BEST-PERFORMING CITIES EUROPE 2017

JESSICA JACKSON AND MINOLI RATNATUNGA WITH ROSS DEVOL

MILKEN INSTITUTE

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ABOUT THE MILKEN INSTITUTE

The Milken Institute is a nonprofit, nonpartisan think tank determined to increase global prosperity by advancing collaborative solutions that widen access to capital, create jobs, and improve health. We do this through independent, data-driven research, action-oriented meetings, and meaningful policy initiatives.

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The Center for Regional Economics promotes prosperity and sustainable growth by increasing understanding of the dynamics that drive job creation and promote industry expansion. Our research, programming, and convening develop and disseminate innovative, actionable economic and policy solutions that provide change makers with the tools to create jobs and improve access to capital.

CONTENTS

EXECUTIVE SUMMARY

Which factors determine the divergence in economic performance across Europe? What regions are leading the way in creating opportunities for prosperity? The Milken Institute's Best-Performing Cities (BPC) Europe index provides an objective benchmark for examining which regional strategies are succeeding. Based on the Milken Institute's long-standing evaluation of U.S. metropolitan areas, this index uses outcomes-based metrics including job creation, wage gains, manufacturing, and skilled service industry concentration to evaluate the relative performance of European regions.

Here are the highlights of the 2017 rankings:

- London leads the pack, with three of its five component regions ranking in the top tier, and **Inner London-East, United Kingdom** in first place in our inaugural Best-Performing Cities Europe index. Its dynamic economy has created more job growth than any large region thanks, in part, to its global financial services hub, flourishing information and communication technology sector, and skilled international workforce.
- **Pest, Hungary** placed first on the Best-Performing Small Cities Europe small region ranking, performing exceptionally well in job growth, capitalizing on momentum in its neighbor, No. 3 ranked large region Budapest.
- Knowledge economies and outsourcing hubs in Northern and Central Eastern Europe also performed solidly, while Mediterranean regions fared less well, still feeling the effects of the sovereign-debt crisis during the years covered by this analysis.
- Foreign direct investment (FDI) has been vital to regional development in manufacturing hubs, and attracting related research and development (R&D) will be key to maintaining a competitive advantage as labor costs rise.
- High levels of education among a region's working-age population also contributed to success, especially in the high-tech service sectors.

2017 European Best-Performing Large City

Inner London-East, United Kingdom claims first place on our inaugural Best-Performing Cities Europe index. Inner London-East is among the most dynamic economies in Europe leading all large European metro areas in job growth over the latest five years (23 percent) through 2016. Its economic rejuvenation has been accomplished through a combination of direct policy implementation—such as the Big Bang that aided financial services and related growth in Canary Wharf—and indigenous, organic entrepreneurial-led growth in a variety of digital content and information and communications technology (ICT) areas. The most current data shows that employment in the industry category professional, scientific, and technical services increased 43.6 percent between 2009 and 2014.

Greater London's world-leading universities attract and create talent, while also providing research for application in the private sector. Inner London-East's economy has been fueled by the human capital created at universities and strong rates of entrepreneurship. Inner London-East had a net business start up rate of 10 percent, the highest in Greater London. Active enterprises in the region grew from 84,830 in 2009 to 127,545 in 2015, an astonishing gain of 50 percent over the period. High levels of international tourism have contributed to growth as well. The region provides a unique mix of knowledge-intensive sectors including creative industries such as media, fashion, and digital content, as well as legal services and biopharmaceuticals.

Economic growth has been moderate in the aftermath of the Brexit vote and the uncertainty revolving around how the U.K. will extricate itself from the EU. Because much of the growth in recent years was fueled by talent migrating from EU member countries, if this talent flow slows substantially in response to Brexit, it will curtail future growth. The lack of new residential construction has driven up prices and rents, reducing affordability and limiting access to the opportunities being created. While Brexit worries persist, Inner London-East has the ingredients to remain one of Europe's most dynamic economies.

TABLE 1

Top 20 European Best-Performing Large Cities

CITY, REGION (NUTS 2 REGION*)	2017 RANK
Inner London-East, United Kingdom	1
Stockholm, Sweden	2
Budapest, Hungary	3
Pomorskie, Poland	4
Nord-Vest, Romania	5
Dolnoslaskie, Poland	6
Berkshire, Buckinghamshire, and Oxfordshire, United Kingdom	7
Oberbayern, Germany	8
Outer London-West and North West, United Kingdom	9
Yugozapaden, Bulgaria	10
Östra Mellansverige, Sweden	11
Jihovýchod, Czech Republic	12
Berlin, Germany	13
Leicestershire, Rutland, and Northamptonshire, United Kingdom	14
Eastern and Midland, Ireland	15
Bucuresti, Romania	16
Wielkopolskie, Poland	17
Derbyshire and Nottinghamshire, United Kingdom	18
Hovedstaden, Denmark	19
Malopolskie, Poland	20

*Eurostat's Nomenclature of Territorial Units for Statistics (NUTS)

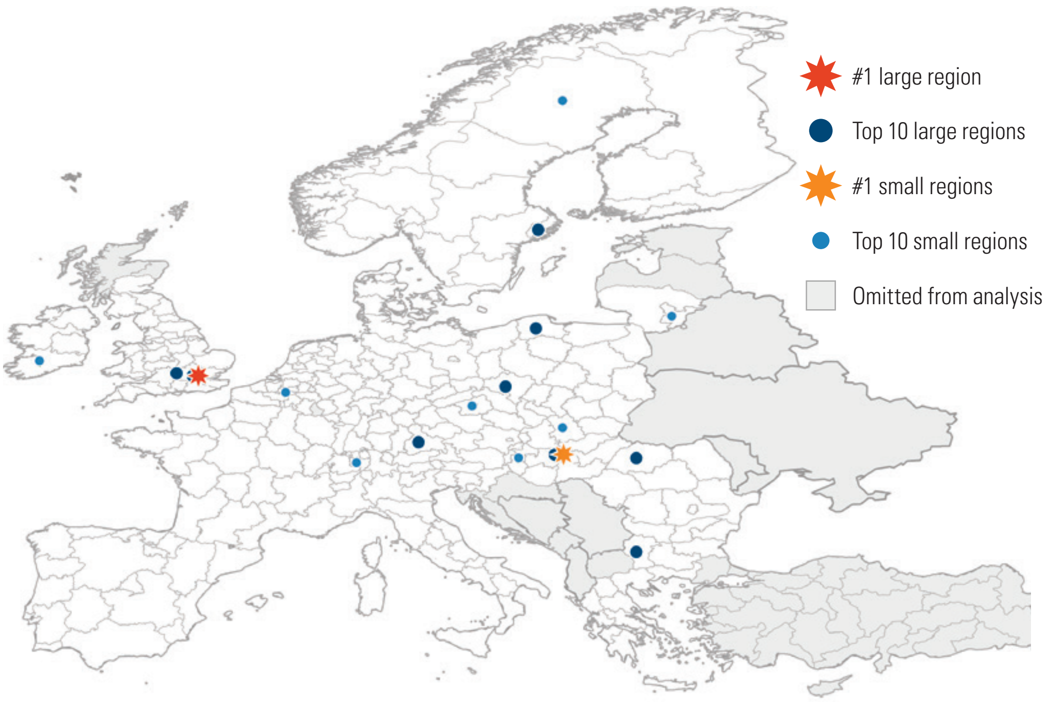
2017 European Best-Performing Small City

Pest, Hungary kicks off our Best-Performing Cities Europe small region ranking in the top spot, thanks in part to its location on the outskirts of Budapest, which placed third on the large region ranking. Together, these two regions accounted for nearly half of Hungary's total GDP in 2014.

Pest performed exceptionally well in job growth and has a strong, stable high-tech services sector. The region is home to Innoreg, or Regional Innovation Agency of Central Hungary, which is dedicated to sustainable development through the promotion of innovation and entrepreneurship in the region.

FIGURE 1

Best-Performing Cities Europe 2017: Top 10 Large and Small Regions



INTRODUCTION

Which factors determine the divergence in economic performance across Europe? What regions are leading the way in creating opportunities for prosperity? The Milken Institute's Best-Performing Cities Europe index provides an objective benchmark for examining which regional strategies have been most successful.

Based on the Milken Institute's long-standing evaluation of U.S. metropolitan areas, this index uses outcomes-based metrics including job creation, wage gains, and skilled service growth to evaluate the relative performance of European regions. While national and international politics and the global business cycle are key external forces acting on regional economies, the top-performing regions have invested in strategies that help them capitalize on their competitive advantages and weather challenges better than their peers.

The goal of our Best-Performing Cities indexes is to help businesses, investors, industry associations, development agencies, government officials, academics, and public-policy groups monitor and evaluate how well their region is promoting economic vitality relative to the rest of its peer regions. This index provides benchmarking data that can inform approaches to improving local performance. In addition, the index can serve as a tool for understanding consumer markets and business opportunities by indicating where employment is stable and expanding, wages and salaries are increasing, and economies and businesses are thriving.[1]

The premier 2017 edition of the BPC Europe index applies similar methodology to other rankings in the Milken Institute BPC series. However, European data, whether from the EU or a country's national statistical bureau, uses geographic terms and definitions not precisely comparable with U.S. Metropolitan Statistical Areas (MSA). The closest structure that exists with geographically broad-reaching, consistent, and current data collection is Eurostat's Nomenclature of Territorial Units for Statistics (NUTS). Though the NUTS classification is a hierarchical system used to divide the European Union's economic territory, the system has also been used in EU candidate countries, potential candidate countries, and countries belonging to the European Free Trade Association.[2] Of the three NUTS socioeconomic levels, we selected the NUTS 2 level that includes basic regions for the application of regional policies.[3] The larger NUTS 1 level would have been major socioeconomic regions, which could have included multiple major cities or metros.[4] The more detailed NUTS 3 level would have included small regions for specific diagnoses, which are not eligible for support from the EU's cohesion policy support and has spottier geographic coverage pertaining to data collection.[5]

An Emphasis on Outcomes

The components used to calculate the Best-Performing Cities Europe rankings are shown in Table 2. The index measures growth over five-year increments to adjust for extreme variations in business cycles and over one-year increments to track the most current economic performance for jobs (ending in 2016), wages (ending in 2013), and high-tech services output (ending in 2014).[6] The concentration of manufacturing output and high-tech services output are calculated using a location quotient (LQ), which measures the concentration of Gross Value Added (GVA) attributed to the manufacturing and high-tech services industries in a given region relative to the European average.[7] The eight indicators used to construct the index and their respective weights are listed in Table 2.

TABLE 2

Components of the Best-Performing Cities Europe Index

COMPONENT	WEIGHT
Job growth (2011-2016)	0.15
Job growth (2015-2016)	0.15
Wage growth (2008-2013)	0.15
Wage growth (2012-2013)	0.15
Hi-tech services GVA growth (2009-2014)	0.10
Hi-tech services GVA growth (2013-2014)	0.10
Hi-tech services GVA LQ (2014)	0.10
Manufacturing GVA LQ (2014)	0.10

Source: Milken Institute.

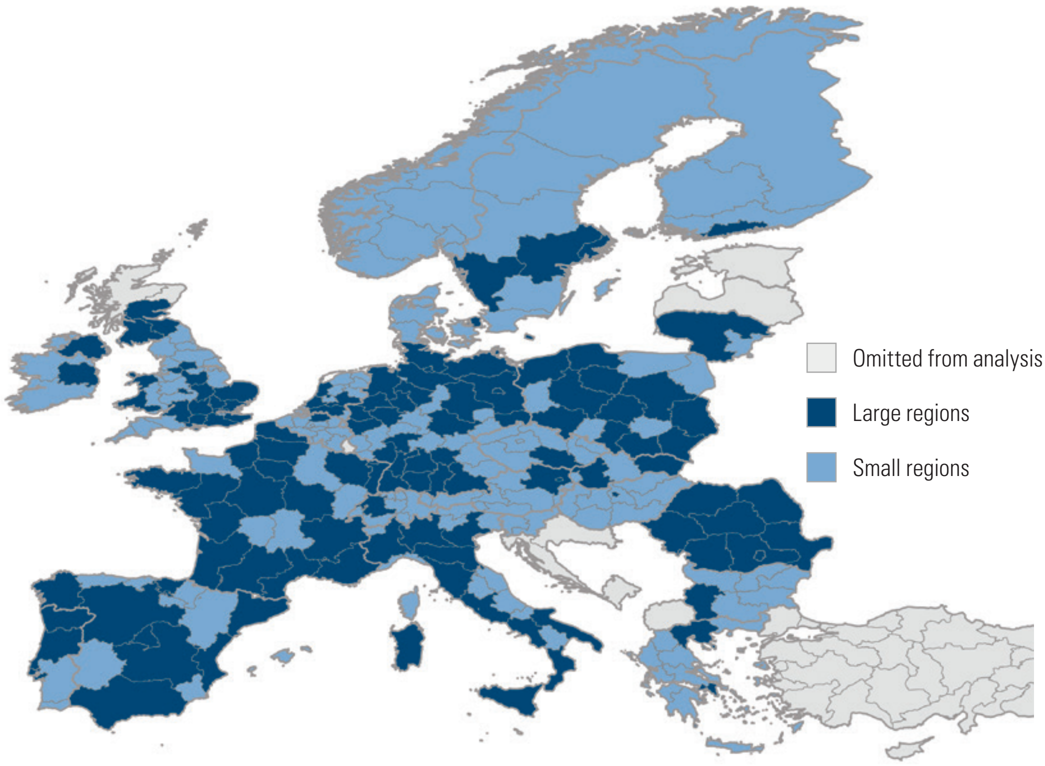
For the NUTS 2 specification, Eurostat identifies 48 non-EU regions and 276 EU regions for a total of 324 NUTS 2 regions.[8] Updates in NUTS classifications are made every few years based on a set of principles including population thresholds, administrative divisions, and regular and extraordinary amendments usually regarding territorial structure.[9] Every effort was made to use NUTS classifications with the most recent 2016 amendment, but in some cases the availability of data only allowed for NUTS classifications with the older 2013 amendment. In no case is any area double-counted. Some NUTS 2 regions were not included in the data available or were missing data for components in Table 2 and were dropped.[10] In one extreme case, all regions within a country were clear outliers when compared with all other European regions and were consequently dropped for data integrity considerations.[11] Our final dataset included 279 NUTS 2 regions. For the purpose of evaluating locations of comparable size, we divided the regions into 125 large and 154 small NUTS 2 regions based strictly on population size.

The Milken Institute uses a ranking method based on weighted z-scores for our Best-Performing Cities Europe to minimize volatility in ranking results. The following steps were used to create our ranking index with the weighted z-score method. The arithmetic mean and standard deviation are first calculated for each component. Then, the arithmetic mean was subtracted from the value of the indicator and the differential is divided by the standard deviation to give a z-score. There are weights assigned to each indicator, as designated by Table 2. The z-scores for each indicator are multiplied by their assigned weight to give a weighted z-score for each indicator. The weighted z-scores across all indicators are summed to give a sum of weighted z-scores for each region. Lastly, we ranked the regions based on their total weighted z-scores.

During the period covered by the metrics used in this index, much of Europe was still feeling the effects of the financial crisis and the policies that followed in its wake. While more recent upheavals—the United Kingdom European Union membership referendum (Brexit) vote in June 2016 for example—might only appear in our job growth indicators, there has been no dearth of change or challenges for European regions in the broader period studied. These include the European sovereign-debt crisis, the influx of refugees and migrants and differing approaches to their support and integration, and the political shifts toward populist parties and policies. To rank highly on our index, regions combine local strengths—including workforce, natural resource, locational, and institutional assets—with national policy that favors their growth and development. By focusing on outcomes, we avoid passing judgment on particular European policies and economic strategies, offering instead a gauge by which to evaluate their achievements.

