

# Human Capital Leading Indicators: How Europe's Regions and Cities Can Drive Growth and Foster Social Inclusion

By Peer Ederer, Philipp Schuller and Stephan Willms



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## Lisbon Council Policy Brief

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## Human Capital Leading Indicators for European Regions and Cities

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The world is entering a new era – a time when economic value will be created not by land, labour and capital, but by the knowledge, skill and ingenuity with which those traditional economic inputs can be recombined into new products and services of ever greater value. It is a world where the depth of a city's, region's or nation's human capital will determine the winners from the losers, where the quality of our workforce will decide the degree of our prosperity, where our institutions will be judged not by the length of their tenure but by their ability to create, attract, retain, and deploy as much human talent as possible.<sup>1</sup>

And yet our institutions are profoundly humbled. Faced with global challenges that will require revolutionarily different responses, they are sent into battle equipped with an outmoded statistical framework clearly designed for a different era – a time when the earth's resources were not yet understood to be ultimately finite; a moment when innovation took place mostly in laboratories, when a typical household was led by a single male breadwinner, when the average European lived about 15 years less than today and the average Chinese person might have thought “export” meant selling a bit of surplus produce in a neighbouring village.

That is the imbalance this study sets out to address. How can we arm policy makers – particularly at the level of regions and cities – with the analytical framework they will need to thrive in a truly global, knowledge-

based economy? What are the tools and levers at policy makers' disposal? What policies deliver the best results? What are the most effective levers? And how can those levers be pulled in the most effective way? In other words, how can we help policy makers at the local level to ensure their region has the human capital it will need to deliver prosperity to citizens in an age of transformation?

The study you hold in your hands is the product of one year of intensive research, conducted by a team of 11 social scientists, working at the Lisbon Council.<sup>2</sup> Building on the original paradigms laid down in our ground-breaking studies *The European Human Capital Index (2006)* and *The European Human Capital Index: The Challenge of Central and Eastern Europe (2007)*, which sought to look at human-capital policies at the national level, this policy brief takes a more granular approach.<sup>3</sup> It seeks to look at human capital performance at the local and regional level, analysing the statistical database and the experience of seven broadly diverse regions in search of new insights into the human-capital policies that work best.

Among the key findings:

- I. Of all the levers a policy maker has available at his or her disposal, there are four key indicators where good performance can be closely correlated to local prosperity. If a region can score well in all four, it means that region

1. Paul Hofheinz, *Europe 2020: Why Skills are Key for Europe's Future* (Brussels: The Lisbon Council, 2009).

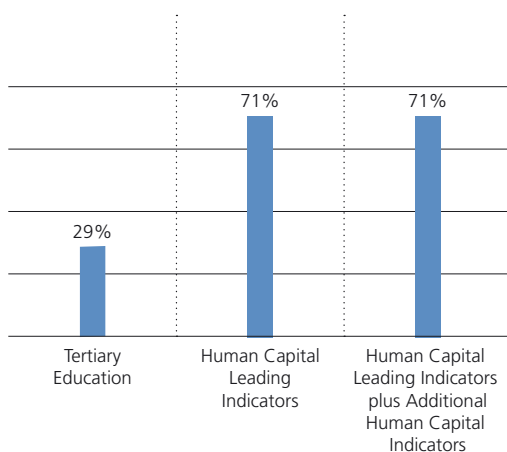
2. The project was made possible by a research grant from the European Community Programme for Employment and Social Solidarity – PROGRESS (2007-2013), managed by DG employment, social affairs and equal opportunities of the European Commission.

3. Peer Ederer, *The European Human Capital Index: Innovation at Work* (Brussels: The Lisbon Council, 2006); Peer Ederer, Philipp Schuller and Stephan Willms, *The European Human Capital Index: The Challenge of Central and Eastern Europe* (Brussels: The Lisbon Council, 2007).

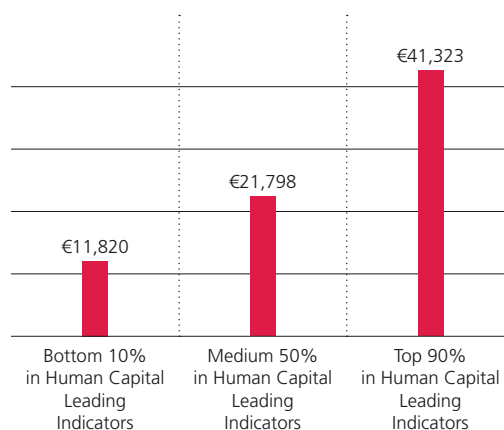
### Chart 1: Top Performance in Human Capital Leading Indicators Closely Predicts Regional Income Differences

The three columns show statistical comparisons of human capital indicators with regional levels of prosperity. In the chart at left, the first column uses the share of people with tertiary education (2007) as the only input variable, and shows a very low correlation between this common proxy for human-capital development and regional wealth. By contrast, the second column uses the four Human Capital Leading Indicators described in this paper: youth unemployment (2007), share of long-term unemployed among all unemployed (2007), share of complex jobs (2008) and number of patents and level of R&D spending (Innovation Index 2003), and shows a very high correlation with regional prosperity. The third column adds additional human-capital indicators to the measurement, including the share of people with tertiary education (2007), the employment rate of women aged 25-35 (2007) and the employment rate of the elderly aged 55-64 (2007), and shows little improvement in correlation or variation with the four Human Capital Leading Indicators. The output variable in each case is regional GDP in euro (PPP per capita 2007, measured in logarithms).

Correlation\* of Regional GDP per Capita with Human Capital Indicators



Regional GDP per Capita and Performance in Human Capital Leading Indicators



\* Based on a multivariate linear regression

Source: Eurostat – European Regional and Urban Statistics Database

is likely to be a wealthy, prosperous and socially cohesive one. The four indicators are 1) the number of complex jobs in a region or city; 2) the number of jobs available for young people and the ease with which young people can find employment, 3) the ability to get the unemployed back to work (thereby avoiding high levels of long-term unemployment), and 4) the intensity of investment in research and development and the volume of local patent applications, a proxy for the “innovativeness” of the region. Statistical analysis shows that, taken together, these four indicators serve as an excellent forecaster of overall performance in the human-capital sphere, explaining fully 71% of regional

differences in gross domestic product per capita in a multivariate linear regression (see Chart 1 above for more).<sup>4</sup> In other words, policy makers who can successfully deliver in these four areas are destined to do well in attracting, retaining and deploying human capital in ways that will give tangible economic and social results to their regions and cities. Other human capital indicators – such as the share of the local population with tertiary education, the employment of 25- to 35-year-old women or the employment rate of the elderly – are much less precise predictors of prosperity for a region. For this reason, we have chosen to call the four statistical checkpoints mentioned above the **Human Capital Leading**

4. A multivariate linear regression looks at the way in which a variety of input data are connected to or can “explain” one outcome variable, in this case GDP per capita, purchasing power parity (PPP) adjusted. The linear regression describes the line through the multidimensional space formed by the input data and the outcome variable that is closest to all data points. If the fit of the line is good, the knowledge of the input variables allows us to imply the associated per-capita income even in cases where income cannot be measured. The “fit” of the line is called the “coefficient of determination,” or “R<sup>2</sup>.” An R<sup>2</sup> of 100% indicates that all observations lie on the line, while an R<sup>2</sup> of 0% indicates that there is no optimal line and no apparent statistical relationship between the data and the outcome.

**Indicators**, and we recommend that regional administrators build and develop their human-capital strategy around improving them.

- II. Regions vary in human-capital performance more among themselves than countries do, based on close comparison of Human Capital Leading Indicators at the national and regional level (see Chart 2 on page 6 for more). What's more, the Human Capital Leading Indicators have less predictive value at the national level than they do at the local level due to the homogenizing effect of national statistics.<sup>5</sup> This has important implications. Nations, because they are made of collections of regions, often contain vastly different levels of human-capital development within them – differences whose special characteristics are somehow lost when

statistics are aggregated at the national level. Therefore, it is particularly hard for national administrators to improve or target widely varying human capital situations with a single, one-size-fits-all human capital policy. Because of this, we recommend that many human capital development decisions and strategies be delegated to the regional level, where they can be most effective. Nations should also make sure that regions have the authority and resources they need to develop successful human-capital strategies.

- III. The Europe 2020 strategy, adopted by European heads of state and government in March 2010, is half right: it is right to focus on human capital as a key component of European development; it is wrong to address the member states rather than the regions.<sup>6</sup> Of Europe 2020's five explicit targets,

### Europe 2020: Europe's Human-Capital Development Strategy

Of the five specific targets in the EU's flagship Europe 2020 agenda, four have a clear human-capital dimension.

1. Employment: Employ 75% of 20 to 64 year olds
2. R&D / innovation: Invest 3% of the EU's GDP (public and private) in R&D and innovation
3. Education: Reduce school drop-out rates to below 10%; at least 40% of 30 to 34 year olds should complete tertiary-level education (or equivalent)
4. Poverty / social exclusion: Reduce number of people in or at risk of poverty by 20 million
5. Climate change / energy: Cut greenhouse gas emissions by 20% of 1990 level (or 30% if a satisfactory international agreement can be achieved to follow Kyoto); produce 20% of all energy from renewables and increase energy efficiency by 20%

5. We tested the Human Capital Leading Indicators at the national level for the 27 European Union member states, and, after finding an intense correlation (71%) at the local level, we found a much weaker correlation of 63,5% at the national level.

6. For more on Europe 2020, visit the European Commission website at [http://ec.europa.eu/europe2020/index\\_en.htm](http://ec.europa.eu/europe2020/index_en.htm).

## ‘There are four key human capital indicators where good performance can be closely correlated to local prosperity.’

four highlight explicitly human-capital related goals (see the Europe 2020 box on page 4). This makes Europe truly unique: it is the only major global actor which has come out so clearly and forcefully with a strategy for future prosperity based on human-capital development. But the programme misses the larger point elaborated above – if you want success in human capital development, you will have more chances by going directly to the local level, where policy making is most direct and effective. Therefore, we believe the Europe 2020 programme should “ensure that each European Region tailors the Europe 2020 strategy to its particular situation and translates the EU goals into regional targets and trajectories.”<sup>7</sup>

IV. Given the vast importance of local decisions to successful human-capital policy making – and the need to ensure that flagship national and European initiatives like Europe 2020 are effectively implemented – we believe cities and regions should appoint regional human capital managers to coordinate, evangelise and implement better human-capital-raising policies at the local level. Successful regions are already doing this, such as the seven regions studied in this paper (the case studies begin on page 16). In each of those regions and cities, this vital task was taken up by informal networks or formally responsible agencies, coordination groups, task forces, locally committed NGOs or

just enthusiastic individuals who, by their actions and agenda, have become largely self-appointed human capital managers for their region. Should the policy of appointing regional human capital managers ever be systematized and more broadly adopted, the human capital manager would design, develop and seek to implement a human capital strategy for the region. Such a strategy would steer and focus resources to those levers that achieve the most, and disregard levers that are not relevant. The kaleidoscope of coordination and prioritisation by the regional human capital manager could include: the shaping of educational institutions from kindergarten to adult learning towards the needs of the regional economy, the attraction of particular types of industries and businesses, the fostering of particular types of innovation and entrepreneurship, the provision of childcare facilities for working parents, the integration of peripheral social groups into the labour market, and more. By formulating and articulating a regional or local human capital strategy, the human capital manager will identify a few critical targets against which the public can hold him or her or all other decision makers in the region to account.

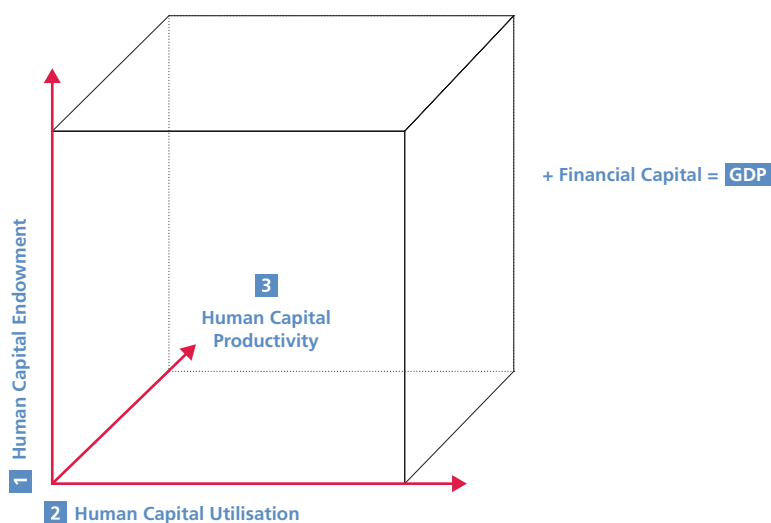
### **The Human Capital Matrix in European Regions and Cities**

Human capital is a vital input to economic growth, standing alongside financial capital as one of two key determinants of GDP in classical growth models (see Chart 2 on

7. *Ibid.*. The Europe 2020 programme sets out “to ensure that each Member State tailors the Europe 2020 strategy to its particular situation, and translates the EU goals into national targets and trajectories (emphasis added).”

## Chart 2: The Human Capital Matrix

Human capital endowment (the amount of human capital a region possesses) x human capital utilisation (the amount of human capital that is active) x human capital productivity (the efficiency with which human capital is deployed) + financial capital = gross domestic product.



page 6 for more). The question, then, is how do we measure human capital? How do we determine the economic value of a region's, city's or country's know-how and skills – including the amount of human capital which a region naturally possesses or can attract and the effectiveness with which it is all deployed in the local economy?

A back of the envelope calculation already tells us a lot about the role skills play in modern economic life. In industrial societies, the amount of money invested in people's salaries is roughly twice as much as the return on financial capital (measured as interest payments and corporate profits).<sup>8</sup> In other words, judging from the price signals the market is sending, nearly two-thirds of all economic value in modern industrial economies is created through direct investment in the skills and human capital of our active workforce.

The difficulty modern societies face, and Europe in particular, is not a shortage of human capital – though even here employers tell us they cannot find skilled workers to do the jobs for which they have openings while overall demographic trends paint an ever more alarming picture

for Europe's future. The difficulties are, in many ways, how do we better use the human capital that we have? How do we create and attract the human capital we will need to deliver the social and economic outcomes we seek? And how do we activate and deploy human capital in ways that will bring the most social good to society at large?

To help policy makers grapple with these separate but related policy objectives, the Lisbon Council created the **Human Capital Matrix**, a two-dimensional graphical representation of the key components that help us measure how much human capital a society has, and how well that human capital is being deployed (for more, see Chart 2 above). The chart is based on a simple formula. Stated plainly, it says the GDP of a country is the amount of human capital a region possesses (human capital endowment) times the amount of human capital that is active in the labour market (human capital utilisation) times the efficiency with which that human capital is deployed (human capital productivity) plus financial capital.

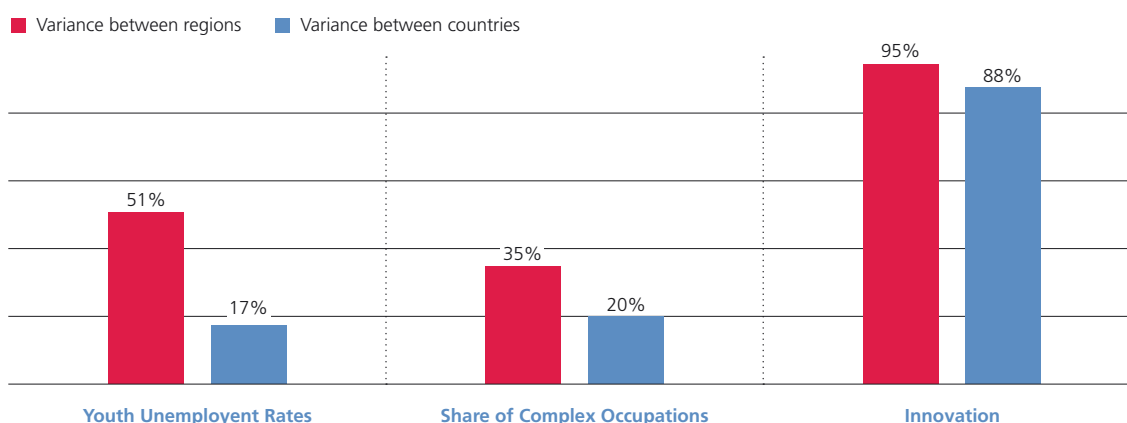
The model has already been deployed

8. Peer Ederer, Philipp Schuller and Stephan Willms, *Geschäftsplan Deutschland* (Stuttgart: Schäffer-Poeschel, 2008).



### Chart 3: Regions Vary More Among Themselves on Key Human Capital Indicators than European Countries Do

Variance of three indicators between 269 regions and between 27 countries.



Source: Eurostat – European Regional and Urban Statistics Database

successfully in earlier studies, which measured the endowment, utilisation and productivity of human capital at the national level.<sup>9</sup> For this study, we set out to adapt the model to the regional level, looking at what the matrix could tell us about the best, most effective way that local authorities could raise and improve human-capital strategies. We chose as our focus group 269 of the 271 regions of the NUTS2 category, the regions that taken together make up the modern 27-member EU.<sup>10</sup> Inner London and Brussels were left out of the study due to performance anomalies (the depth and wealth of human capital in these two regions made them statistical outliers, sitting in a category of their own). The statistical analysis was tested in field research in seven diverse European regions, which will be presented and discussed in the second half of this paper.

The conclusions were in some ways surprising. First and foremost, we found that many regions have more in common with similar areas in other countries than they do with other regions in their own

home country (See Chart 3 above for more). This has important implications for Human Capital Managers. First and foremost, it means the specific problem a region might face is best analysed and understood through comparison with other European regions that have a similar profile and history. For example, the human capital challenges of a national capital can have few lessons for a human capital manager in a thinly populated, rural region. This, in turn, means that, if a region is to benchmark performance, it should look to other similar regions for ideas that have worked and the best comparisons on relative performance.

What's more, we found that, for all of their diversity, Europe's regions could be fairly easily clustered into four categories for purposes of benchmarking their human-capital performance (see the map on page 9 for a geographic rendering of the clustering and Chart 4 on page 8 for an economic snapshot of the four main groupings).

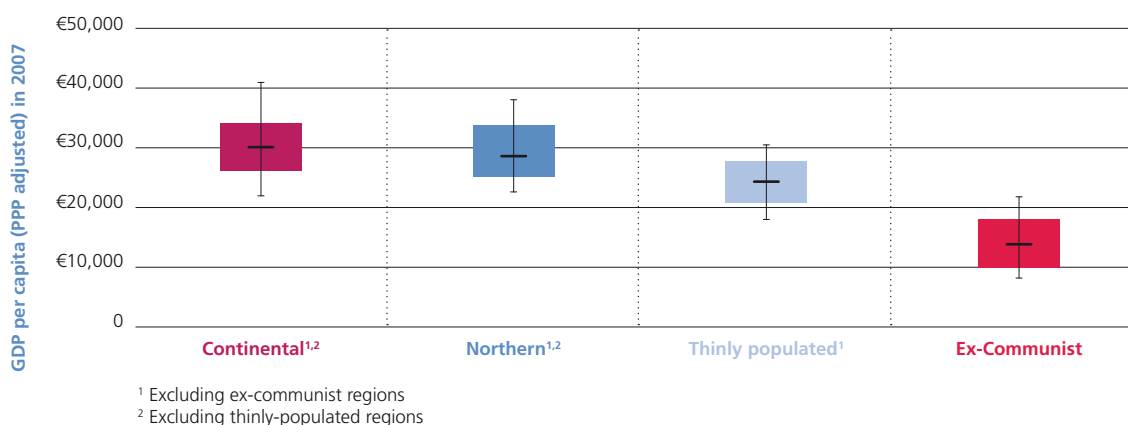
The four groups are:

9. Ederer, *European Human Capital Index*; Ederer, Schuller and Willms, *European Human Capital Index: The Challenge of Central and Eastern Europe*.

10. NUTS is the EU standard for referencing the subdivision of countries into regions and cities for statistical purposes. The acronym comes from the French *nomenclature d'unités territoriales statistiques*. NUTS2 is the broadest of the three NUTS classifications. It includes – but is not limited to – European regions with a population of 800,000 to 3 million inhabitants. There are 271 NUTS2 regions. For purposes of this study, we excluded London and Brussels because they are statistical outliers.

**Chart 4: The Richest Regions Are in Western Europe and Densely Populated**

Boxes show the medium 50% of the regions, whiskers show the medium 80% within each group.



Source: Eurostat – European Regional and Urban Statistics Database

1. Densely-populated Continental European regions, such as Madrid (Spain) and Düsseldorf region (Germany). There are 30 European regions in this category, encompassing 97 million inhabitants.
2. Densely-populated Northern European regions, such as North Holland and Hovedstaden (Copenhagen), Denmark. This grouping is made up of similar regions from Ireland, the United Kingdom, Flanders, Netherlands and Scandinavia. It includes South Finland and South Ireland because of the strong dominance of Helsinki and Dublin in those areas. There are 37 regions in this category, encompassing 68 million people.
3. Thinly-populated West European regions such as South Sweden and Bretagne, France. Here, the average population density is around 76 people per square kilometre, compared with a densely-populated regions average of 417 people per square kilometre and an EU-27 average of 114 people per square kilometre. Malta and the French, Portuguese and Spanish island regions are included in this group as well, along with Slovenia because of its proximity to Austria and the relative openness of the former Yugoslavia. There are 141 regions

in this category, encompassing 210 million inhabitants.

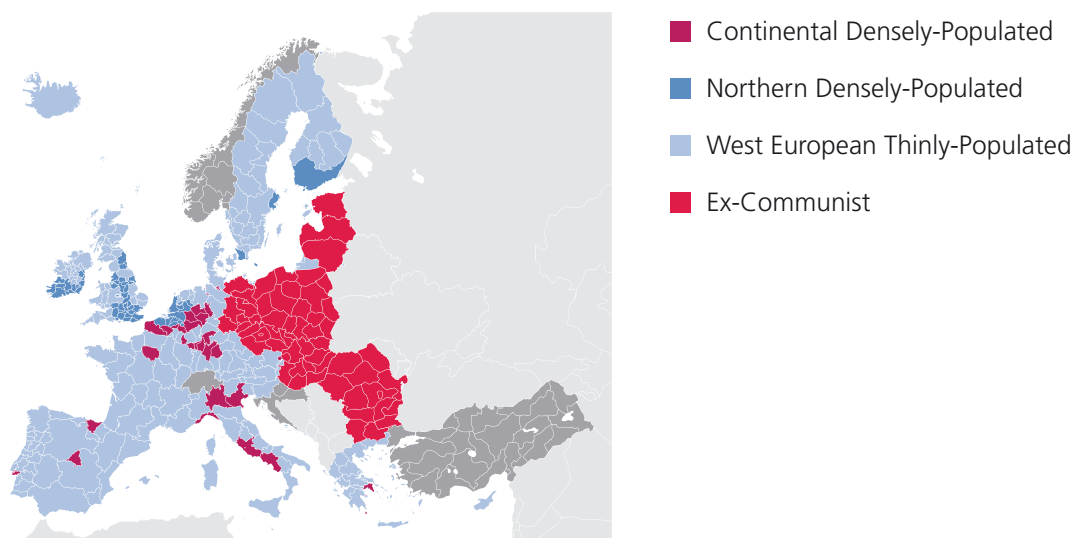
4. All regions in formerly Communist countries, such as Prague (Czech Republic) and Estonia. Due to their history, these regions face truly unique human-capital challenges. Berlin and other former GDR-based regions are included in this group, as we found their statistical profile in human capital terms was closer to their ex-Communist neighbours than their West European counterparts. There are 16 regions in this category, encompassing 117 million citizens. What then does the Human Capital Matrix tell us about the human capital situation in these four categories?

### Human Capital Endowment

Traditionally, many analysts and policy makers use educational attainment rates as a proxy for human capital endowment and a way of measuring human capital itself. This approach has several advantages; for example, the educational attainment of the local workforce is relatively easy to measure and the size of national university cohorts is well known. This, in turn, gives social scientists enough hard data to build a reasonably accurate data-based analysis. But is it the right one? The problem is, simply counting university graduates in

### Economic Models at the Regional Level: Four Groups

Historical and geographical grouping of NUTS2 Regions across Europe.



a country or region doesn't tell us nearly enough about how human capital is being deployed. And it tells us even less about the relationship of human capital to economic wealth generation. As part of this study, we conducted a bivariate regression looking at the statistical correlation of tertiary education attainment with regional prosperity (as measured by PPP-adjusted GDP per capita), and found the correlation was only 29% – considerably less than the fit we found with the four Human Capital Leading Indicators described in the first section of this paper (see Chart 1 on page 3 for more).

But there is another way of measuring human capital endowment – a way that brings together the key strands of both creating and attracting human capital: the share of complex jobs among overall employment. Complex jobs are managerial positions, entrepreneurial activities or professions that typically require a university education such as engineering, law or medical services. Across European regions, complex and managerial work account for around 22% of all jobs; in wealthier regions, the percentage soars to 33%; among the poorer regions, it falls to 13%. For a full ranking of European

regions based on the share of complex jobs as a percentage of all jobs, see Table 1 on page 60.

What's more, we found that in densely-populated regions, the tertiary education indicator and the share of complex jobs indicator are almost interchangeable (see Charts 5 and 6 on page 10 for more). The two indicators rise and fall alongside of each other.<sup>11</sup> But which comes first? Is it the university degrees that attract the complex jobs? Or the complex jobs that attract the university graduates?

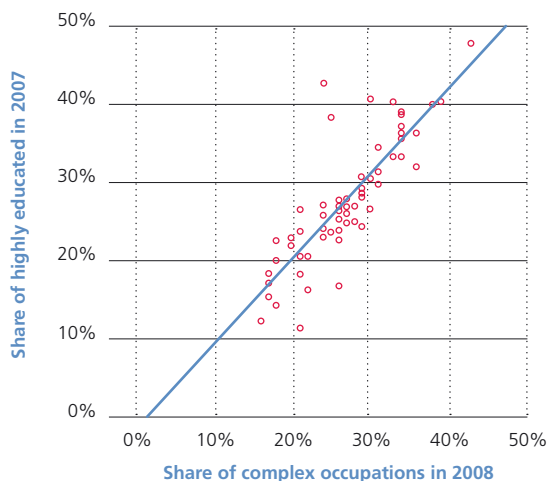
We believe complex jobs is a better lever for local policy makers to target because it is a better magnet for talent, and offers concrete, instantly identifiable, and mutually reinforcing advantages to any human capital manager who can deliver. Specifically, complex, non-routine jobs generate high economic value to the region where they are found, and are accordingly well paid. But good jobs also create more human capital via more intensive on the job learning than less demanding jobs, ensuring employment and high salaries and wages in the future.<sup>12</sup> As has been shown elsewhere, two to three times as much human capital is created at the

11. Uniquely, this is not the case for thinly-populated Western European regions, which show little fit between educational attainment and the prevalence of complex jobs.

12. Ederer, *European Human Capital Index*.

## Charts 5 and 6: Education Leads to Better Jobs in Densely Populated Regions and in Ex-Communist Regions

Complex jobs and higher education in densely populated regions (excluding ex-communist).



Complex jobs and higher education in ex-communist regions.



Source: Eurostat – European Regional and Urban Statistics Database

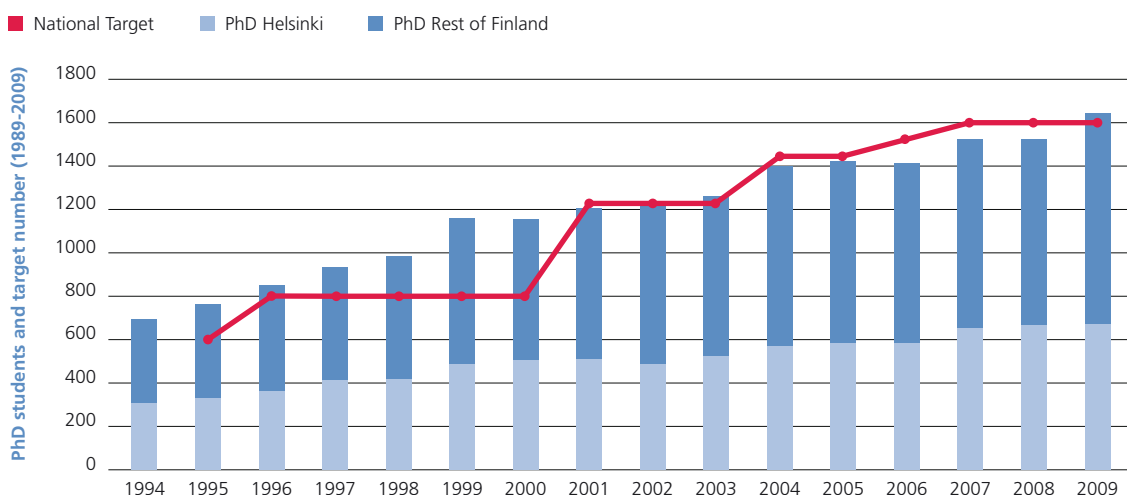
workplace as in formal learning institutions such as schools and universities. These are skills such as team behaviour, problem solving, communications and leadership as well as the functional work skills that European workers continually learn at their work place. The more complex and demanding the jobs of engineers, lawyers and managers, the more opportunity there is for learning. And the more a person learns, the more he will earn and improve future employability. What is more, these jobs tend to have what economists call “positive externalities.” Every lawyer or engineer requires or provides work for a number of other jobs, such as book keepers, production personnel, travel agents, hairdressers, and so will expand employment also in areas with less human capital endowment.

