1 A snapshot of socioeconomic conditions in UK Core Cities

This chapter provides an overview of the socioeconomic conditions in Core Cities and their surrounding regions. It shows that Core Cities face significant challenges in many policy areas, including public transport and social policy. Yet, it also documents important progress made in policy areas such as education and digitisation despite a challenging macroeconomic environment and severe fiscal constraints.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Introduction

Core Cities is an association of 11 large United Kingdom (UK) cities: Belfast, Birmingham, Bristol, Cardiff, Glasgow, Leeds, Liverpool, Manchester, Newcastle, Nottingham and Sheffield. In total, Core Cities and their functional urban areas[1] (FUA) are home to 16.4 million people (25% of the UK population) and cover approximately 11% of its landmass. From an economic point of view, Core Cities and their FUAs constitute around 24% of the UK's total employment and generate 22% of its gross value added (GVA) in 2017.

In the 1970s, Core Cities' economic output was approximately as high as that of London. However, the deindustrialisation during the 1980s and 1990s led to an increasing decoupling in the economic performance of Core Cities and London. While London compensated the loss of manufacturing by specialising in the finance and insurance sector, Core Cities have struggled to build strong economic specialisations that could compensate for the decline of old industries. As a consequence, London, which is home to 18.3% of the UK's population, contributed 28.1% of total gross domestic product (GDP) to the UK economy, while Core Cities generated 22.6% of the UK's GDP in 2016.

Productivity levels in Core Cities are below the national average as well as below the levels of leading second-tier cities in Europe and the rest of the world. Yet, despite low levels of productivity, there are signs of an increasingly vibrant economy in Core Cities, which is reflected, for example, in strongly increasing start-up rates. Converting this economic vibrancy into productivity growth could yield large benefits. A Core Cities' study found that raising productivity in Core Cities to the national average would contribute an additional GBP 100 billion to the national economy (Core Cities, 2018[1]).

Low productivity levels in the UK and especially in Core Cities are not a new phenomenon; it has concerned Core Cities and national policymakers since the early 2000s. However, the issue has received particular attention since the 2007-08 financial crisis. Productivity levels in the UK since 2008 have been nearly stagnant. As productivity growth is the only mechanism to ensure sustainable economic growth in the long term, a lack of productivity growth is an acute threat to economic prosperity in the UK.

The national environment of low productivity growth has exacerbated the challenge facing Core Cities. Yet, there is no simple solution to increase productivity. It depends on a multitude of factors that are both national and locally driven (OECD, 2015[2]) and is dependent upon effective governance structures (OECD, 2015[3]). Enhancing productivity in cities goes beyond macroeconomic levers; it requires action across a range of policy areas including governance, fiscal autonomy, education and skills, transport and connectivity and inclusive growth.

Core Cities not only have lower levels of productivity than their counterparts across the OECD but also fewer statutory powers and less financial autonomy. Governance is a critical mechanism which provides the foundations on which productivity-enhancing policies can be developed (OECD, 2019[4]). Maintaining momentum on devolution, infrastructure investments and adopting bolder place-based policies through which Core Cities can rebalance their economies, boost local growth and reduce disparities is critically important.

The overall context is challenging, regional disparities have increased, Brexit has created many uncertainties and the UK remains one of the most centralised countries in the OECD. However, enhancing productivity has become a shared priority across levels of government, the private sector and institutions. Addressing the structural challenges that prevent productivity from growing is needed to raise living standards, reduce disparities within the UK and create sustainable growth and investment.

This report identifies the factors that are responsible for low productivity in Core Cities and develops strategies that policymakers can use to encourage productivity growth. It does not aim at providing a comprehensive overview of all aspects related to productivity growth that are relevant from a macroeconomic perspective. Rather, it focuses on issues that are specific to Core Cities and that distinguish them from other parts of the UK and from other second-tier cities throughout the OECD.

Nevertheless, the report touches upon a wide range of issues from various policy fields. While it provides concrete policy recommendations, it cannot discuss all issues exhaustively nor can it delve into issues that are specific to individual Core Cities. Thus, policymakers are encouraged to conduct further research into the issues identified by the report.

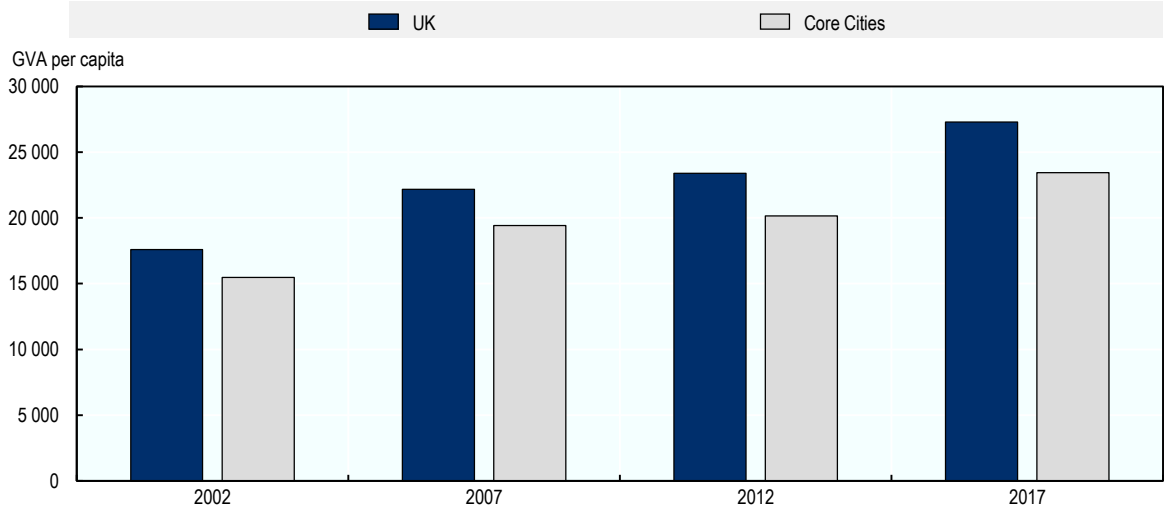
This chapter provides an overview of socioeconomic conditions in Core Cities. It highlights that Core Cities are similar in many dimensions but also points out that important differences between them exist. For the UK government, this has two implications. One the one hand, it shows that a cohesive policy approach to second-tier cities is needed to deal with the common challenges that they face. On the other hand, it also highlights that place-based solutions are important to address the specific circumstances of each city.

Following this chapter, Chapter 2 discusses the determinants of productivity growth in more detail. Based on an analysis of 3.5 million records of workers in Core Cities, it highlights that Core Cities do not achieve their productivity potential to the same degree as second-tier cities in other countries. This fact raises the question of how the national government and local governments can facilitate the emergence of agglomeration economies in the UK as a means to raise productivity levels. Chapter 3 highlights the role of the governance for Core Cities and argues that a set of co-ordinated policies is necessary to create agglomeration economies. It emphasises the importance of continued devolution and close co-operation at the city-region scale.

Core Cities constitute almost one-quarter of the UK economy

In 2017, Core Cities and their functional urban areas had an average gross value added (GVA) per capita of GBP 23 434, which is equivalent to 86% of the national average of GBP 27 298.[2] This gap with the national average has been stable over time. The GVA per capita of Core Cities was around 88% of the UK average in 2002, decreased to 86% in 2012 and has been stable since then (Figure 1.1).

Figure 1.1. GVA per capita: Core Cities are not catching up to the UK average



Note: Gross value added (GVA) per capita at current prices in pounds (GBP).
Source: OECD calculations based on National Official Labour Market Statistics (NOMIS[5]) data (accessed June 2019).

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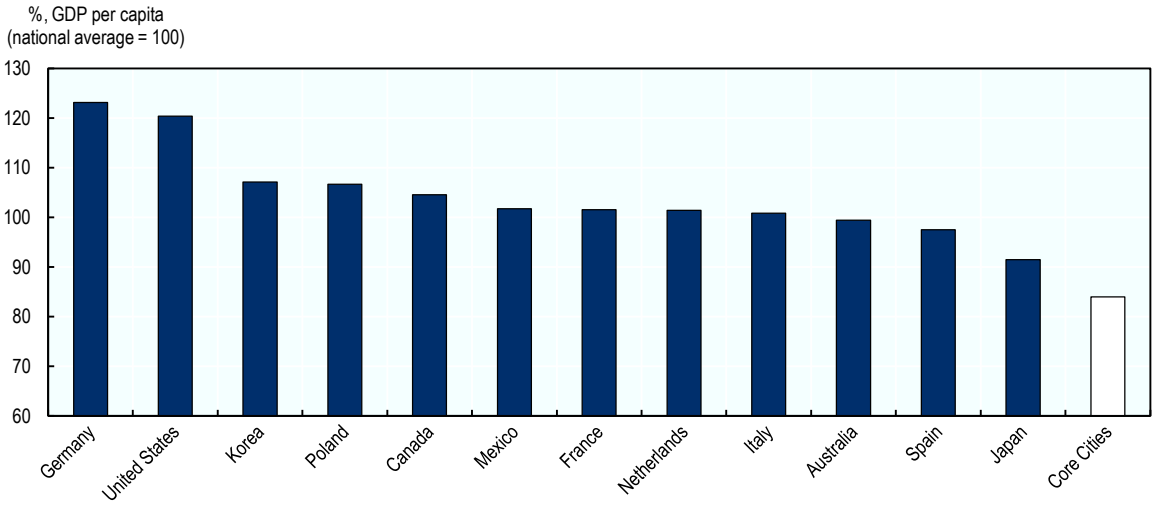
Second-tier cities in most other OECD countries outperform the national average in terms of GDP per capita and GVA per capita. Figure 1.2 plots the average GDP per capita of second-tier cities as the share of the national average. The figure shows that in 9 out of the 13 OECD countries with at least 10 large second-tier cities, the per capita GDP is higher than the national average. In contrast, Core Cities do not only underperform the national average but the gap is also larger than in any of the three other countries where second-tier cities underperform the national average.

Figure 1.2. GDP per capita of second-tier cities are higher in other countries

Average GDP per capita of second-tier cities relative to the national average



Note: The figure plots the average GDP per capita in second-tier cities relative to the national average. Second-tier cities are defined for this figure as the 10 largest cities outside of the largest city of a country. The figure shows all OECD countries with at least 10 second-tier cities with more than 250 000 inhabitants.
Source: OECD calculations based on OECD (2019[6]), OECD Regional Statistics (database) (accessed September 2019).

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Since 2002, GDP growth in Core Cities has been constantly weaker than London and roughly identical to the rest of the UK (excluding London and Core Cities). The accumulation of persistent differences in the growth rates has increased the share of London in the total economy while that of Core Cities has remained stable. While London and Core Cities produced an almost identical share of UK GDP in the early 2000s, a gap has emerged in recent years driven mainly by London's strong performance. For instance, in 2001, Core Cities and London represented 23.5% and 25% of the national GDP (Figure 1.3). Due to the differences in the growth rates, by 2016, the share of Core Cities in the national economy decreased slightly to 22.5%, while the share of London increased to 28%. In other words, as the weight of London in the national economy increased, Core Cities' importance remained unchanged.

Box 1.1. The OECD functional urban area definition

The OECD defines functional urban areas (FUAs) as densely populated urban centres with a surrounding commuting zone whose labour market is highly integrated with the urban centre. Based on gridded population density data, high-density population clusters with more than 50 000 inhabitants are identified. All municipalities that have at least 50% of their inhabitants living in the high-density cluster are considered part of the centre of the FUA. If there are 2 high-density clusters and at least 15% of the working population of 1 high-density cluster commuting into the other, they are considered part of the same FUA. Lastly, the commuting zone is defined as those municipalities from which at least 15% of the working population commute into the municipalities containing the urban centre.

A minimum threshold for the population size of the functional urban areas is set at 50 000 population. The definition is applied to 30 OECD countries. It identifies 1 197 urban areas of different sizes (small urban areas with a population below 200 0000, medium-sized urban areas with a population between 200 000 and 500 000 people, and metropolitan areas with a population higher than 500 000).

This definition overcomes previous limitations for international comparability of urban areas. Traditional definitions based on administrative boundaries are often not comparable across countries because the shape and size of administrative areas vary from country to country. The aim of the OECD approach to FUAs is to create a methodology that can be applied in all countries, thus increasing comparability across countries. The OECD definition may not correspond to national definitions. Therefore, the resulting FUAs may differ from the ones derived from national definitions.

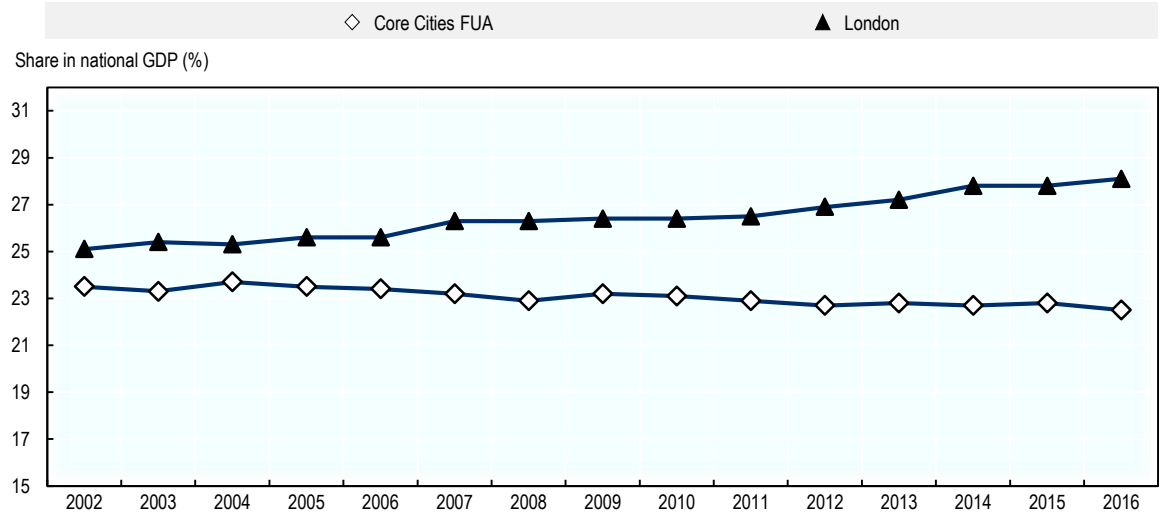
This report uses FUAs as the unit of analysis when possible. FUA level figures are obtained by combining data collected at the local authority unit (LAU) level using the LAU-FUA correspondence (https://www.oecd.org/cfe/regional-policy/list-of-municipalities-in-functional-urban-areas.xls).

When FUA level data is not available, the report also includes analysis using the following geographical units:

- Territorial Level 2 (TL2): Regions within the 35 OECD countries are classified on 2 territorial levels reflecting the administrative organisation of countries. The 398 OECD large (TL2) regions represent the first administrative tier of subnational government. In the UK, there are 12 TL2 regions.
- Territorial Level 3 (TL3): The 2 241 OECD small (TL3) regions represent the second administrative tier and correspond to administrative regions. There are 179 TL3 regions in the UK. These regions are also identical to NUTS3 regions as defined by Eurostat.
- Primary Urban Area (PUA): Cities are measured based on a contiguous built-up area, where buildings are less than 200 metres apart. Thus, a PUA may include more than one local authority. For further details on the definition of PUAs, see Centre for Cities (2015[7]).

Source: Adapted from OECD (2016[8]), "Reader's guide", https://doi.org/10.1787/reg_glance-2016-4-en.

Figure 1.3. Core Cities' and London's share of the UK economy



Note: The share of London and Core Cities in the national economy. Core Cities include their functional urban areas (FUAs).
Source: OECD calculations based on OECD (2019[6]), OECD Regional Statistics (database) (accessed August 2019).