FIGURE 2

Best-Performing Cities Europe: Regional Classifications



TOP 20

Best-Performing
Cities Europe 2017:
Large Regions

Inner London-East

UNITED KINGDOM

JOB GROWTH (2011-2016)	1ST
JOB GROWTH (2015-2016)	21ST
WAGE GROWTH (2008-2013)	15TH
WAGE GROWTH (2012-2013)	8TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	6TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	2ND
HI-TECH SERVICES GVA LQ (2014)	2ND
MANUFACTURING GVA LQ (2014)	125TH

ADVANTAGES

- Global financial services hub at Canary Wharf creating spillover demand for professional and business services in neighboring areas.
- World-class talent attracted by London and trained at its universities provide a highly-skilled workforce.

DISADVANTAGES

- High housing costs harm affordability and limit access to the opportunities being created.

Inner London-East, United Kingdom finished first in our inaugural Best-Performing Cities Europe in the large region category. Inner London-East is among the most dynamic economies in Europe and has become the closest European counterpart to California's world innovation leader in the southern Bay Area (Silicon Valley and San Francisco). The transformation during the past several decades has been remarkable and has only continued to accelerate over the past five years. Its economic rejuvenation has been accomplished through a combination of direct policy implementation—such as the Big Bang that aided financial services and related growth in Canary Wharf[12]—and indigenous, organic entrepreneurial-led growth in a variety of digital content and ICT areas. Inner London-East contains the Tech City cluster of firms and supporting organizations.

A prime example of Inner London-East's stellar performance is its job growth over the five-year period ending in 2016; it led all large European metro areas in this category with its 23 percent increase. This is even more impressive when considering that the period included Europe's sovereign-debt crisis, which restricted export growth to continental Europe. Reflecting the overall high quality of the jobs created, wage growth over the most recent five years of actual data through 2013 was 15th among the large cities and moved up to eighth in growth for 2013 by itself. Although official data is not yet available, wage growth appears to have continued to accelerate since 2013.

Economic growth is moderating in the aftermath of the Brexit vote and the uncertainty revolving around how the U.K. will extricate itself from the EU. For example, Inner London overall saw its growth in GDP fall from an annual rate of 2.5 percent in the fourth quarter of 2016[13] to an estimated 1 percent in the first quarter of 2017. Further, much of the growth in recent years was fueled by talent migrating from EU member countries.[14] If this talent flow slows substantially in response to Brexit, it will curtail future growth. In the meantime, the growth fundamentals remain strong as Inner London-East continues to attract global tech leaders; Google announced its expansion within the area even after the Brexit vote.[15]

Greater London's position as a pre-eminent global city with a unique combination of complementary attributes has aided Inner London-East's economic development.[16] The City of London or Square Mile[17] is Europe's top financial services cluster and spars with Wall Street for the designation as world leader; by many measures it outshines its New York competitor. The demand for professional and business services originating from financial services has spilled over to the surrounding areas of Islington to the north, Tower Hamlets to the east, and Southwark and Lambeth to the south.[18]

Greater London's world-leading universities attract talent and create it, along with the research they provide for application in the private sector. However, it has not been university research that has played the main catalytic role, but the human capital universities create and strong rates of entrepreneurship that fuel Inner London-East's economy.[19] High levels of international tourism, especially since the 2012 Olympics were held in Stratford, have contributed to growth as well. Through creative industries such as media, fashion, and digital content, as well as legal services and biopharmaceuticals, Greater London provides a unique mix of knowledge-intensive sectors.

The digital and ICT-related industries that are now clustered in Inner London-East communities of Shoreditch, Clerkenwell, Hoxton, and Haggerston were formed at the Old Street roundabout, an area that came to be known as the Silicon Roundabout.[20] The Silicon Roundabout, as well as the surrounding area into which it has expanded, became known as Tech City following an economic development initiative inspired by a speech then Prime Minister David Cameron gave to technology executives in 2010. The Old Street area formed and grew in a largely organic manner with little direct policy intervention at the early stages. Office rents were relatively inexpensive and the cluster evolved out of the fabric of the neighborhood, taking advantage of the geographic proximity to central London and the City. The area developed a reputation because of its ability to mix the creative and professional business and technical services with embryonic digital technologies. It had a vibe that attracted the cool, creative, and tech-savvy talent.

Cameron's 2010 speech called upon public-policy leaders and tech entrepreneurs to lay out an aggressive agenda to develop Inner London-East into "one of the world's great technology centres" and borrowed heavily from the imagery of Silicon

Valley.[21] A long list of policies were enacted to support the Tech City initiative, such as tax breaks for seed funding and venture capital, an entrepreneurial visa program, a high-speed broadband fund, and the LaunchPad competition. A new agency, the Tech City Investment Organization, was formed to guide the effort.[22] Although Tech City was inspired by the success of Silicon Valley, in truth, the area has more in common with the physical, attitudinal, and digital elements of San Francisco's South of Market area. Based on the latest data available for 2015, Inner London-East had 27,310 enterprise births and, after subtracting business deaths, a net start up rate of 10 percent, the highest in Greater London. Further, Inner London-East witnessed its active enterprises grow from 84,830 in 2009 to 127,545 in 2015, an astonishing gain of 50 percent over the period.[23] A burgeoning collection of green firms and a variety of "cleanweb" startups are adding to the tech cluster and helping diversify the ecosystem.

Based upon research conducted by the Centre for London, the broad cluster consisted of over 3,200 digital economy firms employing 48,500 workers in 2010, which is double the firms it housed in 1997.[24] The area generated globally-recognized firms such as Mind Candy, Songkick, Unruly, and Last.fm. It has the mix of startups and internet multi-nationals such as Cisco and Facebook, in addition to Google. The most current data shows that employment in the industry category of professional, scientific, and technical services increased 43.6 percent between 2009 and 2014. In 2014, 152,200 individuals were employed in this category, accounting for 7.8 percent of the national total. The broader category of high-tech services had double the concentration in Inner London-East than for the cities in our comparisons based on 2014 data. These digital and other related high-tech services have a strong multiplier effect on the broader Inner London-East economy. Collectively, this has propelled Inner London-East to ninth in GDP per capita in the EU.[25]

The real estate industry has been a prime beneficiary of the spillover activity. The 2008 financial crisis and associated global recession curtailed commercial construction activity, although the building of the 2012 Olympic Games venue mitigated the severity of the downturn. There has been a modest expansion in the commercial sector since then. A similar expansion has not been seen in the residential sector and the lack of new residential construction has driven up prices and rents, harming affordability. To combat this trend, the London Mayor's office is attempting to loosen regulations to spur more building. In another sign of economic strength, the other services industry category saw job growth of 27.1 percent between 2009 and 2014. While Brexit worries persist, Inner London-East has the key ingredients needed to remain one of Europe's most dynamic economies.

Stockholm

SWEDEN

JOB GROWTH (2011-2016)	11TH
JOB GROWTH (2015-2016)	17TH
WAGE GROWTH (2008-2013)	9TH
WAGE GROWTH (2012-2013)	16TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	7TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	5TH
HI-TECH SERVICES GVA LQ (2014)	8TH
MANUFACTURING GVA LQ (2014)	92ND

ADVANTAGES

- Research-intensive industries benefit from a highly-educated working-age population where a majority have tertiary qualifications.[26]
- Supportive environment for technology startups helps harness local innovation and entrepreneurship.

DISADVANTAGES

- Housing supply is not keeping pace with demand, reducing affordability.

Stockholm, Sweden garners the second spot in our European large region category finishing very close to Inner London-East. Stockholm has a thriving tech community with diverse cluster members, such as online gaming, life sciences (including biotechnology and medical devices), mobile communications, fintech, cleantech, and digitized media/music (Spotify is one of the global leaders in this category), as well as advanced manufacturing. It is a trade and logistics hub in the Nordic and Northern European regions. Stockholm has one of the top ecosystems in the world for creating and launching new firms, with a thriving early-stage financing community that would rival American tech centers such as Austin or Portland. Stockholm was recognized by SparkLabs Global Ventures as second behind only Silicon Valley in providing a supportive environment for tech startups in 2016.[27]

Stockholm has an extensive series of innovation assets including incubators, several research institutes such as the Karolinska Institutet, as well as large R&D-intensive firms such as Sony Ericsson, which is among the top patent producers in Europe.[28] Stockholm ranked eighth in our measure of the importance of high-tech services to its economy among European cities. Also of note, it recorded growth in high-tech services gross-value added of 35.7 percent over the five years through 2014, placing it seventh among large European cities. Recent data suggest that performance in knowledge-intensive services accelerated even more. For example, Statistics Sweden reports that gross regional product in business services rose 10.7 percent, and information and communications services rose 8.4 percent in the first of quarter of 2017 from the first quarter of 2016.[29]

Stockholm has gained an international reputation as a business headquarters, attracting operations of several multinational corporations, including U.S. online sales giant Amazon, Spanish engineering and infrastructure firm COMSA, and Finnish smart green walls innovator Naava.[30] Stockholm is attractive for its extensive high-speed broadband network that makes it an efficient location for processing massive amounts of data; very few locations can claim a better capability in the speed at which data can pass through a network. New greenfield foreign direct investment in Stockholm totaled US$4.3 billion between 2009 and 2014 and created 8,200 new jobs, approximately 7 percent of all jobs created based upon data from fDi Intelligence. The bulk of this investment was made by STEM or R&D-intensive industries, including communications, software and IT services, and biopharmaceuticals. Foreign-owned subsidiaries employed 237,000 in Stockholm.[31]

The startup scene in Stockholm is vibrant. A record number of investments (247) were made in Stockholm technology companies in 2016, nearly tripling the figure for 2015.[32] Further, Stockholm tech firms attracted US$1.4 billion in 2016, a jump of 57 percent from the prior year. Stockholm is seeing interest in its emerging FinTech Hub, which is improving access to early-stage risk capital in a number of sectors.

Stockholm is making a claim for initial public offering (IPO) supremacy in Europe as well. Stockholm's stock exchanges listed 74 IPOs in 2016, surpassing London's 69 for the first time.[33] Stockholm ranked second in the world in unicorns (private firms with an implied value over US$1 billion) per capita after Silicon Valley.[34] Minecraft, initially developed by Swedish game designer Markus Persson and later enhanced and published by Mojang, was acquired by Microsoft in 2014 for US$2.5 billion. Minecraft is the second largest selling video game ever, selling 121 million copies.[35] It is one of Stockholm's entrepreneurial success stories.

Stockholm has leveraged its research institutes and universities to emerge as a leading location for innovation that is then translated into commercial applications. In addition to the Karolinska Institutet, the Royal Institute of Technology, Stockholm University, Stockholm School of Economics, Sodertorn University, and a number of other specialized universities provide a rich array of innovation assets.[36] Kista Science City has a strong ICT cluster. Despite the downsizing of AstraZeneca's operations in 2012, Stockholm is a breeding ground for life sciences startups with 15 to 20 formed each year over the past decade.[37] The extensive education assets of Stockholm have created another key attraction factor, a deep pool of locally generated talent. Stockholm has one of the highest rates of educational attainment in Europe. Of the working-age population, 50.4 percent have a tertiary education.[38] In comparison, in Oberbayern (the Munich region), another area highly regarded for the quality of its workforce, just 38.4 percent of the working-age population has obtained tertiary education.[39,40]

Similar to U.S. tech centers, one of Stockholm's biggest challenges is the lack of new housing supply and rising rents and prices. Rent controls were implemented with the intention of reducing the number of young and low-wage workers that were forced from the city due to high leasing rates. The government is attempting to ease the housing crunch by a large round of public investment in rental units. Part of the solution should include creating incentives for new private investment and increasing supply. Despite the housing shortages, Stockholm's economy is flourishing and may eclipse Inner London-East in the future.

#3

Budapest
HUNGARY

JOB GROWTH (2011-2016)	3RD
JOB GROWTH (2015-2016)	1ST
WAGE GROWTH (2008-2013)	84TH
WAGE GROWTH (2012-2013)	7TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	47TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	67TH
HI-TECH SERVICES GVA LQ (2014)	5TH
MANUFACTURING GVA LQ (2014)	90TH

ADVANTAGES

- Concentration in high-skill sectors creates opportunities for local innovation and entrepreneurship.
- Hungarian Academy of Sciences and many associated research centers and institutes located in the capital fuel innovation.

DISADVANTAGES

- Manufacturing employment in decline, displacing workers.

Budapest, Hungary is the nation's capital and ranked third. The capital has been creating jobs at a furious pace, ranking first among large regions for 2016 performance on this metric. This is not just a recent phenomenon, with Budapest adding 16.4 percent more positions to the economy in the five years between 2011 and 2016, which is the third strongest showing among large regions. Hungary's financial and insurance activities are strongly concentrated in the capital, with more than 75 percent of gross value added and 64 percent of employment in that sector located in Budapest. Citi Group has established a major service center in Budapest that provides operational, financial, and technical support for Citi's operations around the world.[41]

High-tech services are a particular strength; the Budapest economy is strongly concentrated in these high-skills industries and ranks fifth on this measure. Approximately three-quarters of jobs in the information and communications field in Hungary are in Budapest. Some local startups have seen global success; Prezi, a firm creating zoomable presentation software claims 85 million users worldwide[42] and has gained ardent supporters among the TED talk set.[43] Unlike other regions in the top five, annual growth in high-tech services GVA has been sedate in Budapest, with the sector expanding at less than half the rate of its peers in 2016.

#4

Pomorskie
POLAND

JOB GROWTH (2011-2016)	2ND
JOB GROWTH (2015-2016)	36TH
WAGE GROWTH (2008-2013)	6TH
WAGE GROWTH (2012-2013)	36TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	36TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	16TH
HI-TECH SERVICES GVA LQ (2014)	65TH
MANUFACTURING GVA LQ (2014)	40TH

ADVANTAGES

- Local universities including the Gdańsk University of Technology, with strengths in engineering, and the University of Gdańsk help build an educated workforce.
- Largest Polish port facilitates trade in petrochemicals, grain, lumber, coal, and ores.

DISADVANTAGES

- Though growing, high-tech services represent a smaller than average share of the local economy.

The **Pomorskie, Poland** region ranks fourth in this category. Located in the Northwest of the country, the province's regional capital and largest city, Gdańsk, was the birthplace of the Solidarity movement. Both its historic status in the beginnings of the non-violent Polish anti-communist labor movement and the Baltic coastline draw in tourists and the number of visitors has increased significantly in recent years, rising by 1 million between 2010 and 2016.[44] The region ranked second among large cities on our measure of five-year employment growth (19 percent) second only to our No. 1 region, Inner London-East on this metric. Five-year wage growth of more than 26.5 percent was also strong and ranked sixth among large regions.

Manufacturing is an important cornerstone of the local economy, employing 168,000 people in 2014. International firms, including Delphi, a United Kingdom-based automotive component manufacturer, have production facilities in the region. The ports in Gdynia and Gdańsk help foster trade through the region, with the latter handling close to two-thirds of Polish container shipments in 2016.[45] Regional products, including from the agricultural, food processing, and petroleum refining industries, pass through the ports into foreign markets. Global multinationals like Bayer and PwC have also chosen the Pomorskie Region as an EU-based outsourcing location, siting service centers and stimulating construction activity.[46] Intel in Gdansk provides HR support to the firm's operations in Europe, the Middle East, and Africa. It also houses some sales and software development groups.[47]

#5

Nord-Vest

ROMANIA

JOB GROWTH (2011-2016)	10TH
JOB GROWTH (2015-2016)	93RD
WAGE GROWTH (2008-2013)	95TH
WAGE GROWTH (2012-2013)	6TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	1ST
HI-TECH SERVICES GVA GROWTH (2013-2014)	21ST
HI-TECH SERVICES GVA LQ (2014)	76TH
MANUFACTURING GVA LQ (2014)	20TH

ADVANTAGES

- Local universities, including the Technical University in Cluj-Napoca, are raising the share of the working population with tertiary education.
- New opportunities are being created in growing high-tech services industries.

