both linked to relatively high levels of GDP per head, though the relationship is closer for productivity than employment and a given

difference in productivity levels is associated with a larger difference in GDP per head than is the case for employment in both 2001 and 2011 (Figures 11 and 12).

Figure 11 GDP per capita, productivity and the employment rate (2001)

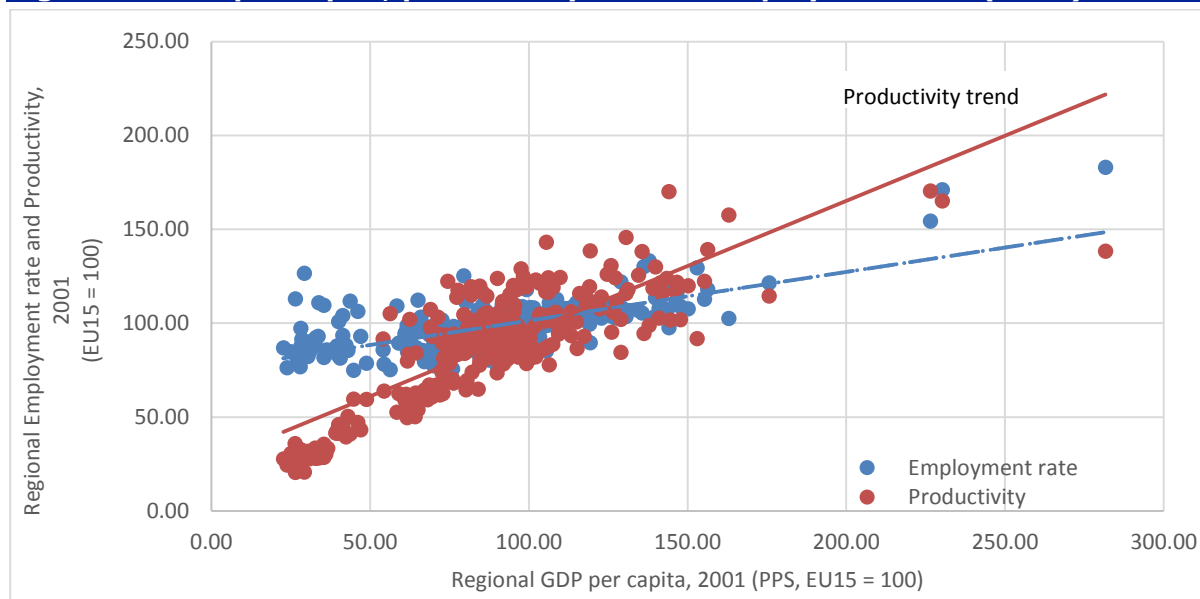
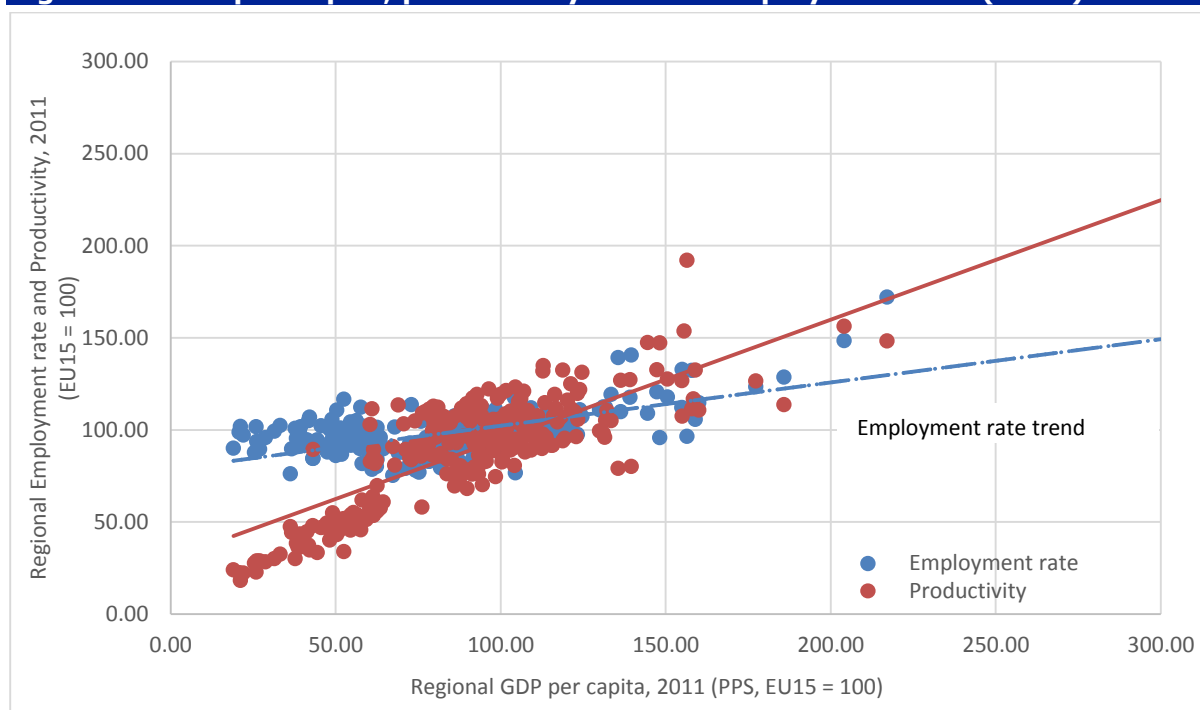
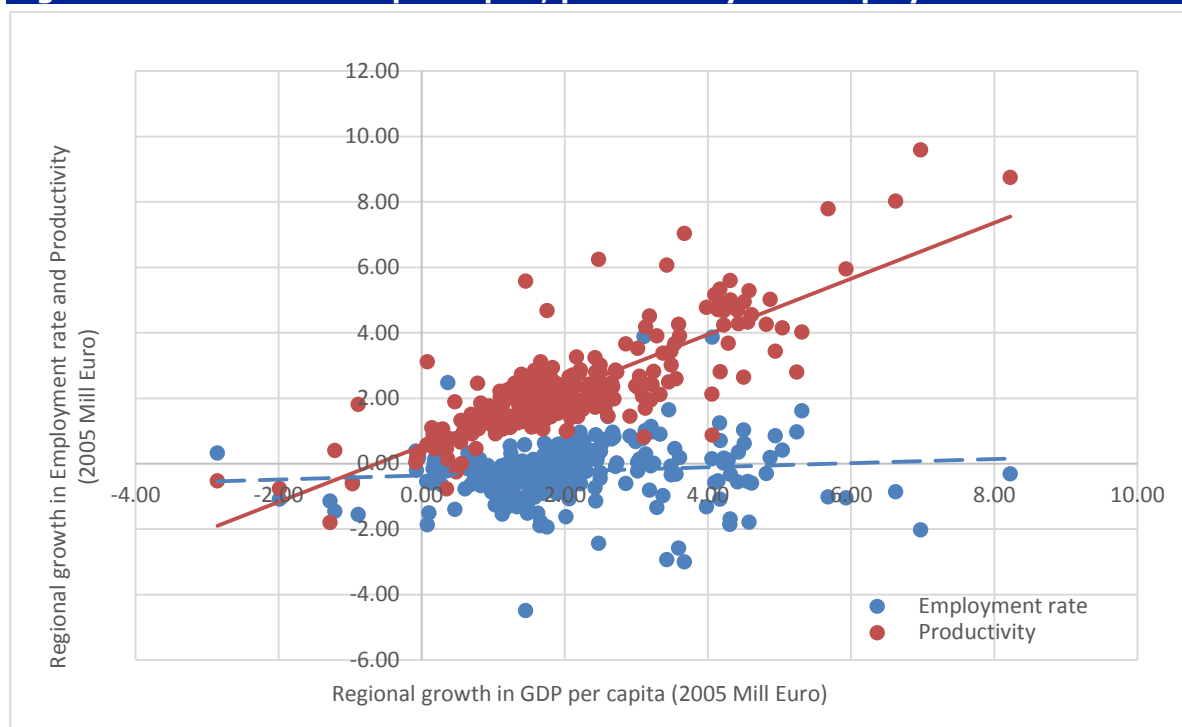


Figure 12 GDP per capita, productivity and the employment rate (2011)



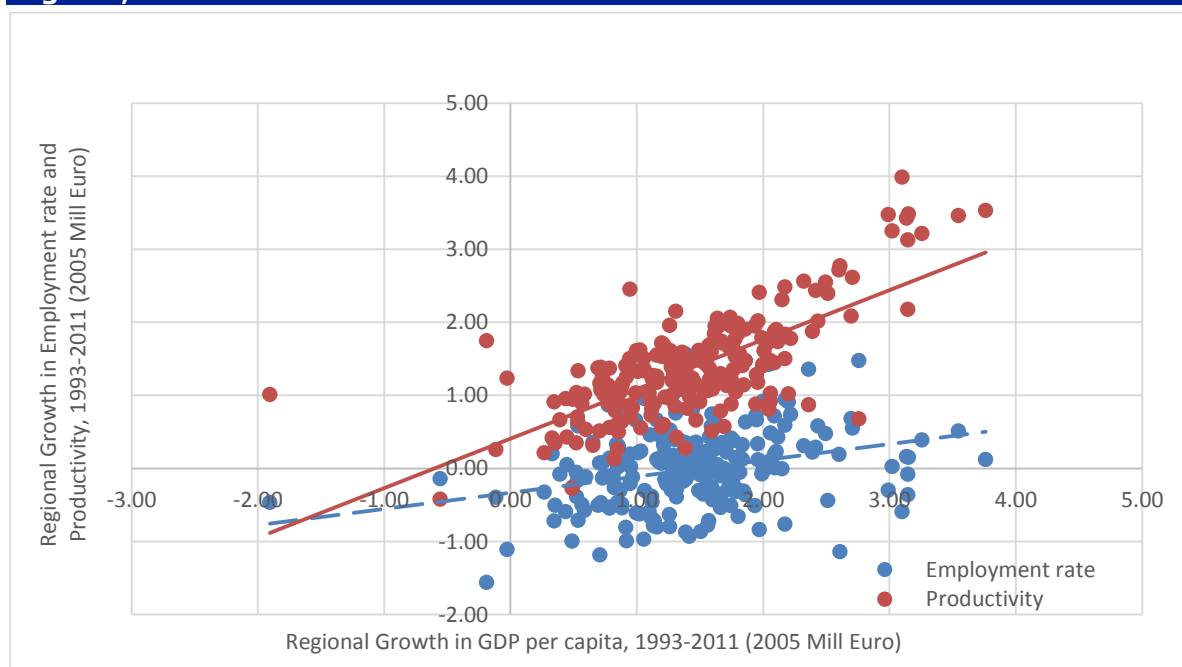
In terms of growth rates, however, there is a much stronger relationship between productivity and GDP per head than for the employment rate. Indeed, increases in the latter are very weakly associated with rises in GDP per head over both periods (Figures 13, 14 and 15).

Figure 13 Growth of GDP per capita, productivity and employment rate

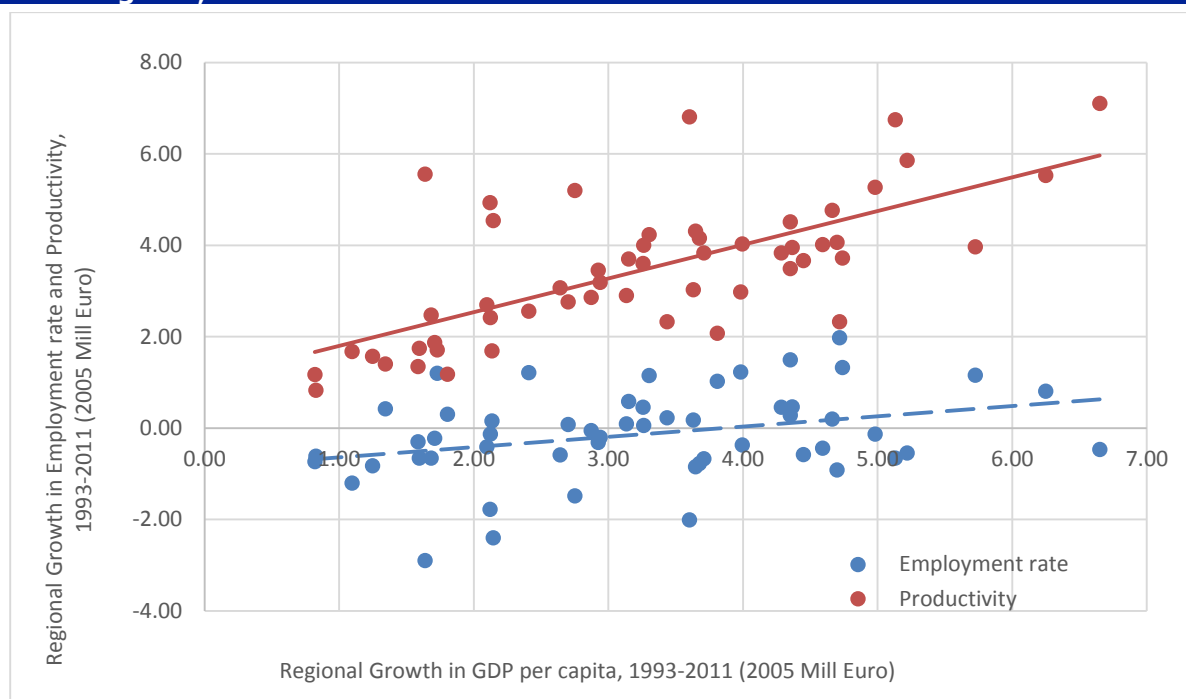


Note: Employment rate is calculated relative to active population rather than working-age population. Growth is calculated over the period 1980-2001 except for some German regions (1993-2001), Flevoland (1986-2001) and Accession Countries (1993-2001).

Figure 14 Growth of GDP per capita, productivity and employment rate, EU15 regions, 1993-2011



Note: Employment rate is calculated relative to active population rather than working.

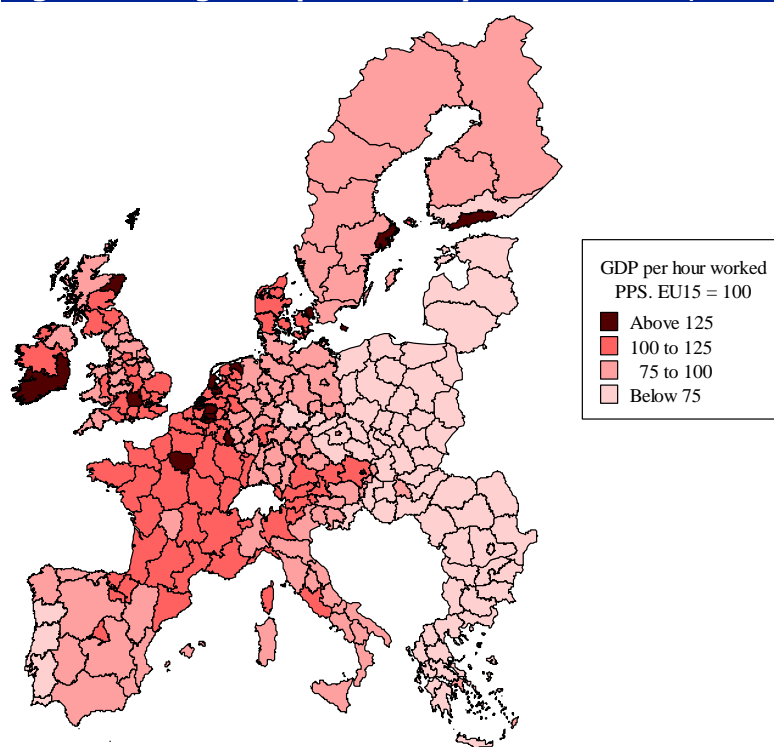
Figure 15 Growth of GDP per capita, productivity and employment rate across CEEC regions, 1993-2011

Note: Employment rate is calculated out of active population rather than working.

2.4 Regional Trends in Productivity across the regions of the EU

From the above, it seems evident that differences in productivity are the main reason for differences in GDP per capita between regions and there is a strong positive correlation between the growth of regional GDP per capita and that of productivity. In view of this and given, therefore, the importance of a high level of productivity for achieving a high level of GDP per head in EU regions, a more detailed analysis of changes in productivity at regional level is called for. As has been argued elsewhere (see Gardiner, Martin and Tyler, 2004), productivity can be thought of as a measure of regional competitiveness, where productivity itself is determined by various factors like the quality, and quantity of human capital (i.e. the skills of the work force), the presence of agglomeration economies and more generally the quality of the social and physical infrastructure of a region. The determinants of regional productivity are not examined here directly, though variations between regions in the educational levels of the work force and the degree of urbanisation as well as other aspects are considered in the next part. The focus instead is on the regional variations in both the level and growth of regional productivity across regions and more specifically on the persistence of regional productivity differences and the convergence of productivity levels between regions. In addition, differences in productivity between traded and non-traded sectors are examined since it is the former which is of prime importance for regional competitiveness.

There are marked differences in productivity, measured as GDP per hour worked in PPS terms, across EU regions (Figure 16).