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Table 1.1. A statistical snapshot of Core Cities

Most recent data, functional urban areas

	Population (total)	GVA per capita (GBP)	Employment rate	Unemployment rate	Business count (per 10 000 people)	Land area (km²)
Belfast	784 655	29 102	65.9	5.3	307	1 833
Birmingham	2 878 851	23 154	68.9	6.6	334	2 072
Bristol	951 113	31 076	78.9	3.4	387	982
Cardiff	782 678	22 808	72.6	5.1	276	842
Glasgow	1 827 240	22 639	71.2	4.7	265	3 365
Leeds	2 611 570	23 256	73.1	4.1	354	5 113
Liverpool	1 094 029	20 853	70.7	3.5	278	834
Manchester	2 798 799	23 729	74.3	4.6	376	3 117
Newcastle	819 345	23 022	74.3	4.6	296	5 425
Nottingham	675 051	23 201	69.2	4.7	313	902
Sheffield	1 185 285	18 858	73.0	5.2	274	1 258
Core Cities	16 408 616	23 434	72.4	4.8	325	25 743
UK	66 040 295	27 298	75.0	4.3	404	242 495

Note: Figures include Core Cities and the local authorities, which form the functional urban areas. Data on population and gross value added are for the year 2017. Employment, unemployment and business counts are for the year 2018; except Belfast for which it is from 2016.
Source: OECD calculations based on National Official Labour Market Statistics (NOMIS[5]) and Northern Ireland Statistics and Research Agency (NISRA[9]) data (accessed June 2019); OECD (2019[6]), OECD Regional Statistics (database) (accessed August 2019).

The economic structure of Core Cities

Unemployment levels in Core Cities are low but labour force participation is weak

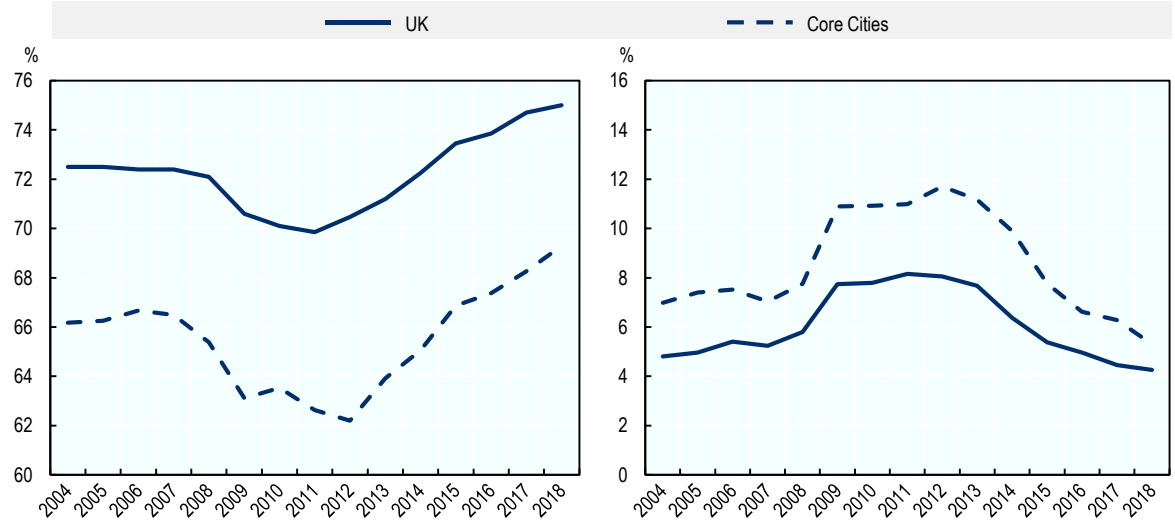
Unemployment rates in Core Cities have been above the national average for many years. However, while the gap increased during the financial crisis, it has been declining strongly since 2012. In 2018, the average unemployment rate was only 1 percentage point higher than the national average, compared to a difference of 3.5 percentage points 5 years earlier (Figure 1.4, right panel).

However, compared to unemployment rates, the difference in employment rates between Core Cities and the national average is significantly larger (Figure 1.4, left panel). The comparably large gap indicates a significantly lower labour force participation rate in Core Cities compared to the rest of the UK. In other words, significantly fewer people are working or actively looking for work. Thus, there is significant untapped potential that could be used if more people were activated for the labour market.

While there are many potential reasons for low labour force participation rates, many of them are related to social issues. Disability caused by factors such as depression, muscular-skeleton disease and other factors is one reason for workers to drop out of the labour force. Long-term unemployment that eventually discourages people from seeking jobs is another factor contributing to low labour force participation. Last but not least, the gender gap in labour force participation also plays a role, as female labour force participation in the UK and in Core Cities is nine percentage points lower than that of men.[3]

One of the reasons for low female labour force participation is exceptionally high childcare costs in the UK. According to OECD data, childcare costs for a couple earning 67% of the average wage are 46% of the total net income, which is the highest share of all OECD countries (OECD, 2019[10]). The high costs of childcare make it unattractive for one partner to seek work as a large share of the earnings would be eaten up by childcare costs.

Figure 1.4. Employment (left panel) and unemployment (right panel) rates



Note: Belfast is included starting from 2009.
Source: OECD calculations based on National Official Labour Market Statistics (NOMIS[5]) and Northern Ireland Statistics and Research Agency (NISRA[9]) data (accessed June 2019).

Core Cities have a diverse service-based economy

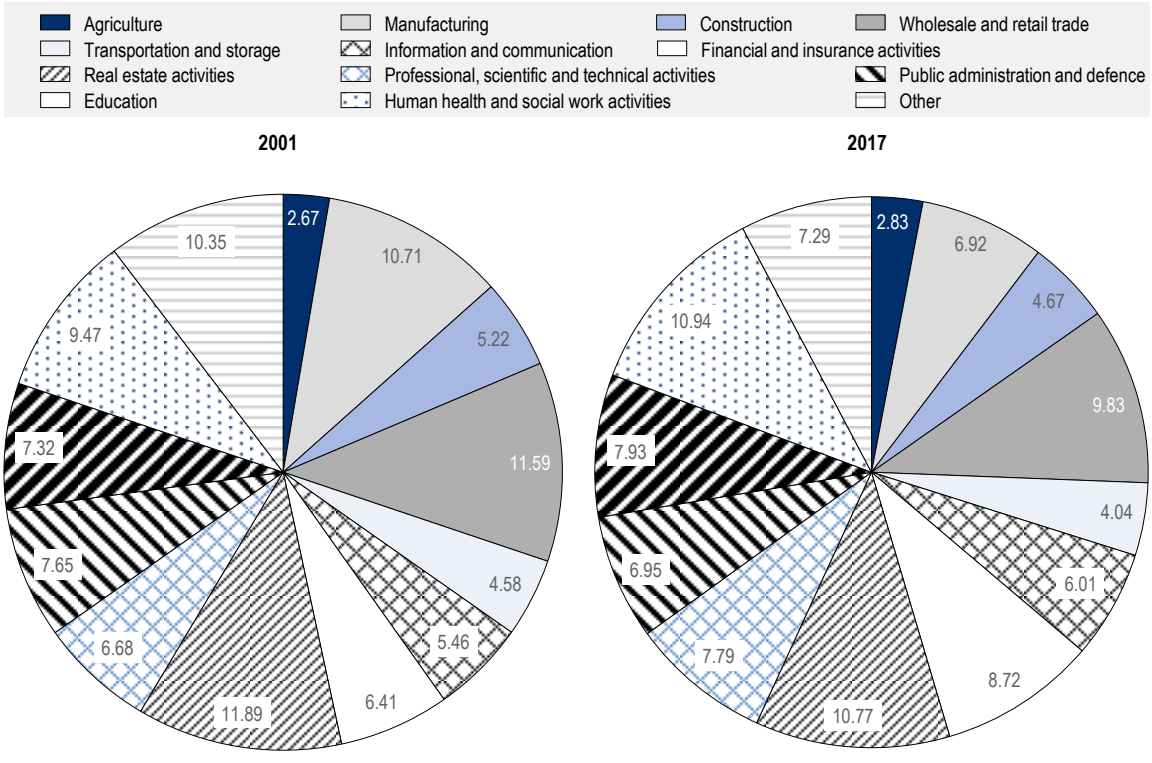
Different sectors in an economy have different productivity levels. Some sectors, such as research and development (R&D), generate higher value added per worker, compared to others such as product assembly add comparatively little value per employed worker. Thus, the sectoral composition of the local economy has strong effects on the productivity level and, hence, the average per capita income.

Core Cities have a diversified service-based economy that is very similar to that of the UK. Since the 1970s, the UK economy has experienced a gradual shift from industry to services, a trend mirrored across all Core Cities. In terms of contribution of each sector to the local gross value added (GVA), real estate activities are the leading contributor representing 11% of the GVA, followed by human health and social work activities and wholesale and retail trade which constitute 10.9% and 9.8% of the GVA respectively (Figure 1.5). Manufacturing, once an important sector in the North, represents only 6.9% of the total GVA in 2017.

Despite following the national average closely, Core Cities have experienced a significant change in the sectoral composition since 2001, reflecting the trends observed in the overall economy. For instance, the manufacturing sector accounted for 10.7% of GVA in 2001, while in 2017 it was around 6.9%. This drop of 3.8 percentage points over 18 years is very similar to the drop of 3.3%, which was observed in the whole of the UK. In reverse, the share of financial and insurance services grew from 6.4% to 8.7%, which is similar to the increase from 5.1% to 7.0% observed in the UK.

Figure 1.5 Sectoral composition in Core Cities

Sectoral composition in terms of GVA in 2001 and 2017, Core Cities and commuting zones



Note: Agriculture includes forestry and fishing, mining and quarrying and electricity, gas and steam supply); Other includes administrative and support services, arts, entertainment and recreation, other service activities), activities of households.
Source: OECD calculations based on National Official Labour Market Statistics (NOMIS[5]) and Northern Ireland Statistics and Research Agency (NISRA[9]) data (accessed June 2019).

The value of GVA produced by a sector, however, is not the only indicator of its importance in the local economy. The employment generated by a sector, as a share of the total employment in the area, would also give a sense of the importance of the sector in the local economy. In terms of employment, wholesale and retail trade, and human, health and social work activities provide 15% and 14% of the total employment respectively. These sectors are followed by administrative and support services (9.4%), and manufacturing (9.1%). Just as when measured by GVA, the employment shares of most sectors in Core Cities are around the national average.

There are few Core Cities whose economies are highly specialised. The diversity in economic activity in Core Cities has upsides and downsides. On the one hand, diverse economies are more resilient to industry-level shocks compared to the economies that are specialised and reliant on specific sectors (OECD, 2015[2]). Moreover, diverse economies benefit from cross-industry knowledge spill-overs and cross-industry fertilisation, the so-called Jacobsian economies, which is a source of innovation and growth (Combes and Gobillon, 2015[11]). These positive effects are especially beneficial when the diversification involves economic activities that are "related", meaning that they have similar characteristics but are not identical (Xiao, Boschma and Andersson, 2018[12]). Finally, diverse economies have a large set of inputs and factors. Faced with structural changes in the global economy, a diverse local economy has a higher capacity to bring together different sets of inputs and factors required by the new economy, and adapt to change. In other words, a diversified economy is more likely to adapt to change compared to a highly specialised one.

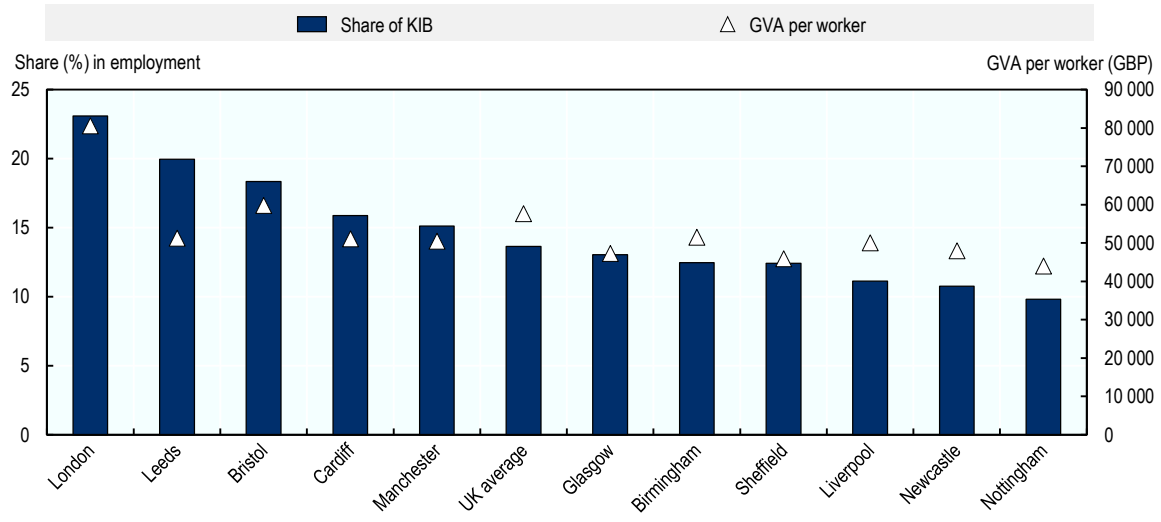
On the other hand, a certain degree of specialisation generates within-industry externalities and creates faster growth through spill-overs (Combes and Gobillon, 2015[11]). It is especially important in smaller cities that do not have the economic mass to support multiple unrelated economic ecosystems. Moreover, Core Cities cannot translate their diversified economic profiles into increased resilience to shocks as the cities struggled to recover from recent recessions (Cambridge Econometrics, 2018[13]).

Despite the long-run debate on whether specialisation or diversity is better for regional growth (Kemeny and Storper, 2015[14]), it is clear that cities that specialise in knowledge-intensive business services (KIBS) have higher average productivity (Figure 1.6). These jobs tend to require higher-skilled workers and benefit more from agglomeration effects that arise from the proximity of people (Jacobs, Koster and van Oort, 2014[15]). As knowledge spill-overs and productivity externalities decline over distance, knowledge-intensive industries tend to cluster close to each other to benefit from agglomeration economies. Once firms in an industry start clustering in a location, its growth can be self-propelling.

All Core Cities have experienced a decline in the share of manufacturing and an increase in its share of knowledge-intensive business services (KIBS), reflecting an industrial shift that is observed in the rest of the UK and other OECD countries. However, individually, Core Cities have different shares of KIBS. While the percentage of KIBS jobs in some cities are significantly above the national average, it is lower in other cities. Given the correlation between the share of KIBS and labour productivity, Core Cities should focus on creating conditions that foster the emergence of clusters in knowledge-intensive services.[4]

Figure 1.6. Knowledge-intensive business services increase productivity

Share of knowledge-intensive business services in total employment and GVA per worker in 2017



Note: The number of knowledge-intensive business service (KIBS) jobs in the city as the percentage of total jobs. Cities are ranked in descending order by the share of their KIBS jobs in the total employment (left axis, bars). The right axis (markers) indicates the gross value added (GVA) per worker in corresponding cities. Cities correspond to the primary urban area based on built-up area and may include more than one local authority. Belfast is not included in the figure due to a lack of available data for Northern Ireland.
Source: OECD calculations based on data from Centre for Cities (2019[16]), Cities Data Tool (database) (accessed August 2019).

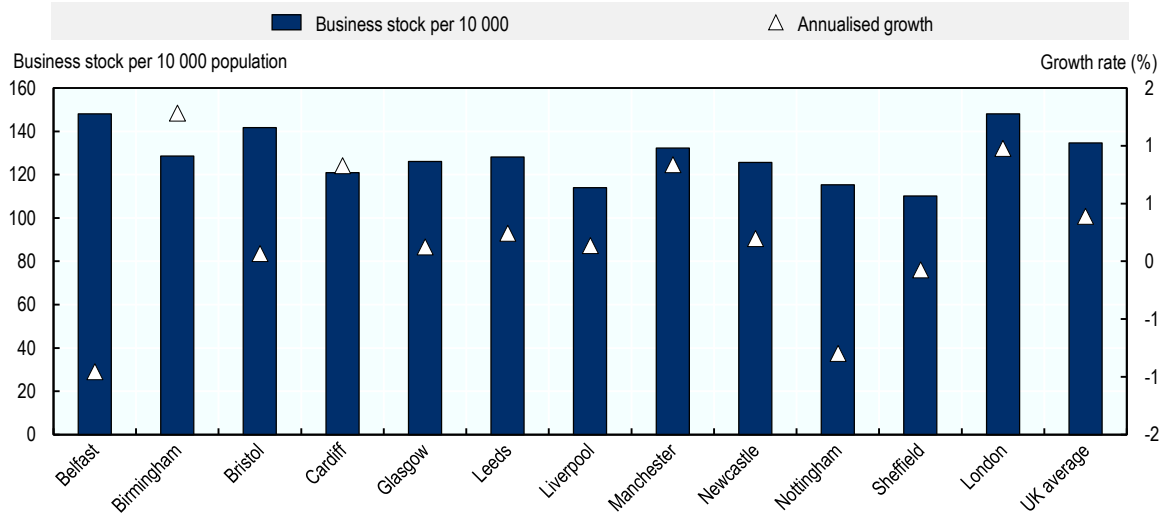
The number of small businesses has been growing but it is unclear whether this represents an increase in entrepreneurial activity

The overall numbers of businesses in a city and the number of new businesses are indicators of the vibrancy of an economy (Sutaria and Hicks, 2004[17]). Core Cities have seen a strong rise in the number of firms but many new firms have zero employees. The owners of these firms are typically the only worker and may not be taking a salary or be counted as an official employee. Although such firms may cover high-skilled occupations such as notaries, doctors or information technology (IT) start-ups firms, they are frequently defined by poor working conditions, low job security and low pay (Apouey and Stabile, 2019[18]). Today, zero employee firms constitute 76% of private sector firms in the UK, making them a significant part of the economy BEIS (2019[19]).