DISADVANTAGES

- Further expansion of road and rail infrastructure is needed to effectively connect to the European transportation network.

Nord-Vest, Romania ranks fifth in this category. The region borders Ukraine to the north and Hungary to the west. The high-tech services sector is very small. Its rapid growth in this area, easier off a small base, contributed to the region's high overall ranking. This was not the Nord-Vest region's only strength; job growth over the past five years ranked tenth among large regions and one-year wage growth at just under 5 percent ranked sixth. However, employment gains in 2016 were significantly weaker, ranking in the bottom quartile for large cities.

While a quarter of workers are employed in manufacturing, mining and quarrying, and other industries, high-tech services only accounted for 6 percent of employment in 2016, up from 3 percent in 2012.[48] Some firms bridge these industries, like the Bosch Group, which has both an R&D center and an electronic control unit plant located in Cluj.[49] The Tetapolis Science Park in the region's largest city, Cluj-Napoca, was recently established to serve as an incubator for information technology firms.[50] This effort to expand the small high-tech sector has been funded in part by the EU. Although employment in the sector has declined by a third in recent years, agriculture remains an important component of the economy, supplying the food manufacturing sector. FrieslandCampina, a Dutch dairy cooperative, recently expanded cheese production at their Napolact factory in the region.[51]

#6

Dolnoslaskie

POLAND

JOB GROWTH (2011-2016)	68TH
JOB GROWTH (2015-2016)	22ND
WAGE GROWTH (2008-2013)	4TH
WAGE GROWTH (2012-2013)	39TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	10TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	14TH
HI-TECH SERVICES GVA LQ (2014)	71ST
MANUFACTURING GVA LQ (2014)	18TH

ADVANTAGES

- Strong traditional manufacturing hub supports economic growth.
- Significant foreign capital investment from global manufacturing industry leaders.

DISADVANTAGES

- More skilled workers needed; share of the population with a tertiary education below the EU average.[52]

Dolnoslaskie, Poland ranks sixth in our BPC Europe large region category. Five-year wage growth ranked fourth, with total wages increasing by almost 29 percent between 2008 and 2013. Job gains were robust in the past year and the region's small high-tech services sector is expanding.

Dolnoslaskie's strong manufacturing base was the 18th most concentrated among large regions. The automotive industry is a key component of the economy, with large investments in factories from foreign firms. Toyota has made significant capital expenditures in the region, manufacturing hybrid, petrol, and diesel engines at plants in Walbrzych and Jelcz-Laskowice.[53] Large household appliances are another key export. Whirlpool has announced a large refrigerator factory in Wroclaw, with a co-located research center.[54, 55] Investments of this type, factories with R&D activities alongside the production plant, provide a model for how the region could move up the value chain.

#7

Berkshire, Buckinghamshire, and Oxfordshire
UNITED KINGDOM

JOB GROWTH (2011-2016)	9TH
JOB GROWTH (2015-2016)	8TH
WAGE GROWTH (2008-2013)	54TH
WAGE GROWTH (2012-2013)	40TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	13TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	66TH
HI-TECH SERVICES GVA LQ (2014)	3RD
MANUFACTURING GVA LQ (2014)	111TH

ADVANTAGES

- Strong knowledge-economy based on professional, technical, and scientific services.
- Impressive job growth as more businesses are attracted to the qualified labor force.

DISADVANTAGES

- Low unemployment rates could indicate a shortage of workers in the future.[56]

Berkshire, Buckinghamshire, and Oxfordshire, United Kingdom come in at No. 7 on our BPC Europe large cities ranking. The region is competitive in most of our indicators, but it lags behind its peers in the manufacturing GVA category. It performed particularly well in job growth with about 11 percent growth from 2011 to 2016.[57]

Berkshire, Buckinghamshire, and Oxfordshire are located in the South East of the United Kingdom. Home to the University of Oxford and its renowned Oxford University Press, the city of Oxford is a hub for publishing and tourism and boasts a highly qualified labor force thanks to the university's presence.[58] The university also contributes to the highly educated population, with about 52 percent of the working-age population having tertiary education in comparison the EU's 31 percent average.[59] Close to 5,300 businesses are located in Oxford alone, employing 133,000 people.[60] The Berkshire, Buckinghamshire, and Oxfordshire region is also the home of Thames Valley Berkshire, which was the U.K.'s most productive sub-region based on GVA per hour worked in 2013.[61]

#8

Oberbayern
GERMANY

JOB GROWTH (2011-2016)	14TH
JOB GROWTH (2015-2016)	39TH
WAGE GROWTH (2008-2013)	11TH
WAGE GROWTH (2012-2013)	12TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	40TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	70TH
HI-TECH SERVICES GVA LQ (2014)	27TH
MANUFACTURING GVA LQ (2014)	15TH

ADVANTAGES

- Diverse and world-class manufacturing sector, encompassing research, design, and manufacturing of vehicles, machinery, electronics, chemicals, and pharmaceuticals.
- Large research capacity fuels progress; two leading German research institutions, the Max Planck Society and the Fraunhofer Society, are headquartered in the region's capital, Munich.

DISADVANTAGES

- Size of skilled labor force is not keeping pace with industry demand, placing a drag on growth.

The **Oberbayern, Germany** region, anchored by Munich, is a strong performer, ranking eighth overall on our Best-Performing Cities Europe index. Solid job gains have supported exceptional wage growth of 19 percent between 2008 and 2013. More than 10 percent of Germany's information and communication sector output was produced in the Oberbayern region in 2014.

Manufacturing is a core strength, with market leaders like Audi and BMW contributing to an industry concentration that places the region 15th among 125 large metro areas. The region's manufacturing output represented 2 percent of total German gross value added in 2014. Like many well-known German vehicle brands, MAN Truck & Bus Group has its corporate headquarters and a major manufacturing plant in the Munich area, with more than 9,000 employees on-site producing trucks, cabs and axles, running logistics, and managing the company.[62] In 2013, Bayern (the state that includes the Oberbayern region) spent the equivalent of more than 3 percent of regional GDP on R&D, a larger share than Taiwan or the United States.[63] Research-intensive industries financed more than 95 percent of their R&D themselves, with small contributions from the government and foreign investors.[64] The majority of this activity happens in the Oberbayern region.[65] BMW alone accounted for almost 1,200 patents filed by companies in the region in 2015.[66]

#9

Outer London-West and North West

UNITED KINGDOM

JOB GROWTH (2011-2016)	5TH
JOB GROWTH (2015-2016)	56TH
WAGE GROWTH (2008-2013)	36TH
WAGE GROWTH (2012-2013)	9TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	20TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	31ST
HI-TECH SERVICES GVA LQ (2014)	7TH
MANUFACTURING GVA LQ (2014)	121ST

ADVANTAGES

- Benefits from its location within the cluster of London regions.
- Strong high-tech services sector is supporting wage growth.

DISADVANTAGES

- Nearly all boroughs in the region are in the bottom half of all London boroughs in terms of improvements in unemployment and improvements in low pay.[67]

Outer London-West and North West, United Kingdom comes in at No. 9 in our BPC Europe large cities ranking. The region performed well across most of our categories. Job growth was robust, increasing by 13 percent from 2011 to 2016.[68] However, the region did lag behind its peers in our manufacturing indicator.

Outer London-West and North West is a hub for transport and storage industry jobs in large part because the region is home to Heathrow Airport and the headquarters of International Airlines Group and Air France-KLM.[69] Nearly half of all air transport jobs in Great Britain are located in this region.[70] Outer London-West and North West also employs a significant amount of professional, scientific, and technical activities jobs because of scientific parks and research centers in the area.[71] In addition, the region has a strong television and cinema presence with Sky offices and studios, Paramount Pictures, Vue Cinemas, QVC UK, Cineworld, Disney, and the Discovery Channel as employers in the region.[72]

#10

Yugozapaden

BULGARIA

JOB GROWTH (2011-2016)	89TH
JOB GROWTH (2015-2016)	33RD
WAGE GROWTH (2008-2013)	1ST
WAGE GROWTH (2012-2013)	1ST
HI-TECH SERVICES GVA GROWTH (2009-2014)	64TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	109TH
HI-TECH SERVICES GVA LQ (2014)	20TH
MANUFACTURING GVA LQ (2014)	96TH

ADVANTAGES

- Center for publicly funded R&D conducted at Bulgarian Academy of Sciences, the Agricultural Academy, and universities.
- Competitive tax rates contribute to the low cost of doing business.

DISADVANTAGES

- Falling birth rates may pose challenges in the future.

Yugozapaden, Bulgaria ranks tenth in this category. The southwestern region of Bulgaria, which includes the country's capital, Sofia, and its outskirts, has outpaced all other large European regions in wage growth on both our one-year and five-year measures. Foreign direct investment is a crucial economic driver and its decline during the financial crisis in 2008 dampened the region's job creation from its previously furious pace. Yugozapaden lagged the other regions in the top 50 for employment growth during the five-year period between 2011 and 2016; however, by the end of that period progress was robust, growing at 1.75 percent. The region is an attractive outsourcing location, thanks in part to high-speed internet access, competitive wages, and comprehensive language education.

High-tech services, which include the information and communication industry and professional, technical, and scientific services, represent a large share of the regional economy (although it contracted slightly in 2014, the only region in the top 20 to do so). The region acts as a magnet for educated workers, with 39.4 percent of the working-age population having completed tertiary education, highest by far of any region in Bulgaria and almost 12 percentage points higher than the national average.[73]

#11 Östra Mellansverige
SWEDEN

JOB GROWTH (2011-2016)	25TH
JOB GROWTH (2015-2016)	32ND
WAGE GROWTH (2008-2013)	19TH
WAGE GROWTH (2012-2013)	41ST
HI-TECH SERVICES GVA GROWTH (2009-2014)	21ST
HI-TECH SERVICES GVA GROWTH (2013-2014)	50TH
HI-TECH SERVICES GVA LQ (2014)	35TH
MANUFACTURING GVA LQ (2014)	29TH

ADVANTAGES

- Research-based economic clusters create high-skill knowledge-based employment.
- Diversified economy is less vulnerable to economic shocks.

DISADVANTAGES

- Rising housing prices across Sweden are a potential source of instability.

Östra Mellansverige, Sweden ranks 11th based on strong performance across all the metrics we consider. Five-year wage and high-tech services growth were particularly strong. The region is adjacent to the Swedish capital, Stockholm (ranked second on our index), and its largest city is Uppsala. Its educated population is an asset; 38 percent of working-age residents have tertiary qualifications (7.3 percent above the European average).[74] Academic institutions, including Uppsala University and the Swedish University of Agricultural Sciences, act as hubs for life sciences and environmental science. Uppsala Science Park houses numerous biotech firms, including Gradientech AB, which develops tools for cell response analysis,[75] and 3H Biomedical, a supplier of cells for life-science research.[76] Aiming to foster a key high-tech cluster, the Automation Region center housed at Mälardalen University in Västerås promotes the development and use of automation technology by fostering a network of business leaders, academics, and other relevant organizations.[77]

#12 Jihovýchod
CZECH REPUBLIC

JOB GROWTH (2011-2016)	20TH
JOB GROWTH (2015-2016)	26TH
WAGE GROWTH (2008-2013)	92ND
WAGE GROWTH (2012-2013)	66TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	38TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	1ST
HI-TECH SERVICES GVA LQ (2014)	62ND
MANUFACTURING GVA LQ (2014)	16TH

ADVANTAGES

- Established manufacturing hub with ties to foreign firms like Honeywell and ABB.
- Growing high-tech services sector, with some homegrown anchors like AVG, a security software developer.

DISADVANTAGES

- Risk that manufacturing moves to lower cost production locations.

The **Jihovýchod, Czech Republic** region ranks 12th in this category. It is home to the country's second largest city, Brno. South Moravia anchors the region's innovation economy. Honeywell Technology Solutions located one of its key global research and development hubs in Brno.[78] The Southeast region's high-tech service sector expanded faster than all peers in the large region index from 2013 to 2014, although it should be noted that the more than 10 percent growth in 2014 was off a low base. Outside of the Brno metro area, the region is largely rural and agriculture remains a major economic driver.

Foreign firms have established manufacturing facilities in the region and mechanical engineering is a local strength. This resulted in a high rank on our manufacturing industry concentration indicator (16th overall). Bosch Diesel s.r.o, located in Jihlava, employs more than 4,400 workers at its three production plants in the region. With co-located R&D, these manufacturing sites have attracted significant investment, and supply diesel injection systems to more than 30 automakers.[79] Encouraging more firms to locate high-skills jobs, like those in R&D, alongside their manufacturing branches would help protect against factory relocations to areas of the European Union that have lower production costs. Moving up the value chain to provide more input into the design and marketing of the goods produced, and making use of the skilled graduates from higher education institutions, including Brno University of Technology and Masaryk University, would help strengthen the economy.

#13

Berlin
GERMANY

JOB GROWTH (2011-2016)	12TH
JOB GROWTH (2015-2016)	46TH
WAGE GROWTH (2008-2013)	17TH
WAGE GROWTH (2012-2013)	30TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	44TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	36TH
HI-TECH SERVICES GVA LQ (2014)	15TH
MANUFACTURING GVA LQ (2014)	100TH

ADVANTAGES

- Growing IT services hub capable of attracting high-skill and creative workers.
- Educated working-age population with more than 39 percent holding a tertiary qualification.[80]

DISADVANTAGES

- Dependence on public service jobs may limit growth potential.

Berlin, Germany ranks 13th in our large cities category. High-tech services are a particular strength of the German capital and the city has long had a reputation as a cosmopolitan, creative hub that helps attract students and young professionals to the region. The city population grew by approximately 1.4 percent each year between 2011 and 2015.[81] There is a lively startup scene, with close to half of German firms that received venture capital investments in 2015 basing their operations in Berlin.[82] Strong performance in the first half of 2017 indicates that investors continue to find opportunities in the region.[83] One such example is Delivery Hero, founded in 2011, a food ordering service based in Berlin that has used venture funds to expand into international markets and went public in June 2017.[84] Public administration is also a key source of employment in Berlin and accounted for 24 percent of the GDP in 2016.[85] In addition to many German ministry research departments, Berlin is home to prestigious non-governmental, nonprofit research institutions—including multiple locations of the Max Plank Society for the Advancement of Science, the Fraunhofer Society for the Advancement of Applied Research, and the Leibnitz Association.

#14

Leicestershire, Rutland, and Northamptonshire
UNITED KINGDOM

JOB GROWTH (2011-2016)	28TH
JOB GROWTH (2015-2016)	6TH
WAGE GROWTH (2008-2013)	74TH
WAGE GROWTH (2012-2013)	29TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	14TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	34TH
HI-TECH SERVICES GVA LQ (2014)	57TH
MANUFACTURING GVA LQ (2014)	62ND

ADVANTAGES

- Infrastructure investments should aid growth moving forward.
- Job growth as the area focuses on high-tech industry growth.