As the share of complex and non-routine jobs in the overall mix of jobs performed in a regional economy is the most important indicator for human capital endowment, how can a regional human capital manager attract such highly qualified jobs?

The best, most obvious way of doing this is by attracting inward and direct foreign investment. Companies bring jobs with

them, and a human capital manager who can attract a major investment to his or her region will see his or her human capital base rise proportionately. In this particular case, the chicken most certainly does follow the egg. But some regions – such as Bratislava and Helsinki, whose experience will be profiled in the case studies that begin on page 16 – have done extremely well by focusing on the egg – namely, the number of locally available graduates ready for work in complex jobs. In 1995, the government of Finland launched 67 graduate schools, employing 722 postgraduate trainees. The number of degrees conferred was used as an indicator for allocating funds among universities, giving universities a strong incentive to graduate more students. By 2006, the number of graduate schools in Finland had risen to 124, with 1458 student posts, a significant increase which had a tangible impact on human capital endowment in Helsinki, where about half of the degrees were based (for more, see Chart 7 on page 11 and the Helsinki Case Study, which begins on page 28). Similarly, Slovakia enacted a highly successful MBA programme, seeking to train local business executives as a way of attracting foreign investment – and raising the game of local

**Chart 7: Helsinki Doubled the Number of PhD Students in Response to Nationally-Mandated Targets**  
PhD students and target number (1989-2009).



Source: Ministry of education, Finland. The data for Helsinki region have been obtained by aggregating the data of eight universities in the region: University of Helsinki, Helsinki University of Technology, Helsinki School of Economics, Swedish school of Economics and Business Administration, University of Art and Design, Sibelius Academy, Theatre Academy and Academy of Fine Arts.

businesses as well (see the Bratislava Case Study, which begins on page 17).

In this game, densely populated regions have inherent advantages. Lower transaction costs and the possibility of higher specialisation make urban regions a natural magnet for highly skilled labour. But densely populated areas must work to retain and activate human capital, as well. One policy lever for raising the share of complex jobs could be to focus on the provision of childcare facilities, so women, who statistically make up a large proportion of the highly-educated in most modern societies, are not forced to leave their careers when they have a child, or can quickly re-enter the workforce if they do. Seemingly small levers like these can have a large effect; they make it possible for regions to retain and activate human capital that would otherwise be lost to them.

### Human Capital Utilisation

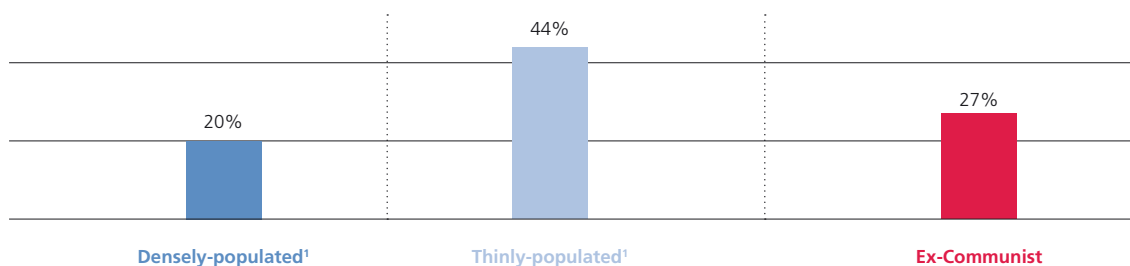
Regions can have excellent human capital endowments, but they will fail to benefit if the human capital is left idle or underutilised. This insight has important implications for a regional human capital manager. Put simply, human capital

managers must focus on utilising the human capital in their region, and not simply because there are very good moral reasons for doing so (unemployment is a social scourge, which ought not to be so readily accepted in some European regions). In fact, there are very good economic reasons why this must be done as well. When people work, they contribute to the region's economic wellbeing – both at the aggregate level, where their work adds to regional prosperity, but also at the individual level, where their personal income will improve and their human capital base expand thanks to on-the-job training and the routine exercising of vital social skills. But the flipside is also true. High unemployment is a major break on human-capital development. Not only do the unemployed fail to contribute to the economic advancement of the region, but their skills can deteriorate quickly, including vital social skills and equally important on-the-job training.

We tested unemployment indicators to gauge their effect on local human-capital development, and found two somewhat surprising results. First and foremost, to a much greater extent than we expected, levels of youth unemployment and long-

**Chart 8: High Youth Unemployment Has a Telling Effect on Income Variation at the Regional Level**

Income variance explained by youth unemployment rates (2007).



<sup>1</sup> Excluding ex-communist regions

Source: Eurostat – European Regional and Urban Statistics Database

term unemployment show a remarkably close correlation with prosperity at the regional level – much more than a broad basket of other employment-based indicators, which we also tested.<sup>13</sup> As Chart 8 above shows, youth unemployment alone shows a statistically significant 20% correlation with regional prosperity in densely populated regions; a 27% correlation in formerly communist regions and fully 44% in thinly populated regions. Among the 269 regions we analysed, the average rate of youth unemployment is 16%; in the richest regions, that rate falls to a much more acceptable 6.5%. But in the poorest regions, it soars to 31% – a social scourge that Europe ought not to be willing to tolerate. See Table 2 on page 62 for a ranking of 269 European regions based on their youth unemployment rate.

Even more curiously, as the wages of young people are among the lowest in the workforce, the correlation we found hints at a deeper connection between youth unemployment and prosperity. Put simply, youth wages are too low to have much of a direct effect on regional prosperity. Instead, we must look deeper for what would have to be an important, indirect consequence of high youth unemployment – namely, the knock-on consequences of having so many young people out of the workforce at a key moment in their lives. Studies have shown – and the statistical evidence

presented in this paper confirms – that young people unable to gain entry to the labour market for prolonged periods of time are at a high risk of developing into permanently peripheral members of society. Having missed out on crucial human capital acquisition in their early careers, they become disenfranchised economically and socially, and are more likely to become dysfunctional or even criminal with all of the associated economic costs. Conversely, an early entry into the labour market forms the basis for a working career and corresponding life habits and is typically followed by family formation, homebuilding or home-making and the creation of community bonds, all of which have positive income effects. In this way, the rate of youth unemployment is a strong indicator of a region's likely level of prosperity, and an area of human-capital development to which a regional human capital manager would be well advised to pay attention.

The other surprisingly significant indicator of human-capital employment is the share of long-term unemployment, which on its own explains fully 18.7% of economic prosperity in European regions.<sup>14</sup> Often, the social protection benefits available to the long-term unemployed are higher than the economic value these people could create if they were working; this is the primary reason why many of them are

13. Other employment-based indicators we tested, but which showed no strong statistical relationship with regional prosperity, include male employment rates, female employment rates, female employment rates of ages 25 to 35 (the mother group), elderly employment rates (both 55 to 64, and 65 and over), hours worked and labour market exit age.

14. The calculations are based on 2007 employment figures. GDP is measured in logarithmic terms.



## Northern v. Continental: Different Paths to a Similar Destination

The differing experience and performance of Europe's two types of densely-populated regions – the Northern European regions (namely Ireland, UK, Scandinavia and Dutch-speaking Benelux) and Continental European regions (namely Austria, France, Germany, Greece, Italy, Portugal and French-speaking Benelux) – on the Human Capital Leading Indicators sheds interesting light on an age-old question: which European social model gives the best results in human capital terms? The answer would appear to be both systems seem to work quite well, though they employ radically different ways of getting there. Northern European regions boast considerably more complex jobs, and universities – after three decades of reform – award considerably more degrees than their counterparts in Continental Europe. And yet, both areas get remarkably similar social outcomes: GDP per capita in the Northern European Regions is €29,300 and in Continental Regions it is €31,400 – a statistical dead heat. How is this possible? It seems likely that many jobs in Continental Europe have content comparable to similar jobs in Northern European regions, but the training for the Continental European region-based jobs occurs within companies rather than at universities. In other words, the two systems are delivering similar results, even if the pathways to them are very different.

	GDP per capita (PPP adjusted)	Share of complex occupations	Share of highly educated
Northern Regions	€29,292	30%	30%
Continental Regions	€31,357	23%	24%

Source: Eurostat – European Regional and Urban Statistics Database

long-term unemployed in the first place, and why this problem is so difficult to resolve. As a result, GDP per capita should be almost unaffected by the level of long-term unemployed; the economic benefit of having these people in work would, a priori, be too small to matter. But the statistics tell us otherwise, indicating a close correlation between the rate of long-term unemployment in a region and the level of local prosperity.<sup>15</sup> One possible explanation may be the ladder effect; if the lowest productivity workers stay off the working ladder, then more qualified people will occupy the lowest rung. If instead they get on the ladder, they force everyone else to move up one rung, in effect raising the productivity of the human capital already employed. See Chart 9 on page 14 for a comparison of the overall long-term unemployed situation in the four main regional classifications deployed throughout this study and see Table 3 on page 64 for a ranking of European regions based on the number of long-term unemployed as a percentage of overall unemployed.

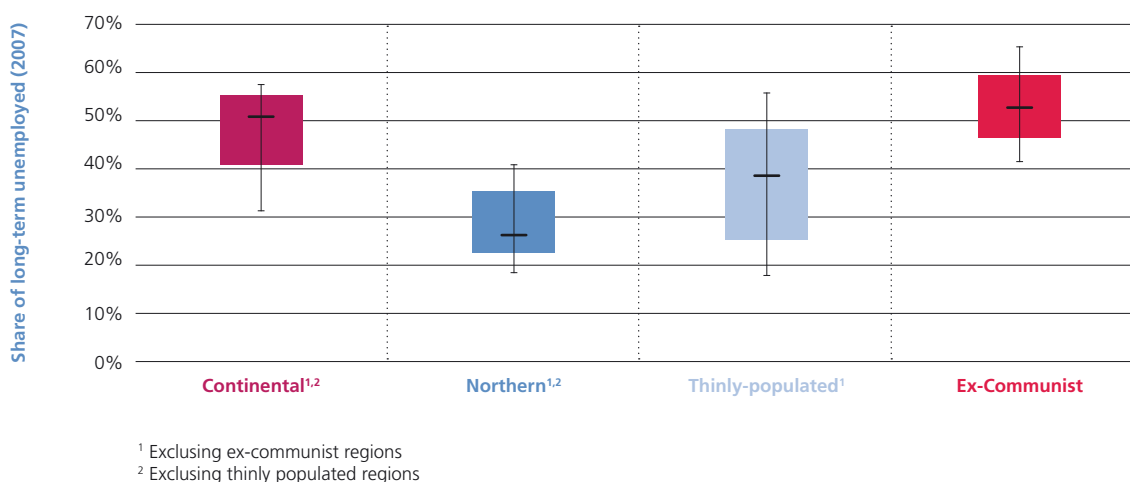
For the regional human capital manager,

the implications of this finding are fairly obvious. Regions that can attack the problems of youth unemployment – and long-term unemployment – stand to reap considerable gains, both in terms of overall prosperity as well as in terms of human capital utilisation. Successful regions have already focused on these areas, putting in place local schemes that help to employ and train the young and re-integrate the long-term unemployed into the workforce. Navarra is a case in point. Regional administrators there introduced a highly successful vocational training programme which did much to lower regional levels of youth unemployment and significantly improve the local skill base from which employers might draw. The results were impressive. Youth unemployment fell by nearly 3% between 2000 and 2007, and the proportion of skilled workers in the labour force rose by more than 33%, easily outpacing the Spanish national average of 26% in the same period. Likewise, Sofia – with the help of the United Nations Development Programme – launched a scheme to hire the long-term unemployed for regeneration of local building projects.

15. The effect is not uniform. We found no statistically significant correlation between long-term unemployment rates and GDP per capita in densely-populated or ex-communist regions. The effect was only observable for the 269 regions taken together as a whole and in thinly-populated regions.

**Chart 9: Long-Term Unemployment is Most Widespread in Ex-Communist Regions**

Boxes show the medium 50% of the regions, whiskers show the medium 80% within each group.



Source: Eurostat – European Regional and Urban Statistics Database

The programme particularly targeted local Roma, ethnic Turkish minority and other socially marginalised groups. In a nine-year period, it created 45,609 jobs and provided 12,475 people with vocational training. While many of the jobs were temporary, 10,471 men and women were reported to have found long-term employment after the project. For more on best practice from Navarra and Sofia, see the case studies that begin on pages 34 and 42, respectively.

### Human Capital Productivity

The third dimension of the Human Capital Matrix is human capital productivity, or the efficiency and effectiveness with which active human capital is able to work. One way of measuring this would be to look at the rate of financial investment in a region and the returns that investment achieves – the resulting difference would serve as a simple proxy for the productivity of the human capital that was used to deliver that return. But this approach is deeply problematic. For starters, it is difficult to distinguish between long-term financial business investment and short-term capital flows (as Ireland and Iceland have recently shown). Second, the rate of financial return is hard to assess as companies often delay taxable profit, which is one of the variables we would most want to measure

for purposes of this indicator. And third, financial assets and financial returns are recorded poorly at the regional level.

However, we found a different variable which is an excellent proxy for expectations about the future success of regional business: the investment levels in research and development by both the public and private sectors, and the number of patents that flow from these investments. These are well recorded on the regional level, clearly attributable to regional activities and are closely tied to human capital investments. As proxies, R&D investment and patents do not create company or individual income directly. Rather, they indicate companies' and individuals' faith in the human-capital productivity of the region. And the effect – high investment in R&D and large numbers of patents existing side-by-side with high levels of regional prosperity – was observable across all four regional groupings. See Table 4 on page 66 for a ranking of European regions based on local investment in R&D and patent applications per one million members of the population.

What, then, are the lessons for a regional human capital manager? First and foremost, R&D and patents are only a



proxy for real productivity, so it is not enough to simply boost them. Rather, the indicator should be used to measure relative levels of success in other areas, namely, the region's ability to attract R&D and to build confidence in the local area as a business site. Put simply, the human capital manager should focus on improving the institutional, infrastructural and social quality of the economic environment and the integration of human capital creation with the productive process – and watch for rising R&D performance as an outcome of such institutional improvements. A case in point is Kista Science City outside of Stockholm, a locally developed science community that today is home to 8,500 companies and provides 67,172 jobs. Or Emilia Romagna, the Italian region, where local administrators created new networks of universities and employers to speed the adoption of innovation. Or West Midlands in the United Kingdom, which showed real ingenuity in creating new jobs to tackle contemporary social challenges. These initiatives are discussed in greater detail in the Emilia Romagna Case Study on page 24, the Stockholm Case Study on page 48 and the West Midlands' Case Study on page 53.

### **The Road Ahead**

We began this essay by arguing that the times are evolving, tossing up new and ever-changing social and economic challenges which policy makers today are sometimes ill equipped to address. But has the world really changed that much? In the Middle Ages, the main social institution was the village or manor. The average person would

scarcely wander more than 20 kilometres beyond the place where they were born, unless their feudal lord called upon them to wage war or famine drove them out desperately in search of safer climes.

And yet, even in an age of globalisation, the village remains our principal point of contact with the outside world. It is the place where we raise our families, earn our livelihoods, build our homes, develop our social connections and invest the vast majority of our time. It is the first point of contact most people have with government, policy, regulation and public administration. And, precisely because so many of us now enjoy unprecedented choice in our decisions of where to live, it is still the place where policy makers should look first if they want to conceive and deliver the kind of improvements that will sustain our way of living for generations to come.

That is the central message of this policy brief. The challenge may indeed be global – but the solution is local. The evidence presented in these pages shows that human capital – and human-capital development – are areas where local policies can have the fastest and most direct effect. After all, nations are only collections of regions, many of them having less in common with their neighbour than with their peers in far-away lands. Nations may worry about human capital, but it is the cities and regions within them that do the most to determine how much of it there is, how effectively it is deployed and how much value it will be able to create.

## Case Studies

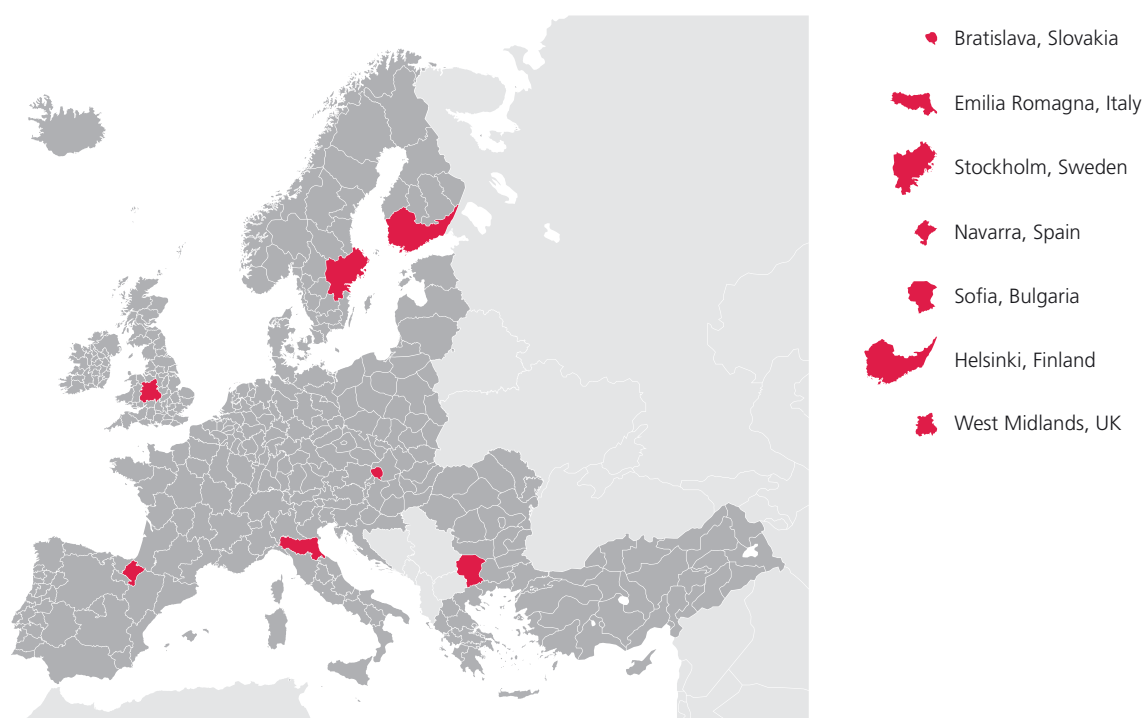
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As part of this study, the Lisbon Council visited seven European regions – Bratislava, Emilia Romagna, Helsinki, Navarra, Sofia, Stockholm and West Midlands – to learn about local initiatives and challenges in the human capital field. In each city and region, we applied the three vectors of the Human Capital Matrix, described on page 6, to local conditions.

The results served as an important validation of the research presented in the first part of this paper, and offered unique insights into the human capital situation of the regions and cities themselves. The recommendations and views expressed in these case studies are those of the authors alone.

### The Human Capital Challenge: Case Studies of Seven European Regions

As part of this study researchers analysed the human capital situation in seven vastly different, geographically dispersed European regions.



# 'We still have a lot of memorisation and not enough creative thinking.'

*Ivan Miklos, minister of finance, Slovakia*

## Bratislava

### Overview

- Bratislava's impressively high gross domestic product per capita (PPP-adjusted) places it in the No. 10 position among the European Union NUTS2 regions (See Table 5 on page 68 for the full ranking). At €39,900, GDP per capita comes in just below Vienna (€40,600) and Stockholm (€41,000). Interestingly, there are no other Slovak regions before the No. 219 position in this ranking. Indeed, Bratislava's GDP per capita is 96% above the national average.
- Bratislava attracts the majority share of Slovakia's foreign direct investment. The region gathered 74% of the nation's foreign direct investment in 2009.<sup>16</sup> Its attractiveness can be attributed to three main characteristics: 1) its convenient location allows it to serve both Western and Eastern Europe, 2) the tax system, which is based on a flat rate of 19%, simplifies business transactions, and 3) the level of educational attainment of its workforce (29%) – measured as the share of individuals with a tertiary degree – is noticeably higher than the national average (17%).
- Women, youth and elderly (aged 55-64) are utilised well. Compared to the figures for women and youth, which place Bratislava in the top 10% of all EU NUTS2 regions, there may be some room for improvement in elderly employment as the regional performance is lower than 24% of the EU NUTS2 regions.
- Bratislava posts figures in the upper echelon of the EU NUTS2 regions in

nearly every category except innovation. Bratislava's level of innovation surpasses the rest of the nation and other eastern European regions. However, it fares worse than 54% of the EU NUTS2 regions. This suggests the potential for significant returns to investment in innovation.

Bratislava is one of the wealthiest regions in Europe in terms of GDP per capita, PPP-adjusted. What policy areas can be addressed to sustain its position among the other European NUTS2 regions in the long run?

### Human Capital Endowment

*A large share of Bratislava's workforce is young, highly educated and has access to a relatively high percentage of demanding jobs. However, the quality of education and proximity to very attractive capital cities could pose problems for future regional growth.*

Bratislava's share of workers with a graduate degree (29%) sets it apart among the rest of the nation and all of Eastern Europe. In fact, this figure raises the national average of 17% as the next closest region in Slovakia is Western Slovakia (Západné Slovensko) with 12.6%. While it is not the foremost leader among the rest of Europe, it fares well compared to the European average of 23%. This figure places it in the 78<sup>th</sup> percentile of all EU NUTS2 regions. In order to vie for a top spot, Bratislava would need to improve by 19 percentage points to overtake the leader, Walloon Brabant (48%) (See Table 6 on page 70

16. All figures refer to the NUTS2 region Bratislavský Kraj (SKOI). FDI data is our elaboration on data from Slovak Investment and Trade Development Agency (SARIO), FDI Inflow Outflow 2009.

‘There is the potential problem of “brain drain,” where many students and highly-skilled people go to Prague or elsewhere in the Czech Republic due to language similarities. Prague poses a higher threat of brain drain than Vienna.’

*Anton Marcincin, economist for the World Bank in Slovakia and Slovenia*

for a ranking of NUTS2 regions by educational attainment).

It appears Bratislava will be able to take advantage of its educated population for some time as the share of elderly aged 65 and above is only 17% of the active population (15-64).<sup>17</sup>

According to the ISCO distribution – which measures the share of highly demanding positions in the region – 27% of all jobs in Bratislava require a high level of skill. This percentage exceeds the national average (17%), as well as the European NUTS2 average (22%) and retains a place in the 83<sup>rd</sup> percentile of the EU NUTS2 regions.<sup>18</sup> The large gap between the quality of the jobs available in Bratislava and the rest of the country provides an explanation of the attractiveness of Bratislava for natives of other Slovak regions, which was mentioned by several people we interviewed in the region. However, a majority of the jobs are classified under “medium” (47%) corresponding to the level of medium educational attainment in the majority of the working population (64%).<sup>19</sup>

According to local accounts, the quality of education is an area that could use improvement. Slovakia’s Finance Minister Ivan Miklos described one issue: “We still have a lot of memorization and not enough creative thinking.”<sup>20</sup>

The proximity to Vienna and Prague represents an additional potential threat to maintaining Bratislava’s stock of human capital. There is a risk that individuals will migrate in order to seek higher wages elsewhere.

### **Human Capital Utilisation**

*Bratislava utilises women and youth well. Elderly employment surpasses the national average, but when compared to the European average could use some improvement. Long-term unemployment figures are poor.*

Bratislava utilises vulnerable groups, such as women and youth, well. The regional youth unemployment rate is impressively low at 8%. This is notably below the national average (19%) and the Eastern European average (18%). Only 12% of the EU NUTS2 regions can claim a better result.

The female employment rate is 11 percentage points above the national average and surpasses the Lisbon Strategy goal of 60% with 73% of women employed. This is only 10 percentage points lower than the best performer of this category among EU NUTS2 regions: the Aland Island in Finland employs 83% of its women. These figures are even more encouraging considering the low share of women and men employed under part-time contracts. Only 4.35% of women and 1.85% of men have part-time contracts.

Elderly utilisation stands at 54%. Although decidedly higher than the national

17. For a comparison, in 2009 Emilia Romagna has a share of over 65 equal to 35% of the active population (15-64), Navarra is equal to 26%, Stockholm 21%, Sofia 20%, Helsinki, West Midlands 24% (data from 2008), Helsinki 23%.

18. Measured as the average of Bratislava’s 4 EU NUTS2 regions.

19. ISCO and ISCED Eurostat data from 2008.

20. Carter Dougherty, “In Slovakia Education Becomes Growth Engine,” *The New York Times* 25 March 2005.

**‘Compared to traditional sectors, the automotive industry is characterized by faster changes and requires more analytical work.’**

*Jan Lešínský, academic director, STU*

average (38%), Bratislava remains in the 76<sup>th</sup> percentile of all EU NUTS2 regions and farther still from the leading European regions. Bratislava would need to increase this figure by 19 percentage points to catch up with top performing Smaland and islands in Sweden. The region's exit age exacerbates these figures. Bratislava follows the national trend by exhibiting the shortest working life among all EU NUTS2 regions with an exit age from the job market of 58.7 years old. Over time, the early average retirement age will inevitably reduce the total number of hours spent working. Currently total hours worked are still considerable and lie above 89% of EU NUTS2 regions. Employees in Bratislava work 69% of the available hours. The room for improvement is more evident if we consider 20% of Eastern European regions post higher figures for total hours worked.

At 54%, Bratislava records the lowest long-term unemployment rate among all Slovak regions and is about 30% lower than the national average. However, this performance diminishes when compared to the other EU NUTS2 regions. In fact, it appears to be a threat to regional growth as only 21% of the other European NUTS2 regions have a higher long-term unemployment rate.

### **Human Capital Productivity**

*Innovation should be a top priority for future regional growth.*

Our innovation indicator – based on public R&D expenditures, business R&D expenditures, and EPO patents – ranks Bratislava above 82% of other Eastern European regions. This impressive performance is severely reduced when compared to all European NUTS2 regions as it falls behind 54% of the regions. This assessment is consistent with the Regional Innovation Scoreboard which ranks Bratislava's innovativeness as “average” on a scale of low, average, medium high and high. The other Slovakian regions score as “low” innovators.

Government expenditure on R&D is particularly detrimental to the ranking as only 0.44% of GDP is allocated to R&D through government mandate. Although expenditures by universities have increased over time, this contribution is still insignificant at 0.26% of GDP. Possibly the most worrisome figure is that of private businesses and enterprises. Expenditures in R&D as a share of GDP have decreased from 0.39% in 2002 to 0.14% in 2007.

### **Best Practice from Bratislava: MBAs and the University of the Third Age**

#### **MBA automotive sector**

Bratislava and its surrounding regions produce more than four million cars every year.<sup>21</sup> While Bratislava has a sufficient number of graduates, the carmakers and their suppliers have trouble filling managerial positions with candidates of appropriate experience and skills. A new MBA solves this challenge.

21. Slovak University of Technology, *Professional MBA – Automotive Industry*.

'The MBA gave me a helicopter view inside the factory and made me able not only to produce information, but also to use that information, to connect the information together and to give the complete story.'

*Participant in the automotive MBA master edition started in March 2009*

It was the summer of 2006 when Jan Lešinský, academic director of the Slovak University of Technology in Bratislava, began to apply himself to finding a solution. He also intended to discover how university teaching time should be structured to meet the real needs of the automotive industry. Together with the Automotive Cluster Vienna Region, which was looking for a cooperative partner, he decided to conduct a survey in 17 automotive companies in Slovakia and Austria.<sup>22</sup> The aim was to better understand the skills and expertise required of the ideal automotive manager or technician. The answers to the surveys represented the basis for setting up a professional MBA programme for the automotive industry, which was open to recent graduates as well as candidates with work experience. The MBA, tailored on the companies' surveyed needs, is a part-time Master requiring four days a month and ten hours per day.<sup>23</sup>

This initiative is likely to create value for both participants and employers. Participants are more likely to find a job aligned with their skills and training and feel more prepared to enter the job market. Employers obtain personnel with the right skills to raise the companies' productivity and facilitate growth.

### University of the Third Age

As a person's productivity is likely to start decreasing after a certain age, the ageing process could lead to a decline in macroeconomic productivity. However, such a pattern is not inevitable.<sup>24</sup> The establishment of the University of the Third Age at Comenius University in Bratislava in 1990 is a good example of a future-oriented strategy in this regard. The UTA offers a three-year programme for people over 50. During the first year the students are offered basic lectures in each of the offered disciplines. The courses of study range from pharmacy to economics, from computers and information to law. Second and third year students can enrol in specialised fields. Moreover, in addition to lectures and seminars, the University organises other activities to complement the pedagogical process such as: excursions, panel discussions, visits to other universities, informal meetings, visit to theatres and thematically conceptualised trips. The interest in the programme has increased over time. The number of senior students enrolled went from 235 in the academic year 1990/91 to more than 1800 in the academic year 2009/2010.<sup>25</sup> After completing their study the students are given certificates.

This initiative helps the elderly maintain an agile mind and update their skills. Both characteristics represent necessary pre-conditions to promote long-term utilisation of elderly in the job market without decreasing their productivity and competitiveness.

22. The overriding objective of the ACVR activities is to concentrate automotive expertise in the Vienna Region and to initiate innovative projects, in order to increase the competitive ability, the R&D quota, and the value creation and innovation level of the partner enterprises.

23. Slovak University of Technology, *Professional MBA – Automotive Industry*.

24. Jaap de Koning, *Incentives to Take Up Work and Remain at Work Longer* (Rotterdam: Erasmus University Rotterdam, 2005).

25. See Centre of Continuing Education, University of the Third Age 2010/2011 (Bratislava: University of the Third Age, 2010).