Given the complexity in assessing whether growth in zero employee firms indicates a healthy and dynamic business environment or precarious labour markets, it is preferable to exclude them from the analysis. Figure 1.7 presents the number of businesses with 5 or more employees per 10 000 inhabitants and their annual growth rate for the period 2010-18. No clear trend is visible for Core Cities. While Birmingham, Cardiff and Manchester have seen growth rates above the UK average, other Core Cities performed around or below the national rate of growth.

Figure 1.7. The number of businesses with more than 5 employees is growing moderately

Businesses with 5 or more employees per 10 000 inhabitants (2018) and growth rate between 2010-18



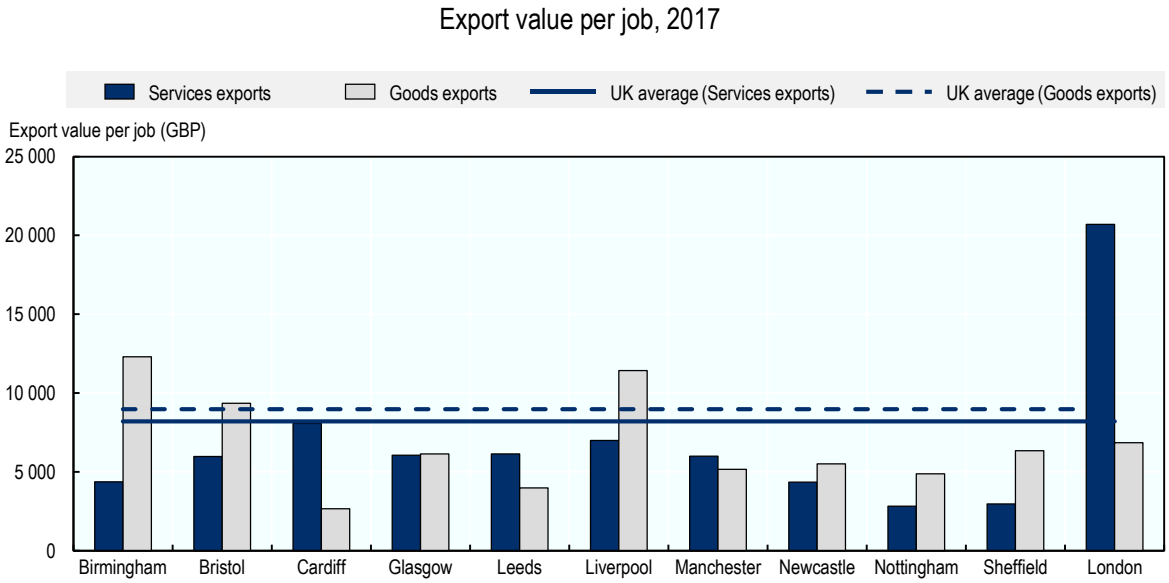
Note: Data refers to functional urban areas (FUAs). The business stock per 10 000 population (left axis) is calculated using firms with more than 4 employees and the working-age population. Growth rate (right axis) is the annual growth rate in business stock per 10 000 population for the period 2010-18.
Source: OECD calculations based on National Official Labour Market Statistics (NOMIS[5]) data (accessed November 2019).

Boosting service exports would yield productivity benefits

Unlike businesses that serve local demand, exporters do not serve one particular market and are not tied to a specific location. Exporters are therefore more flexible in their location decisions and base them on a variety of factors including the availability of workers with the right skills, good transport connections, proximity to suppliers and customers, links to research institutions and the availability of cheap land and office space.

All of Core Cities export both services and goods, but the value and composition of their exports vary substantially. Figure 1.8 plots value of exported goods or services per job in 2017. The value of service exports is informative of the economic performance of the location. The figure shows that the exports, especially service exports, have a lower value than the UK average, revealing an important potential for the improvement of productivity. While most Core Cities export significantly more goods than services, Cardiff stands out as having a very high share of service exports relative to goods exports.

Figure 1.8. Export value per job is lower than the UK average



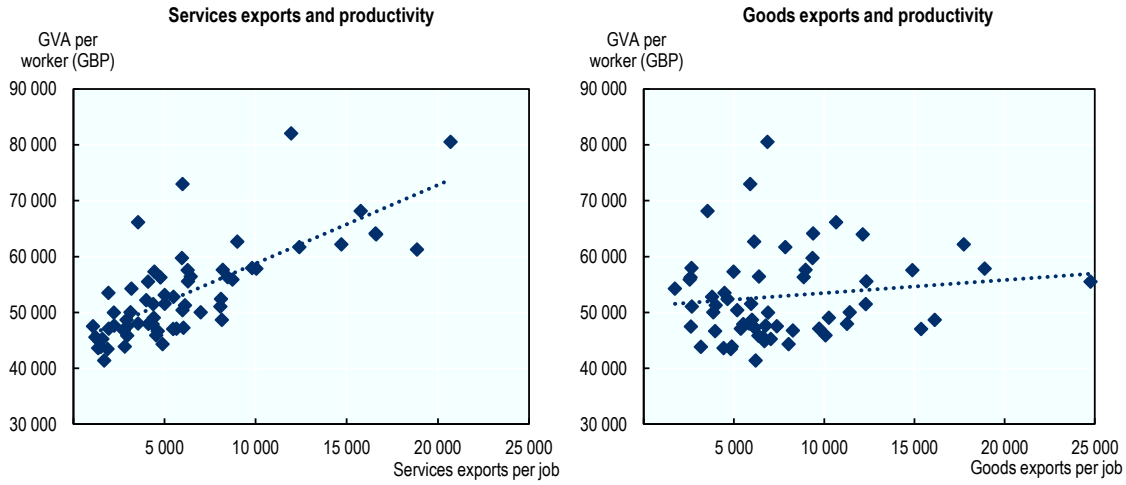
Note: Cities correspond to primary urban areas based on built-up areas and may include more than one local authority. Belfast is not included in the figure due to a lack of available data for Northern Ireland.
Source: OECD calculations based on data from Centre for Cities (2019[16]), Cities Data Tool (database) (accessed August 2019).

Evidence suggests that exporting benefits productivity growth (OECD, 2018[20]). This positive relationship between exporting and productivity is often attributed to "learning by exporting", and refers to the mechanism whereby firms improve their performance by learning through their interactions with foreign customers and rivals. It explains why increasing regional exports can improve local productivity. However, despite the overall positive relationship between exports and productivity, there are important nuances in how the two are linked.

When analysing the link between exporting activity and productivity at the city level in the UK, a strong positive and statistically significant correlation between services exports per job and worker productivity becomes apparent (Figure 1.9). However, the correlation between goods exports and productivity is much weaker. Of course, such correlations neither prove a causal link between service exports and higher productivity nor the absence of such a causal link between goods exports and productivity. However, they are in line with other evidence that shows such a positive effect of service exports (OECD, 2018[20]). Core Cities should increase service exports, in particular in the service sector, to boost their productivity. High productivity service exports are for example financial and legal services. They might also be related to particular activities within global value chains. In a typical global value chain, the first and last stages tend to be highly productive activities, such as R&D and marketing and after-sales services. In contrast, activities located in the middle of the value chain, such as product assembly typically have much lower levels of productivity. Such labour intensive low-skilled manufacturing brings jobs to cities but offers little potential to improve overall productivity. Moreover, labour intensive low-skilled manufacturing usually only stays in a city while wage levels remain low and is relocated to lower-wage destinations as soon as wage levels rise.

Figure 1.9. Services exports matter for labour productivity

Exports and labour productivity, 2017



Note: Figures plot gross value added (GVA) per worker and value of exports per job in 2017, for 63 British cities for which data is available. Cities correspond to primary urban areas based on built-up areas and may include more than one local authority.
Source: OECD calculations based on data from Centre for Cities (2019[16]), Cities Data Tool (database) (accessed August 2019).

Local policies to promote exports can cover many dimensions. They include dedicated contact points and training to help small- and medium-sized enterprises (SMEs) develop the necessary administrative and cultural competency to enter foreign markets. They can also include efforts to build a local brand and market the brand in targeted foreign markets. Teaching foreign languages in school is a strategy that is likely to yield benefits in the long term (Foreman-Peck and Zhou, 2015[21]). Last but not least, dedicated policies to attract foreign direct investment (FDI in exporting industries are also likely to increase export shares.

Education and skills utilisation are essential pieces in the productivity puzzle

Human capital is a key factor for the social and economic development of cities and regions. Skills, innovation and knowledge are considered vital sources for economic growth, especially in the long term. More educated workers are more productive, which benefits their employers and explains why they earn higher wages. In addition to benefitting the individual worker through higher wages, more educated employees also generate positive spill-overs for the workers around them, creating wider social benefits (Moretti, 1999[22]). Thus, it is vital to improving the skill levels of the labour force to boost the productivity and the economic performance of regions while generating inclusive and sustainable growth.

Standard measures of educational attainment indicate that on average, Core Cities' population is slightly less educated than the UK population. However, to put these numbers into perspective, it is important to keep in mind that the country has one of the highest shares of university-educated population across OECD countries (OECD, 2017[23]). In 2017, 46% of UK citizens aged 25-64 had completed tertiary education compared with only 37% across OECD countries (Figure 1.10).

There are important differences across the Core Cities (Figure 1.11). For example, Bristol (46%) and Glasgow (42%) have significantly higher shares of people (aged 15-65) with tertiary education compared to the Core Cities average (35.7%) or the UK average (39.2%). On the opposite end of the spectrum, the share of the population without any recognised qualifications in Core Cities (9.7%) is slightly above the national average (8%). In particular, Glasgow has the second-highest share of people without formal

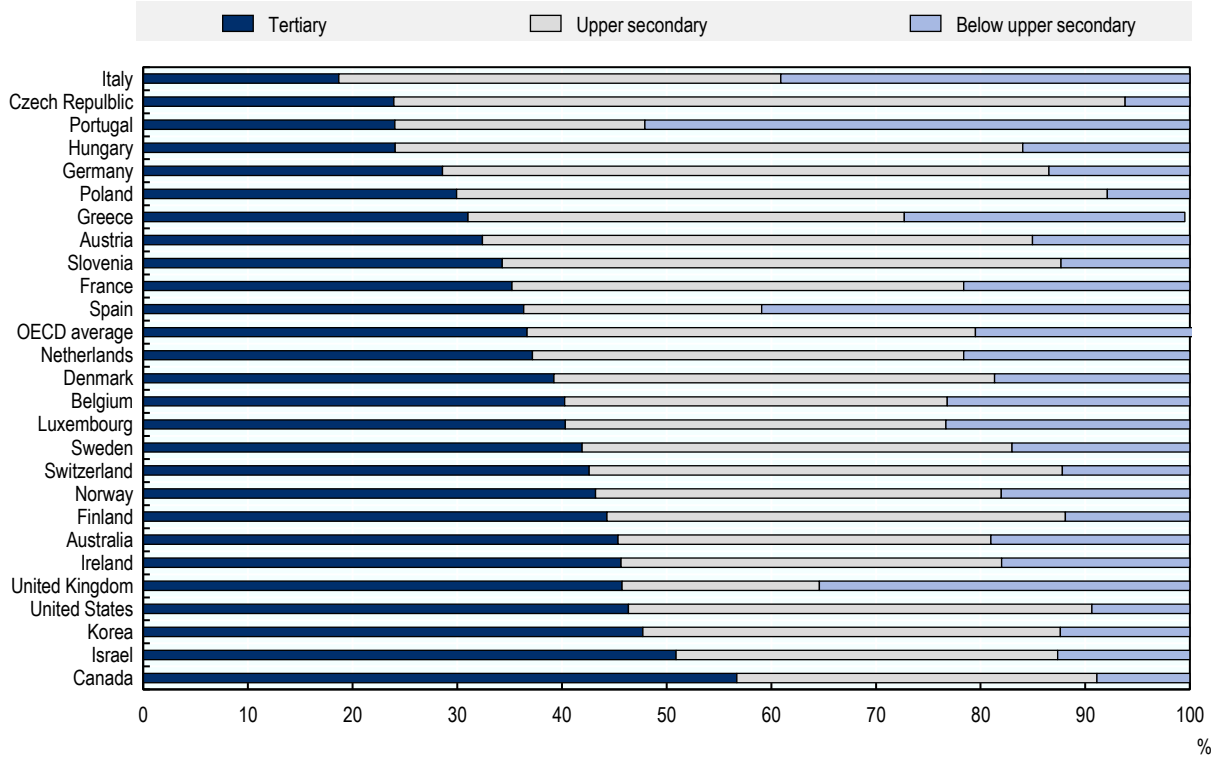
qualifications among Core Cities. This shows that even a city with a high share of university graduates can struggle to ensure that all residents reach adequate education levels. It also highlights the importance of considering the various dimensions of education policy, from early childhood to university education.

Despite the high share of university graduates, international skills assessments place the United Kingdom only in the middle of OECD countries. In 2018, 15-year-old students in England, Scotland and Northern Ireland performed significantly above the OECD average in all 3 tested subjects (mathematics, reading and science) according to the Programme for International Student Assessment (PISA). Student performance improved compared to the 2015 round of the PISA. However, the skills performance of adults lags behind the learning outcome of students. The OECD Survey of Adult Skills (PIAAC) finds that young adults (16-24 year-olds) in England and Northern Ireland have lower literacy and numeracy skills than their peers in almost all other participant countries (OECD, 2017[23]).

Compared to the rest of the country, students in Core Cities perform below average in terms of share of students achieving at least grade 9-4 (the lowest pass grade) in English and Mathematics at the GCSE exams (Figure 1.12). Core Cities' average rate of 59.5% is below the England average of 64%. The difference to London, where 69% of students achieve at least a 9-4 is even higher.

Figure 1.10. The UK has a high share of adults with tertiary education

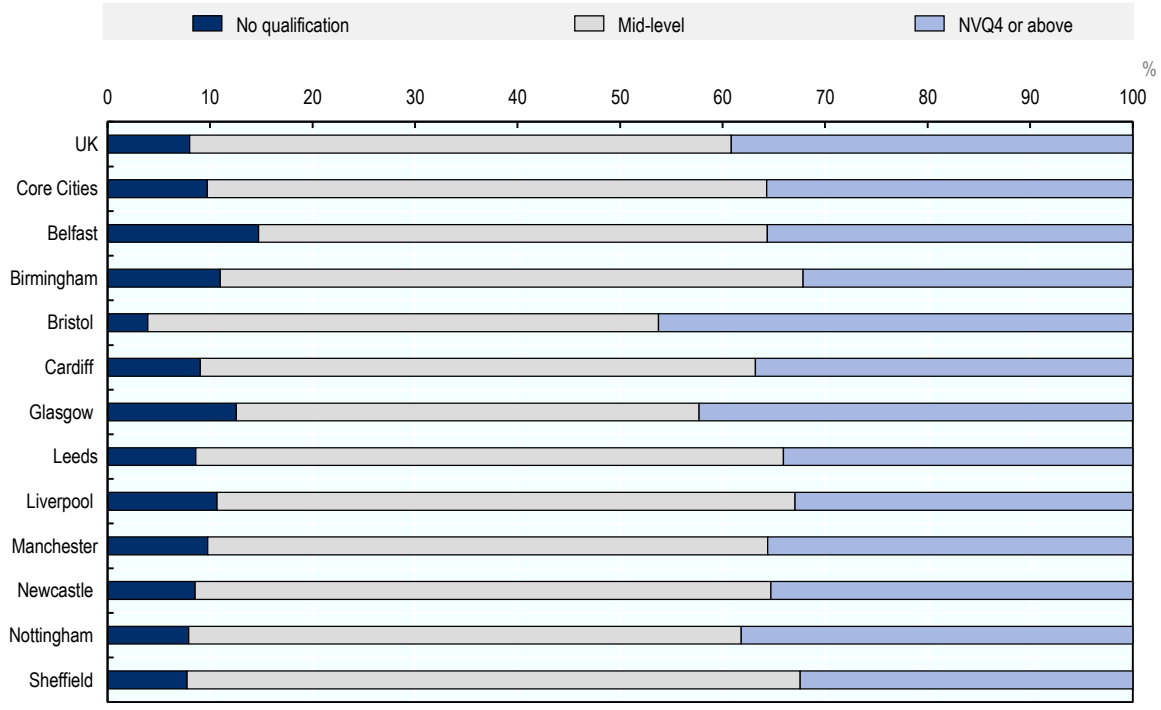
Educational attainment of 25-64 years-olds, 2017



Note: Figure ranks countries in ascending order based on the percentage of adults with tertiary education (i.e. university or higher) as the highest level attained. Data refer to 2017 or the most recent year for which data is available.
Source: OECD calculations based on OECD (2019[24]), OECD Education at a Glance (database) (accessed August 2019).

