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**Sixth report on economic, social and territorial cohesion: Investing in Europe's Future**

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## **5. THE CRISIS LED TO EMPLOYMENT LOSSES, BUT ALSO SOME PRODUCTIVITY GAINS**

Between 2001 and 2008, GVA per head in the EU grew by 1.7% a year in real terms, primarily fuelled by productivity growth of 1.2% a year. Increases in the employment rate added another 0.5% a year while a rise in the share of working-age population in the total had a small but positive impact (0.1% - Table 2). Over the crisis period of 2008-2012, GVA per head fell by 0.5% a year and the employment rate by 0.8% a year with productivity growing by 0.3% a year.

The difference between the less developed Member States and the rest of the EU was pronounced in both periods. Between 2001 and 2008, growth of GVA per head was much higher (5.2% a year), primarily because of productivity growth (4.2% a year), while an increase in the share of working-age population in the total (which increases the number employed at any given employment rate) also contributed significantly (by 0.4% a year). Over the period 2008-2012, GVA per head in the less developed Member States as a group increased, but at a much lower average rate (by 1.2% a year), while it declined in virtually all other Member States. The main source of growth during these years was productivity (which increased by 1.8% a year) while employment declined significantly (by 1.1% a year).

All of the less developed Member States experienced losses in employment between 2008 and 2012 and gains in productivity, except Romania and Hungary where the opposite was the case (Table 2). In five of the countries, productivity growth compensated for the reduction in employment and GVA per head remained unchanged. The effect of the rise in the share of working-age population in total was smaller during this period (adding 0.2% a year to growth instead of 0.4%), but it was still significant in Bulgaria, Poland and Slovakia (adding between 0.4% a year and 0.5% a year). In Croatia, there was a fall in working-age population relative to the total (reducing GVA per head by 0.6% a year) because of a combination of outward migration, low fertility rates and ageing.

GVA per head grew by 1.3% a year between 2001 and 2008 in the highly developed Member States, but declined by -0.7% a year between 2008 and 2012. In the first period, productivity growth (increasing by 0.9% a year) contributed more than the increase in the employment rate (of 0.4% a year), with the share of working-age population in the total remaining unchanged. Between 2008 and 2012, the employment rate declined (by 0.7% a year), while productivity increased only marginally and the share of population of working-age fell equally marginally on average, though by more (by around 0.5% a year) in Ireland, Denmark and Finland.

Among the highly-developed Member States, Ireland and Spain stand out as having suffered the biggest reduction in employment rates (by 3.6% and 3.9% a year) and having the highest productivity growth (2.4% a year and 2.7%). This is in part due to the collapse of construction, a sector with low productivity, though also to productivity gains in other sectors.

Germany and Sweden were the only two highly-developed Member States to experience an increase in GVA per head over the crisis period, but with a very different division between productivity and employment. In Germany, therefore, employment (taking the employment rate and share of working-age population together) increased by slightly more than GVA per head, effectively because of a small decline in productivity. In

Sweden, productivity increased by more than GVA per head and the employment rate fell.

The moderately developed Member States (which include Greece, Portugal, Cyprus, Malta, Czech Republic and Slovenia) have been affected more strongly as a group by the crisis than the other Member States. While GVA per head grew by 2.7% a year in the first period, it shrank by 2.5% a year in the second, primarily due to reductions in the employment rate (by 2% a year), but also to a decline in the share of working age population in the total (by 0.3% a year) and a fall in productivity (by 0.2% a year). The latter fall, therefore, cushioned the effect of the reduction in GVA on employment but only a little. There were, however, very different patterns of development over this period in the different countries.

In Malta, GVA per head increased slightly, the only country in the group where this was the case, but a relatively large decline in productivity (by 0.8% a year) was accompanied by a significant rise in the employment rate (by 1.2% a year). In Portugal, on the other hand, GVA per head declined but by less than the average in the group while productivity increased by much more than in the rest of the group (by 1.8% a year), so that the employment rate fell significantly (by 2.4% a year). In Cyprus, GVA per head fell markedly (by 3.2% a year), but productivity increased (by 0.4% a year) unlike in the other countries in the group (Greece and Slovenia), which combined with a large rise in working-age population relative to the total (by 0.8% a year), due to inward migration, led to the employment rate falling considerably (by 4.4% a year, more than in any other country).

#### **Box on Decomposing growth in GVA per head**

Growth in GVA per head is broken down into three main components: changes in productivity (GVA per person employed), changes in the employment rate (Employment relative to population of working age) and changes in the share of working age population in the total.

