

UK Economic Outlook

7 September 2022



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Our latest analysis of the UK economy focuses on how geopolitical changes and the rising cost of living may impact the outlook for GDP growth, inflation, shape of economic recession, and where economic growth could come from as the UK greets its new prime minister.



Key points

1

The UK economy has struggled to grow with most expenditure categories shrinking except business investment. Headline gross domestic product (GDP) data shows month-on-month GDP dropped by 0.6% in June, closing Q2 2022 with a mild contraction of 0.1%. This was mainly due to a 0.4% fall in services – the UK's largest sector has more than offset growth in production (0.5%) and construction (2.3%) output. While all other expenditure categories fell in Q2 2022, business gross fixed capital formation (GFCF) showed signs of resilience, growing by a modest rate of 0.6%

2

The UK labour market is cooling, but labour shortages in some sectors are more acute, potentially leading to continued wage and price pressures. Sectors, such as information technology, human health, professional services, financial services, and accommodation and food, are likely to experience continued difficulties filling vacancies while pressure in the construction sector should reduce. Continued labour constraints could force high-skilled sectors to continue raising wages to secure top talent, exacerbating the current inflation issue. Despite pockets of strong wage growth, overall real wages have fallen from their all time high in Q4 2021 due to the impact of high inflation.

3

The UK growth outlook has deteriorated. We expect annual real GDP growth to average between 3.1% - 3.6% in 2022, followed by two years of slow, or even negative, real GDP growth. Our expectation is that year-on-year changes in economic output will range between -1.3% to 0.2% in 2023 and between -0.3% to 0.6% in 2024 under our harsh winter and mild winter scenarios. Our modelling predicts that the UK is likely to enter a recession as early as this year which implies a significant deceleration in economic activity in the second half of the year. Next year, we expect slow to negligible growth, as the cost of living crisis takes full effect, with households and businesses adapting to new and evolving circumstances, and the current impact of tightening monetary policy transiting across the real economy.

4

We anticipate that prolonged geopolitical uncertainty, the ongoing cost of living crisis and weak consumer sentiment could weigh down on growth across all sectors. Seemingly high growth in 2022 for some sectors, such as accommodation, entertainment and administrative services are somewhat driven by weak 2021 performance comparison or base effects. Financial services and real estate industries are expected to experience sluggish growth for the rest of this year, as economic uncertainty weighs down on demand, but should gradually regain strength as pressures start to ease. Construction, transport, energy and retail activities are also likely to slow down as households continue to cut down on home improvements, travelling and other discretionary spending, but this will start to improve towards the end of 2023 as households become more resilient. Manufacturing is likely to grow at modest rates as supply chains continue to adjust.

5

Regional output projection shows a mixed picture with some regions regaining their pre-pandemic position while others drift further behind. London is likely to lead the pack this year with output growth standing around 0.7 ppts higher than the runner up (the East of England), and 0.8 ppts higher than the UK average, thanks to relatively strong growth in some of its key industries, and residuals from base effects. We also anticipate below-average growth in economic output among Northern areas, mainly due to (i) their sectoral structure having a greater proportion of lower productivity sectors, such as wholesale and retail; combined with (ii) larger productivity gaps with the national average within a sector. Despite leading recovery in 2021, Northern Ireland's strong albeit fragile economic performance is likely to fall back in 2022, falling by around 0.5 ppts below the UK average. This is largely because of the weaker performance in sectors that the region concentrates on, such as manufacturing, and wholesale and retail.

6

The UK inflation outlook is highly uncertain. Our scenario analysis suggests headline inflation could peak at anywhere from 13% to 22% next year, depending on the outlook for energy prices and where the government does not implement further energy price controls. Depending on which scenario realises, this could mean that household annual energy bills averaging between £3,400 to £6,900 assuming no further government support. The almost ten percentage point range in peak inflation of our scenario-based projections indicates how uncertain the energy outlook remains.

7

Within this highly volatile range, assuming energy prices follow their market implied paths as at the beginning of September means that headline inflation could peak at 17% in the first half of 2023. This is more than eight times higher than the Bank of England's target of 2% and the highest rate of inflation since 1980. Absent further government support, this means that household energy bills average around £5,100 next year. This will also lead to a significant decline in household living standards, with real wages potentially being around 7% lower than 2022 levels and leave the average worker around an additional £40 worse off a week and around £2,000 worse off a year.

8

If the government chooses to freeze household energy bills, then this could see inflation peak at between 10% to 13%, rather than the potential peak of 17% as indicated by the market implied paths for energy prices at the beginning of September. The height of this peak would depend on whether the government chooses to freeze energy bills at their current levels (since Apr-22) or at their Oct-22 levels. If energy prices were frozen at current levels, then this could even mean that we are at or close to the peak headline inflation rate of around 10%. However, there is a risk that the unwinding of this policy could see inflation pick-up again towards the end of this forecast horizon if high wholesale natural gas prices persist.

9

Weak productivity performance has been a persistent challenge for the UK economy but improving sectoral productivity in some regions - to at least the industry's median levels - could add £71.6bn to the UK's output. London and the South East are the only two regions to exceed average UK productivity levels, making closing the regional productivity gap more crucial to the levelling up policy as well as the overall UK economic growth. Our analysis suggests industry composition, variations in skills levels and labour activity are the most important factors in explaining differences in productivity across UK regional areas and so should be a particular focus of investment for both government and business.

Ten levers for future UK growth

As the UK's new prime minister takes office, significant policy and economic challenges remain. These include the ongoing geopolitical uncertainty, a stagflation economy (where high inflation and slow (or negative) growth co-exist), productivity gaps, and cost of living crisis to name a few. All sides of the political spectrum are looking for ways to promote economic growth and thus to grow government revenues and support household incomes. But the challenge is how to boost economic growth and where to look. In this report, we point out ten key areas of the UK economy where substantial and sustainable growth could come from.

1 **Embracing the full benefits of the digital age:**

The UK's digital skills gap has prevented the country from fully capturing the benefits of digitalisation, despite being one of the strongest in Europe in the technology and digital sectors. Policy interventions promoting upskilling and training could, therefore, drive GDP growth through digital upskilling by as much as £63bn a year.

2 **Boosting business investment for sustainable growth:**

The UK has historically invested at lower levels than most other advanced countries. Increasing business investment could provide a short-term boost to economic activity, as well as drive the UK's productive capacity, which in turn supports the country's long-term economic growth.

3 **Improving performance of poor performing firms:**

The gap between the highest and lowest performing UK firms has been widening. Supporting low-productivity firms to develop workplace skills, encouraging more firms to export and facilitating great diffusion of innovation could help lagging businesses catch-up to the national average, and in time become leading firms.

4 **Reducing the economic inactivity rate:**

Economic inactivity has increased since the onset of the pandemic, particularly among the over-50s. Removing barriers to work for people both above and below pension age will help to reverse these trends. Similarly, there is an opportunity to increase economic activity through specific support for young people not in employment, education or training (NEETs).

5 **Boosting healthcare investment:**

There is a record number of people out of work due to long-term sickness in the wake of the pandemic. Increasing investment in pharmaceutical research and healthcare spending to match that of other advanced economies could, therefore, provide a double dividend both through the direct economic impact and through boosting the nation's overall wellbeing.

6 **Promoting a high-skilled economy through higher education:**

The UK has a lower share of young people going to work with a tertiary qualification than some advanced countries, such as Canada, Korea and the US, but still higher than the OECD average. However, on a downward trajectory, its apprenticeships fell to the lowest level in a decade in 2020/21 as the pandemic took its toll. Promoting higher education, upskilling and on the job training could contribute to closing the gap while driving economic growth through improving productivity and wages.

7 **Taking a step closer to closing regional income imbalances:**

The wide disparity in regional disposable income per person has largely been driven by gaps in regional productivity and economic activity rates. Making progress in the levelling-up agenda is key to closing these gaps. This will require a concerted effort, with coordination between central government, local government and businesses.

8 **Accelerating progress on trade agreements:**

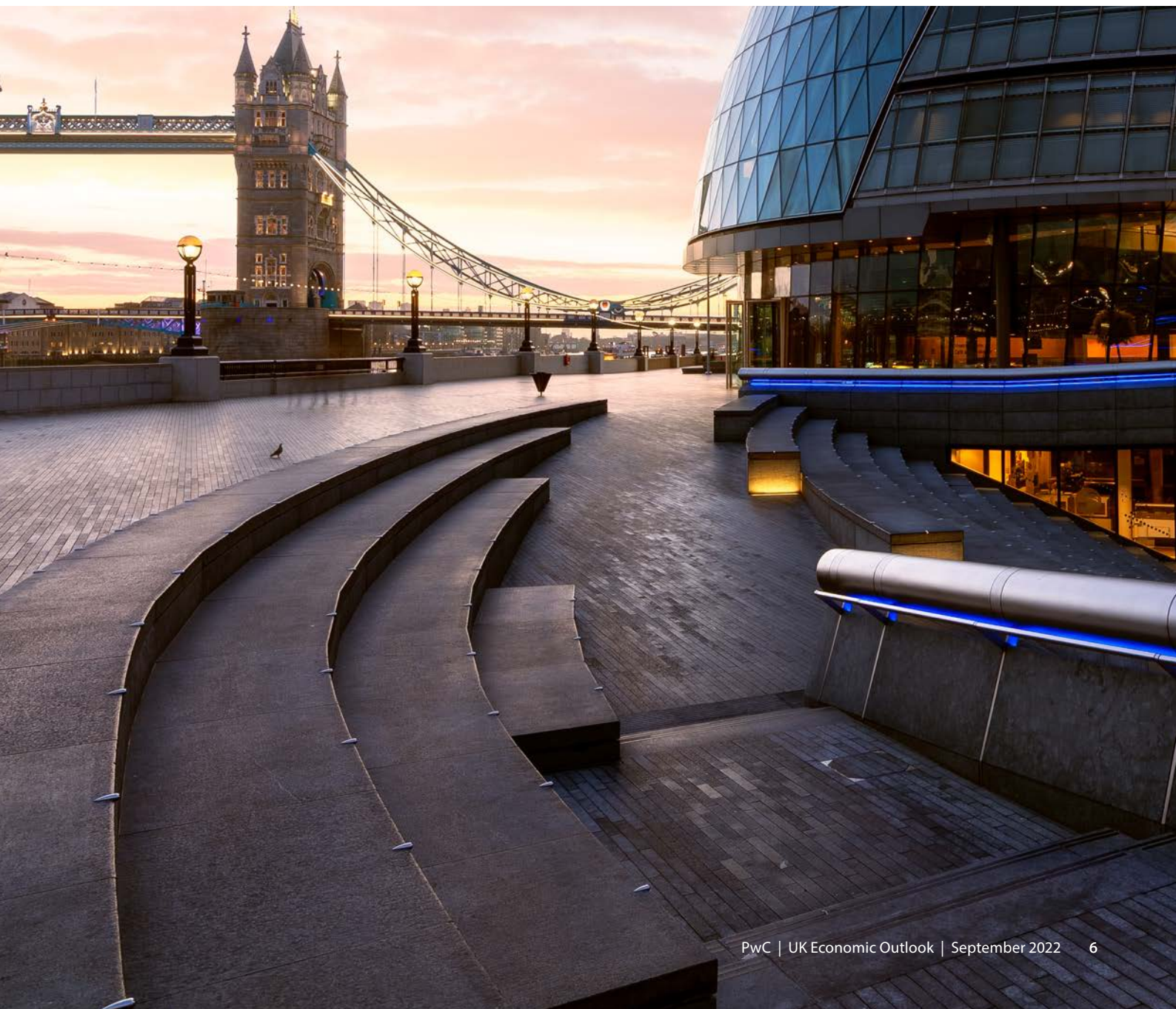
Boosting trade with our main trading partners, such as the EU and the US, through negotiating new free trade agreements (FTAs) could be key for trade growth. As a service-based economy, the UK would particularly benefit from reducing non-tariff barriers in services sectors. This could drive employment, production and productivity while contributing to pushing up average workers' wages and narrowing the gender pay gap. Regulatory alignment with the EU and seamlessly resolving trade challenges in Northern Ireland (NI) could reduce uncertainty and potentially drive the UK overall economic growth.

9 Reshoring critical parts of the supply chain:

Supply chain challenges, exacerbated by the pandemic and the war in Ukraine, have reshaped global trade, with deglobalisation and reshoring becoming more prominent. While reshoring could boost growth, reduce reliance on overseas suppliers and support the domestic labour market, an optimal balance between onshore and offshore production is needed to drive cost efficiency while mitigating risks effectively.

10 Accelerating the net zero progress for a more sustainable future:

Accelerating the implementation of the UK's Net Zero Strategy is not only vital to meeting its net zero target but also could contribute to the creation of new, sustainable, high value green jobs, and cutting energy costs. In seeking to mitigate the impacts of the current global energy security crisis, it is important for the Government to implement steps to improve energy resilience, energy efficiency and increase production of renewable energy going forward.



1. Recent performance of the economy

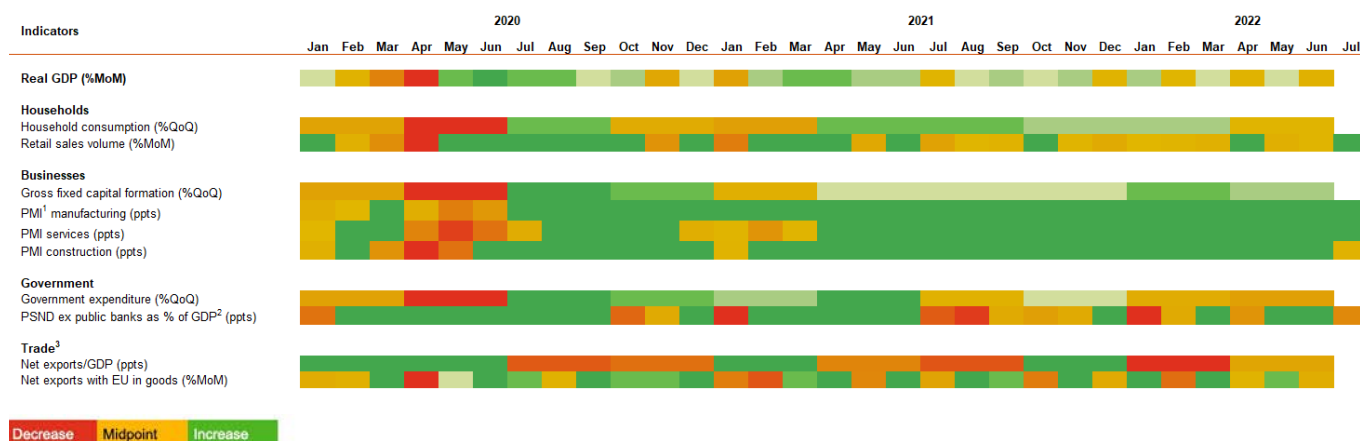
1.1. The UK economy: Heading for a challenging winter

The UK economy shrank by 0.6% in June, with polarised growth recorded at regional levels. The June 2022 economic output stood at 0.9% above its pre-pandemic level in February 2020. However, some regions have struggled to make a breakthrough beyond pre-pandemic levels, deepening the regional growth imbalance. Latest data shows London growing at the fastest rate of 2.3% in Q3 2021 and is now 1.3% above the pre-crisis level. Most regions, such as the North East, the Midlands and Wales, however, experienced a contraction of between 1.2% and 0.3%, and remain around 3.3% smaller than pre-pandemic levels. Given the persistent productivity gaps between UK regions (which we discuss in Section 3), it is likely these regional growth imbalances will widen in the short to medium term.

The quarter-on-quarter GDP changes in Q2 2022 returned to negative after just four quarters of consecutive growth. The economy is estimated to have contracted by 0.1% in Q2 2022, mainly due to a 0.4% fall in services. Despite strong recovery of consumer-facing services, such as hospitality, travel, and entertainment, a large drop of 5.4% in human health activities (including Test and Trace, vaccination activities and lateral flow orders) was responsible for the contraction in the services sector. The drop in output of services, the UK's largest sector, has more than offset growth in production (0.5%) and construction (2.3%) output. In other words, without the impact of shrinking human health activities in Q2, the overall GDP figure would have been positive.

Broken down by expenditure components, UK GDP growth has recovered in most categories while net trade still struggles. Figure 1.1 highlights the recent movement of some key indicators relating to the four GDP components³ since the start of the pandemic.

Figure 1.1: Most macro indicators show early signs of gradual slowdown across the economy



Sources: PwC analysis, Office for National Statistics (ONS), S&P Global

Note:

(1) Purchasing Managers Index (PMI) is a survey-based economic indicator. PMI values range between 0 and 100 with levels of 50.0 signalling no change compared to the previous month. Readings above 50.0 signal an improvement or increase on the previous month. Readings below 50.0 signal a deterioration or decrease compared to the previous month. The greater the divergence from 50.0 the greater the rate of change.

(2) PSND ex/GDP is defined as public sector net debt, excluding public sector banks and the Bank of England, as a percentage of GDP.

(3) Trade excluding precious metals, such as non-monetary gold.

¹ONS – [link](#)

²ONS – [link](#)

³GDP by expenditure components consist of household consumption, businesses' gross capital formation, government expenditure and net trade. Source: ONS ([link](#))

Household consumption contracted 0.2% quarter-on-quarter in Q2 2022, breaking the previous four-quarter trend of consecutive growth. The cost of living crisis has seen households cutting back on both discretionary and essential spending, with spending on energy and eating out being hit the hardest according to our [PwC Consumer Sentiment survey](#). Despite a significant drop in consumer confidence, as can be seen from Figure 1.1 retail sales showed an earlier sign of resilience, growing by 0.3% in July 2022 (see Section 2.4 for further discussion). Latest ONS data also shows a marked reduction in the saving ratio, according to which the household saving ratio in Q1 2022 was 17.1 ppts lower than at the peak of the pandemic in Q2 2020.⁴ The pawnbroking sector, which provides relatively small secured loans using personal items as collateral, has also seen strong post-lockdown growth, for example H&T Group, one of the UK's largest pawnbrokers, experienced a 75% growth in its pledge book in June 2022, compared to the same month a year earlier.⁵ Increasing spending funded by loans and savings could risk leading to weaker spending in the next quarters as interest rate hikes push up borrowing costs.

With regard to business activities, business investment recovered above pre-pandemic levels for the first time, with Gross Fixed Capital Formation (GFCF) growing 0.6% in Q2 2022 to an all-time high. Reaching more than £101bn in Q2 2022, GFCF was driven by strong growth in capital formation across dwellings and other buildings asset classes, which experienced growth rates of 1.2% and 3% respectively. This offset lower activities in transport equipment, the information and communication technology sector (ICT) and intellectual property. Monthly PMI indicators also suggest increases in activities across manufacturing and services. Construction, on the other hand, saw a marginal decline from 52.6 in June to 48.9 in July (below the 50 value which signifies growth), the fastest drop since May 2020.⁶ This was mainly due to subdued activities in residential work and civil engineering more than offsetting the sustained growth in the commercial segment.