Figure 1.11. Core Cities face different challenges in terms of skills

Highest educational attainment of the working-age population (15-65 year-olds), 2018



Note: Mid-level qualifications corresponds to the highest level of qualification from Level 1 up to Level 4. See National Official Labour Market Statistics (NOMIS[5]) for details on qualification groupings. Data refers to functional urban areas (FUAs).
Source: OECD calculations based on National Official Labour Market Statistics (NOMIS[5]) and Northern Ireland Statistics and Research Agency (NISRA[9]) data (accessed June 2019).

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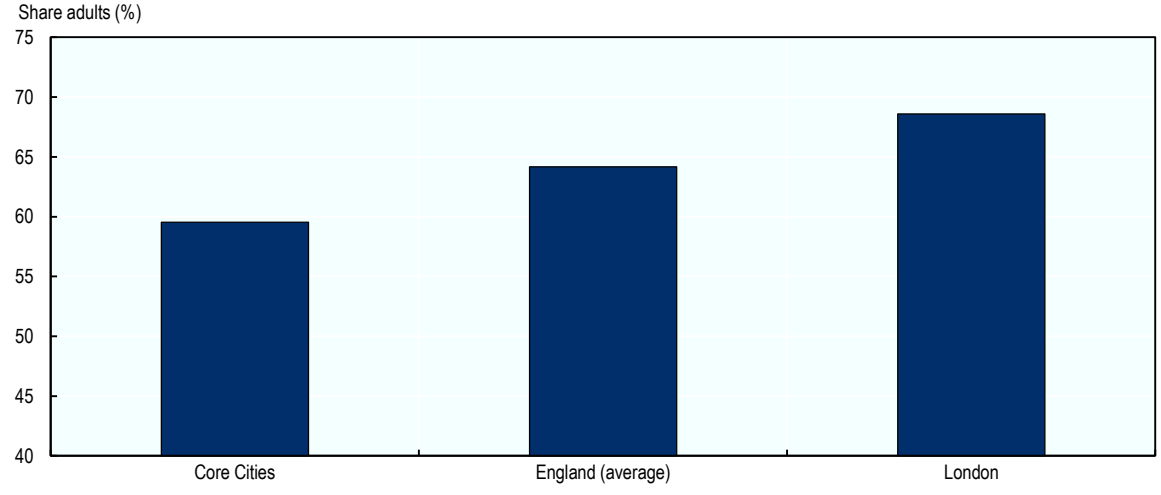
Figure 1.12. Core City students are performing below the average

Average share of students achieving 9-4 in English and Mathematics, 2017

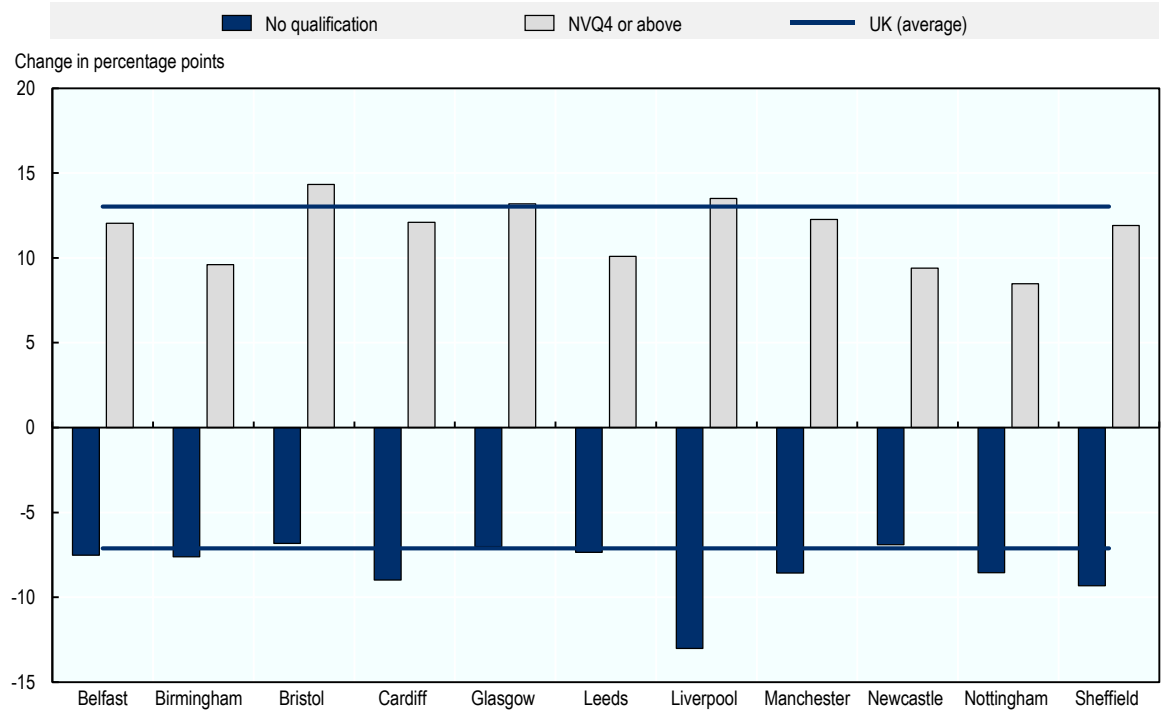


Note: Data for England only. Data refers to academic year ending in 2017. The average for Core Cities includes Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle, Nottingham and Sheffield. Data refer to local authority units (LAUs).
Source: OECD calculations based on Centre for Cities (2019[16]), Cities Data Tool (database) (accessed August 2019).

Despite the gap in other parts of the UK, there have been significant increases in education levels over the past 15 years. The share of people with no education has decreased significantly since 2004, while the share of people with tertiary education has increased (Figure 1.13). The expansion to tertiary education was brought about by government reforms which raised the tuition fee cap, while simultaneously introducing more generous loans and grants, and scholarships for high-achieving students from low-income households (OECD, 2017[23]). The share of the population with tertiary education increased across Core Cities from 24.2% to 35.7%. This increase is similar to the UK average.

Figure 1.13. Improvement in average education

Change in the share of the population without formal qualifications and population with higher education degree



Note: The figure plots the change in the share of the population without any recognised formal education (No qualification) and the share with tertiary education (NVQ4 or above), between 2004 and 2018. The two lines mark the rate of change during the same period, for the whole of the UK. Data refers to functional urban areas (FUAs).
Source: OECD calculations based on National Official Labour Market Statistics (NOMIS[5]) and Northern Ireland Statistics and Research Agency (NISRA[9]) data (accessed June 2019).

Core Cities reduced its share of the adult population with no formal education faster than the rest of the UK. In 2018, 9.7% of the population in Core Cities had no formal education, down from 17.8% in 2004. The decrease in Core Cities was one percentage point larger than the UK average. The biggest improvements took place in Liverpool, where the share of the population without formal qualifications dropped by 13 percentage points.

Continuing the efforts to raise education levels among all population groups will be critical to equip workers with the necessary skills to benefit from globalisation and technological change. Job automation is likely to accelerate in the future and even workers in jobs that were until now largely protected from automation might be threatened by it (OECD, 2018[25]). Continuous upskilling is essential to ensure that workers who lose jobs due to automation find good quality employment in other sectors. To ensure equal access to

quality schooling for children in disadvantaged neighbourhoods in the UK, the OECD (2017[23]) emphasises the need to attract more highly qualified to schools in socioeconomically weak neighbourhoods. Moreover, employer interactions during secondary school should be strengthened to ease the transition from school to the labour market and provide better career guidance to students (OECD, 2017[23]).

Skills gaps are an issue for some Core Cities

Skills are a key driver of economic growth but local economies differ in their ability to develop, attract and retain a skilled workforce. Moreover, it is not only the supply of skills that matters but also how businesses demand and use these skills. Thus, understanding whether the local economy as a whole is making good use of the skills of the local workforce through efficient matches in the labour supply and demand is essential.

Some local areas may have a significant mismatch between the skills of the workforce and the available jobs. In those areas, jobs may remain unfilled or the skills of the workforce may be underutilised. In other communities, a low level of unemployment may be hiding challenges related to low-skilled and poorly productive jobs. Such skill mismatches can undermine the prospects for growth and job creation. Preventing them requires comprehensive strategies for economic and skills development, including altering the use of skills and stimulating innovation (Froy, Giguere and Meghnagi, 2012[26]).

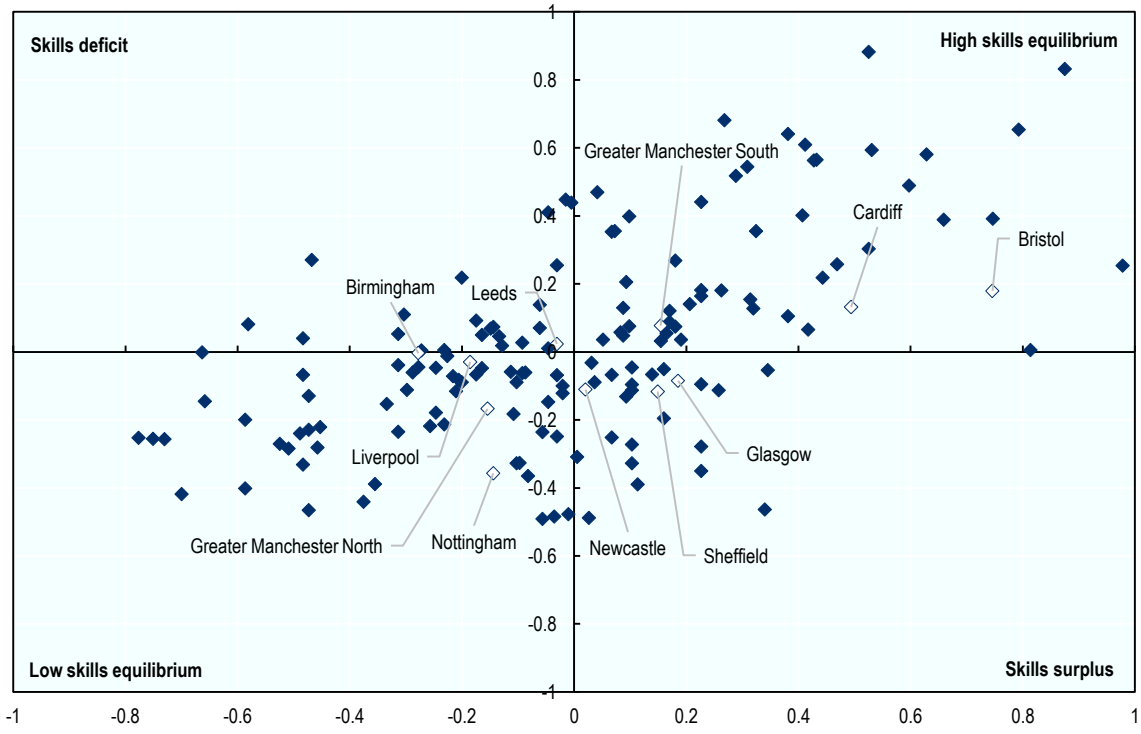
Better understanding the relationship between skills supply and demand in local areas would make it possible to identify the right policy mix to increase competitiveness, reduce unemployment and promote inclusive growth nationally. To aid in these efforts, the OECD has developed a statistical tool to help understand the balance between skills supply and demand within local labour markets (Froy, Giguere and Meghnagi, 2012[26]). According to this methodology, local economies can fall into four different categories: high skills equilibrium, skills deficit, skills surplus or low skills trap.

Supply and demand for skills vary considerably across Core Cities. Figure 1.14 shows supply and demand for skills at the TL3 regional level, which corresponds roughly to city-regions (OECD, 2018[25]). Demand for skills is plotted on the vertical axis, while the supply of skills is plotted on the horizontal axis. Regions in the upper right corner of the figure are in a high-skilled equilibrium, while those in the lower-left corner are in a low-skilled equilibrium. The further to the upper left or lower right a region is located, the larger the skills mismatch. Regions in the upper left face a skills deficit and regions in the lower right of the chart experience a skills surplus. The figure shows that cities such as Bristol and Cardiff have a high supply of skills, which is mostly met by a high demand for skills. Yet, skill supply still exceeds skill demand and there is a risk that skills are underutilised, which could lead to the out-migration of talent, underemployment and attrition of human capital, all of which signal missed opportunities for creating prosperity. In contrast, Birmingham, for example, has an average demand for skills but a below-average supply of skills, thus indicating a skills deficit. Businesses in this city are potentially held back by an insufficient supply of skilled workers.

These results show that Core Cities have a heterogeneous structure in terms of the skills gap. Thus, there is no one-size-fits-all education and skills policy that is appropriate for all Core Cities. Instead, each city must develop a skills policy that is appropriate for its region and have the means to implement it.

Figure 1.14. Skills supply and demand

Skills mismatch in Britain, NUTS-3, 2017



Note: The analysis is carried out at Territorial Level 3 (TL3) regions according to OECD classification. The supply of skills was measured by the percentage of the population with post-secondary education. The demand for skills was approximated using a composite index: percentage of the population employed in medium-high skilled occupations and GVA per worker (weighted at 0.25 and 0.75 respectively). The indices are standardised using the inter-decile method and are compared with the national median. Further explanations of the methodology can be found in Froy, Giguere and Meghnagi (2012[26]). Belfast is not included in the figure due to a lack of available data for Northern Ireland.
Source: OECD calculations based on data from OECD (2018[25]), *Job Creation and Local Economic Development*, 2018.

Innovation is a key determinant of productivity and long-term growth

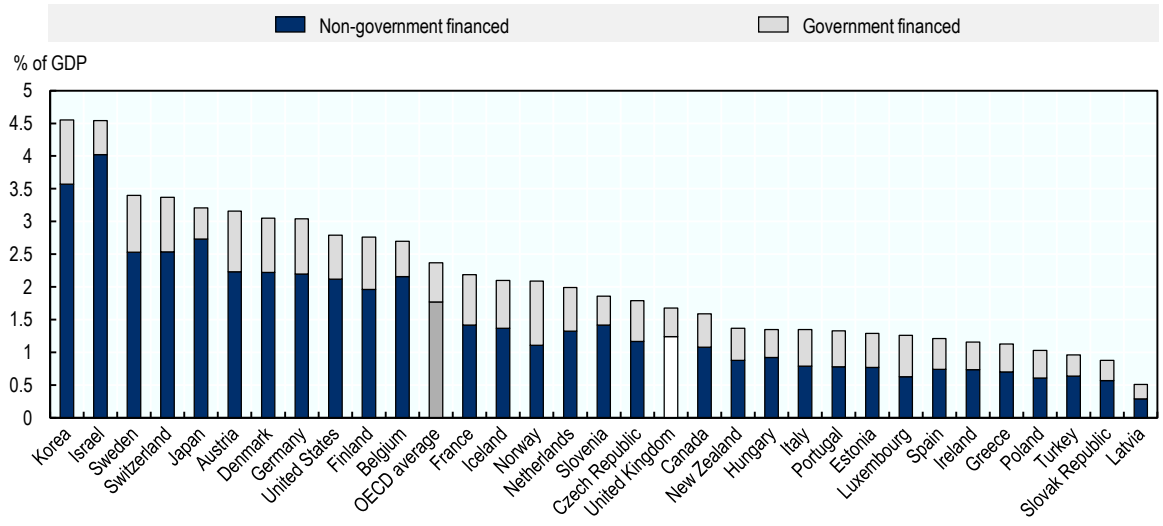
Innovation is the main channel through which productivity is increased in the long term. It allows capital and labour, the two main production factors, to be used in new and better ways, thereby increasing productivity and, through this channel, GDP.