Accordingly:

$$\frac{GVA}{Total\ population} = \frac{GVA}{Employment} \times \frac{Employment}{Working\ age\ population} \times \frac{Working\ age\ population}{Total\ population}$$

The same identity can be expressed in terms of changes.

Usually, the employment rate is derived from the Labour Force Survey and is based on the place of residence of the person employed. Productivity, on the other hand, is calculated on the basis of employment at the place of work (from the national accounts). To ensure that this simple identity holds, the employment rate here is based on employment reported in the national accounts rather than the Labour Force Survey.

**Table 1: Decomposing average annual change in GVA per head per MS, 2001-2008 and 2008-2012**

2001-2008, average annual change (%)					2008-2012				
	Change in GVA per head =	Change in productivity +	Change in employment rate +	Change in share of working-age pop.		Change in GVA per head =	Change in productivity +	Change in employment rate +	Change in share of working-age pop.
<b>EU-28</b>	1.7	1.2	0.5	0.1	<b>EU-28</b>	-0.5	0.3	-0.8	0.0
<b>Less Developed</b>	5.2	4.2	0.6	0.4	<b>Less Developed</b>	0.9	1.8	-1.1	0.2
Hungary	3.3	3.0	0.0	0.2	Croatia	-2.7	0.4	-2.5	-0.6
Poland	4.5	2.9	0.6	0.9	Romania	-1.2	-1.1	0.0	-0.1
Croatia	4.5	2.2	2.0	0.2	Hungary	-1.2	-1.4	0.3	0.0
Estonia	6.2	4.0	1.8	0.3	Latvia	-0.5	3.8	-4.5	0.3
Slovakia	6.4	4.4	1.1	0.8	Estonia	0.0	1.2	-1.4	0.3
Bulgaria	6.4	3.2	3.3	-0.3	Lithuania	0.4	0.9	-0.7	0.1
Romania	7.0	8.2	-0.8	-0.4	Bulgaria	1.0	3.8	-3.1	0.4
Latvia	8.5	5.0	3.1	0.2	Slovakia	1.2	2.3	-1.6	0.5
Lithuania	8.8	5.8	2.5	0.4	Poland	2.7	3.3	-1.0	0.4
<b>Moderately developed</b>	2.7	2.1	0.5	0.1	<b>Moderately developed</b>	-2.5	-0.2	-2.0	-0.3
Portugal	0.6	0.8	-0.2	0.0	Greece	-5.2	-0.8	-3.7	-0.8
Malta	1.8	1.3	-0.1	0.6	Cyprus	-3.2	0.4	-4.4	0.8
Cyprus	1.9	0.6	0.5	0.7	Slovenia	-2.4	-0.5	-2.0	0.1
Greece	3.2	1.6	1.4	0.1	Portugal	-0.8	1.8	-2.4	-0.2
Slovenia	4.3	3.3	0.8	0.1	Czech Rep.	-0.5	-0.3	0.0	-0.2
Czech Rep.	4.7	4.2	0.3	0.2	Malta	0.4	-0.8	1.2	-0.1
<b>Highly developed</b>	1.3	0.9	0.4	0.0	<b>Highly developed</b>	-0.7	0.1	-0.7	-0.1
Italy	0.2	-0.5	0.9	-0.3	Luxembourg	-2.6	-2.5	-0.5	0.3
Denmark	0.8	0.6	0.6	-0.4	Ireland	-1.8	2.4	-3.6	-0.6
France	0.9	1.0	-0.2	0.1	Italy	-1.8	-0.8	-0.9	-0.1
Spain	1.3	0.1	0.7	0.5	Finland	-1.7	-0.9	-0.4	-0.4
Belgium	1.4	1.0	0.4	0.0	Spain	-1.5	2.7	-3.9	-0.1
Germany	1.7	1.3	0.7	-0.4	UK	-1.4	-0.7	-0.5	-0.1
Netherlands	1.7	1.5	0.4	-0.1	Denmark	-1.2	0.7	-1.3	-0.5
Ireland	1.7	1.0	-0.2	0.8	Netherlands	-0.9	-0.3	-0.3	-0.3
Austria	2.0	1.4	0.6	0.0	Belgium	-0.5	-0.2	-0.5	0.1
UK	2.0	1.7	0.1	0.2	France	-0.3	0.3	-0.4	-0.2
Luxembourg	2.1	1.8	0.3	0.0	Austria	0.0	-0.4	0.3	0.0
Sweden	2.3	2.2	0.1	0.0	Sweden	0.5	0.9	-0.2	-0.2
Finland	2.5	1.5	1.0	-0.1	Germany	0.7	-0.1	0.6	0.2