Real government expenditure fell for the second consecutive quarter, dropping by 2.9% in Q2 2022.

This was mainly due to declines in COVID-19 related activities such as Test and Trace and vaccinations. Although there has been a 0.7 ppt increase in public sector net debt (PSND), excluding public banks and the Bank of England as a percentage of GDP at the end of June, this was mainly due to falls in GDP combined with reduction in cash receipts.⁷ Latest data, however, shows a slight improvement in the Government's fiscal position in July, with PSND as a percentage of GDP reducing by -0.4 ppts.

The trade deficit has improved slightly from its record ratio of 5.4% to 4.7% of GDP in Q2 2022, however excluding precious metals reveals a still widening deficit. This is because trade flows have been significantly weighed down by large price movements in fuels and other commodities. Higher oil and commodity prices have contributed to a drop in goods import volumes, resulting in a 2.5% fall in real imports value of goods in Q2 2022.⁸ However, this has been offset by a larger drop in goods exports (9.3%) combined with a persistent trade deficit in services – an area that used to register as surplus before the war in Ukraine. Weak net export performance was also driven by a deterioration in UK-EU trade balance, with the UK experiencing a £10.6bn trade deficit in goods with the EU in June 2022, an increase of 66% from the same month last year. In Section 4.8, we discuss how UK trade could potentially be improved to support the overall economic growth going forward.

1.2. Monetary and fiscal responses: Further policy changes are in the horizon

The Bank of England continued to raise interest rates sharply to 1.75% in August 2022 in response to the UK's record high inflation. This is the sixth time in succession it raised Bank Rate in just under a year, and the biggest rise in 27 years. Following the recent Ofgem changes in energy price cap methodology, resulting in inflationary pressures expected to reach a higher peak in the short run, further rate hikes are likely before the end of the year. However, the methodological changes could also pave the way to stabilising energy prices, feeding through to lower inflation more quickly.

⁴ONS, [link](#)

⁵Financial Times, 'Pawnbroking surges in UK amid cost of living squeeze', [link](#)

⁶Trading Economics, [link](#)

⁷ONS, [link](#)

⁸ONS, [link](#)

Loose fiscal policy is likely to be temporary and is expected to eventually be tightened as the Government juggles the objectives of supporting economic growth and balancing the books. Public sector borrowing in July reached £4.9bn with monthly debt interest payments increasing by 61% compared to the same time last year. The main drivers behind the rise in interest payments were the recent Bank Rate hikes and higher inflation pushing up interest payable on index-linked gilts. Therefore, borrowing more to support the economy amid inflation surges would be costly in terms of future debt interest repayments.

1.3. UK labour market: Cooling down

The UK labour is cooling down. Growth in total hours worked per week stalled in the three months to June 2022, but is still around 4% higher than the same time last year. After increasing each month in the two years to May 2022, vacancies have begun to fall while the unemployment rate has increased by 0.1ppts to 3.8% compared to Q1 2022, but still remains significantly lower than the 5.2% peak during the pandemic (see Figure 1.3 and Figure 1.4).

The latest unemployment data reveals a mixed picture at regional levels. Wales, Yorkshire and the South East experienced increases in their unemployment rate of 0.8 ppts, 0.5 ppts and 0.4 ppts respectively from Q1 2022. However, unemployment fell in other regions, with the North West and East Midlands experiencing the largest falls of 0.2 ppts respectively. The driving force behind the increase in unemployment is that growth in employment is failing to keep pace with the rise in economic activity, meaning more people are willing to work but have not yet got a job.⁹

With vacancies still close to record levels, labour shortages in some sectors are particularly acute, potentially leading to continued wage and price pressures. Matching the industry in which an unemployed person had worked before being unemployed¹⁰ to the rate of vacancies in the same sector, Figure 1.5 shows unfilled vacancies are particularly acute in high-skilled sectors, such as the information and communication, human health, professional services, and financial services with around 2.2 – 2.7 vacancies per unemployed person. These industries are being forced to raise wages to secure top talent, and this could potentially exacerbate the current rising costs for businesses. At the other end of

Figure 1.2. Hours worked per week



Figure 1.3. Unemployment rate (%)

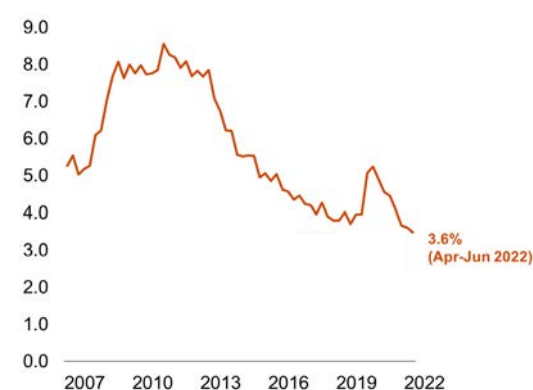


Figure 1.4. Vacancies (Thousands)



Sources: ONS

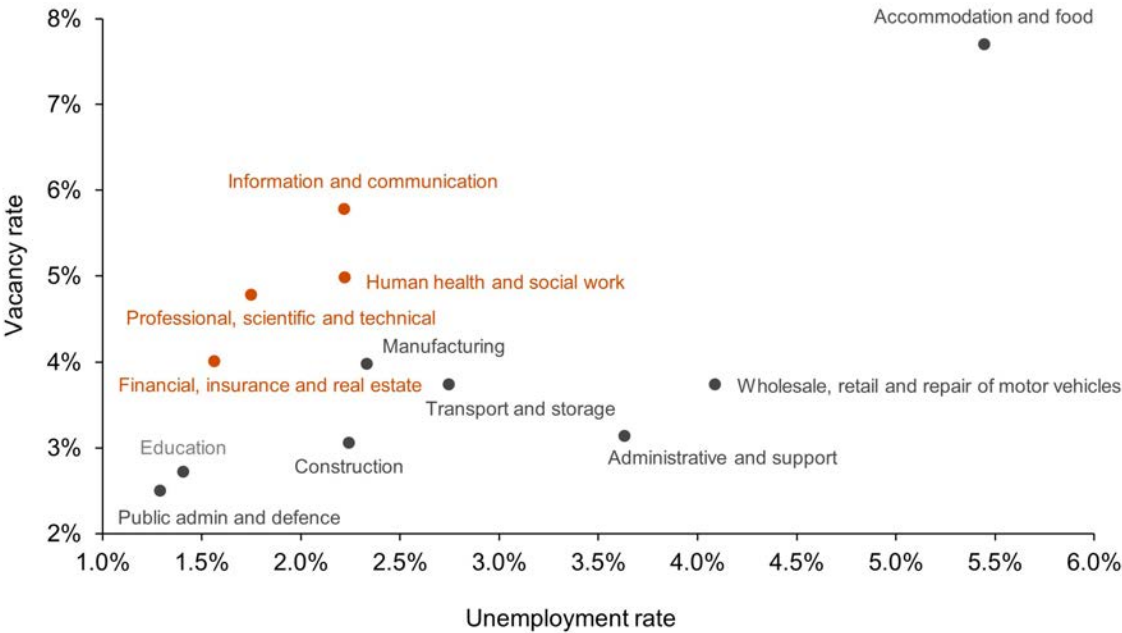
the spectrum, construction, and wholesale and retail are experiencing a vacancy rate which is matched relatively well to recent job departures, making the sectors less likely to experience labour shortages in the coming months.

⁹ONS – [link](#)

¹⁰ONS – [link](#)

Figure 1.5: High-skilled industries are likely to experience acute labour shortages in the short to medium term

Unemployment rate (%) and vacancies per 100 by industry, April-June 2022

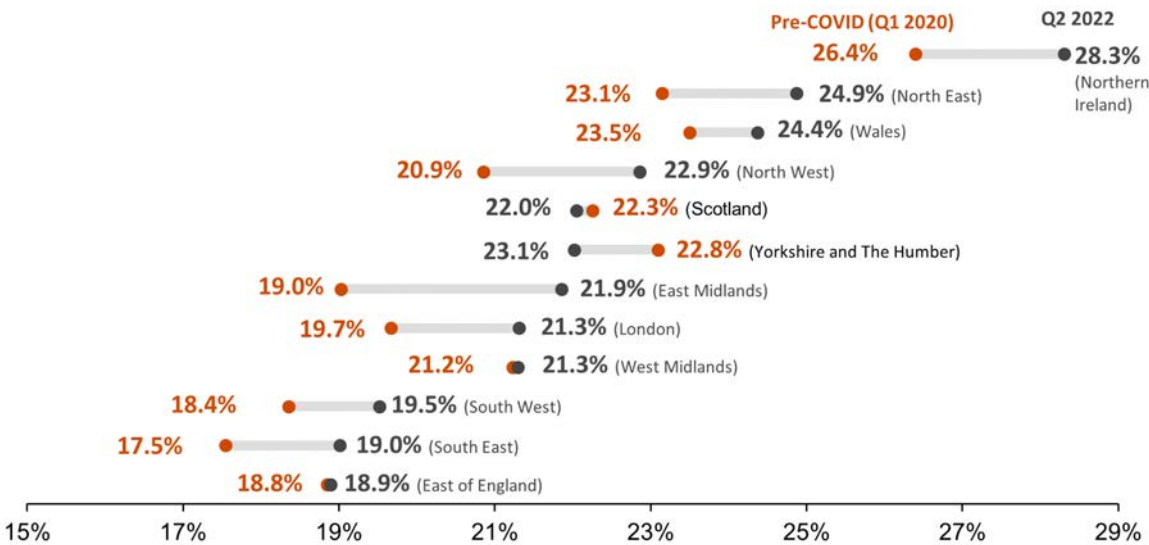


Sources: PwC analysis, ONS

Note: Horizontal axis shows the unemployment rate by industry of last job. Vertical axis shows the vacancies per 100 employee jobs in the same industry.

Figure 1.6: Economic inactivity rate pre-COVID has increased in most UK regions

Inactivity rate (%) by UK regions, Q1 2020 vs Q2 2022



Sources: PwC analysis, ONS

Economic inactivity rates in the three months to June were unchanged compared to the previous three month period, meaning they still mostly stand above pre-pandemic levels. Economic inactivity

was 21.4% in the UK in Q2 2022, 1.0 ppts higher than it was in Q1 2020, when it reached its all time low. Figure 1.6 shows the East Midlands and Northern Ireland have experienced the largest relative increases, with inactivity increasing by 2.9 ppts and 1.9 ppts respectively. Yorkshire and Scotland are the only two regions to have experienced a fall in inactivity rates over the same period, seeing a reduction of 1.1 ppts and 0.2 ppts respectively.

Inactivity rates have increased for the 16-24 and 50-64 age groups in the three months to June.

Since Q1 2022, inactivity rates have increased 0.3 ppts in the 50-64 age group, setting a new high of 27.3% among this group. Unlike the 50-64 age group, the 65+ continued to experience a quarter on quarter fall in inactivity, dropping by 1.4 ppts in Q2 2022. The decreasing trend in economic inactivity in Q2 2022 is mainly attributed to the record number of people

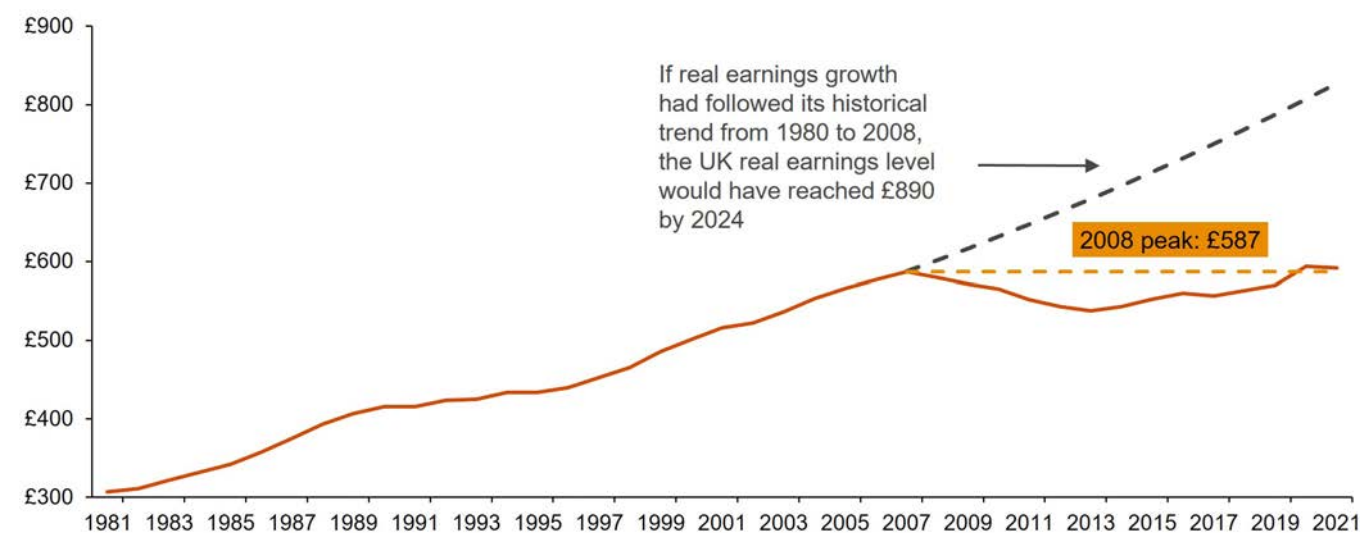
reporting long term sickness as the primary reason for inactivity. This could put the UK labour market at risk of long-term economic scarring if not addressed promptly.

Real wages reached an all time high in Q4 2021, recovering to 2008 levels, but have since fallen again as the cost of living crisis drives a wedge between inflation and earnings.

In 2020, UK average weekly real wages exceeded the 2008 level of £587, carrying on to peak at £592 per week in December 2020 but the improvement quickly faded. With inflation at a 40 year high, nominal wages have been failing to keep pace with price rises, resulting in real wages falling by 3% in Q2 2022, the fastest fall since comparable records began in 2001. PwC's harsh winter scenario projects a further drop of 7.6% and 2.4% in real income for 2022 and 2023 respectively, the worst since records began in the 1960s.¹¹ As a result, we expect continued upward pressure on nominal wages in an effort to catch up with inflation and rising cost of living.

Figure 1.7: Real earnings have dropped from its record high since the 2008 financial crisis and are expected to continue to squeeze

Weekly Real Earning, £, Seasonally Adjusted Total Pay, 1980 – 2021



Sources: PwC analysis, ONS

¹¹Financial Times, 'Bank of England raises rates sharply and warns of 13% inflation by end of year', – [link](#)

2. UK growth outlook: Scenarios for the future

This section shares our latest views on the UK economic growth at national, regional and sectoral levels, together with inflation outlook reflecting the recent Ofgem's changes in price cap methodology.

To capture a range of geopolitical, economic and policy uncertainties, the rest of this section discusses our scenario based projections and the assumptions associated with these.

2.1 Economic scenarios

In the immediate aftermath of the Russian invasion of Ukraine, UK economic activity initially followed our contained conflict scenario. However, in the past month this has shifted beyond the economic escalation scenario in our [UK Economic Outlook April 2022](#), where significant actions (by both the EU and NATO and Russia) have resulted in economic consequences, most notably escalating inflation. Looking ahead, it is unclear how much Russia will export natural gas thus affecting European and UK natural gas prices, how demand will evolve given the autumn and winter weather in the UK and Europe and the impact of the UK's policy response to higher energy prices will impact domestic inflationary pressures. To reflect the range of likely outcomes subject to differing assumptions we designed two economic scenarios outlined below:

- **Mild winter scenario**, in which there is recovery of some supply of Russian natural gas exports (with some flows through Nordstream 1), a reduction in gas prices to their September 2022 starting level, and where the UK government provides considerable support in response to the cost of living crisis.
- **Harsh winter scenario**, in which the supply of Russian natural gas exports to Europe remains highly disrupted, with gas prices remaining around their recent high point, and where the UK government's support is more considerable than our mild winter scenario but less able to mitigate the adverse impact of high gas prices. Demand management reduces energy usage particularly by large industrials.

2.2 Scenario based UK GDP projections

Table 2.1: Projected annual average real UK GDP growth, by scenario

Annual average real UK GDP growth	2022	2023	2024
Mild winter scenario	3.6%	0.2%	0.6%
Harsh winter scenario	3.1%	-1.3%	-0.3%

Source: PwC analysis

Based on our analysis (Table 2.1), we expect UK GDP to grow by between 3.1% and 3.6% in 2022, down from a pre-war consensus of 4.5%.

The downward revision reflects slower household consumption on the back of higher inflationary pressures which is the main impact of the war in Ukraine to the UK economy. This would also see industries reliant on internationally traded commodities imported from Russia (such as crude oil and natural gas) and Ukraine (such as car batteries and agricultural goods) disproportionately affected. Energy-intensive industries will be particularly affected as well. In the harsh winter scenario, the impact on GDP is not transmitted solely through higher commodity pricing, but also through rationing of energy, particularly natural gas, requiring certain segments of the economy to reduce output (such as large manufacturing and industrials).

Headline GDP growth this year is still somewhat driven by 'base' or prior year effects. Our real GDP growth projections for 2022 continue to be skewed by the fact the economy is coming off a low base due to the restrictions in economic activity in early 2021. Therefore, core underlying growth will continue to be relatively modest, albeit slower, than we anticipated earlier in the year. Our quarterly projections suggest that the UK would technically enter a recession as early as Q3 2022. However, the longevity and extent to which the economy contracts is more important to businesses and policy makers than whether a recession is recorded in the national accounts.

¹²In economics, a recession is defined as a period in which the economy experiences at least two consecutive quarters of negative GDP growth.