One of the most immediate ways to increase levels of innovation is an investment in R&D. However, the UK performs poorly on this measure compared to other advanced economies. Public and private spending on R&D was equal to 1.7% of GDP compared to an OECD average of 2.4% in 2017 (Figure 1.15). It is even further behind high-income countries such as Germany (3.0%) and the United States (2.8%). Likewise, the UK performs only around average in many other science and innovation indicators (OECD, 2017[27]).

At the local level, the number of patents publications are a measure for innovation efforts. Most Core Cities are below the national average of 18 patents per 100 000 residents. Exceptions are Bristol and Cardiff, as well as Nottingham, which is slightly above the national average and not far from the level of London.

Figure 1.15. UK spends below OECD average on R&D

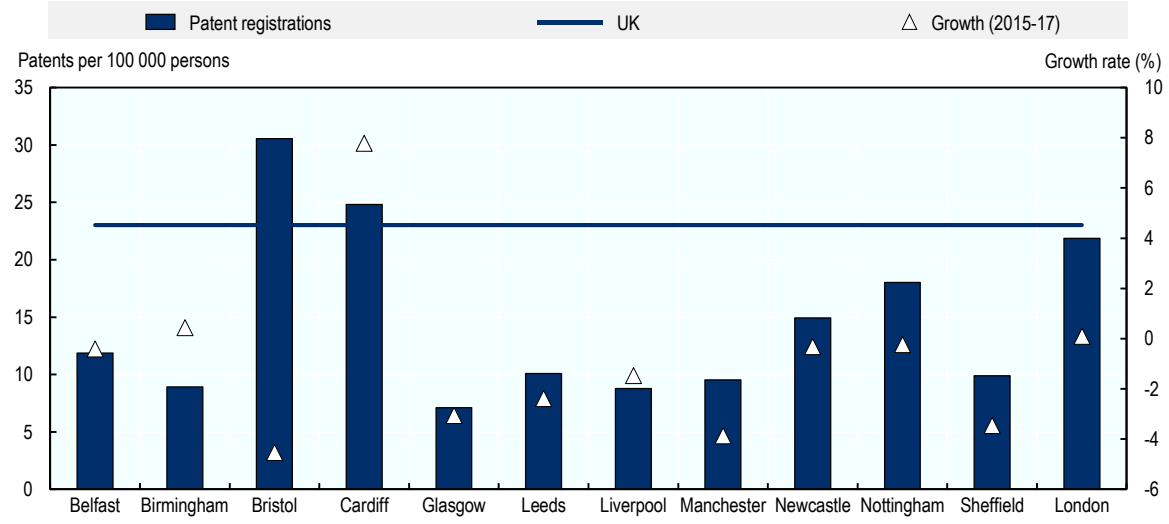
Gross domestic expenditure on R&D by the source of financing, as a percentage of GDP, 2017



Note: Research and development spending by source of financing, as a share of GDP. Data for the UK and OECD aggregate from 2016, all other countries from 2017.
Source: OECD (2019[28]), OECD Science, Technology and R&D Statistics (database) (accessed September 2019).

Figure 1.16. Core Cities can innovate more

Patents registrations (2017) and growth (2015-17)



Note: The left axis (bars) corresponds to several patent applications made for 100 000 population in 2017, while the right axis (triangle markers) plots the growth in patent registrations between 2015 and 2017. Cities correspond to the primary urban area based on built-up areas and may include more than one local authority.
Source: OECD calculations based on Centre for Cities (2019[16]), Cities Data Tool (database) (accessed August 2019).

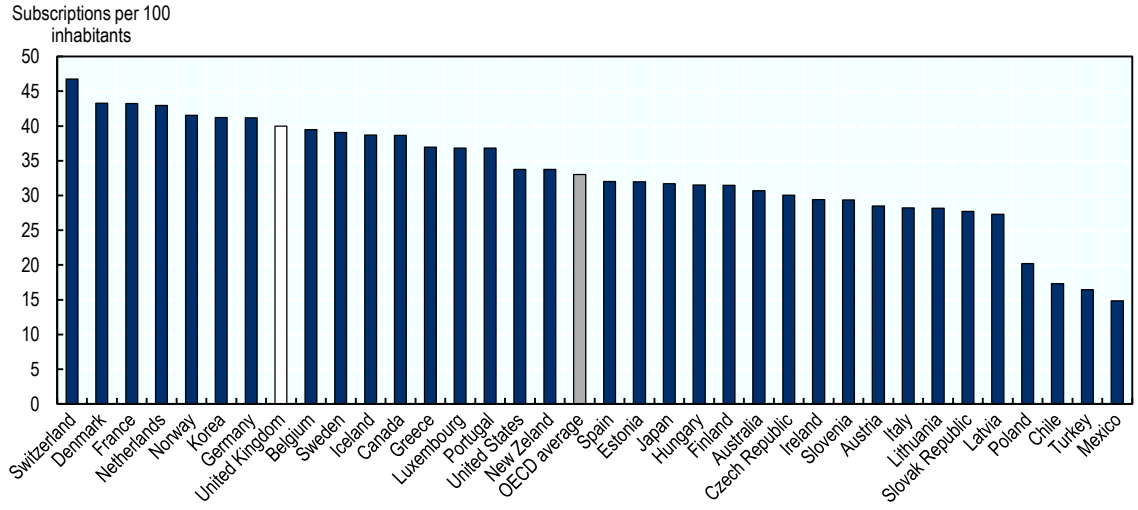
Digital infrastructure development should be supported

Digital infrastructure ensures the flow of communication, data and knowledge across the country. It lays the foundation for innovation in cities, while also helping remote areas to stay connected with the rest of the economy. Thus, it contributes to catching up in productivity and helps to reduce regional disparities (Celbis and de Crombrugghe, 2018[29]). Existing evidence shows that high-speed broadband networks contribute to making firms more productive in the UK and increase economic growth (OECD, 2015[30]).

The UK performs well above other OECD countries in terms of providing access to high-speed Internet to a large share of its population. Moreover, the extent of access to broadband Internet varies very little between regions within the UK, which makes it one of the OECD countries with the smallest geographical difference in terms of broadband access (OECD, 2019[31]). In 2018, more than half of UK premises (51.6%) had access to ultrafast broadband (Figure 1.18, Panel A). All of the Core Cities have widespread access to ultrafast Internet with coverage rates above the national average. While some cities are close to complete coverage, those that are not yet at full coverage are catching up quickly.

Figure 1.17. The number of broadband connections is high in the UK

Total fixed broadband subscriptions per 100 inhabitants, 2018

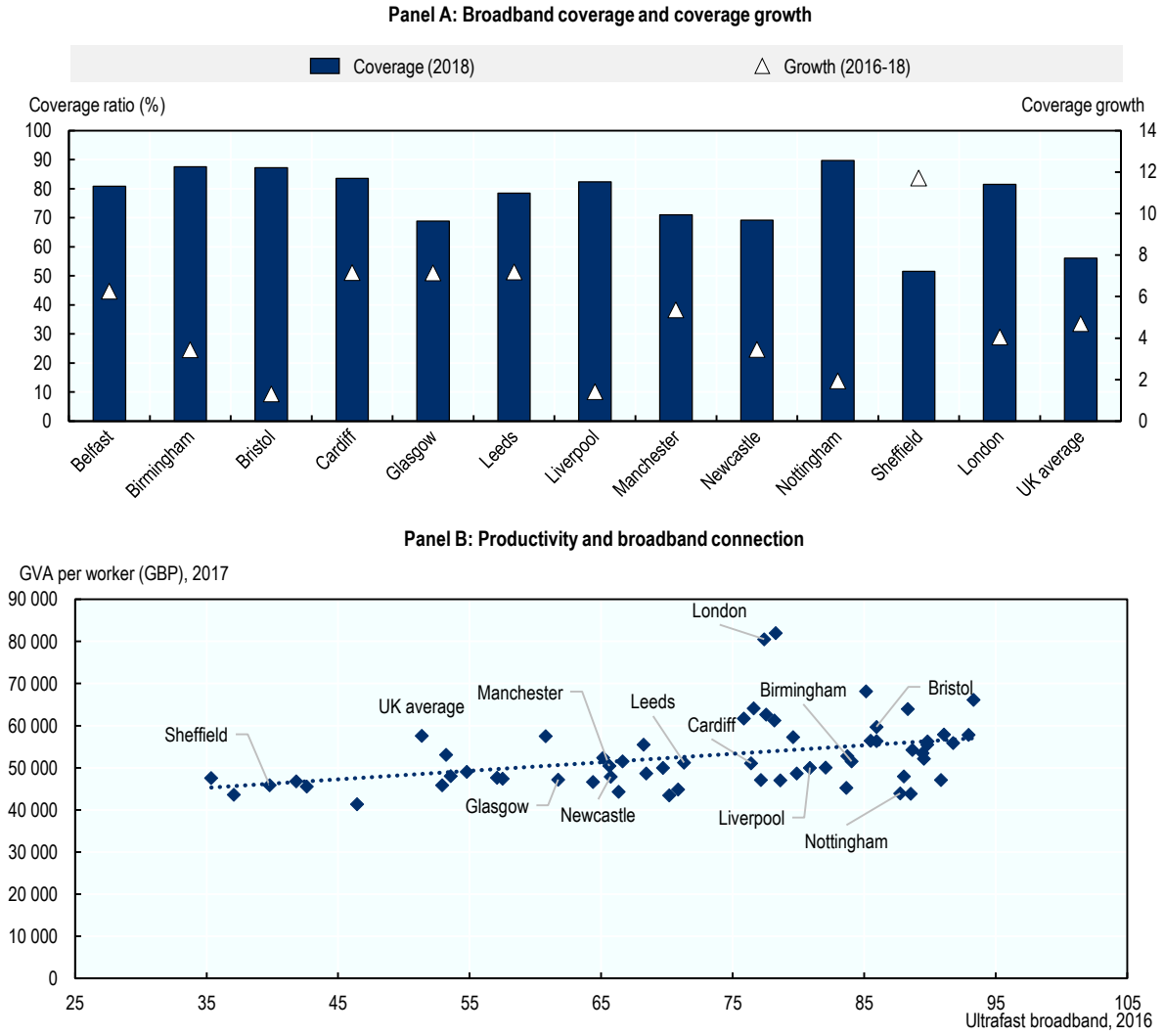


Note: Total fixed broadband subscriptions per 100 inhabitants in 2018. OECD aggregate is the unweighted average of the countries for which data is available.
Source: OECD (2019[32]), OECD Information and Communication Technology Statistics (database) (accessed September 2019).

The positive effects of high-speed broadband on productivity could also be reflected in the positive correlation of these two measures shown in Figure 1.18, Panel B. UK with greater broadband coverage have higher productivity. While such a correlation does not necessarily imply a causal link between the two factors, it is in line with the existing evidence mentioned above.

Given the positive effects on productivity, investments in digital infrastructure should be increased across Core Cities. However, this should occur together with complementary measures to ensure high utilisation of this infrastructure. The provision of information and communication technology (ICT) infrastructure is not enough to unlock the full potential of this technology. Only if factors such as managerial quality, transportation networks and the skill level of the local workforce are at adequate levels will the full benefits of ICT infrastructure materialise (Mack, Anselin and Grubesic, 2011[33]; Shiu and Lam, 2008[34]).

Figure 1.18. Broadband access and productivity



Note: Panel A: Ultrafast broadband is the percentage of premises covered with ultrafast broadband (>100 Mbps) as at the end of the period. The UK average is the unweighted average of all local authority level figures.
Source: Broadband data: Centre for Cities (2019[16]), Cities Data Tool (database) (accessed August 2019).GVA per worker: OECD calculations based on National Official Labour Market Statistics (NOMIS[5]) data (accessed August 2019).

Transportation infrastructure is a bottleneck for productivity

Infrastructure and accessibility – between and within regions – are important for economic performance. Better connectivity between cities and regions reduces the cost of transportation and travel time between individuals and firms. Beyond facilitating the transport of goods and people, it also helps the diffusion of knowledge and best business practices from the top performers to other firms, which is an important element for boosting productivity (Andrews, Criscuolo and Gal, 2016[35]).

For regions, better access and reduced travel times to large metropolitan areas can be a significant driver of productivity and GDP growth per capita (Ahrend and Schumann, 2014[36]). Given the importance of domestic transportation costs in the overall cost of shipping goods across borders, any improvement in the infrastructure would reduce the domestic transportation costs, improve the integration of regions to take part in global supply chains and boost their exports (Cosar and Demir, 2016[37]). According to Gibbons

et al. (2019[38]), establishments located in areas that saw improved connectivity increased their output per worker and paid higher wages to their employees.

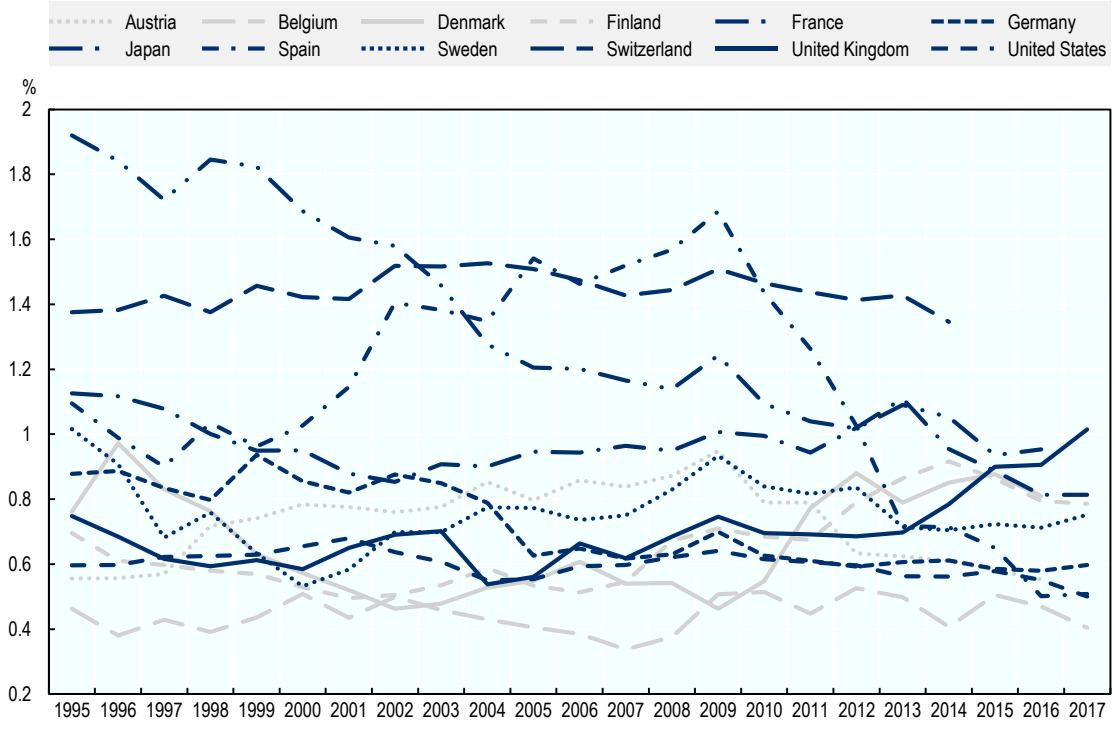
Strengthening transport links across cities can be particularly effective when geographic distances between them are relatively close. For instance, given the high population density and proximity of urban centres in the northern part of England (Liverpool-Manchester-Leeds-Sheffield), better connectivity could substantially increase the number of customers that businesses in these cities reach within a given time.

At the local level, better connectivity can increase the number of jobs workers can reach within a reasonable amount of time while providing firms with a larger pool of workers to tap into. This is, for example, relevant for working couples in specialised professions who may struggle to both find jobs that match their skill profiles within commuting distance of their place of residence. However, it also benefits all other workers who have potential access to a larger number of jobs without having to move. As a consequence, better connectivity reduces labour market imbalances and improves the matching between firms and workers, both of which contribute to productivity growth and increase employment.

As pointed out in the previous Economic Survey of the United Kingdom (OECD, 2013[39]; OECD, 2017[27]) and discussed in other studies (LSE Growth Commission, 2013[40]), insufficient infrastructure investment has become a bottleneck in the development of the UK economy. Total spending on transport investment and maintenance as a percentage of GDP has been low for several decades compared to other advanced economies, although it has started to rise in 2014 (Figure 1.19). Yet, given the low level of investment in the past, it will take a considerable period of higher investment until the level of infrastructure improves markedly.