Source: Eurostat, Ameco and REGIO calculations

Note: In Ireland and Malta real GDP was used instead of real GVA

## **6. GROWTH IN METROPOLITAN REGIONS MORE PRONE TO BOOMS AND BUSTS THAN IN RURAL REGIONS**

### **6.1. Capital metropolitan regions performed well until the crisis led to above average employment losses**

In 2011, metropolitan regions (see map 7) accounted for 59% of EU population, 62% of EU employment and 67% of EU GDP. Accordingly, they are major centres of employment and of business activity which have a higher level of productivity than elsewhere. In all Member States, GDP per head is higher in metropolitan regions than in other regions, though this does not always translate into higher growth rates. For example, between 2000 and 2011, GDP per head grew faster in non-metropolitan regions in Germany, Austria, Sweden, Finland, Portugal and Spain.

Nevertheless, in both the EU-15 and EU-13, real GDP per head in metropolitan regions grew faster than in other regions between 2000 and 2008 (see table). Growth rates in capital city regions were especially high, partly because of their higher productivity growth in the EU-15 and higher employment growth in the EU-13.

Growth in second-tier metropolitan regions was the same as at the national level, but below the rate in the capital metropolitan regions. Smaller metropolitan regions grew more slowly than the other metropolitan regions. In the EU-15, they had the same rate of growth as in non-metropolitan regions. In the EU-13, the smaller metropolitan regions had a significantly lower rate of growth than the non-metropolitan ones.

The crisis had a different effect on the metropolitan regions in the EU-15 and the EU-13 between 2008 and 2011. In the EU-15, GDP in the capital metropolitan regions declined at the same rate as in other regions. In the EU-13, GDP in the capital metropolitan regions declined, while it grew in the other regions. In both cases, this was accompanied by a larger reduction in employment than elsewhere.

In the EU-15, in second-tier and smaller metropolitan regions, productivity growth was low and employment declined, the fall in GDP per head being similar to that in the EU-15 as a whole.

In the EU-13, in second-tier and smaller metropolitan regions growth of GDP per head was twice the EU-13 average as a result of high productivity growth and no reduction in employment. It will be interesting to see whether this launches a period of higher growth rates outside the capital metropolitan regions leading to a narrowing of the gap in GDP per head with the latter.

**Table 2 Change in GDP per head, productivity and employment per head by type of metropolitan region, 2000-2008 and 2008-2011**

Average annual real change in %	2000-2008			2008-2011		
	GDP per head growth =	Productivity growth +	Employment per head growth	GDP per head growth =	Productivity growth +	Employment per head growth
<b>EU-15</b>						
Capital metropolitan region	1.4	0.9	0.6	-0.8	0.3	-1.1
Second tier metropolitan region	1.3	0.7	0.6	-0.8	0.1	-0.9
Smaller metro region	1.2	0.7	0.5	-0.6	0.2	-0.8
Non-metropolitan regions	1.2	0.8	0.4	-0.8	0.2	-1.0
Total	1.3	0.8	0.5	-0.7	0.2	-0.9
<b>EU-13</b>						
Capital metropolitan region	5.5	3.6	1.9	-0.3	1.0	-1.3
Second tier metropolitan region	4.9	4.1	0.8	1.4	1.3	0.1
Smaller metro region	3.7	3.6	0.1	1.4	1.2	0.2
Non-metropolitan regions	4.5	4.4	0.0	0.6	1.7	-1.1
Total	4.9	4.3	0.6	0.7	1.4	-0.8
<b>EU-28</b>						
Capital metropolitan region	1.9	1.0	0.9	-0.7	0.5	-1.2
Second tier metropolitan region	1.6	1.0	0.6	-0.6	0.1	-0.7
Smaller metro region	1.3	0.8	0.5	-0.5	0.2	-0.8
Non-metropolitan regions	1.6	1.3	0.3	-0.5	0.5	-1.0
Total	1.6	1.1	0.5	-0.5	0.4	-0.9
<i>Source: Eurostat &amp; DG REGIO calculations</i>						

A new ESPON study<sup>1</sup> specifically examining the performance of second-tier cities concluded that although some of these make a substantial contribution to the national economy, in most countries, they do not contribute as much as capital cities. It is argued that they could contribute more, however, if they were given greater EU and national support.