DISADVANTAGES

- As the leading creative business hub outside of London, there is much concern about the fate of small business because of the recent business rate hike.[86]

Leicestershire, Rutland, and Northamptonshire, United Kingdom is No. 14 on our BPC Europe large cities ranking. The area performed well across most of our categories, but did notably well in our job growth indicators, boasting a 3 percent increase in employment from 2015 to 2016.[87]

The Leicestershire, Rutland, and Northamptonshire region contains the Leicester and Leicestershire area. The Leicester and Leicestershire area houses 2,500 creative businesses and is said to be the largest creative business cluster outside of London.[88] Also in the Leicester and Leicestershire area are the MIRA Technology Park, the only transport sector focused Enterprise Zone, and the recently designated Loughborough and Leicester Enterprise Zone, which focuses on high-tech manufacturing, R&D, bio-pharma, and the space technology industry.[89] Northamptonshire, also located within the region, was successful in attracting substantial external investment, including a 120 million pound fund focused on infrastructure projects in 2014.[90] Northamptonshire's top 100 businesses were reported to outperform the U.K. economy based on the growth of their turnover in 2014.[91]

#15

Eastern and Midland

IRELAND

JOB GROWTH (2011-2016)	19TH
JOB GROWTH (2015-2016)	2ND
WAGE GROWTH (2008-2013)	120TH
WAGE GROWTH (2012-2013)	98TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	5TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	26TH
HI-TECH SERVICES GVA LQ (2014)	4TH
MANUFACTURING GVA LQ (2014)	67TH

ADVANTAGES

- Educated population supplying businesses with qualified candidates.
- High-tech service industry growth stimulated by investments from foreign firms attracted to Ireland's favorable tax and incentive structure.

DISADVANTAGES

- Development has led to high office rents and urban congestion.

Eastern and Midland, Ireland debuts in the BPC Europe large cities ranking at No. 15. The region performed exceptionally well in job growth, with a 3 percent increase from 2015 to 2016, and high-tech services categories.[92] However, the region does seem to be lagging in wage growth when compared to its peers.

Eastern and Midland is home to the country's capital, Dublin, making it the headquarters for much of the country's business. Due to its role as the nation's business hub, office rents are at peak levels while vacancy rates are low and continue falling.[93] Dublin benefits from having the most diverse and educated population in Ireland.[94] Dubliners are searching for a solution to prevent city congestion in the future. The city is looking to increase car sharing, improve public transport, and create infrastructure to promote walking and cycling.[95]

#16

Bucuresti-Ilfov

ROMANIA

JOB GROWTH (2011-2016)	18TH
JOB GROWTH (2015-2016)	106TH
WAGE GROWTH (2008-2013)	78TH
WAGE GROWTH (2012-2013)	20TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	27TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	17TH
HI-TECH SERVICES GVA LQ (2014)	1ST
MANUFACTURING GVA LQ (2014)	99TH

ADVANTAGES

- Strong high-tech service sector poised for continued expansion.
- Well-educated workforce, with 31 percent holding a tertiary qualification.

DISADVANTAGES

- Working-age population limited by slow population growth and lack of in-migration.

Bucuresti-Ilfov, Romania ranks 16th in our top 20 BPC Europe large cities. The Romanian capital has the highest concentration of high-tech services among the large cities we ranked, thanks to strong and growing professional services and information and communications sectors. Despite the sector being twice as concentrated as the European average, output in this category increased by 23 percent in the five years ending in 2014.
The financial and insurance activities are particularly concentrated in the Bucuresti region and create more than 70 percent of national gross value added in that industry. Foreign firms have a significant presence in the banking sector; in 2006, Austria's Erste Group acquired Banca Comercială Română,[96] the nation's largest lender.[97] Overall job growth in the region was slow in 2016, ranking in the bottom quintile of large regions. However, European Union projections for the Romanian economy see tax cuts and increased public sector wages driving consumer spending, which should benefit the capital's service-based economy.[98]

#17

Wielkopolskie
POLAND

JOB GROWTH (2011-2016)	66TH
JOB GROWTH (2015-2016)	96TH
WAGE GROWTH (2008-2013)	5TH
WAGE GROWTH (2012-2013)	45TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	22ND
HI-TECH SERVICES GVA GROWTH (2013-2014)	3RD
HI-TECH SERVICES GVA LQ (2014)	79TH
MANUFACTURING GVA LQ (2014)	26TH

ADVANTAGES

- Strong automotive manufacturing sector, including innovators like Solaris, an electric bus maker.
- Small, but growing information technology and business services sector.

DISADVANTAGES

- Low unemployment rate can make hiring difficult.

Wielkopolskie, Poland ranks 17th in this category. Poznań is the largest city in the region, located in west central Poland. Manufacturing is an important component of the economy, and vehicle manufacturers and their supply chains have been a source of significant foreign investment. The MAN Truck & Bus Group, headquartered in Munich, Germany, employs 660 people at their Poznań plant.[99] Volkswagen opened a plant in Września in 2016, their second in the region, with the capacity to build up to 100,000 Crafter commercial vehicles annually.[100]

Although the region had the third highest one-year growth rate for the high-tech services sector, the sector is still small. Attempts to expand it include the NanoBioMedical Centre at Adam Mickiewicz University, a collaboration between four universities in Poznań, which uses shared modern laboratory space and conferences to foster networking and collaboration.[101]

#18

Derbyshire and Nottinghamshire
UNITED KINGDOM

JOB GROWTH (2011-2016)	31ST
JOB GROWTH (2015-2016)	4TH
WAGE GROWTH (2008-2013)	50TH
WAGE GROWTH (2012-2013)	37TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	41ST
HI-TECH SERVICES GVA GROWTH (2013-2014)	58TH
HI-TECH SERVICES GVA LQ (2014)	61ST
MANUFACTURING GVA LQ (2014)	55TH

ADVANTAGES

- Growth across many economic indicators gives stability.
- Educated labor force from multiple universities in the region.

DISADVANTAGES

- Its remote location, lacking proximity to other large cities.

Derbyshire and Nottinghamshire, United Kingdom joins our BPC Europe large cities ranking at No. 18. The region performed well compared to its peers across all of our indicators and excelled in short-term job growth with a 3 percent increase from 2015 to 2016.[102]

The Derbyshire and Nottinghamshire region has an economy characterized by manufacturing and engineering.[103] Derbyshire is considered one of the fastest growing economies in the U.K.[104] Notably, Rolls-Royce has a site in Derby that focuses on civil aerospace and submarines and employs more than 12,000 people.[105] This plant has the largest concentration of employees of any other Rolls-Royce site in the U.K.[106] The University of Nottingham contributes to a skilled labor force in the area and offers a high-quality pharmacy and pharmacology program.[107] Two other public universities are also located in the region, although they are less focused on research.

#19

Hovedstaden
DENMARK

JOB GROWTH (2011-2016)	35TH
JOB GROWTH (2015-2016)	18TH
WAGE GROWTH (2008-2013)	73RD
WAGE GROWTH (2012-2013)	56TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	32ND
HI-TECH SERVICES GVA GROWTH (2013-2014)	28TH
HI-TECH SERVICES GVA LQ (2014)	16TH
MANUFACTURING GVA LQ (2014)	80TH

ADVANTAGES

- Established innovation hub with a focus on green technology.
- Highly educated workforce; close to 50 percent of working-age adults have earned a university degree.[108]

DISADVANTAGES

- High cost of living reduces competitiveness as a business location.[109]

Hovedstaden, Denmark ranks 19th in this category. The region, which covers Greater Copenhagen, has a strong and growing high-tech services sector and is less dependent on manufacturing than the European average. Job gains have been strong, placing the region 18th in 2016 and 35th for the five-year period of 2011 to 2016.

Innovation is a key reason the region is a global green economy leader, responsible for creating technologies that can be exported throughout the world. Close to 25,000 researchers work in the region, primarily in the private sector and academia.[110] Accelerace, a startup accelerator that focuses on six sectors including cleantech, life science, and biotech, offers business training, cluster-specific workshops, and access to a network of private sector mentors.[111] These efforts to support entrepreneurs are aided by the quality of life offered in the region, which makes the regions attractive to those who value both the city of Copenhagen's goal of being carbon neutral by 2025 and the amenities created in pursuit of that goal. Thanks to infrastructure investments and policy changes, more than 40 percent of commutes to work and school are already done by bicycle, with a 2025 goal of 50 percent.[112]

#20

Malopolskie
POLAND

JOB GROWTH (2011-2016)	61ST
JOB GROWTH (2015-2016)	111TH
WAGE GROWTH (2008-2013)	2ND
WAGE GROWTH (2012-2013)	25TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	17TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	15TH
HI-TECH SERVICES GVA LQ (2014)	41ST
MANUFACTURING GVA LQ (2014)	53RD

ADVANTAGES

- Established Polish research and technology hub, with collaborative relationships between academic departments and industry.[113]
- Krakow Technology Park facilitates new technology and entrepreneurship.

DISADVANTAGES

- Poor winter air quality affects environmental conditions for residents.[114]

Malopolskie, Poland ranks 20th in our inaugural BPC Europe large cities category. Impressive five-year wage growth earned the southern Polish region second place on that measure, although more recent performance has been weaker. Job growth in 2016 was anemic and the lowest in the top 20 at just under 0.2 percent.

Krakow, the largest city in the region, has a rich history and architecture that is attractive to tourists. The number of tourists has been rising steadily in recent years, with more than 1.3 million visitors in 2016.[115] The high-tech services sector has expanded and the region housed 10 percent of Polish information and communication industry jobs in 2014. The working-age population with a tertiary education is at the European average[116] and the professional, scientific, and technical activities industry in Malopolskie contributes close to 10 percent of the total gross value added by that industry nationwide. Efforts to bolster the high-tech hub include the Kraków Park Technologiczny and related special economic zone, which have offered tax relief for qualifying investments along with access to space and support to high-tech firms for more than a decade.[117] The technology park is a public-private partnership that also aims to enhance collaboration with academics and entrepreneurs.

COMPLETE RESULTS BEST-PERFORMING CITIES EUROPE 2017: LARGE REGIONS

LARGE REGIONS

Final Rank	Geography	Total Employment Growth 2011-2016	Total Employment Growth 2015-2016	Total Wage Growth 2008-2013	Total Wage Growth 2012-2013	High-Tech Services GVA Growth 2009-2014	High-Tech Services GVA Growth 2013-2014	High-Tech Services GVA LQ 2014	Manufacturing GVA LQ 2014
1	Inner London-East, United Kingdom	1	21	15	8	6	2	2	125
2	Stockholm, Sweden	11	17	9	16	7	5	8	92
3	Budapest, Hungary	3	1	84	7	47	67	5	90
4	Pomorskie, Poland	2	36	6	36	36	16	65	40
5	Nord-Vest, Romania	10	93	95	6	1	21	76	20
6	Dolnoslaskie, Poland	68	22	4	39	10	14	71	18
7	Berkshire, Buckinghamshire, and Oxfordshire, United Kingdom	9	8	54	40	13	66	3	111
8	Oberbayern, Germany	14	39	11	12	40	70	27	15
9	Outer London-West and North West, United Kingdom	5	56	36	9	20	31	7	121
10	Yugozapaden, Bulgaria	89	33	1	1	64	109	20	96
11	Östra Mellansverige, Sweden	25	32	19	41	21	50	35	29
12	Jihovýchod, Czech Republic	20	26	92	66	38	1	62	16
13	Berlin, Germany	12	46	17	30	44	36	15	100
14	Leicestershire, Rutland, and Northamptonshire, United Kingdom	28	6	74	29	14	34	57	62
15	Eastern and Midland, Ireland	19	2	120	98	5	26	4	67
16	Bucuresti-Ilfov, Romania	18	106	78	20	27	17	1	99
17	Wielkopolskie, Poland	66	96	5	45	22	3	79	26
18	Derbyshire and Nottinghamshire, United Kingdom	31	4	50	37	41	58	61	55
19	Hovedstaden, Denmark	35	18	73	56	32	28	16	80
20	Malopolskie, Poland	61	111	2	25	17	15	41	53
21	Hampshire and Isle of Wight, United Kingdom	36	24	56	54	16	56	11	97
22	Mazowieckie, Poland	63	81	3	58	26	38	10	85
23	Schwaben, Germany	39	55	22	24	30	90	46	5
24	Västsverige, Sweden	32	31	47	46	31	27	39	49
25	Tübingen, Germany	34	49	23	23	74	101	51	2
26	Surrey, East and West Sussex, United Kingdom	16	15	34	87	24	69	17	113
27	East Anglia, United Kingdom	17	80	48	26	12	41	24	79
28	Gloucestershire, Wiltshire, and Bristol/Bath area, United Kingdom	26	34	64	22	29	39	31	82
29	Bedfordshire and Hertfordshire, United Kingdom	8	82	88	19	28	37	21	91
30	Stuttgart, Germany	30	62	29	32	90	107	42	1
31	Kent, United Kingdom	7	23	76	65	19	52	56	109
32	Greater Manchester, United Kingdom	37	83	61	5	9	49	30	101
33	Rheinhessen-Pfalz, Germany	50	72	20	15	57	76	84	6
34	Freiburg, Germany	29	54	25	27	85	112	47	4
35	Espace Mittelland, Switzerland	13	25	40	84	84	77	68	28

LARGE REGIONS

Final Rank	Geography	Total Employment Growth 2011-2016	Total Employment Growth 2015-2016	Total Wage Growth 2008-2013	Total Wage Growth 2012-2013	High-Tech Services GVA Growth 2009-2014	High-Tech Services GVA Growth 2013-2014	High-Tech Services GVA LQ 2014	Manufacturing GVA LQ 2014
36	Outer London-East and North East, United Kingdom	4	64	28	14	67	83	58	105
37	Západné Slovensko, Slovakia	59	12	65	79	62	33	96	17
38	Mittelfranken, Germany	43	58	32	73	37	72	36	8
39	Hamburg, Germany	38	71	18	17	61	99	14	78
40	Eastern Scotland, United Kingdom	42	35	66	13	25	46	50	102
41	Slaskie, Poland	48	45	10	90	56	44	94	33
42	Detmold, Germany	54	87	33	80	33	51	44	7
43	Weser-Ems, Germany	23	41	16	33	66	95	89	32
44	West Yorkshire, United Kingdom	49	74	63	34	8	40	37	81
45	Helsinki-Uusimaa, Finland	52	65	62	61	34	54	13	76
46	Münster, Germany	58	86	21	68	42	43	40	37
47	Köln, Germany	40	69	26	72	48	60	25	60
48	Prov. Antwerpen, Belgium	69	43	58	69	76	57	26	31
49	Noord-Holland, Netherlands	62	42	75	59	83	13	12	115
50	Východné Slovensko, Slovakia	44	28	44	50	59	119	55	14
51	West Midlands, United Kingdom	33	114	67	4	39	25	63	87
52	Karlsruhe, Germany	46	60	43	48	86	115	32	11
53	Podkarpackie, Poland	96	118	7	28	43	8	104	19
54	West Wales and The Valleys, United Kingdom	24	102	53	10	63	35	117	61
55	Essex, United Kingdom	27	98	77	31	11	48	53	103
56	Schleswig-Holstein, Germany	67	53	46	43	60	30	95	59
57	Zachodniopomorskie, Poland	15	101	14	67	100	45	93	63
58	Düsseldorf, Germany	71	100	41	74	45	53	28	47
59	Niederösterreich, Austria	53	59	31	38	23	96	115	42
60	Łódzkie, Poland	22	109	12	86	79	61	109	34
61	Arnsberg, Germany	76	103	42	76	54	65	48	10
62	Northern Ireland, United Kingdom	51	27	79	91	52	59	82	74
63	Thüringen, Germany	99	104	39	47	35	32	99	22
64	Brandenburg, Germany	87	89	30	44	72	4	103	70
65	Wien, Austria	41	47	49	75	99	97	19	107
66	Noord-Brabant, Netherlands	86	52	83	100	46	29	38	30
67	Centru, Romania	82	119	102	21	2	62	92	9
68	Midi-Pyrénées, France	60	73	37	51	58	74	45	94
69	Comunidad de Madrid, Spain	93	3	109	116	49	10	6	110
70	Rhône-Alpes, France	64	75	51	70	53	86	49	69
71	South Western Scotland, United Kingdom	56	68	90	18	98	42	69	88
72	Pays de la Loire, France	70	66	52	64	51	84	73	71
73	Bretagne, France	80	77	55	62	50	63	60	84