Figure 1.19. Transport investment started picking up in recent years

Transport investment as a percentage of GDP (selected OECD countries)

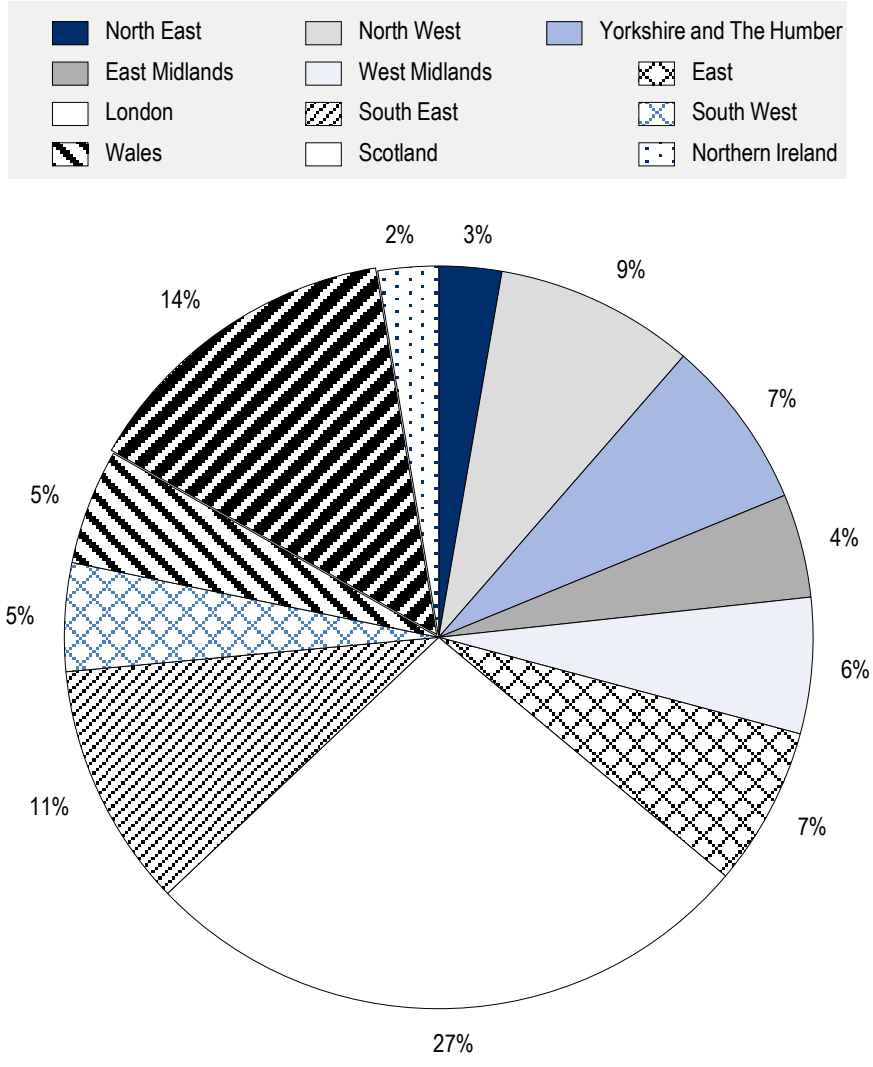


Note: The figure plots the total (both public and private) inland transport infrastructure investment as a percentage of GDP.
Source: OECD (2019[41]), OECD Transport Forum (database) (accessed August 2019).

Yet, transport infrastructure investment is much lower outside of London (Figure 1.20). For instance, nearly 27% of all public sector transport infrastructure spending takes place in London (with the majority of spending by the local government body Transport for London). A similar picture emerges on a per capita basis (Figure 1.21): transport investment spending in London is about GBP 1 019 per resident, compared to Scotland with the second-highest transport spending per capita at close to GBP 667 per resident. Northern Ireland has the lowest capital spending per resident, a little over GBP 297. Some of these differences may stem naturally from different needs across more and less densely populated areas. In particular, transport infrastructure in London is used to some degree by residents commuting into London from outside the city. Thus, the large differences shown in Figure 1.21 would most likely be lower when calculated on a per-user basis instead of a per capita basis.[5] This notwithstanding, increased investment in public transport is imperative to strengthen productivity in Core Cities.

Figure 1.20. The share of transport infrastructure investment by region

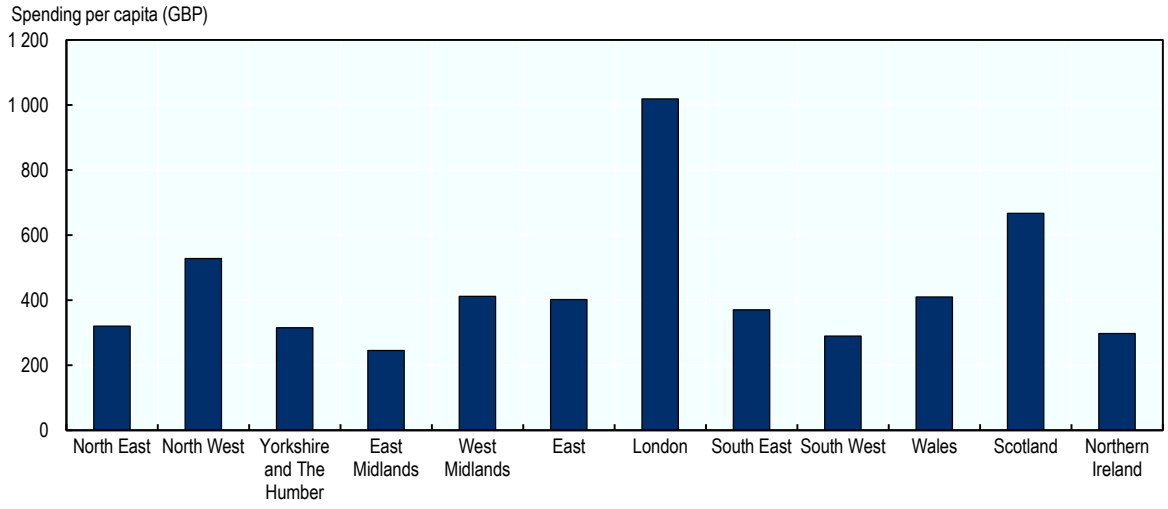
Share of transport infrastructure investment by regions, 2017/18 fiscal year



Note: Data refer to the fiscal year. The figure represents the sum of local and central government expenditure.
Source: OECD calculation based on HM Treasury (2019[42]), *Country and Regional Analysis: 2018*

Figure 1.21. Public transport spending per capita in London is much higher than in other regions

Per capita spending in public transportation services in the 2017/18 fiscal year



Note: Data refer to the fiscal year. The left axis corresponds to spending in GBP per capita in the 2017/18 fiscal year; the right axis corresponds to the growth rate in per capita spending between 2014 and 2018. The figure represents the sum of local and central government expenditure. Data refers to TL2 regions for which data is available.
Source: OECD calculation based HM Treasury (2019[42]), *Country and Regional Analysis: 2018*.

Core Cities rely heavily on road transport

The United Kingdom records a high use of passenger cars. In 2016, car trips represented 85% of the passenger-kilometres travelled, above the EU average (Table 1.2). When it comes to freight, the modal share of road transport is even higher and significantly above the EU average. At the same time, low investment and insufficient funds for road maintenance have increased the concerns about the deteriorating state of the existing infrastructure (OECD, 2013[39]).

Table 1.2. Roads are used heavily for both transportation and freight

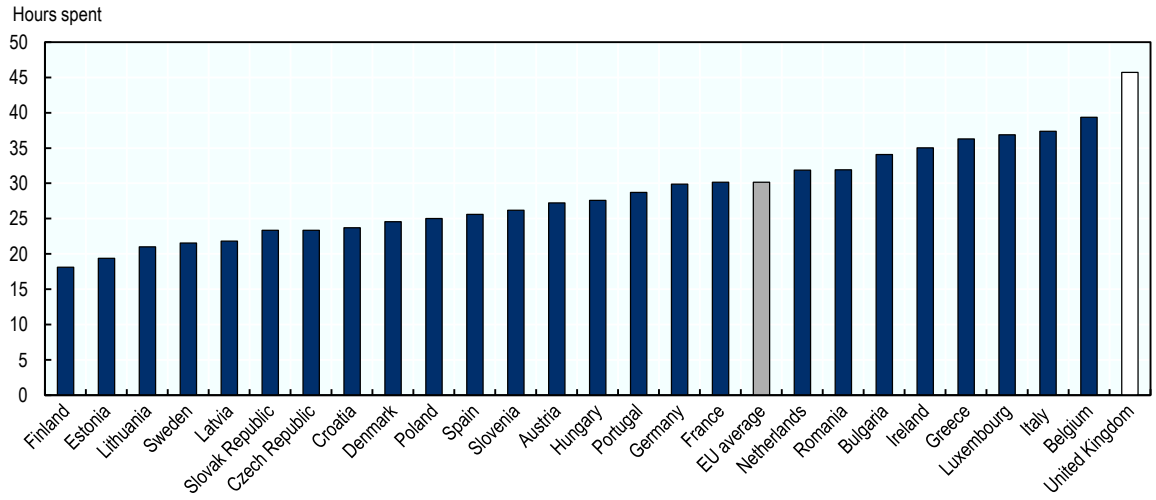
	Passenger transport (% of each mode)				Freight transport (% of each mode)			
	Cars	Buses and coaches	Railways	Tram and metro	Roads	Railways	Inland waterways	Pipeline
UK	85	4.6	8.7	1.7	87.2	8	0.1	4.7
EU-28	81.3	9.3	7.6	1.8	72.8	16.6	5.9	4.6

Note: Table presents modal split (in percentages) for passenger and freight transport in 2016.
Source: European Commission (2019[43]), *Transport in the European Union*, European Commission.

As a consequence of the strong reliance on cars, traffic congestion in the UK is the worst European country in terms of time spent in traffic (Figure 1.22). According to INRIX, a US-based company that collects traffic-related data, drivers in the UK lost an average of 178 hours a year due to congestion, costing UK drivers GBP 7.9 billion in 2018, an average of GBP 1 317 per driver. In addition to cost on private drivers, road congestion also slows freight movement across the UK, which increases the cost of transportation and undermines the potential of connectivity across cities through input-output linkages. The delays due to road congestion increase transport costs for firms and harms their competitiveness. These negative effects of congestion on individuals and firms increase the costs of agglomeration and limit productivity gains.

Figure 1.22. The UK has the worst road congestion in the EU

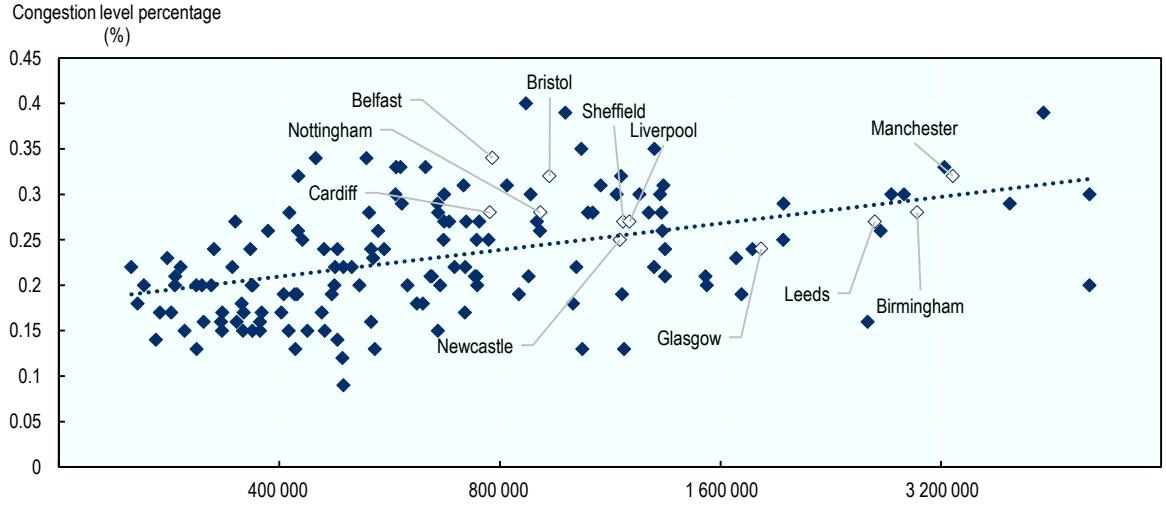
Hours spent in road congestion annually, in 2017



Note: The figure presents hours spent on road congestion by the average driver every year. The indicator assumes two 30-km trips per day (morning peak and evening peak) and 220 working days. It takes into account all major roads in the EU for which data is available.
Source: European Commission (2018[44]), *Road Transport Performance in Europe,* European Commission

Core Cities suffer from congestion relative to their size. Figure 1.23 plots the population size of a city (horizontal axis) and the congestion level percentages which represent the extra travel time experienced by drivers (vertical axis). For example, a congestion level of 32% in of Bristol means that an average trip takes 32% more time than it would in completely uncongested conditions. The figure plots the relationship between the city size and congestion level for 163 European cities in 18 countries. The trend line shows that as the city size increases, congestion levels also increase. Cities that are above the trend line have a higher degree of congestion, while those that are below the trend have a lower degree of congestion.[6]

Figure 1.23. Congestion is high in Core Cities



Note: The figure presents the congestion level percentage (vertical axis) and population size (in log scale, horizontal axis) for 163 European cities in 18 countries, excluding capital cities, for which data is available.
Source: OECD calculations based on (OECD, 2019[6]), OECD Regional Statistics (database) and congestion data from TomTom (2019[45]), Traffic Index 2019 (accessed September 2019).

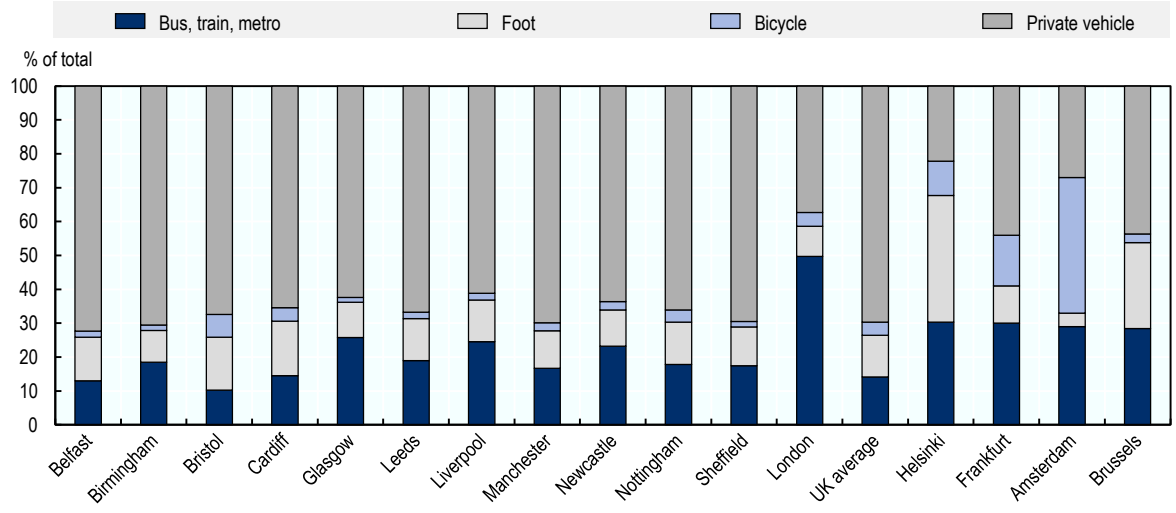
Better public transport is crucial

Urban transportation in Core Cities is highly reliant on private vehicles (i.e. cars) in Core Cities and in the UK (Figure 1.24). On average 61.2% of the commutes in the Core Cities are made in private vehicles, which is almost double the rate of London (33.5%) and much higher than what is observed in other comparable European cities, such as Frankfurt (44%) and Helsinki (22%). The high reliance on private vehicles is mainly due to the low use of public transportation in Core Cities (16.2%). Other soft forms of transportation, such as cycling and walking, also remain limited in the Core Cities (2.5% and 11.2% respectively).

The low mode shares of public transport are one of the reasons for the high levels of congestion documented above. Moreover, the strong reliance on road transport is increasingly problematic as it is a major roadblock in the urgent transition to a low carbon economy. While it is beyond the scope of this report to analyse the determinants of mode shares in detail, it is likely that insufficient investment in public transport is at least partly to blame for the low levels of public transport ridership.