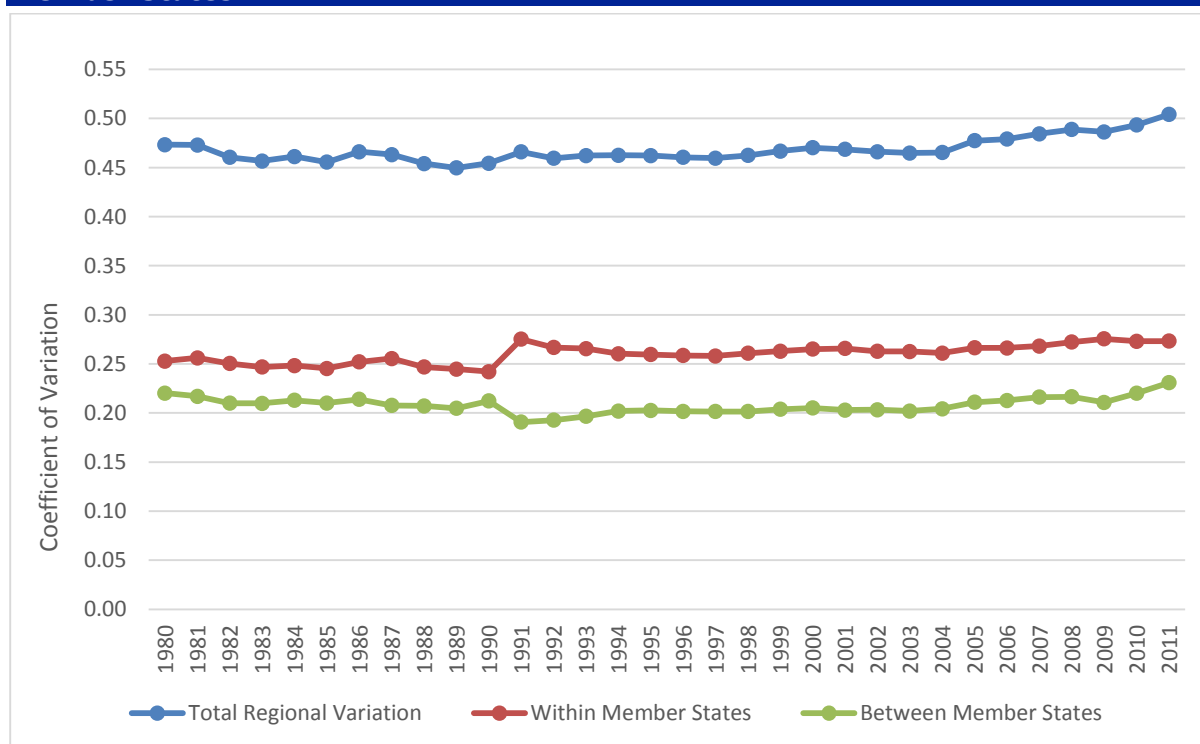
Figure 16 Regional productivity across the EU, 2011

The regions with productivity above the EU average are concentrated in north-western Europe whereas the majority of regions in the southern part of the EU (Spain, Portugal, Greece) and even more markedly the regions in the EU12 central and eastern European countries have below average levels. At the same time, and just as for GDP per capita, there is considerable variations within countries, notably in the UK (London as against the northern regions), Germany (southern Germany vs. the rest of Germany) and Italy (the north vs. the south). (It should be noted here that, unlike the figures for GDP per head, the figures for productivity are not distorted by commuting since GDP is being related to the number of people working in the region and not just to those living there.) Overall, therefore, both inter- and intra-national factors are important in explaining differences in productivity between regions across the EU.

Irrespective of the exact determinants of regional productivity, productivity tends to change only slowly over time and so a long-term view helps to put the 'snapshot' differences in regional productivity in 2011 into a better perspective. Limiting the analysis to EU15 regions only (i.e. excluding the regions in the countries which entered the EU in 2004 and 2007), Figure 17 shows the dispersion in regional productivity in the years between 1980 and 2011, as measured by the coefficient of variation, decomposed into the dispersion between countries and that within countries. Over the 31 years as a whole, the degree of dispersion was relatively stable and in this sense highly persistent. It was almost unchanged in the 1980-2005 period and increased after then, especially with the onset of the financial crisis in 2007-2008.

The main proximate reason for the recent increase in the dispersion of productivity between regions across the EU is the increased dispersion between Member States, which is still less than the dispersion between regions within Member States, though the difference narrowed in the last 10 years or so. The sudden increase in dispersion within Member States (and the simultaneous reduction in that between Member States) in 1991 is a result of German unification. If the regions of the former German Democratic Republic are excluded from the analysis, this spike in 1991 disappears, but the main message from Figure 17 remains unchanged: regional differences in productivity are considerable and very persistent, and in the wake of the recent crisis they have increased further.

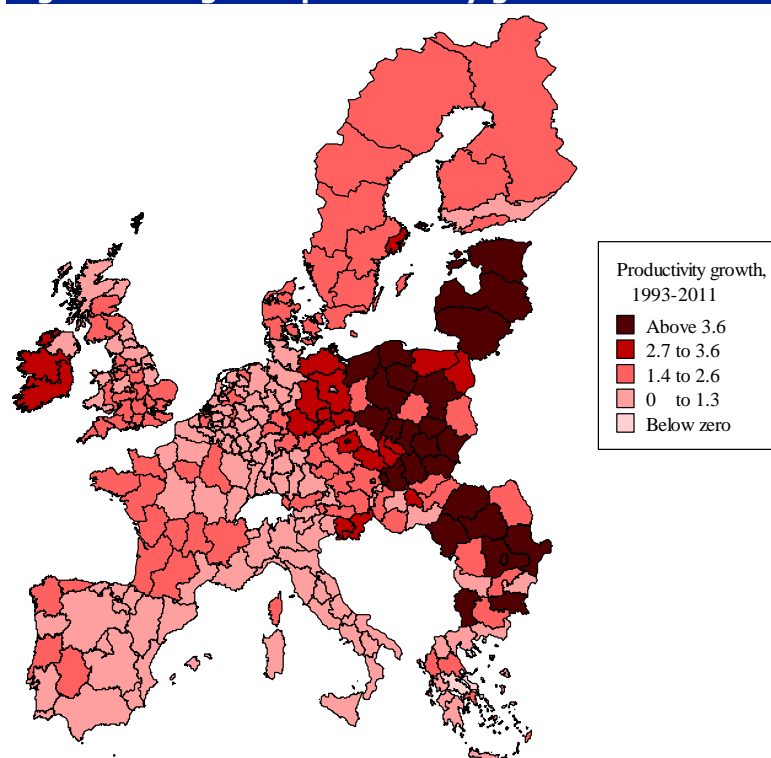
Figure 17 Regional dispersion of productivity across the EU15 (incl. East Germany), 1980-2011: Total, and decomposition into within and between Member States



The level of regional productivity therefore varies markedly across the EU, with the southern EU15 and central and eastern European regions typically having below average productivity. But this masks the fact that growth rates of productivity have been much higher in the central and eastern European regions than in the southern peripheral regions. As Figure 18 shows for the 1993-2011 period, all regions in the highest productivity growth category (above 3.6% a year) are located in the EU12 Member States EU, implying a process of catching-up in terms of productivity levels with the regions in the EU15. According to neo-classical growth theory such a convergence process is to be expected since the return on capital and, so investment, tends to be higher in regions with a relatively low initial level of productivity, so providing an incentive for higher investment, which results in higher productivity growth in the regions concerned.

By contrast, the regions in the southern part of the EU have, on average, not had a higher productivity growth than those regions in the north-western core of the EU, implying a lack of convergence. Almost all the southern EU regions, therefore, had a much lower level of productivity than the core regions at the end of the period as at the beginning.

Figure 18 Regional productivity growth across the EU, 1993-2011



In order to assess the issue of convergence of productivity between regions more systematically, Figures 19 and 20 show for various sub-periods the average growth rate of productivity per year for regions with different levels of productivity at the start of the period. For the EU12 regions, it is possible to go back only as far as 1993 instead of 1980. The main message from Figures 19 and 20, which is very much in line with the conclusions about convergence of regional GDP per capita, is that the overall degree of convergence in productivity between regions has been relatively slow and after the start of the crisis came to a halt.

Figure 21 shows the convergence in regional productivity across the EU for the whole period under consideration, 1980(93)-2011. In what might be termed the “pre-EMU” period, 1980(93)-2001, the annual convergence rate was only just over 1% a year (Figure 19), which is relatively low in the sense that a rule of thumb “normal” convergence process has been found to have a convergence rate of 2%. The rate of convergence in this period, therefore, implies that it would take around 50-60 years to eliminate half the differences in productivity between regions. In the second half of the period 2001-2011 (Figure 20), the convergence rate then falls to only 0.8% a year.

Figure 22 breaks down the period 1980-2011 into 5 sub-periods and shows for each sub-period the annual convergence rate as well as average productivity growth rate. Convergence was relatively slow over the entire period but in the wake of the crisis (2007-2011) slow convergence turned into divergence. This slowing down of convergence was accompanied by an initially gradual and after 2007 a sharp decline in the average productivity growth rate in regions across the EU.

Figure 19 Convergence in regional productivity across the EU – period 1980-2001

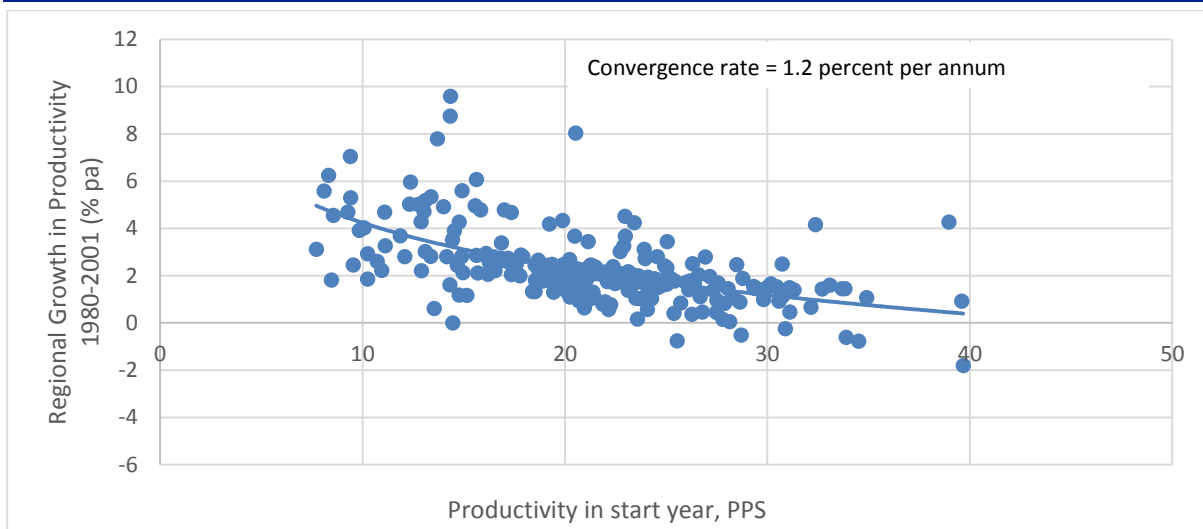


Figure 20 Convergence in regional productivity across the regions of the EU – 2001-2011

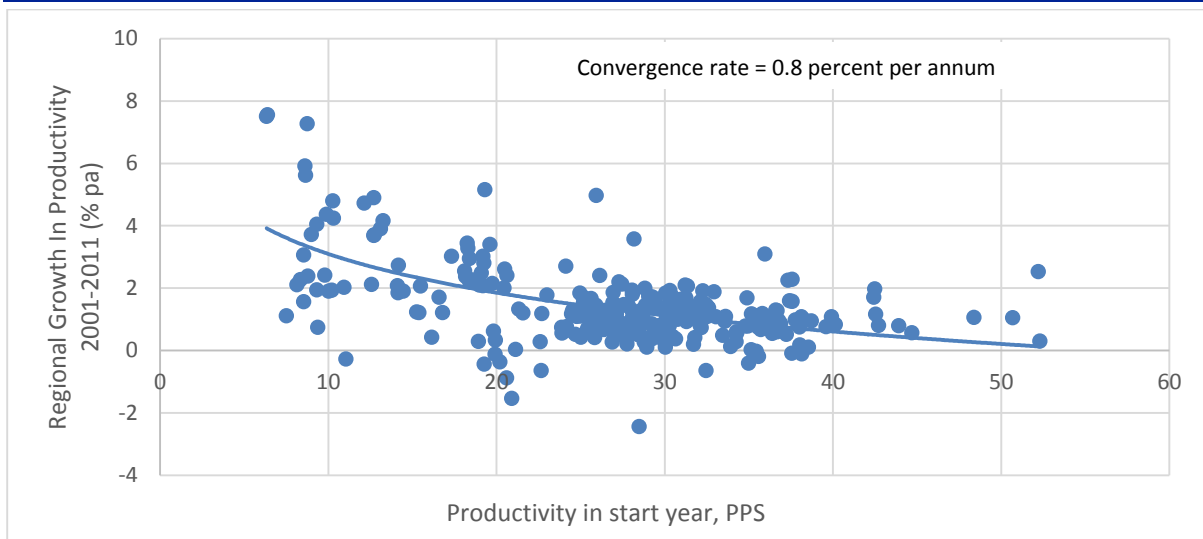


Figure 21 Convergence in regional productivity across the EU – period 1980-2011

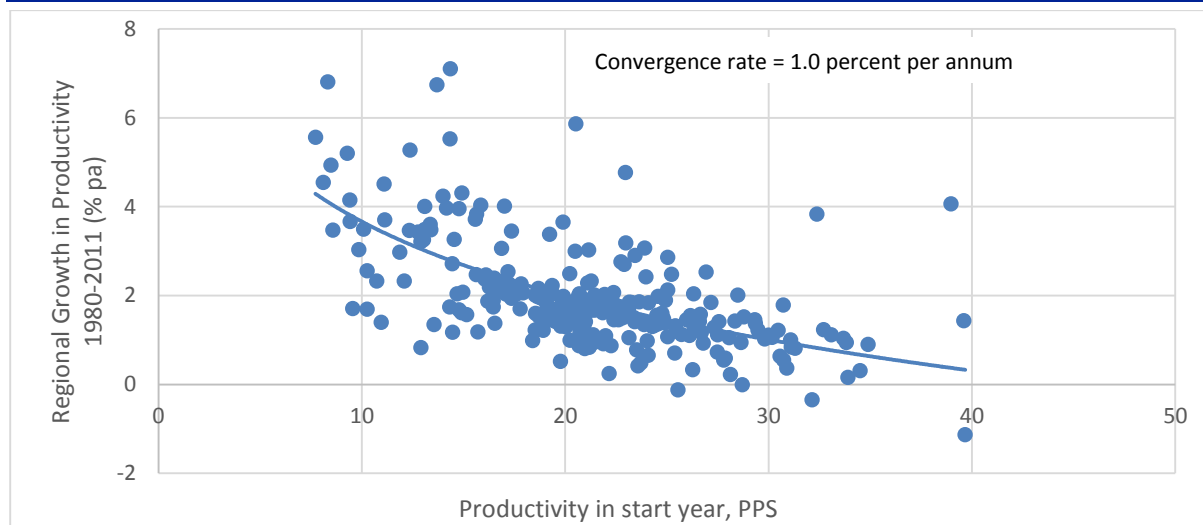
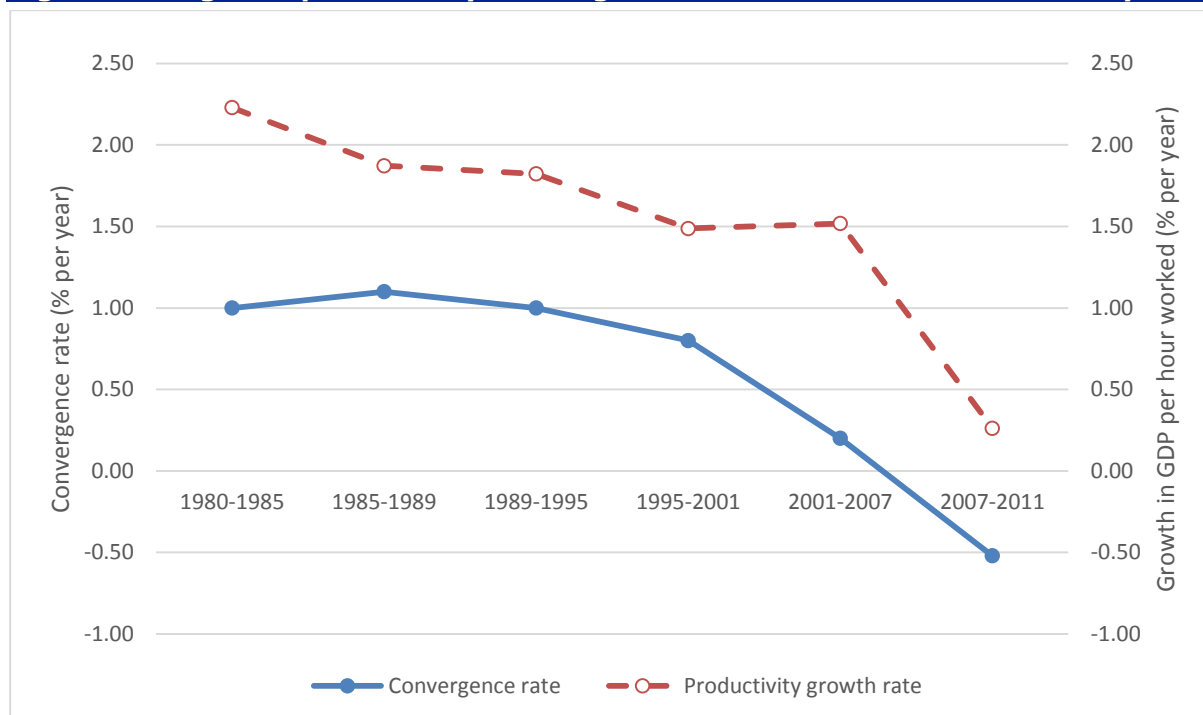


Figure 22 indicates a double-edged problem. Not only is the convergence rate low or even negative towards the end of the period, but this takes place against the background of a general decline in average productivity growth across the EU.

Figure 22 Regional productivity convergence in EU15 over five economic cycles



Since regional productivity is often taken as a measure of regional competitiveness, it is informative to distinguish productivity in traded and non-traded sectors. It is productivity growth in the traded sectors, rather than in the economy as a whole, which should really be regarded as an indicator of a region's competitiveness.