LARGE REGIONS

Final Rank	Geography	Total Employment Growth 2011-2016	Total Employment Growth 2015-2016	Total Wage Growth 2008-2013	Total Wage Growth 2012-2013	High-Tech Services GVA Growth 2009-2014	High-Tech Services GVA Growth 2013-2014	High-Tech Services GVA LQ 2014	Manufacturing GVA LQ 2014
74	Hannover, Germany	55	90	27	35	94	114	80	48
75	Darmstadt, Germany	47	76	68	53	111	117	23	50
76	Île de France, France	72	94	71	95	70	78	9	119
77	Aquitaine, France	45	61	60	78	55	92	70	104
78	Lüneburg, Germany	57	84	24	52	88	116	86	58
79	Lubelskie, Poland	75	117	8	63	71	64	114	66
80	Dresden, Germany	73	88	38	42	91	122	77	39
81	Norte, Portugal	104	30	110	82	77	24	110	41
82	País Vasco, Spain	102	9	112	118	82	7	75	25
83	Vidurio ir vakarų Lietuvos regionas , Lithuania	21	37	97	2	125	110	125	21
84	Sud-Muntenia, Romania	6	120	114	49	15	118	121	3
85	Alsace, France	81	95	72	81	80	87	81	54
86	Provence-Alpes-Côte d'Azur, France	74	79	59	96	69	85	52	114
87	Cataluña, Spain	101	10	118	119	75	9	54	51
88	Languedoc-Roussillon, France	65	67	57	92	78	100	85	118
89	Poitou-Charentes, France	78	91	70	57	68	104	112	89
90	Área Metropolitana de Lisboa, Portugal	112	16	105	77	116	68	33	112
91	Sud-Est, Romania	123	125	103	3	3	6	123	12
92	Emilia-Romagna, Italy	91	50	87	105	114	103	67	24
93	Mecklenburg-Vorpommern, Germany	88	105	45	83	93	71	108	86
94	Nord-Pas de Calais, France	84	99	81	99	73	89	72	83
95	Puglia, Italy	77	13	101	108	118	82	83	95
96	Centre-Val de Loire, France	92	107	80	71	81	93	90	72
97	Lombardia, Italy	90	78	91	104	115	105	29	38
98	Toscana, Italy	83	48	98	107	119	75	64	46
99	Gelderland, Netherlands	100	70	85	103	101	80	43	73
100	Sachsen-Anhalt, Germany	114	116	35	85	110	55	116	36
101	Zuid-Holland, Netherlands	98	85	93	102	103	81	22	108
102	Canarias, Spain	79	5	119	115	105	19	91	123
103	Piemonte, Italy	95	44	100	109	113	120	34	35
104	Lazio, Italy	85	51	99	112	120	91	18	117
105	Galicia, Spain	117	20	117	117	89	11	98	68
106	Haute-Normandie, France	108	110	82	89	97	108	100	52
107	Veneto, Italy	111	92	96	106	117	88	74	23
108	Kujawsko-Pomorskie, Poland	118	122	13	88	104	47	118	27
109	Picardie, France	105	113	89	94	65	102	107	64
110	Centro, Portugal	119	63	113	97	92	18	124	45
111	Comunidad Valenciana, Spain	97	11	123	120	108	20	102	65
112	Bourgogne, France	110	112	86	93	87	94	106	75

LARGE REGIONS

Final Rank	Geography	Total Employment Growth 2011-2016	Total Employment Growth 2015-2016	Total Wage Growth 2008-2013	Total Wage Growth 2012-2013	High-Tech Services GVA Growth 2009-2014	High-Tech Services GVA Growth 2013-2014	High-Tech Services GVA LQ 2014	Manufacturing GVA LQ 2014
113	Lorraine, France	113	115	69	60	107	111	105	77
114	Andalucía, Spain	106	7	121	121	106	12	101	106
115	Castilla y León, Spain	115	19	115	122	102	22	113	56
116	Vest, Romania	103	121	94	101	95	106	87	13
117	Castilla-la Mancha, Spain	116	14	122	123	96	23	120	57
118	Sardegna, Italy	94	38	104	113	109	113	78	120
119	Sicilia, Italy	107	40	108	111	121	73	88	122
120	Campania, Italy	109	97	106	110	122	79	59	98
121	Nord-Est, Romania	125	124	116	55	4	121	111	44
122	Sud-Vest Oltenia, Romania	124	123	107	11	18	124	122	43
123	Calabria, Italy	120	108	111	114	112	98	97	124
124	Attiki, Greece	121	29	125	125	124	125	66	116
125	Kentriki Makedonia, Greece	122	57	124	124	123	123	119	93

TOP 10

Best-Performing Cities Europe 2017: **Small Regions**

We rank 154 small European NUTS 2 regions for our Best-Performing Small Cities index. For our first year in the ranking, Pest, Hungary comes in at No. 1, outperforming all other small regions in five-year job growth.

Of the top 10 small cities, six cities are either a capital city or benefit from their proximity and/or access to large, established cities or regions: **Pest, Hungary; Prov. Brabant Wallon, Belgium; Sostinės regionas, Lithuania; Inner London-West, United Kingdom; Strední Cechy, Czech Republic;** and **Zentralschweiz, Switzerland**. Two of the cities in the top 10 specialize in the automotive industry: **Stredné Slovensko, Slovak Republic** and **Nyugat-Dunántúl, Hungary**. The remaining cities: **Southern, Ireland** and **Övre Norrland, Sweden,** benefit from higher-education institutions in the area.

TABLE 3

Top 10 Best-Performing Small Cities

NUTS 2 REGION	2017 RANK
Pest, Hungary	1
Prov. Brabant Wallon, Belgium	2
Sostinės regionas, Lithuania	3
Southern, Ireland	4
Stredné Slovensko, Slovak Republic	5
Inner London-West, United Kingdom	6
Nyugat-Dunántúl, Hungary	7
Strední Cechy, Czech Republic	8
Zentralschweiz, Switzerland	9
Övre Norrland, Sweden	10

Source: Moody's Analytics and Milken Institute.

#1

Pest
HUNGARY

JOB GROWTH (2011-2016)	1ST
JOB GROWTH (2015-2016)	4TH
WAGE GROWTH (2008-2013)	94TH
WAGE GROWTH (2012-2013)	20TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	102ND
HI-TECH SERVICES GVA GROWTH (2013-2014)	91ST
HI-TECH SERVICES GVA LQ (2014)	14TH
MANUFACTURING GVA LQ (2014)	25TH

ADVANTAGES

- Job growth as business pushes outward from Budapest.
- Abundant space for physical capital investment attracts businesses, especially those needing locations for manufacturing.

DISADVANTAGES

- National policy instability and corruption impede business.

Pest, Hungary tops the ranking of our BPC Europe small cities. The region performed exceptionally well in job growth and has made gains in wage growth in the short term. Though Pest did not perform well in our high-tech services GVA growth categories, it ranks well in the measure of its high-tech services industry concentration. This is because much of the region's total GVA is related to high-tech services, about 12 percent, even if high-tech services GVA has not been growing.[118]

Pest benefits from its location on the outskirts of our large region ranking's No. 3 city, Budapest. Together, these two regions accounted for nearly half of Hungary's total GDP in 2014.[119] In older documentation the two regions were counted together as one statistical region, Central Hungary, but were separated in response to population growth in the area.[120] Central Hungary's regional strength is its innovation performance. Pest is home to Innoreg, or Regional Innovation Agency of Central Hungary, which is dedicated to sustainable development through the promotion of innovation and entrepreneurship in the region.[121] However, the region is not without challenges; according to the World Economic Forum, the two largest impediments to business in the country are policy instability and corruption.[122] Policy instability is likely to continue as political parties engage in a tug-of-war for seats in parliament.[123]

The government has recently decided to reduce the corporate tax rate and cut social insurance contributions in exchange for hefty minimum wage increases.[124] In the future, Pest should experience an increase in investment and an improvement in the overall business climate while also enjoying increased wages.

#2 Prov. Brabant Wallon
BELGIUM

JOB GROWTH (2011-2016)	25TH
JOB GROWTH (2015-2016)	21ST
WAGE GROWTH (2008-2013)	19TH
WAGE GROWTH (2012-2013)	24TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	70TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	26TH
HI-TECH SERVICES GVA LQ (2014)	7TH
MANUFACTURING GVA LQ (2014)	39TH

Prov. Brabant Wallon, Belgium comes in at No. 2 on the premier of our small cities ranking. The region had a strong performance across all of our indicators, but did particularly well in the high-tech services GVA location quotient variable. Of the region's total GVA, about 16 percent is attributed to high-tech services.[125]

Prov. Brabant Wallon benefits from its location on the outskirts of Brussels. Its proximity to Brussels attracted companies such as GlaxoSmithKline, which employs over 8,000 people in its three facilities in Brabant Wallon, close to 25 percent of Belgium's total pharmaceutical industry.[126] The Université Catholique de Louvain (UCL) is located in the region and has a relationship with three science parks including the Louvain-la-Neuve Science Park located in Brabant Wallon.[127] The UCL designed the Louvain Innovation Network, which serves to increase innovation among companies, researchers, and students.[128] The UCL is known for bringing in international students, faculty, and staff, with nearly 20 percent of the students coming from outside of the country.[129] The university also boasts an investment of 222 million euros in research annually.[130]

#3 Sostinės regionas
LITHUANIA

JOB GROWTH (2011-2016)	6TH
JOB GROWTH (2015-2016)	1ST
WAGE GROWTH (2008-2013)	109TH
WAGE GROWTH (2012-2013)	9TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	31ST
HI-TECH SERVICES GVA GROWTH (2013-2014)	73RD
HI-TECH SERVICES GVA LQ (2014)	19TH
MANUFACTURING GVA LQ (2014)	90TH

Sostinės regionas, Lithuania comes in at No. 3 in our BPC Europe small cities ranking. The region performed exceptionally well in job growth, with an 11 percent increase from 2011 to 2016 and over 3 percent from 2015 to 2016, despite struggling in the long-term wage growth category.[131]

Sostinės regionas is home to the capital of Lithuania, Vilnius, which attracts more tourism than any other city in the country.[132] INVL Baltic Real Estate corners the market in commercial real estate investment and, over the last couple of years, has made many investments in locations dedicated to business and technology.[133] The city, which is home to IBC Business Centre and Dommo Business Park, is gaining a reputation as a business hub and plans to convert The Vilnius Gates complex into a base for eight information technology businesses by early 2018.[134] The region is also home to Vilnius University and its tech spin-off, NanoAvionics JSC, a small satellite and CubeSat missions integrator.[135] NanoAvionics JSC has been successful in both raising venture capital and securing funding for its R&D activities from the Lithuanian government.[136]

#4 Southern
IRELAND

JOB GROWTH (2011-2016)	4TH
JOB GROWTH (2015-2016)	11TH
WAGE GROWTH (2008-2013)	138TH
WAGE GROWTH (2012-2013)	100TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	1ST
HI-TECH SERVICES GVA GROWTH (2013-2014)	5TH
HI-TECH SERVICES GVA LQ (2014)	45TH
MANUFACTURING GVA LQ (2014)	12TH

Southern, Ireland came in at No. 4 in our BPC Europe small cities ranking. The region had exceptional growth in jobs and high-tech services GVA with over an 11 percent increase in jobs from 2011 to 2016.[137] It did not do well, however, in the wage growth categories.

Southern Ireland is home to the city of Cork. Cork, previously known as a hub for public sector activities, has recently been increasing global ambition and could one day rival Dublin as a destination for business.[138] Office rentals can be found for half the price of Dublin, while wages in Cork lag only slightly behind those in Ireland's capital.[139] Many large companies, including Apple, Dell EMC, Pfizer, Johnson & Johnson, Amazon, and PepsiCo, already have operations in Cork.[140] Along with the relatively low cost for office space, the area is also attractive to businesses because of its skilled labor force. University College Cork and Cork Institute of Technology both provide programs based on industry demand in the area.[141]

#5 Stredné Slovensko
SLOVAK REPUBLIC

JOB GROWTH (2011-2016)	35TH
JOB GROWTH (2015-2016)	18TH
WAGE GROWTH (2008-2013)	42ND
WAGE GROWTH (2012-2013)	10TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	20TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	72ND
HI-TECH SERVICES GVA LQ (2014)	35TH
MANUFACTURING GVA LQ (2014)	42ND

The **Stredné Slovensko** region of the **Slovak Republic** debuts in our BPC Europe small cities ranking at No. 5. The region performs well across the board in our indicators, particularly in short-term job and wage growth, with 2 percent and 6 percent increases respectively.[142]

Though Stredné Slovensko performed well overall, most of its growth comes from one of its two subregions, the Žilina Region, marking a distinct economic division between the north and south.[143] While the northern Žilina Region benefited from increased foreign direct investment (FDI) to grow their automotive production industry, the southern Banská Bystrica Region remained plagued with high unemployment rates, lower wages, and lower per capita gross domestic product.[144] The Slovak Republic has a national focus on increasing R&D and the Stedné Slovensko region received help with Operational Programmes—born from the European Commission's Research and Innovation Strategies for Smart Specialisation (RIS3).[145] Both of those programs have expired, however, slowing, at least in the short term, the growth of high-tech services.

#6 Inner London-West
UNITED KINGDOM

JOB GROWTH (2011-2016)	2ND
JOB GROWTH (2015-2016)	90TH
WAGE GROWTH (2008-2013)	58TH
WAGE GROWTH (2012-2013)	84TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	10TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	48TH
HI-TECH SERVICES GVA LQ (2014)	1ST
MANUFACTURING GVA LQ (2014)	154TH

Inner London-West, United Kingdom region ranks at No. 6. The region had impressive five-year job growth, with a 14 percent increase from 2011 to 2016, and a strong high-tech services sector with 25 percent of the region's total GVA attributed to high-tech services.[146]

Inner London-West is where Britain's financial district, the City of London, is located. The financial, professional, and associated business service industries employ 75 percent of all workers in the Square Mile.[147] The Inner London area (East and West) benefits from a skilled labor force with 75 percent of the working-age population having received tertiary education as of 2016.[148] The region is also the home of the borough of Camden, which includes the British Library and the British Museum, and much of London University, as well as other medical and educational institutions.[149] However, the city has a notable lack of affordable housing and a high ratio of tourists, temporary residents, and non-residents to local population.[150] Going forward, much uncertainty exists for Inner London's western region due to Brexit's expected effect on the financial district.[151]

#7 Nyugat-Dunántúl
HUNGARY

JOB GROWTH (2011-2016)	29TH
JOB GROWTH (2015-2016)	31ST
WAGE GROWTH (2008-2013)	105TH
WAGE GROWTH (2012-2013)	91ST
HI-TECH SERVICES GVA GROWTH (2009-2014)	11TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	3RD
HI-TECH SERVICES GVA LQ (2014)	107TH
MANUFACTURING GVA LQ (2014)	1ST

Nyugat-Dunántúl, Hungary came in at No. 7 in our BPC Europe small cities ranking. The region's high-tech services show a strong growth rate with a 12 percent increase in GVA from 2013 to 2014, but it still lags behind the rest of Europe in its concentration of that sector as it relies heavily on its manufacturing industry.[152] The manufacturing industry is responsible for 41 percent of the region's total GVA.[153] Employment in Nyugat-Dunántúl was hit particularly hard by the 2008 to 2010 financial crisis; the subsequent recovery was a significant contributing factor in the relatively high growth rate in jobs in our ranking.[154]

Nyugat-Dunántúl benefits from its proximity to Austria, Slovenia, Croatia, and Slovakia.[155] The region has a strong tourism sector with a particular focus on thermal tourism.[156] Nyugat-Dunántúl specializes in automotive and machinery industries, which attract FDI.[157] Bolstering this industry, the region is home to Széchenyi István University, which focuses on vehicle engineering, automation, materials science, mechatronics, and machine design.[158] The university maintains several research partnerships including a notable relationship with Audi.[159]

#8

Strední Cechy

CZECH REPUBLIC

JOB GROWTH (2011-2016)	26TH
JOB GROWTH (2015-2016)	2ND
WAGE GROWTH (2008-2013)	60TH
WAGE GROWTH (2012-2013)	87TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	118TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	12TH
HI-TECH SERVICES GVA LQ (2014)	121ST
MANUFACTURING GVA LQ (2014)	4TH

The **Strední Cechy, Czech Republic** region ranks eighth in this category. The region, which surrounds but does not include the Czech capital, Prague, contains growing suburbs and generally benefits from its proximity to the country's capital. Strední Cechy ranked second among our small regions for 2016 employment growth (over 3 percent). Manufacturing is concentrated in the region, which is fourth highest among small regions on this measure. Anchor firms include Skoda Auto (owned by Volkswagen Group since 2000) and the Toyota Peugeot Citroën Automobile Czech s.r.o. (TPCA) in Kolín. The latter is a joint venture that produces Toyota, Citroën, and Peugeot branded cars sold throughout Europe. The plant employs approximately 3,000 people and produced more than 220,000 vehicles in 2016.[160] The regions lacks a public university to act as a catalyst and, as a result, has a very low high-tech services concentration, although recent growth in this area may be a sign of some improvement.

