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Competing with the continent

How UK cities compare with their European counterparts

Hugo Bessis
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Executive Summary

Cities play an important role, not only in the UK economy, but the European one too. They account for just 3 per cent of the land area of Europe[1] but 42 per cent of European gross value added (GVA).

Europe's economy is particularly concentrated in its largest cities, with the continent's 50 largest cities producing a quarter of European output. London is the leader, having the largest economy of any city in Europe. And Manchester and Birmingham are both among the top 20 largest cities.

But while the UK is home to Europe's largest city, this report shows that its cities lag behind their continental comparators on a range of indicators – the majority trail on skills, innovation and productivity, and a number have an industrial mix that has more in common with cities in Eastern Europe than those in the West.

This matters because it affects the ability of UK cities to attract business investment, create jobs and grow both their own economies and in turn the UK economy as a whole. UK cities cannot compete with Eastern Europe for lower-skilled investment because they are too expensive – labour costs in Bulgaria are six times cheaper than the UK. But because of the large number of people with few or no qualifications, many UK cities struggle to compete for higher-skilled investment too, particularly those further north. All but six UK cities have greater shares of their residents with few or no formal qualifications than the European city average.

The result is that UK cities are much less productive than cities on the continent. Just six cities had higher productivity than the European city average. And of the UK's largest cities, London was the only city to outperform this average. This impacts both the types of jobs available to people in the UK and the amount of money in their pay packets.

These findings have three implications for policy.

1. UK cities need to compete in the knowledge economy if they are to be successful

Many cities, particularly in the North of England, are struggling to compete when it comes to the knowledge economy. They have small shares of business services jobs in their cities, low levels of patent activity and large numbers of residents with few or no formal qualifications.

1 Defined at the 17 European countries looked at in this report

This must change if cities are to successfully compete for international investment. Policy should focus on making the UK's cities more attractive to investment from businesses in higher-skilled, better-paid activities.

2. Low skills is a stand out problem

A major factor in a business deciding where to invest or where to expand is whether it can recruit the workers that it needs. This report shows that UK cities are at a disadvantage when competing against many other European cities on the avaliability of skilled labour. Policy must therefore address the skills challenges faced in many UK cities if it is to make them more competitive.

3. Making the most of big cities

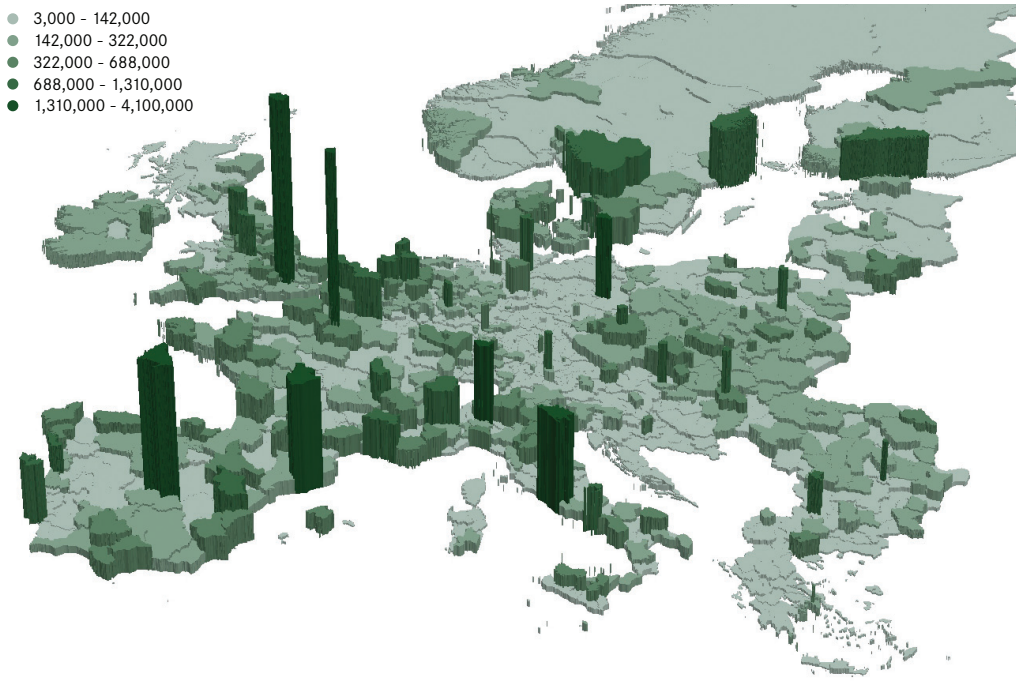
The UK's biggest cities are currently punching well below their weight. To change this policy needs to improve their two key advantages – their ability to create new ideas and spread information, and the access they give businesses to many highly-skilled workers. This requires planning policies that take account of the roles of different parts of cities, for example encouraging the creation of commercial space in dense city centres. It also requires investment in transport within cities and their wider areas to better link jobs in city centres in particular to residential areas in suburbs and hinterlands. This should be coupled with steps to improve the skills of residents.[2]

2 Swinney P (2016) Building the Northern Powerhouse: Lessons from the Rhine-Ruhr and Randstad, London: Centre for Cities

Introduction

Cities are very influential in the European economy. They account for just 3 per cent of the land area of Europe but 42 per cent of European GVA (see Box 1 for definitions and methodology). As Figure 1 illustrates, jobs are clustered in specific places across the continent. This concentration of activity is particularly marked for Europe's largest urban areas - the 50 largest cities in Europe produce a quarter of European GVA.

Figure 1: Jobs by region, 2011



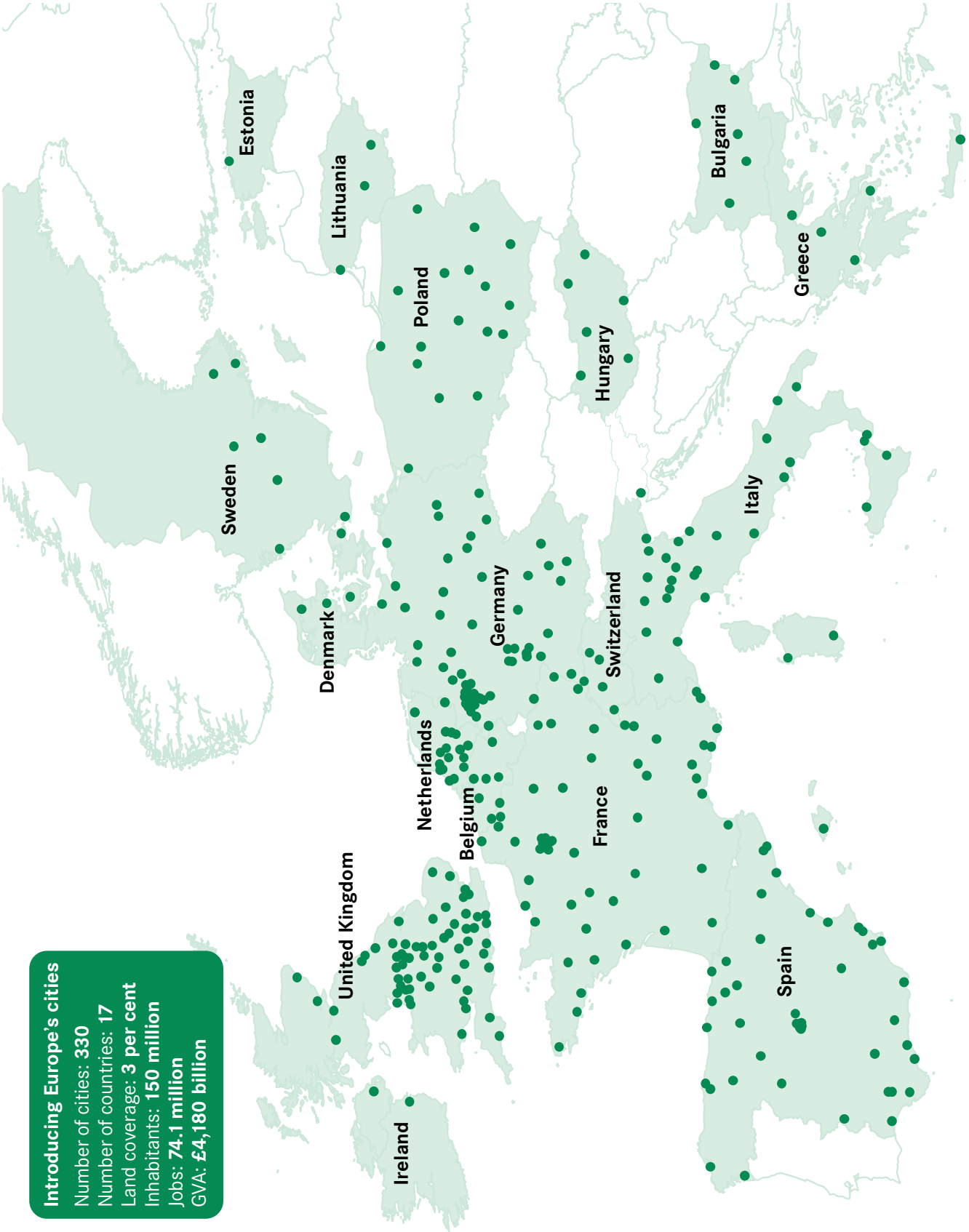
Source: Eurostat. Note: NUTS-3 regions. Some geographies have been amended. © EuroGeographics for administrative boundaries

Cities have always competed for investment, trade and talent. In recent decades, increasing globalisation and technological development has made this competition ever greater. So in order to continue to create jobs and wages for people living in and around them, cities need to be attractive beyond national borders.

For the UK, the ability of its cities to attract investment will determine the success of the national economy as a whole. But little is understood about how UK cities measure up to their continental counterparts.

This report compares 330 cities across 17 European countries (as shown in Figure 2). It first looks at the role of cities in their national context. Then it shows how UK cities compare to their European counterparts on a range of economic indicators, including

Figure 2: Cities and countries analysed in this report



Source: Eurostat © EuroGeographics for administrative boundaries

productivity, industrial structure, skills, innovation and employment. To finish it draws out the implications that these findings have for the UK economy.

All of the data used in this report is available to analyse on a European Cities Data Tool avaliable on the Centre for Cities website,[3] which also provides five continental comparator cities for each city in the UK. The breadth of data produced here will no doubt throw up many further questions and areas for additional investigation. The purpose of this research is to provide the data to frame these questions.

Box 1: Definition, geographies and methodology

Definition: The term "European cities", used throughout the report, refers to the 330 cities analysed in this research. The term "European countries" refers to the 17 European countries where the analysed cities are located: Belgium, Bulgaria, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Lithuania, Hungary, the Netherlands, Poland, Sweden, Switzerland and the United Kingdom. Cities and countries were selected on the basis of data availability.

Geographies: For UK cities, the geography used in this report is the Primary Urban Areas (PUA). For non-UK cities, in order to provide the closest possible geography to PUAs, Eurostat's Urban Audit dataset has been used. Urban Audit cities and "greater cities" are defined based on population density rather than administrative borders, to avoid underbounding issues. Although the mapping methodology is different to PUAs, the concept of cities captured by Urban Audit "cities" and "greater cities" is similar – that is, a focus on the central, more densely populated part of an urban area rather than its wider commuting area or city region. In that regard a good comparability between Urban Audit city definitions and PUAs was found, with 40 PUAs having the same borders to the corresponding Urban Audit geography.