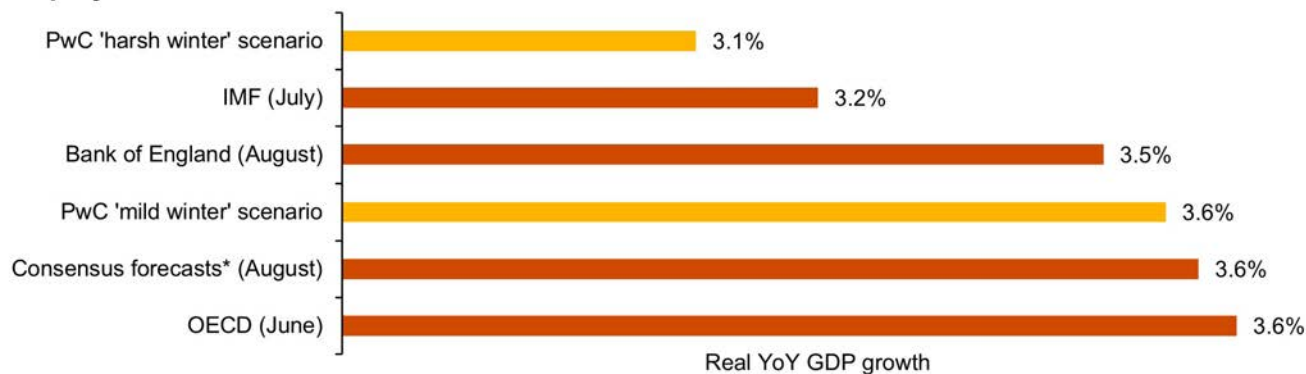
We expect GDP to moderate markedly in 2023 and 2024 as the economy enters a slow growth period or even a prolonged recession.¹² The pace of economic growth in the next two years is projected to remain flat, or even return to a negative zone, as confidence drops and double digit inflation bites. Under our two scenarios, we expect growth to range between -1.3% and 0.2% in 2023, and between -0.3% and 0.6% in 2024. As a result, the UK economy at the end of 2023 could risk falling below the pre-pandemic levels under the harsh winter scenario, seeing any economic recovery since Q3 2021 (around this time last year) completely wiped out.

Our projections are broadly in line with other third-party projections (see Figure 2.1). Some early predictions, for example the OECD, IMF and HM Treasury’s comparison of independent forecasts, were published before Ofgem announced changes to their energy price cap methodology in August 2022, and general deterioration in the economic outlook since then.

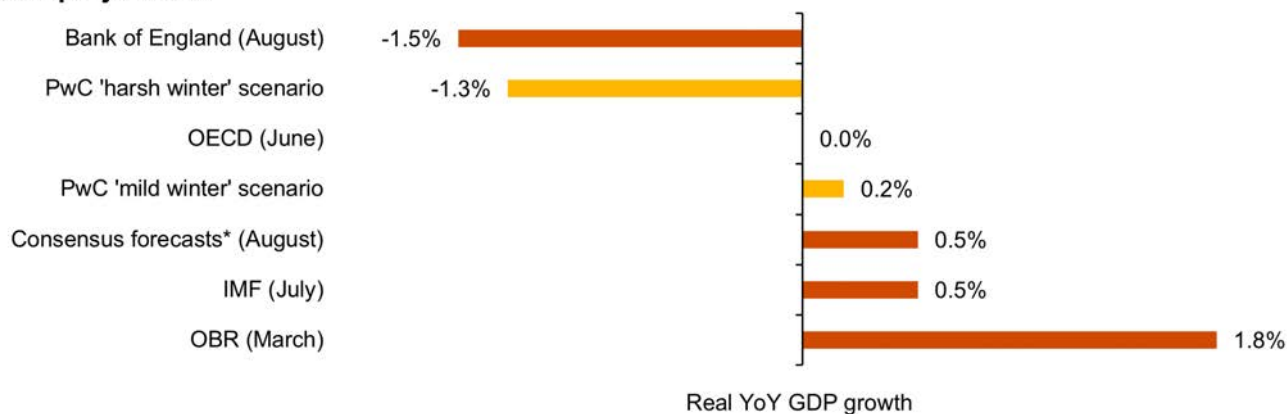
Figure 2.1: Comparison of GDP growth projections, 2022 and 2023

Weekly Real Earning, £, Seasonally Adjusted Total Pay, 1980 – 2021

2022 projections



2023 projections



Sources: PwC, Bank of England, OECD, IMF, HMT

Note: (*) HMT comparison of independent forecasts (August 2022) – average of new forecasts made in the previous month (July 2022).

The path of UK economic growth is largely dependent on the combined impact of various upside and downside factors

Upside factors:

- **Resilient household spending:** Our latest [PwC Consumer Sentiment survey](#) reported the biggest one-year decline in consumer confidence since the financial crisis of 2008. It shows rapid and sustained drops in consumers' intentions to spend on all categories. This potentially means there would be little room to cut spending further. Indeed, July data reported an increase of 0.3% in retail sales volume, reversing the previous trend of either negative or flat growth earlier this year.¹³ As consumers adjust their priorities, household spending should become more resilient in the long run. A similar pattern has also been observed in US consumer markets.¹⁴
- **Positive but modest growth in business investment:** Business investment has grown for four out of the five quarters (marginally contracting by 0.6% in Q1 2022 before returning to growth of 3.8% in Q2). As supply chain disruptions gradually ease, business investment could contribute more strongly to GDP growth this year, albeit modestly (see Section 4.2 for discussion on business investment as a lever driving economic growth).
- **Additional government support in response to rising energy costs:** To help households with the cost of living crisis intensified by rising energy bills, the Government could act quickly and firmly in providing rebates or more long-term financial support. This would likely push up both government expenditure and household consumption in the short to medium term.

Downside factors:

- **High inflation and further interest rate rises add pressures on household spending and business costs:** In response to the double-digit inflation, further interest rate hikes are inevitable. Combined with the current price surges, we anticipate the continued rise in Bank rates to have a particularly adverse impact on household spending (especially those on variable or renewing mortgages), business borrowing costs, and costs of production fed through from material cost rises (see Section 2.5 for discussion on inflation and its trajectory). Our expectation is that these downward factors will weigh down on growth in the short to medium term at least.
- **Slow global economic growth adversely impacts world activity and investment:** Ongoing supply chain disruptions and high commodity prices are likely to drag on global economic growth as shortages of raw materials and persistently high gas and other commodity prices push up production costs. While we expect disruption in global supply chains to gradually ease, the extent to which it cools down may vary across countries. Sluggish global economic growth and high consumer price inflation could potentially weigh down on world activity in general and foreign investment in particular.
- **Ongoing geopolitical uncertainty over the war in Ukraine and China-US tension continues to impact future growth:** The ongoing war in Ukraine and the latest friction between China and the US over Taiwan are likely to weigh down on the UK economic growth fed through from global trade frictions. However, we expect the impact to moderate somewhat as the businesses adapt through refreshing trade approaches and onshoring (see Sections 4.8 and 4.9 for discussion on these).

¹³ONS – [link](#)

¹⁴Financial Times, 'Anxious UK consumers carry on spending regardless', 22 August 2022, – [link](#)

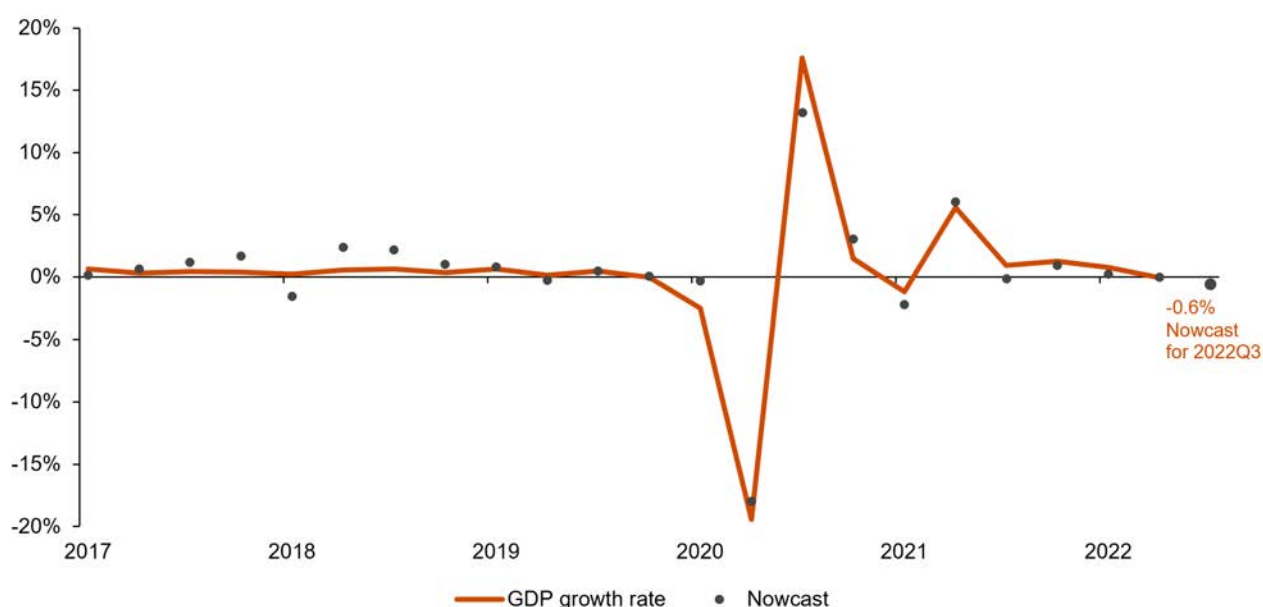
Box A: Quarter-on-quarter GDP projections using nowcasting techniques

Following a -0.1% GDP growth in the second quarter of 2022, the likelihood of the UK falling into a recession mounts.¹⁵ This poses an urgent need for reliable and timely estimates of GDP to give companies and policymakers timely insights for risk mitigation and decision making purposes.

Figure A.1 shows the results of our nowcasting model,¹⁶ according to which the UK economy is likely to contract by 0.6% in Q3 2022, implying a technical recession this year. The economic slowdown is largely due to surges in inflation as the cost of living crisis impacts all demographic groups. This prediction is broadly in line with the views of other major forecasters, such as the Bank of England¹⁷. However, the shape of any recession is more important to businesses and policy makers than whether a recession is recorded in the national accounts.

Figure A.1: Nowcast model predicts UK GDP could contract by 0.6% in Q3 2022

GDP growth forecast (%), Q3 2022



Sources: PwC analysis, ONS, Federal Reserve Economic Data (FRED).

¹⁵Note that ONS's revisions to the official GDP are not uncommon as further data becomes available (see ONS revisions guide, [link](#)). Given the magnitude of the GDP contraction in Q2 2022 (-0.1%), a small revision to this quarterly figure could impact the timing and shape of the technical recession.

¹⁶See Technical Annex for detailed methodology.

¹⁷See Bank of England's Monetary Policy Report, August 2022, [link](#).

¹⁸Gross Value Added (GVA) is used as a proxy for Gross Domestic Product (GDP) in the output approach. It measures the value of an industry's output less the value of intermediate inputs used in the production process. (Source: ONS, [link](#))

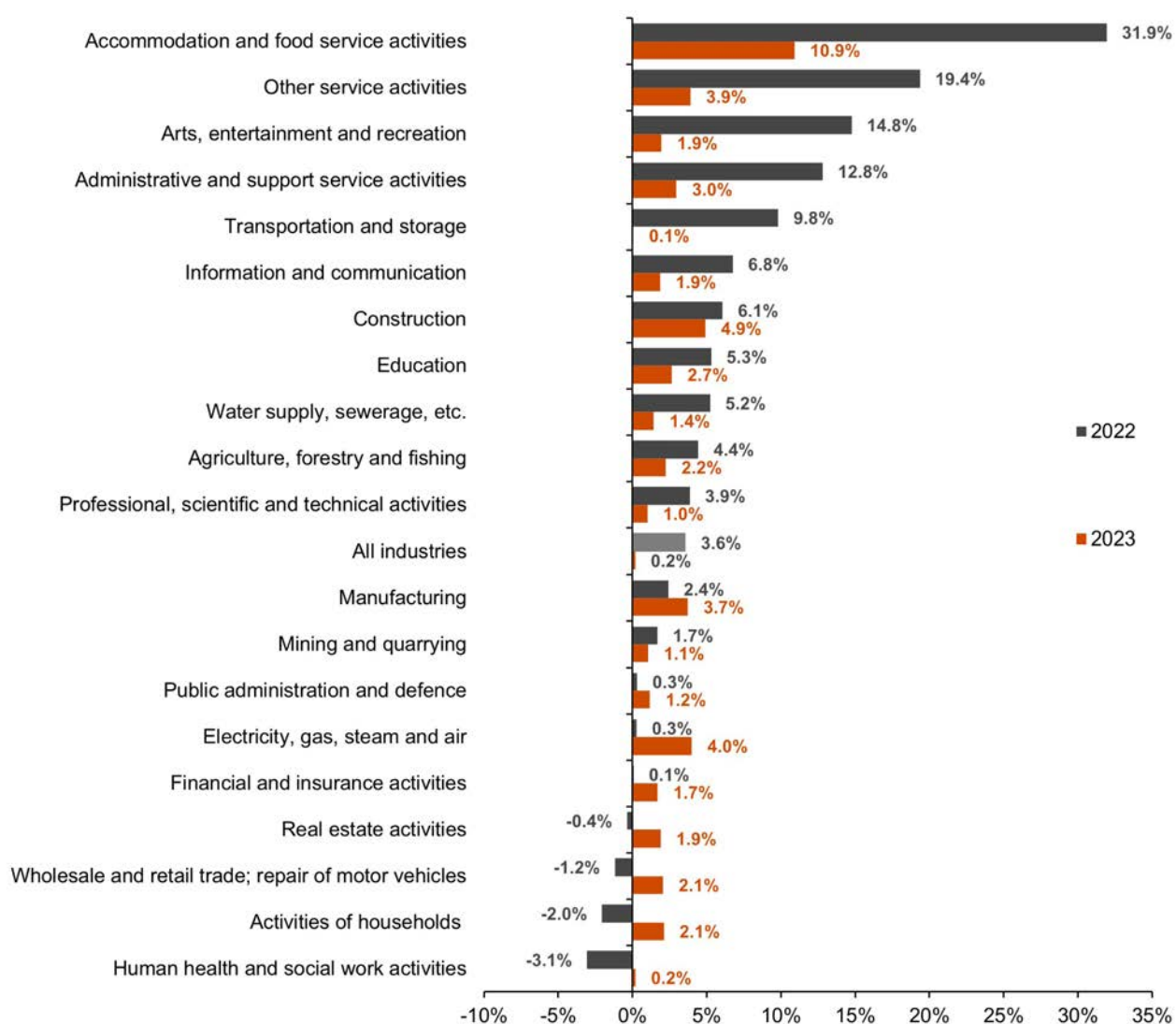
2.3. Sectoral outlook: polarised amid slow growth

We expect prolonged geopolitical uncertainty, coupled with the ongoing cost of living crisis and weak consumer sentiment to weigh down on growth across

all sectors for the rest of 2022 and into next year. Figures 2.2 and 2.3 show our sectoral Gross Value Added (GVA)¹⁸ projections for 2022 and 2023 under mild winter and harsh winter scenarios.

Figure 2.2: In the mild winter scenario growth in most sectors will slow down, with seemingly high growth in some sectors being driven by base effects

GVA growth projection (%) by sector, Mild winter scenario, 2022 and 2023

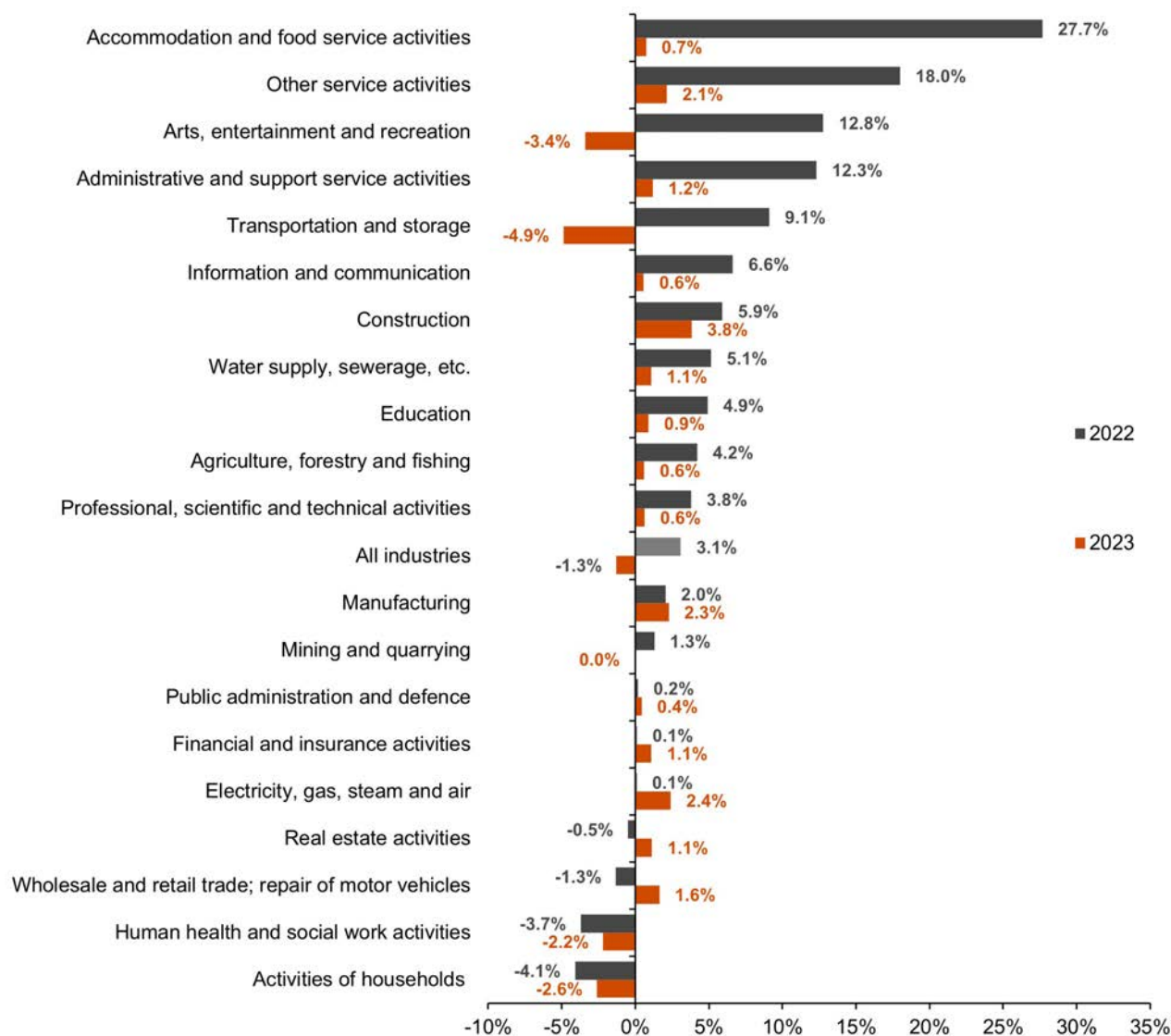


Sources: PwC analysis

¹⁸Gross Value Added (GVA) is used as a proxy for Gross Domestic Product (GDP) in the output approach. It measures the value of an industry's output less the value of intermediate inputs used in the production process. (Source: ONS, [link](#))

Figure 2.3: In the harsh winter scenario there will be much weaker growth across the board as the country enters a recession

GVA growth projection (%) by sector, Harsh winter scenario, 2022 and 2023



Sources: PwC analysis

Seemingly high growth rates in 2022 for some sectors, such as accommodation, arts, entertainment and administrative services are somewhat driven by base effects. Growth in those sectors continue to be skewed as they come off a low base in 2021 due to the restrictions placed on the sector earlier in the year. Therefore, core underlying growth in 2023 will be relatively modest as base effects fall out of the annual growth figures.