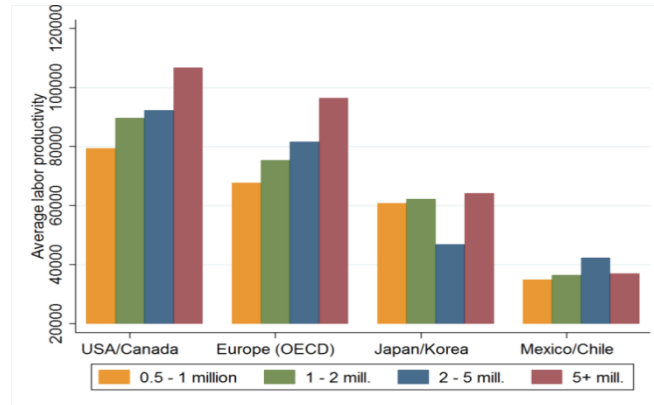
The tendency to over-invest in the capitals and under-invest in second-tier cities is shown to be strong in many countries and it is arguable that higher level governments should resist this tendency and create territorial policies specifically for second-tier cities. This highlights the importance of a tailored, place-based development policy and of taking explicit account of the different territorial impact of national policies on R&D, innovation, education and skills and transport and connectivity.

<sup>1</sup> Parkinson M. et al. 2012, *Second Tier Cities in Europe: In An Age of Austerity Why Invest Beyond the Capitals?* ESPON Study

### Box 1. City size, agglomeration benefits and metropolitan governance

In all OECD countries, productivity and wages increase with city size (Figure 7). As a result of their high levels of productivity and their sheer size, large urban agglomerations contribute substantially to national growth.

**Figure 1: Larger metropolitan areas are more productive**

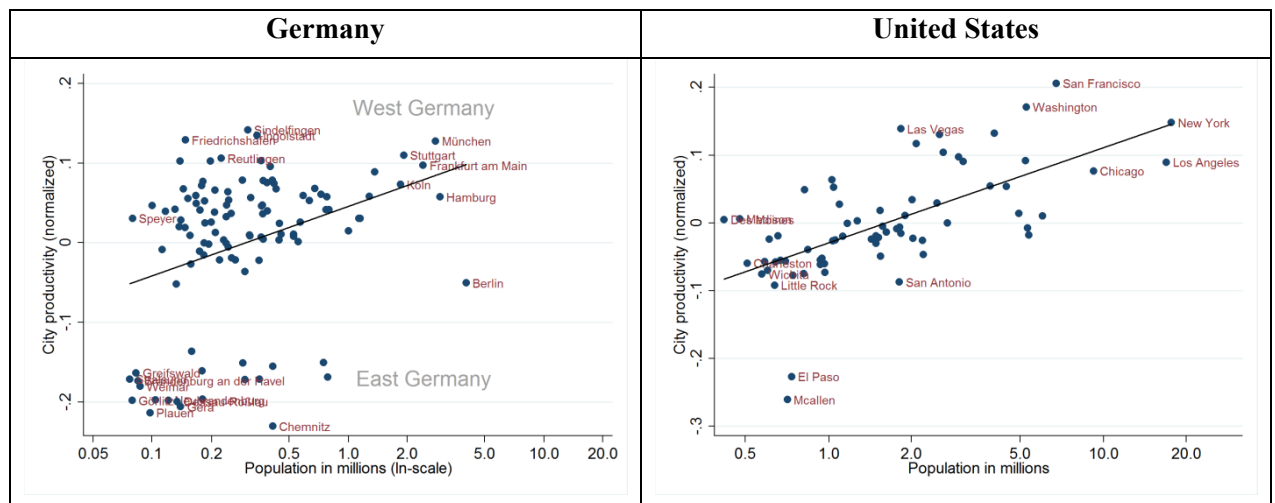


Source: OECD Metropolitan Database

### Why are larger cities more productive?

The productivity of cities depends on a great many factors, such as having companies which are innovative and skilled workers. Productivity, however, at least up to a certain point, increases with the size of cities, which raises the question of why. The reasons are, first, that larger cities tend to have higher levels of human capital, even though the relationship with city size is often non-linear, in the sense that the shares of both very high skilled workers and low skilled increase at the same time. Secondly, larger cities typically have a larger share of high productivity sectors such as consulting and legal and financial services. Thirdly, larger cities are more likely to be hubs or service centres through which trade, finance and other flows are channelled. These flows typically require the provision of high value-added services. Fourthly, cities profit from 'agglomeration benefits', which means that, on average, the productivity of a person increases with the size of the city in which they live and work. Figure 10 shows productivity levels for cities in Germany and the US adjusted for difference in levels of human capital. Recent OECD estimates suggest that productivity increases by 2-5% for every doubling of the population (Ahrend, Farchy, Kaplanis and Lembecke, 2014), which is in line with similar studies for individual countries (Combes et al., 2011).