For the period 1980-2011, there is a weak but positive convergence rate with respect to productivity growth for both the traded and non-traded sectors (Figures 23 and 24), but this turns into a negative convergence rate, most notably in the traded sectors, and so divergence in the 2001-2011 period. This further supports underlying the main message here that, on average, regional productivity differences across the EU are relatively persistent. This persistence combined with low and falling overall productivity growth

across the EU are the main proximate reasons for the decline in the growth of GDP per capita and the weak convergence of GDP per head between regions indicated in the previous section. Against this background, the following section examines changes in regional employment.

Figure 23 Convergence in productivity in the non-traded sector

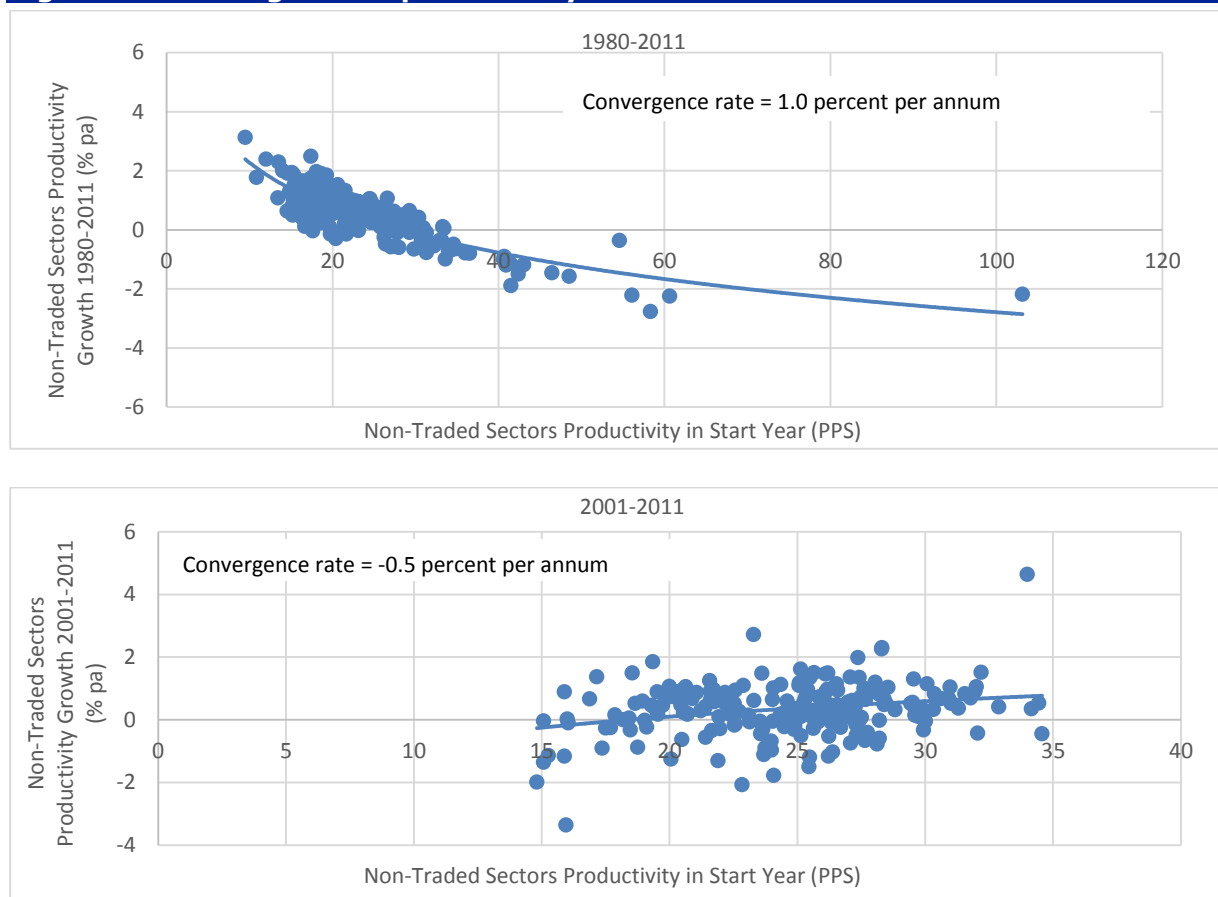
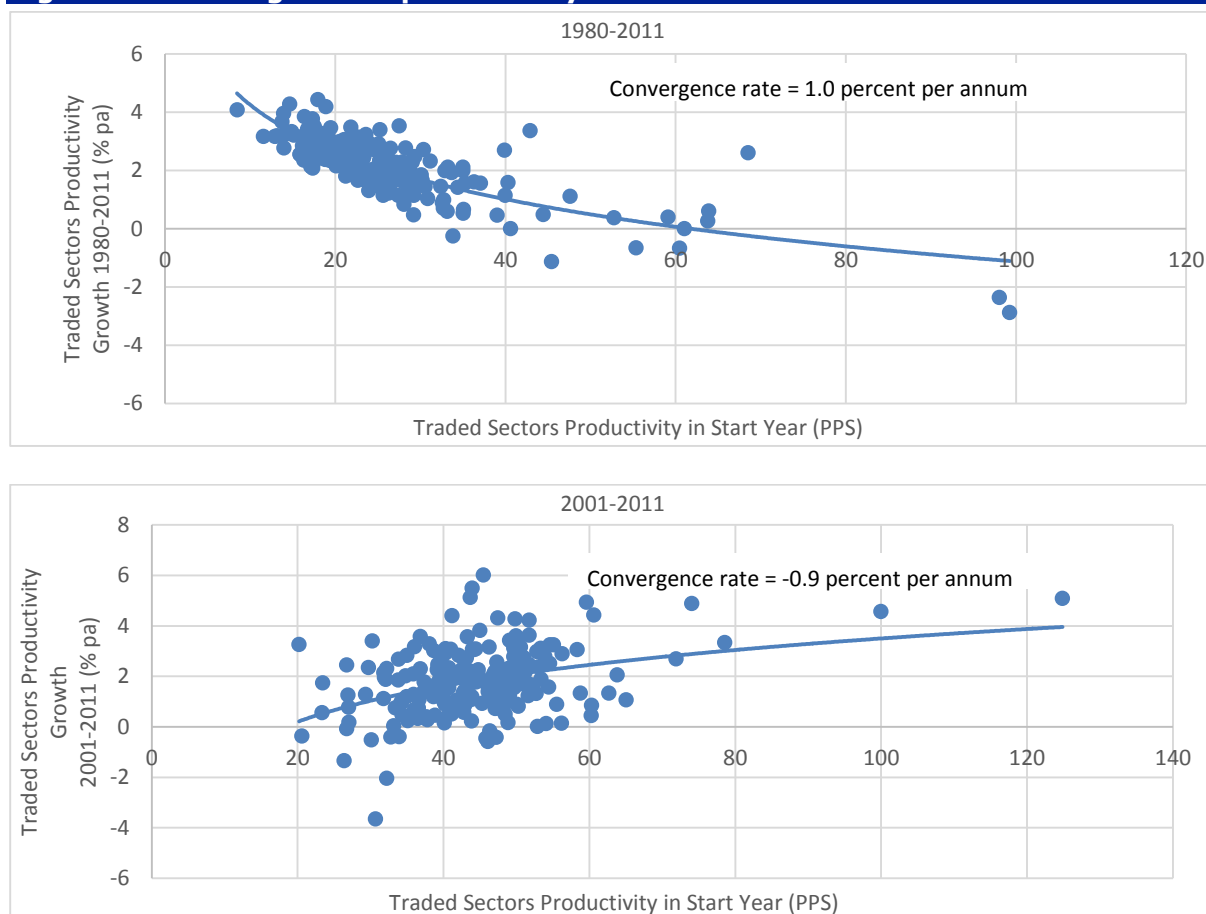


Figure 24 Convergence in productivity in the traded sector

2.5 Changes in regional employment across the European Union

In their seminal paper on regional economic developments in the US, Blanchard and Katz (1992) calculated cumulative employment growth differentials for each State, relative to the US average, for the period 1947-1990. Using this method, they showed how individual States have followed quite different, and divergent, long-run employment growth paths. In addition, by cumulating a region's annual growth differential over time, this approach shows not only the extent of a region's overall 'growth gap', or 'growth lead', by the end of the period examined, but also any significant changes of direction – 'turnarounds' – in a region's relative growth path, due, for example, to region-specific shocks or to a region's differing reaction to a common external shock (such as a national recession).

Martin and Tyler (2006) used the Blanchard and Katz method to examine whether the EU Structural Funds had improved the differential growth paths of Objective 1 regions. Here this analysis is updated by applying the same procedure to regional employment growth paths over the period 1981-2011. As the interest here is in comparing three groups of regions – the (mainly) Objective 1 regions, the Transition regions, and the remaining (largely non assisted) regions, each of these being defined by their status in 2007-2013 – the cumulative differential employment growth (in percentage terms) is calculated for these three groups relative to the EU average for both the EU15 and EU27.

Figure 25 shows the trends for the EU15 regions. Since the (largely) non-assisted regions constitute by far the largest group, not surprisingly their cumulative differential growth path (i.e. the difference with the EU15 average) is close to the zero line – in effect the average for this group is nearly the same as the EU15 average. Of much more interest, however, are the paths of the other two regional groups. These diverge from the beginning of the 1990s onwards, with the relative employment performance of the

Transition regions improving significantly: in these regions employment grew noticeably faster than in the EU15 as a whole. (This is only to be expected, of course, since the regions concerned made the transition from Objective 1 to Transition because of their relatively strong performance.) In contrast, the employment performance of the Objective 1 regions was less robust: for much of the 1990s, employment growth in these regions lagged that in the EU15 as a whole. There was some relative improvement in this group in the early-2000s, which coincided with a relative strengthening of Cohesion policy (though this does not necessarily mean that this was a cause). However, what is clear from Figure 25 is that the Objective 1 regions were adversely affected by the 2007-10 recession.

By the end of the period, the Objective 1 regions, taken collectively, had a negative relative growth gap of around 7 percentage points. Likewise, the recession also had a particularly depressing effect on the relative employment growth of the Transition regions.

Since analysis for the EU-12 regions can only be carried out for the shorter period, 1995-2011, Figure 26 shows the corresponding differential employment growth paths for all EU27 regions over this period. Figure 26 indicates that when all EU27 state regions are included, for this particular period, Objective 1 regions fared even worse than indicated by the performance of EU15 regions over the longer 1981-2011 period, their employment growth rates declining by around 10% percentage points relative to the EU average even before the onset of the crisis. The Transition regions had gained over 15 percentage points relative to the average by 2007 in terms of employment but then lost much more heavily than the Objective 1 regions between then and 2011.

Figure 25 Cumulative differential growth of employment in the EU regions minus the cumulative growth in the EU15, 1980-2011

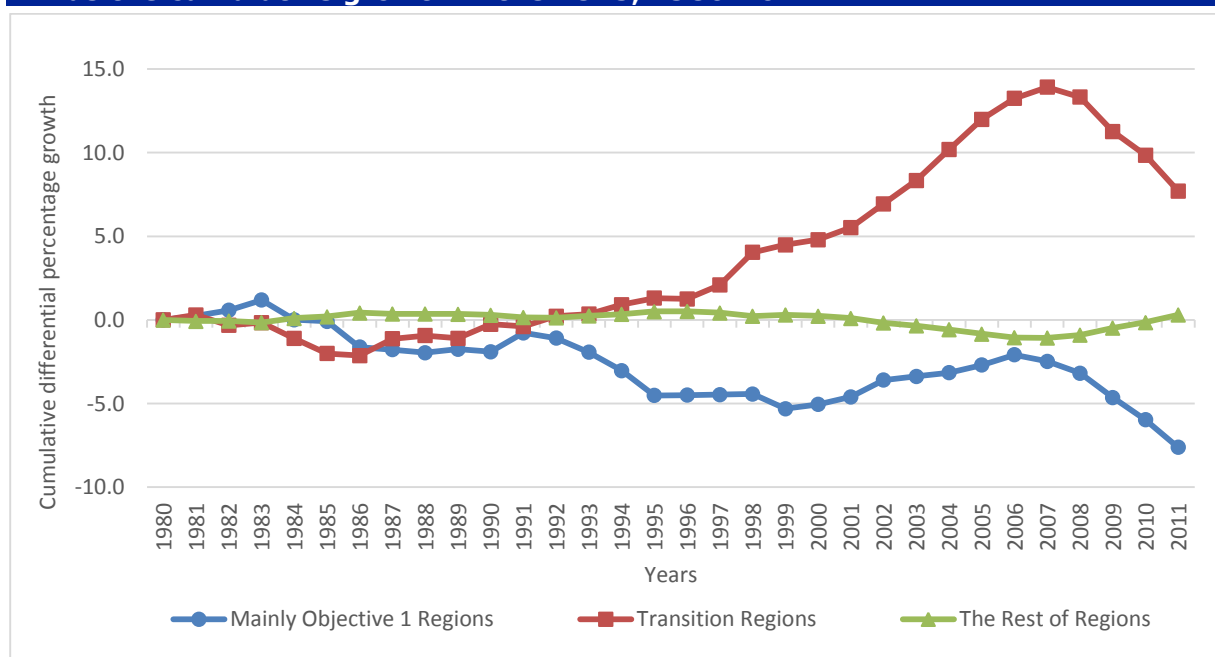
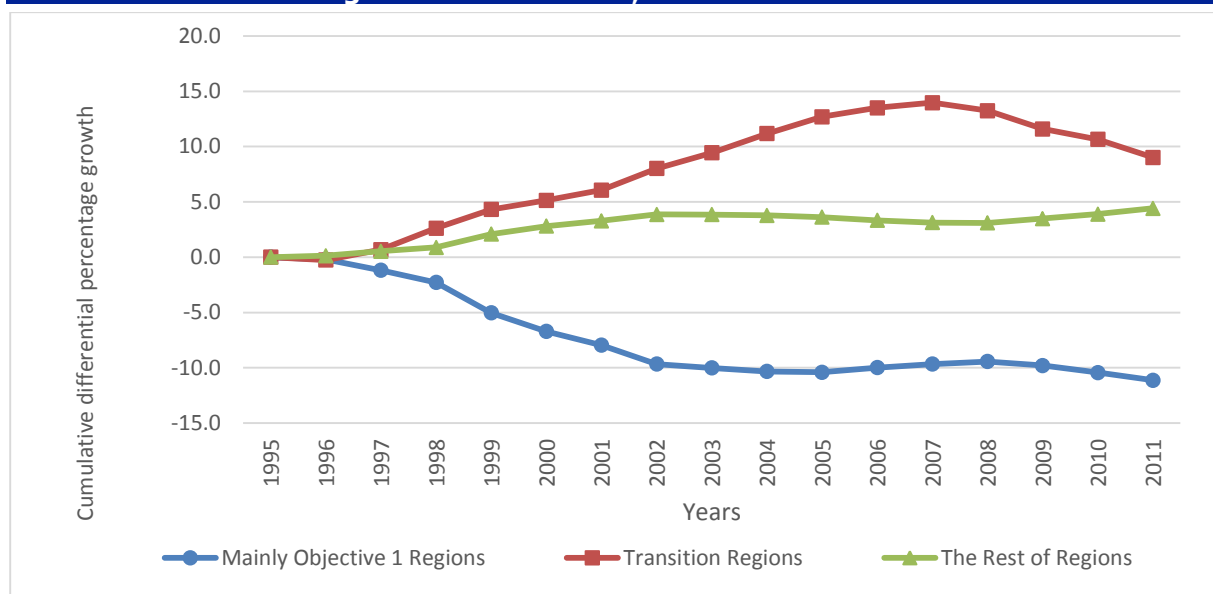


Figure 26 Cumulative differential growth of employment in the EU regions minus the cumulative growth in the EU27, 1995-2011



Extending the employment analysis to GVA

To conclude this part of the analysis, the Blanchard and Katz approach can be applied to the growth of gross-value added (GVA, which is similar to GDP) in each of the three groups. Figure 27 shows that the 'turn-around' in the relative growth of GVA in the Transition regions in the EU15 from the early 1990s is even more dramatic than for employment, implying that as well as the number employed increasing, there were also significant gains in productivity in these regions. For Objective 1 regions, the relative growth path is similar to that for employment. The decline in GVA relative to the EU15 average in the crisis period is again more for the Transition regions than for the Objective 1 ones, though slightly less steep than for employment in both cases, implying a larger reduction in productivity than in the non-assisted regions (i.e. in the EU15, the effect of the crisis on employment was cushioned more by a reduction in productivity, or by a slowdown in its growth, in non-assisted regions than in assisted ones).

Figure 28 shows the relative growth paths of the three groups of regions for the shorter period 1995-2011 for the EU27. The EU12 regions in this case have a major influence on the growth path of the Objective 1 regions since they add to the number significantly. Whereas, therefore, there was a marked decline in employment relative to the average in Objective 1 regions from 1995 up to 2002 or so, this is not the case for GVA, which was slightly higher than in 1995. This implies that there was a much more rapid growth of productivity in these regions, and more specifically the EU12 ones, over this period than in other regions. This was not the case in the Transition regions, which include very few EU12 ones, where the relative growth of GVA was less than that of employment, implying a slower growth of productivity than average. In the crisis period, the reduction in GVA is much the same as the reduction in employment and again much larger in either Objective 1 or the other regions.