Methodology: Every city with more than 125,000 inhabitants has been included in the analysis. Most of the data was available from Urban Audit or Eurostat more widely, but several values were extracted from national statistics offices. For availability reasons the large majority of the dataset is for 2011, except a few values that are from 2012.

3 Access the data tool here: http://www.centreforcities.org/welcome-european-cities-outlook/

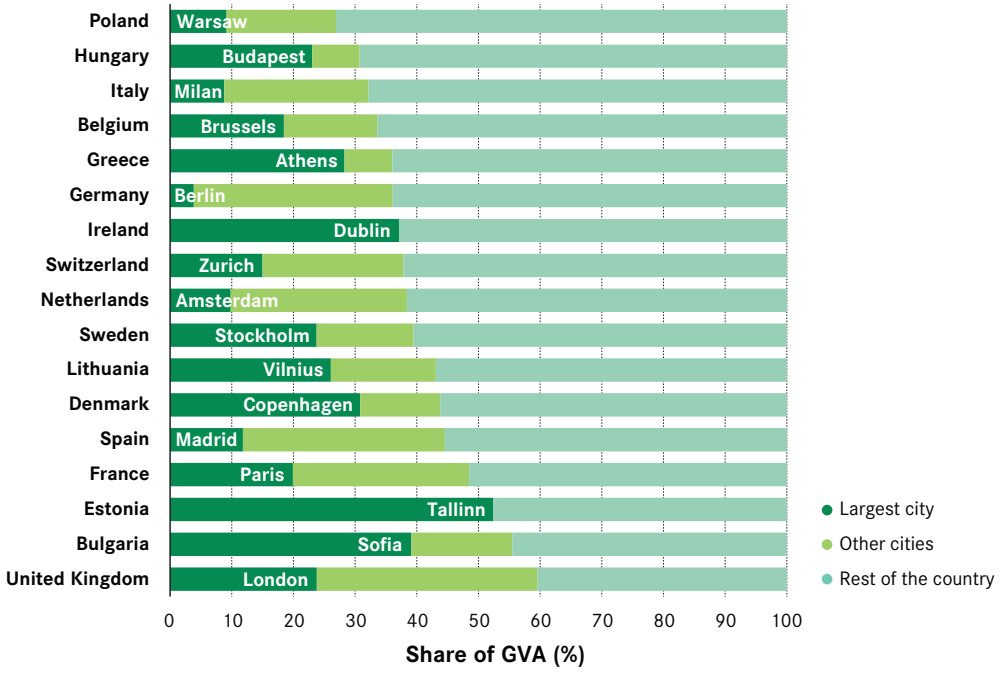
The role of cities in their national and European economies

Cities play a much larger role in the UK economy than their counterparts in other European countries. Around 60 per cent of UK output is generated in its cities. As Figure 3 shows, in no other country do cities represent such a high share of national GVA. In France, cities account for 50 per cent of the national GVA, while they account for 36 per cent of German output and 32 per cent of the Italian economy.[4]

This economic activity is more strongly concentrated in a few places in the UK than in any other large country. London alone accounts for 24 per cent of UK GVA. As Figure 3 shows, having one city dominating the national economy is not an exception in Europe - Copenhagen represents more than 30 per cent of the Danish economy, while Paris accounts for 20 per cent of the French economy.

But capital cities do not dominate everywhere. In Germany, Berlin comprises only 4 per cent of German GVA, while in the Netherlands Amsterdam accounts for 10 per cent of output. And Italy and Spain are countries whose economies are dominated by two cities rather than one capital city.

Figure 3: The city share of the national economy, 2011

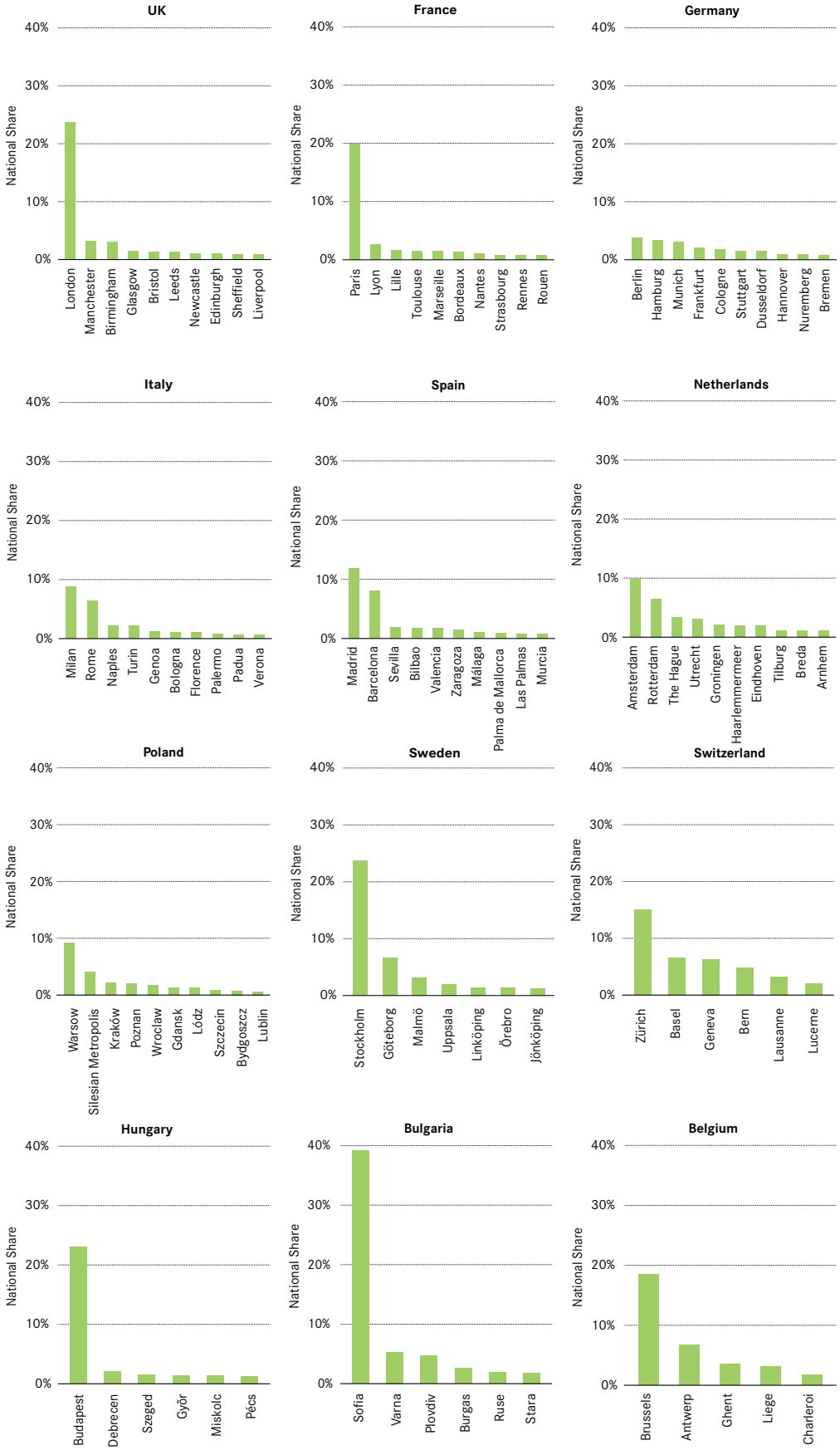


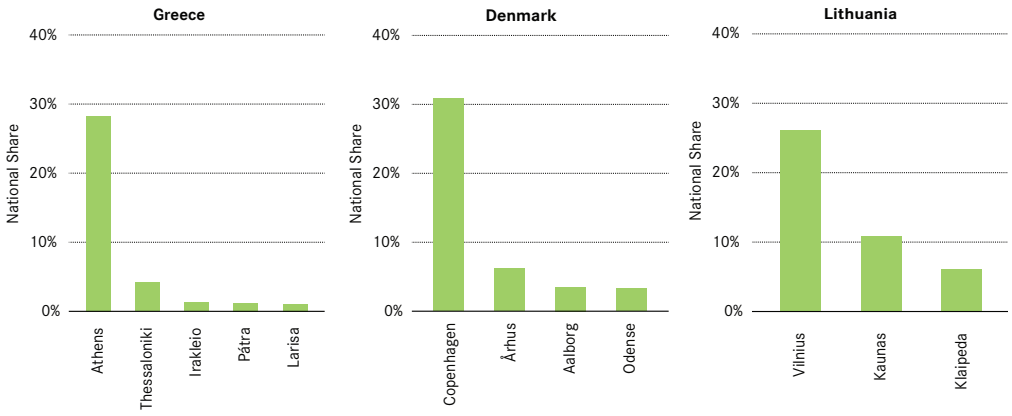
Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO.

4 However this does not necessarily mean that most of the production in these countries is located in rural areas; a likely hypothesis is that production locates in urban yet less densely populated areas, which are not captured in this analysis.

The relative size of London to the UK's next largest cities is much more reflective of the pattern seen in France than other western European countries (see Figure 4). The economies of Manchester and Lyon (the second cities in each country) are about seven times smaller than London and Paris respectively.

Figure 4: Largest cities' share of national gross value added (GVA), 2011



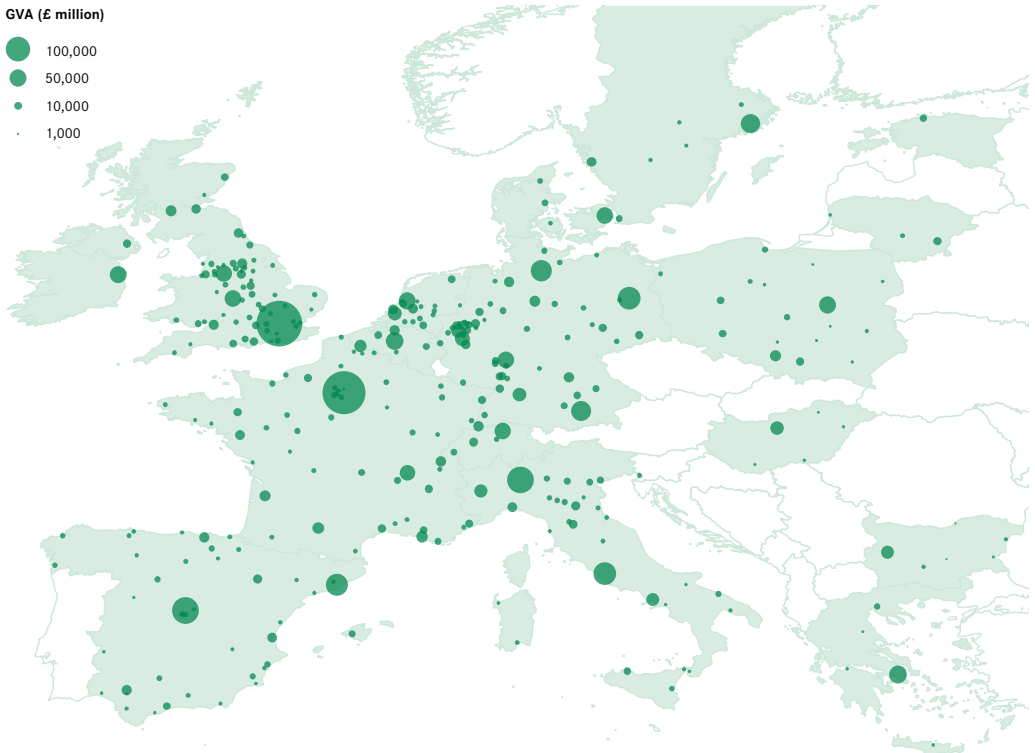


Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO

In contrast, in Spain the gap between Madrid and Barcelona is not as acute, with Madrid's economy being only 1.4 times larger than that of Barcelona. However the third largest city, Seville, is significantly smaller and is only a fourth of the size of Barcelona. This pattern is similar in Italy, where the output of Milan is also 1.4 times higher than Rome, but Naples is three times smaller than Rome.