Figure 2: Population size and productivity by city



Source: Ahrend, Farchy, Kaplanis and Lembecke, 2014

Agglomeration benefits are usually thought to arise from 'sharing', 'matching' and 'learning' (see, e.g., Duranton and Puga, 2004). In larger agglomerations, firms profit from a greater supply of local public

goods, as well as 'shared', or common, facilities such as public laboratories and universities. It is also easier for them to find suppliers that more closely match their needs. Similarly, a larger labour market allows a higher level of flexibility and workers to be better matched to jobs. Equally, the easier generation, diffusion and accumulation of knowledge in larger agglomerations facilitates access to technologies and skills. In addition, agglomeration benefits are often thought to be related to people being better 'connected' in larger cities and to arise perhaps from higher levels of "knowledge based capital" (intangible assets) in the firms located there.

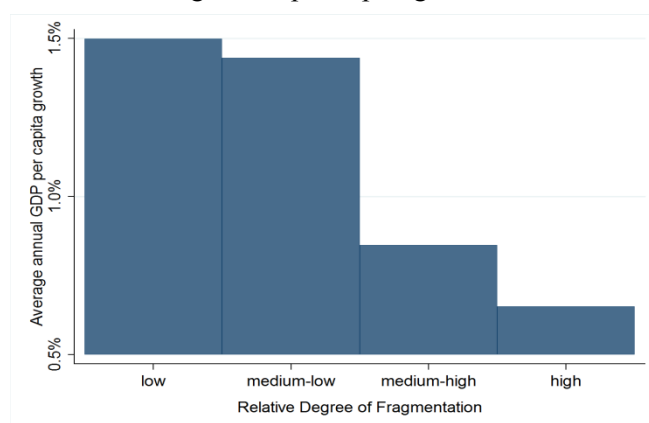
Agglomeration benefits not only arise from the size of population in a city itself but they can also be 'borrowed' from neighbouring agglomerations. For every doubling of the population living in agglomerations within a 300 km radius, the productivity of the city in the centre is estimated to increase by 1-1.5% (Ahrend, Farchy, Kaplanis and Lembcke, 2014). This might explain why in the US productivity in urban agglomerations generally increases more strongly with population size than in European countries. Essentially, because distances between agglomerations tend to be less in Europe, smaller cities are not so disadvantaged since they 'borrow' agglomeration benefits from neighbouring towns and cities.

### **The role of metropolitan governance structures in economic efficiency and well-being**

Metropolitan areas typically span a number of administrative boundaries. They, therefore, often suffer from fragmented policymaking, and it is not uncommon for there to be several hundred local authorities. If these are left to pursue policies independently of each other, they are unlikely to tackle the challenge of developing the economic potential of the metropolitan area as a whole and the well-being of the people living there in an adequate way. Research undertaken by the OECD shows that municipal fragmentation does indeed reduce economic growth (see Figure 9) as well as the productivity of metropolitan areas, estimates indicating that a doubling of the number of municipalities per 100,000 people is associated with a reduction of 5-6% in productivity. It is likely that this in part is a result of sub-optimal provision of transport infrastructure, exemplified by routes in many Metropolitan areas ending at administrative boundaries for no apparent reason. This can also increase the possibility of those living in badly connected areas being socially excluded.

Figure 3: Less fragmented metropolitan areas have experienced higher growth

Annual average GDP per capita growth, 2000-2010



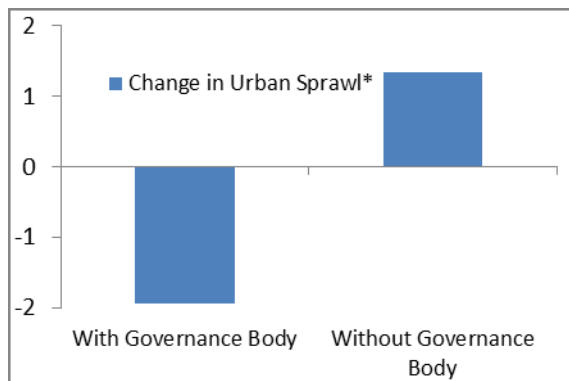
Source: Ahrend and Lembcke (2014)

The potentially adverse effects of the fragmentation of municipalities, however, can at least be mitigated to a large extent by governance arrangements. More specifically, the existence of a central metropolitan governance body is estimated to reduce the adverse effect of fragmentation on productivity by around a half (Ahrend, Farchy, Kaplanis, and Lembcke, 2014). Metropolitan areas with a central governance body, on average, experience less urban sprawl, possibly as a result of more efficient use of land and the planning of transport (Figure 10). Similarly, in metropolitan areas with a transport authority, or some other body to coordinate transport, people tend to be much more satisfied with the public transport system; the areas concerned also tend to have significantly lower levels of air pollution (Kim, Schuman and Ahrend, 2014).