Figure 27 Cumulative differential growth of GVA in the EU regions excluding East Germany minus the cumulative growth in the EU15, 1980-2011

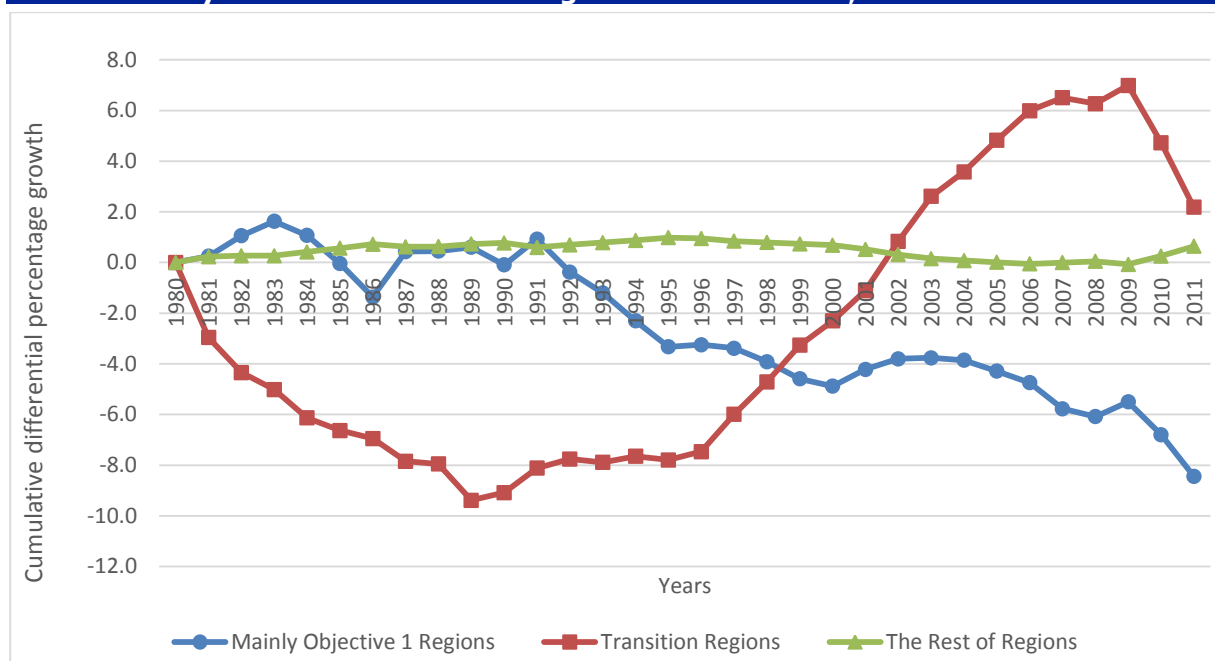
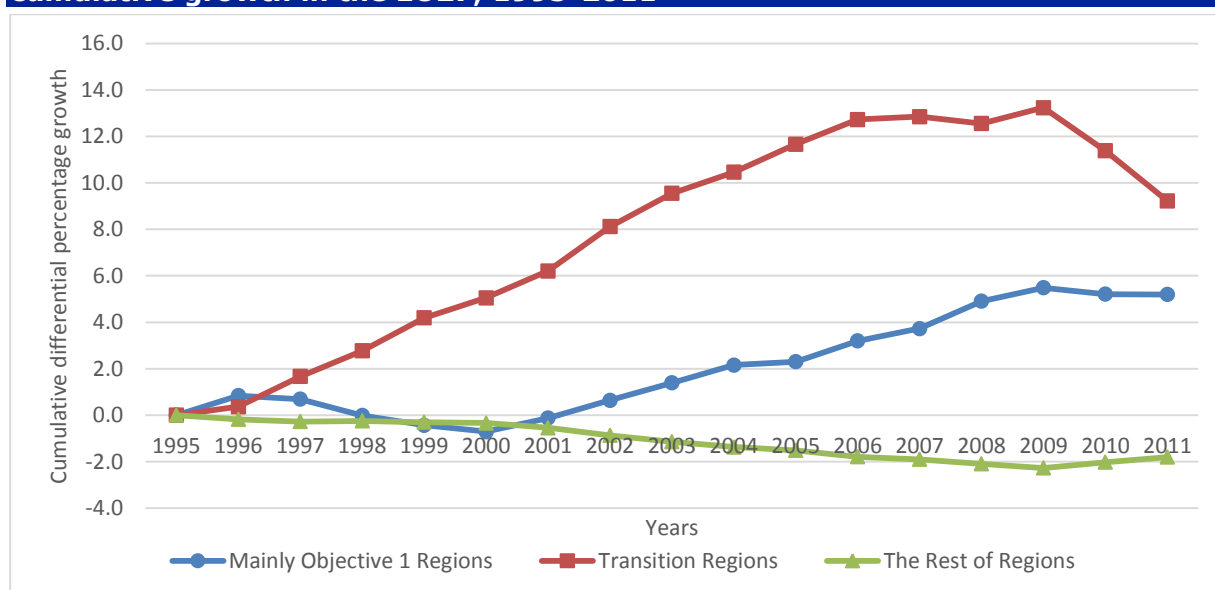


Figure 28 Cumulative differential growth of GVA in the EU regions minus the cumulative growth in the EU27, 1995-2011



3 Part 2: Regional developments in the EU over the 2007-2013 programming period

3.1 Introduction

The analysis below examines developments at regional level across the EU over the last programming period in the light of the longer-term trends described above. Its concern is with the relative economic performance over the period of regions, grouped according to the scale of financial support received from the ERDF and Cohesion Fund, in terms of the growth of GDP per head and the employment rate. This is not intended to suggest that any differences in performance observed can be attributed to such financial support. Indeed, insofar as the support had some effect, it would not necessarily show up over this period, though nearly all the regions assisted had received support over previous years, over three programming periods in the case of most Convergence regions in the EU15 but only since mid-2004 in the case of EU12 regions except those in Bulgaria and Romania. The main intention is simply to describe developments in the three groups of regions distinguished.

It should be noted that regions are grouped in terms of their entitlement to Cohesion policy funding over the 2007-2013 period in order to be able to compare development in the same regions over successive programming periods. In practice, as noted above, all the Convergence regions in 2007-2013 were Convergence regions in 2000-2006, in the sense that they were eligible for Objective 1 funding, and most of them in 1994-1999, though all the Objective 1 regions in 2000-2006 were not necessarily Convergence regions in 2007-2013, since some became phasing-in or phasing-out regions⁵.

The concern is also with other aspects of the development of the regions in question, which to some extent underlie economic performance and/or are affected by it and which, more generally, are indicators of economic and social well-being and the quality of life in the regions. These are:

- household disposable income which is dependent on net transfers to and from the region as well as its GDP per head
- the growth of population and the extent of net migration into the region
- the level of fixed investment carried out
- the education attainment level of the population of working age – specifically, the proportion of people with tertiary qualifications
- expenditure on R&D, which in some degree is a proxy for the capacity for innovation
- the length of motorways, which is an important aspect of the transport network and the ease of travel both within the region and to other regions
- the number of people killed in the roads, which is an indicator, even if very rough, of the standard of the road network
- the proportion of households with access to broadband
- the number of hospital beds in relation to the population

These aspects do not, of course, provide a comprehensive overview of the economic and social situation in the region, but taken together they should be indicative of this. Their common feature is that a reasonably complete set of data is available at (NUTS 2) regional level in nearly all EU Member States, which is a major reason for their selection in the present context. Other aspects which are relevant are not considered here, at least at regional level, largely because of a lack of regional data, or the incomplete

⁵ This is not quite true in that two Portuguese regions, Centro and Alentejo, which were Convergence regions in 2007-2013 were only partially eligible for Objective 1 support in 2000-2006 (74% and 69% of the regions, respectively, the rest being eligible for phasing-out support).

nature of those that are available. Some aspects, however, are examined at national level, specifically, the use of public transport, the connection of households to public water supply, wastewater treatment and the disposal of solid waste.

The aim, as noted at the outset, is mainly a descriptive one, to indicate the extent of disparities in the various aspects which exist between the different groups of regions and how they changed over the programming period. The purpose is to set out the context in which Cohesion policy operated and to provide an indication of background developments against which the achievements of policy – the results of the expenditure co-financed by the ERDF and Cohesion Fund – can potentially be assessed.

In addition to regions being grouped according to their status under Cohesion policy, which determines the scale of funding they received, they are also divided by broad geographical area in order to take some account of differences in the underlying economic context as well as in the types of region concerned. Specifically, regions are, therefore, divided into three groups – those in the EU12 countries (i.e. those which entered the EU in 2004 and 2007), those in the four southern EU15 Member States (the EU4) and those in the rest of the EU15.

3.2 Basic characteristics of regions

Before examining the economic performance of regions and the other aspects listed above, it is important to consider the basic characteristics of regions in terms of their urban or rural nature and the relative importance of different sectors of activity. These do not tend to change very quickly over time, but they can potentially have a significant influence on their performance. In particular, the existence of a major city or agglomeration tends to be regarded as important for the economic development of regions because of the advantages which the concentration of economic activity there brings. Conversely, a region which is largely rural in nature is commonly supposed to tend to face more difficulty in attracting business investment and sustaining economic growth, especially if there is no major city within easy reach. This difficulty has been recognised by Cohesion policy over the years through the creation of a specific strand of funding for assisting rural areas (Objective 5a before 2000, which became an element of Objective 2 in the 2000-2006 period, as well as from the European Agricultural Guidance and Guarantee Fund (EAGGF) in the 2000-2006 period and subsequently from the European Agricultural Fund for Rural Development (EAFRD) both of which were parts of the CAP).

Many of the regions concerned have a relative concentration of activity in agriculture as compared with other regions which can equally adversely affect their growth potential. In the period under examination, regions with a relative concentration of activity in industry or in construction might also have been more affected by the recession in 2008-2009 than other regions given its greater impact on these sectors than on others during this period.

Accordingly, it is potentially important to take explicit account of the differential incidence of these factors when assessing the comparative economic performance of regions. How far, however, these factors had the potential effect supposed is examined below. Here the concern is with the way that they vary across the regional groups distinguished.

3.2.1 Urban-rural division of population

In general, as in earlier periods, regions which received the most EU funding under Cohesion policy in the 2007-2013 programming period, i.e. the regions assisted under the Convergence Objective, had a larger proportion of the population living in rural areas and a smaller proportion living in predominantly urban ones than Less-assisted regions – or more precisely those eligible for assistance under the Competitiveness and Employment Objective, which for the most part received only a very limited amount of support (Table 3).

Transition regions, those classified as either phasing-in or phasing-out for purposes of distinguishing their funding entitlement – which, as noted above, were in most cases Convergence regions or the equivalent (Objective 1) in the previous period – tend to be in between Convergence and Less-assisted regions in these terms, with more population in urban areas than Convergence regions and less in rural ones. The exceptions are the Transition regions in the EU15 other than in the four southern Member States, which have a larger proportion of the population in rural areas than the Convergence regions, which in this case are mostly regions in the former East Germany, though a larger proportion too in urban areas.

These differences are reflected in what is termed an 'Economic potential' index which assigns fairly arbitrary weights to the different types of area (see Note to the Table) in order to indicate the relative ease or difficulty of economic activity being developed in the areas concerned, which is intended simply as a means of comparing regions in these terms. Except in the EU15 regions, this index has, on average, a higher value in the Less-assisted regions than the Transition regions and a higher value in the latter than in the Convergence regions.

Table 3 Regions grouped by status under Cohesion policy and urban-rural population

	No. of regions	Urban	Intermediate close to a city	Rural close to a city	Intermediate remote	Rural remote	Economic potential index
		% population					
EU12 Less-assisted	2	100	0	0	0	0	1.00
EU12 Convergence	52	18	38	34	0	9	0.70
EU12 Transition	2	46	54	0	0	0	0.89
EU4 Less-assisted	24	52	33	12	1	2	0.86
EU4 Convergence	20	26	39	18	4	14	0.69
EU4 Transition	15	48	33	7	1	11	0.79
Other EU15 L-a	132	50	32	14	0	3	0.85
Other EU15 Conv	8	16	55	25	4	0	0.76
Other EU15 Trans	10	37	19	24	2	19	0.67
French DOMs	4	64	23	12	0	0	0.90
All Less-assisted	158	51	32	14	0	3	0.85
All Convergence	84	21	40	28	2	9	0.70
All Transition	27	44	31	12	1	12	0.76
All NUTS 2	269	41	35	18	1	5	0.80

Note: Regions are classified according to the density of population in local administrative units. Rural areas are those where population density is less than 150 inhabitants per square km. Predominantly rural regions are defined at the NUTS 3 level to be those where more than 50% of the population live in rural areas so defined, unless they contain a city of over 200,000 in which case they are defined as intermediate.

Intermediate regions are those where between 15% and 50% live in rural areas unless it contains a city of over 500,000 in which case it becomes a predominantly urban area. Predominantly urban areas are those where less than 15% of the population live in rural areas. Regions close to a city are those where at least 50% of the population live within one hour's driving time to a city of over 50,000 inhabitants. The 'indicator of economic potential' applies weights to each type of area in order to construct a composite index for comparing between regions. The weights are as follows: urban=1; intermediate close to a city=0.8; rural close to a city=0.6; intermediate remote=0.3; rural remote=0.

EU12 are the countries which entered the EU in 2004 and 2007; EU4 are the southern Member States of Greece, Spain, Italy and Portugal. EU15 are the EU15 countries other than the EU4. Less-assisted are regions eligible for funding under the Competitiveness and Employment Objective.

Source: Eurostat, demographic data

3.2.2 Sectoral division of employment

The division of economic activity between sectors also varies in a fairly systematic way between the regional groups distinguished. Convergence regions, therefore, on average, tend to have much more employment in agriculture, except in the EU15 because of the dominance of the East German *Länder* again, and less in Financial and business services, which in most periods and in most cases is the most dynamic sector in terms of growth and job creation (Table 4).

The relative importance of the other sectors varies according to the countries concerned. Industry has a larger weight in the Convergence regions than in other regions in the EU12 and EU15, though only slightly in the latter, but not in the 4 southern Member States. Construction is more important in the Convergence and Transition regions than in the Less-assisted regions in both the EU15 and EU4. Basic services have a larger weight in the Transition regions than in other regions in the EU4 and marginally in the EU12 (though only two regions fall into this category here) but not in the EU15 where there is not much difference between the regional groups. Public services are more important in the Transition regions than in others in both the EU12 and EU15 but not in the EU4 where the share of employment in these services is largest in Convergence regions. This share is particularly large in the French DOMs (the overseas regions in the Caribbean and South Pacific). (It should be noted that overall the share of employment in public services is larger in Less-assisted regions than in the other two groups because of the weight in this group of the EU15, where such services are most important, which indicates the potentially misleading nature of an overall figure for the whole EU.)

Table 4 Division of employment between broad sectors, 2007 (% total employed)

	Agriculture	Industry	Construction	Basic services	Finance+ Business	Public services
EU12 Less-assisted	0.6	10.6	8.6	30.0	27.0	23.3
EU12 Convergence	15.5	24.8	8.1	23.0	7.8	20.9
EU12 Transition	2.5	14.6	9.0	31.4	16.2	26.2
EU4 Less-assisted	2.4	19.7	8.6	26.8	15.4	27.1
EU4 Convergence	10.6	13.9	10.7	25.9	9.7	29.1
EU4 Transition	4.9	13.9	11.1	31.6	10.9	27.5
Other EU15 L-a	2.1	14.6	6.5	27.4	18.2	31.2
Other EU15 Conv	2.5	16.4	8.2	26.2	13.6	33.0
Other EU15 Trans	4.5	12.9	8.3	26.1	13.5	34.7
French DOMs	4.0	7.2	8.7	22.6	10.4	47.1
All Less-assisted	2.1	15.6	6.9	27.3	17.7	30.3
All Convergence	13.0	21.1	8.8	24.0	8.8	24.3
All Transition	4.5	13.7	10.0	29.9	12.4	29.6
All NUTS 2	5.4	17.1	7.7	26.5	14.8	28.5

Note: See Note to Table 1. Basic services are the distributive trades, hotels and restaurants, transport, personal services and employment in households. Public services comprise public administration, education, healthcare and social services. Business and financial services are the remainder.

Source: Cambridge Econometrics regional database

3.3 Growth of GVA per head⁶

GVA per head in the EU as a whole increased hardly at all over the 2007-2013 programming period up to 2011, the latest year for which data are available at present⁷. This came after growth of around 2.4% a year over the previous two programming periods (Table 5). The marked fall in the growth rate is largely a result of the reduction over the two years 2007-2009 (of 4%). The rate of growth over the subsequent two years was around that in the years before the onset of the global recession (last two columns of Table 5 – the annual rate was around 2.4% over the latter two years).

The growth performance in the three categories of region varies between the country groups. In the EU12, GVA per head in the Convergence regions grew by less than in the Less-assisted regions – which in this case are only Prague and Bratislava – in both the 1994-1999 and 2000-2006 periods⁸, though by more than the EU average in each case, especially in the latter period. Over the first 5 years of the 2007-2013 period, however, growth was higher in the Convergence regions than in the Less-assisted ones and again well above the EU average. A breakdown of the 4 crisis years, moreover, shows that the Convergence regions, on average, were not only less affected by the recession over the two years 2007-2009 than both the Less-assisted regions and the rest of the EU but that GVA per head grew more rapidly over the subsequent two years.

Table 5 Growth of GVA per head in real terms by country and regional group, 1994-2011

	GVA per head in real terms				
	Annual % change			Overall % change	
	1993-99	1999-06	2006-11	2007-09	2009-11
EU12 Less-assisted	4.0	5.1	1.7	-2.8	2.9
EU12 Convergence	2.7	4.8	2.2	1.0	4.4
EU12 Transition	4.4	5.0	-0.7	-6.1	1.6
EU4 Less-assisted	2.1	1.2	-1.0	-7.1	1.2
EU4 Convergence	1.8	1.9	-1.1	-5.2	-2.0
EU4 Transition	2.4	2.6	-1.7	-5.2	-5.0
Other EU15 Less-assisted	2.4	1.8	0.2	-4.8	3.3
Other EU15 Convergence	4.7	2.3	0.9	-3.0	4.0
Other EU15 Transition	2.3	2.2	-0.4	-4.9	1.0
French DOMs	0.5	1.9	-0.3	-4.3	2.0
All Less-assisted	2.4	1.7	-0.1	-5.3	2.9
All Convergence	2.6	3.8	1.2	-1.1	2.6
All Transition	2.6	2.7	-1.2	-5.2	-2.4
All NUTS 2	2.5	2.4	0.2	-4.0	2.4

Note: GVA per head is expressed at constant prices and exchange rates. The annual % changes are calculated over successive programming periods.