At the other end of the spectrum, Germany is much more decentralised, with no one city strongly dominating. The economy of Berlin, the largest German city in terms of output, is only 12 per cent bigger than Hamburg, the second largest economy. And while London alone accounts for a quarter of the UK's economic output, in Germany it takes the country's 18 largest cities to do the same.

Figure 5: European cities by GVA, 2011

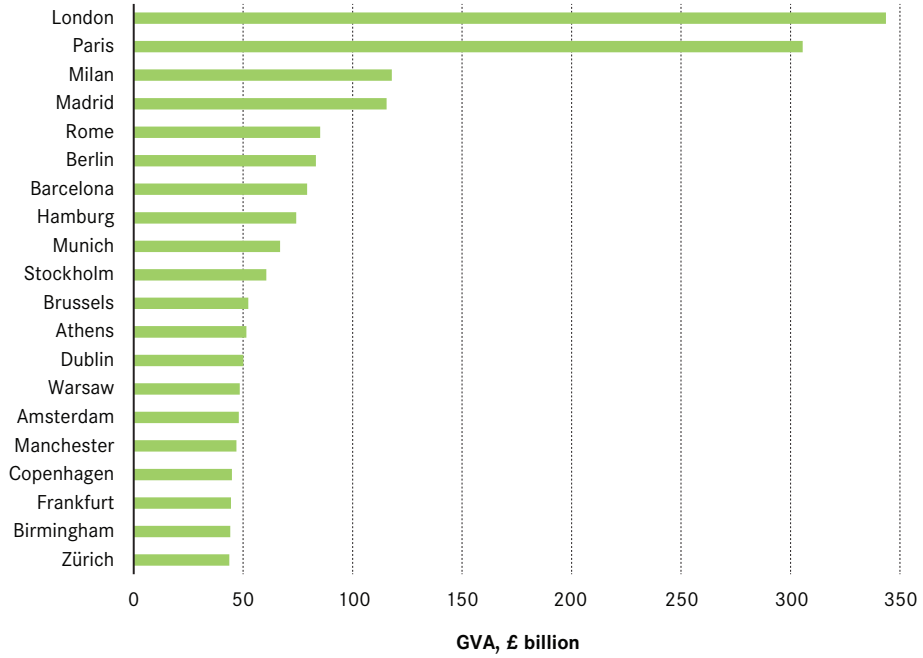


Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO. © EuroGeographics for administrative boundaries

London dominates not only the UK economy but the European economy too. In 2011 London was the largest economy in Europe, producing more than

£340 billion worth of goods and services (3.4 per cent of the European economy). As shown in Figure 6 Paris was a close second, and generated about £300 billion.[5] This was almost three times higher than Milan, the third largest economy. London was not the only UK city to feature in the top 20 however - Manchester and Birmingham ranked 16th and 19th respectively.

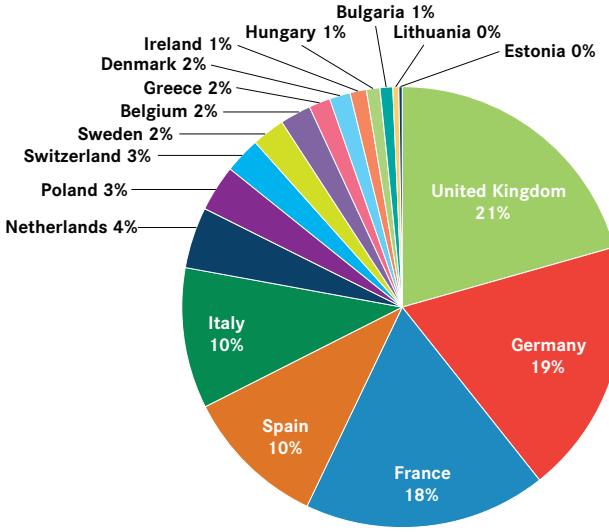
Figure 6: Top 20 European cities (GVA £ billion), 2011



Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO

As a group, UK cities made the largest contribution to the urban economy of Europe. The UK's cities accounted for 21 per cent of European cities' output, while German and French cities represented 19 per cent and 18 per cent of output respectively (Figure 7). This shows the relative size and importance of UK cities in the European context.

Figure 7: Cities contribution to the European urban economy, 2011



Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO

5 Values are expressed in £PPP. For details refer to Appendix 3.

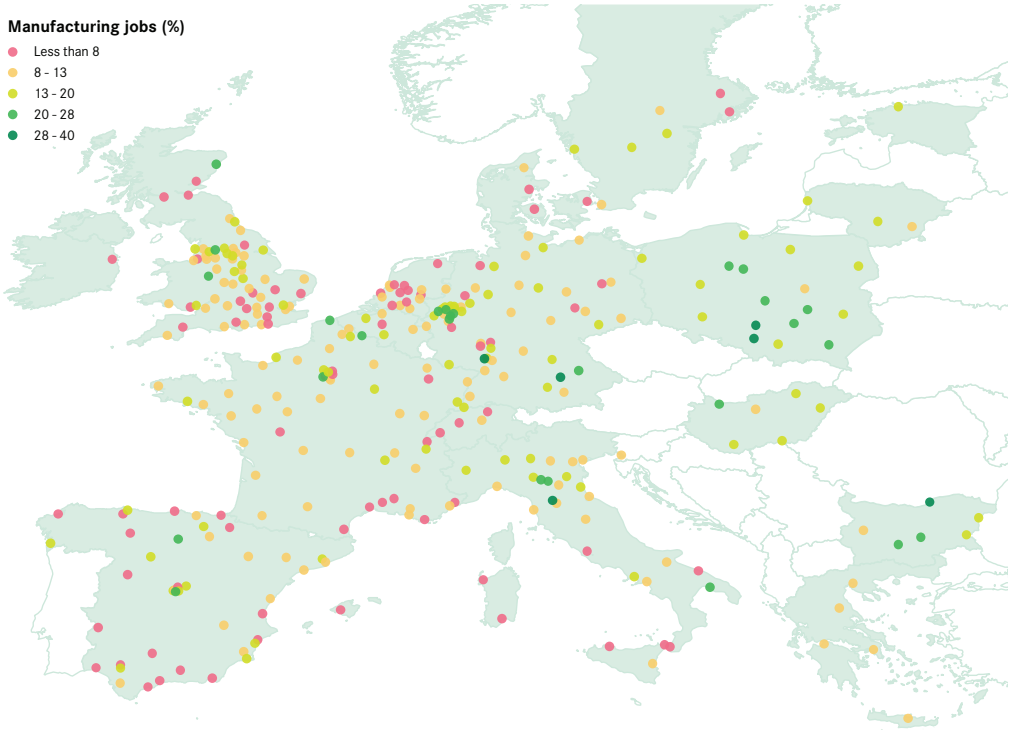
City performance across Europe

How do UK cities compare to their other European counterparts? This section explores the relative performance of UK cities on five economic indicators: industrial structure, skills, innovation, employment and productivity.

Industrial structure

The industrial structure of cities, which reflects the type of investment they have attracted over time, varies across Europe.

Figure 8: Cities by share of manufacturing and utilities jobs, 2011



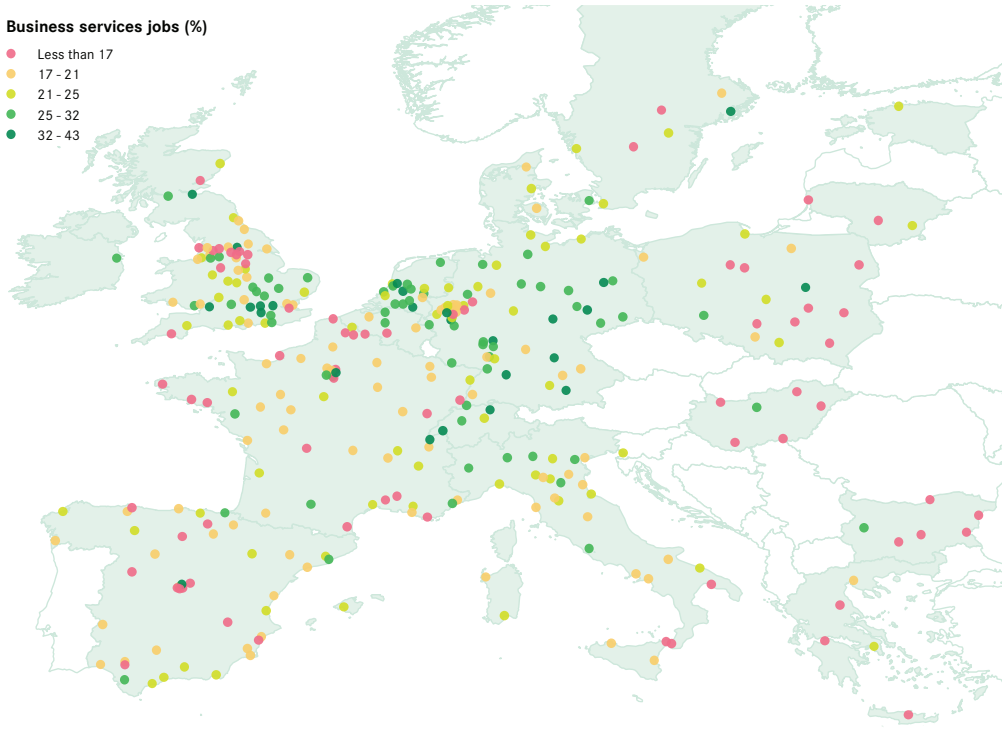
Source: Eurostat. Data unavailable for Belfast. © EuroGeographics for administrative boundaries

Cities that are more reliant on manufacturing and utilities[6] (Figure 8) are mostly located in the North of England, in Germany, in the North of Italy and in Eastern Europe. In total, 11 UK cities are in the top 25 per cent of European cities for their proportion of manufacturing and utilities jobs, with cities such as Burnley, Bradford and Telford having around 20 per cent of their workforce employed in these industries. Ingolstadt in Germany is the European city with the highest share of jobs in manufacturing and utilities (39 per cent), followed by Ludwisghafen am Rhein (38 per cent). Ruse in Bulgaria, Czestochowa in Poland and Prato in Italy are

6 For a definition of "manufacturing" and "business services" see Appendix 3.

among the top 10 cities with the highest share of manufacturing and utilities jobs, all above 30 per cent of the total workforce.