Financial services and real estate industries will experience sluggish growth for the rest of this year but are likely to gradually regain strength in 2023. Following a contraction in Q2 2022 as economic uncertainty weighs down on demand in areas – such as deal advisory and IPO – our [research](#) shows optimism within the financial services sector is likely to decline and non-performing loan rates¹⁹ could go up in the next three months. Real estates would also be adversely impacted by rising house prices and

cost of living crisis resulting in delays in transaction. However, we anticipate these pressures on the two sectors would ease albeit gradually, contributing to positive growth of between 1.1% and 1.9% in 2023.

With the cost of living crisis ongoing, we anticipate households will continue to cut spending on home improvements and travelling. This would translate into weaker performance in the residential construction and transport activities in the coming year. Positive but modest growth in the transport sector, however, will still result in a flat or even negative annual growth rate of between 0.1% and -4.9% for 2023 largely due to base effects as growth in the sector will be unlikely to match the record rate seen post lockdowns.

We anticipate growth in energy, and wholesale and retail industries to be moderated as inflationary pressures mount during 2022, but this will start to improve towards the end of 2023. Rising energy costs combined with high inflation have initially driven down demand, but as discussed in Section 2, we expect spending on those categories to become more resilient, as the impact of government support kicks in.

Ongoing supply chain disruptions and rising material costs intensified by the war in Ukraine are expected to continue to stall growth in manufacturing. The sector is likely to grow at a modest rate of between 2.0% and 2.4% in 2022 and around 2.3% to 3.7% in 2023 under our two scenarios. As one of the sectors that is more productive than the UK average (see Section 3.2) but also more likely to experience labour shortages (see Section 1.3), growth in manufacturing is expected to be positive but the pace depends on how uncertainties over rising production costs and labour shortages evolve in the coming months.

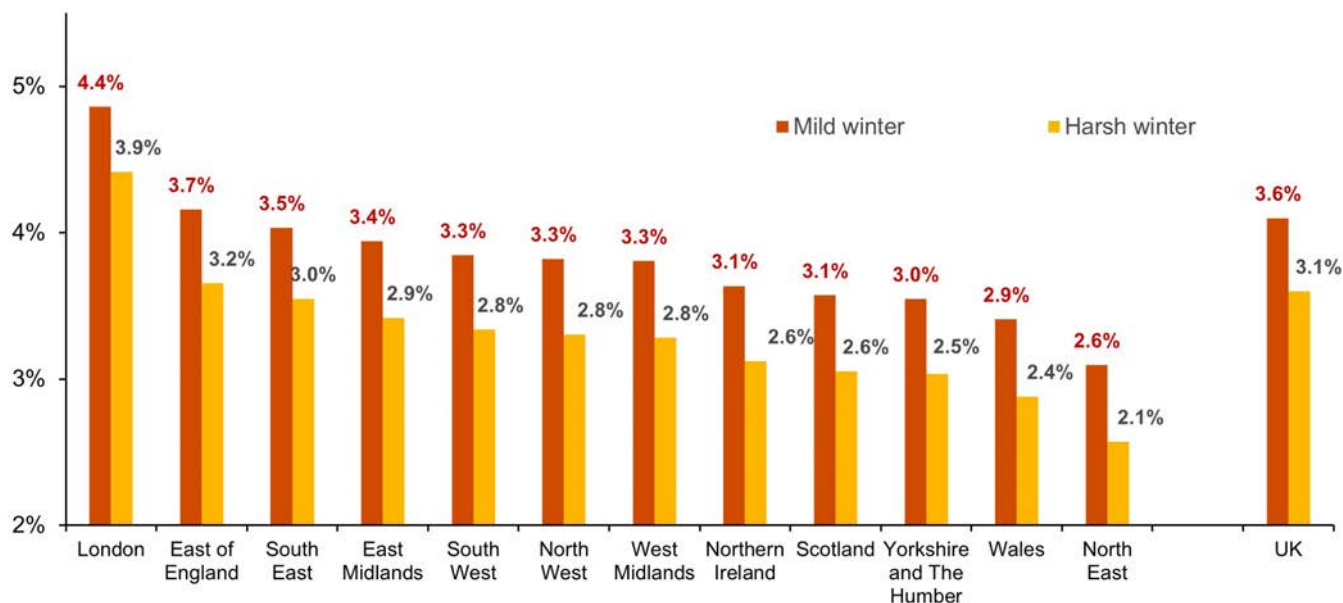
2.4. Regional outlook: A mixed picture

Regional output projection shows a mixed picture with some regions regaining their pre-pandemic position while others drift away. Figure 2.4 shows our projections for 2022 under the mild winter and harsh winter scenarios.

London is likely to lead the pack this year with output growth ranging from 3.9% to 4.4% under our two scenarios. This is around 0.7 ppts higher than the runner up, and 0.8 ppts higher than the UK average.

Figure 2.4: Wider regional disparity would draw the UK's attention back to levelling-up priority

Regional GVA projections (%), YoY, 2022



Sources: PwC analysis

¹⁹Non-performing loans (NPL) are bank loans where the borrowers are not fulfilling their financial commitments to repay in accordance with their contractual agreements. Higher level of NPL negatively affects banks' ability to generate new lending into the real economy, source: European Banking Authority, [link](#)

This could be attributed to relatively strong growth in some of its key industries, including information and communications, and professional, science and technology. Base effects may also play an important role as London started the year from a low base in 2021²⁰, and is estimated to grow at the lowest rate (7.0%) compared to the rest of the UK (7.4% on average). Similar base effects are likely to contribute to the high growth rate in the South East in 2022, bringing the region close to its pre-pandemic position.

We also anticipate sluggish growth in economic output among Northern areas, including Scotland, Yorkshire and The Humber, and the North East.

GVA annual growth rates in these regions are expected to be around 2% and 2.6% under the harsh winter scenario and between 2.6% and 3% under the mild winter scenario. These are well below the UK average, mainly due to (i) the higher proportion of lower productivity sectors combined with (ii) larger productivity gaps with the national average within a sector (e.g. Yorkshire and The Humber is 11% behind in manufacturing productivity levels compared to the UK average). Section 3 of this report discusses regional productivity gaps at sectoral levels and the output gains closing the gaps would bring.

Northern Ireland's economic growth is expected

to lag behind other regions despite leading the recovery in 2021.

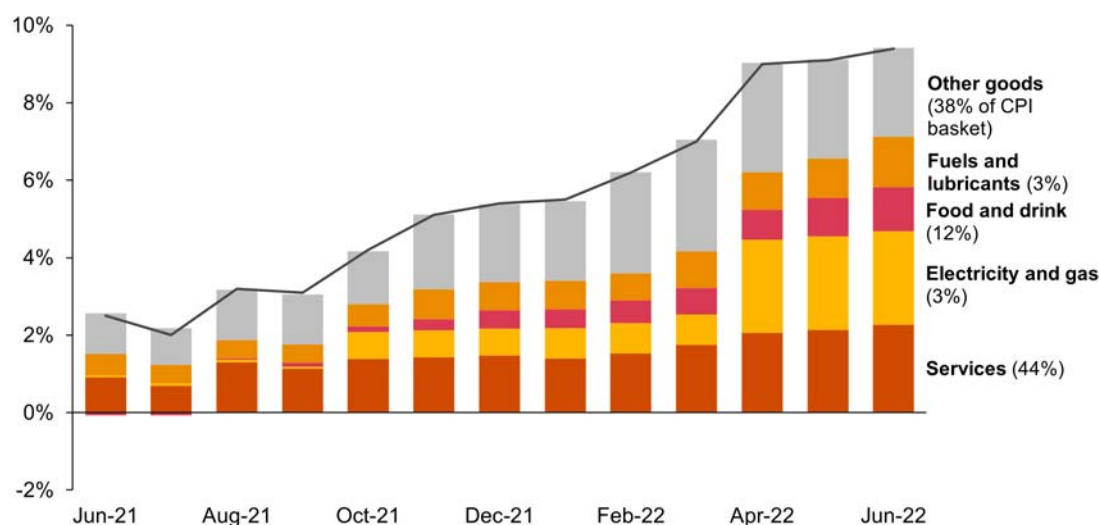
Going into 2022, the country's strong, albeit fragile, growth is likely to lose its grip, falling by around 0.5 ppts below the UK average. While being relatively resilient over the past two years, the weak economic growth in manufacturing, and wholesale and retail will hit Northern Ireland harder than other regions due to the strong concentration of these sectors in the country's economy. Focusing on improvement in economic performance of those industries would contribute to supporting Northern Ireland regaining its leading position in 2023 and beyond.

2.5. Inflation outlook: Higher for longer

Inflation continues to surge but the worst is yet to come. UK consumer price inflation increased to 10.1% in July, more than five times higher than the Bank of England's 2% target inflation rate. This is the UK's fourth inflationary episode above double digits in 70 years. Just under half of the contribution to the July headline inflation rate was driven by energy, food and drink prices. In the next few months, households and businesses will need to brace for further price increases as the outlook for energy prices is set to worsen.

Figure 2.5: Inflation reaches 10.1%, more than five times the Bank of England's target

CPI inflation by component (%), year-on-year, July 2021 - July 2022



Sources: ONS, PwC analysis

²⁰Our estimate is based on regional sectoral mix as the official regional GVA data is only available up to 2020.

Inflation outlook

Figure 2.6: UK natural gas futures prices have shot up over the past month, owing to Russia's curtailment of supplies to Europe and large volumes of natural gas purchases by some European countries to replenish storage facilities

Figure 2.6 shows how the prices of natural gas futures contracts - which alongside power futures prices feed into the energy price cap - have evolved over the past year. In the immediate weeks following Russia's invasion of Ukraine, futures prices for this period almost doubled - as markets priced in the risk that Russia's supply of natural gas to Europe could be curtailed. This risk has since materialised, with Russia gradually reducing its natural gas exports to Europe before switching off the Nord Stream 1 gas pipeline entirely, citing maintenance repairs, initially for three days from the 31st August but probably indefinitely given the latest reports. This culminated in natural gas futures prices peaking at levels almost 4-5x higher than their pre-invasion levels towards the end of August.

Since then, natural gas futures prices have reduced following a series of positive announcements on natural gas storage levels across a number of European countries, including Germany. However, there is still significant uncertainty surrounding the shorter-term outlook for energy prices, and the degree to which Russia will continue exporting natural gas to Europe. In the table below, we use a scenario based approach to evaluate the impact of changes to natural gas and electricity futures prices, relative to start of September 2022 values, on the household energy price cap and the UK's headline inflation rates.

However, energy prices are not the only driver of inflation, so our analysis also makes the following assumptions:

- Global supply bottlenecks continue to ease over 2022 and return to pre-pandemic levels in 2023.
- Higher inflation does not become embedded in consumer expectations. The risk of this increases as inflation reaches new heights and takes a longer time to revert to its target.
- Constant exchange rates.

Table 2.2: UK headline inflation could peak at anywhere from 13% to 22% next year, depending on the outlook for energy prices and where the government does not implement further price controls.

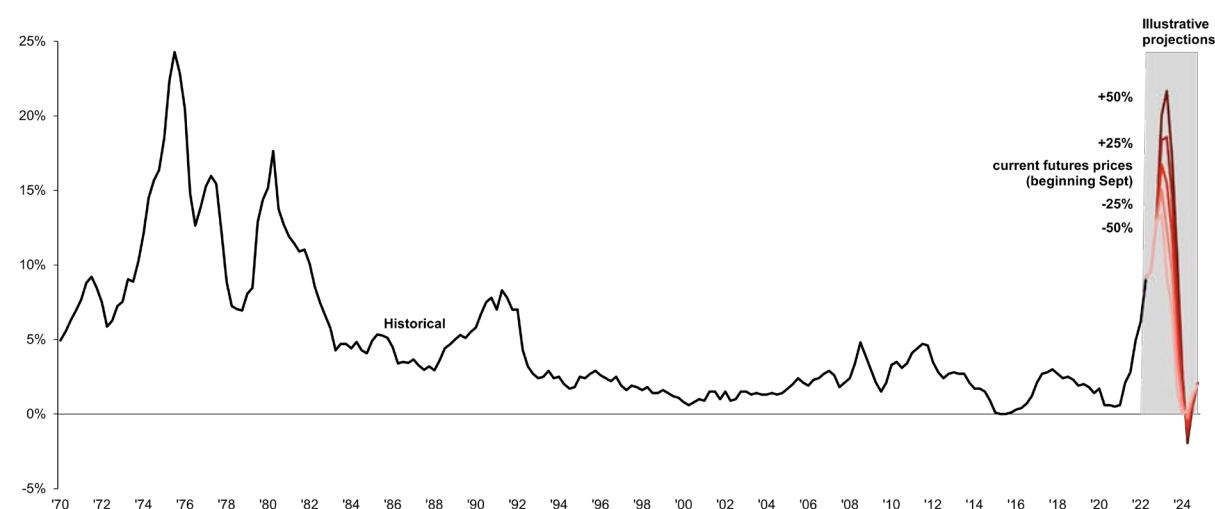
Scenario based analysis on the impact of changes to natural gas & electricity futures prices on the household energy price cap and consumer price index (CPI) inflation rates in 2023, without government intervention directly targeting the price of energy.

Scenarios on natural gas and electricity futures prices relative to beginning of September 2022	Average energy price cap (2023)	Peak CPI inflation rate in 2023	Average CPI inflation rate for 2023
Based on futures curve as at the beginning of September 2022	£5.1k	17%	13%
+50%	£6.9k	22%	17%
+25%	£6.0k	19%	15%
-25%	£4.2k	15%	10%
-50%	£3.4k	13%	8%

Sources: PwC analysis, ONS, Ofgem, Refinitiv Eikon

Figure 2.7: A peak inflation rate of 17% would be the highest rate since 1980

Annual CPI inflation, illustrative projections based on changes to energy futures prices



Sources: PwC analysis, ONS, Ofgem, Refinitiv Eikon

As we set out in Section 2.1, we expect that there will be further government intervention to support households through the cost-of-living crisis. For the purposes of our inflation projection analysis, we show the impact on inflation where government intervention does not directly target the price of energy in the UK (e.g. government support takes the form of income transfers or rebates as used in the Energy Bills Support Scheme) This provides support to households directly but has no bearing on the unit price of electricity or natural gas paid by households (and thereby limited impact on inflation).

Our analysis above does not consider the effects of alternative government interventions that have been recorded in other countries (e.g. France) which would have a more direct impact on prices (e.g. interventions around energy supply, market operations or demand). Given the possible size of inflationary increases, government policies which target energy prices directly (including forms of adjusted price cap or price freeze) are therefore particularly attractive. Using such tools, the UK government could restrict inflation to only modest increases from the current 10.1% figure (the UK is still unable to avoid energy cost inflation embedded in imports nor the weak pound, both of which are set to increase inflation from 10.1% regardless of government action on energy costs). We consider the potential impact of such interventions in Box B below.

Our analysis suggests headline inflation could peak at anywhere from 13% to 22% next year, depending on the outlook for energy prices and the form of future government intervention. The range of our scenario-based projections indicates how uncertain the energy and inflation outlook remains. For example, in the scenario where futures natural gas prices return close to the levels observed at the end of August, the household energy price cap averages £6.9k a year in 2023 - 3.5x current levels - and inflation peaks at 22%.

Whereas in the scenario where future natural gas prices return to lower levels experienced in the immediate aftermath of the Russian invasion to Ukraine, the energy price cap averages £3.4k a year and inflation peaks at a more modest but still considerable 13%. This more optimistic scenario could be achieved by either sustained falls in global energy prices.

Within this highly volatile range, assuming natural gas prices follow their market implied paths as at the beginning of September means that inflation could peak at a five-decade high of 17% in the first half of 2023. This is more than eight times higher than the Bank of England's target of 2% and the highest rate of inflation since 1980. Absent further government support, we expect this would result in a significant decline in household living standards, with real wages potentially being around 7% lower than 2022 levels by the end of 2023. This would leave the average worker around an additional £40 worse off a week and around £2,000 worse off a year. However, further government intervention is highly anticipated and would mitigate some of this impact.

Our scenario analysis also shows that inflation could dip below target in 2024 if energy prices follow their market-determined paths. Financial markets expect that natural gas prices will moderate over the course of 2023 as the EU is projected to significantly reduce its reliance on Russian energy supplies by growing its gas storage levels and liquified natural gas capacity as well as accelerating the build out of renewables. This could result in reductions to the household energy price cap (albeit from very high levels) over the second half of 2023, potentially resulting in inflation dropping below the Bank of England's 2% target in early 2024. However, there is a degree of uncertainty whether this will be operationally feasible.

Box B: What could freezing energy bills do to inflation?