Source: Eurostat, Regional accounts

⁶ GVA, gross value-added is used in the section as a measure of output rather than GDP because the data come from the Eurostat regional accounts rather than the Cambridge Econometric regional database as in the first part of the report. Eurostat, therefore, publishes data on the changes in regional output in these terms. The difference between GDP and GVA is simply that the latter is measured in terms of factor costs (i.e. before indirect taxes and subsidies) instead of at market prices (i.e. including indirect taxes and subsidies).

⁷ Note that regional data for the change in GVA at constant prices at the time of carrying out the analysis were available for later years for many regions but were not consistent with those for earlier years or with the data at national level.

⁸ It should be noted that if GVA per head is adjusted for commuting – see below – the growth rate in Convergence regions was slightly higher than in Less-assisted ones over the 2000-2006 period.

GVA per head in the two Transition regions (Közép-Magyarország in Hungary where Budapest is situated and Cyprus) grew by more than in the Convergence regions but by slightly less than in the Less-assisted ones in 2000-2006. In the 5 years 2007-2011, on the other hand, GVA per head in these regions fell slightly instead of growing, the decline occurring in the recession years, 2007-2009, though growth in the next two years was also slower than in the rest of the EU12.

In the EU15, GVA per head in the Convergence regions grew by more than in the Less-assisted regions in both 1994-1999 and 2000-2006 and the same was the case in the 2007-2011 period (though it should be recalled that these regions are mostly situated in the Eastern part of Germany and benefited from the relatively high growth in the country in the two years 2009-2011). Growth in the Transition regions was also higher than in the Less-assisted regions in the period before 2007 but lower in 1994-1999. It was also lower in the 5 years from 2007 on.

In the four southern EU15 Member States, growth of GVA per head in the Convergence regions exceeded that in the Less-assisted regions in 2000-2006 but was lower in the previous programming period, while GVA per head fell to a similar extent in the first 5 years of the 2007-2013 period. In the Transition regions, on the other hand, growth was higher than in the Less-assisted regions in both 1994-1999 and 2000-2006, especially in the latter period when it was significantly higher than in the Convergence regions (which is part of the reason why the regions concerned lost their Convergence status). GVA, however, fell by more in the 2007-2011 period than in the other two groups.

In sum, therefore, the Transition regions stand out as having performed less well in all three country groups than the other regions in terms of the growth of GVA per head over the 2007-2011 period, in contrast to the experience in the previous two periods in the EU15 at least, including in the four southern countries.

3.3.1 GVA per head adjusted for commuting

It should be recognised, however, that comparisons of growth of GVA per head between regions are potentially distorted by the effect of commuting. People who work in a region while living in another, therefore, add to GVA in the former without being included in the population that enters into the calculation of GVA per head for the region concerned. Conversely, they are included in the calculation of GVA per head in the region where they live without contributing directly to GVA in the region. Accordingly, GVA per head, as measured, is pushed up in regions with net inward commuting without these being any more prosperous as a result than if the people concerned lived in the region, while it is reduced in the regions with net outward commuting without these being any less prosperous than they would be without commuting. Commuting can, therefore, be thought of a means of both helping to realise the potential of regions which are centres of economic activity and, at the same time, of automatically transferring part of the income created to other regions. In consequence, GVA per head needs to be adjusted for commuting in order to eliminate the distortion concerned when comparing across regions⁹.

The same applies to comparisons of growth of GVA per head between regions since the importance of commuting, and the extent to which it adds to or subtracts from GVA in any particular region can change over time. For example, if people who previously commuted to work in a region moved into the region to live without changing their jobs, then GVA per head as measured would tend to fall as a direct result without anything really changing as regards the income generated by the economic activity which takes place in the region. Conversely, if people working in a region moved out and commuted to work instead, GVA per head would be increased with again nothing necessarily changing as regards the economic performance of the region.

⁹ As noted above, comparisons of GVA per person employed, or productivity, are not subject to the same distortion because the people counted in the employed are all those that produce the GVA concerned.

The figures for GVA per head can be adjusted for commuting by essentially attributing to the region where they live the GVA they are responsible for generating in the region where they work, so that in each case the GVA concerned is the same as that generated by those living and working in the region. GVA in regions with net inward commuting is, accordingly, reduced and that in regions with net outward commuting increased to the same extent. Because of the nature of the data, however, the adjustment can be regarded as only approximate. Nevertheless, the adjusted figures indicate that the comparative picture described above is not substantially altered if an explicit allowance is made for the effect of commuting. Indeed, for the most part, the differences in the growth rates of GVA per head are widened once commuting is taken into account. The main difference, as noted above, is that all three groups of regions in the EU12 show the same average growth rate in the 2000-2006 period rather than different ones (see Annex Table A.1).

3.3.2 Growth of GVA per head by urban-rural nature of regions

There is no general relationship between the urban-rural nature of regions and their economic performance over the first 5 years of the 2007-2011 programming period. In the EU12, the more urbanised regions, or more precisely those with a value of the economic potential index defined above of more than 0.8, had significantly higher growth over this period than those with a lower potential because of their settlement characteristics and location (Table 6).

Table 6 Growth of GVA per head in real terms by country, regional group and economic potential, 1994-2011

	High potential			Low potential		
	Annual % change			Annual % change		
	1994-99	2000-06	2007-11	1994-99	2000-06	2007-11
EU12 Less-assisted	4.0	5.1	1.7	-	-	-
EU12 Convergence	5.6	4.5	4.3	2.0	4.8	1.7
EU12 Transition	4.6	5.6	-0.7	3.3	2.3	-0.7
EU4 Less-assisted	2.2	1.2	-0.9	1.7	1.0	-1.2
EU4 Convergence	1.9	1.9	-1.0	1.7	1.9	-1.2
EU4 Transition	2.7	2.8	-2.1	2.1	2.3	-1.3
Other EU15 L-a	2.5	1.8	0.3	2.3	1.8	-0.1
Other EU15 Conv	4.5	2.6	0.2	4.8	2.1	1.3
Other EU15 Trans	2.8	2.4	0.2	1.8	2.1	-0.9
All Less-assisted	2.5	1.7	0.1	2.2	1.7	-0.3
All Convergence	3.9	3.2	1.6	2.2	4.0	1.0
All Transition	3.1	3.1	-1.3	2.0	2.2	-1.1
All NUTS 2	2.8	2.1	0.2	2.2	2.8	0.3

Note: 'High potential' regions are those where the index calculated, as described in the note to Table 3, is over 0.8, 'Low potential' ones are those where it is below this. There are in total 101 regions in the first group, 168 in the second.

Source: Eurostat demographic data, Cambridge Econometrics regional database and author's calculations

This, however, was not the case in the EU15 and only marginally so in the four southern Member States. In the EU15, again excluding the four southern countries, the rate of growth was the same, on average, in Less-assisted regions for both high and low potential regions in the 2000-06 period. In the 5 years 2007-2011 it declined in the latter but continued to growth a little in the former. In Convergence regions, growth was higher in the low potential ones than in the high potential except in 2000-06, while in Transition regions the opposite was the case except in the 2007-11 period. In the EU4, GVA per head declined by slightly less in high potential regions than in the low potential

ones among both the Less-assisted and Convergence regions in the 2007-11 period, whereas the reverse was true among the Transition regions.

In sum, therefore, except in the EU12, the characteristics of regions in terms of their settlement pattern does not seem to have had a major effect on their growth performance over the 2007-2013 programming period, at least up until 2011. This was less the case in the four southern Member States in the previous two programming periods when growth was, on average, higher in the more urbanised regions, while in the rest of the EU15 there was not much difference between the two groups distinguished here.

3.3.3 Growth of GVA per head by sectoral specialisation of regions

As noted above, the distribution of economic activity between sectors can potentially affect GVA growth in regions if a relatively large share is concentrated in sectors which are in decline or growing only slowly. As also noted, the global recession particularly hit industry, so that regions in which this is important might be expected to have been affected more than others. The concern here is to examine how far the rate of growth of GVA per head varied over the programming period according to the nature of their sectoral specialisation, which is defined here as having a significantly larger share of employment in a particular sector than the average in the country in question. The sectors distinguished are agriculture, which is largely synonymous with rural regions, industry, which mainly means manufacturing, and financial and business services, which tend to be concentrated in major cities.

One general point to note is that there is some link between sectoral specialisation and the eligibility of regions for EU support under Cohesion policy. Both of the regions in the EU12 which were not in receipt of the ERDF under either the Convergence or Transition Objective (Prague and Bratislava) were, therefore, specialised in financial and business services, while there is only one region specialised in agriculture in the four southern Member States which did not receive funding under either of these two Objectives. In addition, there is only one region specialised in industry in the four southern countries and the rest of the EU15 which in each case did receive funding under the Convergence Objective.

The main tendency which is evident in the 2007-2011 period in all three country groups is for growth in regions relatively specialised in financial and business services to have been higher, or the fall in GVA per head to have been less, than in other regions (Table 7)¹⁰.

There is no general tendency for regions specialised in industry to have performed less well in these terms than other regions, which might have been expected. While GVA per head declined by more than elsewhere in Transition regions specialised in industry in the four southern Member States, it increased at the same rate as in non-specialised regions (i.e. the 'other' ones) in the EU12 Convergence group, though by much less than in financial and business service regions in this group.

¹⁰ The one exception is in the Transition category in the four southern Member States, but there is only one region which falls into this category.

Table 7 Growth of GVA per head in real terms by sectoral specialisation of regions, 2000-2011

	Agricultural		Industrial		Financial+business		Other regions	
	2000-06	2007-11	2000-06	2007-11	2000-06	2007-11	2000-06	2007-11
EU12 L-a					5.1	1.7		
EU12 Conv	3.8	1.4	4.5	2.6	6.2	4.1	5.0	2.0
EU12 Trans					5.6	-0.7	2.3	-0.7
EU4 L-a	1.5	-1.9	1.2	-0.8	1.2	-1.1	1.0	-1.3
EU4 Conv	2.2	-1.2	0.5	0.7			1.7	-1.6
EU4 Trans	2.4	-0.4	1.6	-2.4	5.0	-2.5	2.1	-1.2
Other EU15 L-a	1.8	-0.4	1.6	0.2	1.4	0.8	2.1	0.0
Other EU15 Conv	2.1	1.2	2.4	-0.8			2.5	1.1
Other EU15 Trans	2.1	-0.9			2.0	1.5	2.5	-0.1
All L-a	1.8	-0.4	1.5	-0.1	1.5	0.4	1.9	-0.2
All Conv	2.7	0.0	3.8	2.0	6.2	4.1	4.3	1.5
All Trans	2.2	-0.7	1.6	-2.4	4.8	-1.3	2.3	-0.6
All NUTS2	2.4	-0.2	1.9	0.1	2.5	0.7	2.9	0.4

Note: Sectoral specialisation is defined in terms of the share of employment in the sectors distinguished, regions with a share significantly above the national average being defined as being specialised in the sector concerned. Regional groups by Cohesion policy status are those indicated in previous tables.

Source: Eurostat, demographic statistics, Cambridge Econometrics regional database and authors' calculations

3.4 GVA growth by regional group in individual Member States

The growth performance of the different regional groups defined in terms of their status under Cohesion policy varied markedly over the 2007-2011 period in different Member States across the EU. In each of the three EU12 countries where there was one region not in receipt of EU funding under the Convergence Objective, the region concerned showed a higher rate of growth in GVA per head over the period, or a smaller decline, than the regions which were in receipt, which was also the case in the previous programming period (Table 8).

On the other hand, in the EU15, excluding the four southern Member States, there were only two countries with Convergence regions, Germany and the UK. Unlike in the UK, in Germany the growth performance of these regions over the 2007-2011 period was superior to that of other regions. This was also the case in the previous two periods.

The Transition regions in Germany also performed better in these terms over the period than the Less-assisted regions, as they did in Austria, but not in Belgium – where the growth rate was the same – or in Ireland or Finland. In Ireland, GVA per head declined in the one Transition region by more than in the Less-assisted one; in Finland, it was stagnating (again there was only one). Given that the poorer performance of Transition regions in the EU15 group of countries was confined to Ireland, the bigger decline in GVA per head in such regions in the EU15 than in others indicated above (in Table 5) to a large extent reflects the decline in the UK where three of the regions were situated.

In the four southern Member States, the experience was mixed. In Greece and Italy, GVA per head fell by more in the Convergence regions than in the Less-assisted ones over the 2007-2011 period and fell by much the same rate in Spain. On the other hand, in Portugal, it increased by slightly more than in Less-assisted regions.

GVA per head in the Transition regions in both Spain and Portugal declined by more than in Less-assisted ones, while in Italy, it declined by less. However, there were only two Transition regions in Italy (Basilicata and Sardegna), whereas there were 7 in Spain and another two in Portugal. The poorer performance of such regions in the latter two countries, therefore, outweighed that in Italy, which with the significant decline in the

Greek Transition regions (even if less than in the Convergence ones) contributed to the bigger reduction in GVA per head in Transition regions overall in the four southern Member States than in other regions (as indicated in Table 5 above).

Table 8 Growth of GVA per head in Member States by regional group, 1994-2011

		Annual % change			% change	
		1994-99	2000-06	2007-11	2007-09	2009-11
Czech Rep	Convergence	2.0	4.4	1.3	-3.0	5.6
	Less-assisted	4.2	5.1	1.9	-1.9	3.2
Hungary	Convergence	2.3	3.3	-1.1	-7.7	3.2
	Transition	4.1	5.4	0.0	-5.1	3.5
Slovakia	Convergence	4.4	4.5	3.4	-0.8	8.3
	Less-assisted	3.0	5.0	4.4	4.1	5.8
Greece	Convergence	1.4	3.4	-3.3	-4.4	-12.5
	Transition	2.3	4.0	-2.2	-2.3	-11.5
Spain	Convergence	2.2	2.8	-0.7	-4.9	-0.8
	Transition	2.5	1.8	-1.1	-6.1	-0.7
	Less-assisted	3.2	1.6	-0.8	-4.9	-0.3
Italy	Convergence	1.1	1.4	-1.7	-6.8	-2.1
	Transition	1.3	1.3	-0.9	-5.4	-0.5
	Less-assisted	1.5	1.1	-1.1	-8.6	2.5
Portugal	Convergence	2.9	1.0	0.5	-2.4	2.2
	Transition	2.6	2.3	-1.3	-5.0	-2.1
	Less-assisted	3.4	1.5	0.4	-0.8	0.2
Belgium	Transition	1.6	1.6	0.7	-2.3	4.0
	Less-assisted	2.4	1.6	0.3	-3.0	2.2
Germany	Convergence	5.0	2.4	1.6	-2.0	5.9
	Transition	2.1	1.8	1.4	-0.8	4.3
	Less-assisted	1.2	1.7	1.3	-4.0	7.2
Ireland	Transition	5.6	6.7	-2.6	-5.7	-8.0
	Less-assisted	7.4	5.2	-0.9	-7.6	-2.0
Austria	Transition	0.5	2.1	1.3	-0.9	4.3
	Less-assisted	2.8	1.9	0.9	-3.5	4.8
Finland	Transition	2.9	3.7	0.0	-12.7	9.3
	Less-assisted	4.5	2.8	-0.1	-9.6	4.0
UK	Convergence	3.2	2.6	-1.2	-6.8	-0.5
	Transition	3.0	2.2	-0.6	-4.9	-0.3
	Less-assisted	3.8	2.6	-0.5	-5.7	1.2

Note: See Note to Table 3 above. Countries included only if they have more than one group of regions defined by their eligibility for Cohesion policy funding.

Source: Cambridge Econometrics regional database

3.5 GDP per head in successive programming periods

The result of the differing rates of growth in the regional groups, as defined by their eligibility for EU funding, was to narrow disparities between Convergence regions and Less-assisted ones in GDP per head, measured in Purchasing Power Standard (PPS) terms to allow for differences in price levels between countries, over the 8 years 2006-2014, though not in all parts of the EU.

In the EU12, the average GDP per head in Convergence regions measured in these term and adjusted for commuting (see note to Table 9) increased from 51% of the EU27 average in 2006 to 65% in 2014, following an increase from 43% to 51% over the previous programming period (Table 9). (The non-commuting adjusted figures show a similar pattern though the differences between the regional groups are significantly wider – see Annex Table A.2.). The average in these regions also rose relative to the Less-assisted regions (Prague and Bratislava) over this period, having remained much the same over the preceding period. GDP per head in the two Transition regions in the EU12 (Cyprus and Budapest) rose relative to the average as well, but by much less and it fell relative to that in the Less-assisted regions in the EU12.

Table 9 GDP per head adjusted for commuting in PPS by country and regional group in 2000, 2006 and 2014

	Adjusted GDP per head in PPS (EU27=100)			Relative to Less-assisted (%)		
	2000	2006	2014	2000	2006	2014
EU12 Less-assisted	101	123	128			
EU12 Convergence	43	51	65	42.2	41.4	50.9
EU12 Transition	81	95	94	79.8	77.3	73.9
EU4 Less-assisted	128	120	109			
EU4 Convergence	76	76	66	59.0	63.2	60.2
EU4 Transition	92	98	81	71.5	81.4	74.4
Other EU15 Less-assisted	124	120	119			
Other EU15 Convergence	83	86	91	66.6	71.7	76.5
Other EU15 Transition	94	95	91	75.9	78.9	76.3
French DOMs	64	67	73			
All Less-assisted	125	120	117			
All Convergence	55	61	68	44.3	50.9	57.6
All Transition	92	97	86	73.2	80.3	73.2
All NUTS 2	100	100	100			

Note: GDP per head is adjusted for the effect of commuting by dividing the figure as recorded by the ratio of the number employed in the region (as given by the regional accounts) to the number living in the region and in employment (as given by the LFS). This ineffectively serves to reduce GDP by the contribution to it of inward commuters or to increase it by the potential contribution of outward commuters, assuming that in each case the GDP they generate per person is the same as that generated by those living and working in the region.