Figure 9: Cities by share of business services jobs, 2011



Source: Eurostat. Data unavailable for Belfast. © EuroGeographics for administrative boundaries

Figure 9 shows a concentration of highly service-oriented cities in specific areas, in particular in the South East of England, as well as in Belgium, the Netherlands, Germany and Switzerland. In total, 19 UK cities rank in the top 25 per cent of European cities for their share of business services – with London and Reading ranked 3rd and 4th respectively. Although the most service-oriented cities are located in the Greater South East, Leeds, Edinburgh and Warrington also have more than 30 per cent of their workforce employed in business services.

Across Europe, Frankfurt and Zurich are the two cities with the highest share of business services (43 and 41 per cent respectively). Cities with the highest shares of business services tend to be relatively large, with Amsterdam, Munich, Dusseldorf and Madrid all appearing in the top 10, all with more than 35 per cent of jobs in these sectors.

There is a significant split seen across UK cities. While 19 cities rank in the top 25 per cent for their share of jobs in business services, 15 rank in the bottom 25 per cent. This occurs to a lesser extent in Italy, where five cities – all located in the north of the country with the exception of Rome – rank in the top 25 per cent for their concentration of business services, while five other cities – four of them located in the south – rank in the bottom 25 per cent.

Germany does not show such divides: there are 26 cities in the top 25 per cent for business services jobs, and only three in the bottom 25 per cent. But interestingly, the Rhine-Ruhr area concentrates both manufacturing and services cities: larger cities (Dusseldorf, Cologne, Essen) have more than 30 per cent of business services jobs, while surrounding cities have relatively high shares of manufacturing and utilities jobs (Leverkusen, Krefeld, Solingen).

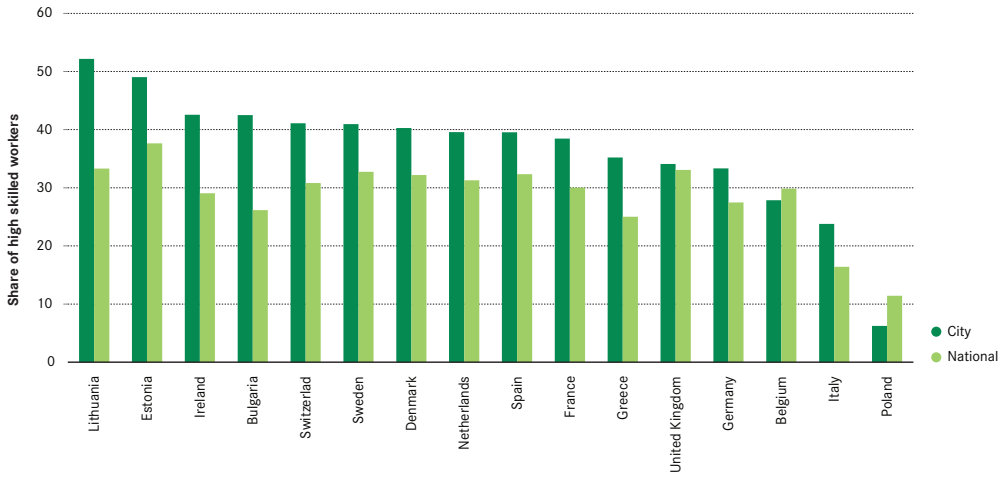
Skills

Human capital is an essential element to urban economic performance. Research has shown that individual graduates tend to receive higher wages,[7] that the proximity to college-educated workers enhances lower-educated workers' wages,[8] and that a higher stock of human capital is positively correlated with urban productivity.[9]

High-skilled population

As shown in Figure 10, the UK has a high proportion of high-skilled residents.[10] A third of the population aged 25-64 (or 11 million inhabitants) have at least a university degree or equivalent, which means the UK has the third largest share of high-skilled residents in Europe, after Estonia and Lithuania. Several countries have about the same share of high-skilled residents nationally, including Sweden, Denmark, Spain, Switzerland and France.

Figure 10: Share of high-skilled residents (cities and countries), 2011



Source: Eurostat, Statistics Belgium, FSO, DST, CSO, Hellenic Statistical Authority; INE, INSEE, CBS, SCB. Note: Hungary missing.

As in most countries, cities in the UK have a higher share of high-skilled residents than the national average. But the differential between cities and the entire country is only about 1 percentage point, meaning that high-skilled residents do not significantly concentrate more in cities.

As a result, **UK cities have a lower share of high-skilled residents than cities in most other countries**. On average 34 per cent of residents in UK cities are high-skilled. In French cities, around 39 per cent of residents are high-skilled, while this reaches 40 per cent in Spain, Denmark and the Netherlands. In Germany however, the number of high-skilled residents in cities is about the same as in the UK (see Box 2).

Going beyond these average figures shows that there are great disparities in the distribution of high-skilled residents across UK cities. On the one hand, Cambridge, Oxford and Edinburgh all rank in the top 10 cities across Europe for high-skilled residents, with Cambridge ranking first across the continent.

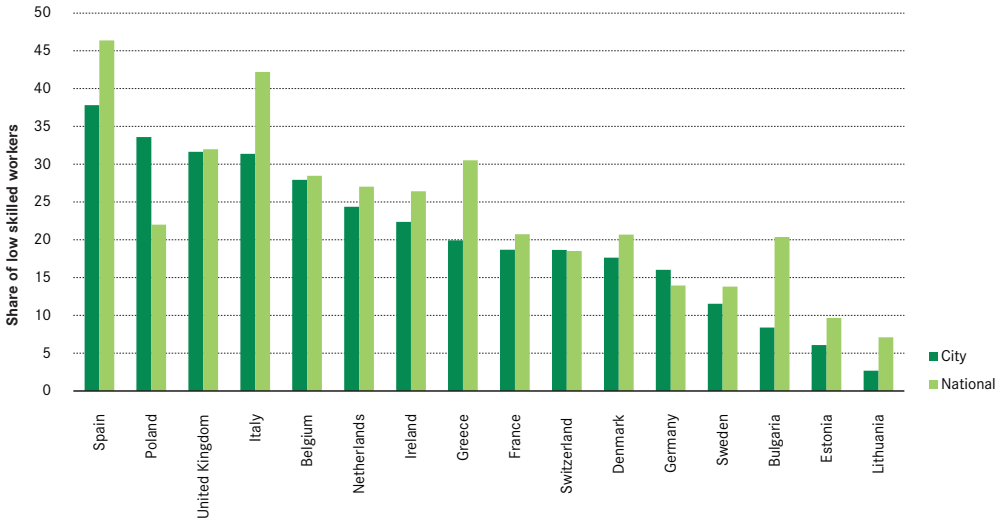
7 Moretti, E. (2003), "Human capital externalities in cities", NBER working paper series
8 Rosenthal, S., Strange, C. (2008), "The attenuation of human capital spillovers", Journal of Urban Economics
9 Abel, J., Dey, I., Gabe, T., "Productivity and the density of human capital", Federal Reserve Bank of New York Staff Reports
10 For a full definition of high-skilled and low-skilled residents see Appendix 3.

On the other hand, more than half of all UK cities (35/62) have a proportion of high-skilled residents between 20 and 30 per cent, which is significantly lower than the European city average (34 per cent). And 17 cities, including Hull and Mansfield, appear in the bottom 25 per cent of European cities for their share of high-skilled residents.

Low-skilled population

The underperformance of UK cities is even starker when looking at low skills. The UK stands out in Europe regarding the share of low-skilled residents in the population, both at the national and city level. As Figure 11 shows, UK cities have a significantly higher share of low-skilled residents compared to cities in most other European countries, with 34 per cent of the urban population having not achieved five good GCSEs. In the Netherlands the proportion of city residents with equivalent education levels is 25 per cent, and only 16 per cent in German cities and 12 per cent in Swedish cities. Interestingly, several Eastern European countries including Bulgaria, Hungary and Lithuania have very low proportions of low-skilled residents in their cities – in Lithuania for instance they represent only 3 per cent of the city population.

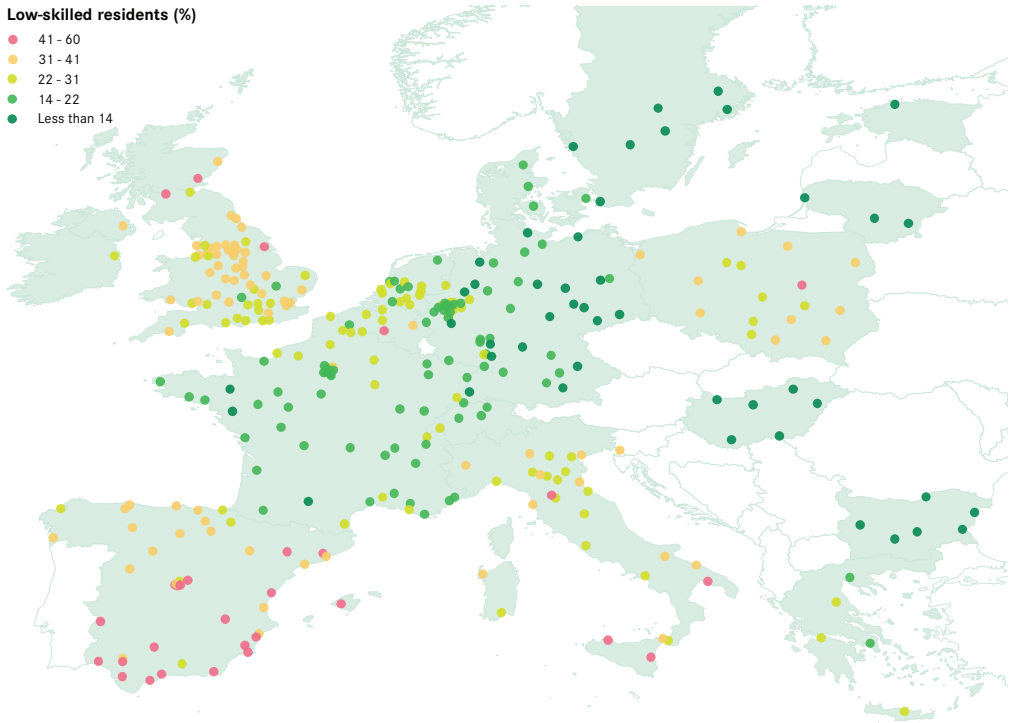
Figure 11: share of low-skilled residents, 2011



Source: Eurostat, Statistics Belgium, FSO, DST, CSO, Hellenic Statistical Authority; INE, INSEE, CBS, SCB. Note: Hungary missing.