Figure 1.24. Modal share in Core Cities and international peers

Modal share in urban transportation, 2011



Note: The figure presents the share of each transportation mode in urban mobility in 2011. Data for Helsinki is from 2016, for Frankfurt from 2015, for Amsterdam from 2014 and for Brussels from 2010. Core Cities correspond to local authority unit boundaries. Cities outside of the UK correspond to their respective administrative borders.
Source: OECD calculations based on census data provided by National Official Labour Market Statistics (NOMIS[5]) and Northern Ireland Statistics and Research Agency (NISRA[9]) data. Data for Brussels, Helsinki, Frankfurt and Amsterdam come from (EPOMM, 2020[46]) (accessed August 2019).

One indication of low levels of public transport infrastructure can be found in the number of light rail and metro systems that are operated in UK cities. Only nine metropolitan areas in the UK are covered by metro or light rail networks (Department for Transport, 2018[47]). Notably, large Core Cities, such as Leeds with approximately 500 000 inhabitants, do not have a light rail system. In contrast, metro and light rail networks are much more frequent in many other OECD countries. For example, Germany, where light rail systems are particularly common, operates metro or light rail systems in more than 60 cities (Light Rail Transport Association, 2018[48]).

The power of an efficient metro system to transport people can be illustrated by a striking fact. With 1.7 billion annual journeys, the London metro system[7] transported just as many passengers as the entire

UK National Rail Network (Office of Rail and Road Transport, 2018[49]; Transport for London, 2019[50]). Developing public transport systems of comparable quality in Core Cities will be necessary for productivity levels to catch up with its potential.

Moreover, greater efforts should be made to invest in cycling infrastructure, such as protected cycle paths. As shown in Figure 1.24, the share of trips made on bicycles in Core Cities and the UK more generally is well below that of comparable cities in other European countries. Investing in cycling infrastructure is a critical element to increase the cycling mode share and thereby desaturate congested roads (Krizek, Barnes and Thompson, 2009[51]). Likewise, the walkability of Core Cities should be improved, both by securing roads for pedestrians and building footpaths as well as by ensuring a compact urban development that favours walking. Such investment into soft infrastructure usually is considerably cheaper than increasing road capacity but can nevertheless have considerable effects on modal shares and congestion.

While better connectivity will increase overall productivity levels (Duranton and Puga, 2004[52]), the possibility to access jobs outside of one's own neighbourhood is vital in poorer neighbourhoods where employment options within the neighbourhood are limited (Mayer and Trevien, 2017[53]). At the same time, residents in these neighbourhoods are especially likely to lack access to their own car and are therefore reliant on good public transport. More generally, public transport investments are essential elements of inclusive growth strategies, as they generate economic growth while benefitting especially low-income households.

Building the required infrastructure to achieve a significant shift in the modal share from road transport to other forms of transport calls for significant investments. An innovative solution to fund this is the use of land value capture. Land value capture is the process of capturing gains in land values that have been caused by public policies, such as infrastructure investments and rezoning decisions. It ensures that rising land values through public actions benefit the general public instead of creating windfall gains to landowners.

A wide range of well-established land value capture instruments exists, including land value taxes, development fees and betterment levies. However, even though land value capture is appealing based on equity and efficiency considerations, and has potential to raise substantial revenues, few governments use it on a large scale and it is underutilised in the UK (House of Commons Housing, 2018[54]). To tap into this funding source, the national government should expand the possibilities for local authorities to deploy land value capture. Yet, in parallel, Core Cities should explore possibilities to use land value capture within the existing legal framework, as experience has shown that cities often have greater flexibility than expected to employ some land value capture instruments.

Core Cities need the powers to regulate local public transport effectively

Strong and well-functioning metropolitan transport authorities are essential to provide effective public transport in large cities. OECD research has shown that the satisfaction of residents with public transport provision is significantly higher in metropolitan areas where such transport authorities exist than in metropolitan areas where they do not exist (OECD, 2015[2]).

The need for effective regulation at the metropolitan level is reflected in bus ridership statistics in the UK. Since the deregulation of bus services outside of London in 1986, annual bus journeys in metropolitan areas outside of London (including non-Core Cities) have declined from 1.6 billion to 0.9 billion in 2017. While deregulation has caused intense competition on profitable bus routes, it also led to insufficiently co-ordinated route networks and timetables as well as reduced service in areas with weaker demand.

In contrast, bus journeys in London, where bus service has been consistently regulated by a strong transport authority annual ridership increased from 1.2 to 2.2 billion journeys (Department for Transport Statistics, 2019[55]). While this discrepancy is not necessarily entirely due to the differences in the regulatory

regime, the abovementioned evidence strongly suggests that differences in regulation contributed to the decline of bus transport in urban areas outside of London.

Most large cities in OECD countries have public transport authorities with significant regulatory responsibilities and user satisfaction with public transport is significantly higher where they exist compared to where they do not exist (Ahrend, Gamper and Schumann, 2014[56]). While the characteristics of such transport authorities differ in important aspects, international experience shows that three regulatory competencies are important to operate a well-co-ordinated public transport system that is convenient to use (OECD, 2015[3]):

1. Determining the route network.
2. Regulating timetables and establishing minimum requirements for service provision.
3. Establishing a unified pricing and ticketing scheme across modes of transport and operators.

The degree to which public transport in Core Cities is regulated through metropolitan public transport authorities varies. While metropolitan transport authorities have been established in some Core Cities, they are still absent in others (Urban Transport Group, 2018[57]). Moreover, where they exist, their regulatory competencies tend to be weak. In some Core Cities, such as Glasgow, discussions are ongoing about creating or strengthening metropolitan transport authorities.

Sufficiently funded metropolitan public transport authorities with appropriate regulatory competencies should be established in all Core Cities. Given the need to co-ordinate public transport provision across an entire metropolitan area, transport authorities should be placed under the responsibility of combined authorities and should at least cover the entire jurisdiction of the combined authority. Yet, as examples from other OECD countries show, it can be effective to extend the jurisdiction of a metropolitan transport authority beyond the limits of the metropolitan area to connect it to the wider metropolitan region (OECD, 2015[3]). Dedicated transport authorities, moreover, can encourage the development of administrative capacity at the regional level.

Where transport authorities exist, they should also have responsibility for investments in transport infrastructure. The *OECD Principles for Public Investment across Levels of Government* highlight that investment decisions need to take regional and local conditions into account (OECD, 2014[58]). Transport infrastructure investment decision are highly-placed dependent and metropolitan transport authorities are likely to have the required local knowledge. As they operate at a metropolitan scale, they are at the same time more likely to take a regional perspective than local authorities. Moreover, giving metropolitan transport authorities the responsibility for transport infrastructure investments helps to ensure that these decisions are aligned with the policy decisions mentioned above.

Reducing car-based transport is urgent for environmental and public health reasons

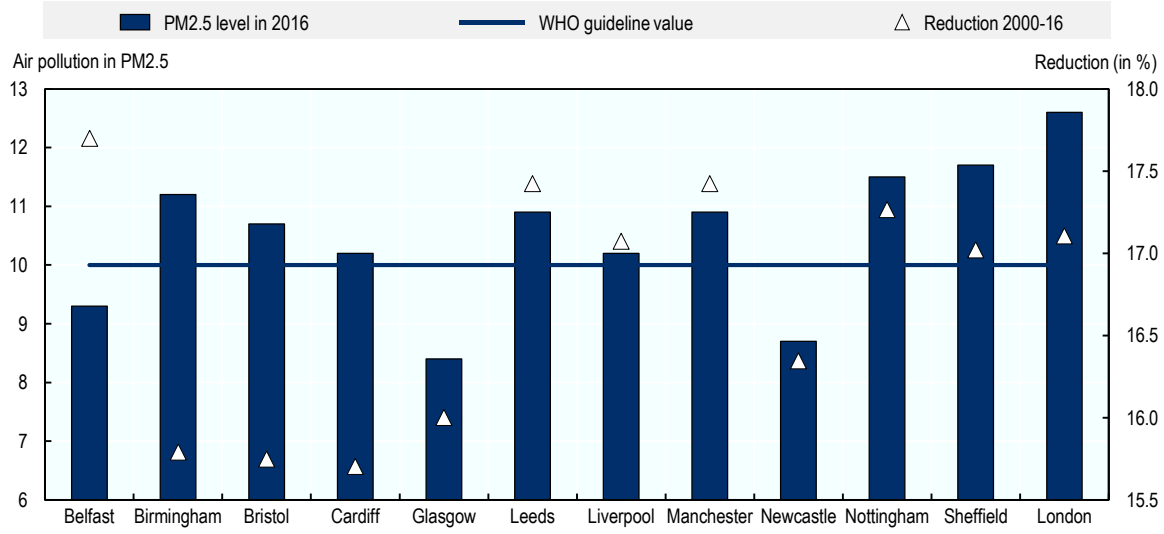
Strengthening public transport and soft modes of transportation is not only a means to increase productivity. It is also a public health measure. Air pollution caused by cars has serious effects on human health and is responsible for an alarming number of premature deaths. In Europe, exposure to air pollutants such as fine particulate matter 2.5 (PM2.5), NOx and ozone is estimated to have caused the death of 238 400 people in 2016 (OECD, 2016[59]). Moreover, air pollution contributes to respiratory, cardiovascular diseases and lung cancer. Road transport is a major contributor to urban air pollution in developed countries. The UK Department for Environment, Food and Rural Affairs and Department for Transport, road transport is responsible for 80% of roadside NOx concentrations, which is a prevalent issue in urban areas in the UK (Department for Environment, Food and Rural Affairs/Department for Transport, 2017[60]).

Despite significant declines in air pollution levels, many Core Cities still exceed the World Health Organization (WHO) threshold of 10µ/m³ average annual PM2.5 concentration (Figure 1.25). While pollution levels are low compared to many other OECD countries, the adverse effects of such air pollution

on health are still serious enough to require urgent action. Moreover, there is also an economic case for greater efforts to reduce air pollution. The global healthcare costs due to air pollution-related illnesses are approximately GBP 20 billion annually, while 1.2 billion working days are lost each year.

Clean Air Zones will be implemented over the coming years in several Core Cities. Vehicles entering these zones will have to pay a fee if they do not meet emission standards. The amount of the fee will depend on the type of vehicle and varies by city. Such policies are effective in reducing car traffic by highly polluting vehicles and should be extended to other Core Cities. However, to be most effective, the introduction of Clean Air Zones needs to take place in parallel with improvements to public transport to provide alternative means of transportation.

Figure 1.25. PM2.5 air pollution in Core Cities



Note: Fine particulate matter (PM) is a mixture of very small particles and liquid droplets released into the air. PM2.5 refers to suspended particulates less than 2.5 microns in diameter that are capable of entering the bloodstream and causing significant health damage. Most fine particulate matters come from fuel combustion, including from vehicles, power plants, factories and households. Data refers to functional urban areas (FUAs).
Source: OECD calculations based on OECD (2019[6]), OECD Regional Statistics (database) (accessed August 2019).

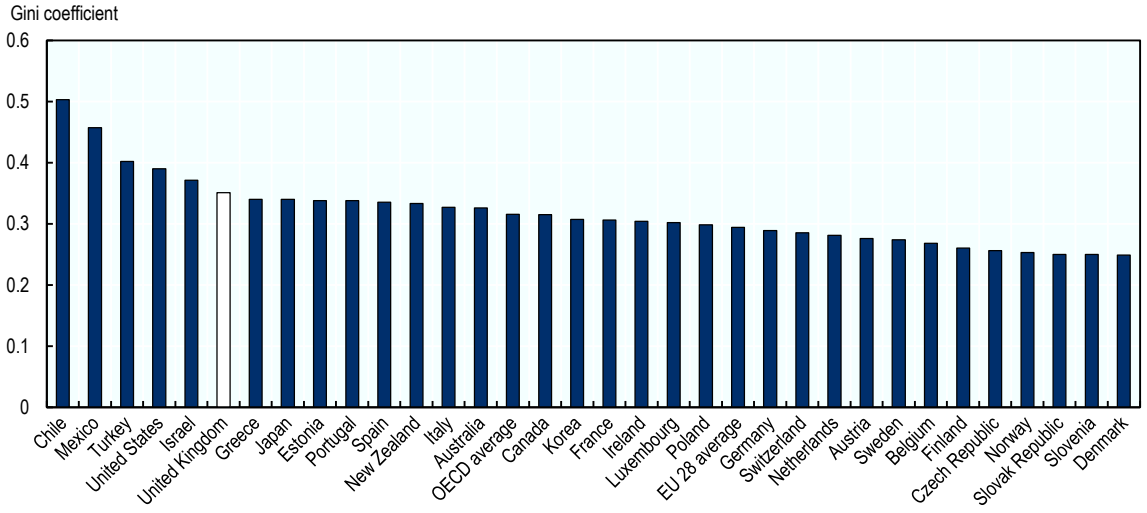
Inequality and segregation of income needs to be addressed

Inequality has been rising in most OECD countries in recent years (Cingano, 2014[61]). The difference between the top earners and the bottom is an indicator of how the economy performs in terms of the distribution of the gains of economic growth. Inequalities in the UK are an important challenge. Despite some marginal improvement in the past years, the UK is still one of the OECD countries with the largest income inequality (Figure 1.26).

Income inequalities within cities are especially problematic if the city suffers from income segregation, geographical concentration of households with a similar income level. When income inequality and income segregation are severe, it generates vicious circles of sustained exposure to disadvantage, which leads to more inequality and disadvantage (Chetty et al., 2014[62]). Such neighbourhood effects have especially important consequences in early childhood. Studies show that children who move to higher-income neighbourhoods will have higher educational attainment, higher incomes and lower rates of single parenthood later in life (Chetty, Hendren and Katz, 2016[63]).

Figure 1.26. The UK is one of the most unequal countries in the OECD

Gini coefficient (after taxes and transfers, 2016)



Note: The Gini coefficient is based on the comparison of cumulative proportions of the population against cumulative proportions of income they receive and it ranges between 0 in the case of perfect equality and 1 in the case of perfect inequality.
Source: OECD calculations based on OECD (2016[64]), *OECD Factbook 2015-2016*.

All Core Cities have very similar rates of income inequality as measured by the Gini coefficient that is close to the average of cities in the UK and lower than those of London.[8] Yet, given the overall high level of inequality, these rates of income inequality are still high by international standards. Moreover, the UK experienced a strong increase in segregation at the neighbourhood level between 2001 and 2011 (the latest period for which such data is available). The degree of segregation rose particularly strongly in several Core Cities, including in Cardiff, Leeds, Liverpool, Manchester and Sheffield (OECD, 2018[65]). Thus, there is an increasing risk that self-enforcing vicious cycles emerge, in which inequality in combination with segregation leads to perpetuating patterns of inequality.

Income levels in Core Cities also vary between different areas of the same FUA. Income levels in Core Cities are on average 6% lower than the commuting zone within their FUAs (Figure 1.27). With the exception of Cardiff and Nottingham, residents in the suburban commuting zone are richer than residents in city centres. This gap is not unique to Core Cities and it is observed across the UK and also countries such as Austria, Belgium, Estonia, France Germany, the Netherlands and Sweden (OECD, 2018[66]).