#9

Zentralschweiz

SWITZERLAND

JOB GROWTH (2011-2016)	11TH
JOB GROWTH (2015-2016)	57TH
WAGE GROWTH (2008-2013)	26TH
WAGE GROWTH (2012-2013)	18TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	72ND
HI-TECH SERVICES GVA GROWTH (2013-2014)	78TH
HI-TECH SERVICES GVA LQ (2014)	22ND
MANUFACTURING GVA LQ (2014)	45TH

Zentralschweiz, Switzerland stands at No. 9 in our BPC Europe small cities ranking. The region performed well across all of our indicators but performed particularly well in five-year job growth (10 percent increase from 2011 to 2016) and one-year wage growth (4 percent increase from 2012 to 2013) in comparison with its peers.[161]

The Canton of Lucerne is located in this region and benefits from its proximity to a major motorway leading to Zurich. The city has the lowest corporate tax rate in all of Switzerland, making it a desirable location for business.[162] Switzerland is known for its pharmaceutical industry and this region is no exception.[163] Lucerne alone is home to Merck/MSD Sharp & Dohme AG and B. Braun Medical, two major pharmaceutical companies that develop prescription medicines and prepare sterile goods respectively.[164, 165, 166] The city is also home to Lucerne University of Applied Sciences and Arts, the largest educational institution in the region.[167]

#10 Övre Norrland

SWEDEN

JOB GROWTH (2011-2016)	46TH
JOB GROWTH (2015-2016)	38TH
WAGE GROWTH (2008-2013)	39TH
WAGE GROWTH (2012-2013)	45TH
HI-TECH SERVICES GVA GROWTH (2009-2014)	5TH
HI-TECH SERVICES GVA GROWTH (2013-2014)	85TH
HI-TECH SERVICES GVA LQ (2014)	44TH
MANUFACTURING GVA LQ (2014)	15TH

Övre Norrland, Sweden debuts at No. 10 in the BPC Europe small cities ranking. The region boasts high long-term growth rates in the high-tech services category with a 29 percent increase in GVA from 2009 to 2014.[168] Health and biotechnology are key industries in the area, with human health and social work activities accounting for nearly 21 percent of North Norrland's total employment.[169, 170]

The region consists of two subregions, Norrbotten and Västerbotten, which cover nearly one-third of Sweden's physical area.[171] Despite being the largest Nuts 2 region in Sweden, the area is thinly populated. The low rate of urbanization allows the region to retain its natural resources, and forestry and mining remain two of the area's key sectors.[172] Despite its uninhabited nature, the region houses two large universities, Luleå University of Technology and Umeå University, both of which help attract innovation to the area.[173] These universities are also major contributors to the region's employment, with over 11 percent of North Norrland's total employment coming from education.[174] Another organization dedicated to promoting innovation in the Luleå and Umeå areas is Adopticum.[175] Adopticum is considered a center of innovation and works with other local organizations to improve the region's competitiveness.[176]

COMPLETE RESULTS BEST-PERFORMING CITIES EUROPE 2017: SMALL REGIONS

SMALL REGIONS

Final Rank	Geography	Total Employment Growth 2011-2016	Total Employment Growth 2015-2016	Total Wage Growth 2008-2013	Total Wage Growth 2012-2013	High-Tech Services GVA Growth 2009-2014	High-Tech Services GVA Growth 2013-2014	High-Tech Services GVA LQ 2014	Manufacturing GVA LQ 2014
1	Pest, Hungary	1	4	94	20	102	91	14	25
2	Prov. Brabant Wallon, Belgium	25	21	19	24	70	26	7	39
3	Sostinės regionas, Lithuania	6	1	109	9	31	73	19	90
4	Southern, Ireland	4	11	138	100	1	5	45	12
5	Stredné Slovensko, Slovakia	35	18	42	10	20	72	35	42
6	Inner London-West, United Kingdom	2	90	58	84	10	48	1	154
7	Nyugat-Dunántúl, Hungary	29	31	105	91	11	3	107	1
8	Strední Cechy, Czech Republic	26	2	60	87	118	12	121	4
9	Zentralschweiz, Switzerland	11	57	26	18	72	78	22	45
10	Övre Norrland, Sweden	46	38	39	45	5	85	44	15
11	Bratislavský kraj, Slovakia	38	8	28	111	62	28	12	74
12	Zürich, Switzerland	7	7	51	56	109	81	18	115
13	Vestlandet, Norway	13	114	3	4	23	70	74	104
14	Cheshire, United Kingdom	9	105	73	29	27	27	9	73
15	Észak-Alföld, Hungary	8	26	97	77	37	17	96	37
16	Niederbayern, Germany	31	68	38	30	34	96	43	8
17	Strední Morava, Czech Republic	17	22	106	113	59	6	116	5
18	Sydsverige, Sweden	42	40	31	48	2	110	11	99
19	North Yorkshire, United Kingdom	5	29	89	34	14	71	32	118
20	Oberpfalz, Germany	36	77	34	44	28	80	39	6
21	Agder og Rogaland, Norway	18	92	2	13	25	112	47	102
22	Ticino, Switzerland	41	71	29	22	52	44	23	53
23	Közép-Dunántúl, Hungary	44	27	114	118	7	29	94	2
24	Prov. Oost-Vlaanderen, Belgium	47	33	33	55	64	51	16	68
25	Praha, Czech Republic	83	23	82	93	49	47	2	138
26	Oberösterreich, Austria	53	64	32	31	22	95	84	11
27	Région lémanique, Switzerland	10	62	49	58	78	86	15	94
28	Vorarlberg, Austria	21	35	25	12	92	149	134	10
29	Dorset and Somerset, United Kingdom	20	69	64	15	16	41	57	112
30	Leipzig, Germany	30	72	22	16	21	124	30	98
31	Lincolnshire, United Kingdom	51	12	61	54	19	63	102	103
32	Braunschweig, Germany	52	113	12	21	55	125	99	3
33	Trøndelag, Norway	34	137	4	6	15	109	24	125
34	South Yorkshire, United Kingdom	40	59	78	23	3	82	53	111
35	East Yorkshire and Northern Lincolnshire, United Kingdom	32	41	76	42	13	104	115	44
36	Oslo og Akershus, Norway	50	146	8	8	42	87	6	143
37	Småland med öarna, Sweden	54	84	62	68	9	37	58	34

SMALL REGIONS

Final Rank	Geography	Total Employment Growth 2011-2016	Total Employment Growth 2015-2016	Total Wage Growth 2008-2013	Total Wage Growth 2012-2013	High-Tech Services GVA Growth 2009-2014	High-Tech Services GVA Growth 2013-2014	High-Tech Services GVA LQ 2014	Manufacturing GVA LQ 2014
38	Dél-Alföld, Hungary	49	43	111	107	26	4	93	38
39	Prov. Vlaams-Brabant, Belgium	59	61	53	79	86	115	3	122
40	Burgenland, Austria	68	111	20	27	6	8	125	70
41	Cumbria, United Kingdom	23	102	40	43	96	49	71	30
42	Nordwestschweiz, Switzerland	39	60	70	72	101	93	26	27
43	Tirol, Austria	45	51	24	32	35	102	127	56
44	Unterfranken, Germany	57	94	66	52	36	105	20	21
45	Steiermark, Austria	87	78	41	51	4	106	88	29
46	Trier, Germany	77	88	36	26	40	57	61	43
47	Oberfranken, Germany	60	106	63	57	50	79	29	16
48	Észak-Magyarország, Hungary	28	36	124	138	29	9	110	13
49	East Wales, United Kingdom	37	112	56	41	18	52	40	87
50	Prov. Limburg, Belgium	84	74	52	61	30	58	31	58
51	Prov. West-Vlaanderen, Belgium	91	86	48	76	17	38	25	61
52	Devon, United Kingdom	33	48	90	35	41	59	65	127
53	Bremen, Germany	65	96	44	40	43	107	34	52
54	Warminsko-Mazurskie, Poland	27	128	13	95	38	35	108	51
55	Kassel, Germany	55	100	35	36	111	119	27	35
56	Severoiztochen, Bulgaria	43	65	1	3	141	121	138	83
57	Corse, France	12	17	17	88	120	123	131	145
58	Jihozápad, Czech Republic	76	47	99	90	127	14	111	14
59	Syddanmark, Denmark	86	45	108	66	8	30	72	79
60	Zahodna Slovenija, Slovenia	71	24	123	135	58	40	10	72
61	Mellersta Norrland, Sweden	79	82	72	53	12	74	28	101
62	Koblenz, Germany	80	116	46	25	39	84	54	48
63	Dél-Dunántúl, Hungary	48	53	119	105	87	2	78	91
64	Cornwall and Isles of Scilly, United Kingdom	22	76	87	38	32	60	90	128
65	Outer London-South, United Kingdom	24	122	98	46	33	66	8	146
66	Salzburg, Austria	63	70	30	33	24	131	85	76
67	Nordjylland, Denmark	89	34	102	73	47	32	69	89
68	Utrecht, Netherlands	103	67	77	89	107	76	4	136
69	Herefordshire, Worcestershire, and Warwickshire, United Kingdom	16	140	81	83	53	64	17	78
70	Lubuskie, Poland	72	75	16	97	121	75	119	31
71	Prov. Liège, Belgium	96	83	45	69	60	46	42	95
72	Norra Mellansverige, Sweden	95	73	65	74	61	88	75	46
73	Gießen, Germany	56	91	57	60	126	132	33	28
74	Yuzhen tsentralen, Bulgaria	136	130	5	7	131	23	146	33
75	Shropshire and Staffordshire, United Kingdom	14	142	67	49	69	56	64	93
76	Prov. Namur, Belgium	101	85	21	63	46	61	36	135
77	Midtjylland, Denmark	82	50	104	92	114	33	41	71
78	Sør-Østlandet, Norway	75	144	15	11	48	111	87	80

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Final Rank	Geography	Total Employment Growth 2011-2016	Total Employment Growth 2015-2016	Total Wage Growth 2008-2013	Total Wage Growth 2012-2013	High-Tech Services GVA Growth 2009-2014	High-Tech Services GVA Growth 2013-2014	High-Tech Services GVA LQ 2014	Manufacturing GVA LQ 2014
79	Moravskoslezsko, Czech Republic	69	87	116	109	94	53	81	9
80	Ciudad Autónoma de Melilla, Spain	73	6	125	86	45	13	144	153
81	Ciudad Autónoma de Ceuta, Spain	90	5	122	78	68	15	141	152
82	Merseyside, United Kingdom	78	127	93	37	80	55	21	110
83	Flevoland, Netherlands	98	52	103	132	89	19	13	130
84	Lancashire, United Kingdom	67	135	71	28	67	67	55	84
85	Provincia Autonoma di Bolzano/Bozen, Italy	62	28	59	115	108	128	77	107
86	Opolskie, Poland	107	81	11	106	125	94	128	36
87	Severovýchod, Czech Republic	58	66	117	99	133	100	104	7
88	Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest, Belgium	97	107	47	70	123	116	5	148
89	Illes Balears, Spain	74	3	132	134	75	10	66	147
90	Provincia Autonoma di Trento, Italy	93	46	88	120	100	69	51	105
91	Northumberland and Tyne and Wear, United Kingdom	70	138	85	50	63	42	37	109
92	Kärnten, Austria	100	97	68	67	66	103	109	49
93	Saarland, Germany	110	119	55	59	74	134	56	19
94	Ostschweiz, Switzerland	81	147	80	85	56	90	48	24
95	Prov. Hainaut, Belgium	102	79	43	64	85	138	50	96
96	La Rioja, Spain	109	15	133	142	83	18	126	20
97	Comunidad Foral de Navarra, Spain	128	20	129	137	99	21	98	17
98	Prov. Luxembourg, Belgium	92	56	27	81	119	137	83	119
99	Liguria, Italy	88	30	113	122	104	114	49	120
100	Sjælland, Denmark	99	55	115	94	103	36	114	85
101	Podlaskie, Poland	119	145	9	47	97	39	123	66
102	Tees Valley and Durham, United Kingdom	66	150	86	19	65	50	82	86
103	Overijssel, Netherlands	126	89	83	101	81	89	38	64
104	Umbria, Italy	94	9	126	129	137	126	52	75
105	Vzhodna Slovenija, Slovenia	116	42	127	136	91	83	76	23
106	Aragón, Spain	125	10	136	141	84	16	97	65
107	Auvergne, France	85	129	74	65	51	120	95	92
108	Limburg, Netherlands	118	101	92	98	117	97	46	59
109	Hedmark og Oppland, Norway	61	149	14	14	71	139	105	124
110	Abruzzo, Italy	123	54	118	121	106	65	67	63
111	Länsi-Suomi, Finland	132	117	69	82	57	130	63	41
112	Northern and Western, Ireland	19	25	142	114	154	7	139	22
113	Zeeland, Netherlands	121	109	95	116	44	77	106	55
114	Drenthe, Netherlands	117	104	120	125	113	1	101	100
115	Región de Murcia, Spain	105	13	137	139	110	24	112	97
116	Groningen, Netherlands	106	95	91	80	98	98	73	126
117	Severen tsentralen, Bulgaria	146	153	6	2	138	68	153	18
118	Yugoiztochen, Bulgaria	148	151	10	1	130	20	149	113

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Final Rank	Geography	Total Employment Growth 2011-2016	Total Employment Growth 2015-2016	Total Wage Growth 2008-2013	Total Wage Growth 2012-2013	High-Tech Services GVA Growth 2009-2014	High-Tech Services GVA Growth 2013-2014	High-Tech Services GVA LQ 2014	Manufacturing GVA LQ 2014
119	Extremadura, Spain	114	14	130	128	112	31	120	131
120	Franche-Comté, France	129	134	75	75	90	108	100	57
121	Chemnitz, Germany	124	136	50	71	116	146	60	26
122	Marche, Italy	133	99	110	119	128	92	62	40
123	Nord-Norge, Norway	115	152	7	17	79	122	132	132
124	Basse-Normandie, France	111	132	79	96	77	113	103	106
125	Cantabria, Spain	137	32	140	140	93	25	92	62
126	Friesland, Netherlands	131	93	100	127	134	43	80	88
127	Świętokrzyskie, Poland	147	133	23	112	76	62	118	60
128	Pohjois- ja Itä-Suomi, Finland	127	131	54	104	54	141	89	69
129	Etelä-Suomi, Finland	140	139	84	130	82	45	79	50
130	Basilicata, Italy	113	44	131	133	115	99	91	117
131	Principado de Asturias, Spain	143	37	139	143	73	22	68	81
132	Algarve, Portugal	120	49	141	108	124	11	129	144
133	Friuli-Venezia Giulia, Italy	139	121	112	123	129	129	59	54
134	Champagne-Ardenne, France	134	141	96	103	95	118	122	82
135	Severozápad, Czech Republic	112	123	121	124	136	135	113	32
136	Limousin, France	122	143	101	102	105	133	124	114
137	Alentejo, Portugal	142	120	135	110	88	54	145	77
138	Severozapaden, Bulgaria	144	154	18	5	147	117	154	67
139	Valle d'Aosta/Vallée d'Aoste, Italy	130	124	107	126	132	153	70	133
140	Região Autónoma dos Açores, Portugal	145	148	128	39	122	101	137	137
141	Åland, Finland	64	108	37	62	142	154	117	139
142	Ionia Nisia, Greece	3	19	147	146	149	147	147	150
143	Região Autónoma da Madeira, Portugal	149	115	143	117	135	34	136	141
144	Molise, Italy	141	126	134	131	140	127	86	121
145	Notio Aigaio, Greece	15	16	152	153	148	150	152	151
146	Voreio Aigaio, Greece	108	58	144	144	150	144	143	149
147	Thessalia, Greece	135	39	148	147	152	152	150	116
148	Anatoliki Makedonia, Thraki, Greece	104	63	146	145	153	151	148	123
149	Ipeiros, Greece	138	80	145	149	145	143	142	129
150	Peloponnisos, Greece	150	110	149	150	146	145	140	108
151	Dytiki Makedonia, Greece	154	98	153	152	139	140	133	140
152	Kriti, Greece	151	118	150	151	143	142	130	142
153	Dytiki Ellada, Greece	153	125	151	148	144	136	135	134
154	Sterea Ellada, Greece	152	103	154	154	151	148	151	47

ENDNOTES

1. This report draws on methodology and material used in previous editions of the Milken Institute's "Best-Performing Cities" report.