Figure 12 highlights the significant number of cities that have a high share of low-skilled residents in the UK. Just six cities have a lower share of low-skilled residents than the European city average (25 per cent): Brighton, London, York, Reading, Oxford and Cambridge. At the other end of the spectrum, 25 out of 63 UK cities are in the top 25 per cent for their share of low-skilled residents, including Dundee, Glasgow, Hull, Mansfield and Wakefield. Across Europe, cities with a high proportion of low-skilled residents are mostly located in Spain, Belgium, Italy and Poland. But the proportion is significantly lower in French, German or Swedish cities – low skills are much less of a problem there.

Figure 12: Low-skilled population, 2011



Source: Eurostat, Statistics Belgium, FSO, DST, CSO, Hellenic Statistical Authority; INE, INSEE, CBS, SCB. © EuroGeographics for administrative boundaries.

Box 2: Medium skilled workers in Germany

German cities have some of the lowest shares of low-skilled residents of all European cities. Only four cities in Germany have a higher proportion of low-skilled residents than the European average. That said, the proportion of high-skilled residents is also relatively low, with half of the cities below the European average.

There appears to be two reasons for this. The first is that the German education system requires students to study until they are 18. This has only been recently applied in the UK. The second is that the system strongly encourages students to pursue vocational training and apprenticeship programmes, as opposed to the traditional curriculum leading to university.

German students can choose to study in *duale berufsausbildung* (dual vocational training) around age 16, where they get both classroom instruction and on-site training in a company. After completing the programme, apprentices have the option to undertake through further part-time vocational training or higher education, and on average 59 per cent of them are employed by the training firm. A firm is estimated to save some £3,750 in recruitment and training cost for each apprentice they hire full-time.[11]

Vocational training is a very common education pathway in Germany. In 2012, 54 per cent of the German workforce had received its qualification through a dual education apprenticeship, while university graduates only represented 18 per cent of the workforce.[12]

11 Hilary Steedman (2010), The State of Apprenticeship in 2010. Centre for Economic Performance, London School of Economics. http://cep.lse.ac.uk/pubs/download/special/cepsp22.pdf

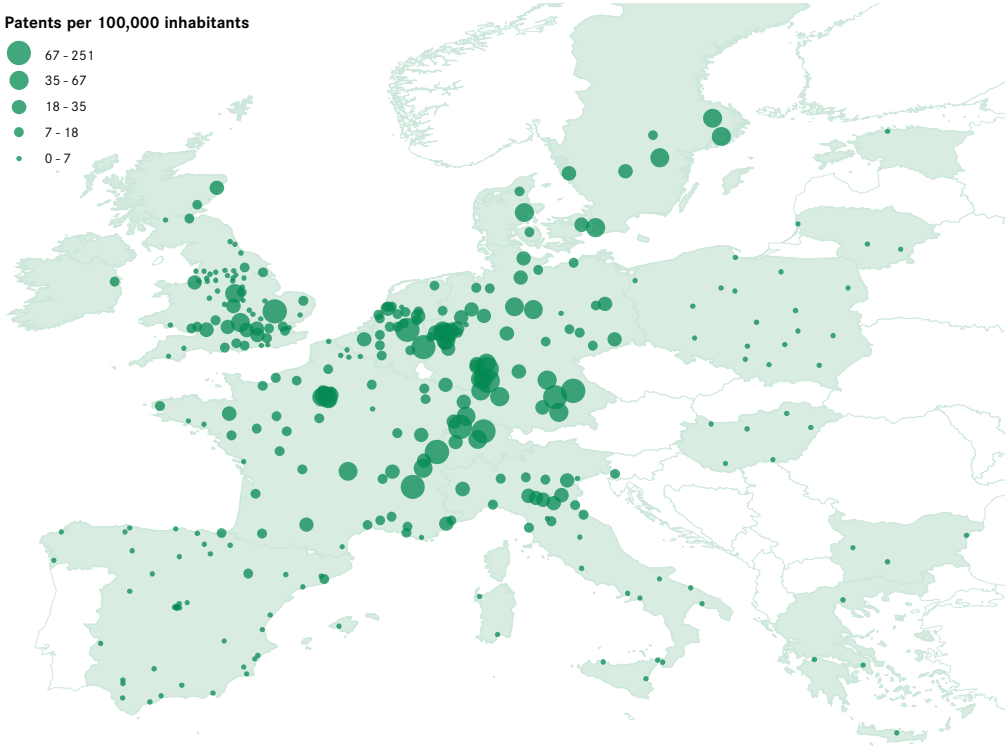
12 Germany Trade & Invest (2014), Vocational Training "Made in Germany", Germany's Dual System of Vocational Education and Training (VET). https://www.gtai.de/GTAI/Content/EN/Invest/_SharedDocs/Downloads/GTAI/BLG/blg–most-wanted–dual-vocational-training-in-germany-pdf.pdf?v=4

Innovation

Innovation is the main driver of long-term economic growth. Although the impact of innovation on growth is difficult to measure, research estimates that innovation contributes to about a third of economic growth.[13]

Figure 13 shows the number of patents filed to the European Patent Organisation (EPO) in 2011, normalised by population. There is a clear belt of innovative cities stretching from Belgium and the Netherlands to Switzerland and the French Alps, crossing most of the west of Germany – 12 of the 20 cities with the highest number of patents per inhabitant are German (see Box 3). Some cities in the North of Italy, along with Scandinavian cities, also have a high number of patents per 100,000 inhabitants.

Figure 13: Patents per 100,000 inhabitants, 2011



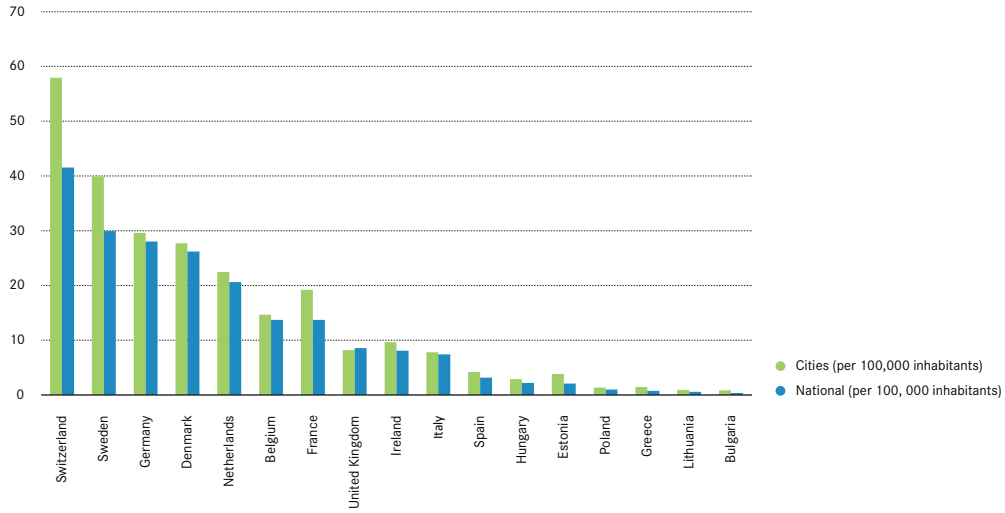
Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO. Data unavailable for some cities. © EuroGeographics for administrative boundaries.

In the UK, there is a clustering of innovative cities in the Greater South East, with the notable exceptions of Coventry, Derby, Birkenhead and Aberdeen. In total, 11 UK cities are in the European top 25 per cent for the number of patents per inhabitants. Two cities, Cambridge and Oxford, rank in the top 20 cities on this measure, with 74 and 50 patents per 100,000 inhabitants respectively.

However, UK innovation is mostly concentrated in these few cities. Figure 14 shows that on aggregate, UK cities performed relatively poorly in terms of patents per inhabitants compared to other European countries, with about 8 patents per 100,000 inhabitants. This compares with 19 patents per 100,000 inhabitants in French cities, 30 per 100,000 inhabitants in German cities and 58 per 100,000 inhabitants in Swiss cities.

13 Cameron, G. (1996) Innovation and economic growth. CEPDP, 277. Centre for Economic Performance, London School of Economics and Political Science, London, UK. ISBN 0753003007

Figure 14: Patents per 100,000 inhabitants, 2011



Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO. Data unavailable for some cities.

Cities that produce the most patents in the UK are mostly small or medium-sized. Out of the 11 cities in the top 25 per cent, seven are small and three are medium-sized, while only one – Bristol – had a population of more than 500,000.

The lower amount of patent registrations in large cities seen in the UK does not hold across Europe. Figure 15 shows the number of patents per 100,000 inhabitants in the largest European cities (cities with more than 1 million inhabitants). London (8), Manchester (5) and Birmingham (3) perform poorly relative to other large cities. Paris has 26 patents per 100,000 inhabitants, Berlin has 20, and Amsterdam 13.

Figure 15: Patents per 100,000 inhabitants of largest cities (more than a million inhabitants), 2011

Rank	City	Patents to the EPO	Patents per 100,000 inhabitants
1	Munich	824	61
2	Stockholm	719	46
3	Copenhagen	345	29
4	Lyon	342	26
5	Paris	1713	26
6	Hamburg	428	24
7	Berlin	680	20
8	Cologne	187	19
9	Amsterdam	135	13
10	Milan	401	13
11	Marseille	118	11
12	Brussels	127	11
13	Dublin	122	10
14	Barcelona	260	8
15	London	726	8
16	Madrid	198	6
17	Lille	68	6
18	Manchester	114	5
19	Rome	128	5

Rank	City	Patents to the EPO	Patents per 100,000 inhabitants
20	Budapest	60	3
21	Birmingham	75	3
22	Warsaw	35	2
23	Sofia	17	1
24	Athens	36	1
25	Naples	22	1
26	Silesian Metropolis	12	1

Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO. Data unavailable for some cities.

Box 3: Innovative cities profile

The top 20 cities with the highest number of patents per 100,000 inhabitants have some interesting similarities.

Rank	City	Patents per 100,000 inhabitants	Size
1	Eindhoven	252	Small
2	Regensburg	84	Small
3	Aachen	82	Medium
4	Heidelberg	82	Small
5	Grenoble	80	Medium
6	Darmstadt	77	Small
7	Zürich	74	Large
8	Basel	74	Medium
9	Cambridge	74	Small
10	Ingolstadt	73	Small
11	Lausanne	71	Small
12	Stuttgart	68	Large
13	Hannover	63	Large
14	München	61	Very large
15	Ludwigshafen am Rhein	61	Small
16	Saint-Quentin en Yvelines	60	Small
17	Mülheim a.d.Ruhr	55	Small
18	Mannheim	54	Medium
19	Leverkusen	51	Small
20	Oxford	51	Small

Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO. Data unavailable for some cities.