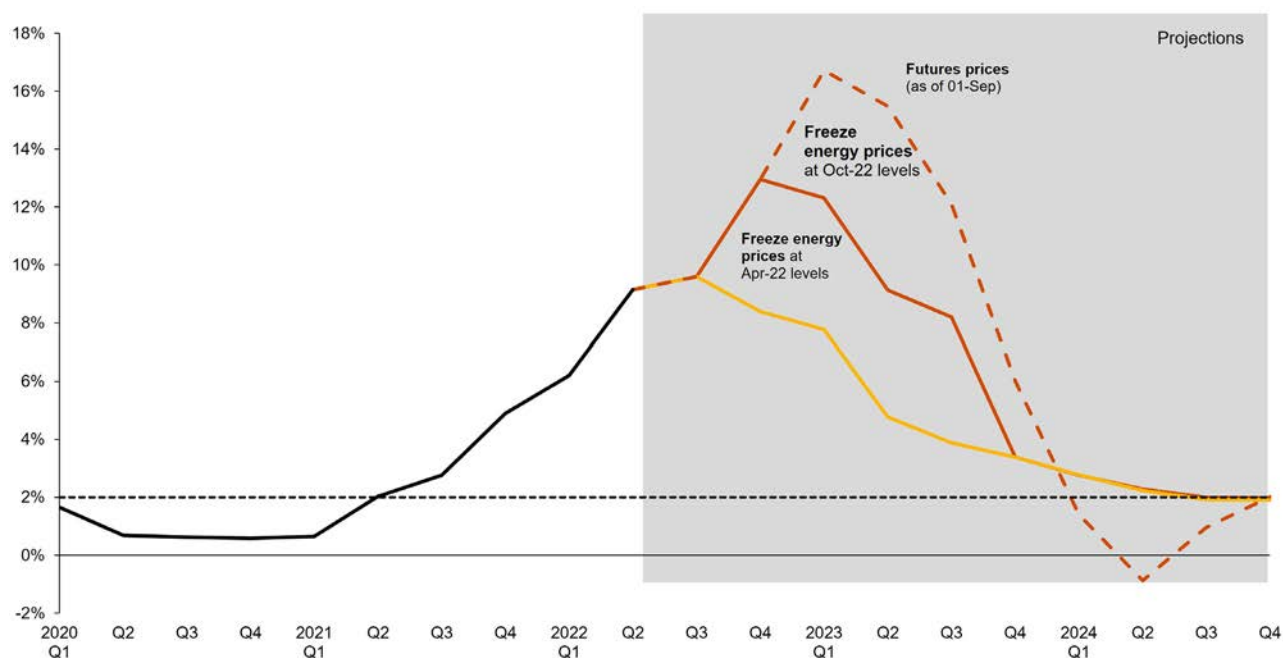
It has been widely reported in the media that the UK government are considering freezing energy bills, potentially both for households and businesses, for the next 18-24 months. This will impact consumer price inflation directly, through reducing the energy inflation component. Indirectly, if business' energy bills are also frozen this could also perhaps ease pressure for businesses to pass-through costs consumer prices.

Our static analysis below shows that the direct impact of freezing household energy bills for the next 18-24 months could see headline inflation peak at between 10% to 13%, rather than the potential peak of 17% as indicated by the market implied paths for natural gas at the beginning of September. The height of this peak would depend on whether the government chooses to freeze energy bills at April-22 levels or at the October-22 levels which was recently announced by Ofgem.

If household energy prices are frozen at April-22 rates then this could mean that we are at or close to the peak headline inflation rate of around 10%. However, there is a risk that the unwinding of this policy could see inflation pick-up again towards the end of this forecast horizon if wholesale natural gas prices remain elevated.

Figure 2.8: Freezing household energy bills at April-22 levels could mean that we are at or close to peak inflation

Annual CPI inflation, illustrative projections based on potential government intervention



Sources: ONS, Ofgem, PwC analysis

In conclusion, there is a high degree of uncertainty on the evolution of natural gas prices in the next few quarters as Europe, which is heavily reliant on natural gas for electricity generation, enters the colder months of the year. Our scenario based analysis indicates that this degree of uncertainty could have a very significant impact on the peak of the inflation rate, which could hit more than 20% in a very extreme scenario. Policy intervention will therefore be very most likely necessary to mitigate the impact of such high energy costs. There is also a degree of uncertainty on the form of policy intervention the UK opts and whether these evolve from income transfers to potentially fixed-period price controls.

For net energy importing economies like the UK, energy price swings have a cross-cutting effect across all sectors of the economy. Focusing on businesses, this high level of energy price uncertainty requires business leaders to prepare for and act on a variety of energy price scenarios as higher, hard-to-avoid inflation will have a substantial impact on their cost base as well as their people, suppliers and clients. Managing the impact of inflation will be one of the most pressing business challenges through 2022 and into 2023.



3. UK productivity: Opportunities in challenges

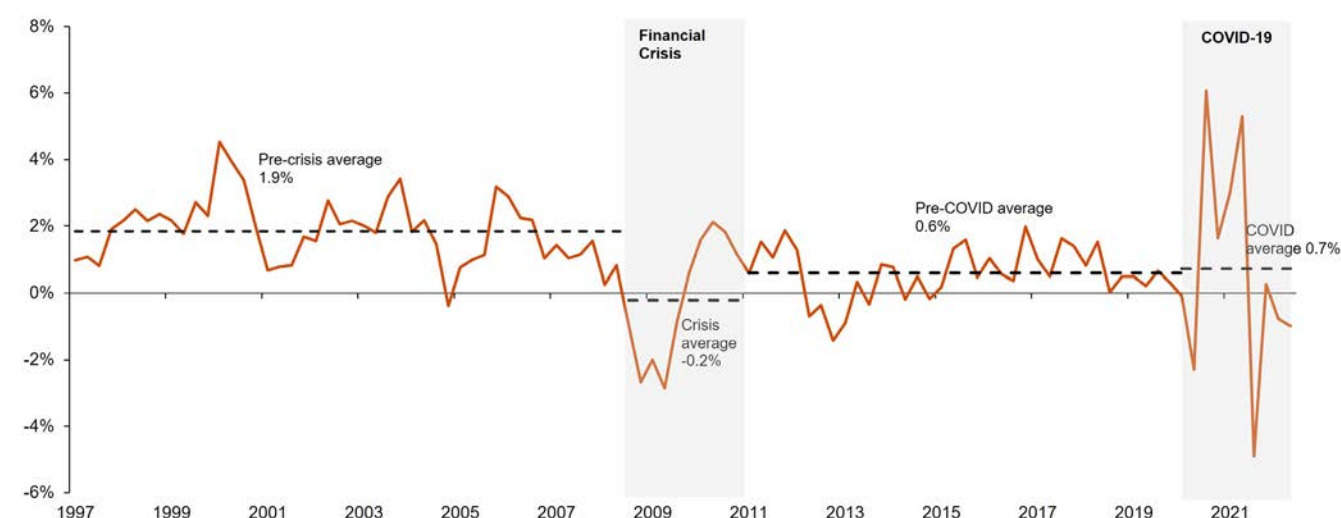
3.1. UK productivity challenges

There has been much discussion around the UK's 'productivity puzzle' over the past decade. Productivity²¹ in the UK has consistently lagged behind other advanced economies, and remained weak since the financial crisis of 2008. Latest country comparison shows the UK ranked fourth in G7 after the US, France and Germany.²² Before 2008, UK productivity growth was around 1.9% per year on average but declined to

-0.2% during the financial crisis, and remained low at 0.6% on average running up to the COVID-19 period (Figure 3.1). During the pandemic, it is worth noting the peak in productivity growth did not reflect the actual trajectory of UK productivity. This was purely a result of a significant drop in the number of hours worked, due to furlough and sickness. As the furlough scheme wound down, UK productivity fell by 4.9 ppts in Q3 2021, compared to a year earlier, and has struggled to recover since.

Figure 3.1. UK labour productivity has remained low since the financial crisis

Growth in UK output per hour worked (%), YoY, 1997 Q1 – 2022 Q2



Sources: PwC analysis, ONS

At regional levels, productivity gaps have been a long standing issue, with London and the South East consistently ranked top. Figure 3.2 shows regional differences in productivity levels in 2020²³, according to which productivity in London and the South East were around 34 ppts and 9 ppts above the UK average. At the other end of the spectrum, Northern Ireland productivity was about 17 ppts below the national average.

UK average productivity is skewed upwards by the significantly stronger performance of London. Among the 12 UK regions (also classified as International Territorial Level 1 regions), London and the South East are the only two regions that exceeded the average UK productivity levels. Scotland, the third highest productivity region, remained slightly underperforming compared to the UK average, with a productivity level of 2 ppts below the national average. The deviation from the UK average level seen in other regions was even larger, ranging from -17 ppts to -7 ppts, making closing the regional productivity gap more crucial to delivering the levelling up policy as well as the overall UK economic growth.

²¹Economic productivity can be measured by output per hour worked, output per job or output per worker (source: ONS, [link](#)). In this report, we use output per hour worked to better capture the productive hours, as the other measures based on numbers of jobs and workers may be impacted by furlough schemes.

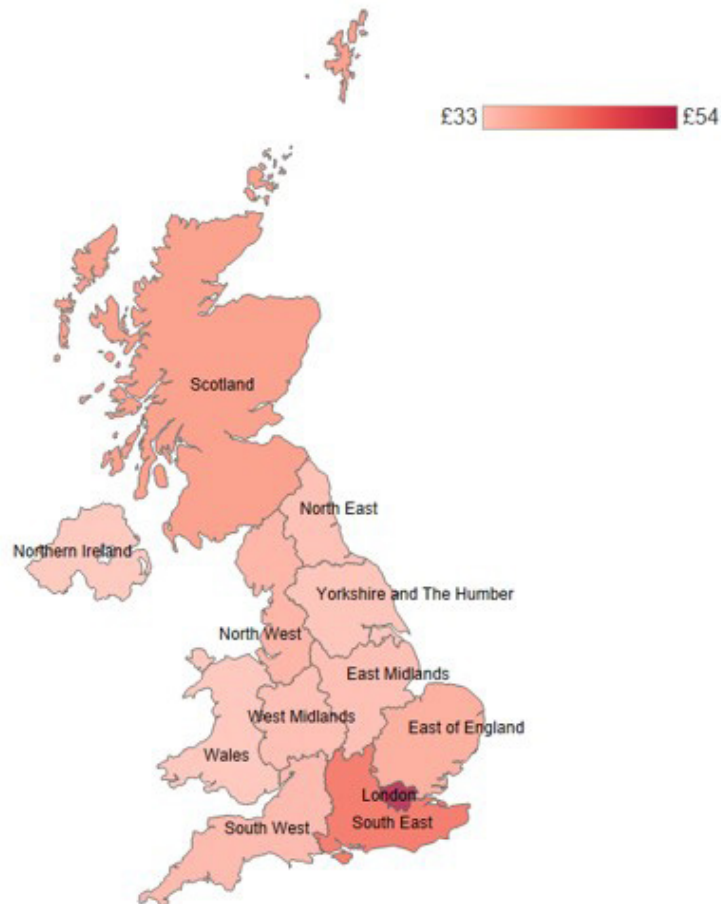
²²ONS, [link](#)

²³Although the data on regional productivity is only available up to 2020, before UK lockdowns were fully lifted and Russia invaded Ukraine, analysing this sample period could still add value because: (i) in the past 20 years, regional productivity disparities had hardly changed, with the exception of a few regions (e.g. Yorkshire and The Humber and West Midlands) which reported large changes in their relative productivity rankings, and (ii) COVID-19 and the Ukraine war are more likely to exacerbate the productivity issue rather than dilute it as businesses have been forced to speed up the uptake of productivity induced methodologies, such as automation and reshoring (which will be discussed further in Section 4).

²⁴From 1 January 2021, the ONS adopted the International Territorial Levels (ITLs) geography, which has replaced the Nomenclature of territorial units for statistics (NUTS) geographies for the UK.

Figure 3.2. Regional productivity gaps skewed towards London and the South East

UK output per hour worked (£) by region, 2020 (latest data available)



Sources: PwC analysis, ONS

3.2. What drives the UK regional productivity disparity?

While the UK regional productivity gaps have been a persistent challenge, this section identifies the underlying drivers of lower productivity levels in some regions and potential areas for improvement. These include:

- ‘Within-industry’ productivity gaps.
- Skills and education.
- Regional income imbalance.
- Regional productivity differences can be driven by two main factors, which we discuss in turn:
- **Between industry effect:** where one region has a greater share of workers in industries which have higher productivity.

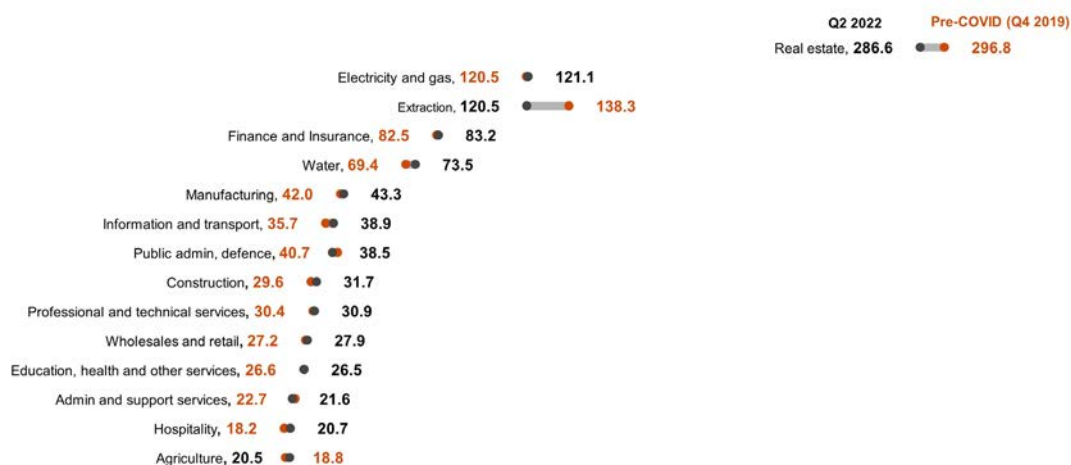
- **Within industry effect:** where one region has higher productivity within the same industries.

Between industry effect

Our between industry analysis shows that reprofiling the regional labour force in higher productivity industries could contribute to closing the productivity gap. As of December 2020, 10% of jobs in London were in the top four most productive sectors, namely real estate, electricity and gas, extraction and financial services sectors (see Figure 3.3). By contrast, Northern Ireland allocated only around 4% of jobs in those industries but had nearly 31% worked in less productive industries, such as wholesales and retail, agriculture, hospitality and administration.

Figure 3.3. Understanding sectoral productivity levels would contribute to better prioritising resources

UK labour productivity (£) by sector, 2019 Q4 (amber dots) vs 2022 Q2 (grey dots)



Sources: PwC analysis, ONS

Within industry effect

Regional differences in skill levels²⁵ could also explain the regional productivity gap. The upward dotted line in Figure 3.4 indicates a strong positive correlation between the two variables. While this does not imply a direct causal relationship, it shows that high-skilled workers are more likely to work in more productive occupations, and also have greater potential and opportunity to adapt to new technological developments that further enhance productivity in their jobs. Firms that underperform due to sluggish growth in training investment and innovation could also drag down their employees' potential. Sections 4.3 and 4.6 of this report discuss further possible benefits of improving firm-specific performance and education investment on boosting sectoral productivity and overall economic growth going forward.

We also analyse other workforce demographics, such as age groups, which have contributed to the regional productivity gap. A study by Center for

Research in Economics and Statistics (CREST) shows that age-specific productivity tends to increase up to the age of 40-45 but levels out thereafter, depending on the type of tasks associated with qualifications and skills levels.²⁶ Our analysis in Figure 3.4, in which the size of the bubbles indicates the proportion of economically active working age population (aged 16 to 64) over the total population, shows a strong positive correlation between higher workforce density and higher productivity. London, the South East and Scotland, for example, have a higher percentage of workers among the working age than less productive regions, such as Northern Ireland and Wales.

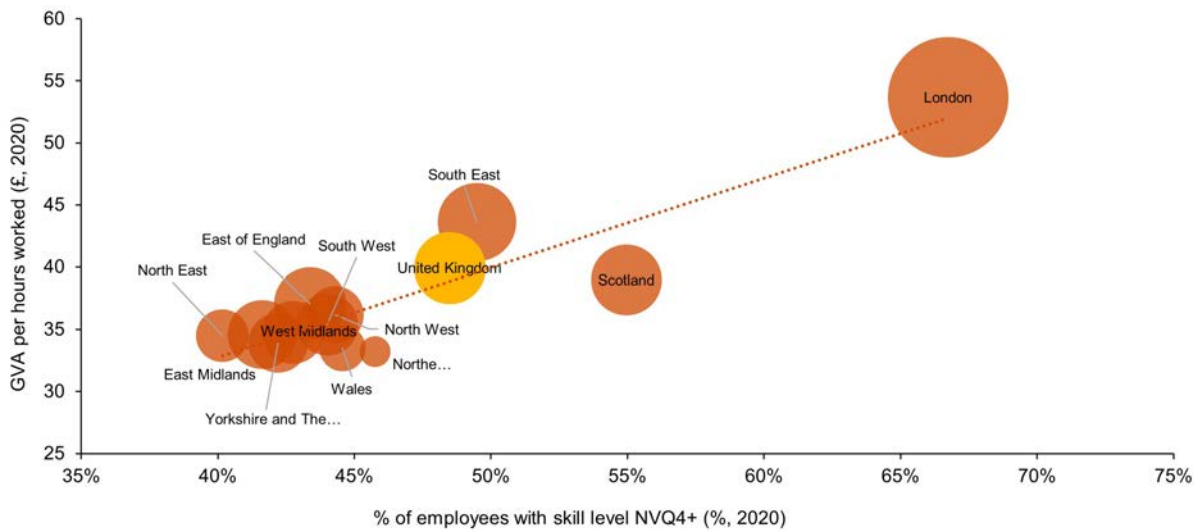
It is also worth noting that larger cities and tech hubs, like London, would have greater job opportunities and therefore be more likely to attract a larger proportion of workers and job seekers. Although this has been adjusted for in our analysis, an effective productivity strategy should focus on both upskilling the workforce and creating more job opportunities in the regions. Further discussion on addressing regional imbalances is provided in Section 4.7 of this report.

²⁵We use the proportion of employees whose educational attainment is at National Vocational Qualifications (NVQ) level 4 or higher as a proxy for regional skill levels.