2. Eurostat; "NUTS-Nomenclature of Territorial Unites for Statistics;" "Statistical Regions for EU Candidate and EFTA Countries," accessed 9/5/2017, http://ec.europa.eu/eurostat/web/nuts/statistical-regions-outside-eu.

3. Eurostat; "NUTS-Nomenclature of Territorial Unites for Statistics;" "Overview," accessed 9/5/2017, http://ec.europa.eu/eurostat/web/nuts.

4. Ibid.

5. Ibid.

6. High-tech services include the activities considered to be in the information and communication industry and the professional, scientific, and technical activities industry by the Statistical classification of economic activities in the European Community (NACE) Rev. 2.

7. The European average GVA attributed to high-tech service industries is based on the average of all of the locations included in our ranking, large and small combined.

8. Eurostat; "NUTS-Nomenclature of Territorial Unites for Statistics;" "Statistical Regions for EU Candidate and EFTA Countries," accessed 9/5/2017, http://ec.europa.eu/eurostat/web/nuts/statistical-regions-outside-eu; Eurostat; "NUTS-Nomenclature of Territorial Unites for Statistics;" "Overview," accessed 9/5/2017, http://ec.europa.eu/eurostat/web/nuts.

9. Eurostat; "NUTS-Nomenclature of Territorial Unites for Statistics;" "Principles and Characteristics," accessed 9/5/2017, http://ec.europa.eu/eurostat/web/nuts/principles-and-characteristics.

10. Countries dropped in their entirety because of limited data availability included: Albania, Croatia, Cyprus, Estonia, Former Yugoslav Republic of Macedonia, Iceland, Latvia, Liechtenstein, Luxembourg, Malta, Montenegro, and Serbia.

11. All Turkish regions were dropped from the ranking for this reason.

12. TMF Group; "U.K.: Can Silicon Valley Be Replicated?" Mondaq Business Briefing, February 16, 2017, Nexis.com.

13. "Top Economies," Derby Telegraph, Section: Agency: Other; 18-19, Nexis.com, accessed July 26, 2017.

14. London First, "London 2036: An Agenda for Jobs and Growth, 2015," January 2017, http://londonfirst.co.uk/wp-content/uploads/2017/01/London-First_HIGH-RES-05_01_17.pdf.

15. Eric Pfanner and Jeremy Kahn, "Google to Expand London Campus Despite Brexit Question," Bloomberg, November 15, 2016, https://www.bloomberg.com/news/articles/2016-11-15/google-affirms-plan-to-expand-london-campus-with-new-building.

16. GLA Economics, "State of London's Economy, Trade, and London's Specialisation," Draft Economic Evidence Base 2016, https://www.london.gov.uk/sites/default/files/chapter1-draft-eeb-2016.pdf.

17. The City of London (also known as the Square Mile) is the financial district of London. It is just one of the 33 locally governed areas in to which London is divided. See: City of London on "The City of London." https://www.cityoflondon.gov.uk/about-the-city/about-us/Pages/default.aspx.

18. Aaron Girardi and Joel Marsden, "A Description of London's Economy," Working Paper 85, Mayor of London, GLA Economics, March 2017, https://www.london.gov.uk/sites/default/files/description-londons-economy-working-paper-85.pdf.

19. Max Nathan and Emma Vandore, "Here Be Startups: Exploring a Young Digital Cluster in Inner East London," Spatial Economics Research Centre, SERC Discussion Paper 146, November 2013, http://www.spatialeconomics.ac.uk/textonly/SERC/publications/download/sercdp0146.pdf.

20. Max Nathan, Emma Vandore, and Rob Whitehead, "A Tale of Tech City: The Future of Inner East London's Digital Economy," Center for London, July 13, 2012, https://citygeographics.org/2012/07/13/a-tale-of-tech-city-the-future-of-inner-east-londons-digital-economy/.

21. David Cameron, "East End Tech City speech," November 4, 2010, http:number10.gov.uk/news/east-end-tech-city-speech/.

22. Marc Bogdanowicz, “The Case of Inner London East as a European ICT Pole of Excellence: Experts’ Insights into Public Policies,” JRC Scientific and Policy Reports, 2014, https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/case-inner-london-east-european-ict-pole-excellence-experts-insights-public-policies.

23. Girardi, “A Description of London’s Economy,” 39.

24. Max Nathan, “London’s Tech City,” LSE Cities, accessed 8/24/2017, https://lsecities.net/media/objects/articles/londons-tech-city/en-gb/.

25. News release, “2015 GDP Per Capita in 276 EU Regions,” Eurostat, 52/2017, March 30, 2017, http://ec.europa.eu/eurostat/documents/2995521/7962764/1-30032017-AP-EN.pdf/4e9c09e5-c743-41a5-afc8-eb4aa89913f6.

26. Eurostat, “Population aged 25-64 by educational attainment level, sex and NUTS 2 regions (%), 2016,” 2017.

27. Bernard Moon, “Top 10 startup ecosystems in the world 2016,” November 5, 2016, https://venturebeat.com/2016/11/05/top-10-startup-ecosystems-in-the-world-2016/.

28. Joseph Parilla, Jesus Leal Trujillo, Nick Marchio, and Catharine Kho, “Global Stockholm: Profiling the Capital Region’s International Competitiveness and Connections,” The Brookings Institution, Metropolitan Studies Program, 2015, 20, https://www.brookings.edu/wp-content/uploads/2016/07/GCI_Stockholm_Nov16final_LoRes.pdf.

29. “Stockholm Economy: Q1 2017,” June 2017, Stockholm Business Region, http://www.stockholmbusinessregion.com/globalassets/about-us/facts-and-figures/facts-about-business/quarterly/2017_q1_stockholm_economy.pdf.

30. Invest Stockholm, “Why Companies Like Amazon Love Stockholm,” May 23, 2017, https://www.thelocal.se/20170523/why-companies-like-amazon-love-stockholm-investstockholm-tlccu.

31. Stockholm Business Region; “Facts and figures,” accessed 8/31/2017, https://www.stockholmbusinessregion.com/facts-figures/.

32. “Investment in Stockholm Technology Companies Hits Record High,” Xinhua General News Service, Section: World News, January 16, 2017, Nexis.com.

33. “Top 10 Stockholm tech startup stories of 2016,” The Local, January 23, 2017, https://www.thelocal.se/20170123/10-biggest-stockholm-tech-startup-stories-of-2016-investstockholm-tlccu.

34. Business Sweden, “ICT & tech opportunities in Sweden,” accessed 8/31/2017, http://www.business-sweden.se/en/Invest/industries/ICT/.

35. Vikki Blake, “Minecraft Has 55 Million Monthly Players, 122 Million Sales,” IGN, Ziff Davis, February 27, 2017, http://www.ign.com/articles/2017/02/27/minecraft-has-55-million-monthly-players-122-million-sales.

36. European Commission; “Growth;” “Regional Innovation Monitor Plus;” “Stockholm,” accessed 9/1/2017, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/base-profile/stockholm.

37. Invest Stockholm Business Region, “Life Science,” https://www.investstockholm.com/investment_opportunities/lifescience/, accessed September 1, 2017.

38. Eurostat, “Population aged 25-64 by educational attainment level, sex and NUTS 2 regions (%), 2016,” 2017.

39. Parilla, “Global Stockholm,” 25.

40. Eurostat, “Population aged 25-64 by educational attainment level, sex and NUTS 2 regions (%), 2016,” 2017.

41. Citi Group; “About Us;” “Regions;” “Europe, Middle East & Africa;” “Hungary;” “Country Presence: Hungary,” accessed 9/9/2017, http://www.citigroup.com/citi/about/countrypresence/hungary.html.

42. Prezi, “Visualizing Great Things,” accessed 9/9/2017, https://prezi.com/about/.

43. Carmine Gallo, “The 1 Tip Key to Keeping Presentations Short and Engaging, According to This Year’s TED Speakers,” Inc., May 11, 2017, https://www.inc.com/carmine-gallo/how-this-years-ted-speakers-edit-presentations-to-stay-under-15-minutes.html.

44. Statistical Office in Gdańsk, “Pomorskie Voivodship in figures 2017,” Polish Department of Statistical Publishing, Warsaw, 2017.

45. Port Gdańsk; “Home Page;” “About Port;” “Facts & Figures;” “Port of Gdansk in numbers,” accessed 9/11/2017, https://www.portgdansk.pl/about-port/the-port-of-gdansk-in-numbers.

46. Henry Foy, “Poland’s Gdansk emerges as next hot outsourcing city,” Financial Times, June 1, 2015. https://www.ft.com/content/06fba140-07ab-11e5-9579-00144feabdc0.

47. Intel; “Jobs at Intel in Gdansk, Poland;” “Poland Locations: Gdansk,” accessed 9/11/2017, https://www.intel.com/content/www/us/en/jobs/locations/poland/sites/gdansk.html.

48. Eurostat, “Employment by age, economic activity and NUTS 2 regions (NACE Rev. 2),” 2017.

49. Bosch; “Our Company;” “Bosch in Romania,” accessed 9/12/2017, http://www.bosch.com.ro/en/ro/our_company_12/our-company-lp.html.

50. Marius Septimiu Avram, “Cluj: The Tetapolis Science Park launched the first digital incubator in Romania,” AGERPRES, June 13, 2017, https://www.agerpres.ro/sci-tech/2017/06/13/cluj-parcul-stiintific-tetapolis-a-lansat-primul-incubator-digital-din-romania-17-42-08.

51. News Desk, “FrieslandCampina Romania puts 1.3m euros behind cheese line,” Foodbev Media, August 2, 2017, http://www.foodbev.com/news/frieslandcampina-romania-puts-1-3m-euros-behind-cheese-line/.

52. Eurostat, “Population aged 25-64 by educational attainment level, sex and NUTS 2 regions (%), 2016,” 2017.

53. Automotive World; “Home;” “News Releases;” “Toyota to produce hybrid transaxle and new petrol engines in Poland,” October 20, 2016, https://www.automotiveworld.com/news-releases/toyota-produce-hybrid-transaxle-new-petrol-engines-poland/.

54. Whirlpool Corporation, “Whirlpool to establish a Global Technology Research Center for Refrigeration and Dishwashing in Wroclaw, Poland,” November 15, 2016, http://www.whirlpoolcorp.com/whirlpool-to-establish-a-global-technology-research-center-for-refrigeration-and-dishwashing-in-wroclaw-poland/.

55. Official website of Wrocław; “Wrocław to have largest Whirlpool plant in Europe,” November 18, 2015. http://www.wroclaw.pl/en/wroclaw-to-have-largest-whirlpool-plant-in-europe.

56. Oxford City Council; “Economic Statistics;” “Quick facts,” accessed 9/4/2017, https://www.oxford.gov.uk/info/20124/economy/454/economic_statistics.

57. “Total employment for Berkshire, Buckinghamshire, and Oxfordshire, United Kingdom, 2011-2016,” Moody’s Analytics.

58. Oxford City Council; “Economic Statistics;” “Quick facts,” accessed 9/4/2017, https://www.oxford.gov.uk/info/20124/economy/454/economic_statistics.

59. Eurostat, “Population aged 25-64 by educational attainment level, sex and NUTS 2 regions (%), 2016,” 2017.

60. Oxford City Council; “Economic Statistics;” “Quick facts,” accessed 9/4/2017, https://www.oxford.gov.uk/info/20124/economy/454/economic_statistics.

61. “Sub-regional productivity: February 2015,” Office for National Statistics, February 2015, accessed 9/4/2017, https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/articles/subregionalproductivity/2015-02-19.

62. MAN Truck and Bus Company; “Home;” “Company;” “Production Plants;” “Production;” “Munich plant,” accessed 8/22/2017, https://www.mantruckandbus.com/en/company/production-sites-man-truck-and-bus/production/munich.jsp.

63. Industrie-und Handelskammern in Bayern, “Forschung & Entwicklung in Bayern–2015/2016,” report, 2015.

64. Ibid.

65. Ibid.

66. Industrie-und Handelskammern in Bayern, “Patente in Bayern 2016/2017,” report, 2016.

67. Hanna Aldridge, Theo Barry Born, Adam Tinson, and Tom MacInnes, “London’s Poverty Profile 2015,” Trust for London and New Policy Institute, October 2015, accessed 9/5/2017, http://www.npi.org.uk/publications/income-and-poverty/londons-poverty-profile-2015/.

68. “Total employment for Outer London-West and North West, United Kingdom, 2011-2016,” Moody’s Analytics.

69. Girardi, “A Description of London’s Economy.”

70. Ibid.

71. Ibid.

72. Ibid.

73. Eurostat, “Population aged 25-64 by educational attainment level, sex and NUTS 2 regions (%), 2016,” 2017.

74. Ibid.

75. Gradientech; “Biomolecular gradients control life,” accessed 8/17/2017, http://gradientech.se/about-us/mission/.

76. 3H Biomedical, “3H Biomedical AB: Cell & Culture Experts,” accessed 8/17/2017, http://www.3hbiomedical.com/index.asp.

77. Automation Region Mälardalen University, “World-class automation solutions,” accessed 8/16/2017, http://www.automationregion.com/om-automation-region/automationslosningar-i-varldsklass/.

78. Honeywell International Inc.; “Czech Republic;” “Honeywell Technology Solutions Czech Republic,” accessed 8/14/2017, https://www.honeywell.com/worldwide/emea/czech-republic-en/honeywell-technology-solutions.

79. Bosch; “Our Company;” “Bosch in Czech Republic;” “Bosch Dielse s.r.o.-Jihlava,” accessed 8/11/2017, http://www.bosch.cz/en/cz/our_company_7/locations_7/jihlava_menu/jihlava_menu_uvod.html.