15 of the top 20 cities have at least one university ranked in the top 500 QS World University Ranking. Among these, six cities have a university ranked in the world top 100: Cambridge, Oxford, Zurich, Lausanne, Munich and Heidelberg. But university R&D does not tell the whole story. Many of these cities also have high numbers of innovative and tech industries, which benefit from the proximity to public research institutions for collaboration and retention of talented workers. Eindhoven in the Netherlands, Cambridge in the UK or Grenoble in France are examples of such "regional innovative systems".[14]

14 Almeida et al. (2008), "Science and technologic parks in regional innovation systems: a cluster analysis. http://www.apdr.pt/congresso/2009/pdf/Sess%C3%A3o%2021/53A.pdf

That said, a number of cities do not have a highly-ranked university but are nonetheless strongly innovative: Ingolstadt, Ludwigshafen am Rhein, St-Quentin-en-Yvelines, Mulheim an der Ruhr and Leverkusen. All these cities have more than 20 per cent of their workforce employed in manufacturing and utilities and all belong to the top 10 per cent of cities with the highest proportion of jobs in these industries. These cities are typically small in size and their economy is dominated by one or two large manufacturers, which explains the very high number of patents per inhabitants. In Germany, Ingolstadt is home to the headquarters of the car manufacturer Audi, Ludwigshafen am Rhein is the site of BASF – one of the largest chemical producers in the world, and Leverkusen benefits from the presence of the pharmaceutical group Bayer. St-Quentin-en-Yvelines, in France, is home to car manufacturer Renault's R&D centre.

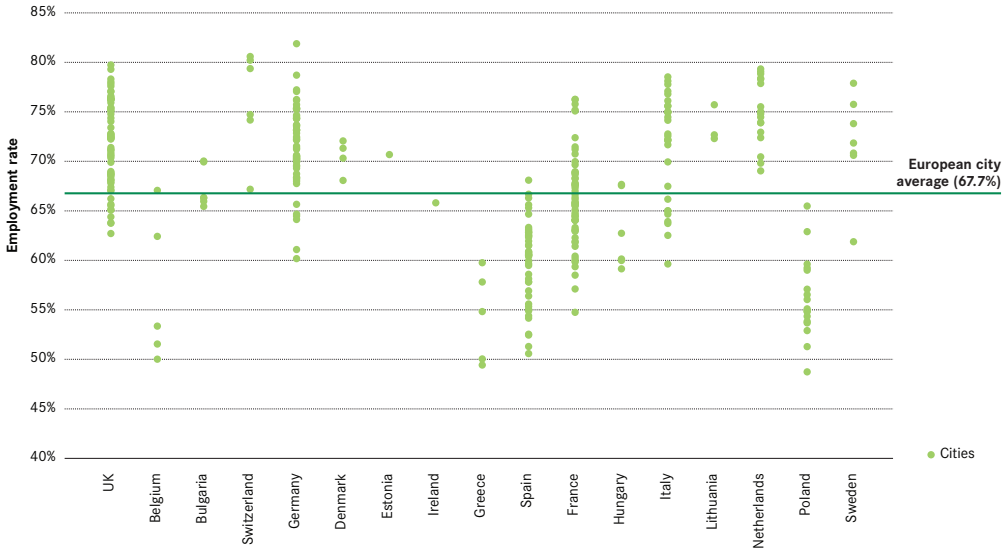
Finally, it seems that city size is not a major criterion for innovation. 16 of the top 20 cities are small or medium-sized (125,000 to 500,000 inhabitants), but three cities have more than 500,000 inhabitants and one city (Munich) has more than 1 million inhabitants.

Employment

The UK has a high employment rate nationally, and this good performance is reflected across its cities.

As shown in Figure 16, 52 out of 63 UK cities have a higher employment rate than the European city average (67 per cent of the active population). Only one city, Blackburn, is in the European bottom 25 per cent with an employment rate of 63 per cent. There is a similar pattern in Germany, where 50 out of 56 cities have a higher employment rate than the European average. But there is a greater amount a variation across German cities, with Ingolstadt having an employment rate of 82 per cent (the highest in Germany), and Heidelberg a rate of 60 per cent (the lowest). In France, less than half of the cities perform better than the European average (22/55) and only one of the 47 Spanish cities (Lleida) was above the average.

Figure 16: Distribution of cities by employment rate, 2011

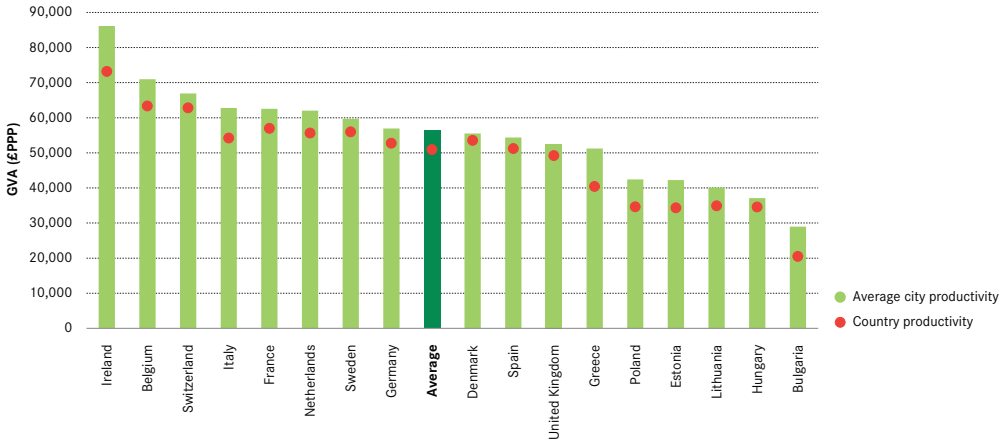


Source: Eurostat, Statistical Office of Poland, DST, ISTAT.

Productivity

Although UK cities account for a large share of the output of urban Europe, they tend to be much less productive. As shown by Figure 17, UK cities' average productivity is around £52,500 (in £PPP), which is lower than the average European city productivity (£56,300). In Western Europe, Belgian cities have an average productivity of £71,000, while in German cities this is around £57,000. These figures are consistent with the productivity of national economies: in 2011 GVA per worker in the UK was £49,198, which was lower than any western European economy, and around £2,000 lower than the 17 country average.

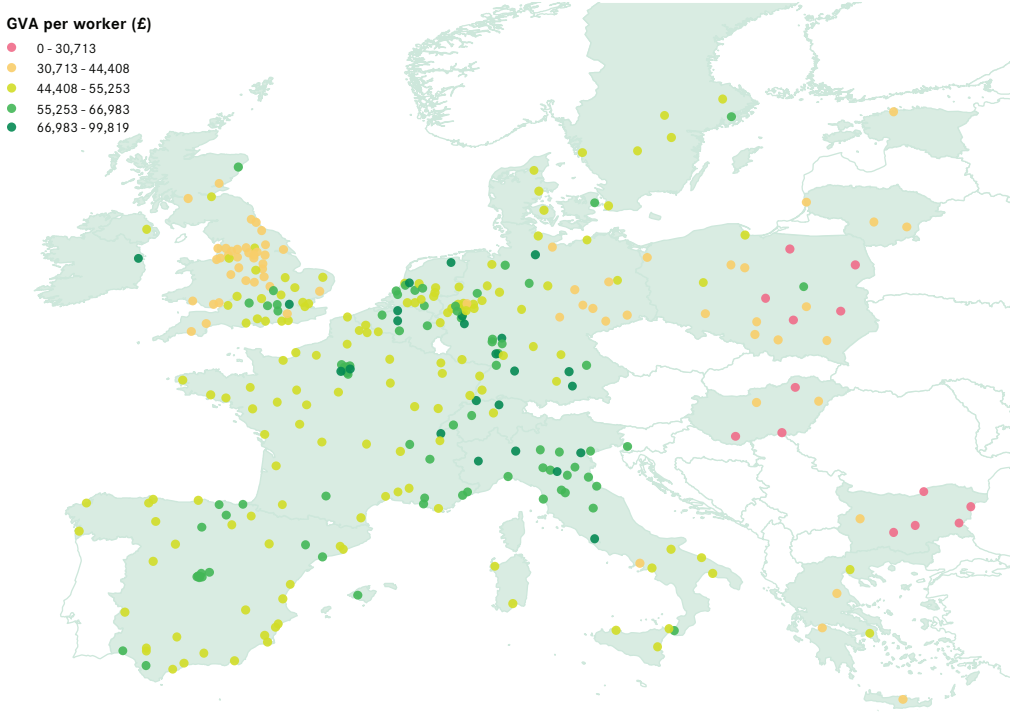
Figure 17: Average city and country productivity, 2011



Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO. Note: Ireland and Estonia only have one city.

Only six UK cities have a higher productivity than the 330 European cities average - London, Slough, Reading, Milton Keynes, Aberdeen and Aldershot. Meanwhile more than half of UK cities (38) are among the 25 per cent of cities with the lowest productivity.

Figure 18: Productivity across Europe, 2011



Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO

As shown in Figure 18, the UK's most productive cities are located in the Greater South East. In other countries the most productive cities seem to be clustered in specific areas too. For instance Germany has several productive areas: along the Rhine river (among which Dusseldorf, Cologne and Bonn for the Rhine Ruhr, but also Frankfurt, Mannheim and Stuttgart), in the south-eastern Lander of Bavaria (Munich, Ingolstadt, Regensburg) and in some large cities in the North (Bremen, Hamburg). In France, the most productive cities are either the largest (Paris, Lyon, Marseille, Toulouse, Nice) or small cities located around Paris (St-Quentin-en-Yvelines, Versailles, etc). In Italy, the most productive cities are typically small or medium-sized and locate in the northern part of the country.

On the other hand, the map also reveals a clustering of low-productive cities in the north of England, with city productivity ranging from £30,700 to £44,400. Putting aside a few exceptions, cities with a similar level of poor productivity can only be found in the East of Germany and in Eastern Europe.

Box 3: The "productivity puzzle"

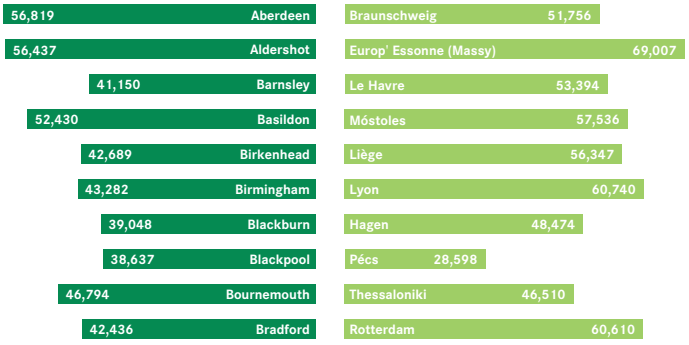
As in most European countries, labour productivity in the UK declined as a result of the 2007/08 recession. But while it has picked up elsewhere in the years since, it has continued to stagnate in the UK. In 2014, the level of productivity was 20 percentage points below the average for the G7 economies.[15]

The Bank of England estimated that the UK productivity in 2014 was 16 percentage points lower than it should have been if the pre-crisis trend had carried on.[16] 4 percentage points are considered to be caused by mismeasurement issues, 3 to 4 are estimated to be due to reduced investments in capital, and 3 to 5 in slow reallocation of resources and higher firm survival rates during the crisis.