Source: Cambridge Econometrics regional database, Eurostat, Labour Force Survey and authors' calculations.

In the EU15 Member States, excluding the four southern countries, GDP per head in Convergence regions also rose relative to the EU average over the 2007-2014 period, as well as in relation to the Less-assisted regions, again following an increase in the previous period. The Transition regions did less well, however, GDP per head falling relative to both the EU average and the average in the Less-assisted regions, having remained constant in relation to the former and risen relative to the latter in the 2000-2006 period. As a result, GDP per head in these regions was the same on average than in Convergence regions in 2014 having been significantly higher in 2006 before the start of the programming period.

In the four southern Member States, GDP per head declined relative to the EU average, in both the Less-assisted regions and the Convergence regions and Transition ones over the 2007-2014 period, especially in the latter following a marked increase in the preceding period.

In sum, therefore, the GDP per head figures confirm the picture shown by the relative rates of growth, with the Transition regions in both the four southern Member States and in the rest of the EU15 performing worse than Less-assisted regions over the last programming period.

3.6 Household disposable income in the different regions

What matters to people living in the different regions across the EU is not so much the level of GDP per head because not all of this benefits them, but disposable income, or how much they have to spend after allowing for taxes and transfers. Although this bears some relationship to the latter, it is by no means one to one. In particular, governments can affect the distribution of disposable income across regions through their tax and expenditure policies in a more direct way than they can affect the distribution of GDP. Those living in regions with relatively low levels of GDP per head, therefore, are likely to gain from central government transfers, while those living in high GDP per head regions are likely to experience some reduction through paying higher taxes. The pressure on public finances stemming from the crisis led to a cutback in transfers in many countries and an increase in tax rates, so potentially giving rise to a reduction in disposable income relative to GDP in regions across the EU and raising the question of whether or not regional disparities in this regard were widened or narrowed.

The gap in disposable income between Convergence regions and the Less-assisted in 2013 (the latest year for which data are available) was narrower than in GDP per head in the EU15 countries excluding the four southern Member States, reflecting the significant size of transfers from the latter to the former. It was also narrower between the Transition regions and the Less-assisted ones, though to a smaller extent, which was the case as well in 2006. Indeed, household disposable income was higher on average in the Convergence regions in both years than in the Transition regions (Table 10)¹¹.

Between 2006 and 2013, however, disposable income per head in the Transition regions in the EU15 fell by less relative to the EU average than GDP per head, with the result that it remained more or less unchanged relative to that in Less-assisted regions. In Convergence regions in the EU15, by contrast, disposable income per head rose by slightly less in relative term than GDP per head so that the gap with the Less-assisted regions narrowed but to a smaller extent than the gap in GDP per head.

In the four southern Member States, on the other hand, the size of net transfers between regions is smaller than in the EU15. Nevertheless, they seem to have increased between 2006 and 2013 at least for the Convergence regions, since disposable income per head in these regions fell by less relative to the EU average than GDP per head, with the result that the gap with the Less-assisted regions narrowed instead of widening over the period. In the Transition regions, on the contrary, disposable income fell only marginally less relative to the EU average than GDP per head, so that the gap with the Less-assisted regions in terms of income widened by almost as much as the gap in terms of GDP per head.

¹¹ GDP per head is adjusted for commuting in the same way as above since, as noted, commuters effectively transfer the income they generate in the region in which they work to the region where they live.

Table 10 GDP and household disposable income per head in PPS by country and regional group, 2006 and 2013

	GDP per head		Income. per head		GDP per head		Income. per head	
	EU27=100		EU27=100		as % L-a regions*		as % L-a regions*	
	2006	2013	2006	2013	2006	2013	2006	2013
EU12 Less-assisted	123	128	92	100				
EU12 Convergence	51	64	46	63	41.4	49.9	50.6	63.6
EU12 Transition	95	95	83	67	77.3	74.1	90.5	67.1
EU4 Less-assisted	120	111	125	113				
EU4 Convergence	76	67	81	74	63.2	60.3	64.7	65.2
EU4 Transition	98	82	95	80	81.4	74.0	76.4	71.1
Other EU15 Less-assisted	120	120	119	117				
Other EU15 Convergence	86	90	105	108	71.7	75.6	87.8	92.4
Other EU15 Transition	95	91	101	99	78.9	76.2	84.4	84.5
French DOMs	67	72	78	86				
All Less-assisted	120	118	120	116				
All Convergence	61	67	61	71	50.9	56.9	51.1	60.8
All Transition	97	86	96	85	80.3	73.2	79.6	73.1
All NUTS 2	100	100	100	100				

Note: GDP per head is adjusted for commuting. *Less-assisted

Source: Eurostat, regional accounts

In the EU12, household disposable income per head is much smaller than GDP per head in the two Less-assisted regions, Prague and Bratislava, reflecting the income generated in the regions which is transferred elsewhere, largely to other countries by the foreign-owned firms located there as well as by commuting. In 2013, therefore, disposable income per head was just the EU average rather than being well above, as in the case of GDP per head. Much the same is true in the two Transition regions, Cyprus and Budapest, taken together. This is the major reason for the much smaller difference between the Convergence regions and the other regions in these terms than in terms of GDP per head.

Over the 7 years 2006-2013, household disposable income increased in the Convergence regions by much the same relative to the EU average as GDP per head, whereas in the Less-assisted regions, the increase was smaller and in the Transition regions, income declined instead of increasing. As a result, the difference in disposable income per head between the Convergence regions and the Less-assisted ones narrowed by more than the gap in GDP per head while that between the Transition regions and the latter widened by much more.

In sum, transfers less taxes seem to have most effect in narrowing income disparities between regions in the EU15 countries excluding the four southern Member States, but over the period 2006-2013, the effect seems to have been reduced, especially in respect of the Convergence regions. In the Transition regions, on the other hand, they appear to have moderated the effect of the relative reduction in GDP per head. This seems also to have been the case in the Convergence regions in the four southern Member States, though not in the Transition regions in these countries, where, in general, transfers less taxes have less effect on the distribution of income across regions. The latter also seems to be the case in the EU12 at least in respect of government policy in this regard, private sector transfers, especially by foreign companies, appearing to dominate.

3.7 Employment rates in the different regional groups

It is possible to extend the period of analysis by an additional two years if employment rather than GDP is examined since the Labour Force Survey, on which the figures for employment rates are based, is much more up-to-date than the regional accounts which is the basis of the GDP figures. As it happens, the changes in employment rates which occurred over the 2006-2015 period in the different regional groups largely reflect the relative rates of GDP growth discussed above, though there are some differences. These reflect the additional two years for which data are available but also variations not so much in relative rates of growth of labour productivity but the differing extent of job saving and the efforts made to maintain employment in the face of slow growth of GDP or even of decline.

Over the EU27 as a whole, employment rates, defined in relation to the 20-64 age group (i.e. the same as for the target set in the Europe 2020 strategy¹²), increased on average in the Convergence regions between 2006 and 2015 whereas rates in Less-assisted regions rose only marginally. This was also the case in the different broad parts of the EU. In the EU12, therefore, employment rates rose over this period, while rates in Less-assisted regions in these countries stagnated (Table 11). Employment rates also increased in Convergence regions in the EU15, excluding the four southern Member States, over these 7 years and even more markedly (by over 8 percentage points), substantially more than in the Less-assisted regions.

Table 11 Employment rates of those aged 20-64 by country and regional group, 2000-2015

	Employment rates, 20-64 (% population, 20-64)			Difference (%-point difference)	
	2000	2006	2015	2000-06	2006-15
	EU12 Less-assisted	77.7	76.9	77.1	-0.8
EU12 Convergence	64.3	64.0	68.3	-0.3	4.4
EU12 Transition	66.2	69.7	71.4	3.4	1.7
EU4 Less-assisted	64.4	70.2	68.3	5.8	-1.9
EU4 Convergence	54.7	59.4	60.7	4.7	1.2
EU4 Transition	60.2	66.7	58.8	6.4	-7.9
Other EU15 Less-assisted	70.9	72.7	75.0	1.8	2.3
Other EU15 Convergence	65.8	68.8	77.1	2.9	8.3
Other EU15 Transition	64.3	66.9	71.2	2.6	4.3
French DOMs	49.0	50.0	54.2	1.1	4.2
All Less-assisted	69.6	72.2	73.6	2.6	1.4
All Convergence	61.8	63.1	66.9	1.3	3.8
All Transition	62.2	67.1	64.2	4.8	-2.9
All NUTS 2	66.5	68.9	70.9	2.4	1.9

Source: Eurostat, Labour Force Survey

3.8 Expenditure on fixed investment by regional group

Spending on investment, or fixed capital formation, contributes to GDP growth, in the longer-term as well as the short. It is also a reflection of GDP growth, to the extent that it encourages growth and helps to finance expenditure. Investment was the main component of GDP to be hit by the global recession in 2008-2009, expenditure falling by over 13% in the EU over these two years (Table 12). Moreover, over the subsequent two

¹² Defining the employment rate in terms of the 15-64 age group, which is the conventional measure, does not change the results reported here significantly.

years, investment hardly changed at all, so that over the 5 years 2007-2011 as a whole, there was a reduction of 1.6% a year across the EU.

The extent of the reduction was particularly large in the Transition regions, amounting to 7% a year over the programming period up to 2011, an overall decline of 30% over the 5 years. It was largest of all in such regions in the four southern Member States, where it reached 8.5% a year (an overall reduction of 36%), but it was still substantial in both the other EU15 countries and the EU12 (at almost 5% a year, or around 20% or more).

In the Convergence regions, there was only a small decline on average, but this conceals a large reduction in both the four southern Member States and the rest of the EU15 (amounting to around 4% a year or more, or some 20% or just under), in both cases, more than in the Less-assisted regions, if only slightly so in the four southern countries. In the EU12, on the other hand, investment increased over the period (by just under 2% a year), much less than in the two Less-assisted regions but a much better performance than in the two Transition regions (where it declined by almost 5% a year).

Table 12 Change in Gross fixed capital formation in real terms by country and regional group, 1994-2011

	Annual % change			% change	
	1994-99	2000-06	2007-11	2007-09	2009-11
EU12 Less-assisted	8.2	6.2	7.3	-5.4	13.9
EU12 Convergence	9.6	7.3	1.7	-6.4	2.6
EU12 Transition	5.1	1.4	-4.6	-9.5	-16.6
EU4 Less-assisted	5.0	3.2	-4.2	-	-4.8
EU4 Convergence	3.9	3.5	-4.4	17.2	-9.9
EU4 Transition	6.1	5.4	-8.5	-	-18.7
Other EU15 Less-assisted	5.0	2.0	-0.9	24.0	4.2
Other EU15 Convergence	-1.4	-4.6	-3.8	-	0.1
Other EU15 Transition	4.6	-0.6	-4.9	20.3	-5.2
French DOMs	3.8	6.2	1.5	19.0	8.0
All Less-assisted	5.0	2.2	-1.5	-8.4	2.5
All Convergence	7.0	5.2	-0.4	13.9	-0.9
All Transition	5.5	2.9	-6.9	10.4	-14.1
All NUTS 2	5.7	3.2	-1.6	20.9	0.2
				13.3	

Note: See Note to Table 3

Source: Cambridge Econometrics regional database

In sum, therefore, while investment in the Less-assisted regions declined by more than in the Convergence regions across the EU as a whole, in each of the broad country groups distinguished here, it either fell by less or increased by more than in these regions, suggesting that growth potential was less adversely affected than in the latter and much less adversely affected than in the Transition regions.

3.9 Educational attainment of the work force by regional group

The growth potential of regions is determined not only by physical investment and the structure of economic activity but also by the educational attainment levels of the population of working age, which represents the potential work force. At the same time, as in the case of investment, education levels are also affected by economic growth insofar as regions with higher levels of GDP tend to be more able to support investment

in education. In practice, there is a relatively close relationship between GDP per head and the proportion of the population with tertiary education (i.e. university education or the equivalent). Accordingly, this proportion tends to be smaller in the Convergence and Transition regions than in the less assisted ones in individual countries and the issue is whether the gap has narrowed or widened over time and, if the former, at what rate.

In practice, in Convergence regions taken together over the EU as a whole, the proportion of the population aged 25-64 with tertiary education increased to nearly the same extent as in Less-assisted regions by slightly more between 2006 and 2015 than in Transition regions (Table 13). The increase in the proportion in the Convergence regions was smaller than in the other two regional groups in the previous programming period, while the increase in Transition regions was larger.

Much the same pattern of change is also evident for the 2006-2015 period in the different parts of the EU distinguished here at least as regards Convergence regions. In each of the EU12, the four southern Member States and the rest of the EU15, the share of those aged 25-64 with tertiary education increased by less than in other regions, which was also the case in the previous programming period in the latter two country groups.

In the Transition regions, the increase in the share of people in this age group with tertiary education rose by more than in the Less-assisted regions in the four southern Member States between 2006 and 2013, though marginally less than the EU average, while it increased by slightly less than in the Less-assisted ones in the rest of the EU15. In the two EU12 Transition regions, the increase was smaller than in the two Less-assisted regions but still more than in the Convergence regions as well as in the EU as a whole.

Table 13 Share of population aged 25-64 with tertiary education by country and regional group, 2000, 2006 and 2015

	% population 25-64			% -point change	
	2000	2006	2015	2000-06	2006-2015
EU12 Less-assisted	25.7	27.7	39.5	2.0	11.8
EU12 Convergence	12.7	16.2	24.1	3.5	7.8
EU12 Transition	22.1	28.1	37.8	6.0	9.8
EU4 Less-assisted	15.1	20.2	26.4	5.1	6.2
EU4 Convergence	12.0	15.9	21.0	3.9	5.1
EU4 Transition	19.2	24.4	31.0	5.2	6.6
Other EU15 Less-assisted	24.2	27.2	34.9	3.0	7.7
Other EU15 Convergence	29.1	27.4	28.1	-1.7	0.6
Other EU15 Transition	20.8	23.0	29.3	2.1	6.3
All Less-assisted	22.3	25.7	33.1	3.4	7.4
All Convergence	14.2	17.3	23.6	3.1	6.3
All Transition	20.1	24.3	31.2	4.2	6.9
All NUTS 2	19.5	23.0	30.1	3.4	7.1

Note: Tertiary education is defined as the successful completion of ISCED level 5 or 6

Source: Eurostat, Labour Force Survey

In sum, therefore, there is little evidence of the gap in the proportion of working-age population with tertiary education between the Convergence and the Transition regions and the Less-assisted ones – i.e. the Competitiveness and Employment regions – narrowing over the last programming period.

3.10 Population trends in regional groups

It is to be expected that, with free movement, population would grow by more in the more prosperous regions of the EU than in the less prosperous, partly because of inward migration flows but also as a result of higher fertility rates reflecting the younger average age in the regions concerned as a consequence of such migration. Indeed, the movement of population from regions with relatively low GDP per head to those with higher levels – and, more particularly, from regions with unemployment to those with lower rates – is potentially an important means of balancing labour markets both within countries and across the EU. The issue considered here is how far changes in population and migration mirrored the relative growth rates of GDP, and changes in employment rates, across regions over the last programming period and the previous one.

Over the last programming period, or more specifically between 2007 and 2013, population growth in the EU as whole slowed down a little (Table 14). Net inward migration was also slightly smaller, though it still contributed more to the growth of population than the natural increase (around three-quarters of so). Population in Convergence regions declined on average by marginally more than in the previous period, while net outward migration was larger. In both Transition and Less-assisted regions, by contrast, population increased though by less than in the preceding period. In both cases, inward migration was also less, especially in the Transition regions, reflecting the slowdown in the economy and, accordingly, a reduction in jobs for migrants to take up and an increase in the number of migrants returning home.

Table 14 Change in population and net migration by country and regional group, 2000-2014

	Total change in population (%)			Net migration (% popn in base year)		
	2000-06	2006-14	2000-14	2000-06	2006-14	2000-14
EU12 Less-assisted	-2.1	6.7	4.5	-1.0	5.1	4.0
EU12 Convergence	-2.3	-2.9	-5.1	-1.2	-2.0	-3.2
EU12 Transition	2.7	5.5	8.3	4.0	6.0	10.2
EU4 Less-assisted	6.7	5.0	12.0	6.6	4.9	11.8
EU4 Convergence	2.8	1.4	4.3	2.1	1.4	3.5
EU4 Transition	8.6	1.0	9.8	8.0	0.6	8.7
Other EU15 Less-assisted	3.4	3.5	7.1	2.2	1.9	4.2
Other EU15 Convergence	-3.7	-4.3	-7.9	-1.4	-1.6	-2.9
Other EU15 Transition	1.9	1.8	3.7	1.9	1.4	3.3
French DOMs	9.7	3.3	13.3	0.2	-5.7	-6.0
All Less-assisted	4.0	3.9	8.0	3.1	2.5	5.7
All Convergence	-1.0	-1.8	-2.8	-0.4	-1.1	-1.5
All Transition	5.7	1.7	7.6	5.5	1.4	7.1
All NUTS 2	2.5	1.9	4.5	2.1	1.3	3.4

Note: Net migration is measured as the total change in population less the natural change

Source: Eurostat, demographic statistics

Much the same pattern of change is evident in the three country groupings. In the EU12, population in the Convergence regions declined over the period 2007-2013 at much the same rate as over the previous programming period, largely as a result of net outward migration. In both the two Transition regions and the two Less-assisted regions, on the other hand, population increased by more than in the preceding period – in the Less-assisted regions, it fell over the latter – again largely because of migration.

In the EU15 excluding the four southern Member States, population declined between 2007 and 2013 as it did over the previous 6 years, though more because of a natural decline than because of net outward migration. In the Transition regions, by contrast,

population increased almost entirely because of inward migration, which was also the case in the preceding period, while in the Less-assisted regions, it also rose and at much the same rate, though less as a result of net inward migration than in the Transition regions.