**'I feel I am appreciated and not a burden on society. Instead, I can be useful and also teach something to my nephews or people in general.'**

*Student at the University of the Third Age, Comenius University*

### **Recommendations**

Evaluating the performance of the region through the human capital dimension allows us to focus on the main challenges and provide concrete policy recommendations that could help Bratislava develop and deploy its human capital.

Bratislava's overall performance is exemplary compared to the other regions of Slovakia and all of the Eastern European regions. However, public and private R&D expenditures should be increased or else the region risks losing its competitive edge in the near future.

Fostering innovation, increasing cooperation between universities and businesses and youth entrepreneurship is critical.

Given the attractiveness of the region for foreign businesses the region could create value by emulating Stockholm's creation of Kista (See the Stockholm Case Study, which begins on page 48). The creation of a business cluster can reduce obstacles to innovative efforts. The lack of financial resources is one example. Additionally, closeness between universities and businesses could facilitate the alignment of educational curricula with the needs of employers. This would eventually smooth the hiring process for high skilled positions in their companies.

The Automotive MBA is an interesting and valid project. It can serve as a lighthouse project to lead the way for tailoring other educational paths to businesses' needs. Increasing internship opportunities during studies could be an additional method to enhance students' preparation for entering the job market.

Encouraging youth entrepreneurship could be a way to retain graduates while simultaneously maintaining and enhancing the competitive strength of an economy. The entrance of a new firm into a particular market forces the incumbent firms to react by improving efficiency or introducing innovation.<sup>26</sup> A best practice example for fostering youth entrepreneurship is the creation of the Aalto society in Helsinki (see the Helsinki Case Study, which begins on page 28).

Increase the working life of the population.

The University of the Third Age is a beneficial initiative because it assists elderly in maintaining a youthful mentality that is a pre-condition for productive utilisation of this demographic group. This also increases the incentive for employers to hire and employ elderly longer. Additional policies should be adopted that aim to increase retirement ages.

26. Isabelle de Voldere, Eva Janssens, Jonas Onkelinx, Leo Sleuwaegen, *The Creative Economy Challenges and Opportunities for the DC Regions*, (Ghent: Flanders District of Creativity, 2006).

## Emilia Romagna

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### Overview

- Emilia Romagna is among the wealthiest regions in Europe. Its GDP per capita (PPP-adjusted) of €31,900 is 27% above the national average and has steadily increased over the past 10 years. This puts the region in the 88<sup>th</sup> percentile of all EU NUTS2 regions. It is flanked by Cataluña (85<sup>th</sup> percentile) and Antwerp (91<sup>st</sup> percentile) and among our sample of regions it approaches Navarra (€32,900 per capita) and Helsinki (€33,800 per capita).
- However, compared to these regions, educational attainment in Emilia Romagna is relatively low. Only 15% of its working population has engaged in higher education. This figure is not only significantly lower than regions with similar GDP per capita, but it is also low when compared to all of the EU NUTS2 regions. Only 20% of the cases present figures lower than Emilia Romagna.<sup>27</sup>
- Emilia Romagna's share of demanding jobs (18%), measured by the ISCO distribution, is lower than the Italian average (19%) and the EU NUTS2 average (22%). This places the region in the 37<sup>th</sup> percentile of all European NUTS2 regions.
- Youth unemployment and female employment place the region in the upper-middle of all EU NUTS2 regions, but the elderly employment figure remains in the lower echelon. Compared to the EU NUTS2 regions, Emilia Romagna is in the 76<sup>th</sup> percentile for youth unemployment, 58<sup>th</sup> percentile for female employment and the 31<sup>st</sup>

percentile with regard to elderly employment.

What regional dynamics enable Emilia Romagna to post such high GDP figures in the face of medium-level educational attainment of its workforce?

### Human Capital Endowment

*Matching the needs of local industries by requiring more specialised technicians than graduates, means lowering the educational attainment level of the region's working age population. Although learning on the job holds great importance, the high quality of education provided suggests that the region has huge potential in terms of its workforce. If tapped, an educated workforce could boost the productivity of the region.*

While the performance in terms of ISCED share is weak, the quality of education in Emilia Romagna is high. According to the 2006 PISA survey Emilia Romagna's performance is above the OECD average, with 510 vs. 500 points scored and well above the national score of 475.

The region's ability to match the needs of its industrial sector with the supply from its educational institutions is remarkable. According to the ISCO distribution, a majority of the jobs are classified under "medium" (52%) and thus correspond to the educational attainment level of the majority of the population. Businesses in the region do not necessarily need

27. For a comparison: Cataluña and Antwerp have an ISCED share twice as high as Emilia Romagna.



graduates. Graduates are too expensive and often too far from the entrepreneurial tradition of the region's businesses. The size of the region's SMEs does not enable them to fully exploit the potential of a graduate. Instead, businesses usually employ young, specialised technicians, coming from the many professional schools of the region. Technicians who will end up working as middle-managers, thus testifying the profitability of their occupations.

The key in Emilia Romagna is the role of learning on the job. Professionals enter businesses and basically complete and expand their education there, tailoring it to the needs of the enterprise. Says Chiara Bentivoglio of the Banca d'Italia: "Our small companies produce niche goods and require youth with work experience. Learning on the job has a great importance in these realities."

### Human Capital Utilisation

*Although the region lacks highly qualified human capital, it utilises women, youth and immigrants well. There is room for large improvements in elderly employment figures.*

Emilia Romagna well utilises vulnerable groups, such as women and youth. The female employment rate is well above the national average and with 67% of women employed surpasses the Lisbon Strategy goal of 60%.<sup>28</sup> The region's tradition of providing child care facilities compliments

this figure. Emilia Romagna boasts the highest number of kindergarten places of any region in Italy.<sup>29</sup> The utilisation of youth in the region is also notable. With an 11% youth unemployment rate, only 24% of the EU NUTS2 regions can claim a lower number.

Figures for elderly performance are low. Emilia Romagna lays claim to one of the highest proportion of elderly to working age populations in Italy.<sup>30</sup> As this trend does not show signs of changing in the immediate future, elderly workforce participation is key to maximizing human capital utilization in the region. Currently, only 38% of elderly participate in the regional workforce. Considering about 30% of the European NUTS2 regions perform worse, this suggests there is significant room for improvement. Despite these figures, the region's total hours worked remain above the European average, placing Emilia Romagna in the 64<sup>th</sup> percentile.<sup>31</sup> This result is partly due to the region's proactive efforts to increase the integration of migrants who make up a large share of the regional population.<sup>32</sup> Not only do immigrants contribute to the local economy by performing jobs which may be considered unappealing to native Italians, they offer an additional benefit. The low average age of migrants (31 versus 45 in the autochthonous population) may help alleviate the issues arising from an ageing population.

28. First region in Italy for female employment; national average: 46.6% (2007).

29. Emilia Romagna also shows best results among Italian regions both for the number of children attending kindergartens (24% of children between 0-2), and for the percentage of municipalities offering childcare services (81.8% of the municipalities, which account for 96.8% of the children in the region). ISTAT, L'offerta comunale di asili nido e altri servizi socio-educativi per la prima infanzia, p.3, 2010 ([http://www.istat.it/salastampa/comunicati/non\\_calendario/20100614\\_00/testointegrale20100614.pdf](http://www.istat.it/salastampa/comunicati/non_calendario/20100614_00/testointegrale20100614.pdf))

30. The elderly dependence ratio, which indicates the number of elderly (65 and over) per 100 people in the active population, is equal to 34.7 against a national average of 30.7. This indicates that in Emilia Romagna 34.7% of the active population are over 65 years old. This is 4 percentage points more than in Italy as a whole. *Indicatori demografici* 2009, ISTAT, February 2010

31. The European average refers to the average performance of the European NUTS2 regions.

32. In 2008, 8.62% of the population were immigrants

## Human Capital Productivity

*A strong focus on innovation and the ability of local businesses to compete on international markets through quality and niche products balance out rather weak educational attainments and allow the region to be among the wealthiest in Europe.*

The Regional Innovation Scoreboard classifies Emilia Romagna as a medium-high innovating region. This is consistent with our innovation indicator – based on public R&D expenditures, business R&D expenditures and EPO patents – which rates Emilia Romagna higher than 79% of the European NUTS2 regions. The industrial sector is permeated by small businesses which represent the engine of economic expansion and wealth creation. Small businesses – family-run or

organised in cooperatives – are centres of employment, development and learning. They are the locus of working and social life.<sup>33</sup> The regional productive system is characterised by some important clusters composed mainly of SMEs, but also larger companies or co-operatives. The main clusters are automotive, industrial machinery, agricultural machinery, engines, biomedical and precision mechanics, shipbuilding, construction, agro-food and fashion. World-leading brands in the automotive sector, such as Ferrari, Ducati, Lamborghini and Maserati, are located in Emilia-Romagna Region and represent the best-known regional champions. The region maintains its competitive edge on international markets through high quality and niche products.

## Best Practice from Emilia Romagna: Research and Social Integration

### Regional Programme for Industrial Research, Innovation and Technology Transfer (PRRIITT)

In 2002, Emilia-Romagna adopted a law aimed at facilitating and supporting the collaboration between enterprises and the research system and promoting the qualification of human capital in universities, research centres and enterprises in the research, innovation and technology transfer fields. In 2003, the Productive Activities Office of the Emilia-Romagna regional government started the Regional Programme for Industrial Research Innovation and Technology Transfer (PRRIITT) to implement the law. The High Technology Network was created, composed by a number of specialised industrial research laboratories and innovation centres dedicated to applied research based on interests, needs and technology transfer.

The High Technology Network, organised into thematic technology platforms, has evolved towards the so called Technopoles, ten research facilities hosting the existing 34 industrial research laboratories of the High Technology Network of Emilia-Romagna.

33. In June 2009, there were 5,545 cooperatives with 175,554 people working (8.98% of the working population of individuals aged 15 years and over in the whole region). Data from Eurostat and Il sole 24 ore, *COOP più forti della recessione*, January 2010.

**'We have improved a lot in the last years.  
We have more workers, more families, more long  
term residence permits...it means that we start to  
have a history of successful migration.'**

*Andrea Stuppini, head of social policy services for the acceptance  
and integration of immigrants*

It is organised in 43 different locations. Currently 1600 researchers are at work, of which 560 are new staff, committed to finding solutions for companies in the region, to transferring technology and knowledge and to translating them into innovative products and processes. The Technopoles are oriented towards the most significant industries in the region: high-tech mechanics, food, buildings, energy and environment, navigation, biotechnologies, ICT and multimedia. The total commitment for this regional research infrastructure amounts to €137 million (of which €94m come from the ROP ERDF), which, together with the contribution of universities and research institutes (€90 million) and from the local authorities (€14 million), brings the total investment to €241million for the 2007-2013 programming period.

#### **Regional programme for the social integration of immigrants**

Emilia Romagna has the highest international net migration in Italy: in 2009, 10,5% of the population came from other EU or non-EU countries compared to a national average of 7%.<sup>34</sup> Migration implies positive human capital externalities for the receiving region only if it is combined with social and cultural integration. In recognition of this, the region took action in 2000 by partnering with local authorities. As a result of their combined efforts, they launched a specific regional programme for the social integration of immigrants. The aim of this programme was to curb discrimination of migrants, raise the trust level in the community and foster growth. Emilia Romagna adopted regional law 5/2004 which was the first system-wide reform of the legal system with regard to immigration issues to be approved in Italy. In February 2006, the regional government complied with the law by adopting a three-year programme 2006-2008 to identify actions that would increase the social inclusion of foreigners. This was followed in 2009 by the launch of a second three-year programme. The priority action-items identified by the programmes to foster immigrant integration focus on language skills, antidiscrimination and cultural mediation measures. It introduced 40 indicators which measure the integration level of foreigners in the region to monitor the program and its results.

The figures show evidence of improvements between 2004 and 2008 along most of the indicators. The graduation rate of foreign students in high school increased 13%, the gap between graduation rates of foreigners and Italians in high school reduced to one-eighth and the number of foreign children in socio-educational services (0-3 years) increased by 32%.<sup>35</sup> These results highlight the ability of the region to improve equality, skills and access to services for migrants. These qualities are vital to promoting a diverse, socially cohesive community where the benefits of immigration flow more freely and quickly.

34. Osservatorio regionale sul fenomeno migratorio, *L'immigrazione straniera in Emilia Romagna, 2010* and local interviews  
35. Data from Osservatorio regionale sul fenomeno migratorio

## Recommendations

*Evaluating the performance of the region through the human capital dimensions allows us to focus on the main challenges and provide concrete policy recommendations that could help Emilia Romagna develop and deploy its human capital.*

Despite having reached an advanced level of development, the region lags behind with respect to the expected level of education. This should be seen as an opportunity to improve the region's competitiveness, rather than an obstacle.

Increase the human capital endowment. The region has the potential to increase its human capital stock by increasing the educational attainment level of its workforce. This would translate into higher productivity for businesses. In this respect, the West Midlands approach of showing businesses the benefits of graduates within the company should be a good example for Emilia Romagna (see the West Midlands Case Study on page 53).

It will be difficult to increase the stock of human capital without adjustments in the skill requirements of employers.

Stress the approach promoted within the Technopoles project which aims at sharing knowledge, skills and persons, with an interdisciplinary logic that needs to be valorised. This will lead to a better share of resources between businesses.

Increase the cooperation between universities and entrepreneurs in order to better reach the regional development objectives and to promote a stronger knowledge based economy. Universities' commercialisation of products and collaboration of businesses with research institutions is still low. A good step forward is represented by SPINNER 2013, the programme launched by Emilia Romagna to support individuals interested in developing innovative business ideas in collaboration with universities, research centres and enterprises<sup>36</sup>. Emilia Romagna could also benefit from referencing the Kista approach in this respect (see the Stockholm Case Study on page 48).

The large share of immigrants working in low-skilled jobs for low wages represents an additional constraint on the region's attempt to increase the quality of jobs because they increase the comparative advantages of medium-low technology sectors.

Attract more qualified migrants. Despite the lack of a full coverage statistical system for these figures, Emilia Romagna appears to share some national trends by attracting immigrants without sophisticated competencies or high educational attainment. The region should increase its efforts to attract more qualified immigrants so that beyond the increase in the fertility rate, migration could also produce a growth effect on wealth where, on average, a rise in the human capital level increases GDP per capita.<sup>37</sup>

36. Spinner 2013 is an action of the Regional Operational Programme (ROP) 2007-2013 of the European Social Fund (ESF), Axis IV Human Capital, Objective 2 "Regional Competitiveness and Employment" supported by the Regional Department for Education, Professional Training, University and Research, Labor of Emilia-Romagna Region

37. Tito Boeri, *Immigrazione e crescita* (Milan: Fondazione Rodolfo de Benedetti, 2010).

According to a survey of 41 Italian universities (where 91% of foreign PhD students are enrolled) the main obstacles discouraging students from studying in the country are red tape and low English proficiency even among the public administration.<sup>38</sup>

Emilia Romagna should prepare for the eventual aging of its population by improving the utilisation of its elderly workforce.

Deal with demographic change. In order to counter the negative effects of an ageing population, the region should implement measures promoting longer work lives. These measures should provide incentives to employers to hire older workers and

motivate the elderly to work longer. Promoting life-long learning is fundamental to maintaining high elderly productivity. Highly educated workers have considerably higher chances to remain employed at older ages than those with lower education. Furthermore, frequent training and mobility during one's working life reduces the chances of unemployment and inactivity later in life.<sup>39</sup> If a system of life-long learning functions well, elderly employees could serve as mentors for youth entering their companies. This would enable elderly employees to transfer knowledge and experience, speed up on-the-job training and simultaneously reduce their incentive to retire early by lightening their workload.

38. The survey was carried out by the Fondazione Rodolfo de Benedetti between April and May 2009.

39. Jaap de Koning, *Incentives to Take up Work and Remain at Work Longer* (Rotterdam: Erasmus University, 2005).

## Helsinki

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### Overview

- Helsinki is a top performer in terms of its highly educated workforce and share of demanding, high-skilled jobs. With 40% of its working population engaged in tertiary education, Helsinki exceeds the national average (33%) as well as the European NUTS2 average (23%) and retains a place in the 98<sup>th</sup> percentile of all NUTS2 regions.<sup>40</sup> According to ISCO, 33% of Helsinki's jobs are classified as high-skilled positions compared to 22% in the EU NUTS2 regions.
- Utilisation of human capital among different demographics reveals inconsistencies. While Helsinki remains in the highest percentiles for its female employment rate (97<sup>th</sup>) and elderly (aged 55-64) employment rate (88<sup>th</sup>), its youth unemployment rate (14%) is higher than 45% of the EU NUTS2 regions. Compared with other densely populated regions, this number fares worse as 56% have lower youth unemployment.
- Innovation aids Helsinki's regional competitiveness. Helsinki ranks No. 5 and No. 6 out of 268 European NUTS2 regions in the Regional Competitiveness Index for innovation and overall competitiveness, respectively. This is consistent with our indicator which places Helsinki in the 95<sup>th</sup> percentile among densely populated regions.
- Helsinki's GDP per capita (PPP adjusted) is strong overall; however, comparing figures to other densely populated regions reveals some room for improvement. GDP per capita from

2007 shows a strong overall performance at €33,800. This places the region in the 91<sup>st</sup> percentile of all EU NUTS2 regions. However, the figure falls to the 76<sup>th</sup> percentile when compared to similar densely populated regions.

Helsinki is well endowed with educated human capital and highly demanding jobs and is considered one of the foremost regions in terms of innovation. What policy areas can be addressed to raise GDP per capita to the level of other top performing regions?

### Human Capital Endowment

*Helsinki has a high rate of tertiary education and large share of high-skilled jobs.*

Helsinki boasts one of the most educated working populations in Europe and has the highest share in Finland as a whole. Forty per cent of its workers have taken part in post-secondary education compared with a national average of just 32.7%. This puts Helsinki in the 98<sup>th</sup> percentile of all European NUTS2 regions and not far behind the top performer, Brabant Wallon (48%). According to the ISCO distribution – which measures the region's share of highly-demanding occupations – 33% of the positions available to these skilled workers are highly-demanding jobs. Compared with an EU NUTS2 regional average of 22%, this suggests economic conditions in Helsinki are quite favourable.

40. All figures refer to the NUTS2 region Etelä-Suomi (FI18).



**‘We are a small country, therefore it’s important to gain the best from what we have focusing on education. We have good skills, good people to be hired. It’s not about how clever Finns are, but about how well the society is able to educate the population.’**

*Tatu Laurila, CEO, Greater Helsinki Promotion Ltd.*

Not only does Helsinki have a high share of educated workers, their overall educational attainment level is high as well. The number of graduates pursuing PhD’s has doubled since 1994 (from 315 in 1994 to 671 in 2009).<sup>41</sup> Locals attribute this to the following factors:

1. Lack of time limits. Traditionally, there were no time limits set for students to complete a PhD in Finland. There was also a lack of monitoring of dissertation research. This meant students who could not devote the majority of their time to studies were able to passively pursue a degree without the pressure of finishing within a certain number of years or showing progress in their research. Thus, part-time students entered and remained in the educational system while new students added to their numbers. Students received life-time status as PhD students until their studies were completed. Maintaining status was very easy – even when not actively researching. During the past 4-5 years, there have been some attempted changes (e.g. a tracking system that monitored students’ progresses). “The aim is to finish in four years with a full-time study,” says Dr. Kirsi Phylato, senior researcher at the Research and Development Center for Higher Education.
2. Absence of monetary obligations. Introduction of tuition fees has recently been discussed, but was opposed by students and student unions. The low cost of education reduces barriers to entry and increases the number of students who can afford to pursue a PhD. Says Anna Parpala, project manager at the Centre for Research and Development of Higher Education: “A reason that explains Finland’s high number of PhD students is the absence of time limits and fees.”
3. Education as a cultural and societal priority. More than one interviewee mentioned that the pursuit of higher education is revered in Finnish society. To that end, the Ministry of Education set targets for PhDs and gave a higher weight to PhDs when determining how to distribute government funding. Universities responded by increasing the number of PhD programmes offered. “In the last 10-15 years, the Ministry of Education has given substantial resources to universities to increase the number of PhD students and has decided the exact amount of PhDs to reach in each discipline,” says Ulla Maija Forsberg, vice rector at the University of Helsinki. Locals also expressed the importance of maximising the productivity and quality of the country’s inputs – essentially, making the most out of available resources.
4. Market value and job security. PhD holders in Finland are not restricted to careers in research at universities, but are commonly employed in the private sector. The demand for PhD graduates is evident in that firms such as Nokia have formed their own programmes and few graduates remain unemployed after receiving their degree. “There is almost no unemployment among PhD

41. The data for Helsinki region have been obtained by aggregating the data of eight Universities in the region: University of Helsinki, Helsinki University of Technology, Helsinki School of Economics, Swedish School of Economics and Business Administration, University of Art and Design, Sibelius Academy, Theatre Academy and Academy of Fine Arts. Ministry of Education, Finland.

**‘Childcare is provided by the municipalities, prices are income dependent and there are enough places for all children.’**

*Ulla-Mari Karhu, expert on social environment, welfare and planning,  
Uusimaa Regional Council*

graduates – around 1%. Researchers are quite commonly used as experts and consultants in different fields,” says Dr. Kirsi Pyhälä senior researcher at the Research and Development Center for Higher Education.

### **Human Capital Utilisation**

*Women’s potential is well used and total hours worked by the labour force are above average. However, late labour market entry combined with a relatively early average retirement age reduces the total number of years Helsinki can utilise its highly educated workforce.*

The Helsinki region employs 77% of its female labour force. This places it in the 97<sup>th</sup> percentile of all EU NUTS2 regions and in the 98<sup>th</sup> percentile of other densely populated regions. This is consistent with, and even slightly above, the national average of 74% with Åland at 83% and Helsinki putting up the next highest figure. Locals tend to partially attribute this to an adequate availability of childcare.

In contrast to female employment figures, youth unemployment rates in Finland are high. Helsinki’s youth unemployment comes in at 14%. While this is notable because it is lower than the national average of 19%, it remains slightly higher than other urban regions. Whereas Helsinki enjoys a top spot in performance for women’s employment figures, it comes in at the middle of the pack for youth unemployment rates. 56% of other densely-populated regions manage to employ a higher percentage of their working age youth.

Helsinki performs quite well in terms of elderly (aged 55-64) employment. With an employment rate of 59%, this places it in the 89<sup>th</sup> percentile of all EU NUTS2 regions and in the 83<sup>rd</sup> percentile when compared to other densely populated regions.

Although the stock of human capital is quite high in Helsinki, and in Finland as a whole, the amount of time spent working by this stock is reduced by late entry (reflected in high youth unemployment rates and long duration of studies) and early retirement. The median age for graduation from tertiary education in Finland is nearly 27 and the average retirement age is 62 years (quite low when compared to the EU NUTS2 regions) putting Helsinki in the 41<sup>th</sup> percentile of all regions.<sup>42</sup> These figures limit the benefits that such a highly-educated population can provide.

### **Human Capital Productivity**

*Prioritising innovation and research in both the private and public arena enhances Helsinki’s productivity. Concentration of financial capital among large corporations in this area may hinder the potential of small- and medium-sized entrepreneurs.*

Helsinki is a leader in innovation among its European and densely-populated counterparts. Our innovation indicator places it in the 97<sup>th</sup> percentile of all European NUTS2 regions. Similarly, the Regional Competitiveness Index for innovation places Helsinki in the No.5 position among 268 regions. This success is partly driven by public expenditure, but

42. OECD, *Highlights From Education at a Glance 2010*, (Paris: OECD, 2010).



**‘Not only is the private share [of R&D expenditure] very high, the state’s participation is also quite considerable. Companies see that it’s very fruitful to invest in R&D and follow the example of Nokia in directing funds towards research.’**

*Olli-Pekka Hatanpää, planning manager, Uusimaa Regional Council*

also by the efforts of private corporations. Further evidence of Helsinki’s emphasis on innovation can be witnessed by partnerships and cooperation between universities, research centres, and the public and private sectors. The triple or quadruple helix systems – which are joint ventures that attempt to facilitate user-driven innovation – are good examples of such partnerships. University-level focus on research, competition for top students and international reputation also

speaks in favour of the local priorities for innovation and growth.

While Helsinki’s innovative prowess is well established, there may be room for growth through further support of small- and medium-sized entrepreneurs. Locals have suggested that these SME’s lack venture capital and foreign direct investment. Efforts to increase funding in these areas could increase Helsinki’s productivity.

### **Best Practice from Helsinki: Entrepreneurship and Higher Education**

#### **Aalto Entrepreneurship Society**

Encouraging youth entrepreneurship became a regional goal after the recession of the early 1990s because it was believed that entrepreneurship helps create jobs and economic growth.<sup>43</sup> However, even for well-qualified students, entrepreneurship remains less attractive than traditional positions in large corporations.<sup>44</sup> To gain ideas on how to change this some universities included traveling to other countries in order to learn from their entrepreneurial culture.

On one of these trips in 2008, a group of students from the Helsinki School of Economics traveled to the United States to examine how entrepreneurship was supported by American educational institutions. Upon return, their vice-rector suggested doing a concrete project in lieu of the traditional summary paper. Based on this suggestion, the group established the Aalto Entrepreneurship Society in 2009. They began by arranging events with experienced entrepreneurs and fellow students who wished to develop their business ideas. The society gradually expanded and increased the number of events offered including meetings with more entrepreneurs as well as “pitching” competitions to convince others of their business ideas. Major initial obstacles identified by members of the Aalto society included limited access to public funding and support from the university. After presenting these results, they eventually received support from the Design Faculty and later the rector of Aalto University granted the society the use of a 700 square meter Aalto Venture Garage. The society has seen an increase in student interest in entrepreneurship which it mainly tracks via its Facebook group. Current estimates place membership at 5,000 students and around 400 students usually attend events. Attendance at meetings has also fostered the development of students’ startup projects.

43. Antti Pelkonen, *The Finnish Competition State and Entrepreneurial Policies in the Helsinki Region*, (Helsinki: University of Helsinki, Department of Sociology, 2008).  
44. Tommi Pukkinen, Jarna Heinonen, Anne Kovalainen and Pekka Stenholm, *Global Entrepreneurship Monitor: Finnish 2008 Report* (Turku School of Economics, A 1/2009).

**'The strategy of the University of Helsinki focuses on top research, interaction with society, internationalisation (e.g. attraction of foreign staff, researchers, and students), and visibility on a local and global level.'**

*Ulla Maija Forsberg, vice rector, University of Helsinki*

One example is a project formerly called Cityard – currently known as Heimoi. It is a location-based web service that engages local activities in the neighbourhoods of the city.

### **Government Targets for PhD's**

In 1987, the OECD released a report concluding that the postgraduate educational system in Finland was poorly organised.<sup>45</sup> In 1989, the Ministry of Education responded by forming a Postgraduate Education Committee to draft a new plan for researcher training. The committee submitted recommendations to universities citing the need to double PhD output and to form special programmes to improve training in all faculties.<sup>46</sup> Shortly after, in the early 1990's, Finland faced an economic decline characterised by 15% unemployment and declining industrial output.<sup>47</sup> In 1994, the Academy of Finland sought to increase educational opportunities for youth who had become unemployed during the economic crisis and simultaneously recommended that graduate schools, a new form of post-graduate programme, be implemented with funds from the state. Reforms were put in place that adjusted the way institutions were funded and set their budgets. This involved degree targets being set by government agencies (which gave preference to PhDs), but allowed individual universities to allocate resources according to their own prerogative.

This case represents an effective policy intervention to increase the quality and attainment levels of higher education. As a result of the programme, the number of PhD's awarded increased from 402 in 1989 to 1,527 in 2008. The number of people employed in research and development fields increased by more than 50% from 1991 to 2001. Additionally, PhD students enrolled in graduate school post-doctoral programmes obtain their degrees at an earlier age than those from other forms of PhD programmes.

### **Recommendations**

*Evaluating the performance of the region through the human capital dimension allows us to focus on the main challenges and provide concrete policy recommendations that could help Helsinki develop and deploy its human capital.*

Overall economic performance in Helsinki is exemplary compared to the European NUTS2 regions. Helsinki is a leader in terms of endowment with human capital. There appears to be some room for growth

in terms of GDP per capita which might be remedied with increased utilisation of youth and elderly and by focusing even stronger on high value added activities.

Policies should be adopted aiming to increase the retirement ages and reduce the labour market entry ages of Helsinki's highly educated workforce.

Innovation and R&D are key to Helsinki's economy. Continuing support of young

45. Sakari Ahola and Osmo Kivinen, *Postgraduate Education in Europe: Harmonising with a Dissonance?* (Linköping: University of Linköping, 2001).

46. OECD, *Research Training: Present and Future* (Paris: OECD, 1995).

47. Statistics Finland, *The Growing Years of Finland's Industrial Production*.

entrepreneurs could exploit some untapped potential in these areas.

Fostering youth entrepreneurship through the creation of the Aalto society is an interesting and valid project. However, it could be improved through further support and funding from the region. This would serve to engage graduates while simultaneously maintaining and enhancing the competitive strength of an economy through job creation and increasing utilisation of Helsinki's highly skilled workforce.

Next to young entrepreneurs it might make sense to look at more senior employees with the potential of becoming an entrepreneur. This could include MBO, spin-offs or the development of businesses based on university research.

An interesting case for Helsinki to reference to increase the partnerships between businesses and universities that result in new ideas and products would be the Kista approach in Stockholm (see the Stockholm Case Study, which begins on page 48).