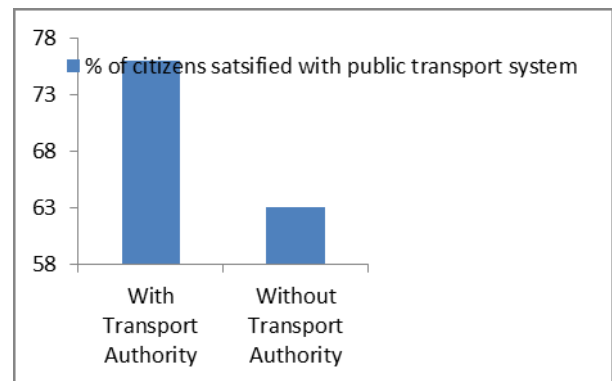


Figure 4: Governance institutions and selected outcomes

#### Central governance bodies and urban sprawl



#### Transport authorities and satisfaction with public transport



Source: Ahrend, Gamper and Schumann, 2014

\* Controlling for country fixed effects.

Ahrend, R., Farchy, E., Kaplanis, I. and A. Lembcke, 2014, *What Makes Cities More Productive? Evidence on the Role of Urban Governance for OECD Countries*, OECD Regional Development Working Papers, forthcoming.

Ahrend, R., Gamper, C. and A. Schuhmann, 2014, *The OECD Metropolitan Governance Survey: A Quantitative Description of Governance Structures in Large Urban Areas*, OECD Regional Development Working Papers, forthcoming.

Ahrend, R. and A. Lembcke, 2014, *Economic and Demographic Trends in Cities*, OECD Regional Development Working Papers, forthcoming.

Combes, P.-P., Duranton, G. and L. Gobillon, 2011, *The identification of agglomeration economies*, *Journal of Economic Geography*, Vol. 11, pp. 253-266

Duranton, G., Puga, D., 2004. *Microfoundations of urban agglomeration economies*, in: Henderson, V., Thisse, J. F., (Eds.) *Handbook of Regional and Urban Economics*, vol. 4. Amsterdam: NorthHolland, pp.2063–2117.

Kim, S.-J., A. Schumann, and R. Ahrend, 2014, *What Governance for Metropolitan Areas?*, OECD Regional Development Working Papers, forthcoming.

## 6.2. GDP growth in rural regions was lower prior to the crisis, but proved more resilient during the crisis years

Between 2000 and 2008, real GDP per head in rural regions (see Map and box) in the EU-28 grew by 1.7% a year (Table), similar to the rate in other types of region. The only difference was that productivity in rural region grew faster, while employment relative to population (i.e. the employment rate) rose more slowly.

In the EU-15, GDP per head in rural regions grew slightly more slowly as productivity growth was lower than in other regions, but the employment rate increased at the same rate as in other regions.

In the EU-13, GDP per head in rural regions also grew more slowly between 2000 and 2008 than in other regions, though here productivity growth was higher and employment contracted relative to population whereas in other regions, it increased. The two tendencies may be linked, insofar as the higher productivity growth was

due to catching up in the use of technology and more efficient methods of working, including in agriculture, which in turn led to a reduction in employment.

The crisis had a differentiated effect on rural regions. The reduction in GDP per head between 2008 and 2011 was less pronounced in rural regions than in urban ones in the EU-15. In the EU-13, growth rates of GDP per head between 2008 and 2011 were much lower than in the preceding period but still positive. Growth in urban regions was slightly higher than in others.

Employment declined in all types of region, by more in urban regions in the EU-15 and in rural regions in the EU-13. Productivity continued to grow in the EU-15 and, more especially, in the EU-13. In both, growth was higher in rural regions than elsewhere.