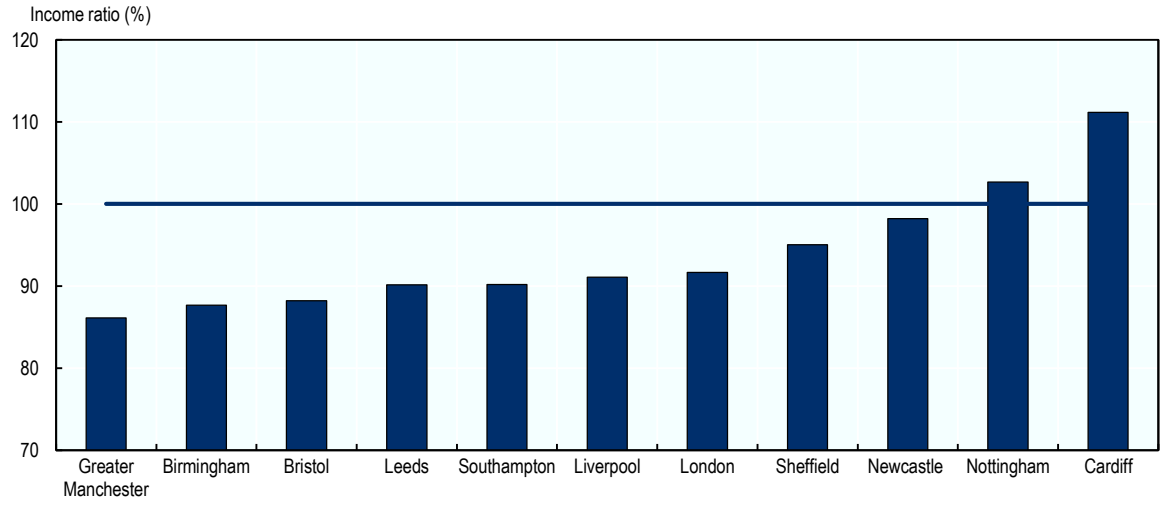
Inequality has many dimensions and there are even more ways to measure it. While the Gini coefficient is a well-defined and widely used concept, it only captures some of the aspects related to inequality. In particular, the Gini coefficient does not provide detailed information on poverty levels and other indicators are better suited to capture it. A particularly broad measure of poverty at the neighbourhood level is the Index of Multiple Deprivation. It combines information on factors such as income, employment, education, health, crime, housing and access to services. Neighbourhoods that fall in the bottom 10% of the ranking are considered to be deprived.

On average, 36.2% of the neighbourhoods that are located in the centre of the Core Cities are part of the 10% most deprived neighbourhoods in the UK. Thus, the share of deprived neighbourhoods within the centres of Core Cities is more than 3.1 times higher than the UK average. The situation is relatively better in commuting zones than in Core Cities. Within these suburban areas, only 12.3% of the neighbourhoods are among the most deprived and towns throughout the UK only have 9% deprived neighbourhoods (ONS,

2019[67]). This shows that despite signs of gentrification in city centres, deprivation is still much more common within large cities than in their surrounding areas.

Figure 1.27. Income levels are higher in the commuting belts around Core Cities

Income difference between Core City and its commuting zone, 2016



Note: The figure plots the percentage difference of income in Core Cities relative to the commuting zone in each functional urban area. Income levels are based on the sum of the gross income of every member of the household plus any income from taxes and benefits. Data for Belfast and Glasgow are not available.
Source: OECD calculations based on National Official Labour Market Statistics (NOMIS[5]) data.

Box 1.2. Rehabilitation of offenders in Liverpool

The rate of reoffending amongst those leaving prison in Liverpool is exceptionally high. Local partners recognised that the cost of this failure was both morally unacceptable, an expensive drain on public funding and a drag on local productivity. Determined to create a radical improvement in outcomes the chief executive of the city council, the chief constable of the police and the governor of the local prison service gathered a group of strategic stakeholders including probation, housing providers, businesses and the local community and voluntary sector to identify ways of reducing reoffending rates in the city.

The vision is to support the capabilities of prisoners to improve their housing, health, employment, social and economic outcomes, reducing reoffending and supporting prisoners' active contribution to lead full and active lives within the communities of Liverpool. Many of the ex-offenders have genuine entrepreneurial skills that if redirected can make a positive contribution to productivity.

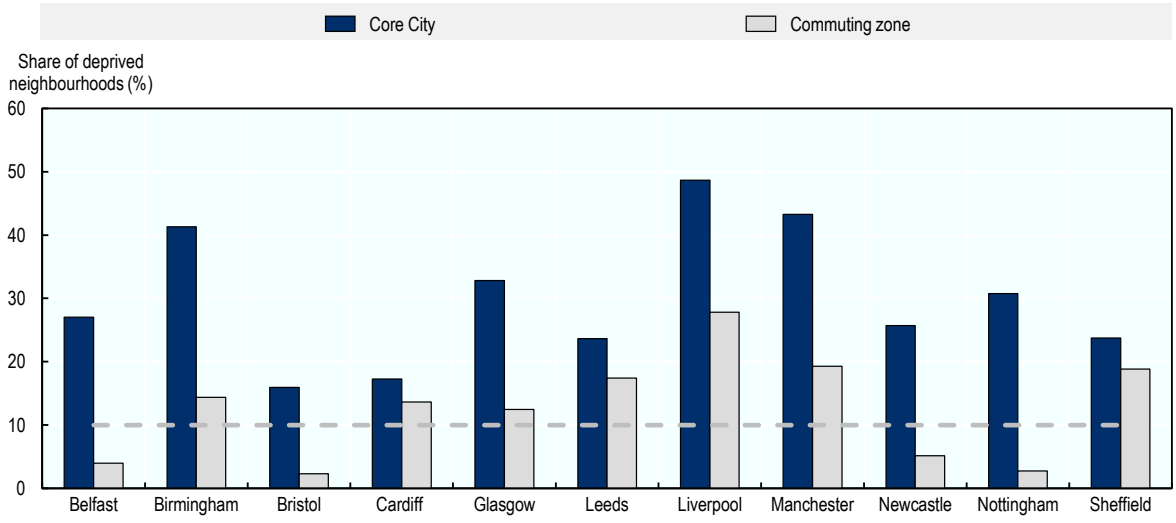
Access to good employment opportunities, within the prison system and upon release, has a positive effect on reducing reoffending and ensuring there is a meaningful and equivalent offer of employment and opportunity will rival the offer of criminality. But to be successful, the initiative must ensure that there is a better and more joined-up response from the support agencies that is tailored to the needs of each individual – from skills, training and employment to housing, benefits and health/well-being. Partners aim to work together at scale to change the system and address the failures that are causing high reoffending rates, creating the flexibility to do things differently. The potential public service savings are immense as are the improved outcomes for the individuals, local productivity and society.

Source: Core Cities.

In terms of deprived neighbourhoods, there are significant variations across Core Cities which require breaking down these figures separately by city (Figure 1.28, Panel A). Among the Core Cities, Liverpool, at 49%, has the highest proportion of highly deprived neighbourhoods, followed by Manchester (43%), Birmingham (41%) and Glasgow (33%). It is important to note, however, that despite having high rates, between 2010 and 2019, Liverpool and Manchester reduced the proportion of highly deprived neighbourhoods significantly by 2.2 and 2.3 percentage points respectively. This improvement is especially important because it occurred against a backdrop of overall stable rates of highly deprived neighbourhoods in Core Cities.

Figure 1.28. Core Cities have a high share of deprived neighbourhoods

2019 or latest available year



Note: Share of deprived neighbourhoods. The dashed line corresponds to the UK average of 10%. Data for England is from 2019, Wales 2016, Scotland and Northern Ireland from 2017
Source: OECD calculations based on statistics provided by the Ministry of Housing, Communities and Local Government, Scottish Government, and Welsh Government (accessed October 2019).

Differences in the geographical extent of a local authority influence the share of deprived neighbourhoods. As some Core Cities have large and relatively prosperous suburban areas within their boundaries, their share of deprived neighbourhoods tends to be lower. For instance, Leeds covers more than 550 km² and has 482 neighbourhoods, of which 114 (24%) are considered deprived (Figure 1.28). In contrast, Liverpool covers a much smaller area of 112 km² and has only 298 neighbourhoods, of which 145 (49%) are deprived.

Housing supply is key for inclusive growth

As the cities grow economically or in population, this increases the demand for housing, creating pressure on the housing market. If the regulatory or geographical conditions allow construction of new housing, the increase in housing demand would be met with additional housing supply. However, if due to geographical constraints or planning regulations the new constructions are limited, increasing demand leads to rising prices (Glaeser, Gyourko and Saiz, 2008[68]). When measured by the long-run responsiveness of housing supply to price changes, the United Kingdom is at the lower end in the OECD (Caldera Sánchez and

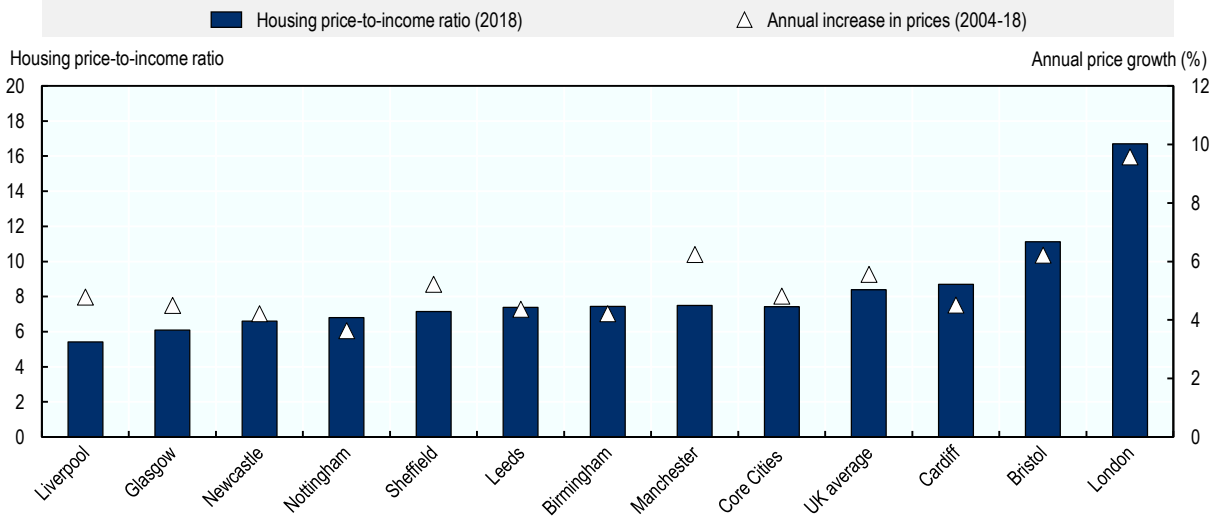
Johansson, 2011[69]). In other words, an increase in housing demand does not lead to strong increases in housing supply and is instead reflected in increasing prices.

Rising housing prices have important distributional consequences. They shift wealth from renters and first-time buyers to owners. Since owners tend to be wealthier, an increase in house prices tends to have regressive distributional effects. Moreover, rising housing also harm firms. Usually, they go hand in hand with higher prices for commercial property and therefore increase the costs that firms face when locating in a particular city. Moreover, rising housing prices also affect the costs of firms indirectly through their effects on wages. If housing costs rise, workers will demand higher wages to be compensated for the increased costs of living.

Housing costs in Core Cities are high by international and historical standards but remain affordable relative to the rest of the UK. The average price-to-income ratio in Core Cities is 7.4 (Figure 1.29) compared to the UK average of 8.4. The ratio shows how many average annual salaries are required to pay for an average home. It is not a perfect measure of affordability because it does take mortgage costs into account, but it allows for basic international comparisons. According to this measure, even Liverpool, the most affordable city, has a price-to-income ratio (5.5) that is above the average of a globally representative sample of cities (4.9) and well above the threshold typically considered to define affordable. With a price-to-income ratio of 11.1, Bristol is facing the greatest affordability challenges.

Figure 1.29. Housing costs in Core Cities are high by international standards but moderate by UK standards

2018



Note: House price-to-income ratio (left axis) is measured as the ratio between average house price and the average annual earnings in the city. The right axis gives the annual growth in the current average house price in each city between 2004 and 2018. Cities correspond to the primary urban area based on built-up areas and may include more than one local authority. The Core City average corresponds to unweighted averages of Core Cities excluding Belfast, for which data is unavailable. The average for Britain is the unweighted average of 63 cities for which data is available.
Source: OECD calculations based on Centre for Cities (2019[16]), Cities Data Tool (database) (accessed August 2019).

Restrictive land-use regulations and planning policies in areas with high demand are one of the leading causes of high housing costs (Hilber and Vermeulen, 2016[70]). For example, local authorities have implausibly low targets for the construction of new housing units because they aim at reducing the number of vacant housing units. This can result in a high refusal rate for planning applications and can explain the

weak response of housing supply to growing demand mentioned above (Cheshire, Hilber and Koster, 2018[71]). To prevent the rise in housing prices, local planning policies should accommodate housing development in areas with high demand, while ensuring compact urban development and protecting areas with less demand from over-development. Moreover, measures should be taken to ensure that housing construction starts within a reasonable time frame once planning permission has been granted.

Brownfield redevelopment prevents the fragmentation of the urban fabric

Beyond planning policies, other factors influence urban development and housing supply. It is widely accepted by planners that urban development should take place preferably on brownfield and greyfield sites.[9] Brownfield and greyfield redevelopment closes gaps in the urban fabric that can lead to disconnected and isolated neighbourhoods that are prone to social problems. Moreover, it prevents sprawl and reduces the pressure for development on greenfield land.

However, brownfield sites are often polluted and require costly decontamination before they can be redeveloped. Often, the costs of remediation limit the economic viability of brownfield sites. In cities with weak real estate markets or in peripheral locations, the costs of remediation can easily exceed the returns from redevelopment. While the polluter pays principle stipulates that the businesses that caused environmental damage are responsible for remediation, there are practical limits to the principle. For example, firms that own brownfield sites might go out of business and are unable to pay or ownership of brownfield sites is unclear. Accordingly, a study of 460 contaminated sites across England found that in approximately 40% of the cases, the polluter did not bear the costs of remediation (Environment Agency, 2016[72]).

While greyfield sites do not require remediation by definition, other challenges can still prevent effective redevelopment. Unknown ground conditions, proximity to other buildings and small or irregularly shaped plots can increase construction costs. Moreover, many greyfield (and brownfield) sites are in locations that are difficult to redevelop because they are within neighbourhoods that are undergoing transitions from industrial or commercial use to residential use but still have active businesses in the vicinity.

In order to encourage the redevelopment of brownfield and greyfield sites, the UK provides financial incentives through two channels. Most importantly, there are tax breaks for housing construction on brownfield sites. Of lesser importance are direct subsidies for brownfield redevelopment administered through Local Enterprise Partnerships. While no reliable data exists, uptake of these measures is considered to be low because of their discretionary nature and a complex application procedure (Environmental Industries Commission, 2016[73]).

Planning policy should prefer development on brownfield land while at the same time ensuring that sufficient development takes place to accommodate demand from growing populations and shrinking household sizes. To cover the costs of remediation, local authorities should emphasise the polluter pays principle. However, where it is not possible to charge the polluter for the costs or where other financial obstacles prevent the redevelopment of brownfield and greyfield sites, financial incentives should be used to encourage redevelopment. Incentivising the redevelopment of brownfield and greyfield sites with public funds is justified by the considerable positive externalities that can emerge from such projects. Especially when they are located in strategic locations, such regeneration projects can be decisive factors in the economic revitalisation of much larger neighbourhoods (Maliene, Wignall and Malys, 2012[74]).

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Notes

[1] The OECD functional urban area definition is designed to provide an internationally comparable definition of urban areas (see Box 1.1). For this reason, it does not necessarily correspond to local definitions of city-regions, travel-work-areas and similar concepts. For instance, Core Cities' city-regions are home to 20 million people and generate about 26% of GVA, in 2017 (ONS, NISRA).

[2] GVA and GDP are two closely related measures of economic activity. Whereas GVA is net of taxes and subsidies, these are included in GDP. Due to varying data availability, this report uses both measures. While GVA and GDP are the most widely available clearly defined measures of economic activity, they have the drawback that they do not cover important aspects of economic activity, including unpaid social activities, such as childcare, as well as the informal economy.

[3] In 2018, male and female employment rates in Core Cities are around 75% and 67% respectively. Both rates are about 5 percentage points lower than the UK average, which is 80% for men and 71% for women.

[4] No information is available for Belfast for this and several other outcomes mentioned throughout the report, as the corresponding data is not available for Northern Ireland. To facilitate the comparison of Belfast with other Core Cities, enhancing data availability for Norther Ireland would be beneficial.

[5] The number of public transport users is highly dependent on the quality of public transport and thus on public transport investment. It is therefore not an appropriate indicator to determine whether public transport investment is adequate.

[6] Note that the differences between the exceptionally high congestion levels for the UK as a whole in Figure 1.22 and the moderately high congestion levels for Core Cities in Figure 1.23 are likely due to the fact that Figure 1.22 is a measure of congestion during peak hours while Figure 1.23 is a measure of congestion across all trips throughout the day.

[7] Including the London Underground, London Overground and Docklands Light Rail

[8] In terms of inequality, OECD analysis using data from Centre for Cities show that Core Cities as a whole has a Gini Coefficient of 0.39, which is at the national average. Despite marginal improvements in the last few years, inequalities remain an issue in Core Cities and the rest of the UK.

[9] Greyfield sites are abandoned or disused plots of land that, unlike brownfield sites, do not require substantial remediation activities to return them to productive use.