# 'In Spain, all parents wanted their kids to go to the University'

Maria Antonia Del Burgo, director, Government of Navarra

## Navarra

### Overview

- Navarra is a consolidated and dynamic region. As a hub of renewable energies in Europe, it is among the top 10% of the wealthiest European NUTS2 regions with a GDP per capita of €32,900.<sup>48</sup>
- Navarra has strong educational attainments and met the Lisbon objectives for its employment rate ahead of schedule in 2006. However, the relative lack of demanding, well-paid jobs prevents the region from fully exploiting the benefits of its graduates. The ISCO distribution shows only 20% of all jobs in Navarra are categorised as highly-demanding positions. Instead, the majority of jobs fall in the medium- to low-skilled sectors where technical personnel with specific theoretical and practical training make a better fit than tertiary graduates.
- The region's efforts to increase its share of skilled workers to meet labour demand are a good first step. However, future efforts should address graduates' job expectations in order to avoid a detrimental pattern of brain drain which would be difficult to reverse.

Navarra is one of the wealthiest regions in Europe in terms of GDP per capita. What policy areas can be addressed to sustain its position among the other European NUTS2 regions in the long-run?

### Human Capital Endowment

*A large share of Navarra's workforce is highly educated. However, this still does not match the mix of available jobs well.*

Until recently, vocational training in Navarra – and all of Spain – did not enjoy a particularly positive reputation. Interviews with locals suggest that the population doubted whether engaging in vocational training would provide the best opportunities in the future. This may have contributed to the demand for tertiary education and thus, the build up of a highly educated human capital stock in the region.

Educational attainment measured in share of ISCED “high” shows that 38% of the working age population have engaged in higher education. This performance is only surpassed by 3% of the EU NUTS2 regions. Unfortunately, the education attainment levels in Navarra are not aligned to the skills demanded by existing employers. According to ISCO – which measures the region's share of high-demanding occupations – the majority of the jobs in the region are classified under “low” (44%) and “medium” (35%). This job market mismatch prevents Navarra from fully exploiting the potential of its human capital stock.

### Human Capital Utilisation

*Total hours worked is high compared to other regions, but there is room to improve the utilisation of women, youth and the elderly.*

Navarra's labour force works 67% of the available working hours. This figure for total hours worked is higher than 80% of all the European NUTS2 regions and

48. Its GDP occupies the 89<sup>th</sup> percentile among all EU NUTS2 regions.

## 'Companies, research institutes and universities tend to follow different direction'

*Emilio Huerta, professor, Public University of Navarra*

suggests that Navarra makes good use of its human capital. However, utilisation of vulnerable groups such as women, youth and elderly should be considered before drawing conclusions about the region's human capital utilisation.

The female employment rate in Navarra is well above the national average of 56% and outreaches the Lisbon Strategy goal of 60% with 64% of women employed.<sup>49</sup> However, this rate is worse than in most EU NUTS2 regions. 57% of the EU NUTS2 regions have a higher share of women working. Moreover, 27% of women working have part time contracts compared with 3.5% of men. So-called "glass ceilings" in the work environment are still quite common and lead to vertical segregation. As a result, women tend to concentrate in the lower professional categories. Women only account for 31.3% of company director and administration positions in Navarra. This may indicate that division of care and household duties still follow strict gender patterns which prevent women from acquiring the highest level positions.<sup>50</sup>

Despite the apparent mismatch between the overly educated workforce and the skills required by businesses, the youth unemployment is only equal to 12%. This is relatively low given that only 30% of the other NUTS2 EU regions manage to achieve a better result. However, it indicates some room for improvement.

Only half of Navarra's elderly population (aged 55-64) participate in the labour force. Whether this is due to policy interventions, a general culture of preference for younger employees or other factors could not be verified, but with the development towards an aging population, the need for more involvement of older employees will rise and the region should take this into consideration.

### **Human Capital Productivity**

*Navarra invests more in R&D than any other region in Spain, but lags behind other European regions.*

In 2009, Navarra invested 2.13% of its GDP in R&D expenditures. This places it above any other region in Spain with Madrid and the Basque region following closely at 2.06%.<sup>51</sup> The innovativeness of the region is quite high compared to the nation's average performance. According to our innovation scoreboard, based on public R&D expenditures, business R&D expenditures and EPO patents, Navarra scores 49% higher than the national average.<sup>52</sup>

While Navarra fares well compared to the national average, its performance is less impressive on a European regional basis. 48% of all EU NUTS2 regions post higher innovation scores whereas 47% of similar EU thinly populated regions perform better.

49. The average refers to the average performance of the Spanish regions at NUTS2 level.

50. Government of Navarra, ESF 2007-2013. *Programa Operativo Comunitario Foral de Navarra* (Pamplona: Government of Navarra, November 2007).

51. Innovation Agency of Navarra (ANAIN), *Estadística Sobre Actividades en I+D 2009*.

52. The average refers to the average performance of the Spanish regions at NUTS2 level.

**‘Navarra is now one of the most industrialised regions in Spain with 28% of its jobs in the industrial sector compared with a national average of 16-17%’**

*Jose Javier Armendariz, director general, National Centre for Renewable Energy (CENER)*

### **Best Practice from Navarra: New Economic Models, Better Job Matching and Entrepreneurship**

#### **MODERNA: The New Economic Development Model for Navarra**

The Europe 2020 growth strategy can be successful only if the regions embrace it as their own. The Navarra region is a good example to emulate in this regard. Although it is one of the wealthiest and most cohesive regions in Europe, Navarra recognised the necessity to move from an industrial economy to a knowledge-based economy in order to maintain and enhance its economic and social development in the 21<sup>st</sup> century.<sup>53</sup> In November 2008, a committee of representatives of the government of Navarra and other political, social and educational actors carried out a diagnosis to analyse the current status of Navarra’s economy and to identify its main challenges. Some of the weaknesses identified were low entrepreneurship activity, an insufficient command of English, a low number of scientists and a poor cooperation between companies, universities and technology centres, all of which could prevent a shift or make it more difficult.

To address the weaknesses and move forward, Navarra launched the New Economic Development Model MODERNA in October 2010. MODERNA is a medium and long term strategic plan in line with the Europe 2020 Strategy, aiming at allowing the region to successfully compete not only locally but worldwide. It has three main objectives for the future of Navarra: (i) greater prosperity, (ii) greater quality of life and (iii) greater sustainability measured by GDP per capita, the Human Development Index and Environmental Sustainability index,<sup>54</sup> respectively. MODERNA’s success depends on the improvement of seven transversal factors considered as critical. Six of the seven are focused on human capital policy: (1) talent and human capital, (2) entrepreneurship, (3) research and development and innovation, (4) public administration efficiency, (5) internationalisation and (6) collaborative environment.<sup>55</sup> Each of these factors has actions defined and their effectiveness will be tested by a system of continuous evaluation and monitoring of objectives along set timeframes.<sup>56</sup> Programme administrators developed a set of 25 indicators which will serve to measure the progress of MODERNA and the gap with the set goals.

Navarra’s regional government, private companies, social actors, educational system, universities and technology centres are the main drivers involved in the model development. They have the responsibility to make the change possible in their areas of work. These joint efforts are likely to help the region to be better equipped for competing

53. Innovation Agency of Navarra (ANAIN), *New Economic Development Model for Navarra. Executive Summary* (Pamplona: ANAIN, 2010).

54. An European synthetic indicator of economic-environmental sustainability is now under construction. Until available they will use a partial indicator: the reduction of energy consumption.

55. The seventh transversal factor which must be improved for the development of the New Model is energy infrastructure.

56. Innovation Agency of Navarra (ANAIN), *New Economic Development Model for Navarra. Executive Summary* (Pamplona: ANAIN, 2010).



**‘The MODERNA strategy on one hand identifies the problems to tackle and the sectors to invest in, on the other it focuses on transversal factors, such as Human Capital, to improve the productivity of Navarra and its prosperity.’**

*Emilio Huerta, professor, Public University of Navarra*

**Chart 1: Sample of indicators to measure the progress of MODERNA**

Indicator	2010	2030
Level of Educational achievement (PISA)	502	550
Level of English	7%	90%
Investment in R&D	1.92%	4%
Export (Million of Euros)	5.450	10.000
Exporting companies	711	2000
Employment	284.000	365.000
Number of new companies	943	1.600

Source: New Economic Development Model for Navarra

globally in the knowledge economy. In short, MODERNA is attempting to construct a people-oriented, idea-based economic system, a system which will be attractive for business as well as social development and which will function as a complete system.<sup>57</sup>

### **Improving job market matching**

The mismatch between labour supply, made up of graduates with a theoretical background, and labour demand, generated by local industry seeking workers with technical and vocational qualifications, represented a dangerous constraint to regional competitiveness and growth. In 2000, the regional government created the Navarra Council for Vocational Training to tackle this issue. Its purpose was to improve the vocational training system and its reputation by increasing youth awareness of the high probability that the graduates of this system would find a qualified job afterwards. Moreover, programme administrators initiated a study among employers to identify their needs for skilled labour. The programme made a particular effort to offer specialised vocational training programmes to support successful regional economic sectors. The creation of CENIFER, a training centre for the development of skilled personnel for the renewable energy sector, is a prime example. Through these initiatives, Navarra has managed to reduce the demand-supply skills mismatch noticeably. Between 2000 and 2008, the proportion of skilled workers in its labour force increased by more than 50%, easily outpacing the increase at the national level (28%).

### **Entrepreneurship**

Tribucan is an educational project conducted by Caja Navarra which is part of Banca Civica. This unique programme fosters solidarity and entrepreneurship among children and is a part of the educational curricula in more than 60 schools. One of its most impressive achievements is that all of the groups involved – NGOs, entrepreneurs, teachers, educators, CAN employees – collaborate voluntarily. The Tribucan programme

57. Ibid..

**‘We took giant steps. Now, people who want to learn a job know that they have a specific path and they can also go to University afterward.’**

*Maria Antonia Del Burgo, director, Government of Navarra*

lasts for one school year. It begins by introducing the students to a developing country and an NGO that works in the country. Later, they gain a closer view of entrepreneurial activities through personal experience through visits to an entrepreneur's enterprise. During the final stages, they create their own enterprise and draft a business plan. The profits they obtain are sent to the NGO they studied at the beginning of the course. Since 2007, over 7,000 students have participated in Tribucan, as well as 250 educators, 70 entrepreneurs and 120 CAN professionals who have worked as subject tutors. Tribucan's value has also been recognised by the Market Place–Spain's main event regarding Corporate Social Responsibility (CSR). The event is organised by Forética at Madrid's Museo del Ferrocarril (Train Museum). In 2010, the Tribucan project won an award by obtaining the highest number of votes in the Dialogue with Interested Parties category at Spain's Corporate Social Responsibility (CSR) event.<sup>58</sup>

The Centro Europeo de Empresas e Innovación de Navarra, S.A. (CEIN, S.A.) was established by the Government of Navarra in 1988. Its main mission was to diversify the industrial and economic fabric of Navarra and contribute to the region's development by stimulating entrepreneurship, creating and consolidating new businesses and promoting innovation in small and medium sized companies. The centre helps entrepreneurs turn their ideas into viable, consolidated and innovative businesses. It trains entrepreneurs to be effective, committed to innovation and open to change. CEIN promotes entrepreneurial values among students of all ages. It identifies new business opportunities for the region and introduces innovation in SME's. CEIN carried out a study to identify strategic sectors in the region. As a result of this study, CEIN Navarra has stimulated the creation of clusters in auto, ICT and renewable energies and linguistic competences over the last few years. Since 1991, 1,977 companies and 4,285 jobs have been created through its support.<sup>59</sup>

SODENA is the business development organisation operated by the government of Navarra. It owns a private equity fund and supports the growth of business projects and investments in the region through venture capital strategy. SODENA was instrumental in the region's effort to enter new sectors. Private companies would have hesitated to enter without government support because of their high investment risks. A success story, in which SODENA had a key role, concerns the renewable energy sector. In 1989, through SODENA, the regional government bought a stake in EHN (Energía Hidroeléctrica de Navarra). EHN was founded by Esteban Morras with the goal of being a leader in the development process of renewables in the region.<sup>60</sup> SODENA's initial involvement encouraged other stakeholders to invest based on the rationale that the new sector would lead to a lasting economic impact on the region. Navarra currently produces

58. "Caja Navarra Wins Two Awards at Spain's CSR Event," *CajaNavarra.es*, 30 September 2010.

59. European Business & Innovation Centre Network, *Case Study – CEEI Navarra*.

60. The EHN was founded both with public (48%) and private capital (52%). See especially Miguel Albertolchaso, "Wind Power Development in Spain: The Model of Navarra," *DEWI Magazine* No.17, 2000.



## 'The usage of SODENA was pivotal. SODENA also looks at social and societal return, not only financial return.'

*Jose Javier Armendariz, director general, National Centre for Renewable Energy (CENER)*

approximately 65% of its electricity from renewable-energy. This figure is matched internationally by very few regions with as high a degree of socioeconomic development as Navarra which itself lies above the European average.<sup>61</sup>

Currently the region is repeating what they did with renewable energies this time in the biomedical sector which in 2010 provided about 1000 job opportunities in Navarra, above all in the area of R&D. SODENA once again had a key role in the development and consolidation of this high-risk, high-returns sector through a direct investment in most of the biomedical companies currently operating in the region. The growth of this well-established and recognised cluster is the result of the active participation of many different drivers. Caja Navarra, the main financial institution in the region, invests in the biomedical sector and so do many other private investors. Further critical support comes from the Innovation Agency of Navarra (ANAIN)<sup>62</sup>; since its creation in 1999 this public enterprise made proactive efforts to promote the quantitative and qualitative increase of innovation in Navarra for example by managing the creation and the development of promising clusters, communicating and disseminating the benefits of innovation to the Navarra society and coordinating the definition of the development model MODERNA, its start-up, monitoring and constant updating.

### Recommendations

*Evaluating the performance of the region through the human capital dimension allows us to focus on the main challenges and provide concrete policy recommendations that could help Navarra develop and deploy its human capital.*

While Navarra posts strong figures for GDP per capita, more companies with high level jobs are needed to support the skill set of the region. Only jobs like these will enable the region to raise GDP per capita further and provide jobs for highly skilled graduates and its normal work force.

Attract and create high quality jobs. There is room for improved utilisation of Navarra's human-capital stock. Efforts should be made to increase the quality of the jobs available to its highly educated workforce. This would serve a number of purposes. It increases the attractiveness of the region and reduces emigration of skilled workers ("brain drain"). It also increases the human capital stock of this group through learning on the job which tends to be higher for more complex and demanding jobs. Indeed, it is apparent that the region has recognised the importance of such initiatives through its TALENT Declaration which states four specific regional goals

61. Government of Navarra, ANAIN, *Renewable Energies in Navarra*, (Pamplona: Government of Navarra, 2010).

62. Government of Navarra, ANAIN, *Biomedicine in Navarra*, (Pamplona: Government of Navarra, 2010).

with regards to human capital (creation and identification, attraction, retention, and activation). While the Declaration cites the significance of these goals, concrete action and implementation of programmes should follow.

- We suggest referencing the MBA for the automotive industry, tailored on industry needs of managers in Bratislava (see the Bratislava Case Study on page 17).
- The West Midlands approach of showing businesses the potential contributions of graduates also provides a useful example of policy options (see the West Midlands Case Study on page 53).
- Assist especially the SMEs by enabling the set-up of clusters. More consideration should be given to the area's large group of SMEs. The region should attend to specific challenges such as: lack of financial, human and organisational resources and difficulties in collaborating with other firms. One strategy could be the development of business clusters that facilitate the development and access to technologies and innovations that are traditionally more difficult for small companies to accomplish on their own. The cluster approach fostered by the MODERNA strategy, in order to increase the competitiveness of several industries such as renewables, biomedicine and mechatronics, is a good step forward and should also create more complex jobs with the positive effects on the

human capital stock highlighted above. Navarra could benefit from referencing Stockholm's creation of Kista in this respect (see the Stockholm Case Study on page 48).

The region should implement measures promoting longer work lives. These measures should provide incentives to employers to hire older workers and motivate the elderly to work longer. Promoting life-long learning is fundamental to maintaining high elderly productivity. Highly educated workers have considerably higher chances to remain employed at older age than those with lower education. Furthermore, frequent training and mobility during one's working life reduces the chances of unemployment and inactivity later in life. Therefore, a life-long learning strategy is certainly important.<sup>63</sup> If a system of life-long learning functions well, elderly employees could serve as mentors for youth entering their companies. This would enable elderly employees to transfer knowledge and experience, speed up on-the-job training and simultaneously reduce their incentive to retire early by lightening their workload.

Foster young entrepreneurs. Fostering youth entrepreneurship could be a way to use graduates effectively while simultaneously maintaining and enhancing the competitive strength of the economy. The entrance of a new firm into a particular market forces the incumbent firms to react by improving

63. Jaap de Koning, *Incentives to Take Up Work and Remain at Work Longer* (Rotterdam: Erasmus University, 2005).

efficiency or introducing innovation.<sup>64</sup> The two initiatives of Navarra are good steps forward. This is also consistent with the region's MODERNA framework which specifically points to enhancing the entrepreneurial spirit of individuals as a main root for fostering education, talent and human capital.

- A best practice example for fostering youth entrepreneurship is the creation of the Aalto society in Helsinki (see the Helsinki Case Study on page 28).

64. Isabelle de Voldere, Eva Janssens, Jonas Onkelinx, Leo Sleuwaegen, *The Creative Economy Challenges and Opportunities for the DC Regions* (Ghent: Flanders District of Creativity, 2006).

### Overview

- The Sofia region is a best practice example of human capital utilisation in Europe in terms of hours worked. Its citizens work 76% of the hours available, putting the region in the 99<sup>th</sup> percentile of all EU NUTS2 regions.<sup>65</sup> Part-time work is minimal.<sup>66</sup>
- Sofia also fares well concerning human capital utilisation measured by the number of people working. Youth unemployment is impressively low at 7% with only 8% of the European NUTS2 regions performing better. Female employment outreaches the original Lisbon Strategy goal of 60% and the national average of 64%, with 74% of women employed.
- Sofia performs better than 92% of the European NUTS2 regions in its stock of human capital. Thirty-three per cent of the working population is engaged in tertiary education.
- Although Sofia's economic development significantly outstrips the other Bulgarian regions, its GDP per capita performance is poor by comparison. The region only reaches the 16<sup>th</sup> percentile of all EU NUTS2 regions in this category.

With such positive Human Capital Indicators, what is stifling Sofia's development, preventing it from increasing its GDP per capita and causing it to lag behind other regions in these two areas?

### Human Capital Endowment

*Sofia has a high rate of tertiary education, but very few high skilled jobs leading to a low*

*GDP per capita. Problems of high drop-out rates and low quality of education hinder the rate of development.*

Educational attainment in Sofia is higher than Bulgaria as a whole; however, investigating other regional factors reveals underlying problems. According to the ISCO distribution, the quality of jobs available is noticeably poor. Nearly half of the positions are classified as low-skilled (40%) and the share of demanding jobs comes in at only 26%. Given the high weight that the quality of jobs has in determining GDP performance in the Eastern regions cluster, the ISCO distribution sheds some light on why there appears to be a contradictory combination of relatively high human capital utilisation and tertiary education in Sofia and low GDP. Even though Sofia has a high rate of tertiary education, it has not yet managed to transform this into high-skilled quality jobs, which basically comes down to people working in positions below their skill set.

The high school drop-out rates among young people is an additional regional factor which may explain Sofia's low GDP performance. High drop-out rates contribute to the migration of skilled workers and to youth unemployment in Sofia. Large quantities of early school leavers reduce the area's ability to attract knowledge-oriented businesses which would invest in the region. Tackling this issue could increase the quality of jobs available and discourage many graduates

65. All figures refer to the NUTS2 region Yugozapaden (BG41).

66. 2.6% of women working have part time contracts compared to only 1.4% of men.

**‘The municipality supports the process of desegregation, like providing education for children living in ghettos, so they are taken by buses and put in mixed schools. However Roma communities inclusion still represents an huge issue for Sofia.’**

*Milen Milanov, national coordinator of the Decade on Roma Inclusion 2005-2015*

from leaving in search of more attractive career opportunities abroad.

Also from another perspective, a high number of drop-outs is one of the region’s main challenges. Young people lacking educational basics will find it difficult to get jobs that provide adequate pay and security. Many of them will stay unemployed or become employed in very low skilled and insecure jobs, making it difficult to set up a decent life. These circumstances, with little hope of a full time job and no chance of further education, have the potential to tempt young people to either enter into criminal behavior or work on the black market in order to provide for themselves and increase their quality of life.

Finally, issues exist in terms of quality of available education and a mismatch between skills taught in schools and universities and those required by businesses. According to many local employers, schools and universities are not able to provide students with the skills and competences required by the job market, especially practical skills.

### **Human Capital Utilisation**

*Women’s potential is well used, but lack of child-care facilities endangers this success and simultaneously reduces elderly employment. Insufficient integration and education of Roma endangers further development.*

Perhaps following their communist heritage, a large number of women – even mothers – work full-time. However, the

municipality lags behind in providing childcare. Kindergartens exist, but as the demand is higher than the number of places available, children are usually left with their grandparents. In turn, the grandparents must sometimes give up their jobs or retire early. The so-called “babasitter phenomenon” thus negatively affects elderly employment. While elderly employment is not extremely low at 49%, Sofia lags behind 40% of the European NUTS2 regions. Some businesses, like Siemens, provide childcare for employees; however, the necessities of the families cannot be covered by these isolated cases.

Another issue for Sofia, as well as Bulgaria as a whole, is the insufficient integration of Roma communities. Public services for the Roma are scarcer and of lower quality than for the general population. Access to education and the job market is also more difficult.

The low inclusion of the Roma people means that only very few are economic actors, able to increase the region’s wealth. Therefore, the untapped potential of this group would be quite high if they succeeded in acquiring a high level of education. In Sofia, there are more than 100,000 Roma, and they form the youngest population with the biggest share of working aged people, according to Milen Milanov, national coordinator of the Decade on Roma Inclusion 2005-2015.

### **Human Capital Productivity**

*Lack of modern infrastructure and strong internal migration hamper human capital productivity.*

According to the Regional Innovation Scoreboard, Sofia follows the national trend of rather low innovativeness. Poor infrastructure deprives the environment of its potential for high human capital productivity.

Existing issues have been made worse by an inflow of migrants, especially from other Bulgarian regions, which have made Sofia over-crowded and rendered its infrastructure insufficient to cope with so many people.

## Best Practice from Sofia: New Skills and New Jobs

### Beautiful Sofia

In July 1997, the Municipality of Sofia and UNDP commenced implementation of a pilot project – Beautiful Sofia – which was designed to address the city’s unemployment problem by funding works dedicated to improving its dilapidated urban buildings. The project simultaneously generated temporary jobs, refurbished historic facades, monuments and parks, and trained long-term unemployed men and women in basic construction and “Start Your Own Business” skills. The pilot project proved to be a helpful contribution towards alleviating the city’s unemployment problem and a successful solution to reconditioning a rundown urban landscape. The project received local and international funding. UNDP allocated €155,625, while Sofia Municipality contributed €219,375.

The project is interesting as an example of good practice because it introduces a new planning approach to urban renewal through which unemployed individuals are recruited into the labour force and a positive social outcome is achieved. The project also sought to improve the situation of marginalised groups. It succeeded in involving many such groups with a majority of Roma and ethnic Turks being represented. Therefore, the programme’s achievements should also be evaluated in terms of social integration and reintegration of the long-term unemployed involved in the programme. Moreover, Beautiful Sofia provided support for the development of the private sector and entrepreneurship in the field of construction.

Its achievements inspired the conception of Beautiful Bulgaria which started in 1998 and targeted four of Bulgaria’s largest cities in addition to Sofia. The success of Beautiful Bulgaria I paved the way for a larger and still more ambitious second phase called Beautiful Bulgaria II, which included six additional cities. The total temporary occupation created at the time of the evaluation mission (first half of December 2000) thus reached 23,582 people per month. Evaluations updated in June 2007 show this figure later increased to 45,609. Of these, 12,453 were from minority groups. Moreover, 10,471 people were reported to have found long-term employment after the project and 12,475 unemployed individuals were provided with vocational training.<sup>67</sup>

67. UNDP, *Beautiful Bulgaria Programme. Project Factsheet* (New York: UNDP, 2007).



**‘The aim is to move the region toward a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion.’**

*Kristina Petkova, sociologist and social psychologist, Institute of Sociology*

#### **Municipal Guarantee Fund for Small and Medium Enterprises**

Small- and medium-sized enterprises (SMEs) generate new jobs, while helping to increase the competitiveness of the market through high and sustainable economic growth. Unfortunately, fostering entrepreneurship is often difficult because of limited access to credit for youth and other disadvantaged groups. The purpose of the Municipal Guarantee Fund for Small and Medium Enterprises (MGFSME) is to actively support and encourage SMEs within the Sofia Municipality, which is a prerequisite for increased economic efficiency of business. The Fund provides guarantees to SMEs especially those falling under the following categories: female entrepreneurs, disabled individuals or young entrepreneurs up to 30 years old. The Fund is also useful as a tool to improve the innovativeness of the region. In Business projects involving information technology and information services are considered with priority. From its inception and to the present day the MGFSME has examined 348 requests for guaranteed support and has made a commitment to 276 SMEs for loans totalling €18,744,398.<sup>68</sup> Says Irina Yordanova, chair of the managing board of Sofia’s Municipal Guarantee Fund for SMEs: “So far, the default rate has been zero. The business plans of applicants are examined by experts in risk analysis within the fund. However, there is a further check by the banks.”

The Fund also consults SMEs in accounting services, legal services, management services, services related to obtaining international certificates – ISO 9001, 14001 awarding of initial credit rating, services for development of projects as well as applying for open grants in operational programmes. Clients do not pay for consultation. Other minor initiatives to foster youth entrepreneurship involve some credit institutions like Procredit Bank. This approach targets entrepreneurs and helps them with the provision of bank services free of charge for young people up to 25 years of age.

#### **Sofia 2020**

The Europe 2020 growth strategy focuses heavily on human capital as a driver of competitiveness. However, unless the strategy is developed at a regional level, it will struggle to be successful. Indeed, each region should make itself available for connection to the Europe 2020 growth strategy. The Sofia region is a good example to emulate in this regard. The region has developed the Sofia 2020 strategy as a platform to better reach the Europe 2020 targets. It addresses regional issues concerning human capital development, such as high number of drop-outs, the lack of qualitative components in the education system, and too few adults involved in life-long learning.

#### **Sofia 2020:**

- Promote early childhood development programmes to support school readiness
- Intensify efforts to prevent early school leaving and boost retention in education and training

68. European Central Bank, 13 December 2010.

- Complete ongoing school education reform to improve quality and relevance
- Encourage tertiary participation
- Enhance labour market relevance of university degree programmes
- Pilot-test adult learning approaches
- Ease alternative entry routes into higher education for adults<sup>69</sup>

## Recommendations

*Evaluating the performance of the region through the human capital dimension allows us to focus on the main challenges and provide concrete policy recommendations that could help Sofia develop and deploy its human capital.*

The economy is not strong enough to support the skill set of the region. More companies and especially companies with high-level jobs are needed in the Sofia region. Only jobs of this type will enable the region to raise GDP per capita, be attractive for returning emigrants and provide jobs for highly skilled graduates and normal work force.

Fostering (youth) entrepreneurship could be a way to retain graduates while simultaneously maintaining and enhancing the competitive strength of an economy. The entrance of a new firm into a particular market forces the incumbent firms to react by improving efficiency or introducing innovation. A best practice example for fostering youth entrepreneurship is the creation of the Aalto society in Helsinki (see the Helsinki Case Study on page 28).

Improving vocational training and creating a specialised vocational training

centre like CENIFER in Navarra could attract foreign industries by establishing a base of skilled workers (see the Navarra Case Study on page 34). This would alleviate the lack of experts in some sectors and entice foreign companies to invest in the region which would benefit high and low wage earners.

A major hurdle to increased foreign investment seems to be the difficult and non-transparent administration procedures in public offices. The issue of corruption was also mentioned several times in the interviews as representing a major hurdle for the development of independent businesses.

Beautiful Sofia and now Beautiful Bulgaria are interesting and valid projects. However, they could be improved and tailored to the new needs of the regions. According to our calculations, increasing the quality of jobs would have more visible effects on regional wealth and growth. Good examples include the two initiatives of the West Midlands in the regeneration sector (see the West Midlands Case Study on page 53). Sofia could enlarge the target groups of the project by providing more demanding positions in the urban renewal sector for graduates.

69. Based on interview with Kristina Petcova held in July 2010.

This would serve two-fold by retaining graduates – which is a driver of growth in the Eastern European regions – and improving the region’s image and infrastructure.

Develop approaches to tackle youth unemployment in order to improve future outcomes. Lack of labour market entry for young people will hinder their ability to lead self-sufficient lives. This will make it more difficult for them to support their children, invest in their homes or become active members of society.

Reducing drop outs is therefore vital for the region. Building childcare facilities could create learning environments for the very young. This would enable them to build an educational foundation, especially in those cases where parents are incapable of providing guidance. This would also foster the permanence of elderly in the job market and increase female employment (although already high). Both of which are important as examples for the young to follow.

If economic growth leaves groups of people marginalised – without a chance to participate in the benefits of growth – desperation and despair will take over and lead to a parallel society. This has already happened with the Roma people many decades ago and is developing into a major difficulty for Sofia and Bulgaria as a whole.

Increasing the integration of Roma communities would prevent the waste of economic development potential and help avoid security problems. Although Bulgaria joined the Decade of Roma Inclusion 2005–2015, integration also needs to be implemented at a regional level to be effective.<sup>70</sup>

The Employment Pathway developed by the West Midlands to deal with refugees could be replicated in Sofia to cope with the exclusion of Roma people (see West Midlands Case Study on page 53).