**Table 3: Real GDP per head, productivity and employment per head growth by urban-rural typology, 2000-2011**

	2000-2008				2008-2011			2011
Average annual real change in %	GDP per head growth =	Productivity growth +	Employment per head growth		GDP per head growth =	Productivity growth +	Employment per head growth	GDP per head (PPS) index EU-28=100
<b>EU-15</b>								
Urban	1.3	0.8	0.5		-0.9	0.2	-1.0	124
Intermediate	1.2	0.7	0.5		-0.6	0.3	-0.8	100
Rural	1.2	0.7	0.5		-0.5	0.4	-0.9	90
Total	1.3	0.8	0.5		-0.7	0.2	-0.9	110
<b>EU-13</b>								
Urban	5.5	3.6	1.9		0.7	0.9	-0.2	108
Intermediate	4.6	4.2	0.4		0.5	1.5	-1.0	57
Rural	4.3	4.5	-0.2		0.6	1.6	-1.1	46
Total	4.9	4.3	0.6		0.7	1.4	-0.8	64
<b>EU-28</b>								
Urban	1.5	0.9	0.7		-0.8	0.2	-0.9	122
Intermediate	1.5	1.0	0.5		-0.4	0.4	-0.9	90
Rural	1.7	1.5	0.2		-0.3	0.7	-1.0	74
Total	1.6	1.1	0.5		-0.5	0.4	-0.9	100

Source: Eurostat and DG REGIO calculations

In 2011, the differences in GDP per head between the three types of region in the EU-15 were much smaller than in the EU-13. In rural regions, average GDP per head was 90% of the EU average, in urban regions, 124% of the average, a difference of 34 percentage points. In the EU-13, on the other hand, GDP per head in the rural regions was only 46% of the EU average, while in urban regions, it was 108% of the average, a difference of 62 percentage points.

#### *Box on Commuting and functional geographies*

The difference between GDP per head in urban regions and other regions is due in part to commuting which tends to distort the comparison. People working in an urban region and living in a neighbouring intermediate or rural region inflate GDP per head in the urban region (by contributing to its GDP, but not its population) and deflate GDP per head in the region they live (by adding to its population but not its GDP). In many cases, this effect is small, but in some cases it can be very large. For example, half the people working in Brussels live outside the Brussels region, so that GDP per head in

Brussels is around twice what it would be without commuting. In such a situation, GDP per head is a poor proxy for income per head.

Using functional regions like labour market areas<sup>2</sup> or metropolitan regions avoids this distortion. Of the 272 metropolitan regions, however, 42 consist of a mixture of urban, intermediate and rural areas, which means that in these cases, the difference in GDP per head between the three types of area is likely to be exaggerated because of commuting.

One way of showing the impact of commuting is to compare GDP per head (distorted by commuting) with GDP per person employed, persons employed being measured in terms of their place of work and, accordingly, not distorted by commuting. GDP per person employed is, of course, much higher than GDP per head as only about half of the total population is employed. In a functional region with no inward or outward commuting this difference would equate to the share of the population in employment.

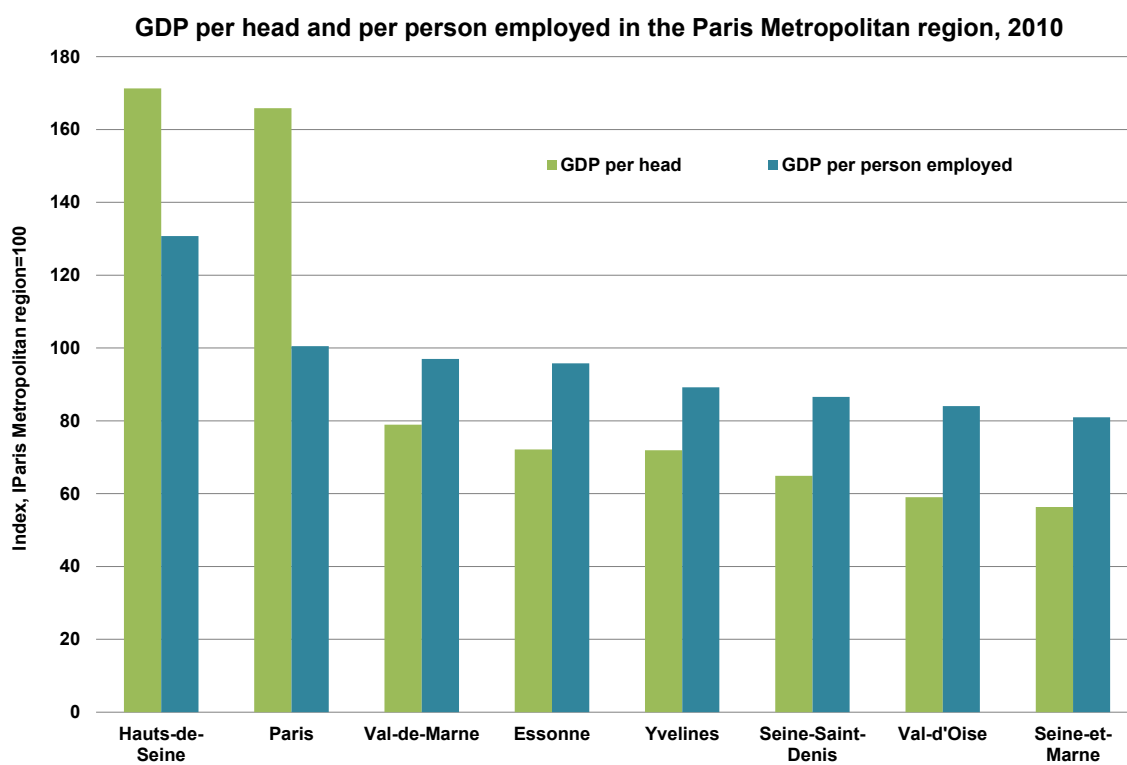
However, in the case of the Paris metropolitan region, for example, GDP per head is much higher than implied by this difference in the two areas with net inward commuting, while it is substantially lower higher in the areas with net outward (see figure). This illustrates the inflation of GDP per head in regions with more jobs than employed residents and the reduction in regions which have the opposite (which are, in effect, 'dormitory' regions for the region where economic activity is concentrated).