²⁶Aubert, P. and Crépon, B., 2007, "Are older workers less productive? Firm-level evidence on age-productivity and age-wage profiles", **Center for Research in Economics and Statistics**, [link](#)

Figure 3.4. Differences in skill levels across regions show a strong correlation with the variation in productivity

GVA per hour worked vs educational qualifications at ITL 1 level, 2020

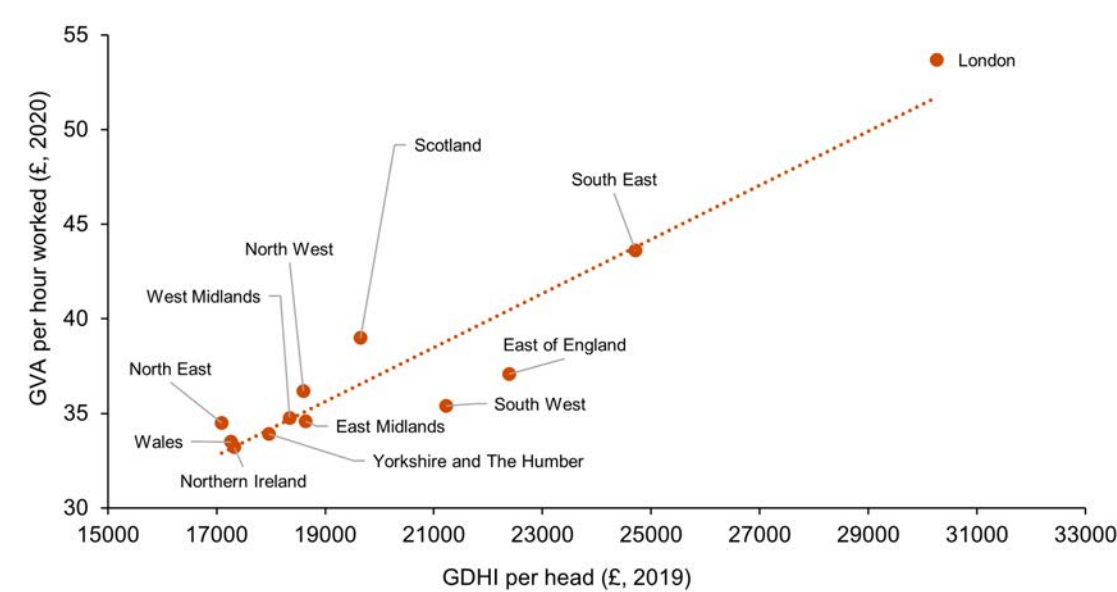


Sources: PwC analysis, ONS

Note: The size of the bubble indicates the percentage of the economically active working age population (aged 16-64) over the total population of the corresponding region.

Figure 3.5. Lower income regions tend to have lower productivity levels and vice versa

GVA per hour worked against gross disposable household income (GDHI) per head* (£)



Sources: PwC analysis, ONS

Note: (*) Latest data available at regional levels

We also find that regional income imbalances could contribute to explaining the UK regional productivity gaps. As shown in Figure 3.5, weaker regional productivity performance tends to fall among lower income regions, and vice versa. Regional productivity gaps are one of the largest drivers of the rising income inequality between workers. Reinforcing, but in reverse, regional income imbalance could exacerbate the productivity gaps in the UK regions as limited flow of investment in human capital weighs down on output growth.²⁸

3.3. The potential prize from closing the regional productivity gap

In this section, we estimate the potential gains from bringing regional industrial productivity for each industry to at least the current UK median level

. As this only focuses on the within industry effect, the output gains from addressing both between and within industry effects (described in Section 3.2) would markedly increase the economic benefits. Details of our methodology and more granular breakdown of the results are reported in Box C.

Figure 3.6 shows our estimation of the GVA gains by region and by sector group (i.e. production, services and construction). According to our analysis, if underperforming sectors (defined as having productivity below the industrial median levels) in all regions improved their productivity to at least the industrial median, **this could potentially add as much as £71.6bn to the total UK output per year, estimated to be around 3.4% of total GDP in 2023.**

The largest contributor would come from the services sector, adding nearly 77% of the total output gains, followed by production (18%) and construction (5%). Regions that have the most potential of improving their services productivity

levels are the West Midlands and North West, in which real estate and wholesale and retail could contribute the most (see Box C for more details). Northern Ireland stands out as a region with the highest potential gains from improving productivity within the production industry, contributing to nearly 30% of the total gains in the production industries. This could come mainly from improving productivity in Northern Ireland manufacturing, for example in the large food processing sector, which has lagged behind the UK median levels. Surprisingly, London, which has been ranked consistently at the top of the regional productivity leaderboard, still has not reached its potential. This is mainly due to London's real estate activities having been strained by its significantly higher property prices, limiting the residents' ability to engage and get on the housing ladder.

Although the services sector could have the most potential for productivity enhancements, it is also the area that is traditionally harder to improve productivity. There have been studies pointing out that improving productivity and quality simultaneously is the key challenge for service productivity enhancement. This is because productivity is measured by output while quality is measured by customer satisfaction that sometimes compromises profitability. Also, productivity in some services sectors, such as real estate and transport, is heavily dependent on the demand side, such as affordability and spending appetite, and is therefore more difficult to influence. However, adopting automation and other new technologies, such as digital services and digital advertising, in some areas of services, including banking, and wholesale and retail, has enabled both improved productivity and service quality. Section 4.1 of this report discussed further how utilising technologies could support productivity enhancement while improving customer experience at the same time.

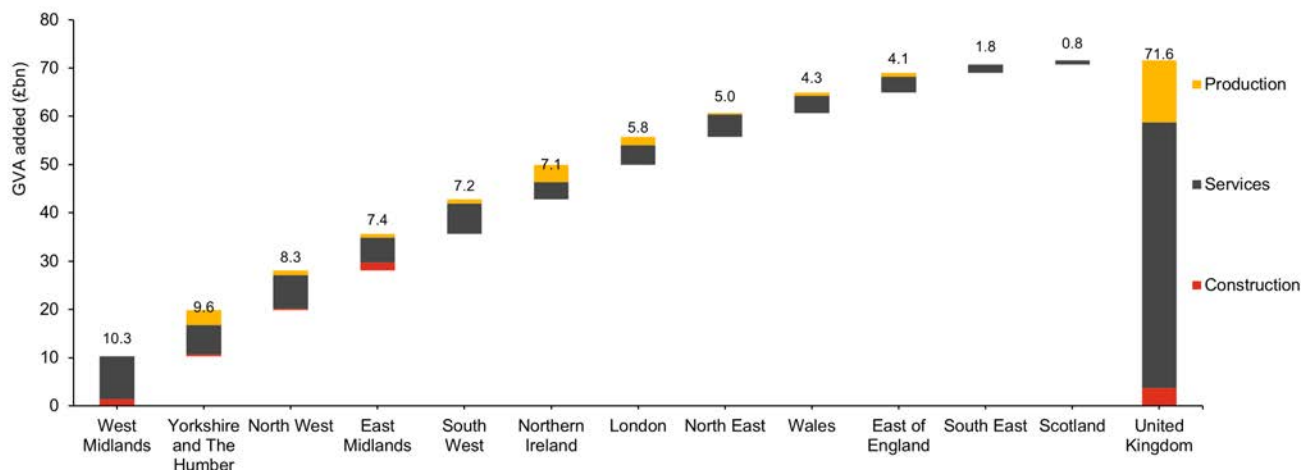
²⁷Ramos.G, 2016, "The productivity and equality nexus", [OECD](#), [link](#)

²⁸Bardhan. P, Udry.C, 1999, "Human Capital and Income Distribution", [Oxford Academic](#), [link](#)

²⁹Ueno, A. 2022, "Which factors can improve service productivity and service quality simultaneously?", Middlesex University Business School, [link](#)

Figure 3.6: Closing regional productivity gap could add around £71.6bn to the UK total GDP

Impact on regional GVA (£bn) if lagging regions raise their productivity to the industry's median level, 2023



Sources: PwC analysis, ONS

Box C: Productivity analysis methodology and output gains

Technical methodology

Step 1: To estimate the potential gains from improving regional productivity to at least the industry's median levels, we first estimate the 2023 regional productivity levels for each industry by projecting the latest ONS's regional productivity by industry using its 10 year compounded annual growth rate (CAGR).

Assumptions: As cross sectional data by region and by industry is only available up to 2019, this estimation involves assuming:

- Regional productivity (i.e. GVA per hour worked), and total hours worked in each industry to grow at their corresponding 10 year CAGR for the period from 2019 to 2023.
- Regional industry structure and labour distribution within an industry remain largely unchanged between 2019 and 2023.
- Although the latest data does not cover the pandemic period, we assume the adverse impact of lockdowns would gradually cease as the economy reopened and return to its long term trend in 2023.

Step 2: We estimate the potential productivity gains by comparing the differences between regional productivity and industrial median for each industry.

Step 3: To estimate the benefit in terms of potential GVA increase, we use a similar method described in Step 1 to project the 2023 hours worked by region and by industry, which were then used to calculate the estimated 2023 GVA from the estimated GVA per hour worked. The granular breakdown of estimated productivity gains at regional and industry levels are reported in Table C.1.

Output gains by region and by industry

Table C.1: GVA gains by region and by industry if sectoral productivity is brought to the median levels (£m), 2023

GDP growth forecast (%), Q3 2022

Industry / Region	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East of England	London	South East	South West	Wales	Scotland	Northern Ireland	Total
Production													
Non-Manufacturing Production	-	1,001	701	-	-	748	-	-	225	679	-	1,082	4,435
Manufacturing	255	-	2,355	947	-	-	1,746	-	604	-	-	2,500	8,407
Construction	6	367	398	-	1,380	-	-	-	1,568	17	-	-	3,736
Services													
Wholesales and retail	1,612	2,721	248	519	-	-	-	-	960	806	-	-	6,866
Transport	441	141	-	904	1,195	262	-	-	-	185	-	-	3,129
Hospitality	409	-	-	208	-	309	-	48	435	145	-	-	1,554
Information and communication	111	38	1,710	168	-	-	-	-	-	401	-	845	3,273
Finance and Insurance	-	-	748	471	-	331	-	-	1,094	20	-	585	3,249
Real estate	989	3,074	228	2,369	5,349	-	4,078	-	-	-	-	-	16,087
Professional and technical services	-	80	518	718	157	865	-	-	-	1,042	-	-	3,379
Admin and support services	614	-	-	277	1,688	-	-	-	-	215	233	876	3,902
Public admin, defence	-	-	741	550	-	-	-	-	675	124	79	260	2,429
Education	524	168	-	-	57	113	-	-	-	545	-	477	1,885
Health	-	-	846	4	274	1,425	-	1,724	1,175	-	-	-	5,448
Art	-	184	-	7	-	-	-	-	711	89	517	72	1,580
Other services	-	543	1,066	31	189	-	-	2	-	-	-	416	2,246
Total	4,962	8,316	9,558	7,173	10,290	4,053	5,824	1,774	7,447	4,269	829	7,112	71,606

Sources: PwC analysis, ONS

Note: Darker shades indicate higher levels of potential output gains.

Our regional analysis shows that Northern Ireland could potentially benefit the most from improving within-industry productivity (i.e. raising their sectoral productivity to the UK's median levels for the corresponding sector). The country could see an extra 16% increase in their regional GVA by closing this gap, while the North East and Yorkshire and the Humber each could potentially raise their regional GVA by 7%-9%.

The largest shares of productivity gains could come from the services and manufacturing sectors, with a potential GVA increase of almost 3.3% (equivalent to £55bn in 2018 prices) and 4.4% (£8bn in 2018 prices) respectively. Additional output gains could potentially be achieved by boosting regional productivity gaps

in non-manufacturing productions (6.3%), such as agriculture and utilities, which historically recorded larger productivity disparities between regions.³⁰

Typically, productivity increases in the services sector are harder to realise due to a variety of factors which have to do with the time it requires to train human capital, the extent of competition in some service sub-sectors and also the lack of appropriate technology to deploy particularly in areas where human contact is desired. However, advances in automation and artificial intelligence make it easier to apply technology in vast swathes of the services sector.

³⁰Non-manufacturing production includes agriculture, mining and quarrying, and utilities.

4. Where can future growth come from?

As Liz Truss takes office, significant policy and economic challenges remain. As discussed in the previous sections, these include the ongoing geopolitical uncertainty, stagflation economy (with both high inflation and slow or no growth), productivity gaps, and cost of living crisis to name a few. All sides of the political spectrum agree that economic growth is desirable, as it provides higher government income to deploy on economic and social priorities, and higher household incomes. But the challenge is where to look for higher growth and develop the policies which will achieve it. In this section, we highlight and assess 10 key areas of the UK economy where substantial and sustainable growth could come from.

4.1 Embracing the full benefits of the digital age

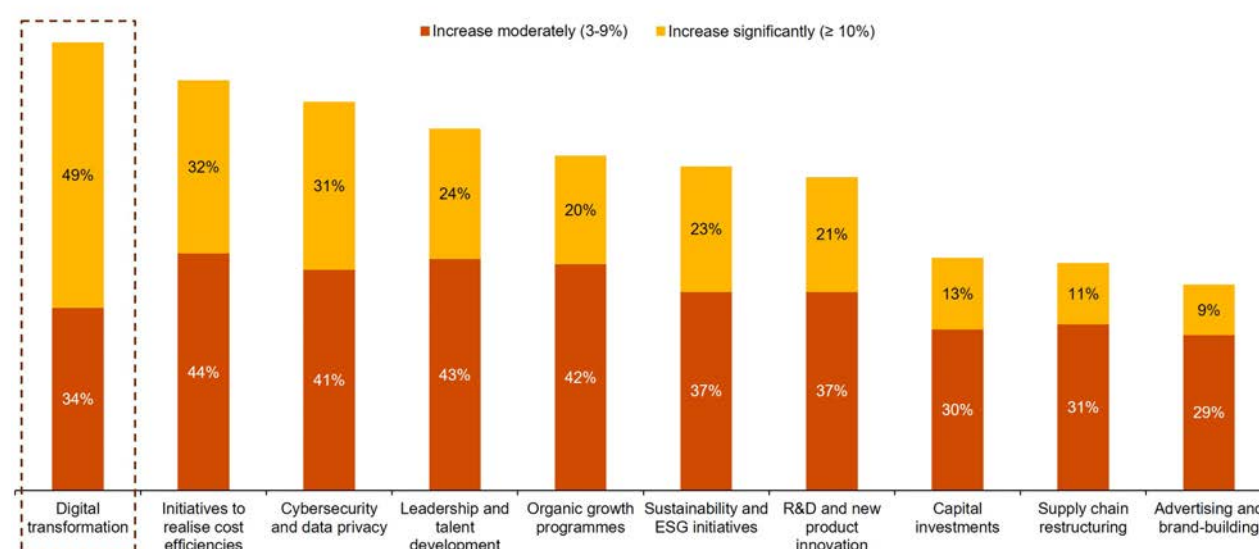
The UK's technology and digital sector is considered stronger than most of its European counterparts. London has also beaten New York and Singapore as the top hub for fintech, and is ranked as the number one destination for US tech companies expanding outside their home market.³¹ The UK is

also the leader in investment in digital and technology, with around £12bn of venture capital funding flowing into UK tech start-ups and scale-ups in the first half of 2022. This was more than the amount recorded for the whole of 2020. Being second only to the US, UK start-ups are outperforming countries that were traditionally strong in the area of attracting funding, such as China, France and India.³²

Digital transformation offers opportunities to tackle current global challenges. Many businesses have reassessed their operating models and increasingly embraced technologies in the wake of disruptions such as the pandemic. For example, in the first seven weeks of the pandemic, online retail sales expanded more than they were estimated to achieve in seven years. In PwC's 24th Annual Global CEO Survey, nearly half of CEOs revealed plans to increase their long-term investment in digital transformation by more than 10% over the next three years (see Figure 4.1).

Figure 4.1: Nearly half of CEOs plan to increase their rate of digital investment by 10% or more.

Percentage response (%) to the survey question: How do you plan to change your long-term investments in the following areas over the next three years, as a result of the COVID-19 crisis?



Source: PwC's 24th Annual Global CEO Survey

³¹Mayor of London, [link](#)

³²Gov.UK, [link](#)

Moving forward, the rise of digitalisation and automation enables more productive working and drives economic performance. According to a PwC research, artificial intelligence (AI) could contribute up to \$15.7 trillion (approx. £13.5 trillion)³³ to the global economy in 2030. The growth could come from the following main areas:

- **Productivity gains and reduced labour shortage from automation.** According to the PwC's 2022 annual AI business survey, 44% of AI leaders found AI increased productivity through automation, ranking top among all other potential benefits brought by AI. In addition, automation and digital technology can help ease labour shortages. Latest ONS data shows vacancies are rising with manufacturing recruiting 77.4% more in Q2 2022 than its pre-pandemic levels, while vacancies in utilities and extraction industries have doubled. As companies struggle to fill the gaps, an increasing number of firms are turning to technology to help alleviate staff shortages.
- **Increased consumer demand for AI-enabled services.** Demand for personalised and/or higher-quality AI-enhanced products and services are on the rise. In the same AI business survey, 40% of AI leaders realised value from AI initiatives in improving customer experience and products / services innovation. These are considered the third most significant benefit of AI in the digital age.

However, the UK's long-standing digital skills gap would need to be addressed in order to fully capitalise on the potential benefit of technology and digital transformation. More than 80% of UK jobs require digital skills, with a lack of such skills the single biggest factor to exacerbate labour shortages. UK government estimates suggest closing the digital skills gap could potentially as much as £63bn a year to the overall GDP. On top of that, upskilling could facilitate the transition to an economy where human labour is increasingly complemented and augmented – rather than replaced – by new technology, thus improving the overall quality of jobs. PwC's research

estimates that upskilling could lead to the net creation of 5.3 million new jobs globally by 2030. To seize the opportunity, policy interventions should focus on targeted digital upskilling courses, encouraging on-the-job training as well as preparing students for the future through, for example, tax breaks / loans for upskilling initiatives and subsidising apprenticeship programmes.

4.2 Boosting business investment for sustainable growth

The UK had the lowest levels of business investment in the G7 in 2000-2021, averaging around 17% of GDP compared to 25% in Japan and 22% in both France and Canada.³⁷ The UK has also been consistently ranked the lowest in almost all of the last 20 individual years in this category. Prolonged periods of weak investment not only reduce the level of economic activity in the short term, but have long-term implications for the productive capacity of the economy, and therefore for future growth.

In the UK, investment by businesses has been growing at a long-term average rate of around 2% per year in real terms, but has fallen back in more recent years.³⁸ Figure 4.2 shows a strong correlation between business investment and output. The pandemic resulted in a significant fall in investment in 2020 and while there has been strong growth in recent months, it has not yet fully recovered – with business investment in Q2 of 2022 remaining almost 6% below the pre-pandemic level.

Following the 2008 financial crisis, business investment took five years to fully recover to pre-crisis levels. Should this prolonged recovery be repeated in the coming years, it would have long-lasting consequences for economic growth. While the Government's temporary increases in capital allowances (the super-deduction) may have increased business investment, this is more likely to bring forward investment than drive a sustained increase in investment levels.

³³Exchange rate GBP:USD as of 01 September 2022: 1.1638

³⁴AI leaders are defined as companies that are more likely to be advanced in their AI usage and to be achieving valuable business outcomes. There were 364 AI leaders surveyed.