70. The Decade of Roma Inclusion 2005-2015 is a political commitment by European governments to improve the socio-economic status and social inclusion of Roma. See <http://www.romadecade.org/about>.

## Stockholm

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### Overview

- The Stockholm region is among the most competitive regions in Europe. The Regional Competitiveness Index ranks it No. 5 among the 268 NUTS2 European regions. Its GDP per capita is among the highest in Europe reaching €41,000 and puts the region in the 98<sup>th</sup> percentile of all the EU NUTS2 regions next to Vienna (97<sup>th</sup> percentile) and Bratislava (97<sup>th</sup> percentile).
- A well-educated labour force, a high share of demanding jobs and a strong focus on innovation contribute most in making the Stockholm region one of the most successful regions in Europe.
- Utilisation of human capital presents a weakness that could undermine Stockholm's long-run competitiveness. While Stockholm is in the 99<sup>th</sup> percentile for female and 100<sup>th</sup> for elderly employment rates among the European NUTS2 regions, youth unemployment presents itself as an obstacle to elevated utilisation.

Stockholm is considered one of the foremost regions in Europe in terms of competitive strength. What policy areas can be addressed to sustain Stockholm's competitiveness in the long-run?

### Human Capital Endowment

*Educational attainment measured in share of ISCED high shows that 39% of the working population in Stockholm have a tertiary degree. This is less than ten percentage points from the top-performer Walloon Brabant (48%) and well above the EU NUTS2*

*average (23%) and the densely-populated average (28%). This figure places Stockholm in the 90<sup>th</sup> percentile among densely-populated regions and the 97<sup>th</sup> percentile among all European NUTS2 regions. Stockholm's ISCED percentage is also impressive compared to the national average of 30% and is the highest among all regions in Sweden.*

The quality of jobs in Stockholm is equally impressive. The ISCO distribution shows that in the Stockholm region demanding jobs represent 34% of all jobs. This surpasses the national average of 23% and places Stockholm in the 98<sup>th</sup> percentile among all EU NUTS2 regions. This figure loses some ground when compared to other densely-populated regions. Stockholm's ISCO share places it in the 93<sup>th</sup> percentile among its densely-populated counterparts. Considering the high percentage of educated individuals in its workforce, this suggests supply and demand of high skills are well aligned. This should provide the additional benefit of encouraging graduates to remain in the region and thereby contribute to growth.

### Human Capital Utilisation

*With 81% of the female labour force employed, Stockholm ranks No. 3 among all EU NUTS2 regions and No. 1 compared to other densely-populated regions. Stockholm also enjoys top spots for its elderly (aged 55-64) employment rate of 72%: No. 2 among the European NUTS2 regions and No. 1 among densely-populated regions.*

**‘Social capital is a key element in our society. Our experience tells us that the State is there to support you as an individual, that the authorities are your humble servant, that the tax you pay will be used in an efficient way for the best of the society and that your neighbour will not steal your property.’**

*Mats Essemyr, employee, Swedish Confederation of Professional Employees (TCO)*

The development of public child and elderly care facilities has allowed women – who have traditionally been the primary caretakers of children and elderly relatives at home – to go from unpaid domestic work to paid employment on the labour market. The expansion of the public sector also meant an increased demand for labour and women were, in large part, recruited into these positions.<sup>71</sup>

However, while the employment figures for women and the elderly are encouraging, youth unemployment remains a big problem in the Stockholm region as well as in the country itself. In 2007, it stood at 20%, almost three times more than in the Sofia or Bratislava regions and higher than 75% of all the European NUTS2 regions. One explanation for the high level of youth unemployment could be the unique characteristics of the labour market: high minimum wages, set in collective agreements, and stringent employment protection rules. Those with low productivity have little chance to find a job and employers are cautious about hiring youth whose skills are often hard to assess, in particular youth with an immigrant background.<sup>72</sup>

Sweden’s integration policies were the only policies among 28 countries to score high enough to be considered ‘favourable’ for promoting integration according to the Migrants Integration Policy Index.<sup>73</sup> However, migrants still face difficulties

accessing the labour market. In the Stockholm region, only 40% of foreign-born university graduates from non-EU countries have a qualified job compared to 90% for native Swedes.<sup>74</sup>

Moreover, although the Stockholm region is one of the European regions with the highest percentage of part time workers – especially among women (33%) – on average its population works 73% of the possible hours available. Only 2% of the NUTS2 European regions manage to do better.

### **Human Capital Productivity**

*The Stockholm region successfully competes through high performance in innovation and creativity.<sup>75</sup> Indeed, the Innovation pillar of the Regional Competitiveness Index, which is based on 11 factors highlighting “innovation performance,” ranks the Stockholm region as No.1 in Europe. This is consistent with our innovation indicator – based on public R&D expenditures, business R&D expenditures and EPO patents – which shows that only 2% of the EU NUTS2 regions perform better.*

The Stockholm region has developed a strong position in innovative and knowledge-intensive activities in manufacturing and services.<sup>76</sup> In 2007, the percentage of employees in high technology sectors was 9.28% of total employment – well above the national average of 5.93% and second only to the EU NUTS2 regions Berkshire,

71. Ministry of Health and Social Affairs, Sweden, *Report by the Government of Sweden on the Follow-Up to the Regional Implementation Strategy (RIS) of the Madrid International Plan of Action on Ageing (MIPAA) in Sweden* (Stockholm: Ministry of Health and Social Affairs, 2007).

72. OECD, *OECD Economic Surveys: Sweden 2008* (Paris: OECD, 2008).

73. Jan Niessen, Thomas Huddleston and Laura Citron, *Migrant Integration Policy Index* (Brussels: British Council and Migration Policy Group, 2007).

74. The unit of analysis for the Stockholm region in the 2006 review was the aggregation of two NUTS3 administrative unit (referring to as Uppsala Län and Stockholm Län). See OECD, *OECD Territorial Reviews: Stockholm 2006* (Paris: OECD, 2006).

75. *Regions Benefiting from Globalisation and Increased Trade. Final Report. Volume 2 – Case Studies*, (Milan: Polytechnics of Milan, Bocconi University, 2009).

76. Ibid..

**‘In a start-up, you need experts in different fields. However, especially for a small company, it is not easy to find all the competences it needs. In KISTA, you just have to go next door and ask for help.’**

*Patrik Moller, CEO, Replisaurus Technologies, Stockholm*

Buckinghamshire and Oxfordshire also considered in this study.

However, the region follows the national trend by suffering from the so called “Swedish paradox” characterised by strong R&D investment and relatively low levels of new firm creation and entrepreneurship. As the two latter factors are essential to enhancing the competitive strength of an economy, this implies that in spite of its strong knowledge potential, the Stockholm region has not succeeded in exploiting its knowledge advantage.<sup>77</sup>

Underdeveloped transport infrastructure represents one of the major threats to the region. Stockholm is not connected with the other two metropolitan regions in Sweden by means of its high-speed trains and the Arlanda airport offers too few direct international flight connections. This implies that both the insufficient internal and external accessibility of the region are globalisation threats and could reduce the attractiveness of the region as a location.<sup>78</sup>

## **Best Practice from Stockholm: Innovation and Clusters**

### **Kista**

Located between the city of Stockholm and the international Stockholm-Arlanda Airport, on relatively inexpensive grounds, the area of Kista was a great spot to create an innovation cluster. In the 1960s, the Wallenberg family, a well-known Swedish industry dynasty, collaborated with Stockholm’s mayor, Hjalmar Mehr, to develop an industrial park on a former military training ground north-west of Stockholm. However, in the 1980s, highly-skilled employees were urgently needed and universities were asked to provide educational training for students.<sup>79</sup> Consequently, Stockholm University and the Royal Institute of Technology (KTH) moved their facilities from central Stockholm to Kista. It was transformed from an industrial production site into a science park. Cooperation between the business sector, public authorities, and academia increased during the following years and led to a new common vision. Rather than limiting Kista to a science park, the three players – Mayor of Stockholm, Carl Cederschiöld, Principal of KTH, Anders Flodström, and Vice-President of Telefonaktiebolaget LM Ericsson Johan Siberg – decided to develop a science city. They hoped this would increase the attractiveness of the city and so transform the park into a living city with cultural and social activities.<sup>80</sup> Today, Kista is home to 8,500 companies and provides 67,172 jobs. More than one third of the employees work in ICT companies.<sup>81</sup> Due to the development of Kista, the Stockholm region has benefited from the strong presence of major players in the ICT sector including Ericsson, Nokia, hp, Microsoft, Sun Microsystems, Intel, Apple, IBM and Oracle. This diverse clusters of firms cover a broad range of products

77. Ibid..

78. Ibid..

79. Based on the interview with Pär Hedberg held on 30 August 2010.

80. More information (in Swedish only) on the common vision of Kista is available at <http://www.sbk.stockholm.se/Kista/index.htm>.

81. 2010 data.



## 'In Kista, they merge good ideas with good entrepreneurs.'

*Erik Oden, CEO, Mantex AB*

and services and are active in software, content, hardware, telecommunications, and research as well as other services.<sup>82</sup> The ICT cluster stimulates entrepreneurship and innovation through localised positive externalities in labour market pooling, input and output linkages and knowledge spillovers.<sup>83</sup>

Most companies are attracted to Kista because of the enormous amount of highly-skilled individuals in the city. Cooperation with universities and research institutes is easy to establish and the denseness of the city favours lively intercommunication. The value-add of Kista is that it helps transforming knowledge from universities into innovation incorporated in products and services.

### The Programme for Employment

Stockholm faced a labour shortage in some occupational fields in 2000 – especially in elderly care services. At the same time, the number of unemployed immigrants and refugees was very high. To combat both issues, the Integration Department of the City of Stockholm, Stockholm City Administration (department of personnel policy) and different district councils, partnered to launch The Programme for Employment.<sup>84</sup> It was designed to remedy the labour shortage in elderly care services through the employment of refugees and immigrants.

The Programme for Employment has three parts: Introduction, Apprenticeship and Evaluation. The introduction includes vocational training and information about work etiquette, work culture and general advice on the labour-market outlook. During the apprenticeship period, participants complete practical work placements and learn work routines and tasks by shadowing an assigned facilitator.

Most of the immigrants and refugees require intensive language training before they can begin the programme. In 2001, Specific Swedish Language Skills Training was introduced. The language training was tailored to match the terminology used in elderly care services. The programme provided training for 20 participants at the time. Nearly 100% of the participants became employed after completion of the Programme for Employment.

One positive aspect of this programme is the ease with which it can be transferred. As a result of its initial success and political support, the programme was expanded in terms of geography and scope. It has spread from the two original District Councils of Stockholm to all 18 district councils and has been used to assist other sectors experiencing labour shortages without problems.<sup>85</sup>

82. *Regions Benefiting from Globalisation and Increased Trade. Final Report. Volume 2 – Case Studies*, (Milan: Polytechnics of Milan, Bocconi University, 2009).

83. OECD, *Clusters, Innovation and Entrepreneurship*, (Paris: OECD, 2009).

84. The Swedish Integration Board and the European Refugee Fund supported the project in 2001.

85. Identification, Dissemination and Exchange of Good practice in Local Employment Development and Promoting Better Governance (IDELE), *Programme for Employment, Stockholm – Sweden*.

## Recommendations

*Evaluating the performance of the region through the human capital dimension allows us to focus on the main challenges and provide concrete policy recommendations that could help Stockholm develop and deploy its human capital.*

Overall economic performance in Stockholm is strong compared to the European NUTS2 regions. To increase firm creation, entrepreneurial awareness and entrepreneurial culture should be taught from an early age.

In order to successfully start and run a business, youth need training courses to develop entrepreneurial skills. A best practice to reference is the creation of the Aalto society in Helsinki (see the Helsinki Case Study on page 28).

Young people should enter the workforce earlier.

Providing incentives to promote youth employment through tax arrangements to encourage businesses to employ young people or offering apprenticeships could be effective in creating jobs. Graduates would gain vital work experience while employers would have the chance to 'try-before-they-buy' and in most cases gain innovative inputs. The employment programme approach could be used more effectively to target the young. An interesting regional case to cite is the Placement Programme in the West Midlands (see the West Midlands Regional Case Study on page 53).

Lack of infrastructure threatens and limits the growth potential of the region.

Efforts should be made to increase investment into the currently weak transport infrastructure.

## West Midlands

### Overview

- Once the birthplace of the Industrial Revolution, the West Midlands now struggles to move its economy towards more knowledge-intensive sectors and lags behind the rest of the nation. In the face of globalisation, the region is currently coping with a challenging restructuring process: moving from primarily manufacturing low-cost products to the design and manufacture of new knowledge-intensive products and services. One factor which makes the struggle more difficult is that the percentage of employed individuals with tertiary education in high-technology sectors stands at 6.2% compared to the national level average of 6.8%. The gap in performance is larger when compared to other English regions such as London (6.9%) or the South East (11.2%) where many West Midlands graduates move to seek better careers.<sup>86</sup>
  - Unlike all other regions in our sample, West Midlands experienced an increase in the proportion of the population listed as “low educated” over time. The region hosts some top-notch universities and the educational attainments of its working age population are high with only 26% of the EU NUTS2 regions posting higher figures. However, the West Midlands perform poorer than the UK average in this category. Moreover, the region failed to cut its share of low-educated people which is still significant and equal to 25% of its active population. Instead, this figure increased between 2000 and 2008 by 7.3 percentage points compared to an increase in highly educated people of just 3.5 percentage points.
  - The West Midlands’ more vulnerable groups may present untapped potential. The percentage of women working part-time, at 42%, is notably higher than any other region in our sample. However, with youth unemployment equal to 16% it is higher than the national figure and most of EU NUTS2 regions. These two groups have difficulties in finding full time employment. In effect, the region is wasting its human capital and should do everything to make sure that this untapped potential is being used.
  - Some important weaknesses lead to a poor economic performance. GDP per capita, equal to €24,800, is 17% lower than the national average and falls behind 47% of the EU NUTS 2 regions.
- What policy areas should the West Midlands address in order to align its performance to the national average?

### Human Capital Endowment

*The demanding jobs found in the region are not always occupied by highly-educated people, but by those with specific skills. The lack of demand for graduates’ skills may cause them to seek more lucrative opportunities in other regions. This cycle could be difficult to reverse and ultimately lowers the competitiveness of the region.*

86. The West Midlands region is composed of three NUTS2 regions: Herefordshire, Worcestershire and Warwickshire (UKG1), Shropshire and Staffordshire (UKG2) and West Midlands (UKG3). All figures refer to the unweighted average performance of the three. See also Andy Phillips, *Graduate Retention Attraction and Employment 2008: Key Findings*, (Birmingham: West Midlands Regional Observatory, 2008). According to this study 12% of West Midlands graduates found their first job in London, 8% in the South East and 20% in other places.

**'The most ambitious graduates tend to leave the West Midlands in search of higher skilled, better paid jobs. Employers complain that the problem in hiring graduates is that they have academic qualification, but a lack of practical skills that are more useful inside an enterprise.'**

*Andy Philipps, head of skills research, West Midlands Regional Observatory*

On educational attainment, the West Midlands region performs better than most of the EU NUTS2 regions, although with 28% of its working age population engaged in higher education, it is still below the national average of 30%.<sup>87</sup> Attainment of skills is particularly low among older people and certain ethnic minority communities. The gap between better and poorer performing areas of the region has widened over time.<sup>88</sup>

Due to the lack of communication between universities and businesses, graduate education in the region is often too theoretical or focused on subjects which are not asked for by local industry. Twenty per cent of all employers and a quarter of the higher value-added private sector industries feel that graduates tend to lack the work-based and business-specific skills they require. This perception leads to low demand for higher-level skills, especially in the region's private sector. This results in significant numbers of graduates and other "knowledge workers" leaving the region to secure employment in better paid, higher skilled and higher value-added sectors of the economy.

Only 28% of all employers in the region and 14% of those in higher value-added private sector industries invest in training to address the skill deficiencies of graduates.

Gaps and deficiencies in the skills of many of the region's managers and limited

investment in training inhibit businesses' ability to effectively harness and deploy the skills and technologies available to them.<sup>89</sup> The West Midlands Economic Strategy states: "Even where strong skill sets are available to business, we do not have sufficient people with the leadership and management abilities to innovate, drive change and get the maximum out of the knowledge available to them."<sup>90</sup>

Job quality, measured in terms of ISCO "high," shows that the region's share of high-demanding occupations is 28%. This is above the EU NUTS2 region average (22%). However, it is worse than other English regions like London (42%) and South East (32%).

### **Human Capital Utilisation**

*Regional human capital utilisation is insufficient.*

Female employment is quite high and surpasses the Lisbon objectives with 69% of women employed. However, 42% have part-time contracts. The percentage of men working part-time is 11%. This is one of the highest percentages among our sample of regions, but is still much lower compared to the share of women working part-time.

Youth unemployment is high at 16%. This is two percentage points above the national average and higher than 54% of EU NUTS2 regions.

87. The England average is calculated as average performance of the NUTS2 UK regions.

88. West Midlands Regional Observatory, *Developing the Region's Knowledge Economy: Key Issues and Policy Implications*, (Birmingham: West Midlands Regional Observatory, 2009).

89. Ibid..

90. West Midlands Regional Observatory, *Management and Leadership Skills Balance Sheet: Key Issues and Policy Implications*, (Birmingham: West Midlands Regional Observatory, 08 May 2008).

Consistent with the national trend, the region is in the highest percentiles for its elderly employment among the EU NUTS2 regions (No. 88). However, utilising 59% of its elderly is still quite far from the top performers in the EU NUTS2 regions. Sweden's regions employ more than 70% of its workforce aged 55-64.

The West Midlands region is the second largest host to refugees and asylum seekers in the UK.<sup>91</sup> However, a study stated that only 12% of refugees in Coventry and 24% in Birmingham were employed, compared to a sub-regional average employment rate of non-refugees of 68% and 74%, respectively. Half of the people we interviewed were employed in their countries of origin and of these around half had been employed in skilled or professional work. Particularly, those employed in the UK were exclusively employed in unskilled jobs.<sup>92</sup>

The West Midlands has a large untapped potential in the form of its female and non-native workers. This is compounded by its figures for total hours worked. West Midlands' labour force only works 64% of the total possible hours, lagging

behind Latvia the top performer in the EU NUTS2 with 77% of total hours worked, suggesting there is room for improvement.

### **Human Capital Productivity**

*The innovative efforts of the region are low.*

The large share of SME's existing in the region, as well as in the country as a whole, suggest the region lacks benefits from economies of scale which could partly explain its mediocre performance.<sup>93</sup> West Midlands' innovativeness – measured by our scoreboard based on public R&D expenditures, business R&D expenditures and EPO patents – is slightly below the national average and worse than 53% of the European NUTS2 regions. Its score on our innovation indicator is 0.473 which is rather far behind Karlsruhe, Germany, the top performer among the EU NUTS2 regions regarding innovation with a score of 0.968.

The negative perception of the West Midlands' living and working environment was mentioned by many interviewees as an additional weaknesses of the region. This should be addressed to attract businesses and skilled workers.

91. Political asylum seekers first enter the country as asylum seekers and apply for refugee status, which then grants legal permission to work and to access public services.

92. The study was undertaken for the Learning and Skills Councils in West Midlands by the Centre for Urban and Regional Studies (CURS) and the National Institute for Adult Continuing Education. See Jenny Phillimore, *Employability Pathways an Integrated Approach to Recognizing the Skills and Experiences of New Migrants* (Birmingham: University of Birmingham, Centre for Urban and Regional Studies, 2007).

93. SMEs account for the 99.8% of enterprises in UK and for 99.9% in the West Midlands regions. Data from Department for Business and Innovation (BIS), "Small and Medium-Sized Enterprise (SME) Statistics for the UK and Regions 2009 (SME Statistics)," 13 October 2010.

**‘I was struck by how much time you need to establish an action like this, but positively by the impact it can have.’**

*Jenny Phillimore, senior lecturer, Institute of Applied Social Studies,  
Birmingham University*

## **Best Practice from West Midlands: Job Placement and Integration**

### **Graduate placement programme**

RegenWM<sup>94</sup> decided to simultaneously address two issues plaguing the West Midlands region. First was the negative image which affected West Midlands’ attractiveness to both skilled workers and businesses. Second, it tackled the low demand for high skills by companies. It launched the Graduate Placement Programme with the aim of building a bridge between companies in the regeneration sector and graduates.<sup>95</sup> RegenWM essentially acts as a “broker” between students (graduates and current undergraduates) and hosts (employers in the regeneration sector in the West Midlands region). When employers set up an internship, RegenWM receives a short description and sends it to all students in its database. This enables those interested to apply without delay. The programme provides graduates with the opportunity to gain vital work experience while giving employers the chance to “try-before-they-buy.” Says Conrad Parke, head of skills development at RegenWM: “The employer wins by attracting high calibre student. Students win by getting a foot in the door. The university wins because their students get jobs and the region wins by retaining graduates.” About 70% of students were hired by the host of their placement after they completed an internship or were referred to jobs in other organisations within the West Midlands area. Ninety per cent of the students involved in an internship decided to stay in the region afterward to search for work.

### **Employability pathways for refugees**

Surveys have indicated that a sizeable proportion of refugees arriving in the UK possess high levels of skills and education. However, they struggle to get their skills and experience recognised because they lack employers’ references or certificates. Local employers were said to be nervous of non-UK qualifications because they didn’t understand them.<sup>96</sup> In order to reduce part of the untapped potential in the region, the Birmingham University Centre for Urban and Regional Studies (CURS) became a partner in the PROGRESS GB EQUAL Development Partnership in 2004 and launched a model named “The employability pathway” in 2006. The aim of the project is to give migrants a real chance to integrate themselves in society. Pathways are offered in five different vocational areas: construction, social research, general maintenance, business administration, and health care. Each pathway provides various trainings to help refugees gain employment. These include language courses, recognition of certificates and skills, and providing work experience and networking contacts in the area. As a result, an impressive 44% of the participants who have completed the programme secured permanent employment in a skilled job through the “employability pathway” initiative. The results are remarkable because increased employment of skilled refugees, no matter how small the number, represents a major break through. When the labour is skilled, this has a very positive effect in terms of growth.

94. RegenWM is the first Regional Centre of Excellence for Sustainable Communities (RCE) in England set up in 2003 to address the skills shortages in the regeneration sector.

95. Regeneration includes all people working to improve the environment where they live or work.

96. Jenny Phillimore, *Employability Pathways an Integrated Approach to Recognizing the Skills and Experiences of New Migrants*, (Birmingham: University of Birmingham, Centre for Urban and Regional Studies, 2007).



## Recommendations

*Evaluating the performance of the region through the human capital dimension allows us to focus on the main challenges and provide concrete policy recommendations that could help the West Midlands develop and deploy its human capital.*

The economy is not strong enough to support the skill set of the region, especially when compared to other English regions. More companies and especially companies with high-level jobs are needed in the West Midlands region. Only jobs of this kind will enable the region to raise GDP per capita, be attractive for returning emigrants and provide jobs for highly skilled graduates and normal work force.

Fostering (youth) entrepreneurship could be a way to retain graduates while simultaneously maintaining and enhancing the competitive strength of an economy. The entrance of a new firm into a particular market forces the incumbent firms to react by improving efficiency or introducing innovation.<sup>97</sup> A best practice example for fostering youth entrepreneurship is the creation of the Aalto society in Helsinki (see the Helsinki Case Study on page 28).

Improve the reputation of the region's living and working environment. Encouraging cooperation between universities and businesses is key to regional competitiveness. Programmes should be put in place which increase demand of highly educated labourers.

These individuals represent potential untapped human capital.

Survey companies about desired skills. This could guide students into study paths which will translate into real career opportunities after completing their studies.

The Graduate Placement Programme is an interesting and valid project. However, it could be expanded by increasing the availability of internships. This would help additional graduates acquire the skills they need to obtain gainful employment. At the same time, this would counteract the perception of employers about the scarce competences of graduates.

The region should address the lack of managerial and leadership competences as they represent a huge obstacle to regional development. Referencing Bratislava's MBA for the automotive industry could be fruitful (see the Bratislava Case Study on page 17). This programme was tailored to the industry's need for managers with MBAs in the hope that this would provide companies' managers with the right skills to exploit regional potential. A similar approach, based on cooperation between businesses and universities, could help alleviate the mismatching between the skills demanded and graduate competencies in the West Midlands.

The West Midlands should prepare for the eventual ageing of its population by

97. Isabelle de Voldere, Eva Janssens, Jonas Onkelinx, Leo Sleuwaegen, *The Creative Economy Challenges and Opportunities for the DC Regions*, (Ghent: Flanders District of Creativity, 2006).

improving the utilisation of its elderly workforce.

Maintain elderly productivity, and thus the competitiveness of companies, through a life-long learning strategy.

Promoting and increasing the innovativeness of the region could be pivotal for the creation of more demanding jobs and for increasing the attractiveness of the region for high skilled workers.

Address the challenges faced by the large number of SMEs: lack of financial, human and organisational resources and difficulties in collaborating with

other firms. These are major obstacles to regional innovation. One strategy could be the development of business clusters that facilitate the development and access to technologies and innovations that are traditionally more difficult for small companies to accomplish on their own. Emulating Stockholm's creation of Kista could be helpful (see the Stockholm Case Study on page 48). Attending to these obstacles could improve the innovativeness of the region, lead to the creation of more demanding jobs, and increase the attractiveness of the region for high skilled workers.