80. Eurostat, “Population aged 25-64 by educational attainment level, sex and NUTS 2 regions (%), 2016,” 2017.

81. Amt für Statistik Berlin-Brandenburg, “Bevölkerungsstand: Berlin (2011-2015).”

82. Julian Kahl and Christoph Scheuplein, “Berliner Venture-Capital Report 2016,” Technologiestiftung Berlin, 2016.

83. Ernst & Young, “Start-ups. Aiming High,” 2017, http://www.ey.com/Publication/vwLUAssets/ey-start-up-barometer-februar-2017/$FILE/ey-start-up-barometer-februar-2017.pdf.

84. Aaron Ricadela and Stefan Nicola, “Delivery Hero Gains on First Trading Day in Tech IPO Success,” Bloomberg, June 30, 2017, https://www.bloomberg.com/news/articles/2017-06-30/delivery-hero-gains-on-first-day-of-trading-as-tech-ipo-succeeds.

85. Oxford Economics, “Berlin,” June 2017.

86. Website of The Federation of Small Businesses, “Local authorities urged to help with business rate hikes,” August 23, 2017, https://www.fsb.org.uk/regions/leicestershire-northamptonshire-rutland/news/2017/08/23/local-authorities-urged-to-help-with-business-rate-hikes.

87. “Total employment for Leicestershire, Rutland, and Northamptonshire, United Kingdom, 2015-2016,” Moody’s Analytics.

88. Leicester & Leicestershire Enterprise Partnership; Home page employment facts, accessed 9/4/2017, https://www.llep.org.uk/.

89. Leicester & Leicestershire Enterprise Partnership; “Enterprise Zones,” accessed 9/4/2017, https://www.llep.org.uk/enterprise-zones/.

90. “Northamptonshire Ltd 2015; A focus on profitability,” Grant Thornton UK LLP, in association with Northamtonshire Enterprise Partnership, 2015, http://genesispr.co.uk/uploads/northampton-hire-ltd-2015-report.pdf?route=NorthamptonshireLtd2015.

91. “Northamtonshire businesses ‘outperforming U.K. economy’,” BBC News, May 14, 2015, http://www.bbc.com/news/uk-england-northamptonshire-32729933.

92. “Total employment for Eastern and Midland, Ireland, 2015-2016,” Moody’s Analytics.

93. Dublin Economic Monitor, July 2017, http://issuu.com/256media/docs/dublineconomicmonitor_17?e=16581915/51538736.

94. Dublin Chamber; “Policy;” “Economic Profile;” “Dublin: Facts and Figures,” accessed 9/5/2017, http://www.dubchamber.ie/policy/economic-profile-of-dublin.

95. Dublin Chamber; “News;” “Press Releases;” “Chamber News;” “Solving Dublin’s €2bn Congestion Conundrum,” June 19, 2017, http://www.dubchamber.ie/news/press-releases/news/display-news/2017/06/20/solving-dublin’s-2bn-congestion-conundrum.

96. BCR; “Our History,” accessed 8/17/2017, https://www.bcr.ro/en/about-us/history.

97. “Moody’s upgrades Romanian top lender BCR’s deposit rating to Baa3,” SeeNews, August 10, 2017, https://seenews.com/news/moodys-upgrades-romanian-top-lender-bcrs-deposit-rating-to-baa3-579183.

98. European Commission; “Spring 2017 Economic Forecast – Romania,” accessed 8/17/2017, https://ec.europa.eu/info/files/spring-2017-economic-forecast-romania_en.

99. MAN Truck and Bus Company; “Home;” “Company;” “Production Plants;” “Production;” “Poznań plant,” accessed 8/17/2017, https://www.mantruckandbus.com/en/company/production-sites-man-truck-and-bus/production/posen.jsp.

100. Volkswagan Poznan; “The new Crafter Plant in Września,” accessed 8/17/2017, http://www.volkswagen-poznan.pl/en/new-crafter-plant-wrzesnia.

101. Website for Nanobiomedical Centre Adam Mickiewicz University in Poznań, “About NBMC,” accessed 8/17/2017, http://cnbm.amu.edu.pl/en/about-nbmc.

102. “Total employment for Derbyshire and Nottinghamshire, United Kingdom, 2015-2016,” Moody’s Analytics.

103. This is Money; “Derby is centre of U.K. economic recovery with booming car manufacturing industry,” June 14, 2015, http://www.thisismoney.co.uk/money/news/article-3123684/Derby-centre-UK-economic-recovery-booming-car-manufacturing-industry.html.

104. Ibid.

105. Rolls-Royce; “Derby,” accessed 9/6/2017, http://careers.rolls-royce.com/united-kingdom/commercial-and-business/our-locations/derby#/.

106. Ibid.

107. Top Universities; "The University of Nottingham," accessed 9/6/2017, https://www.topuniversities.com/universities/university-nottingham.

108. Eurostat, "Population aged 25-64 by educational attainment level, sex and NUTS 2 regions (%), 2016," 2017.

109. The Economist Intelligence Unit, "Worldwide Cost of Living 2017: A ranking of the world's major cities," 2017.

110. Eurostat, "Total R&D personnel and researchers by sectors of performance, sex and NUTS 2 regions, 2014," 2017.

111. Accelerace; "The most tailored program in Europe," accessed 8/20/2017, https://www.accelerace.io/accelerator/.

112. City of Copenhagen, "Copenhagen City of Cyclists Facts & Figures 2017," brochure, http://www.cycling-embassy.dk/wp-content/uploads/2017/07/Velo-city_handout.pdf.

113. European Commission; "Growth;" "Regional Innovation Monitor Plus;" Technopolis Group, "Regional Innovation Report Malopolskie (Industry 4.0 and smart systems)," report, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/sites/default/files/report/2016_RIM%20Plus_Regional%20Innovation%20Report_Malopolskie.pdf.

114. Malopolska; "LIFE Project;" "LIFE IP Implementation of Air Quality Plan for Małopolska Region – Małopolska in a healthy atmosphere," accessed 8/21/2017, http://powietrze.malopolska.pl/en/life-ip/.

115. Polish Central Statistical Office, "Tourist Accommodation Establishments and Their Occupancy," 2017.

116. Eurostat, "Population aged 25-64 by educational attainment level, sex and NUTS 2 regions (%), 2016," 2017.

117. European Commission; "Growth;" "Regional Innovation Monitor Plus;" "Krakow Technology Park," accessed 8/20/2017, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/organisation/krakow-technology-park.

118. "Total GVA for Pest, Hungary, 2014" "Information and communication GVA for Pest, Hungary, 2014" "Professional, scientific and technical activities GVA for Pest, Hungary, 2014," Moody's Analytics.

119. European Commission; "Growth;" "Regional Innovation Monitor Plus;" "Central Hungary," accessed 8/24/2017, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/base-profile/central-hungary.

120. Eurostat; "NUTS-Nomenclature of Territorial Unites for Statistics;" "Principles and Characteristics," accessed 8/24/2017, http://ec.europa.eu/eurostat/web/nuts/principles-and-characteristics.

121. European Commission; "Growth;" "Regional Innovation Monitor Plus;" "Innoreg (Regional Innovation Center of Central Hungary)," accessed 8/24/2017, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/organisation/innoreg-regional-innovation-agency-central-hungary.

122. The World Economic Forum, Global Competitiveness Index 2016-2017, International Monetary Fund; World Economic Outlook Database (April 2016), http://reports.weforum.org/pdf/gci-2016-2017/WEF_GCI_2016_2017_Profile_HUN.pdf.

123. Website of the Government of the United Kingdom; "Foreign & Commonwealth Office;" "Overseas Business Risk-Hungary," updated August 16, 2017, https://www.gov.uk/government/publications/overseas-business-risk-hungary/overseas-business-risk-hungary.

124. Oxford Economics' City Report on Budapest, June 2017.

125. "Total GVA for Prov. Brabant Wallon, Belgium, 2014" "Information and communication GVA for Prov. Brabant Wallon, Belgium, 2014;" "Professional, scientific and technical activities GVA for Prov. Brabant Wallon, Belgium, 2014," Moody's Analytics.

126. GSK; "Responsibility;" "Our people," accessed 8/25/2017, http://be.gsk.com/en/responsibility/our-people/.

127. LLN Science Park, "Innovation and Entrepreneurship," accessed 9/25/2017, http://www.llnsciencepark.be/innover-et-entreprendre. UCL on Teaching & Research, accessed 9/25/2017, https://uclouvain.be/fr/decouvrir/connaitre-l-ucl.html.

128. LLN Science Park, "Innovation and Entrepreneurship," accessed 9/25/2017, http://www.llnsciencepark.be/innover-et-entreprendre.

129. UCL on Opening to the World, accessed 9/25/2017, https://uclouvain.be/fr/decouvrir/connaitre-l-ucl.html.

130. UCL on Teaching & Research, accessed 9/25/2017, https://uclouvain.be/fr/decouvrir/connaitre-l-ucl.html.

131. "Total employment for Sostinės regionas, Lithuania, 2011-2016," Moody's Analytics.

132. Lithuania's Official Statistics Portal on Inbound tourism in 2016, accessed 8/28/2017, https://osp.stat.gov.lt/informaciniai-pranesimai?articleId=5156600.

133. Nasdaq Global Newswire, “INVL Baltic Real Estate has signed an agreement on sale of Kirtimų Street property,” July 27, 2017, https://globenewswire.com/news-release/2017/07/27/1063259/0/en/INVL-Baltic-Real-Estate-has-signed-an-agreement-on-sale-of-Kirtim%C5%B3-Street-property.html; INVL Baltic Real Estate, “Vilnius Gates to become a technology business hub,” February 7, 2017, https://bre.invl.com/3/en/articles/articles/view/113/vilnius-gates-to-become-a-technology-business-hub.

134. Nasdaq Global Newswire, “INVL Baltic Real Estate has signed an agreement on sale of Kirtimų Street property,” July 27, 2017, https://globenewswire.com/news-release/2017/07/27/1063259/0/en/INVL-Baltic-Real-Estate-has-signed-an-agreement-on-sale-of-Kirtim%C5%B3-Street-property.html; INVL Baltic Real Estate, “Vilnius Gates to become a technology business hub,” February 7, 2017, https://bre.invl.com/3/en/articles/articles/view/113/vilnius-gates-to-become-a-technology-business-hub.

135. Jaroslaw Adamowski, “Lithuanian nano-spacecraft industry player obtains 3.2M euros to commercialize propulsion system, performs successful in-orbit test,” August 8, 2017, http://spacenews.com/lithuanian-nano-spacecraft-industry-player-obtains-3-2m-euros-to-commercialize-propulsion-system-performs-successful-in-orbit-test/.

136. Ibid.

137. “Total employment for Southern, Ireland, 2011-2016,” Moody’s Analytics.

138. The Business Report; “From Apple to Pepsi, Cork is a host of global ambition,” accessed 8/28/2017, http://www.the-businessreport.com/article/apple-pepsi-cork-host-global-ambition/.

139. Ibid.

140. Ibid.

141. Ibid.

142. “Total employment for Stredné Slovensko, Slovak Republic, 2015-2016,” “Total compensation for Stredné Slovensko, Slovak Republic, 2012-2013,” Moody’s Analytics.

143. European Commission; “Growth;” “Regional Innovation Monitor Plus,” accessed 8/29/2017, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/base-profile/central-slovakia-0.

144. Ibid.

145. European Commission; “Growth;” “Regional Innovation Monitor Plus,” “The Smart Specialisation Strategy for the Slovak Republic for period 2014-2020,” 2013, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/policy-document/slovenska-republika/smart-specialisation-strategy-slovak-republic-period-2014-2020.

146. “Total employment for Inner London-West, United Kingdom, 2011-2016,” “Total GVA for Inner London-West, United Kingdom, 2014,” “Information and communication GVA for Inner London-West, United Kingdom, 2014,” “Professional, scientific and technical activities GVA for Inner London-West, United Kingdom, 2014,” Moody’s Analytics.

147. The City of London, “Statistics about the city,” City Statistics Briefing, accessed 8/30/2017, https://www.cityoflondon.gov.uk/business/economic-research-and-information/Documents/city-statistics-briefing.pdf.

148. Eurostat, “Population aged 25-64 by educational attainment level, sex and NUTS 2 regions (%), 2016,” 2017.

149. Camden.com, “The economy of the London borough of Camden,” accessed 8/30/2017, https://www.camden.com/v/economy/.

150. Ibid.

151. Oxford Economics’ City Report on London, June 2017.

152. “Information and communication GVA for Nyugat-Dunántúl, Hungary, 2013-2014,” “Professional, scientific and technical activities GVA for Nyugat-Dunántúl, Hungary, 2013-2014,” Moody’s Analytics.

153. “Total GVA for Nyugat-Dunántúl, Hungary, 2014,” “Manufacturing GVA for Nyugat-Dunántúl, Hungary, 2014,” Moody’s Analytics.

154. European Commission; “Growth;” “Regional Innovation Monitor Plus;” “West-Transdanubia,” accessed 8/31/2017, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/base-profile/west-transdanubia.

155. Ibid.

156. Ibid.

157. Ibid.

158. European Commission; “Growth;” “Regional Innovation Monitor Plus;” “Széchenyi István University,” accessed 8/31/2017, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/organisation/sz%C3%A9chenyi-istv%C3%A1n-university.

159. Széchenyi István University, “Research partnership,” accessed 8/31/2017, http://uni.sze.hu/en_GB/home.

160. Toyota Peugeot Citroën Automobile; Czech, s.r.o, “TCPA in numbers,” accessed 8/16/2017, http://en.tpca.cz/about-us/.

161. “Total employment for Zentralschweiz, Switzerland, 2011-2016,” “Total compensation for Zentralschweiz, Switzerland, 2012-2013,” Moody’s Analytics.

162. SwissCommunity.org; “Lucerne: Economy,” accessed 9/1/2017, https://www.swisscommunity.org/en/explore-switzerland/lucerne/economy.

163. Website for Discover Switzerland; “Research and Development,” accessed 9/1/2017, https://www.eda.admin.ch/aboutswitzerland/en/home/wirtschaft/uebersicht/forschung-und-entwicklung.html.

164. SwissCommunity.org; “Lucerne: Economy,” accessed 9/1/2017, https://www.swisscommunity.org/en/explore-switzerland/lucerne/economy.

165. MSD; “About Us;” “Our Local History,” accessed 9/1/2017, http://www.msd.ch/english/about/our-history/Pages/Local-History.aspx.

166. B. Braun Medical; “Switzerland locations,” accessed 9/1/2017, https://www.bbraun.ch/de/unternehmen/standorte.html.

167. Website for Lucerne University of Applied Sciences and Arts; Home page, accessed 9/1/2017, https://www.hslu.ch/en/.

168. “Information and communication GVA for Övre Norrland, Sweden, 2009-2014,” “Professional, scientific and technical activities GVA for Övre Norrland, Sweden, 2009-2014,” Moody’s Analytics.

169. European Commission; “Growth;” “Regional Innovation Monitor Plus;” “Övre Norrland,” accessed 9/4/2017, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/base-profile/%C3%B6vre-norrland.

170. “Human health and social work activities employment for Övre Norrland, Sweden, 2014,” Moody’s Analytics.

171. European Commission; “Growth;” “Regional Innovation Monitor Plus;” “Övre Norrland,” accessed 9/4/2017, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/base-profile/%C3%B6vre-norrland.

172. Ibid.

173. Ibid.

174. “Education employment for Övre Norrland, Sweden, 2014,” Moody’s Analytics.

175. European Commission; “Growth;” “Regional Innovation Monitor Plus;” “Adopticum,” accessed 9/4/2017, https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/organisation/adopticum.

176. Ibid.

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