In the four southern EU Member States, there was an increase in population in all three regional groups over the 2007-2013 period, though by less than in the previous 6 years, especially in the Transition regions, predominantly because of a slowdown in net inward migration, which still accounted for most of the increase in all three cases. As in the preceding period, the increase in population was less in the Convergence regions than in the other two groups, though the difference was much smaller.

In sum, therefore, there was a general tendency across the EU for population to increase by less or to decline by more in Convergence regions than in others over both the last programming period and the preceding one, with net outward migration being a major reason for this.

3.11 Research and development expenditure by regional group

Innovation is a key means of achieving gains in productivity and, therefore, of boosting the potential of regional economies for growth and expenditure on research and development (R&D) is in most cases important for laying the basis for innovations to be introduced into the production process. Indeed, the Europe 2020 strategy has set a target for increasing R&D expenditure across the EU to 3% of GDP precisely because of the supposed relationship between the two and reducing regional disparities in the capacity for innovation by providing financial support for R&D was an important objective of Cohesion policy over the last programming period – as it is in the present period.

In both Convergence and Transition regions taken as a whole, expenditure on R&D relative to GDP in 2006 was slightly less than half what it was in Less-assisted regions (Table 15). The gap between the regional groups was smaller in each of the three country groupings, especially in the EU15 excluding the four southern Member States, where expenditure relative to GDP in Convergence regions was some 87% of the EU average. By contrast, in both the Convergence and Transition regions in the four southern countries, expenditure was only just over 40% of the average.

Table 15 Expenditure on R&D by country and regional group, 2006 and 2013

	% GDP		% -point difference 2006-13	EU27=100		Relative to Competitiveness	
	2006	2013		2006	2013	2006	2013
EU12 Less-assisted	1.8	2.3	0.42	103	112		
EU12 Convergence	0.6	1.0	0.32	36	47	34.8	42.1
EU12 Transition	1.2	1.4	0.26	64	70	62.5	62.4
EU4 Less-assisted	1.3	1.5	0.19	71	72		
EU4 Convergence	0.8	1.0	0.20	43	48	61.2	66.7
EU4 Transition	0.7	0.9	0.11	41	42	58.2	58.2
Other EU15 Less-assisted	2.2	2.4	0.25	122	120		
Other EU15 Convergence	1.6	1.9	0.25	89	91	73.3	76.1
Other EU15 Transition	1.4	1.5	0.10	78	74	64.4	62.0
All Less-assisted	2.0	2.3	0.25	112	112		
All Convergence	0.9	1.1	0.23	49	54	43.3	48.4
All Transition	1.0	1.2	0.14	57	57	50.4	51.1
All NUTS 2	1.8	2.0	0.24	100	100		

Source: Eurostat, Science and technology statistics

Between 2006 and 2011 (note that data for the previous programming period are not available for many regions), expenditure on R&D increased relative to the EU average in Convergence regions in each of the country groupings, as well as overall, even though the overall percentage point change in these regions – though not in the country groups taken separately – was smaller than in the Less-assisted regions. In Transition regions, there was a significant increase in spending relative to the EU average in the EU15 excluding the four southern Member States, but in both the EU12 and the four southern countries, there was a decline in these terms even if small.

In sum, therefore, there was some narrowing of the gap in R&D expenditure relative to GDP in the Convergence regions as compared with other regions over the first 5 years of the 2007-2011 programming period, though less so in the Transition regions, where in the four southern countries, the gap widened marginally.

3.12 Transport infrastructure in the different regional groups

A significant share of EU funding under Cohesion policy has gone on strengthening transport networks over successive programming periods. Identifying indicators to convey the state of networks across the EU, however – or more precisely identifying indicators for which a reasonably complete set of data are available – is difficult, especially at regional level. Here two indicators at this level are examined both relating to roads – the length of motorways and the number of deaths from road accidents, which though by no means ideal gives some indication of the standard of roads in different regions (though it also reflects to some extent the standard of driving and the extent to which legislation aimed at improving road safety is applied). In addition, the use of public transport is also considered, though at the national rather than regional level and then only for some countries, mainly in the EU12.

3.12.1 Length of motorways

The length of motorways in relation to the population was less in Convergence regions considered across the EU as a whole than in Less-assisted regions, though it was greater in Transition regions, largely reflecting the relatively large number of motorways in Transition regions in the four southern EU countries, especially in Spain (Table 16, but see Box for a different way of comparing lengths).

Between 2006 and 2012, moreover, the length of motorways relative to population increased by much more in Transition region than in the less assisted ones, though by slightly less than in Convergence regions. The same was the case in the previous programming period. The same was also the case in the EU12 and the four southern EU Member States, where in both periods, there was a greater increase in the length of motorways in relation to population in Convergence regions than in Less-assisted ones. This was also true for Transition regions in both cases.

Length of motorways relative to the geographical size of regions

It should be noted that the length of motorways can also be related to the physical size of regions, in terms of square kilometres, in order to compare between regions. While this gives the same increases over time as the indicator discussed above, it gives very different figures for the comparison between the three groups of region at any moment in time, reflecting the fact that the Less-assisted regions tend to be more urbanised (as noted above) with a higher density of population than the other two groups. Accordingly, the length of motorways in relation to land area also tends to be much greater in the Less-assisted regions than if measured relative to population. In 2012, therefore, it was twice what it was in Convergence regions, though this reflects the low value of the indicator in Convergence regions in the EU12 measured in this way (only just over a third of the EU average). In such regions in the four southern Member States, it was 75% of that in Less-assisted regions and in Transition regions, over 90%, while in the rest of the EU15, the value was higher in the Convergence regions than in the Less-assisted, though considerably less than both in Transition regions.

Table 16 Length of motorways in the different country and regional groups, 2000, 2006 and 2014

	km per million inhabitants			% change	
	2000	2006	2014	2000-06	2006-14
EU12 Less-assisted	59	66	68	11.3	4.2
EU12 Convergence	28	41	66	43.2	62.0
EU12 Transition	99	131	152	32.5	16.0
EU4 Less-assisted	136	151	169	11.0	12.1
EU4 Convergence	141	196	232	38.4	18.7
EU4 Transition	137	194	248	41.3	27.5
Other EU15 Less-assisted	128	138	147	7.7	6.4
Other EU15 Convergence	145	182	190	25.2	4.8
Other EU15 Transition	89	100	126	12.9	25.4
French DOMs	4	4	:	0.0	:
All Less-assisted	129	140	151	8.4	7.7
All Convergence	69	95	121	37.0	27.8
All Transition	117	157	197	33.4	26.0
All NUTS 2	109	127	145	16.0	14.0

Source: Eurostat, Transport statistics

In the rest of the EU15, apart from the four southern countries, on the other hand, the length of motorways increased by less in Convergence regions than in others over the 2006-2014 period after increasing by much more over the previous 6 years. By 2006, however, there were already significantly more motorways relative to population in these regions, many of which are in the eastern part of Germany, than elsewhere. This was equally the case in the four southern Member States but there was still a larger increase over the subsequent 8 years in such regions, and even more in the Transition regions, than in Less-assisted ones.

The increase in motorways between 2006 and 2014 was particularly large in the EU4 Convergence regions, as it was in the preceding programming period, so that the overall length in 2014 in relation to population was substantially greater than the EU average.

In sum, there was some tendency for the length of motorways to increase by more relative to population in both the Convergence and Transition regions than in the less-assisted regions over the last programming period. As a result, the length relative to population was greater in Transition regions on average than in Less-assisted ones in 2014 and while it was still less in Convergence regions than in the latter, the gap was much narrower than at the beginning of the period.

3.12.2 Deaths from road accidents

The number of deaths from road accidents across the EU has fallen substantially over time. Between the 7 years 2000-2006 and the 8 years 2007-2014, the average in the EU declined from 104 per million inhabitants to 65, a fall of almost 40% (Table 17). The fall in aggregate, however, was smaller in Convergence regions than in Less-assisted regions, which in turn showed a slightly smaller fall than Transition regions. Nevertheless, the number in relation to population remained much smaller in Less-assisted regions than others and only around 56% of the number in Convergence regions.

Table 17 Deaths from road accidents relative to population, 2000-2006 and 2007-2014

	Average per million inhabitants		% change 2000-6 to 2007-14
	2000-2006	2007-2014	
EU12 Less-assisted	80	40	-50.1
EU12 Convergence	145	105	-27.9
EU12 Transition	106	60	-43.7
EU4 Less-assisted	117	63	-46.5
EU4 Convergence	120	72	-40.1
EU4 Transition	135	69	-48.6
Other EU15 Less-assisted	78	48	-38.5
Other EU15 Convergence	104	61	-41.3
Other EU15 Transition	99	64	-36.0
French DOMs	95	57	-40.5
All Less-assisted	86	51	-40.6
All Convergence	134	91	-32.0
All Transition	120	67	-44.6
All NUTS 2	104	65	-37.8

Source: Eurostat, Transport statistics

The reduction between the two periods was less than average in Convergence regions in the EU12 (less than 30%) where the number was over twice as high in the 2007-2014 period than the EU average (in the non-Convergence regions, the fall was around 40% or more).

In the Convergence regions in the four southern Member States, the reduction in deaths was also smaller than in the other two groups, though it was still around 40%.

In the rest of the EU15, the reduction was slightly larger in the Convergence regions (at just over 41%) than in either the Less-assisted or Transition regions, taking the average number to below that in the latter.

In sum, there is little evidence of any reduction in disparities in road deaths across EU regions between the last programming period and the previous one and in the Convergence regions in the EU12 in particular, evidence of widening. The improvement in the standard of roads between the two periods which the data on motorways seems to suggest, therefore, is not yet apparent in the accident statistics.

3.12.3 Use of public transport

Public transport represents an effective way of reducing air pollution and the environmental damage more generally caused by travel. As noted above, regional statistics on its use are incomplete, but the data at national level give some indication of both the variation across the EU on use and the way that it changed over the last programming period.

Both the number of people using public transport and the extent of the change over the last two programming periods vary markedly across countries. In the EU12, the number is particularly high in Cyprus and Hungary and especially low in Lithuania, Slovenia and Slovakia (Table 19). Between 2006 and 2013, the number of km travelled by public transport relative to population declined in all 10 countries for which data are available, whereas in the previous period, it increased in all three Baltic States and remained unchanged in the Czech Republic. The decline over the last programming period was

especially large in Estonia (24%) where the number had risen markedly in the previous period, and even more so in Slovakia (40%).

Table 18 Number of passengers on public transport relative to population, 2000, 2006 and 2013

	Number of km in public transport per inhabitant			% change	
	2000	2006	2013	2000-06	2006-13
Bulgaria	1781	1677	1605	-5.9	-4.3
Czech Rep	1645	1258	1118	-23.5	-11.2
Estonia	2065	2494	1894	20.8	-24.0
Cyprus	2752	2554	2409	-7.2	-5.7
Latvia	1745	2180	1879	25.0	-13.8
Lithuania	784	1123	958	43.2	-14.7
Hungary	954	886	762	-7.2	-14.0
Poland	1816	1479	1297	-18.6	-12.3
Slovenia	1099	821	717	-25.3	-12.6
Slovakia	1420	1427	852	0.5	-40.3
Ireland	1739	1608	1573	-7.6	-2.2
Luxembourg	2913	2243	2365	-23.0	5.4
Netherlands	1437	1347	706	-6.3	-47.6
Italy	651	692	737	6.2	6.6
Portugal	415	457	988	10.2	116.0

Source: Eurostat, Transport Statistics

In the three EU15 Member States, excluding the southern countries, for which data are available, the number of passengers increased in Luxembourg (where many of the large number of passengers in 2013 were commuters who are not counted in the population) but declined in both Ireland and the Netherlands, especially the latter, having also fallen in each of the two over the previous period.

In the two southern EU Member States for which there are data, the number of km travelled relative to population increased slightly in Italy, as it had done in the previous period, but increased substantially in Portugal, where it also went up in the period before. Nevertheless, in both cases, the number concerned remained relatively small.

3.13 Access to broadband in the different regional groups

The availability of a fast internet connection has become essential for businesses to operate efficiently in the EU. Over the years, regional disparities in this regard have tended to diminish but they have not yet been eliminated. The access of households to broadband in the different regions across the EU give an indication of the extent to which such disparities still exist and how far they were reduced over the 2007-2015 period.

Between 2006 and 2015, the proportion of households with access to broadband in Convergence regions taken together increased by 48 percentage points, slightly more than in both Less-assisted regions and Transition ones, the increase in which was much the same (Table 19). Nevertheless, this still left the proportion concerned in 2013 some way below that in the other two groups (65% as against just over 80% in the Less-assisted regions).

Table 19 Proportion of households with access to broadband by country and regional group, 2006 and 2015

	% of households		% -point change 2006-2015	EU=100	
	2006	2015		2006	2015
EU12 Less-assisted	24	85	61	77	106
EU12 Convergence	16	70	54	52	88
EU12 Transition	24	81	57	77	101
EU4 Less-assisted	23	78	55	74	98
EU4 Convergence	17	69	52	55	86
EU4 Transition	21	74	53	68	93
Other EU15 Less-assisted	40	85	45	129	106
Other EU15 Convergence	27	84	57	87	105
Other EU15 Transition	33	78	45	106	89
French DOMs	22	59	37	71	74
All Less-assisted	37	84	47	119	105
All Convergence	18	71	53	58	89
All Transition	25	76	51	81	95
All NUTS 2	31	80	49	100	100

Source: Eurostat, Information Society statistics

In the EU12, the increase over the period in the proportion of households with access in the Convergence regions was similar to the average in such regions in the EU but less than in the other regions in these countries, leaving the proportion at only 88% of the EU average.

In the four southern Member States, the increase in Convergence regions was also slightly less than in either Less-assisted or Transition regions (where the increase was also slightly less than in the Less-assisted), though marginally above the average rise across the EU, leaving only 69% of households in the regions connected, 14% below the EU average figure.

In the other EU15 countries, by contrast, the increase in households with access was significantly larger in Convergence regions than in the other two groups of regions. This meant that in 2015, the proportion of households concerned, at 84%, was larger in Convergence regions than in the Transition ones and above the EU average, while in Transition regions, it was marginally below average.

In sum, therefore, there was some narrowing of disparities in broadband access across regions between 2006 and 2015, though small and in the four southern Member States, there was a slight widening rather than a narrowing. Accordingly, in 2015, the proportion of households with access in Convergence regions in both the EU12 and the four southern countries remained significantly below that in other regions in the EU.

3.14 Environmental infrastructure

Environmental infrastructure is another important area in which Cohesion policy has supported improvements in lagging regions over the years. Unfortunately, however, there are no EU-wide regional data at NUTS 2 level which enable the extent of endowment, and changes in it, in this regard to be assessed in different parts of the Union¹³. Accordingly, the data examined here are at national level, which, nevertheless,

¹³ There are regional data published by Eurostat but only by River Basin District (RBD) for water and wastewater.

provide some indication of the situation in the different regional groups, even though the data concerned are incomplete.

3.14.1 Connection to mains water supply

In around half the countries in the EU, all or nearly all the population are connected to main water supply no matter in which region they live. In some countries, however, a significant number of people remain unconnected according to the latest statistics. In Romania, in particular, only 62% of the population were connected in 2013, in Lithuania, 76% and Estonia, 82% (Table 20). In Slovakia and Poland too, the proportion was less than 90%, as it was in Sweden (also in 2010), while in Finland, it was only just over 90%, though in both the latter two countries, many people live in very remote, sparsely populated places.

Table 20 Population connected to public water supply in EU Member States, 2000, 2006 and 2009/11

	% population			% -point change	
	2000	2006	2013	2000-06	2006-13
Bulgaria	99	99	99	0	0
Czech Republic	87	92	94	5	1
Estonia	70	72	82	2	10
Lithuania	:	76	76	:	0
Poland	83	86	88	4	2
Romania	:	49	62	:	13
Slovakia	84	86	87	2	1
Belgium	95	99	100	3	2
Denmark	95	:	:	:	:
Germany	99	99	99	0	0
Ireland	:	84	:	:	:
France	99	99	99	0	0
Austria	89	95	:	6	:
Finland	:	:	92	:	:
Sweden	85	85	86	0	1
Greece	85	92	:	7	:
Portugal	:	91	97	:	6

Note: There are no data for Italy, Latvia, Slovenia and the UK. In other countries not included in the table, Spain, Cyprus, Luxembourg, Hungary, Malta and the Netherlands, 100% of the population were connected to public water supply in all the years.

Source: Eurostat, Environment statistics

Over the last programming period, there was a significant increase in the proportion of the population connected in Romania and Estonia in the EU12, though the proportion in Poland and Slovakia increased only slightly and in Lithuania, not at all. There was also an increase in Portugal, while in Greece, the proportion increased over the previous programming period, but there are no data to indicate subsequent developments.

3.14.2 Connection to wastewater treatment facilities

The extent to which wastewater is collected through main drainage and suitably treated to prevent damage to ecosystems also varies across the EU. The proportion of the urban population connected to main drainage in the EU12 for the most part remains less than in other parts of the EU. Leaving aside Malta, where it was 100%, the proportion varied in 2013 from 87% in Poland and 85% in the Czech Republic to only 63-65% in Slovenia and Slovakia and just 47% in Romania (though it might well be as low as this in Cyprus

too, but there are no data beyond 2005) (Table 21). The proportion was also relatively small in the EU15 in Ireland (67%), Portugal (81%), France (82%) and Finland (83%).

Between 2006 and 2013, the proportion increased markedly in Romania (by 18 percentage points) and to a lesser extent (by 7-8 percentage points) in the Czech Republic, Estonia, Hungary and Slovakia. It also increased by to a similar extent as in the latter in Greece and Spain, but elsewhere it either rose relatively little or remained unchanged.