# League Tables: Regions Ranked by Human Capital Leading Indicators

Table 1: Share of Complex Jobs in Workforce (2008)\*

Rank	Region	ISCO	Percentile in Ranking	Rank	Region	ISCO	Percentile in Ranking
1	Prov. Brabant Wallon	0,43	100%	69	Κεντρική Μακεδονία / Kentriki Makedonia	0,26	79%
2	Prov. Vlaams-Brabant	0,39	100%	70	Eesti	0,26	79%
3	Utrecht	0,38	99%	71	Югозападен / Yugozapaden (Sofia)	0,26	79%
4	Berkshire, Buckinghamshire and Oxfordshire	0,36	99%	72	Comunidad de Madrid	0,25	73%
5	Bedfordshire and Hertfordshire	0,36	99%	73	Friesland (NL)	0,25	73%
6	Île de France	0,34	98%	74	South Western Scotland	0,25	73%
7	Stockholm	0,34	98%	75	Νότιο Αιγαίο / Notio Aigaio	0,25	73%
8	Noord-Holland	0,34	98%	76	Cumbria	0,25	73%
9	Cheshire	0,34	98%	77	Highlands and Islands	0,25	73%
10	Surrey, East and West Sussex	0,34	98%	78	Κρήτη / Kriti	0,25	73%
11	Outer London	0,34	98%	79	Tees Valley and Durham	0,25	73%
12	Praha	0,33	96%	80	Cornwall and Isles of Scilly	0,25	73%
13	Southern and Eastern	0,33	96%	81	Wien	0,24	70%
14	Etelä-Suomi (Helsinki)	0,33	96%	82	Darmstadt	0,24	70%
15	Zuid-Holland	0,31	95%	83	Pais Vasco	0,24	70%
16	Gloucestershire, Wiltshire and Bristol/Bath area	0,31	95%	84	Zeeland	0,24	70%
17	Hampshire and Isle of Wight	0,31	95%	85	Västsverige	0,24	70%
18	East Wales	0,31	95%	85	Köln	0,24	70%
19	Prov. Oost-Vlaanderen	0,31	95%	87	Sydsverige	0,24	70%
20	North Yorkshire	0,31	95%	88	Länsi-Suomi	0,24	70%
21	Border, Midland and Western	0,31	95%	89	Pohjois-Suomi	0,24	70%
22	Prov. Luxembourg (B)	0,31	95%	90	Northumberland and Tyne and Wear	0,24	70%
23	Luxembourg (Grand-Duché)	0,3	92%	91	Midi-Pyrénées	0,24	70%
24	Hovedstaden	0,3	92%	92	Northern Ireland	0,24	70%
25	Közép-Magyarország	0,3	92%	93	South Yorkshire	0,24	70%
26	Herefordshire, Worcestershire and Warwickshire	0,3	92%	94	Θεσσαλία / Thessalia	0,24	70%
27	Berlin	0,3	92%	95	Δυτική Ελλάδα / Dytiki Ellada	0,24	70%
28	Prov. Liège	0,3	92%	96	Latvija	0,24	70%
29	Prov. Namur	0,3	92%	97	Östra Mellansverige	0,23	64%
30	Prov. Antwerpen	0,29	89%	98	West Wales and The Valleys	0,23	64%
31	Noord-Brabant	0,29	89%	99	Śląskie	0,23	64%
32	Eastern Scotland	0,29	89%	100	Pomorskie	0,23	64%
33	Leicestershire, Rutland and Northamptonshire	0,29	89%	101	Małopolskie	0,23	64%
34	Gelderland	0,29	89%	102	Övre Norrland	0,22	62%
35	East Anglia	0,29	89%	103	Mellersta Norrland	0,22	62%
36	Prov. West-Vlaanderen	0,29	89%	104	Liguria	0,22	62%
37	Essex	0,29	89%	105	Lisboa	0,22	62%
38	București – Ilfov	0,29	89%	106	Alsace	0,22	62%
39	Groningen	0,28	86%	107	Provence-Alpes-Côte d'Azur	0,22	62%
40	North Eastern Scotland	0,28	86%	108	Principado de Asturias	0,22	62%
41	Αττική / Attiki	0,28	86%	109	Auvergne	0,22	62%
42	Kent	0,28	86%	110	Δυτική Μακεδονία / Dytiki Makedonia	0,22	62%
43	Prov. Hainaut	0,28	86%	111	Ιόνια Νησιά / Ionia Nisia	0,22	62%
44	Lietuva	0,28	86%	112	Zachodniopomorskie	0,22	62%
45	Bratislavský kraj	0,27	83%	113	Stuttgart	0,21	58%
46	Overijssel	0,27	83%	114	Karlsruhe	0,21	58%
47	Zahodna Slovenija	0,27	83%	115	Düsseldorf	0,21	58%
48	West Midlands	0,27	83%	116	Cataluña	0,21	58%
49	Drenthe	0,27	83%	117	Lazio	0,21	58%
50	West Yorkshire	0,27	83%	118	Aragón	0,21	58%
51	Derbyshire and Nottinghamshire	0,27	83%	119	Rheinhessen-Pfalz	0,21	58%
52	Dorset and Somerset	0,27	83%	120	Aquitaine	0,21	58%
53	Prov. Limburg (B)	0,27	83%	121	Sjælland	0,21	58%
54	Devon	0,27	83%	122	Galicia	0,21	58%
55	Mazowieckie	0,27	83%	123	Itä-Suomi	0,21	58%
56	Βόρειο Αιγαίο / Voreio Aigaio	0,27	83%	124	Malta	0,21	58%
57	Hamburg	0,26	79%	125	Basilicata	0,21	58%
58	Oberbayern	0,26	79%	126	Ηπείρος / Ipeiros	0,21	58%
59	Åland	0,26	79%	127	Campania	0,21	58%
60	Limburg (NL)	0,26	79%	128	Calabria	0,21	58%
61	Flevoland	0,26	79%	129	Dolnośląskie	0,21	58%
62	Greater Manchester	0,26	79%	130	Łódzkie	0,21	58%
63	Ciudad Autónoma de Ceuta	0,26	79%	131	Bremen	0,2	51%
64	East Yorkshire and Northern Lincolnshire	0,26	79%	132	Mittelfranken	0,2	51%
65	Lancashire	0,26	79%	133	Comunidad Foral de Navarra	0,2	51%
66	Shropshire and Staffordshire	0,26	79%	134	Freiburg	0,2	51%
67	Lincolnshire	0,26	79%	135	Hannover	0,2	51%
68	Merseyside	0,26	79%	136	Rhône-Alpes	0,2	51%

\*excludes Brussels and London due to performance anomalies

Rank	Region	ISCO	Percentile in Ranking
137	Cantabria	0,2	51%
138	Leipzig	0,2	51%
139	Nord-Pas-de-Calais	0,2	51%
140	Abruzzo	0,2	51%
141	Στερεά Ελλάδα / Sterea Ellada	0,2	51%
142	Molise	0,2	51%
143	Πελοπόννησος / Peloponnisos	0,2	51%
144	Puglia	0,2	51%
145	Sicilia	0,2	51%
146	Ανατολική Μακεδονία, Θράκη / Anatoliki Makedonia, Thraki	0,2	51%
147	Opolskie	0,2	51%
148	Tübingen	0,19	45%
149	Midtjylland	0,19	45%
150	Toscana	0,19	45%
151	Braunschweig	0,19	45%
152	Gießen	0,19	45%
153	Castilla y León	0,19	45%
154	Schleswig-Holstein	0,19	45%
155	Trier	0,19	45%
156	Κύπρος / Kibris	0,19	45%
157	Basse-Normandie	0,19	45%
158	Dresden	0,19	45%
159	Brandenburg-Südwest	0,19	45%
160	Languedoc-Roussillon	0,19	45%
161	Corse	0,19	45%
162	Andalucía	0,19	45%
163	Extremadura	0,19	45%
164	Wielkopolskie	0,19	45%
165	Lubuskie	0,19	45%
166	Warmińsko-Mazurskie	0,19	45%
167	Salzburg	0,18	37%
168	Lombardia	0,18	37%
169	Provincia Autonoma Bolzano/Bozen	0,18	37%
170	Emilia-Romagna	0,18	37%
171	Kassel	0,18	37%
172	La Rioja	0,18	37%
173	Norra Mellansverige	0,18	37%
174	Münster	0,18	37%
175	Centre	0,18	37%
176	Comunidad Valenciana	0,18	37%
177	Bretagne	0,18	37%
178	Ciudad Autónoma de Melilla	0,18	37%
179	Región de Murcia	0,18	37%
180	Chemnitz	0,18	37%
181	Sardegna	0,18	37%
182	Vzhodna Slovenija	0,18	37%
183	Közép-Dunántúl	0,18	37%
184	Dél-Alföld	0,18	37%
185	Észak-Magyarország	0,18	37%
186	Észak-Alföld	0,18	37%
187	Lubelskie	0,18	37%
188	Podkarpackie	0,18	37%
189	Северои́зточен / Severoiztochen	0,18	37%
190	Tirol	0,17	29%
191	Oberpfalz	0,17	29%
192	Valle d'Aosta/Vallée d'Aoste	0,17	29%
193	Unterfranken	0,17	29%
194	Saarland	0,17	29%
195	Illes Balears	0,17	29%
196	Piemonte	0,17	29%
197	Syddanmark	0,17	29%
198	Småland med öarna	0,17	29%
199	Detmold	0,17	29%
200	Arnsberg	0,17	29%
201	Haute-Normandie	0,17	29%
202	Koblenz	0,17	29%

Rank	Region	ISCO	Percentile in Ranking
203	Umbria	0,17	29%
204	Bourgogne	0,17	29%
205	Franche-Comté	0,17	29%
206	Poitou-Charentes	0,17	29%
207	Limousin	0,17	29%
208	Picardie	0,17	29%
209	Lüneburg	0,17	29%
210	Castilla-La Mancha	0,17	29%
211	Algarve	0,17	29%
212	Střední Čechy	0,17	29%
213	Jihovýchod	0,17	29%
214	Kujawsko-Pomorskie	0,17	29%
215	Dél-Dunántúl	0,17	29%
216	Świętokrzyskie	0,17	29%
217	Podlaskie	0,17	29%
218	Vorarlberg	0,16	18%
219	Provincia Autonoma Trento	0,16	18%
220	Veneto	0,16	18%
221	Schwaben	0,16	18%
222	Friuli-Venezia Giulia	0,16	18%
223	Oberfranken	0,16	18%
224	Nordjylland	0,16	18%
225	Kärnten	0,16	18%
226	Weser-Ems	0,16	18%
227	Champagne-Ardenne	0,16	18%
228	Pays de la Loire	0,16	18%
229	Canarias	0,16	18%
230	Thüringen	0,16	18%
231	Burgenland (A)	0,16	18%
232	Brandenburg-Nordost	0,16	18%
233	Alentejo	0,16	18%
234	Střední Morava	0,16	18%
235	Северен централен / Severen tseentralen	0,16	18%
236	Северозападен / Severozapaden	0,16	18%
237	Niederbayern	0,15	11%
238	Steiermark	0,15	11%
239	Marche	0,15	11%
240	Niederösterreich	0,15	11%
241	Sachsen-Anhalt	0,15	11%
242	Jihozápad	0,15	11%
243	Moravskoslezsko	0,15	11%
244	Severovýchod	0,15	11%
245	Nyugat-Dunántúl	0,15	11%
246	Stredné Slovensko	0,15	11%
247	Югоизточен / Yugoiztochen	0,15	11%
248	Lorraine	0,14	7%
249	Mecklenburg-Vorpommern	0,14	7%
250	Norte	0,14	7%
251	Южен централен / Yuzhen tseentralen	0,14	7%
252	Oberösterreich	0,13	5%
253	Západné Slovensko	0,13	5%
254	Vest	0,13	5%
255	Východné Slovensko	0,13	5%
256	Região Autónoma da Madeira	0,12	4%
257	Severozápad	0,12	4%
258	Centru	0,12	4%
259	Nord-Vest	0,12	4%
260	Centro (P)	0,11	2%
261	Sud-Vest Oltenia	0,11	2%
262	Sud-Est	0,1	2%
263	Nord-Est	0,1	2%
264	Sud-Muntenia	0,09	1%
265	Região Autónoma dos Açores	0,08	0%
	Martinique	n/a	
	Guadeloupe	n/a	
	Réunion	n/a	
	Guyane	n/a	

Source: Eurostat – European Regional and Urban Statistics Database

n/a= data not available

Table 2: Youth Unemployment Rate (Aged 15-24, 2007)\*

Rank	Region	Youth Unem- ployment Rate	Percentile in Ranking	Rank	Region	Youth Unem- ployment Rate	Percentile in Ranking
1	Gelderland	0,049	100%	69	Herefordshire, Worcestershire and Warwickshire	0,117	71%
2	Utrecht	0,05	99%	70	Berkshire, Buckinghamshire and Oxfordshire	0,118	71%
3	Overijssel	0,051	98%	71	Hampshire and Isle of Wight	0,118	71%
4	Freiburg	0,051	98%	72	Comunidad Foral de Navarra	0,12	70%
5	Noord-Brabant	0,052	98%	73	Nyugat-Dunántúl	0,12	70%
6	Zeeland	0,052	98%	74	East Anglia	0,121	69%
7	Noord-Holland	0,056	97%	75	Rheinhesen-Pfalz	0,121	69%
8	Friesland (NL)	0,06	96%	76	Surrey, East and West Sussex	0,122	69%
9	Jihozápad	0,06	96%	77	Essex	0,123	68%
10	Tirol	0,064	96%	78	Vzhodna Slovenija	0,123	68%
11	Schwaben	0,065	95%	79	Pays de la Loire	0,125	67%
12	Praha	0,066	94%	80	Prov. Limburg (B)	0,126	67%
13	Oberbayern	0,066	94%	81	Gießen	0,127	66%
14	Zuid-Holland	0,066	94%	82	Umbria	0,127	66%
15	Oberösterreich	0,066	94%	83	Kassel	0,128	65%
16	Tübingen	0,067	93%	84	Leicestershire, Rutland and Northamptonshire	0,128	65%
17	Niederbayern	0,07	92%	85	Lombardia	0,129	64%
18	Midtjylland	0,07	92%	85	Schleswig-Holstein	0,129	64%
19	Flevoland	0,07	92%	87	Západné Slovensko	0,13	64%
20	Югозападен / Yugozapaden (Sofia)	0,071	92%	88	South Western Scotland	0,132	64%
21	Karlsruhe	0,073	91%	89	Cataluña	0,135	62%
22	Limburg (NL)	0,074	91%	90	Braunschweig	0,135	62%
23	Oberpfalz	0,075	90%	91	Bretagne	0,135	62%
24	Střední Čechy	0,075	90%	92	Aragón	0,136	61%
25	Bratislavský kraj	0,076	88%	93	Lancashire	0,136	61%
26	Stuttgart	0,076	88%	94	Chemnitz	0,136	61%
27	Zahodna Slovenija	0,076	88%	95	Centro (P)	0,136	61%
28	Niederösterreich	0,076	88%	96	Toscana	0,137	60%
29	Drenthe	0,079	88%	97	Cantabria	0,138	59%
30	Sjælland	0,08	88%	98	Prov. Oost-Vlaanderen	0,138	59%
31	Hovedstaden	0,081	87%	99	Lincolnshire	0,138	59%
32	Kärnten	0,081	87%	100	Южен централен / Yuzhen tsentralen	0,138	59%
33	Nordjylland	0,082	86%	101	Hannover	0,139	57%
34	Steiermark	0,082	86%	102	Devon	0,139	57%
35	Lietuva	0,082	86%	103	Κρήτη / Kriti	0,139	57%
36	Syddanmark	0,083	85%	104	Malta	0,139	57%
37	Veneto	0,084	85%	105	East Wales	0,14	56%
38	Gloucestershire, Wiltshire and Bristol/Bath area	0,085	84%	106	South Yorkshire	0,14	56%
39	Střední Morava	0,088	84%	107	Bedfordshire and Hertfordshire	0,141	55%
40	Southern and Eastern	0,089	83%	108	Nord-Vest	0,141	55%
41	Groningen	0,089	83%	109	Etelä-Suomi (Helsinki)	0,143	55%
42	Provincia Autonoma Trento	0,089	83%	110	Piemonte	0,143	55%
43	Prov. West-Vlaanderen	0,09	82%	111	Prov. Vlaams-Brabant	0,144	54%
44	Münster	0,092	81%	112	Shropshire and Staffordshire	0,144	54%
45	Northern Ireland	0,092	81%	113	Düsseldorf	0,145	52%
46	Marche	0,093	81%	114	Friuli-Venezia Giulia	0,145	52%
47	Koblenz	0,093	81%	115	Basse-Normandie	0,145	52%
48	Mittelfranken	0,096	80%	116	Югоизточен / Yugoiztochen	0,145	52%
49	Border, Midland and Western	0,098	80%	117	Arnsberg	0,146	51%
50	Severovýchod	0,099	79%	118	West Yorkshire	0,146	51%
51	Eesti	0,1	79%	119	West Wales and The Valleys	0,147	50%
52	Prov. Antwerpen	0,101	79%	120	Nord-Est	0,147	50%
53	Κύπρος / Kibris	0,102	78%	121	Northumberland and Tyne and Wear	0,148	50%
54	Közép-Magyarország	0,103	77%	122	Länsi-Suomi	0,149	49%
55	Weser-Ems	0,103	77%	123	Centre	0,149	49%
56	Unterfranken	0,106	77%	124	Thüringen	0,149	49%
57	Latvija	0,107	76%	125	East Yorkshire and Northern Lincolnshire	0,15	48%
58	Emilia-Romagna	0,108	76%	126	Illes Balears	0,151	48%
59	Lüneburg	0,109	76%	127	Luxembourg (Grand-Duché)	0,152	47%
60	Oberfranken	0,111	75%	128	Moravskoslezsko	0,152	47%
61	Dorset and Somerset	0,111	75%	129	Wien	0,153	46%
62	Detmold	0,112	74%	130	Eastern Scotland	0,153	46%
63	Darmstadt	0,113	73%	131	Brandenburg-Südwest	0,154	46%
64	Jihovýchod	0,113	73%	132	Greater Manchester	0,156	45%
65	Közép-Dunántúl	0,113	73%	133	Castilla-La Mancha	0,157	45%
66	Cheshire	0,114	72%	134	Småland med öarna	0,158	44%
67	Köln	0,114	72%	135	Kent	0,158	44%
68	Hamburg	0,116	72%	136	Rhône-Alpes	0,159	43%

\*excludes Brussels and London due to performance anomalies



Rank	Region	Youth Unemployment Rate	Percentile in Ranking	Rank	Region	Youth Unemployment Rate	Percentile in Ranking
137	Bourgogne	0,159	43%	204	Molise	0,238	16%
138	Galicia	0,159	43%	205	Κεντρική Μακεδονία / Kentriki Makedonia	0,239	15%
139	Dresden	0,159	43%	206	Sud-Muntenia	0,239	15%
140	Alsace	0,16	42%	207	Itä-Suomi	0,24	14%
141	București-Ilfov	0,161	42%	208	Małopolskie	0,242	14%
142	La Rioja	0,162	41%	209	Lubelskie	0,243	14%
143	Derbyshire and Nottinghamshire	0,163	40%	210	Podkarpackie	0,244	13%
144	Lorraine	0,163	40%	211	Πελοπόννησος / Peloponnisos	0,245	12%
145	Limousin	0,164	40%	212	Zachodniopomorskie	0,245	12%
146	Región de Murcia	0,165	40%	213	Stredné Slovensko	0,247	12%
147	Norte	0,166	39%	214	Centru	0,247	12%
148	Outer London	0,167	39%	215	Lazio	0,249	11%
149	Comunidad de Madrid	0,17	38%	216	Североизточен / Severoiztochen	0,25	11%
150	Pais Vasco	0,171	38%	217	Lubuskie	0,251	10%
151	Abruzzo	0,172	38%	218	Warmińsko-Mazurskie	0,251	10%
152	Vest	0,173	37%	219	Prov. Namur	0,252	10%
153	Castilla y León	0,174	37%	220	Ανατολική Μακεδονία, Θράκη / Anatoliki Makedonia, Thraki	0,255	9%
154	Śląskie	0,175	36%	221	Languedoc-Roussillon	0,256	9%
155	Île de France	0,177	35%	222	Prov. Liège	0,257	8%
156	Västsverige	0,177	35%	223	Στερεά Ελλάδα / Sterea Ellada	0,262	7%
157	Tees Valley and Durham	0,177	35%	224	Extremadura	0,262	7%
158	Łódzkie	0,178	35%	225	Sud-Est	0,265	7%
159	Franche-Comté	0,179	34%	226	Észak-Alföld	0,271	7%
160	Opolskie	0,183	34%	227	Nord-Pas-de-Calais	0,275	6%
161	Norra Mellansverige	0,187	33%	228	Észak-Magyarország	0,277	6%
162	Lisboa	0,187	33%	229	Świętokrzyskie	0,278	5%
163	Leipzig	0,187	33%	230	Východné Slovensko	0,296	5%
164	Principado de Asturias	0,188	32%	231	Ήπειρος / Ipeiros	0,304	5%
165	Comunidad Valenciana	0,191	31%	232	Basilicata	0,314	4%
166	Auvergne	0,191	31%	233	Calabria	0,316	3%
167	Övre Norrland	0,192	31%	234	Δυτική Ελλάδα / Dytiki Ellada	0,316	3%
168	Sachsen-Anhalt	0,193	30%	235	Puglia	0,318	3%
169	Severozápad	0,193	30%	236	Sardegna	0,325	2%
170	Wielkopolskie	0,193	30%	237	Campania	0,325	2%
171	Mecklenburg-Vorpommern	0,194	29%	238	Prov. Hainaut	0,345	2%
172	Dél-Alföld	0,195	29%	239	Sicilia	0,372	1%
173	Poitou-Charentes	0,196	29%	240	Martinique	0,478	1%
174	Podlaskie	0,197	28%	241	Réunion	0,5	0%
175	Provence-Alpes-Côte d'Azur	0,198	27%	242	Guadeloupe	0,557	0%
176	Brandenburg-Nordost	0,198	27%		Bremen	n/a	
177	Mellersta Norrland	0,2	27%		North Eastern Scotland	n/a	
178	Stockholm	0,201	25%		Åland	n/a	
179	Αττική / Attiki	0,201	25%		Salzburg	n/a	
180	Merseyside	0,201	25%		Provincia Autonoma Bolzano/Bozen	n/a	
181	Alentejo	0,201	25%		Vorarlberg	n/a	
182	Östra Mellansverige	0,202	24%		Valle d'Aosta/Vallée d'Aoste	n/a	
183	Aquitaine	0,202	24%		Saarland	n/a	
184	West Midlands	0,205	24%		Prov. Brabant Wallon	n/a	
185	Liguria	0,207	24%		North Yorkshire	n/a	
186	Pomorskie	0,208	23%		Ciudad Autónoma de Ceuta	n/a	
187	Midi-Pyrénées	0,21	23%		Νότιο Αιγαίο / Notio Aigaio	n/a	
188	Champagne-Ardenne	0,211	22%		Região Autónoma da Madeira	n/a	
189	Северен централен / Severen tsentralen	0,211	22%		Ciudad Autónoma de Melilla	n/a	
190	Berlin	0,212	21%		Trier	n/a	
191	Mazowieckie	0,213	21%		Cumbria	n/a	
192	Pohjois-Suomi	0,22	21%		Highlands and Islands	n/a	
193	Sydsverige	0,221	20%		Corse	n/a	
194	Sud-Vest Oltenia	0,221	20%		Burgenland (A)	n/a	
195	Северозападен / Severozapaden	0,223	19%		Algarve	n/a	
196	Canarias	0,224	19%		Prov. Luxembourg (B)	n/a	
197	Picardie	0,227	18%		Δυτική Μακεδονία / Dytiki Makedonia	n/a	
198	Θεσσαλία / Thessalia	0,227	18%		Cornwall and Isles of Scilly	n/a	
199	Haute-Normandie	0,228	17%		Ιόνια Νησιά / Ionia Nisia	n/a	
200	Dolnośląskie	0,228	17%		Região Autónoma dos Açores	n/a	
201	Kujawsko-Pomorskie	0,229	17%		Βόρειο Αιγαίο / Voreio Aigaio	n/a	
202	Dél-Dunántúl	0,231	17%		Guyane	n/a	
203	Andalucía	0,233	16%				

Source: Eurostat – European Regional and Urban Statistics Database

n/a= data not available

Table 3: Long-Term Unemployment as Percentage of Overall Unemployment (2007)\*

Rank	Region	Long-Term Unemployment Rate	Percentile in Ranking	Rank	Region	Long-Term Unemployment Rate	Percentile in Ranking
1	Sydsverige	0,091	100%	69	Extremadura	0,251	74%
2	Illes Balears	0,093	99%	70	Salzburg	0,252	74%
3	Mellersta Norrland	0,109	99%	71	East Yorkshire and Northern Lincolnshire	0,254	74%
4	Norra Mellansverige	0,116	99%	72	Galicia	0,255	73%
5	Cornwall and Isles of Scilly	0,12	98%	73	Northumberland and Tyne and Wear	0,261	72%
6	Småland med öarna	0,13	98%	74	Burgenland (A)	0,261	72%
7	Tirol	0,132	97%	75	Latvija	0,264	72%
8	Västsverige	0,135	97%	76	Merseyside	0,265	72%
9	Gloucestershire, Wiltshire and Bristol/Bath area	0,139	97%	77	Essex	0,266	71%
10	Övre Norrland	0,143	96%	78	Outer London	0,269	71%
11	Comunidad Foral de Navarra	0,144	96%	79	Ιόνια Νησιά / Ionia Nisia	0,279	71%
12	Región de Murcia	0,144	96%	80	Emilia-Romagna	0,285	70%
13	Midtjylland	0,145	95%	81	Cumbria	0,286	70%
14	Herefordshire, Worcestershire and Warwickshire	0,148	95%	82	Luxembourg (Grand-Duché)	0,287	69%
15	North Eastern Scotland	0,149	94%	83	Κρήτη / Kriti	0,287	69%
16	Devon	0,15	94%	84	Niederösterreich	0,295	69%
17	Highlands and Islands	0,15	94%	85	Southern and Eastern	0,299	68%
18	La Rioja	0,155	93%	85	Border, Midland and Western	0,302	68%
19	Stockholm	0,156	92%	87	Principado de Asturias	0,305	68%
20	Hovedstaden	0,156	92%	88	Prov. West-Vlaanderen	0,315	67%
21	Dorset and Somerset	0,156	92%	89	Liguria	0,316	66%
22	Sjælland	0,156	92%	90	Alsace	0,316	66%
23	Comunidad Valenciana	0,16	91%	91	West Midlands	0,32	66%
24	Pohjois-Suomi	0,164	91%	92	Lietuva	0,32	66%
25	Syddanmark	0,166	91%	93	Zeeland	0,321	65%
26	Kärnten	0,169	90%	94	Prov. Limburg (B)	0,327	65%
27	Aragón	0,171	90%	95	Friuli-Venezia Giulia	0,339	65%
28	Surrey, East and West Sussex	0,173	90%	96	Franche-Comté	0,34	64%
29	Comunidad de Madrid	0,174	89%	97	Lubuskie	0,341	64%
30	Oberösterreich	0,185	89%	98	Valle d'Aosta/Vallée d'Aoste	0,342	63%
31	Κύπρος / Kibris	0,186	88%	99	Wien	0,344	63%
32	Östra Mellansverige	0,188	88%	100	Lombardia	0,344	63%
33	Hampshire and Isle of Wight	0,191	88%	101	Veneto	0,346	62%
34	Castilla-La Mancha	0,193	87%	102	Basse-Normandie	0,346	62%
35	West Wales and The Valleys	0,194	87%	103	Rhône-Alpes	0,349	62%
36	East Anglia	0,198	87%	104	Prov. Vlaams-Brabant	0,35	61%
37	Berkshire, Buckinghamshire and Oxfordshire	0,201	86%	105	Aquitaine	0,352	61%
38	Cantabria	0,202	86%	106	Limburg (NL)	0,353	60%
39	Cataluña	0,205	85%	107	Bretagne	0,353	60%
40	Leicestershire, Rutland and Northamptonshire	0,206	85%	108	Champagne-Ardenne	0,354	60%
41	North Yorkshire	0,207	85%	109	Marche	0,356	59%
42	Nordjylland	0,209	84%	110	Alentejo	0,358	59%
43	Steiermark	0,211	84%	111	Utrecht	0,36	59%
44	East Wales	0,212	84%	112	Praha	0,361	58%
45	Cheshire	0,215	83%	113	Midi-Pyrénées	0,363	58%
46	Andalucía	0,216	83%	114	Auvergne	0,365	57%
47	Derbyshire and Nottinghamshire	0,217	82%	115	Northern Ireland	0,366	57%
48	Canarias	0,218	82%	116	Podkarpacie	0,376	57%
49	South Western Scotland	0,219	81%	117	Bourgogne	0,378	56%
50	Νότιο Αιγαίο / Notio Aigaio	0,219	81%	118	Gelderland	0,379	56%
51	Eastern Scotland	0,223	81%	119	Centre	0,379	56%
52	Castilla y León	0,224	80%	120	Pays de la Loire	0,383	55%
53	Shropshire and Staffordshire	0,224	80%	121	Algarve	0,384	54%
54	Tees Valley and Durham	0,227	80%	122	Região Autónoma dos Açores	0,384	54%
55	Itä-Suomi	0,228	79%	123	Freiburg	0,385	54%
56	Lincolnshire	0,229	79%	124	Picardie	0,385	54%
57	Provincia Autonoma Bolzano/Bozen	0,23	78%	125	Toscana	0,386	53%
58	Bedfordshire and Hertfordshire	0,23	78%	126	Drenthe	0,389	53%
59	Länsi-Suomi	0,234	78%	127	Poitou-Charentes	0,39	53%
60	Provincia Autonoma Trento	0,235	77%	128	Groningen	0,393	52%
61	Lancashire	0,235	77%	129	Zuid-Holland	0,394	51%
62	Greater Manchester	0,237	77%	130	Friesland (NL)	0,394	51%
63	Vorarlberg	0,238	76%	131	Ciudad Autónoma de Melilla	0,401	51%
64	West Yorkshire	0,24	76%	132	Prov. Antwerpen	0,402	50%
65	South Yorkshire	0,243	76%	133	Lorraine	0,402	50%
66	Pais Vasco	0,249	75%	134	Noord-Brabant	0,403	50%
67	Etelä-Suomi (Helsinki)	0,25	75%	135	Umbria	0,405	50%
68	Kent	0,251	74%	136	Βόρειο Αιγαίο / Voreio Aigaio	0,409	49%