Industrial structure and productivity

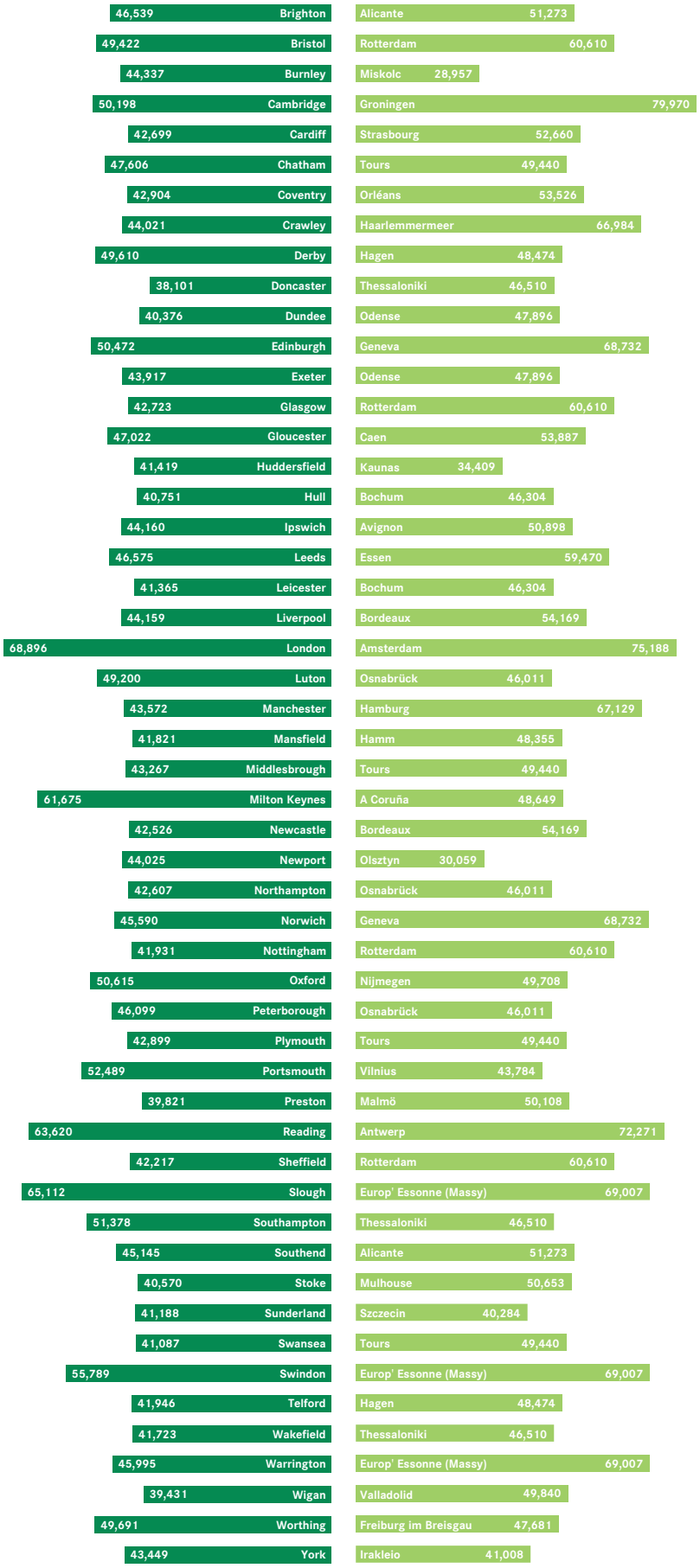
Figure 19 compares the productivity of UK cities against that of their closest European neighbour in terms of industrial structure. For each UK city the proportion of jobs in each sector of the economy is compared with that of each other European city of similar size to find the closest match.

Figure 19: Productivity comparison of UK cities to European most similar city, 2011



15 Chapman, N. (2015, "International Comparisons of Productivity – First Estimates: 2014", *ONS Statistical Bulletin.* Available at: http://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/bulletins/internationalcomparisonsofproductivityfirstestimates/2015-09-18

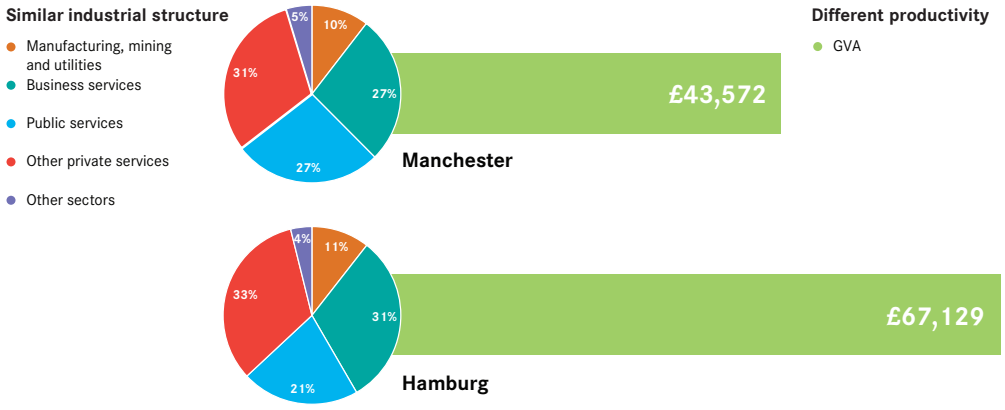
16 Barnett A. et al. (2014), "The UK productivity puzzle", Bank of England Quarterly Bulletin, 2014-Q2



Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO. Note: Ireland and Estonia only have one city. Belfast is excluded due to data unavailability.

The index shows that 46 of the 62 UK cities have a lower productivity than their 'twin' city. This means that, for a similar economic structure, these cities produce less output per worker than their nearest comparator. For example, despite their similar economic structure, productivity in Manchester is 35 per cent lower than in Hamburg (Figure 20).

Figure 20: Industrial structure and productivity in Manchester and Hamburg, 2011



Source: Eurostat, ONS

Large cities are punching below their weight

In general larger cities tend to have higher productivity than smaller ones: the 65 European cities with more than 500,000 inhabitants have an overall productivity of £59,600, whereas the European city average is £56,300. But this does not seem to be reflected in the UK (Figure 21).

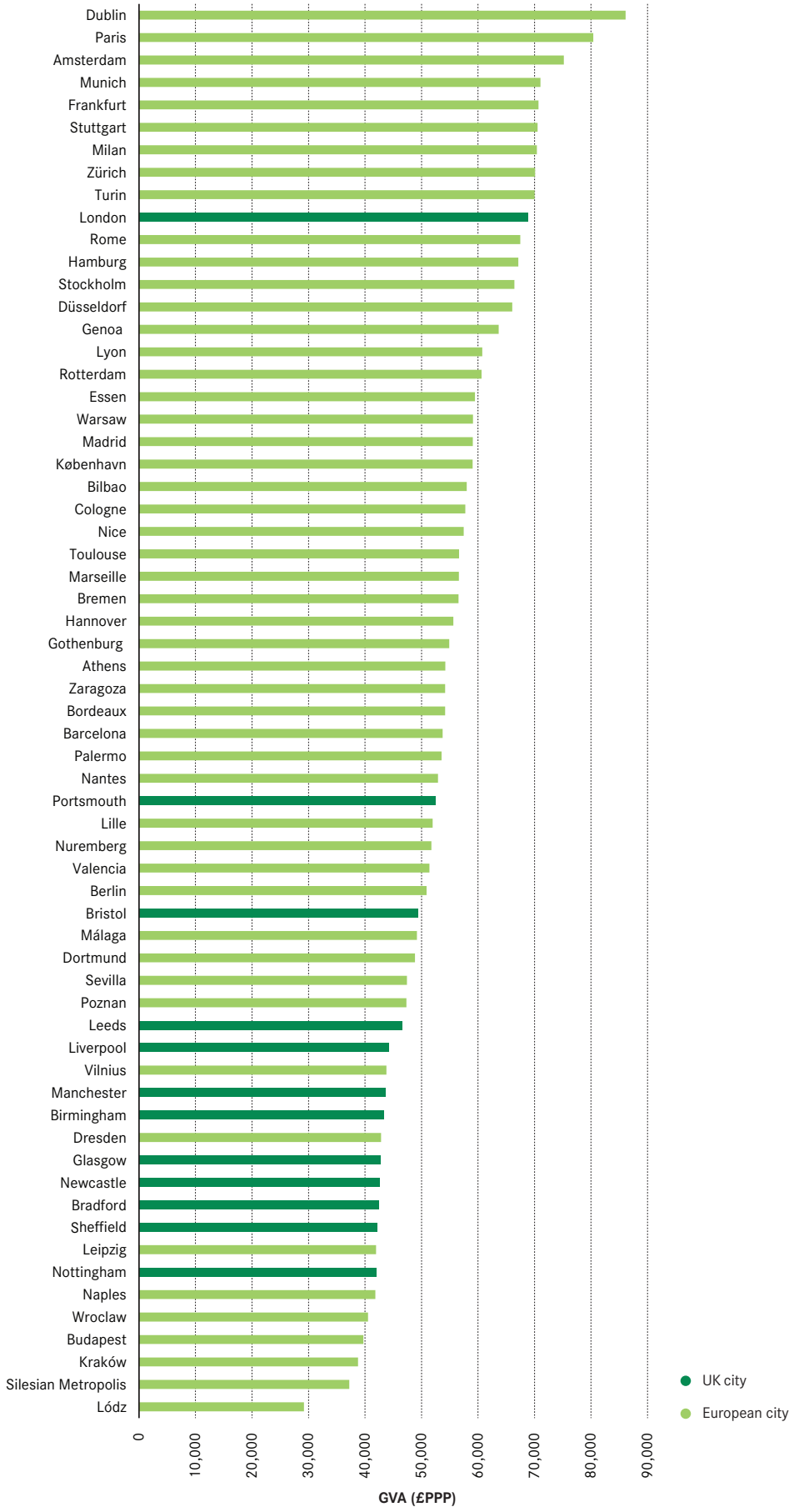
Among the 12 UK cities with more than 500,000 inhabitants, only three – London, Bristol and Portsmouth – have a higher productivity than the national average, and only London has a higher productivity than the European city average.

In other countries, large but less-productive cities are relatively rare. For instance in Germany, nine of the 14 cities of more than 500,000 inhabitants have a higher productivity than the national average, and eight perform better than the European city average. In Italy, four of the six largest cities have a higher productivity than the national and European city averages. In France, three of the eight largest cities are above the national average but five are above the European city average.

This result reflects research by the OECD, which found that larger cities tended to be more productive than their national averages, apart from the UK.[17] This suggests that large cities in particular in the UK are failing to realise the benefits of agglomeration compared to their European counterparts.

17 Ahrend R. *et al.* (2014), What makes cities more productive? Evidence on the role of urban governance from five OECD countries, *OECD Regional Development Working Papers*, 2014/05, OECD Publishing. http://dx.doi.org/10.1787/5jz432cf2d8p-en

Figure 21: Large EU cities by productivity, 2011



Source: Eurostat, ONS, INSEE, ISTAT, Statistical Office of Poland, FSO

Conclusion and Implications

Cities play an important role in their national economies and the wider European economy too. This is most clearly seen in the UK – UK cities play a bigger role within their national economy than cities in other European countries do, and as a group they account for the largest share of Europe's urban economic output.