³⁵Gov.UK, [link](#)

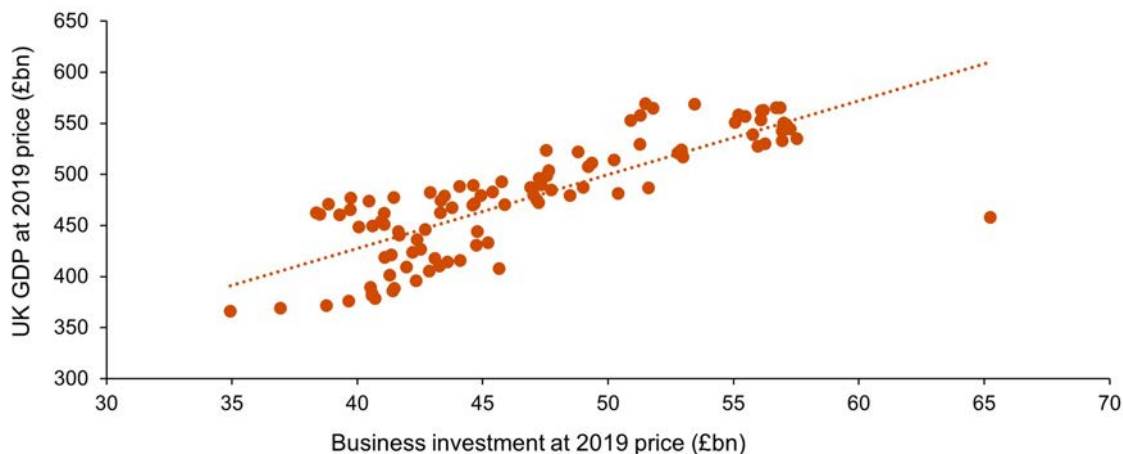
³⁶Gov.UK, [link](#)

³⁷World Bank, [link](#)

³⁸ONS, [link](#)

Figure 4.2: Business investment is closely correlated with economic performance

Correlation between UK GDP and business investment, Q1 1997 – Q2 2022



Sources: PwC analysis, ONS

Note: Each dot plots business investment and total GDP in a given quarter. The upward dotted line shows a positive correlation between business investment and GDP over time.

Ongoing uncertainties, intensified by the current price surges, may reduce businesses' appetite to invest. It follows a number of years of uncertainty around future trading arrangements and the pandemic, resulting in a difficult environment in which to invest. A more stable business environment could be supported through, for example, providing certainty over future tax policy, including the future of capital allowances when the temporary super-deduction expires. Continued government commitment to levelling up could also open new opportunities for investment and make for a more even distribution of investment around the country.

Besides encouraging businesses to invest, policy interventions could focus on increasing the flow of funds into businesses. Incentives to invest through, for example, the Enterprise Investment Scheme (EIS) are important and should be continually reviewed to ensure they remain effective. Proposed reforms to pension fund rules, which have been subject to consultation, could potentially support both business investment and infrastructure investment while there could also be an opportunity to increase the focus of Local Authority pension funds on supporting business investment.

The size of the prize could be equivalent to at least £11 billion (in 2019 prices). Based on the latest business investment trends, if UK authorities manage to increase business investment back to pre COVID levels, then this would imply an uplift of around £11 billion in 2019 prices. The economic impact would most certainly be higher due to the short-term spillover effects which will be predominantly felt via the demand channels but also in the medium-to-long-term as it will help boost supply and resilience across the business sector.

4.3 Improving performance of poor performing firms

Our analysis shows the wide productivity gaps between UK firms have only partially been explained by age, size, sector specific characteristics and geography.³⁹ A further 70% of the variation is due to factors such as skill levels of the workforce, investment and degree of innovation utilised. If the least productive firms are able to move closer to the national average, this would have a significant impact on overall productivity.

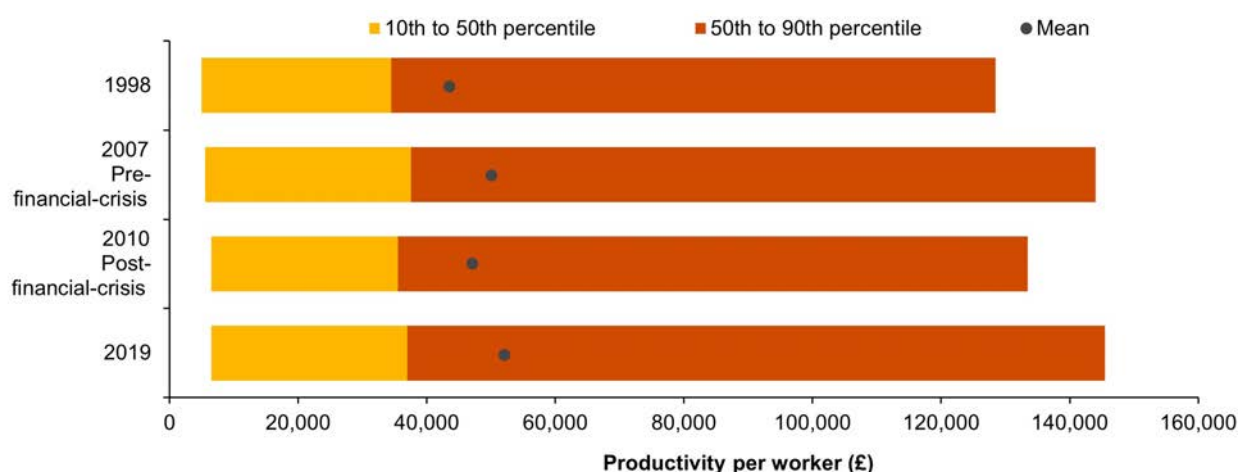
³⁹ONS, 'Firm-level productivity measures from the Annual Business Survey 1998-2019', [link](#)

At the other end of the spectrum, highly productive firms have accounted for the majority of the UK productivity growth since 2010. During this period, overall productivity grew by 1.2%, with the top 10% of firms (weighted by employment) making up 0.7 percentage points of this growth, and the bottom 50% of firms contributing only 0.1 percentage points

(see Figure 4.3). This suggests there has been limited growth in productivity outside the top performing firms. Also, the median productivity levels have barely changed over the last 20 years, in which the increase in the mean average has largely been driven by higher performing firms.

Figure 4.3: More productive firms have made increasing gains over those in the bottom half of the productivity distribution

Firm-level productivity* (£ in 2019 prices), Bottom and top 10% excluded from chart



Sources: PwC analysis, ONS

Note: (*) 2019 is the latest data available at firm level

Policy interventions should focus on supporting low productivity firms closing some of the gap with their high-performing peers. This includes the potential to improve workplace skills, as identified earlier in Section 3, but in particular to close the gap through investment in leadership and management skills, and the broader adoption of high performance work practices. Gains could also be made by encouraging more firms to export for the first time, or by facilitating the diffusion of innovation to less productive firms.

Overall productivity could be further improved by reallocating resources to more productive firms and away from firms at the lower end of the productivity distribution. Supporting companies in high-productivity sectors, such as information and communication, and financial services, with high growth potential could contribute to faster economic growth. For example, employment in firms with GVA per worker between £25,000 and £30,000 grew by almost 900,000 over 2014-2019 and if these jobs had instead been created in firms with above average productivity, this would result in at least 1% of

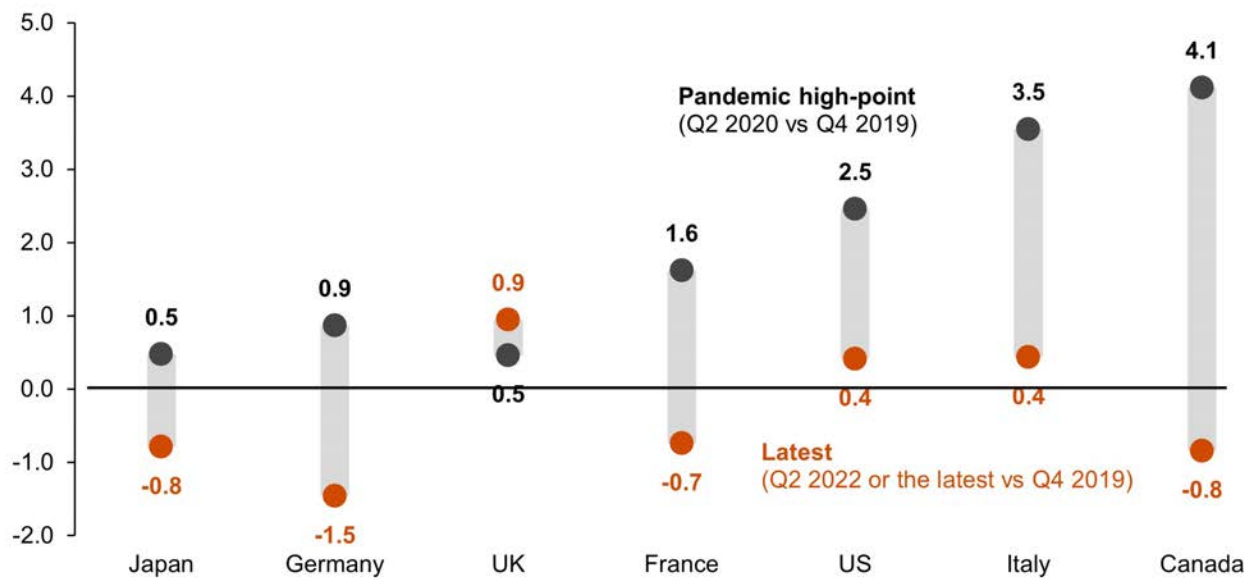
additional GDP growth over this period. This could further be encouraged by supporting the reallocation of resources from those poor performing firms which have been kept afloat through ultra-low interest rates and government support, or ‘zombie firms’, not just by facilitating fast bankruptcy processes where appropriate, but also through enabling the transfer of productive assets and labour from these firms.

4.4 Reducing economic inactivity

Economic inactivity in the UK has started to improve but remains higher than during the pandemic (see more in Section 1.3). Similarly to other advanced economies, UK economic inactivity increased during the pandemic, but it has not fallen back as quickly as other countries (see Figure 4.4), reflecting the restricted employment opportunities in many sectors. While the economically inactive can still contribute to society, for example as carers or volunteers, economic inactivity reduces the resources available to participate in the workforce, and therefore reduces the productive capacity of the economy.

Figure 4.4: Economic inactivity increased during the pandemic, across all of the G7, but has since fallen back close to or below pre-pandemic levels, in all but the UK.

Economic inactivity difference (%) by country, pre-pandemic (Q2 2020 vs Q4 2019) vs post-pandemic (Q2 2022 or the latest vs Q4 2019)



Sources: PwC analysis, OECD

The UK's ageing society poses further challenges, as older people are likely to make up an increasingly significant proportion of the population. The number of people above pension age is expected to increase from 300 per 1,000 working age population, to 360 over the next 40 years.⁴⁰ Post-pandemic economic inactivity has also increased markedly in the 50+ age group (see Figure 4.5). To maintain current all-age activity rates, there must either be an increase in participation by those above the current pension age, or from those aged below it, but the task is not without challenges.

There is an opportunity to support people to work for longer, increasing employment by 1%, and therefore the productive capacity of the economy. Increasing economic activity among 50-64 year olds back to pre-pandemic levels could increase employment by almost 1%. However, it is possible to boost employment further by identifying and removing barriers to participation - both in this age group and for those above pension age who want to continue

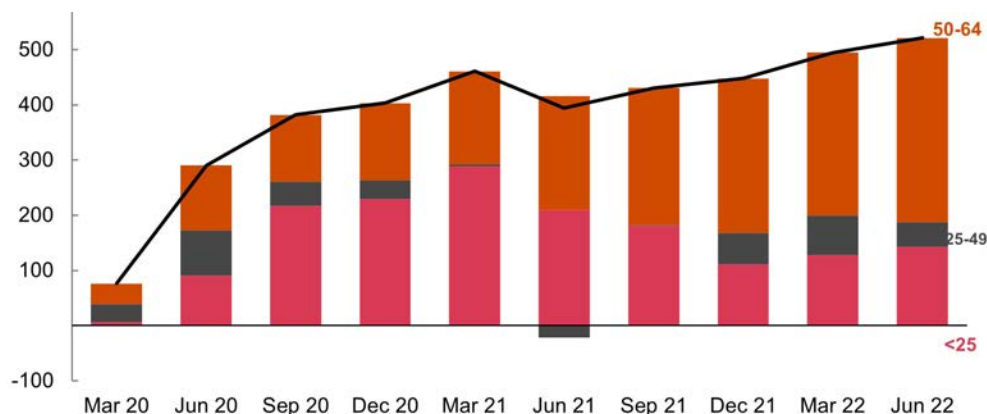
working but are unable to due to health or social factors. Boosting health spending, as covered in the next section, could be an important element of this, as could supporting carers to continue to work. Specific active labour market policies for older workers could untap further economic activity. PwC Golden Age study found that UK GDP could be boosted by £180bn if the employment rate of older workers were increased to match the rate in New Zealand.

Policy should also be focussed on younger people not in employment, education or training (NEETs). Broadening the range and availability of training opportunities could support these people to move into employment in the medium term. This is also an area where targeted active labour market policies can support young people who face barriers to work, due to social or economic factors. PwC Youth Employment Index suggests that reducing the NEET rate of 20-24 year olds to German levels would add £38bn to the UK economy.

⁴⁰ONS 'Living longer and old-age dependency – what does the future hold?', [link](#)

Figure 4.5: Post-pandemic economic inactivity has increased markedly in the 50+ age group

UK economic inactivity by age (thousands), seasonally adjusted, cumulative change from February 2020



Sources: PwC analysis, ONS

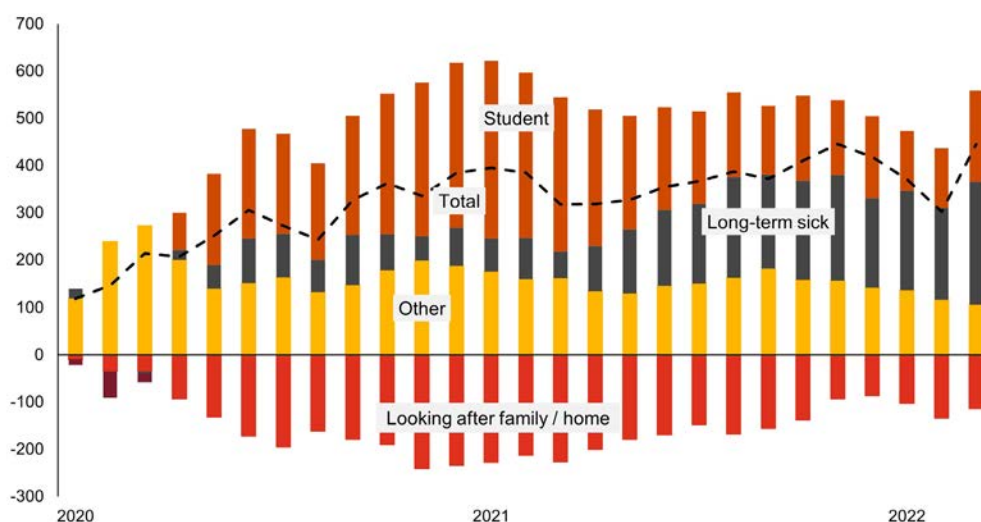
4.5. Boosting healthcare investment

Temporary and long-term sickness is one of the main reasons behind the UK's shrinking labour force. The UK is the only developed country in the world where the share of inactive working-age people due to sickness remains high post pandemic,⁴¹ rising

18 times in three-months to June 2022 compared to the beginning of the pandemic.⁴² Figure 4.6 shows besides long-term sickness, the knock-on effects of the pandemic have been persistent in other categories, such as short-term sickness and looking after family members.

Figure 4.6: Temporary and long-term sickness is one of the main reasons for economic inactivity

Change in economic inactivity (thousands), 2020 – 2022



Sources: PwC analysis, ONS

⁴¹Financial Times, 'Chronic illness makes UK workforce the sickest in the developed world', July 2022, [link](#)

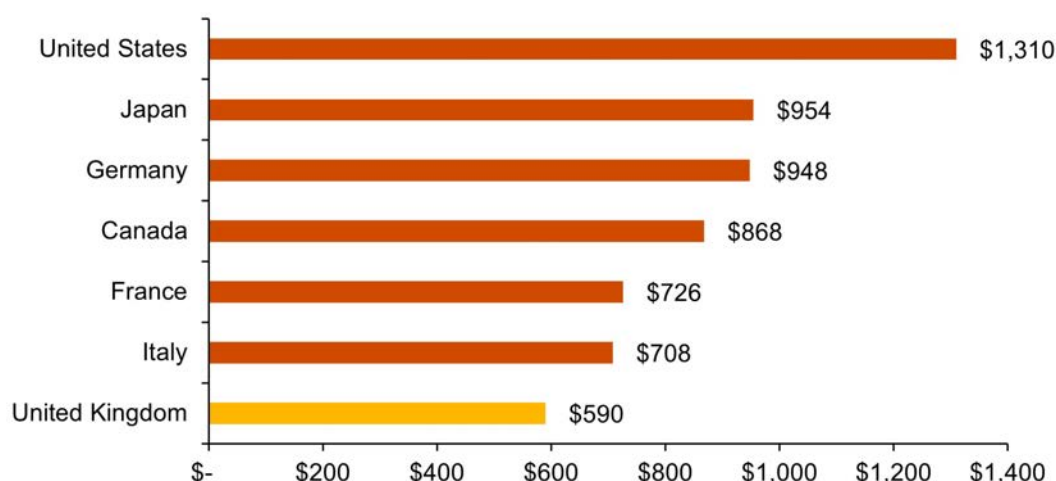
⁴²ONS, [link](#)

One of the factors impacting the UK's ability to deal with the recent health crisis could be the investment stagnation in pharmaceutical research and development (R&D). The sector accounted for just 19% of R&D by UK businesses in 2020, a 9 ppt smaller than 10 years ago.⁴³ The same dataset shows public funding for health R&D has also remained largely unchanged since 2014, accounting for only

0.12% of GDP in 2020.⁴⁴ In contrast, other developed countries, such as the US, France and Germany, have increased their health R&D by 21%, 80% and 60% respectively over the same period. As a result, the UK has the lowest spending per capita and R&D investment per capita in the pharmaceutical industry among the G7 (see Figure 4.7).⁴⁵

Figure 4.7: The UK ranks last in G7 countries on pharmaceutical spending per capita

Pharmaceutical spending per capita (\$), 2021*



Sources: PwC analysis, OECD

Note: (*) Data as of 2021 or latest available.