\*excludes Brussels and London due to performance anomalies

Rank	Region	Long-Term Unemployment Rate	Percentile in Ranking	Rank	Region	Long-Term Unemployment Rate	Percentile in Ranking
137	Limousin	0,41	49%	204	Югоизточен / Yugoiztochen	0,525	24%
138	Provence-Alpes-Côte d'Azur	0,411	49%	205	Braunschweig	0,526	23%
139	Noord-Holland	0,412	48%	206	Jihovýchod	0,526	23%
140	Közép-Dunántúl	0,412	48%	207	Norte	0,526	23%
141	Opolskie	0,414	47%	208	Koblenz	0,529	22%
142	Prov. Oost-Vlaanderen	0,417	47%	209	Puglia	0,53	22%
143	Trier	0,417	47%	210	Vest	0,533	22%
144	Malta	0,42	46%	211	Bratislavský kraj	0,536	21%
145	Jihozápad	0,422	46%	212	Darmstadt	0,536	21%
146	Pomorskie	0,424	46%	213	Prov. Brabant Wallon	0,536	21%
147	Nord-Vest	0,427	45%	214	Weser-Ems	0,54	20%
148	Île de France	0,428	44%	215	Πελοπόννησος / Peloponnisos	0,541	20%
149	Centro (P)	0,428	44%	216	Campania	0,542	19%
150	Haute-Normandie	0,43	44%	217	Североизточен / Severoiztochen	0,544	19%
151	Flevoland	0,431	44%	218	Basilicata	0,545	18%
152	Střední Čechy	0,432	43%	219	Κεντρική Μακεδονία / Kentriki Makedonia	0,545	18%
153	Piemonte	0,434	43%	220	Łódzkie	0,545	18%
154	Mazowieckie	0,437	43%	221	Morava	0,548	18%
155	Unterfranken	0,438	42%	222	Hamburg	0,549	17%
156	Dél-Dunántúl	0,438	42%	223	Münster	0,551	17%
157	Oberbayern	0,44	41%	224	Wielkopolskie	0,552	16%
158	Overijssel	0,442	41%	225	Calabria	0,555	16%
159	Nyugat-Dunántúl	0,444	41%	226	Zachodniopomorskie	0,556	16%
160	Dél-Alföld	0,448	40%	227	Ανατολική Μακεδονία, Θράκη / Anatoliki Makedonia, Thraki	0,559	15%
161	Schwaben	0,454	40%	228	Düsseldorf	0,56	15%
162	Vzhodna Slovenija	0,457	40%	229	Prov. Liège	0,56	15%
163	Zahodna Slovenija	0,458	39%	230	Detmold	0,561	14%
164	Lisboa	0,459	39%	231	Oberfranken	0,565	14%
165	Languedoc-Roussillon	0,462	38%	232	Hannover	0,568	13%
166	Ciudad Autónoma de Ceuta	0,463	38%	233	Kujawsko-Pomorskie	0,568	13%
167	Região Autónoma da Madeira	0,464	37%	234	Małopolskie	0,568	13%
168	Corse	0,464	37%	235	Lüneburg	0,569	12%
169	Sardegna	0,464	37%	236	Köln	0,572	12%
170	Centru	0,464	37%	237	Kassel	0,572	12%
171	Abruzzo	0,467	36%	238	Moravskoslezsko	0,575	11%
172	Severovýchod	0,467	36%	239	Arnsberg	0,578	11%
173	Tübingen	0,472	35%	240	Podlaskie	0,581	10%
174	Niederbayern	0,475	35%	241	Świętokrzyskie	0,585	10%
175	Prov. Luxembourg (B)	0,477	34%	242	Śląskie	0,588	10%
176	Észak-Alföld	0,477	34%	243	Dresden	0,593	9%
177	Észak-Magyarország	0,478	34%	244	Warmińsko-Mazurskie	0,593	9%
178	Θεσσαλία / Thessalia	0,481	34%	245	Brandenburg-Nordost	0,596	9%
179	Stuttgart	0,485	33%	246	Brandenburg-Südwest	0,598	8%
180	București-Ilfov	0,493	32%	247	Ἰπείρος / Ipeiros	0,598	8%
181	Molise	0,493	32%	248	Mecklenburg-Vorpommern	0,608	7%
182	Eesti	0,495	32%	249	Prov. Hainaut	0,608	7%
183	Nord-Pas-de-Calais	0,497	32%	250	Sicilia	0,609	7%
184	Στερεά Ελλάδα / Sterea Ellada	0,498	31%	251	Severozápad	0,611	6%
185	Lubelskie	0,499	31%	252	Bremen	0,62	6%
186	Αττική / Attiki	0,5	31%	253	Δυτική Μακεδονία / Dytiki Makedonia	0,63	6%
187	Rheinessen-Pfalz	0,503	30%	254	Berlin	0,632	5%
188	Gießen	0,504	30%	255	Thüringen	0,639	5%
189	Sud-Muntenia	0,51	29%	256	Sachsen-Anhalt	0,641	4%
190	Lazio	0,511	29%	257	Chemnitz	0,646	4%
191	Югозападен / Yugozapaden (Sofia)	0,511	29%	258	Северен централен / Severen tsentralen	0,652	4%
192	Mittelfranken	0,514	28%	259	Северозападен / Severozapaden	0,653	3%
193	Közép-Magyarország	0,514	28%	260	Leipzig	0,654	3%
194	Prov. Namur	0,514	28%	261	Южен централен / Yuzhen tsentralen	0,654	3%
195	Nord-Est	0,515	27%	262	Guyane	0,67	2%
196	Karlsruhe	0,516	26%	263	Západné Slovensko	0,698	2%
197	Δυτική Ελλάδα / Dytiki Ellada	0,516	26%	264	Stredné Slovensko	0,748	1%
198	Oberpfalz	0,517	26%	265	Réunion	0,752	1%
199	Sud-Est	0,518	26%	266	Východné Slovensko	0,795	1%
200	Saarland	0,519	25%	267	Guadeloupe	0,808	0%
201	Sud-Vest Oltenia	0,519	25%	268	Martinique	0,854	0%
202	Schleswig-Holstein	0,52	24%		Åland	n/a	
203	Dolnośląskie	0,52	24%				

Source: Eurostat – European Regional and Urban Statistics Database

n/a= data not available

**Table 4: Innovation (Measured as Public and Private R&D as a Percentage of Overall GDP and Patent Applications per One Million Inhabitants, 2003)\***

Rank	Region	Innovation Score	Percentile in Ranking	Rank	Region	Innovation Score	Percentile in Ranking
1	Karlsruhe	0,968	100%	69	Övre Norrland	0,689	74%
2	Oberbayern	0,965	100%	70	Surrey, East and West Sussex	0,688	74%
3	Vorarlberg	0,951	99%	71	Saarland	0,685	73%
4	Sydsverige	0,943	99%	72	Noord-Holland	0,682	73%
5	Stockholm	0,943	98%	73	Lancashire	0,680	73%
6	Braunschweig	0,942	98%	74	Lombardia	0,671	72%
7	Köln	0,934	98%	75	Franche-Comté	0,671	72%
8	Etelä-Suomi (Helsinki)	0,932	97%	76	Kärnten	0,670	71%
9	Tübingen	0,927	97%	77	Prov. West-Vlaanderen	0,658	71%
10	Östra Mellansverige	0,916	97%	78	Brandenburg-Südwest	0,658	71%
11	Västssverige	0,915	96%	79	Centre	0,655	70%
12	Prov. Brabant Wallon	0,915	96%	80	Herefordshire, Worcestershire and Warwickshire	0,649	70%
13	Rheinessen-Pfalz	0,915	95%	81	Eastern Scotland	0,644	70%
14	Île de France	0,914	95%	82	Flevoland	0,641	69%
15	Länsi-Suomi	0,907	95%	83	Zahodna Slovenija	0,636	69%
16	Pohjois-Suomi	0,906	94%	84	Haute-Normandie	0,636	68%
17	Freiburg	0,903	94%	85	Kent	0,632	68%
18	Stuttgart	0,891	94%	85	Friuli-Venezia Giulia	0,627	68%
19	Mittelfranken	0,887	93%	87	Overijssel	0,626	67%
20	East Anglia	0,887	93%	88	Norra Mellansverige	0,620	67%
21	Prov. Vlaams-Brabant	0,875	92%	89	Toscana	0,613	67%
22	Rhône-Alpes	0,873	92%	90	North Eastern Scotland	0,603	66%
23	Berlin	0,872	92%	91	Prov. Namur	0,602	66%
24	Hannover	0,868	91%	92	Languedoc-Roussillon	0,599	65%
25	Darmstadt	0,866	91%	93	Groningen	0,596	65%
26	Wien	0,859	90%	94	Chemnitz	0,592	65%
27	Unterfranken	0,853	90%	95	Liguria	0,589	64%
28	Gießen	0,853	90%	96	Burgenland (A)	0,586	64%
29	Oberösterreich	0,847	89%	97	Leipzig	0,584	63%
30	Hamburg	0,835	89%	98	Itä-Suomi	0,583	63%
31	Dresden	0,824	89%	99	Lorraine	0,581	63%
32	Steiermark	0,823	88%	100	Derbyshire and Nottinghamshire	0,579	62%
33	Noord-Brabant	0,823	88%	101	Cataluña	0,577	62%
34	Oberpfalz	0,816	87%	102	Lazio	0,566	62%
35	Prov. Antwerpen	0,815	87%	103	Bourgogne	0,564	61%
36	Berkshire, Buckinghamshire and Oxfordshire	0,814	87%	104	Kassel	0,563	61%
37	Hampshire and Isle of Wight	0,804	86%	105	Småland med öarna	0,562	60%
38	Salzburg	0,803	86%	106	Veneto	0,561	60%
39	Midi-Pyrénées	0,802	86%	107	Tees Valley and Durham	0,560	60%
40	Düsseldorf	0,792	85%	108	Koblenz	0,559	59%
41	Alsace	0,786	85%	109	Comunidad de Madrid	0,559	59%
42	Tirol	0,779	84%	110	Essex	0,559	59%
43	Arnsberg	0,774	84%	111	Prov. Hainaut	0,558	58%
44	Limburg (NL)	0,772	84%	112	Bóipeio Ayaíio / Voreio Aigaio	0,553	58%
45	Prov. Luxembourg (B)	0,771	83%	113	Praha	0,552	57%
46	Bremen	0,771	83%	114	Dorset and Somerset	0,546	57%
47	Utrecht	0,752	83%	115	Aquitaine	0,545	57%
48	Prov. Oost-Vlaanderen	0,746	82%	116	North Yorkshire	0,541	56%
49	Oberfranken	0,746	82%	117	Sachsen-Anhalt	0,540	56%
50	Bedfordshire and Hertfordshire	0,743	81%	118	Pays de la Loire	0,540	56%
51	Niederösterreich	0,742	81%	119	Leicestershire, Rutland and Northamptonshire	0,538	55%
52	Bretagne	0,741	81%	120	Weser-Ems	0,538	55%
53	Zuid-Holland	0,739	80%	121	Basse-Normandie	0,538	54%
54	Gloucestershire, Wiltshire and Bristol/Bath area	0,735	80%	122	Southern and Eastern	0,536	54%
55	Thüringen	0,735	79%	123	Közép-Magyarország	0,534	54%
56	Emilia-Romagna	0,731	79%	124	Provincia Autonoma Trento	0,534	53%
57	Prov. Limburg (B)	0,722	79%	125	Mazowieckie	0,533	53%
58	Provence-Alpes-Côte d'Azur	0,721	78%	126	Picardie	0,531	52%
59	Prov. Liège	0,718	78%	127	Comunidad Foral de Navarra	0,527	52%
60	Detmold	0,718	78%	128	Border, Midland and Western	0,527	52%
61	Cheshire	0,706	77%	129	Lüneburg	0,527	52%
62	Schwaben	0,706	77%	130	Cumbria	0,519	51%
63	Schleswig-Holstein	0,705	76%	131	Niederbayern	0,514	51%
64	Münster	0,703	76%	132	Poitou-Charentes	0,510	50%
65	Gelderland	0,703	76%	133	Mecklenburg-Vorpommern	0,508	50%
66	Piemonte	0,700	75%	134	Trier	0,506	49%
67	Luxembourg (Grand-Duché)	0,699	75%	135	Drenthe	0,502	49%
68	Auvergne	0,691	75%	136	Abruzzo	0,501	49%

\*excludes Brussels and London due to performance anomalies

Rank	Region	Innovation Score	Percentile in Ranking
137	East Wales	0,493	48%
138	Limousin	0,493	48%
139	Pais Vasco	0,482	48%
140	Ἰπείρος / Ipeiros	0,482	47%
141	Champagne-Ardenne	0,475	47%
142	West Yorkshire	0,471	46%
143	Bratislavský kraj	0,468	46%
144	Brandenburg-Nordost	0,467	46%
145	Jihovýchod	0,456	45%
146	Střední Čechy	0,451	45%
147	Marche	0,450	44%
148	Umbria	0,450	44%
149	Northern Ireland	0,447	44%
150	Cornwall and Isles of Scilly	0,447	43%
151	Campania	0,444	43%
152	Shropshire and Staffordshire	0,436	43%
153	Zeeland	0,434	42%
154	Greater Manchester	0,431	42%
155	Nord-Pas-de-Calais	0,429	41%
156	Comunidad Valenciana	0,416	41%
157	Lisboa	0,404	41%
158	Castilla y León	0,403	40%
159	Mellersta Norrland	0,402	40%
160	Åland	0,402	40%
161	Outer London	0,401	39%
162	Merseyside	0,395	39%
163	Sicilia	0,391	38%
164	West Midlands	0,391	38%
165	București-Ilfov	0,390	38%
166	Friesland (NL)	0,388	37%
167	Extremadura	0,387	37%
168	Andalucía	0,379	37%
169	Galicia	0,377	36%
170	Aragón	0,374	36%
171	Αττική / Attiki	0,371	35%
172	Severovýchod	0,371	35%
173	La Rioja	0,367	35%
174	East Yorkshire and Northern Lincolnshire	0,366	34%
175	Moravskoslezsko	0,365	34%
176	Eesti	0,357	33%
177	Κρήτη / Kriti	0,352	33%
178	Región de Murcia	0,348	33%
179	Κεντρική Μακεδονία / Kentriki Makedonia	0,339	32%
180	Észak-Alföld	0,339	32%
181	South Yorkshire	0,336	32%
182	Югозападен / Yugozapaden (Sofia)	0,334	31%
183	Vzhodna Slovenija	0,331	31%
184	Puglia	0,329	30%
185	Valle d'Aosta/Vallée d'Aoste	0,329	30%
186	Northumberland and Tyne and Wear	0,328	30%
187	Δυτική Ελλάδα / Dytiki Ellada	0,327	29%
188	Łódzkie	0,325	29%
189	Principado de Asturias	0,322	29%
190	Provincia Autonoma Bolzano/Bozen	0,315	28%
191	Corse	0,313	28%
192	South Western Scotland	0,305	27%
193	Dél-Alföld	0,305	27%
194	Małopolskie	0,304	27%
195	Basilicata	0,302	26%
196	Sardegna	0,299	26%
197	West Wales and The Valleys	0,295	25%
198	Lincolnshire	0,294	25%
199	Canarias	0,289	25%
200	Střední Morava	0,280	24%
201	Ανατολική Μακεδονία, Θράκη / Anatoliki Makedonia, Thraki	0,280	24%
202	Cantabria	0,279	24%

Rank	Region	Innovation Score	Percentile in Ranking
203	Devon	0,275	23%
204	Centro (P)	0,272	23%
205	Lietuva	0,269	22%
206	Jihozápad	0,268	22%
207	Norte	0,267	22%
208	Molise	0,254	21%
209	Highlands and Islands	0,252	21%
210	Κύπρος / Kibris	0,243	21%
211	Região Autónoma dos Açores	0,243	21%
212	Wielkopolskie	0,240	20%
213	Castilla-La Mancha	0,237	19%
214	Malta	0,234	19%
215	Közép-Dunántúl	0,226	19%
216	Dél-Dunántúl	0,223	18%
217	Západné Slovensko	0,217	18%
218	Podkarpackie	0,210	17%
219	Východné Slovensko	0,190	17%
220	Calabria	0,185	17%
221	Illes Balears	0,184	16%
222	Guyane	0,180	16%
223	Pomorskie	0,175	16%
224	Latvija	0,174	15%
225	Réunion	0,172	15%
226	Nyugat-Dunántúl	0,172	15%
227	Alentejo	0,165	14%
228	Lubuskie	0,164	14%
229	Észak-Magyarország	0,155	13%
230	Algarve	0,147	13%
231	Ιόνια Νησιά / Ionia Nisia	0,142	13%
232	Severozápad	0,141	12%
233	Δυτική Μακεδονία / Dytiki Makedonia	0,141	12%
234	Śląskie	0,140	11%
235	Dolnośląskie	0,136	11%
236	Stredné Slovensko	0,136	11%
237	Podlaskie	0,135	10%
238	Lubelskie	0,131	10%
239	Североизточен / Severoiztochen	0,131	10%
240	Região Autónoma da Madeira	0,121	9%
241	Centru	0,118	9%
242	Θεσσαλία / Thessalia	0,114	8%
243	Sud-Muntenia	0,114	8%
244	Северен централен / Severen tsentralen	0,114	8%
245	Πελοπόννησος / Peloponnisos	0,113	7%
246	Kujawsko-Pomorskie	0,104	7%
247	Югоизточен / Yugoiztochen	0,095	6%
248	Ciudad Autónoma de Ceuta	0,094	6%
249	Świętokrzyskie	0,092	6%
250	Vest	0,090	5%
251	Guadeloupe	0,088	5%
252	Южен централен / Yuzhen tsentralen	0,084	5%
253	Северозападен / Severozapaden	0,074	4%
254	Zachodniopomorskie	0,072	4%
255	Nord-Vest	0,067	3%
256	Νότιο Αιγαίο / Notio Aigaio	0,058	3%
257	Nord-Est	0,049	3%
258	Opolskie	0,048	2%
259	Sud-Est	0,047	2%
260	Sud-Vest Oltenia	0,039	2%
261	Warmińsko-Mazurskie	0,037	1%
262	Martinique	0,036	1%
263	Στερεά Ελλάδα / Sterea Ellada	0,020	0%
	Hovedstaden	n/a	
	Midtjylland	n/a	
	Syddanmark	n/a	
	Nordjylland	n/a	
	Ciudad Autónoma de Melilla	n/a	
	Sjælland	n/a	

Source: Eurostat – European Regional and Urban Statistics Database

n/a= data not available



## Annex: Additional Indicator-Based Rankings

Table 5: Regions Ranked by GDP per Capita (PPP-Adjusted, 2007)\*

Rank	Region	GDP per capita, PPP-adjusted	Percentile in Ranking	Rank	Region	GDP per capita, PPP-adjusted	Percentile in Ranking
1	Luxembourg (Grand-Duché)	€68.500	100%	69	Gelderland	€28.300	75%
2	Hamburg	€47.800	100%	70	Piemonte	€28.300	75%
3	Praha	€42.800	99%	71	Oberfranken	€28.200	74%
4	Île de France	€42.000	99%	72	Syddanmark	€28.200	74%
5	Southern and Eastern	€41.400	99%	73	Toscana	€28.100	73%
6	Groningen	€41.100	98%	74	La Rioja	€27.900	73%
7	Oberbayern	€41.000	98%	75	Prov. Brabant Wallon	€27.700	72%
8	Stockholm	€41.000	98%	76	Braunschweig	€27.700	72%
9	Wien	€40.600	97%	77	Hannover	€27.600	72%
10	Bratislavský kraj	€39.900	97%	78	East Anglia	€27.500	71%
11	Bremen	€39.500	96%	79	East Wales	€27.500	71%
12	Berkshire, Buckinghamshire and Oxfordshire	€38.900	96%	80	Prov. West-Vlaanderen	€27.400	71%
13	Darmstadt	€38.900	96%	81	Sydsverige	€27.400	71%
14	Utrecht	€38.700	95%	82	Nordjylland	€27.400	71%
15	North Eastern Scotland	€38.100	95%	83	Småland med öarna	€27.400	71%
16	Noord-Holland	€37.400	94%	84	Rhône-Alpes	€27.300	69%
17	Hovedstaden	€37.400	94%	85	Detmold	€27.200	69%
18	Åland	€35.700	94%	85	Mellersta Norrland	€27.000	68%
19	Stuttgart	€35.200	93%	87	Norra Mellansverige	€26.900	68%
20	Salzburg	€34.700	93%	88	Friesland (NL)	€26.800	68%
21	Comunidad de Madrid	€34.100	93%	89	Gießen	€26.800	68%
22	Pais Vasco	€34.100	93%	90	Flevoland	€26.700	67%
23	Zuid-Holland	€34.000	92%	91	Zahodna Slovenija	€26.600	67%
24	Prov. Antwerpen	€33.800	91%	92	Outer London	€26.600	67%
25	Etelä-Suomi (Helsinki)	€33.800	91%	93	Liguria	€26.600	67%
26	Lombardia	€33.600	91%	94	Rhein Hessen-Pfalz	€26.500	65%
27	Noord-Brabant	€33.500	90%	95	Östra Mellansverige	€26.500	65%
28	Provincia Autonoma Bolzano/Bozen	€33.500	90%	96	Arnsberg	€26.500	65%
29	Mittelfranken	€33.000	90%	97	Steiermark	€26.400	64%
30	Karlsruhe	€32.900	89%	98	Marche	€26.300	64%
31	Comunidad Foral de Navarra	€32.900	89%	99	Greater Manchester	€26.200	64%
32	Gloucestershire, Wiltshire and Bristol/Bath area	€31.900	88%	100	West Midlands	€26.200	64%
33	Vorarlberg	€31.900	88%	101	Cantabria	€26.200	64%
34	Tirol	€31.900	88%	102	Prov. Oost-Vlaanderen	€26.100	62%
35	Emilia-Romagna	€31.900	88%	103	Länsi-Suomi	€26.100	62%
36	Αττική / Attiki	€31.900	88%	104	Kärnten	€26.100	62%
37	Düsseldorf	€31.800	87%	105	Lisboa	€26.100	62%
38	Bedfordshire and Hertfordshire	€31.600	86%	106	Drenthe	€25.800	61%
39	Tübingen	€31.200	86%	107	West Yorkshire	€25.800	61%
40	Cheshire	€30.800	86%	108	South Western Scotland	€25.800	61%
41	Cataluña	€30.700	85%	109	Közép-Magyarország	€25.600	60%
42	Prov. Vlaams-Brabant	€30.500	85%	110	Alsace	€25.500	59%
43	Surrey, East and West Sussex	€30.500	85%	111	Pohjois-Suomi	€25.500	59%
44	Lazio	€30.500	85%	112	Provence-Alpes-Côte d'Azur	€25.500	59%
45	Oberpfalz	€30.400	84%	113	Castilla y León	€25.300	58%
46	Provincia Autonoma Trento	€30.400	84%	114	North Yorkshire	€25.200	58%
47	Zeeland	€30.300	83%	115	Weser-Ems	€25.200	58%
48	Veneto	€30.300	83%	116	Herefordshire, Worcestershire and Warwickshire	€25.100	57%
49	Schwaben	€30.100	82%	117	Derbyshire and Nottinghamshire	€25.000	57%
50	Eastern Scotland	€29.900	82%	118	Niederösterreich	€24.900	57%
51	Oberösterreich	€29.900	82%	119	Champagne-Ardenne	€24.900	57%
52	Limburg (NL)	€29.700	81%	120	Schleswig-Holstein	€24.800	56%
53	Västssverige	€29.700	81%	121	Border, Midland and Western	€24.700	55%
54	Valle d'Aosta/Vallée d'Aoste	€29.500	80%	122	Münster	€24.500	55%
55	Köln	€29.400	80%	123	Aquitaine	€24.500	55%
56	Unterfranken	€29.300	80%	124	Haute-Normandie	€24.500	55%
57	Hampshire and Isle of Wight	€29.100	79%	125	Essex	€24.400	54%
58	Friuli-Venezia Giulia	€29.000	79%	126	Berlin	€24.400	54%
59	Niederbayern	€28.800	78%	127	Northumberland and Tyne and Wear	€24.400	54%
60	Midtjylland	€28.700	78%	128	Pays de la Loire	€24.400	54%
61	Övre Norrland	€28.700	78%	129	Koblenz	€24.300	52%
62	Kassel	€28.700	78%	130	Dorset and Somerset	€24.200	52%
63	Overijssel	€28.600	77%	131	Ciudad Autónoma de Ceuta	€24.200	52%
64	Leicestershire, Rutland and Northamptonshire	€28.500	77%	132	Midi-Pyrénées	€24.200	52%
65	Saarland	€28.500	77%	133	Umbria	€24.100	51%
66	Aragón	€28.500	77%	134	Principado de Asturias	€24.100	51%
67	Freiburg	€28.400	75%	135	Νότιο Αιγαίο / Notio Aigaio	€24.000	50%
68	Illes Balears	€28.400	75%	136	Região Autónoma da Madeira	€24.000	50%

\*excludes Brussels and London due to performance anomalies



Rank	Region	GDP per capita, PPP-adjusted	Percentile in Ranking
137	Prov. Limburg (B)	€ 23.900	49%
138	Centre	€ 23.700	49%
139	Comunidad Valenciana	€ 23.700	49%
140	Bretagne	€ 23.600	48%
141	Ciudad Autónoma de Melilla	€ 23.500	48%
142	Trier	€ 23.500	48%
143	Bourgogne	€ 23.500	48%
144	Kent	€ 23.300	47%
145	Κύπρος / Kibris	€ 23.300	47%
146	Northern Ireland	€ 23.100	46%
147	Canarias	€ 23.100	46%
148	București-Ilfov	€ 23.000	45%
149	Sjælland	€ 22.800	45%
150	Auvergne	€ 22.800	45%
151	East Yorkshire and Northern Lincolnshire	€ 22.500	44%
152	South Yorkshire	€ 22.500	44%
153	Franche-Comté	€ 22.500	44%
154	Poitou-Charentes	€ 22.500	44%
155	Lancashire	€ 22.400	43%
156	Cumbria	€ 22.300	42%
157	Shropshire and Staffordshire	€ 22.200	42%
158	Devon	€ 22.100	42%
159	Leipzig	€ 22.100	42%
160	Galicja	€ 22.100	42%
161	Itä-Suomi	€ 22.100	42%
162	Lorraine	€ 22.100	42%
163	Basse-Normandie	€ 22.000	40%
164	Nord-Pas-de-Calais	€ 22.000	40%
165	Limousin	€ 21.900	39%
166	Dresden	€ 21.800	39%
167	Highlands and Islands	€ 21.700	38%
168	Brandenburg-Südwest	€ 21.700	38%
169	Mazowieckie	€ 21.700	38%
170	Región de Murcia	€ 21.600	37%
171	Picardie	€ 21.400	37%
172	Languedoc-Roussillon	€ 21.300	36%
173	Prov. Liège	€ 21.200	36%
174	Abruzzo	€ 21.200	36%
175	Corse	€ 21.100	35%
176	Στερεά Ελλάδα / Sterea Ellada	€ 20.900	35%
177	Κρήτη / Kriti	€ 20.800	35%
178	Lüneburg	€ 20.800	35%
179	Sachsen-Anhalt	€ 20.800	35%
180	Lincolnshire	€ 20.700	33%
181	Thüringen	€ 20.700	33%
182	Merseyside	€ 20.700	33%
183	Chemnitz	€ 20.600	32%
184	Burgenland (A)	€ 20.300	32%
185	Tees Valley and Durham	€ 20.300	32%
186	Castilla-La Mancha	€ 20.300	32%
187	Andalucía	€ 20.200	31%
188	Mecklenburg-Vorpommern	€ 20.200	31%
189	Prov. Namur	€ 19.800	30%
190	Algarve	€ 19.800	30%
191	Prov. Luxembourg (B)	€ 19.500	29%
192	Sardegna	€ 19.500	29%
193	Molise	€ 19.400	29%
194	Malta	€ 19.000	28%
195	Brandenburg-Nordost	€ 19.000	28%
196	Δυτική Μακεδονία / Dytiki Makedonia	€ 18.900	28%
197	Πελοπόννησος / Peloponnisos	€ 18.900	28%
198	Cornwall and Isles of Scilly	€ 18.700	27%
199	Střední Čechy	€ 18.700	27%
200	Prov. Hainaut	€ 18.700	27%
201	Basilicata	€ 18.700	27%
202	Martinique	€ 18.700	27%
203	Ιόνια Νησιά / Ionia Nisia	€ 18.400	25%

Rank	Region	GDP per capita, PPP-adjusted	Percentile in Ranking
204	West Wales and The Valleys	€ 18.300	25%
205	Vzhodna Slovenija	€ 18.200	24%
206	Κεντρική Μακεδονία / Kentriki Makedonia	€ 18.000	24%
207	Extremadura	€ 18.000	24%
208	Jihovýchod	€ 17.900	23%
209	Alentejo	€ 17.900	23%
210	Jihozápad	€ 17.700	22%
211	Eesti	€ 17.100	22%
212	Guadeloupe	€ 17.100	22%
213	Ηπείρος / Ipeiros	€ 17.000	21%
214	Θεσσαλία / Thessalia	€ 17.000	21%
215	Região Autónoma dos Açores	€ 16.800	20%
216	Moravskoslezsko	€ 16.800	20%
217	Βόρειο Αιγαίο / Voreio Aigaio	€ 16.600	20%
218	Puglia	€ 16.600	20%
219	Západné Slovensko	€ 16.500	19%
220	Severovýchod	€ 16.400	19%
221	Campania	€ 16.400	19%
222	Sicilia	€ 16.400	19%
223	Calabria	€ 16.400	19%
224	Centro (P)	€ 16.100	17%
225	Réunion	€ 15.600	17%
226	Střední Morava	€ 15.500	16%
227	Ανατολική Μακεδονία, Θράκη / Anatoliki Makedonia, Thraki	€ 15.500	16%
228	Югозападен / Yugozapaden (Sofia)	€ 15.400	16%
229	Severozápad	€ 15.400	16%
230	Nyugat-Dunántúl	€ 15.300	15%
231	Norte	€ 15.000	14%
232	Δυτική Ελλάδα / Dytiki Ellada	€ 14.900	14%
233	Lietuva	€ 14.800	14%
234	Dolnośląskie	€ 14.700	13%
235	Közép-Dunántúl	€ 14.500	13%
236	Śląskie	€ 14.400	13%
237	Wielkopolskie	€ 14.200	12%
238	Latvija	€ 13.900	12%
239	Pomorskie	€ 13.300	12%
240	Stredné Slovensko	€ 13.300	12%
241	Łódzkie	€ 12.500	11%
242	Zachodniopomorskie	€ 12.200	10%
243	Guyane	€ 12.100	10%
244	Lubuskie	€ 12.000	10%
245	Vest	€ 12.000	10%
246	Kujawsko-Pomorskie	€ 11.800	9%
247	Małopolskie	€ 11.600	9%
248	Východné Slovensko	€ 11.500	8%
249	Opolskie	€ 11.200	8%
250	Dél-Dunántúl	€ 10.600	7%
251	Centru	€ 10.500	7%
252	Dél-Alföld	€ 10.400	7%
253	Świętokrzyskie	€ 10.400	7%
254	Podlaskie	€ 10.100	6%
255	Warmińsko-Mazurskie	€ 10.100	6%
256	Nord-Vest	€ 10.000	5%
257	Észak-Magyarország	€ 10.000	5%
258	Észak-Alföld	€ 9.800	4%
259	Lubelskie	€ 9.200	4%
260	Podkarpackie	€ 9.100	4%
261	Sud-Muntenia	€ 8.500	3%
262	Sud-Est	€ 8.400	3%
263	Североизточен / Severoiztochen	€ 8.100	3%
264	Sud-Vest Oltenia	€ 8.100	3%
265	Югоизточен / Yugoiztochen	€ 7.600	2%
266	Южен централен / Yuzhen tsentralen	€ 6.800	1%
267	Nord-Est	€ 6.600	1%
268	Северен централен / Severen tsentralen	€ 6.600	1%
269	Северозападен / Severozapaden	€ 6.400	0%