However, UK cities lag behind their continental comparators on a range of indicators – the majority trail behind on skills, innovation and productivity. The poor productivity performance of UK cities, a result in part of larger shares of residents with few or no qualifications and lower levels of innovation, needs to be tackled for two main reasons. Firstly, it limits the wages that workers are paid and the living standards that they enjoy. And secondly it acts as a drag on the future growth of UK cities and in turn the national economy.

Given this, three main challenges emerge for policy when attempting to tackle the poor productivity performance of UK cities:

1. UK cities need to compete in the knowledge economy if they are to be successful

The cost of doing business in UK cities relative to cities in Eastern Europe in particular means that it is much harder to compete for low skilled work. For instance, the cost of labour in Bulgaria is more than six times lower than in the UK. UK cities will need to compete primarily on high-skilled work – be that services or manufacturing – if they are to be successful.

This means many cities, particularly in the North of England, need to improve their levels of high skilled jobs. They have small shares of business services jobs in their cities, low levels of patent activity and large numbers of residents with few or no formal qualifications.

They will be in a stronger position to compete for international investment if policy can help make these cities more attractive to investment from businesses in higher-skilled, better-paid activities.

2. Low skills is a stand out problem

A major factor in a business deciding where to invest or where to expand is whether it can recruit the workers that it needs. The data above shows that UK cities are at a disadvantage when compared to many other European cities on this measure.

In terms of the share of people with degrees, several UK cities compare favourably. But this isn't the case for low skills, where it appears that other countries have

been much more successful at supporting their residents to achieve mid-level qualifications (equivalent to GCSEs and A-levels) than the UK. And it is at this level that UK policy should be targeted to improve its poor attainment.

3. Making the most of big cities

Low productivity is a problem for all UK cities. But it is particularly problematic for the UK's larger cities, which appear not to be capturing the benefits of agglomeration (the process by which concentrating economic activity in one place increases productivity) that other large cities on the continent do. This is particularly an issue given that knowledge-based industries are the ones that stand to gain the most from the benefits of agglomeration.[18]

To make the most of their size, policy needs to help facilitate two key elements of agglomeration. The first is to encourage 'knowledge spillovers' – that is the availability and spreading of information that occurs when businesses locate close to one another. This requires planning policies that understand the roles of different parts of cities, encouraging the creation of commercial space in dense city centres.

The second is to increase the size of the pool of workers that businesses can recruit from. This requires investment in transport within cities and their wider areas to better link jobs in city centres in particular to residential areas in suburbs and hinterlands, coupled with steps to improve the skills of residents.

18 Graham, D. J. (2006). Investigating the link between productivity and agglomeration for UK industries. Report prepared for the UK Department for Transport.

Appendix 1: UK cities by productivity, 2011

	European Rank	Country	City	GVA per worker (£PPP)	
Top 10 European cities	1	Germany	Ingolstadt	89,547	
	2	Ireland	Dublin	86,134	
	3	Germany	Ludwigshafen am Rhein	84,530	
	4	France	Paris	80,391	
	5	Netherlands	Groningen	79,970	
	6	Belgium	Brussels	77,608	
	7	Netherlands	Amsterdam	75,188	
	8	Germany	Bonn	73,857	
	9	Switzerland	Basel	73,521	
	10	Belgium	Antwerp	72,271	
Top 25%	21	UK	London	68,896	
	34	UK	Slough	65,112	
	42	UK	Reading	63,620	
	50	UK	Milton Keynes	61,675	
	90	UK	Aberdeen	56,819	**European city average (56,300)**
	94	UK	Aldershot	56,437	
	100	UK	Swindon	55,789	
	136	UK	Portsmouth	52,489	
	137	UK	Basildon	52,430	
	155	UK	Southampton	51,378	
	167	UK	Oxford	50,615	
	169	UK	Edinburgh	50,472	
	173	UK	Cambridge	50,198	
	183	UK	Worthing	49,691	
	184	UK	Derby	49,610	
	187	UK	Bristol	49,422	
	190	UK	Luton	49,200	
	218	UK	Chatham	47,606	
	219	UK	Belfast	47,593	
	229	UK	Gloucester	47,022	
	230	UK	Bournemouth	46,794	
	239	UK	Leeds	46,575	
	241	UK	Brighton	46,539	
	246	UK	Peterborough	46,099	
	248	UK	Warrington	45,995	
Bottom 25%	251	UK	Norwich	45,590	
	252	UK	Southend	45,145	
	254	UK	Burnley	44,337	
	255	UK	Ipswich	44,160	
	256	UK	Liverpool	44,159	
	257	UK	Newport	44,025	
	258	UK	Crawley	44,021	
	260	UK	Exeter	43,917	
	263	UK	Manchester	43,572	

	European Rank	Country	City	GVA per worker (£PPP)
Bottom 25%	264	UK	York	43,449
	265	UK	Birmingham	43,282
	266	UK	Middlesbrough	43,267
	267	UK	Coventry	42,904
	268	UK	Plymouth	42,899
	270	UK	Glasgow	42,723
	271	UK	Cardiff	42,699
	272	UK	Birkenhead	42,689
	273	UK	Northampton	42,607
	274	UK	Newcastle	42,526
	275	UK	Bradford	42,436
	277	UK	Sheffield	42,217
	279	UK	Telford	41,946
	280	UK	Nottingham	41,931
	281	UK	Mansfield	41,821
	283	UK	Wakefield	41,723
	284	UK	Huddersfield	41,419
	285	UK	Leicester	41,365
	286	UK	Sunderland	41,188
	287	UK	Barnsley	41,150
	289	UK	Swansea	41,087
	291	UK	Hull	40,751
	292	UK	Stoke	40,570
	294	UK	Dundee	40,376
	298	UK	Preston	39,821
	300	UK	Wigan	39,431
	302	UK	Blackburn	39,048
	305	UK	Blackpool	38,637
	307	UK	Doncaster	38,101

Appendix 2: Data sources

Variables/indicators	Source
Population 2011	Eurostat 2016, Population on 1 January by age groups and sex - cities and greater cities; Eurostat 2016, Population on 1 January by broad age group, sex and NUTS 3 region
Business Stock per 100, 000 population	Eurostat 2016, Economy and finance - cities and greater cities; FSO 2016, Statent; CSO 2016, Business Demography; INSEE 2016, répertoire des établissements et des entreprises; Istat 2016, Census 2011; CBS 2016, Vestigingen van bedrijven. Centre for Cities calculation. Data unavailable for Polish, Spanish and Swedish cities.
Unemployment rate 2011 (%)	Eurostat 2016, Labour market - cities and greater cities; Statistical Office of Poland 2016. Data for Paris (FR) is for 2012
Employment rate 2011 (%)	Eurostat 2016, Labour market - cities and greater cities; Statistical Office of Poland 2016, employment rate by municipality; DST 2016, register-based labour force survey; ISTAT 2016, Census 2011. Data for Paris (FR) is for 2012
GVA 2011 (£ billion) and GVA per worker 2011	Eurostat 2016, Gross value added at basic prices by NUTS 3 regions; Eurostat 2016, Employment (thousand persons) by NUTS 3 regions; Eurostat 2016, Labour market - cities and greater cities; ONS 2016, BRES; INSEE 2016, Recensements de la population 2012; ISTAT 2016, Census 2011; Statistical Office of Poland 2016, Labour market; FSO 2016, Statent; FSO 2016, GVA per canton. Data for Avignon (FR), Aix-en-Provence (FR) and Versailles (FR) are for 2012. Centre for Cities calculation.
Industrial structure	Eurostat 2016, Labour market - cities and greater cities. Data unavailable for Belfast
Total jobs 2011 (thousand)	Eurostat 2016, Labour market - cities and greater cities. Data unavailable for Belfast
Level of skills 2011 (%)	Eurostat 2016, Education - cities and greater cities; Statistics Belgium 2016, Census 2011; FSO 2016; DST 2016, Educational attainment; CSO 2016, Census 2011; Hellenic Statistical Authority 2016; INE 2016, Urban Audit statistics; INSEE 2016, RP 2012; CBS 2016, Municipal populaton; SCB 2016, level of education by municipality. Data for Paris is for 2012. Data unavailable for Milan (IT) and Naples (IT)
Patent applications to the EPO 2011 (per 100,000 of population)	Eurostat 2016, Patent applications to the EPO by priority year by NUTS 3 regions; Eurostat 2016, Gross value added at basic prices by NUTS 3 regions; Eurostat 2016, Employment (thousand persons) by NUTS 3 regions; Eurostat 2016, Labour market - cities and greater cities; ONS 2016, BRES; INSEE 2016, Recensements de la population 2012; ISTAT 2016, Census 2011; Statistical Office of Poland 2016, Labour market; FSO 2016, Statent; FSO 2016, GVA per canton. Data for Avignon (FR), Aix-en-Provence (FR) and Versailles (FR) are for 2012. Centre for Cities calculation. Data unavailable for some Bulgarian, Greek and Spanish cities. Data unavailable for Belfast.

Appendix 3: Definitions

Industrial structure definition

The data used for cities' industrial structure provides the number of jobs for groups of NACE rev. 2 industries (similar to SIC industries). Due to data availability, the term "manufacturing and utilities" refers to jobs in mining and quarrying; manufacturing; electricity, gas, stream and air conditioning supply; water supply, sewerage, waste management and remediation activities.

The term "business services" intends to proxy knowledge-based service jobs, although due to data availability the definition also captures a certain number of other services. "Business services" refers to jobs in information and communication; financial and insurance activities; real estate activities; professional, scientific and technical activities; administrative and support service activities.

Skills definition

Levels of education are determined by the International Standard Classification of Education (ISCED). Under the 1997 classification, applied in the dataset used, there are six levels of education (from 0 to 6), grouped into three categories: low, medium and high level of education. In the UK context, low level of education refers to having less than 5 good GCSEs as a highest level of education; medium level of education includes 5 good GCSEs, A level and vocational training; high level of education includes higher education and university degrees.

Purchasing Power Parities

All GVA values used in this report are expressed in pound sterling (£), adjusted for purchasing power parities. This removes the difference in price levels between countries. In other words, £100 (or its equivalent in local currency) does not buy the same amount of goods in the UK or in another country.

To illustrate this, let's suppose an identical good is locally produced in three locations: in the UK, in Denmark and in Bulgaria. Based on the local costs of labour and capital, as well as local levels of inflation, the good produced in the UK is priced £25, the one produced in Denmark €50, and the one produced in Bulgaria 23 lev. Converted into pounds using the market exchange rate, this means the Danish good is worth £42 and the Bulgarian good £10. But as the cost of living (and wages) is lower in Bulgaria and higher in Denmark than in the UK, buying the local good might actually be as expensive for a Danish, a British or a Bulgarian consumer. On aggregate, not adjusting for purchasing power would over-estimate the Danish GVA (where the monetary value of goods and services produced is higher because of the higher cost of living), and underestimate the Bulgarian GVA.

Purchasing Power Parity values have been obtained using Eurostat Purchasing Power Standard data, then converted to the value of a pound in 2011.

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