There is a growing consensus that economic policies and development strategies should be related to more functional regions rather than covering particular parts of an economic area or labour market. This can be seen in the emergence of new instruments to govern metropolitan areas in France, the UK and other countries. It is also why when assessing regional competitiveness several NUTS-2 regions have been combined to ensure that a single metropolitan area was not divided into multiple regions.

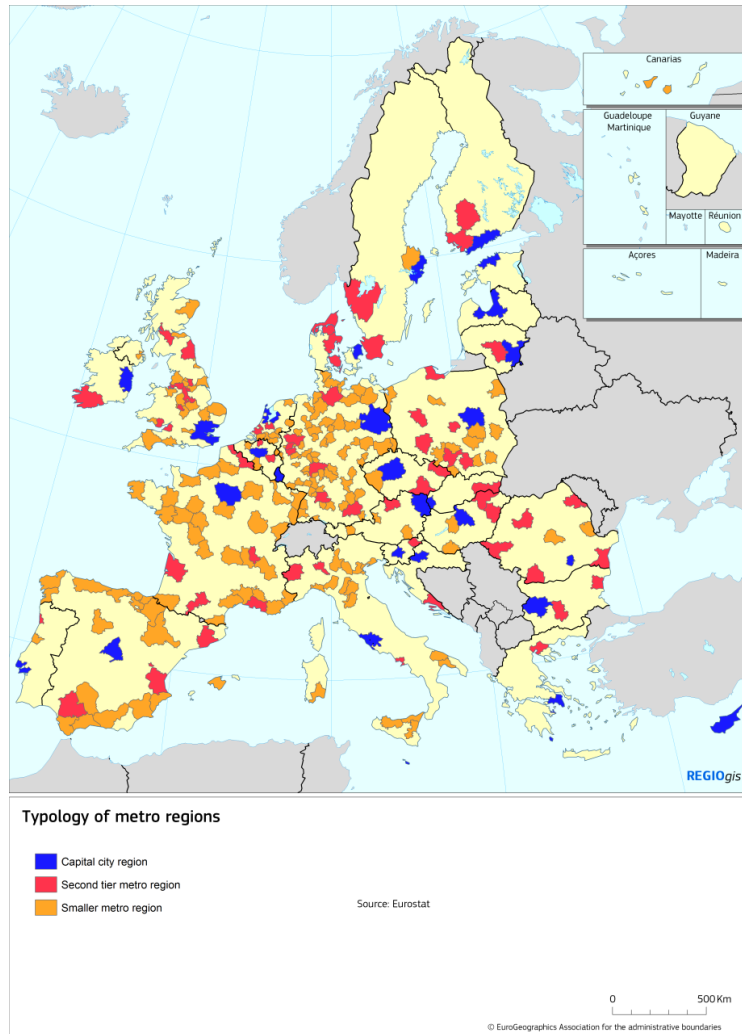
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<sup>2</sup> Eurostat has created a taskforce to investigate different labour market methodologies. Results will be available in 2015.

**Figure 5 GDP per head and per person employed  
in the Paris Metropolitan regions, 2010**



**Map 1 Metropolitan regions by type**



**Map 2 Urban-rural regional typology**