Source: Eurostat – European Regional and Urban Statistics Database

Table 6: Educational Attainment (25-64 Year Olds, 2008)\*

Rank	Region	ISCED	Percentile in Ranking	Rank	Region	ISCED	Percentile in Ranking
1	Prov. Brabant Wallon	0,476	100%	69	Rhône-Alpes	0,282	74%
2	País Vasco	0,425	100%	70	Cumbria	0,282	74%
3	Hovedstaden	0,405	99%	71	Shropshire and Staffordshire	0,282	74%
4	Prov. Vlaams-Brabant	0,404	99%	72	Leicestershire, Rutland and Northamptonshire	0,28	73%
5	Etelä-Suomi (Helsinki)	0,403	98%	73	Northern Ireland	0,279	73%
6	Utrecht	0,399	98%	74	Prov. Limburg (B)	0,278	72%
7	Île de France	0,389	98%	75	Praha	0,277	72%
8	Stockholm	0,386	97%	76	Åland	0,277	72%
9	Comunidad de Madrid	0,383	97%	77	Devon	0,277	72%
10	Comunidad Foral de Navarra	0,382	97%	78	Greater Manchester	0,276	71%
11	Surrey, East and West Sussex	0,37	96%	79	Közép-Magyarország	0,276	71%
12	Berkshire, Buckinghamshire and Oxfordshire	0,362	96%	80	Mellersta Norrland	0,274	70%
13	Eastern Scotland	0,362	96%	81	Mazowieckie	0,273	70%
14	Noord-Holland	0,361	95%	82	Zahodna Slovenija	0,271	69%
15	North Eastern Scotland	0,36	95%	83	Darmstadt	0,27	69%
16	Outer London	0,356	94%	84	Kent	0,27	69%
17	Berlin	0,345	94%	85	Thüringen	0,27	69%
18	Gloucestershire, Wiltshire and Bristol/Bath area	0,344	94%	85	Αττική / Attiki	0,269	68%
19	Leipzig	0,338	93%	87	Sjælland	0,269	68%
20	Dresden	0,335	93%	88	Lancashire	0,268	67%
21	Aragón	0,333	92%	89	Overijssel	0,267	67%
22	Eesti	0,333	92%	90	Derbyshire and Nottinghamshire	0,267	67%
23	Cheshire	0,332	92%	91	Luxembourg (Grand-Duché)	0,265	66%
24	Länsi-Suomi	0,332	92%	92	Hamburg	0,265	66%
25	Югозападен / Yugozapaden (Sofia)	0,332	92%	93	Languedoc-Roussillon	0,265	66%
26	Southern and Eastern	0,331	91%	94	Karlsruhe	0,264	65%
27	Pohjois-Suomi	0,331	91%	95	Stuttgart	0,263	65%
28	Κύριος / Kibris	0,331	91%	96	București-Ilfov	0,263	65%
29	South Western Scotland	0,328	89%	97	Syddanmark	0,262	64%
30	Sydsverige	0,327	89%	98	Drenthe	0,261	63%
31	Highlands and Islands	0,326	89%	99	Comunidad Valenciana	0,261	63%
32	Cantabria	0,324	88%	100	West Yorkshire	0,26	63%
33	North Yorkshire	0,324	88%	101	Tübingen	0,259	62%
34	Bedfordshire and Hertfordshire	0,32	88%	102	Köln	0,259	62%
35	Herefordshire, Worcestershire and Warwickshire	0,319	87%	103	Border, Midland and Western	0,259	62%
36	East Wales	0,317	87%	104	Northumberland and Tyne and Wear	0,258	61%
37	Zuid-Holland	0,313	86%	105	Freiburg	0,253	61%
38	Prov. Oost-Vlaanderen	0,313	86%	106	Flevoland	0,252	60%
39	Västssverige	0,31	86%	107	Alsace	0,251	60%
40	Oberbayern	0,308	85%	108	Merseyside	0,251	60%
41	La Rioja	0,308	85%	109	Friesland (NL)	0,25	59%
42	Brandenburg-Südwest	0,307	85%	110	Mecklenburg-Vorpommern	0,25	59%
43	Prov. Antwerpen	0,306	84%	111	Småland med Öarna	0,249	58%
44	Bretagne	0,305	84%	112	Prov. Hainaut	0,248	58%
45	Prov. Liège	0,305	84%	113	Mittelfranken	0,247	58%
46	Prov. Namur	0,304	83%	114	West Midlands	0,247	58%
47	Castilla y León	0,299	83%	115	Gießen	0,246	57%
48	Chemnitz	0,298	82%	116	Provence-Alpes-Côte d'Azur	0,245	57%
49	Groningen	0,297	82%	117	Canarias	0,244	56%
50	Hampshire and Isle of Wight	0,297	82%	118	Nordjylland	0,242	56%
51	Itä-Suomi	0,296	81%	119	Essex	0,242	56%
52	Övre Norrland	0,294	81%	120	South Yorkshire	0,241	55%
53	Midtjylland	0,293	80%	121	West Wales and The Valleys	0,24	55%
54	Gelderland	0,293	80%	122	Limburg (NL)	0,238	54%
55	Midi-Pyrénées	0,293	80%	123	Aquitaine	0,238	54%
56	Principado de Asturias	0,292	79%	124	Andalucía	0,238	54%
57	Prov. Luxembourg (B)	0,292	79%	125	Rheinhessen-Pfalz	0,236	53%
58	Bratislavský kraj	0,291	78%	126	Lincolnshire	0,236	53%
59	Noord-Brabant	0,289	78%	127	Región de Murcia	0,235	52%
60	Lietuva	0,289	78%	128	Tees Valley and Durham	0,235	52%
61	Östra Mellansverige	0,288	77%	129	Norra Mellansverige	0,231	52%
62	Dorset and Somerset	0,287	77%	130	Sachsen-Anhalt	0,231	52%
63	Galicía	0,287	77%	131	Wien	0,23	51%
64	Cataluña	0,286	76%	132	Unterfranken	0,228	51%
65	Prov. West-Vlaanderen	0,285	76%	133	Nord-Pas-de-Calais	0,228	51%
66	East Anglia	0,284	75%	134	Κεντρική Μακεδονία / Kentriki Makedonia	0,227	50%
67	Brandenburg-Nordost	0,284	75%	135	East Yorkshire and Northern Lincolnshire	0,226	49%
68	Cornwall and Isles of Scilly	0,284	75%	136	Pays de la Loire	0,225	49%

\*excludes Brussels and London due to performance anomalies

Rank	Region	ISCED	Percentile in Ranking
137	Latvija	0,225	49%
138	Ciudad Autónoma de Melilla	0,224	48%
139	Auvergne	0,223	48%
140	Trier	0,222	48%
141	Basse-Normandie	0,222	48%
142	Castilla-La Mancha	0,221	47%
143	Bremen	0,22	46%
144	Kassel	0,22	46%
145	Hannover	0,22	46%
146	Champagne-Ardenne	0,218	45%
147	Lorraine	0,218	45%
148	Extremadura	0,217	45%
149	Braunschweig	0,215	44%
150	Illes Balears	0,214	44%
151	Zeeland	0,213	43%
152	Θεσσαλία / Thessalia	0,213	43%
153	Oberfranken	0,211	43%
154	Schwaben	0,21	42%
155	Centre	0,209	42%
156	Limousin	0,209	42%
157	Κρήτη / Kriti	0,209	42%
158	Düsseldorf	0,205	41%
159	Niederbayern	0,205	41%
160	Lisboa	0,205	41%
161	Haute-Normandie	0,203	40%
162	Franche-Comté	0,203	40%
163	Североизточен / Severoiztochen	0,203	40%
164	Schleswig-Holstein	0,202	38%
165	Münster	0,2	38%
166	Oberpfalz	0,198	38%
167	Małopolskie	0,197	37%
168	Ήπειρος / Ipeiros	0,195	37%
169	Zachodniopomorskie	0,195	37%
170	Podlaskie	0,195	37%
171	Δυτική Ελλάδα / Dytiki Ellada	0,194	36%
172	Северен централен / Severen tsentralen	0,193	35%
173	Poitou-Charentes	0,191	35%
174	Bourgogne	0,189	35%
175	Corse	0,189	35%
176	Koblenz	0,187	34%
177	Dolnośląskie	0,186	34%
178	Lubelskie	0,186	34%
179	Pomorskie	0,185	33%
180	Salzburg	0,184	32%
181	Weser-Ems	0,184	32%
182	Łódzkie	0,184	32%
183	Lazio	0,182	31%
184	Detmold	0,182	31%
185	Vzhodna Slovenija	0,182	31%
186	Lüneburg	0,18	30%
187	Югоизточен / Yugoiztochen	0,177	30%
188	Северозападен / Severozapaden	0,175	29%
189	Świętokrzyskie	0,173	29%
190	Picardie	0,172	29%
191	Arnsberg	0,171	28%
192	Ανατολική Μακεδονία, Θράκη / Anatoliki Makedonia, Thraki	0,171	28%
193	Δυτική Μακεδονία / Dytiki Makedonia	0,169	28%
194	Βόρειο Αιγαίο / Voreio Aigaio	0,168	27%
195	Ciudad Autónoma de Ceuta	0,167	27%
196	Vorarlberg	0,166	26%
197	Śląskie	0,166	26%
198	Южен централен / Yuzhen tsentralen	0,166	26%
199	Tirol	0,165	25%
200	Oberösterreich	0,164	25%
201	Kärnten	0,164	25%
202	Podkarpackie	0,164	25%

Source: Eurostat – European Regional and Urban Statistics Database

Rank	Region	ISCED	Percentile in Ranking
203	Liguria	0,162	24%
204	Wielkopolskie	0,162	24%
205	Steiermark	0,161	23%
206	Πελοπόννησος / Peloponnisos	0,159	23%
207	Opolskie	0,157	22%
208	Dél-Alföld	0,155	22%
209	Saarland	0,153	22%
210	Niederösterreich	0,153	22%
211	Jihovýchod	0,153	22%
212	Umbria	0,151	20%
213	Warmińsko-Mazurskie	0,149	20%
214	Emilia-Romagna	0,148	20%
215	Toscana	0,147	19%
216	Lubuskie	0,147	19%
217	Provincia Autonoma Trento	0,144	18%
218	Molise	0,143	18%
219	Közép-Dunántúl	0,143	18%
220	Észak-Alföld	0,143	18%
221	Lombardia	0,142	17%
222	Abruzzo	0,142	17%
223	Στερεά Ελλάδα / Sterea Ellada	0,139	16%
224	Marche	0,138	16%
225	Nyugat-Dunántúl	0,137	15%
226	Friuli-Venezia Giulia	0,136	15%
227	Burgenland (A)	0,136	15%
228	Calabria	0,135	14%
229	Dél-Dunántúl	0,133	14%
230	Piemonte	0,13	14%
231	Észak-Magyarország	0,128	13%
232	Jihozápad	0,127	13%
233	Malta	0,126	12%
234	Západné Slovensko	0,126	12%
235	Střední Morava	0,126	12%
236	Basilicata	0,125	11%
237	Kujawsko-Pomorskie	0,125	11%
238	Východné Slovensko	0,124	11%
239	Ιόνια Νησιά / Ionia Nisia	0,123	10%
240	Stredné Slovensko	0,123	10%
241	Veneto	0,122	9%
242	Νότιο Αιγαίο / Notio Aigaio	0,121	9%
243	Centro (P)	0,119	9%
244	Alentejo	0,117	8%
245	Moravskoslezsko	0,117	8%
246	Valle d'Aosta/Vallée d'Aoste	0,115	8%
247	Sicilia	0,115	8%
248	Vest	0,114	7%
249	Campania	0,113	6%
250	Região Autónoma da Madeira	0,112	6%
251	Puglia	0,112	6%
252	Centru	0,111	5%
253	Sud-Vest Oltenia	0,111	5%
254	Sardegna	0,11	5%
255	Střední Čechy	0,11	5%
256	Severovýchod	0,11	5%
257	Nord-Vest	0,11	5%
258	Norte	0,109	3%
259	Algarve	0,108	3%
260	Provincia Autonoma Bolzano/Bozen	0,103	2%
261	Nord-Est	0,103	2%
262	Sud-Est	0,088	2%
263	Sud-Muntenia	0,086	1%
264	Região Autónoma dos Açores	0,074	1%
265	Severozápad	0,073	0%
	Martinique	n/a	
	Guadeloupe	n/a	
	Réunion	n/a	
	Guyane	n/a	

n/a= data not available

## Note on Methodology and Data

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This policy brief aims to advise regional policy-makers on how they can foster economic growth, in particular along the parameters of the European growth strategy until 2020. The model is designed to explain income differences measured in per capita gross domestic product, adjusted for purchasing power parity, in logarithmic terms through simple ordinary least squares (OLS). OLS is a standard estimation technique that is used very widely due to its good statistical properties and its easy interpretation. It estimates parameters in a linear regression model by minimizing the sum of squared errors in the data. OLS is potentially vulnerable to issues of endogeneity, for example from reverse causality. The investigation of reverse causality through time lag analysis – using the expected explanatory variable from an earlier point in time than the output variable to ensure that causality can only go one way – did not yield conclusive evidence. For youth unemployment, causality runs in the expected direction: Youth unemployment in 2000 does explain differences in GDP per capita in 2007 controlled for GDP per capita in 2000. However, GDP per capita in 2000 does not explain differences in the youth unemployment rates in 2007, controlled for youth unemployment rates in 2000. For the other variables this relationship is not so clear, also because the time lag of just eight years is not long enough.

Another source of endogeneity, omitted-variable bias, could arise from third factors influencing the human capital of a region

as well as its income. Typical examples of third factors that might drive both human capital performance and income independently are fixed capital formation, financial market systems, regulatory quality, dominant religious orientation, climate or history. In this analysis, some of these factors were taken into account by grouping the regions according to their a priori conditions. Others, such as the availability of financial capital, were ruled out a priori due to the generally well developed financial infrastructure in Europe. Still others should be covered at least indirectly by the innovation indicator.

A more elaborate model design to avoid omitted-variable bias (for time-constant unobserved variables) could have been fixed-effects estimators. A fixed-effects estimator ignores any variation in the level of outcomes across regions and only focuses on changes over time.<sup>98</sup> As data was available only for a maximum of nine years, it may have been sufficient to show some of the effects of adult human capital variables such as the proportion of complex jobs or long-term unemployment but it was unlikely to do justice to their long-term effects or any of the effects of schooling or tertiary education. The analysis is presented without time lags because the level of GDP is not sensitive to single years due to the high intertemporal correlation of each variable.<sup>99</sup>

Another model design that would allow unbiased results even in the case of endogeneity is the use of instrumental

98. Martin Schlotter, Guido Schwerdt and Ludger Woessmann, "Econometric Methods for Causal Evaluation of Education Policies and Practices: A Non-Technical Guide", IZA, Discussion Paper No. 4725, January 2010. Fixed-effects estimators have some disadvantages, too. In the academic literature different generalized method of moments (GMM) estimators are usually applied.

99. In contrast, by regarding growth rates, the chosen time lag influences the results considerably.

variables. A valid instrument needs strong assumptions and a generalisation of the results can be difficult. For easier comprehension, this policy brief only reports OLS results.

All references to the coefficient of determination ( $R^2$ ) or the explained variation in income refer to the unadjusted  $R^2$ . The results are not sensitive to the choice of  $R^2$ , adjusted  $R^2$  or the Akaike information criterion. The dependent variable is the logarithm of per-capita GDP, but the results are qualitatively similar to the per-capita GDP. The logarithm is preferable because of its approximate normal distribution and its coefficients as being interpretable as semi-elasticities. GDP data were adjusted for purchasing power parity. Eurostat provides this data as purchasing power standards (PPS).

Many similar studies look at the income growth rates as the dependent variable. However, growth rates are more susceptible to measurement error than income levels.<sup>100</sup> Also, a number of European economies such as Ireland, Spain and United Kingdom have seen housing or property bubbles between 1999 and 2007. So the GDP growth rates may not be a valid proxy for potential long-term growth. In fact, this policy brief's independent variables had no robust explanatory power for growth whether with OLS or with fixed-effects estimation. The GDP level rather than GDP growth rates were also chosen so as to retain the information of GDP levels in the analysis.

More than 30 input variables were examined. Some of the variables not presented in this policy brief are working hours, population, migration, broadband accesses or social capital proxies from the European Social Survey (ESS 2006 / 2008) such as questions on trust.

The Human Capital Leading Indicators were selected by the following three criteria. First, there are intuitive reasons to suppose that each variable affects the regional wealth creation in line with the Human Capital Matrix. Second, for each indicator there is a sufficient number of regions providing data – a reason why social capital or broadband were not included. Third, each indicator is significant and important as determined by a statistical selection procedure. The significance and the effect size of every variable were checked to avoid making statements for variables where effects were only weak.

Complex jobs are those with starting digits 1 and 2 according to the ISCO classification of the International Labour Organization (ILO); Eurostat prepared a detailed data set for this study consisting primarily of the year 2008 and 2009. The share of complex jobs among total employment is closely related to the share of the population with a tertiary degree. However, the share of complex jobs provides greater explanatory power than the share of tertiary education. In addition, complex should be less susceptible to reverse causality: higher income may make higher education more affordable,

100. The correlation of all relevant variables is considerably higher between 2006 and 2007 than between 1999 and 2000.

but income by itself cannot directly create more complex jobs.<sup>101</sup> A regional human capital manager should seek a high share of complex jobs in the work force, and tertiary degree holders are one but not the only means to that end.

The innovation variable is built up of three sub-indicators in 2003: public R&D expenditures, private R&D expenditures (in % of GDP) and patent applications per million of inhabitants, for each of which the regions are ranked. A region's innovation score is the numerical average of the ranks of the three sub-indicators. The maximum number of observations of all three sub-indicators in all regions was available for 2003. The choice of this year is corroborated by very high temporal correlation of each sub-indicator between 2003 and 2007. Some would argue that R&D and patents may not be sufficiently satisfactory as a proxy for the productivity of human capital. Unfortunately, there is no obviously better proxy. The results might be improved by focusing on business R&D expenditures and excluding public R&D expenditures or by using a composite indicator.<sup>102</sup>

An early version of the regional groupings divided the thinly populated regions into two groups: those with a strong share of manufacturing industries, and those which are mostly agricultural and touristic. Surprisingly, the importance of R&D spending and patent awards was nearly the same, even though one might expect that manufacturing operations

would need to rely more on patents than hotels and restaurants on sea shores. The rejection of this hypothesis supports the conclusion that investments in innovation such as R&D are symptoms of high capital productivity, rather than their cause. In some cases, we refer to the national average as the (unweighted) average of all regions within a country.

### Data Availability and Reliability

Data availability on European regions is improving but has limited historical reach. The data used for this policy brief has been provided by Eurostat, the statistical office of the European Union. There are many variables available from Eurostat at the NUTS2 or NUTS3 level but few before 1999, and others only for very recent years. Some variables are not available for all regions even in 2007. Youth unemployment rates, for example, are missing for 27 out of 269 regions in 2007. There are 234 regions that have data for all four Human Capital Leading Indicators as well as the share of highly educated.

There are 271 NUTS-2 regions but Brussels and London were omitted from the analysis because these cities are statistical outliers with an unusually high GDP and high leverage on the estimated coefficients. 234 regions provide data for all eight indicators investigated. In addition, capital cities were controlled for, although Valletta and Nicosia were not considered in the capital city group, as they are indistinguishable from their region due to their small size. For each regression, the

101. Compare also on the robustness of highly-skilled labour statistics in Jesus Crespo-Cuaresma, Neil Foster and Robert Stehrer, "The Determinants of Regional Economic Growth by Quantile," *Vienna Institute for International Economic Studies*, Working Paper 54, May 2009.

102. Hugo Hollanders and Funda Celikel Esser, "Measuring innovation Efficiency," *INNO-Metrics Thematic Paper*, December 2007.



impact of individual regions on the size of the coefficient was checked so that outlier regions could be identified.

The finding that regional variance is greater than national variance and therefore a better guide to good practice is also backed up by the distribution of an indicator that was not included in the analysis. The Programme for International Student Assessment (PISA) is an internationally

standardised assessment that was jointly developed by participating economies and administered to 15 year olds in schools. Only a few European countries provide regional data but where such data exists it strongly supports one of the key findings of this analysis: there are large differences within countries in student competencies driven by, for example, regional human capital policies.

## Interviews

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Researchers visited the following regions, and interviewed the following people, as part of the research and fact gathering for this year-long study. The Lisbon Council would like to thank them for their warm hospitality, and for taking so much time to share their wisdom and insights with us. As always, errors of fact or judgment remaining in the study are the authors' sole responsibility.

### Bratislava, Slovakia

12-15 December 2010

*Vladimir Baláž*, head, scientific committee, institute for forecasting, Slovak Academy of Science

*Kvetoslava Blahová*, project manager, FDI section, Slovak Investment and Trade Development Agency (SARIO)

*Kvetoslava Blahová*, project manager, nationwide employment initiative Bratislava-Vienna, Central Office of Labour, Social Affairs and Family

*Denisa Brighton*, manager, know-how centre, Slovak University of Technology

*Peter Chudoba*, student, MBA automotive industry programme, Slovak University of Technology

*Agmar Csomò*, student, University of the Third Age

*Lenka Demovicova*, project manager, FDI section, Slovak Investment and Trade Development Agency (SARIO)

*Katarína Dubovanová*, director, employment services, Office of Labour

*Katarína Grunwald*, student, University of the Third Age

*Nadežda Hrapková*, director, University of the Third Age

*Ivana Kondášová*, project manager,

Regionfemme, Slovak Chamber of Commerce and Industry

*Jan Lešinský*, academic director, Slovak University of Technology

*Lenka Lutonská*, student, University of the Third Age

*Anton Marcincin*, economist, Slovakia and Slovenia, World Bank

*Michal Matusek*, student, MBA automotive industry programme, Slovak University of Technology

*Lenka Mikulikova*, manager, know-how centre, Slovak University of Technology

*Marek Moška*, office of the president, Department of Foreign Relations, Protocol and EU Affairs

*Peter Plavčan*, general director, Ministry of Education

*Juraj Poledna*, head, foreign affairs department, Slovak Chamber of Commerce and Industry

*Robert Redhammer*, vice-rector, Slovak University of Technology

*Arnaud Segretain*, head, EU office

### Emilia Romagna, Italy

29-30 June 2010

*Sergio D'Alesio*, Labour and Migration

*Andrea Antonelli*, director, Technopolis Interdepartmental Centre

*Valeria Bandini*, Aster

*Matteo Beghelli*, economist, Chamber of Commerce

*Chiara Bentivoglio*, Banca d'Italia

*Francesca Bergamini*, Programming and Evaluation Service for Officers within Culture, Training and Labour

*Silvano Bertini*, Economic Development Policies Unit

*Gianluca Bladoni*, Department for

#### Productive Activities

*Rocco Luigi Bubbico*, PhD student, SED Manchester

*Andrea Facchini*, head, social policy, Service for Welcome and Integration of Immigrants

*Patrizia Fava*, professor, University of Modena and Reggio

*Cinzia Ioppi*, Social Services Planning and Development

*Aki Ishiwa*, officer

*Paola Maccani*, head, department for local development initiatives, Territorial Development Agency (ERVET S.p.a)

*Rita Malavasi*, EU policy officer, Regional Office of Emilia Romagna

*Maurizio Marengon*, Statistical Data

*Federico Margelli*, researcher, Regional Laboratory for Innovation in Air Quality Control (LARIA)

*Annamaria Mucchi*, communication, media relations and publishing department, Reggio Children

*Valentina Polylas*, EU policy officer, Regional Office of Emilia Romagna

*Sonia Di Silvestre*, manager, Programmes on Female Entrepreneurship

*Andrea Stuppini*, head, social policy, Service for Welcome and Integration of Immigrants

*Lorella Trancossi*, pedagogist, Reggio Children

#### Helsinki, Finland

02-03 September 2010

*Ulla Maija Forsberg*, vice-rector, University of Helsinki

*Tarja Hartikainen*, director, regional development

*Olli Pekka Hatanpää*, planning chief,

#### Housing Policy and Welfare Services

*Kauko Huhtinen*, project manager,

Culminatum Innovation

*Mikko Ikola*, developer, Aalto

Entrepreneurship Society

*Hilkka Jylli*, senior adviser for education

*Jarmo Kallunki*, educational officer, National Union of University Students Finland

*Ulla Mari Karhu*, expert, social environment, welfare and planning, Uusimaa Regional Council

*Ari Lainevuori*, research chief, METREX

*Tatu Laurila*, CEO, Greater Helsinki Promotion

*Markus Nuotto*, developer, Aalto Entrepreneurship Society

*Anna Parpala*, project manager, centre for research and development for higher education, University of Helsinki

*Kirsi Pyhälä*, senior researcher, centre for research and development for higher education, University of Helsinki

*Jens Sørensen*, chairman, Aalto Entrepreneurship Society

*Adrian Solitander*, head, EU office

*Pertti Vuorela*, senior advisor, Culminatum Innovation

#### Navarra, Spain

31 May-02 June 2010

*Francisco Arasanz*, member, Council for Vocational Training

*Cristina Arcaya*, director, Observatory for Employment and Training

*Jose Javier Armendariz*, director-general, National Centre for Renewable Energy (CENER)

*María Beunza*, project director, Innovation Agency of Navarra (ANAIN)

*Ramon Bulto*, Sodena  
*María Antonia Del Burgo*, director,  
 Government of Navarra  
*Alberto Clerigué*, Sodena  
*Roberto Ducay*, member, committee of  
 direction, Caja Navarra  
*Fernando Egidio*, Caja Navarra  
*Iñigo Goenaga*, employee, Academic  
 Hospital of Navarra  
*Belén Goñi*, general manager, Innovation  
 Agency of Navarra (ANAIN)  
*Pedro Gonzales*, general director, vocational  
 training and universities, DG education,  
 Government of Navarra  
*Emilio Huerta*, professor, Public University  
 of Navarra  
*María Pilar Ibiricu*, Caja Navarra  
*Javier Izcue*, DG education, Government of  
 Navarra  
*Carmen Leza*, director, European Centre  
 for Business and Innovation (CEIN)  
*Enrique De Mulder*, independent  
 consultant, De Mulder Consulting  
*Gaizka Nicuesa*, Gamesa  
*Araceli Parres Serrano*, assistant, Caja  
 Navarra  
*Fernando De La Puente*, managing director,  
 Centre for Applied Medical Research  
 (CIMA)  
*Katrin Simon*, professor, Public University  
 of Navarra  
*Cristina Urdanoz*, director, training  
 and intermediation, DG employment,  
 Government of Navarra  
*Begoña Urien*, DG enterprise, Government  
 of Navarra

## Sofia, Bulgaria

19-21 July 2010

*Hristo Angelichin*, deputy mayor, culture,  
 education, sport and prevention of  
 addictions  
*Genoveva Bakardjieva*, Bulgarian Human  
 Resource Management Association  
*Maria Bojkova*, public relations, Sofia  
 Municipality  
*Pepka Boyadjieva*, professor, institute of  
 sociology, Bulgarian Academy of Sciences  
*William Drysdale*, senior consultant, AIMS  
 Human Capital Bulgaria and Macedonia  
*Anna Krasteva*, professor, New Bulgarian  
 University  
*Ivan Krustev*, head, programming and  
 planning department, Ministry of Labour  
 and Social Policy  
*Svetlana Lomeva*, executive director,  
 Sofia Development Association; Sofia  
 Municipality  
*Viktor Manev*, managing partner, MMC  
*Milen Milanov*, advisor to the minister,  
 Ministry of Labour and Social Policy  
*Nadia Nikolova*  
*Kristina Petkova*, sociologist and social  
 psychologist, institute of sociology,  
 Bulgarian Academy of Sciences  
*Boriana Savova*, head, EU office  
*Borislav Stefano*, Invest Bulgaria  
*Evelina Stoyanova*  
*Georgi Stoytchev*, executive director, Open  
 Society Institute  
*Hristina Valeva*  
*Plamen Voushev*, entrepreneur  
*Sevdalina Voynova*, director of programmes,  
 Sofia Development Association  
*Irina Yordanova*, chairwoman, Committee  
 on EU Affairs and Civil Society  
*Boyan Zahariev*, Open Society Institute

## **Stockholm, Sweden**

**30-31 August 2010**

*Jonatan Dannemann*, project manager, higher education and research, KISTA Science City AB

*Mats Ershammar*, member, County Administrative Board of Stockholm

*Mats Essemyr*, Swedish Confederation of Professional Employees

*Pär Hedberg*, CEO, Stockholm Innovation and Growth (STING)

*Jenny Kallstenius*, PhD student, Stockholm University

*Patrik Möller*, CEO, Replisaurus Technologies

*Erik Oden*, CEO, Mantex

*Mikael Östling*, member, Council for Innovation, New Growth Businesses and Global Expansion

*Michael Tahlin*, professor of sociology, Swedish institute for social research (SOFI), Stockholm University

*Bengtsson Torbjörn*, Stockholm Business Region Development

*Dally Panesar*, West Midlands Leaders Board

*Conrad Parke*, head, skills development, RegenWM

*Jenny Phillimore*, senior lecturer, institute of applied social studies, Birmingham University

*Andy Phillips*, head, skills research, West Midlands Regional Observatory

*James Watkins*, executive director, Business Voice

*Sherman Wong*, head, economic and social policy, West Midlands Leaders Board

## **West Midlands, United Kingdom**

**28-30 July 2010**

*Elaine Bird*, project officer, RegenWM

*Farhana Darwich*, senior policy officer, West Midlands Leaders Board

*Elen Higson*, professor, higher education management, Aston Business School

*Stephen Howarth*, deputy chief executive, West Midlands Regional Observatory

*Geoff Hyde*, Birmingham University

*Pat Jackson*, director for skills, Advantage West Midlands

*Barry Knights*, Business Link

*Sophie Lainé*, European policy officer, West Midlands European Service

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