Table 21 Population connection to urban wastewater collection and treatment facilities in EU Member States, 2006 and 2013

	Wastewater collection			Treatment plants			Tertiary treatment		
	% population		Change 2006-13	% population		Change 2006-13	% population		Change 2006-13
	2006	2013		2006	2013		2006	2013	
Bulgaria	69	75	5	41	56	15	0	35	35
Czech Rep	77	85	7	72	80	8	60	72	12
Estonia	75	82	7	74	82	8	55	77	22
Cyprus	30	:	:	30	:	:	18	:	:
Latvia	65	71	6	65	71	6	38	17	-21
Lithuania	71	74	3	64	74	10	34	61	26
Hungary	67	75	8	63	73	9	16	57	41
Malta	100	100	0	9	100	91	0	0	0
Poland	85	87	2	61	70	9	39	56	17
Romania	29	47	18	28	45	17	0	18	18
Slovenia	63	63	0	51	55	4	11	22	11
Slovakia	57	65	8	55	60	5	:	:	:
Belgium	85	89	3	57	84	27	50	73	24
Denmark	89	91	2	89	91	2	86	88	3
Germany	97	97	1	96	96	0	92	92	0
Ireland	:	67	:	:	63	:	17	43	26
France	82	82	0	81	82	1	:	22	:
Luxembourg	97	99	2	95	98	3	25	70	45
Netherlands	99	99	0	99	99	0	98	99	1
Austria	92	95	3	92	95	3	88	94	5
Finland	:	83	:	82	83	1	82	83	1
Sweden	86	87	1	86	87	1	81	83	2
UK	97	97	0	:	97	:	:	50	:
Greece	85	92	7	85	92	7	78	86	8
Spain	92	99	7	92	98	6	36	67	31
Italy	:	94	:	82	88	6	:	49	:
Portugal	77	81	5	72	71	-1	12	16	4

Note: Figures under 2006 for Cyprus relate to 2005, for Lithuania and Romania, to 2008.

Source: Eurostat, Environment statistics

The extent to which urban wastewater is treated also varies across countries. In most cases, if it is collected then it is treated as well, though this can vary from primary treatment, which involves skinning off oil, grease and solid materials, through secondary treatment, involving removing dissolved and suspended biological matter, to tertiary treatment which entails filtering or disinfecting the water. In general, the population connected to treatment plants increased by more over the 7 years 2006-2013 than those

connected to main drainage. In Malta, most of the population were connected over this period, nearly all of them to tertiary treatment plants. In Bulgaria and Romania, the proportion of those living in urban areas connected to treatment plants increased by 15-17 percentage points, though in each case, this still left significant numbers of people not connected to treatment facilities. This was also true in Slovenia and Slovakia as well as Ireland, where in the first two, 40% or more of the urban population was not connected to such facilities in 2013 and in the last, over 35%. The biggest increase in connections by far was in Malta where in 2013, all of the urban population were connected to treatment facilities as opposed to just 9% in 2006.

In most countries, therefore, the proportion connected to treatment plants increased by relatively little over the 5-year period, though in many cases, there was a bigger increase in the proportion connected to tertiary treatment. This was especially so in the EU12, where the proportion concerned rose by over 20 percentage points in Estonia and Lithuania, by over a third in Bulgaria and by 40 percentage points in Hungary, while there were also significant increases (by over 10 percentage points) in the Czech Republic, Poland, Romania and Slovenia. Nevertheless, in all of these countries, a great many people living in urban areas remained unconnected to such facilities in 2011 – around 80% in Romania and Slovenia, just under two-thirds in Bulgaria, almost half in Poland and over 40% in Hungary. Moreover, in Latvia, the proportion connected is reported to have declined to only 17%.

Elsewhere, there were also large increases in the proportion connected to tertiary treatment plants in Belgium, Ireland (around 25 percentage points in each case), Spain (30 percentage points) and Luxembourg (45 percentage points). This still meant that a substantial number of people were not connected (57% in Ireland and a third in Spain), as was equally the case in Italy and the UK (around 50% in both). The largest proportions, however, were in France (78%) and Portugal (84%), in the last of which where there was only a small increase between 2006 and 2013.

In sum, although there remain wide disparities in the treatment of wastewater across the EU, there was some narrowing of the differences in the first few years of the last programming period as the share of the population connected to such facilities increased by more in the EU12 and to a lesser extent in the southern Member States than in the rest of the EU.

3.14.3 Municipal waste disposal

Disposal of solid waste, which is the third broad area as regards environmental infrastructure, varies just as markedly as wastewater treatment across the EU. In the EU12, the main means remains landfill, which in 2013 accounted for around 60% or more of the urban waste disposed of in all countries except Estonia, Poland and Slovenia (in Poland, it was over half) (Table 22). It also remains important in the southern EU15 countries as well as in Ireland – in Spain and Portugal, the proportion was around half and in Ireland, slightly higher.

The extent of recycling and composting is for the most part a mirror image of this. In only three of the EU12 Member States (Lithuania, Hungary and Slovenia) was more than a quarter of waste disposed of in this way in 2013, though in Poland, it was only just below. In Malta and Slovakia, the figure was only 10-11%. In Germany, by contrast, the proportion was close to 75% and in Austria, almost 60%, whereas in Portugal, the proportion was only just over a quarter.

The amount of waste incinerated with energy recovery was also relatively large in a number of the EU15 countries – in Luxembourg and the Netherlands, it was over a third. By contrast, it was relatively small in EU12 countries, apart from the Czech Republic (18%) and, above all, in Estonia (55%). The proportion was small as well in Spain and Ireland (less than 10%).

Table 22 Urban waste disposal by means in Member States, 2006 and 2013

	% landfilled		%-point change	% recycled/composted		%-point change	% burnt with energy recovery		%-point change
	2006	2013	2006-13	2006	2013	2006-13	2006	2013	2006-13
Bulgaria	78	59	-18	:	:	:	:	:	:
Czech Rep	67	65	-3	7	:	:	13	18	5
Estonia	70	14	-56	17	17	0	0	55	55
Cyprus	96	79	-17	4	21	17	0	0	0
Latvia	88	83	-5	4	17	12	1	0	-1
Lithuania	91	62	-29	2	28	26	0	7	7
Hungary	71	65	-6	15	26	12	8	9	1
Malta	87	81	-5	13	10	-3	0	0	0
Poland	73	53	-21	7	24	17	:	5	:
Romania	75	68	-7	0	15	14	0	2	2
Slovenia	70	26	-44	16	43	27	0	0	0
Slovakia	77	70	-7	4	11	7	0	11	11
Belgium	6	1	-5	47	54	6	26	43	16
Germany	:	:	:	58	74	15	:	:	:
Ireland	59	53	-6	33	36	3	0	2	2
France	48	26	-22	24	40	16	26	32	6
Luxembourg	19	17	-1	44	48	4	37	35	-3
Netherlands	2	1	-1	47	50	3	34	48	14
Austria	10	4	-6	66	58	-9	29	35	6
UK	:	40	:	:	42	:	:	16	:
Spain	:	52	:	:	40	:	:	9	:
Italy	54	37	-17	19	36	17	13	18	6
Portugal	64	50	-14	16	26	10	20	24	4

Note: No data for Denmark, Finland, Sweden and Greece.

Source: Eurostat, Environment statistics

Between 2006 and 2013, there was a widespread decline in the proportion of urban waste disposed of by landfill, most markedly in Estonia and Slovenia, where landfill had been the predominant means of disposing of waste.

The reduction in the use of landfill was accompanied by a significant increase in recycling or composting in Slovenia as well as in Lithuania, where the use of landfill was also reduced markedly. In Estonia, on the other hand, the reduction in the use of landfill was accompanied by a substantial increase in the use of burning. There was also a relatively large increase (of over 15 percentage points) in Cyprus and Poland as well as in France and Italy in the EU15.

The relative amount of waste incinerated with energy recovery in most countries either remained unchanged or increased only slightly. The main exceptions, apart from Estonia, were Slovakia, Belgium and the Netherlands, where in each case it rose by over 10 percentage points.

In sum, therefore, there was some narrowing of disparities in methods of urban waste disposal across the EU over the last programming period, in sense that the use of recycling or composting tended to increase by more in the EU12 than in the EU15.

3.15 Healthcare facilities

There are a few different indicators of the scale of health service resources in different parts of the EU, such as the number of doctors or dentists relative to the population which might have need to be treated by them. The one examined here is the number of

hospital beds in relation to population since the ERDF can be used to co-finance an expansion or improvement in hospital equipment or healthcare facilities more generally. It is important, however, to interpret the figures with caution since variations in the number across the EU may conceal significant differences in the quality of care associated with the beds (a lower quality of care, for example, may necessitate a larger number of beds because people need to remain in hospital longer) or in the extent and standard of outpatient facilities.

In 2006 before the start of the last programming period, the number of hospital bed relative to population in the EU12 was significantly larger than in most other parts of the EU, as it was in Convergence regions in the EU15, excluding the four southern countries (Table 23). By contrast, the number of beds in the latter four countries was considerably below the average elsewhere, most especially in the Convergence regions in these countries (where the number relative to population was only 55% of the EU average).

Between 2006 and 2013, there was a general reduction in the number of beds relative to population, which followed a similarly widespread reduction over the previous programming period. This was especially marked in Convergence regions in the four southern Member States, where the number of beds was already relatively small. There was a similarly large reduction in the Less-assisted regions in these countries. There was also a large reduction in Transition regions in the rest of the EU15, though the number of bed relative to population increased marginally in Convergence regions where the number was already above the EU average.

Table 23 Number of hospital bed relative to population by country and regional group, 2000, 2006 and 2013

	Beds per 100,000 popn			% change		EU=100		
	2000	2006	2013	2000-06	2006-13	2000	2006	2013
EU12 Less-assisted	1076	975	803	-9.4	-17.7	100	101	89
EU12 Convergence	720	662	645	-8.1	-2.5	67	69	72
EU12 Transition	885	827	660	-6.5	-20.3	82	86	73
EU4 Less-assisted	475	407	356	-14.4	-12.5	44	42	40
EU4 Convergence	358	328	289	-8.4	-11.8	33	34	32
EU4 Transition	430	396	376	-7.9	-5.1	40	41	42
Other EU15 Less-assisted	1546	1371	1265	-11.3	-7.7	143	142	141
Other EU15 Convergence	1163	1119	1130	-3.8	1.0	108	116	126
Other EU15 Transition	1368	1225	1113	-10.5	-9.1	127	127	124
French DOMs	519	478	458	-8.0	-4.1	48	50	51
All Less-assisted	1332	1175	1078	-11.8	-8.3	124	122	120
All Convergence	668	614	590	-8.1	-3.9	62	64	66
All Transition	798	714	646	-10.5	-9.5	74	74	72
All NUTS 2	1079	965	898	-10.6	-7.0	100	100	100

Source: Eurostat. Health statistics

Accordingly, regional differences in the number of hospital beds relative to population widened over the period, with the number in the Convergence regions in the EU15 excluding the four southern Member States, measured in these terms, being around four times the number in the Convergence regions in the latter four countries in 2013. How much significance to attach to such differences, however, is an open question.

3.16 References

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Annex: Supplementary tables

Table A.1 Growth of GVA per head adjusted for commuting by country and regional group, 2000-2011

	Adjusted GVA per head in real terms			
	Annual % change		Overall % change	
	2000-06	2007-11	2007-09	2009-11
EU12 Less-assisted	4.0	1.9	-1.5	2.1
EU12 Convergence	4.8	2.3	0.7	4.6
EU12 Transition	4.5	-1.0	-5.7	0.2
EU15 Less-assisted	1.7	0.2	-4.8	3.2
EU15 Convergence	2.4	1.0	-2.8	4.4
EU15 Transition	2.0	-0.6	-6.4	1.4
EU4 Less-assisted	1.2	-0.8	-6.6	1.4
EU4 Convergence	1.9	-1.3	-5.9	-2.3
EU4 Transition	2.5	-2.0	-5.4	-6.1
French DOMs	1.9	-0.1	-3.7	2.2
All Less-assisted	3.8	1.2	-1.4	2.7
All Convergence	2.6	-1.4	-5.8	-3.0
All Transition	1.6	0.0	-5.1	2.8
All NUTS 2	2.4	0.2	-4.0	2.4

Note: GDP per head is expressed at constant prices and exchange rates. The annual % changes are calculated over the programming periods - over 6 years in the first, 7 years in the second and 5 years in the third. The overall % changes are over the two years 2007-2009 and 2009-2011.

Table A.2 GDP per head in PPS by country and regional group in 2000, 2006 and 2014

	GDP per head in PPS (EU27=100)			Relative to Competitiveness		
	(EU27=100)			(%)		
	2000	2006	2014	2000	2006	2014
EU12 Less-assisted	130	164	177			
EU12 Convergence	42	49	63	32.0	30.2	35.6
EU12 Transition	84	101	102	65.0	61.9	57.3
EU4 Less-assisted	131	123	112			
EU4 Convergence	72	73	65	55.0	59.1	57.9
EU4 Transition	90	96	80	68.8	78.2	71.8
Other EU15 Less-assisted	125	121	120			
Other EU15 Convergence	76	79	84	60.3	64.9	70.1
Other EU15 Transition	87	88	84	69.3	72.4	70.0
French DOMs	65	68	70			
All Less-assisted	127	122	119			
All Convergence	53	59	66	41.8	48.1	55.2
All Transition	89	94	84	69.9	77.1	70.5
All NUTS 2	100	100	100			

Source: Cambridge Econometrics regional database.

Table A.3 GDP per head in PPS by country and regional group in 2000, 2006 and 2014

		EU27=100			% Competitiveness regions		
		2000	2006	2014	2000	2006	2014
Czech Rep	Convergence	62.9	68.8	72.5	44.5	39.8	42.0
	Less-assisted	141.5	173.0	172.7			
Hungary	Convergence	42.3	46.0	50.7	51.3	45.1	47.3
	Transition	82.4	102.0	107.3			
Slovakia	Convergence	41.9	52.0	62.8	39.3	35.8	33.8
	Less-assisted	106.9	145.3	186.2			
Greece	Convergence	68.8	73.7	56.0	72.7	70.0	68.7
	Transition	94.7	105.3	81.5			
Spain	Convergence	71.5	80.2	70.0	60.2	64.2	62.2
	Transition	88.4	92.5	80.0	74.5	74.1	71.1
	Less-assisted	118.7	124.9	112.6			
Italy	Convergence	76.1	69.1	61.2	55.1	56.3	55.0
	Transition	84.3	77.0	71.5	61.0	62.8	64.2
	Less-assisted	138.1	122.7	111.4			
Portugal	Convergence	66.0	65.8	66.3	47.8	53.6	59.6
	Transition	76.8	82.5	76.0	55.6	67.2	68.2
	Less-assisted	113.5	113.5	106.5			
Belgium	Transition	86.6	76.3	76.4	63.2	62.5	61.6
	Less-assisted	137.0	122.2	123.9			
Germany	Convergence	75.8	78.6	87.2	59.0	62.8	65.4
	Transition	85.7	83.5	93.4	66.8	66.8	70.1
	Less-assisted	128.3	125.1	133.3			
Ireland	Transition	88.0	104.1	88.3	60.3	64.4	58.8
	Less-assisted	146.0	161.6	150.2			
Austria	Transition	85.0	81.2	88.7	64.2	64.2	68.0
	Less-assisted	132.3	126.4	130.4			
Finland	Transition	91.6	93.0	90.9	73.0	76.6	78.4
	Less-assisted	125.5	121.5	115.9			
UK	Convergence	74.6	79.0	70.2	61.4	64.7	64.1
	Transition	87.7	93.9	80.7	72.2	76.9	73.7
	Less-assisted	121.5	122.1	109.5			

Note: See Note to Table 3 above. Countries included only if they have more than one group of regions defined by their eligibility for Cohesion policy funding.

Source: Eurostat, Regional accounts

Table A.4 GDP per head adjusted for commuting in PPS by country and regional group in 2000, 2006 and 2014

		Annual % change			% of competitiveness regions		
		2000	2006	2014	2000	2006	2014
Czech Rep	Convergence	65.8	72.7	77.9	58.9	55.2	61.5
	Less-assisted	111.8	131.7	126.7			
Hungary	Convergence	43.6	47.6	53.7	55.6	50.5	55.0
	Transition	78.3	94.2	97.8			
Slovakia	Convergence	54.3	66.9	80.8	66.4	62.7	62.5
	Less-assisted	81.7	106.6	129.3			
Greece	Convergence	68.5	73.4	56.5	73.5	69.6	69.2
	Transition	93.2	105.6	81.7			
Spain	Convergence	76.5	84.6	71.9	65.5	70.4	67.7
	Transition	92.0	95.3	82.2	78.8	79.3	77.5
	Less-assisted	116.7	120.3	106.2			
Italy	Convergence	79.2	72.5	61.0	58.4	59.6	54.5
	Transition	88.8	81.6	73.1	65.5	67.1	65.3
	Less-assisted	135.6	121.6	112.0			
Portugal	Convergence	69.8	69.7	70.7	51.5	57.3	63.2
	Transition	78.5	82.8	75.7	57.9	68.1	67.6
	Less-assisted	100.6	102.0	95.1			
Belgium	Transition	98.1	83.7	83.9	74.1	69.9	69.2
	Less-assisted	132.5	119.7	121.3			
Germany	Convergence	82.8	86.0	94.8	65.7	70.1	71.7
	Transition	97.8	94.3	105.5	77.7	76.9	79.8
	Less-assisted	125.9	122.7	132.2			
Ireland	Transition	89.4	107.0	95.1	61.2	66.3	63.3
	Less-assisted	146.2	161.4	150.3			
Austria	Transition	107.4	98.7	107.0	81.7	78.7	81.8
	Less-assisted	131.4	125.3	130.9			
Finland	Transition	94.4	95.3	94.4	75.2	78.4	81.5
	Less-assisted	125.5	121.6	115.8			
UK	Convergence	83.2	88.0	75.9	70.1	73.6	71.7
	Transition	93.2	101.2	86.6	78.6	84.7	81.8
	Less-assisted	118.7	119.5	105.9			

Note: See Note to Table 3 above. Countries included only if they have more than one group of regions defined by their eligibility for Cohesion policy funding.

Source: Eurostat, Regional accounts

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