Boosting healthcare investment could be a sustainable strategy for a strong workforce. It could help bring people back to work more quickly, as well as maintain a stable pool of resources at work. For instance, a recent Cancer Research UK report, found the current £1.8bn annual investment in cancer research provided a social benefit of £1.4bn in quality adjusted life years (QALYs) through improved survival rates. Further, if the current trajectory of research investment continues to 2040, annual investment will reach £3.1bn and will provide a QALYs benefit of £6.4bn – £10.3bn.⁴⁶

Moreover, new research investment could cut the UK's overall health burden by 40% while raising workforce productivity by £45bn over the next 30 years.⁴⁷ The PwC's study in collaboration

with the Association of the British Pharmaceutical Industry (ABPI) found investing in pharmaceutical manufacturing R&D offers considerable GDP and employment benefits. If the UK raised its pharmaceutical R&D spending per capita levels to a comparable level to the US, there would be an additional £7.2bn invested into research each year. Current literature suggests every £1 invested in private R&D today provides £0.50 additional GVA per year in perpetuity, and therefore this additional investment each year could provide a benefit of £68.1bn to the UK economy over the subsequent 30 year period. Further, if the UK increased its share of global pharmaceutical exports from the current 4.3% to 8%, comparable with the US, Belgium or Ireland, there would be £16.3bn additional GDP generated and 85,000 jobs supported.

⁴³ONS, [link](#)

⁴⁴Gov.UK, [link](#)

⁴⁵OECD ([link](#)), and European Federation of Pharmaceutical ([link](#))

⁴⁶Cancer Research UK, 'Understanding the economic value of cancer research', June 2022, [link](#)

⁴⁷Association of the British Pharmaceutical Industry (ABPI) /PwC, [link](#)

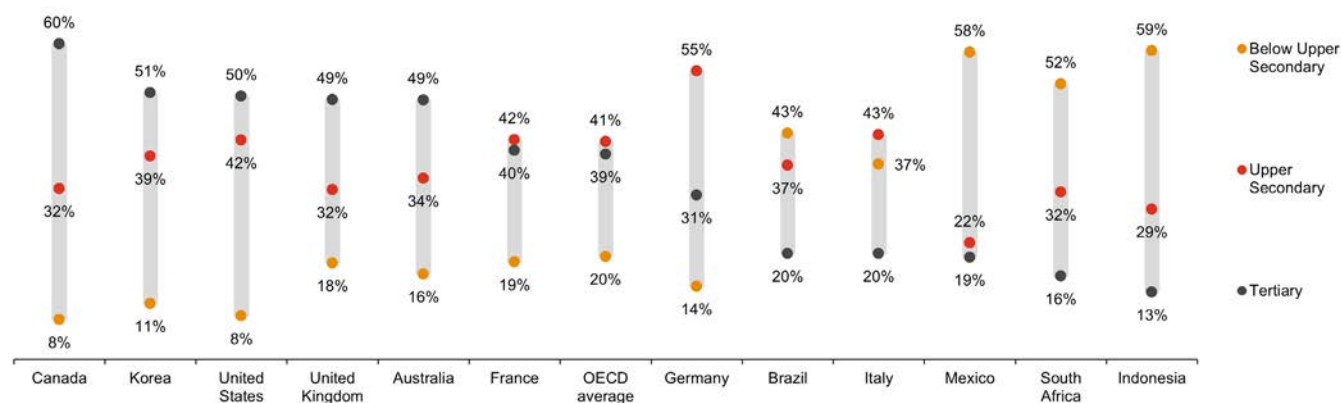
4.6. Promoting a high-skilled economy through higher education

UK higher education has experienced a significant transformation in the past decades, moving to a more universal system making university more accessible. As a result, the proportion of people holding a university degree, which stood at 11% in 1993, almost doubled by 2006, and tripled by 2016. This is largely attributed to the Government's strong commitment to investing in higher education. Since the start of the 21st century, education spending has been the third-largest component of the UK public sector spending (with the exception of 2021, in which economic support rocketed to 179%, driven by the Coronavirus Job Retention and Self-Employment Income Support Schemes). In 2020-21, education spending accounted for about 4.5% national income (£99bn in 2022 prices, of which one-fifth was to fund full-time undergraduate education⁵⁰).

Despite the Government's commitment, the UK has a lower share of young people entering the labour force with a tertiary qualification than some of the G20 countries. Figure 4.8 shows around 49% of the UK working age population held a tertiary qualification in 2020, significantly lower than Canada (60%), slightly lower than Korea (51%) and the US (50%), but still 8 ppts higher than the OECD average (41%).⁵¹ However, following four years of decline, the UK apprenticeships fell to their lowest level in a decade in 2020/21 as the pandemic took its toll.⁵²

Figure 4.8: UK ranked fourth in the percentage of the working population with a tertiary degree among G20 countries (where data are available).

Highest level of qualification – below upper secondary / tertiary / upper secondary, (% of 25-64 year-olds), 2020



Source: PwC analysis, OECD

⁴⁸Blundell, R, Green, D. A. and Jin, W, 2022, 'The U.K. as a Technological Follower: Higher Education Expansion and the College Wage Premium', The Review of Economic Studies, Vol. 89(1), [link](#)

⁴⁹HM Treasury, [link](#)

⁵⁰Institute of Fiscal Studies, [link](#)

⁵¹OECD, 'Education at a Glance 2021', [link](#)

⁵²Gov.UK, 2022, 'Apprenticeships and traineeships', [link](#)

Delayed by the pandemic, investing in education and upskilling has now returned to the Government agenda. In February 2022, the Government unveiled the Levelling Up White Paper, in which it shifted the focus from higher education enrolments to education quality and lifelong learnings. The refreshed strategy aims to equip 200,000 more people in England with high-quality training each year by 2030, including 80,000 people in areas with the lowest skills levels. The plan is to deliver this through the Lifelong Loan Entitlement (LLE) which is designed to support students to study, train, retrain or upskill at any stage throughout their lives.

Training and upskilling can positively impact the domestic labour market at all levels, but could particularly be beneficial to low-skilled workers.

A study by the Institute of Fiscal Studies found a 1 ppt increase in training rate could result in a 0.6% increase in productivity and a 0.3% increase in worker wages. Moreover, people with degrees are more likely to participate in further in-work training (32.4%), compared to employees with no qualifications (8.5%). The combined impact of improved productivity and increased wages could drive the overall economic growth through boosting business performance and worker morale in a sustainable way.

4.7. Taking a step closer to closing regional income imbalances

Regional household disposable income varies widely across the UK, from around £17,000 per person in the North East, to more than £30,000 in London.⁵⁵ Nine of the UK's 12 regions have average income levels below the national average, with only London, the South East and the East of England above it. Bringing lagging regions up towards the UK average could have significant positive impact on standards of living, while bringing them closer to London levels would see incomes rise by as much as 75% in some regions. However, this definition of disposable income does not account for regional differences in either housing or in the cost of living more broadly.

Divergence in regional average incomes is largely driven by imbalances in both productivity and economic activity rates. Our analysis in Section 3 estimates closing the regional productivity gap could result in an additional £71.6bn of economic output. There are also wide variations in workforce participation rates by region, ranging from 59.2% of the 16+ population in Northern Ireland, to

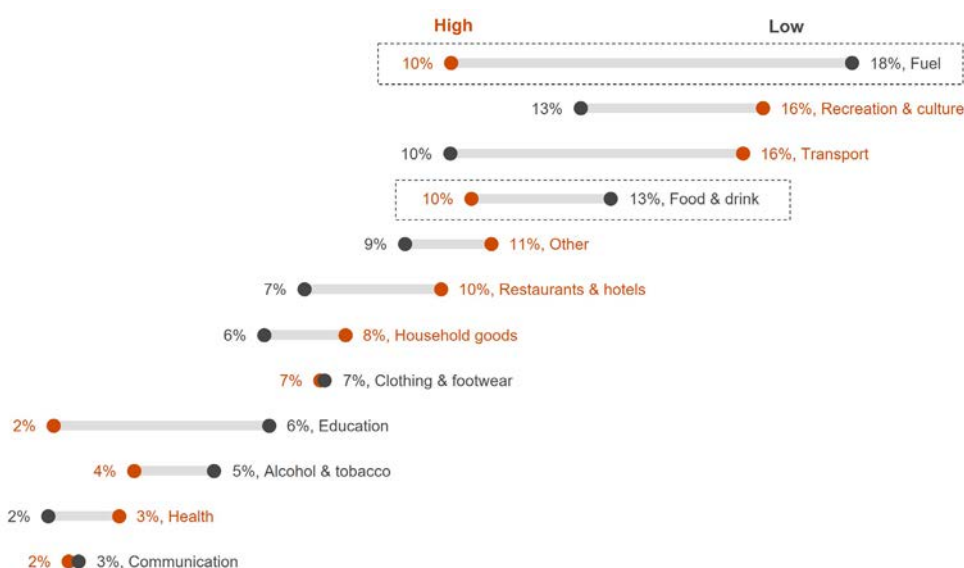
69.5% in London. The fact that most regions with low productivity also have low rates of workforce participation means there is a compound effect on regional incomes.

Regional income imbalance could worsen as lower income households experience higher inflation in recent months. This is because the budget shares of fuel and food are 80% and 30% higher than in high income households, respectively (Figure 4.9).⁵⁷

Progress on the levelling-up agenda could both result in a more even distribution of growth, and result in more growth as underperforming regions may have more potential to grow from a relatively low base. As part of PwC's Future of Government programme, we surveyed 4,000 members of the public and it was clear that respondents felt that the provision of better and more quality housing was the biggest factor that could contribute to levelling up. Achieving a better regional balance of activity is not a short-term fix however, and would take many years of focus and a coordinated approach between central government, local government and business.

Figure 4.9: Low income households are more vulnerable to inflation

Share of expenditure (%), high vs low income households



Sources: PwC analysis, ONS

Note: High income refers to the 9th income decile, while low income refers to the 2nd

⁵³Dearden, L., Reed, H. and Reenen, J. V., 2006, 'The Impact of Training on Productivity and Wages: Evidence from British Panel Data', Institute of Fiscal Studies, [link](#)

⁵⁴ONS, [link](#)

⁵⁵ONS, Regional gross disposable household income – 2019 (latest data), [link](#)

⁵⁶ONS, Regional labour market, [link](#)

⁵⁷ONS, Family spending, [link](#)

4.8. Accelerating progress on trade agreements

In the context of deglobalisation trends, Brexit and COVID-19, the importance of trade policy and international cooperation is high. Increasing trade through new FTAs is at the top of the Department for International Trade's agenda, with a particular focus on the reduction of non-tariff barriers in services sectors. The UK is a strong service-based economy, with the second highest net services trade of all OECD countries in 2021. The top two destinations for UK services exports are the EU and the US (see Figure 4.10), so maintaining and strengthening trading relations with these regions will be important for future growth.

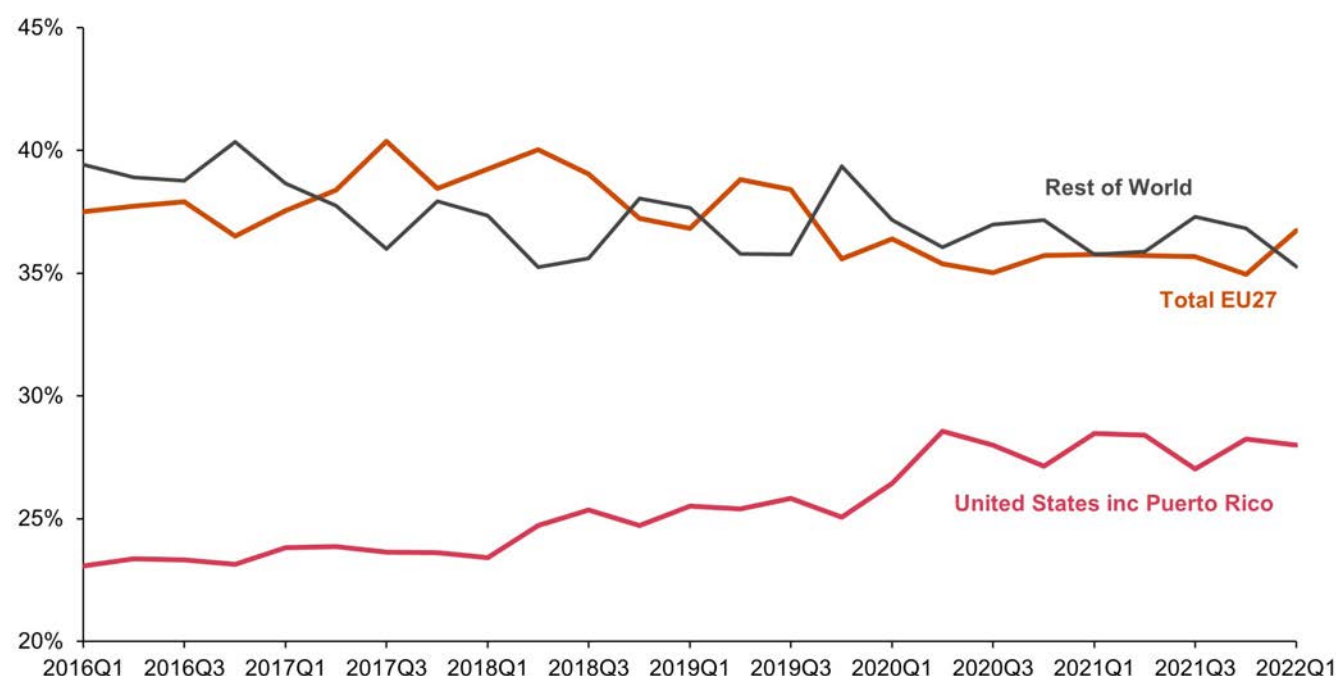
Services trade liberalisation has the potential to significantly boost UK economic growth. Improved service trade could drive employment, production and productivity while contributing to raising average workers' wages and narrowing the gender pay gap.⁵⁹ The OECD study estimated that a

1% increase in services imports (exports) could lead to a 0.04% increase in firm turnover (0.02% increase in employment). That means on average, a service firm in the UK could gain an extra 3% in turnover a year and/or create around four extra jobs as a result of improving service trade.⁶⁰ These benefits are derived from greater international competition and lower cost of imported intermediates, increasing firm competitiveness in both the domestic and export markets. As traded and non-traded firms are connected through supply chains, sectors that do not trade internationally also benefit from lower supply chain costs.

Negotiating deep FTAs that carve out specific chapters on services and digital trade have larger benefits than shallow agreements.⁶¹ Research from the World Bank suggests the UK more than doubled services trade by joining the EU and subsequently signing deep FTAs with third countries as an EU member.⁶²

Figure 4.10: The EU and US remain important destinations for UK services exports

Total UK services export shares by destination (%), Q1 2016 – Q1 2022



Source: ONS

⁵⁹OECD, Trade in Services 2021. [link](#)

⁶⁰OECD, 'Services Trade and Labour Market Outcomes in the UK', 2020. [link](#)

⁶¹This estimate is based on an assumption that overall services imports/exports rise at the same rate as the average rises between 2012 and 2017 (the sample period in which the OECD study assessed).

⁶²FTAs that cover tariffs and other border measures are shallow agreements; FTAs that cover a larger set of policy areas, at the border and behind the border (i.e. regulatory barriers in services sectors) are deep agreements.

There has been an upward trend in services trade liberalisation (see Figure 4.11), signalling the increasing prevalence of deep FTAs. The UK is currently in negotiations with the Comprehensive Trans-Pacific Partnership (CPTPP), an agreement which goes deeper on services liberalisation than many pre-existing UK FTAs, and government modelling suggests it could increase UK GDP by around £1.8bn in the long-run.⁶³

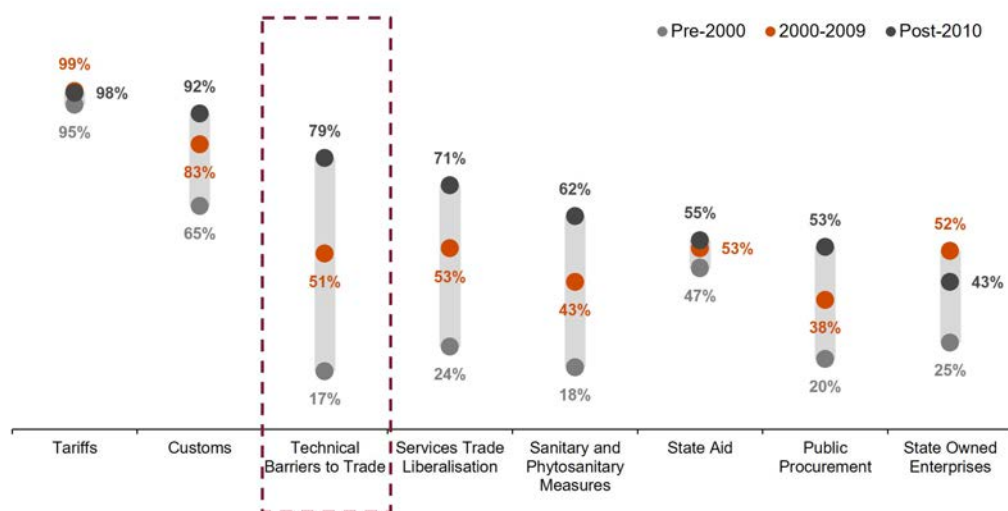
In the medium-term, regulatory alignment and co-operation with the EU could resolve issues relating to the NI Protocol and streamline trade for UK businesses. The EU-UK Trade and Co-operation Agreement (TCA) is up for its five yearly review in 2025 and the government could use this opportunity to re-assess some aspects of the current relationship with its European counterpart. Resolving issues with the EU and increasing certainty regarding the Irish border and the NI Protocol could increase trade. It is also likely to have wider economic benefits to UK businesses in the long run as it reduces trade frictions with its largest (and closest) partners. Reducing uncertainty, especially in terms of international trade, could support business growth as well as the country's overall economic performance.

4.9. Reshoring critical parts of the supply chain

Supply chain challenges, exacerbated by the pandemic and the war in Ukraine, have reshaped global trade, in which deglobalisation and reshoring trends have become more prominent. In the US, sentiment towards reshoring is becoming increasingly positive, with 79% of manufacturers with operations in China already having moved part of their operations back to the US or revealing plans to do so in the next three years⁶⁴. Similarly, research conducted in Europe just before the outbreak of the war, found more than two-thirds of businesses were looking to onshore or re-shore in the next three years.⁶⁵

Figure 4.11: Upward trend in services trade liberalisation as UK joined the EU

Presence of chapter in FTAs signed (%), pre-2020 vs 2000-2009 vs post-2010



Sources: World Bank, Design of Trade Agreements

⁶²FTAs that cover tariffs and other border measures are shallow agreements. World Bank, 'Deep Integration and UK-EU Trade Relations', 2017. [link](#)

⁶³Department for International Trade, 'UK Accession to CPTPP: The UK's Strategic Approach', 2020. [link](#)

⁶⁴Kearney, '2021 Reshoring Index', [link](#)

⁶⁵Buck Consultants International, 'Global Reshoring & Footprint Strategy', February 16 2022, [link](#)

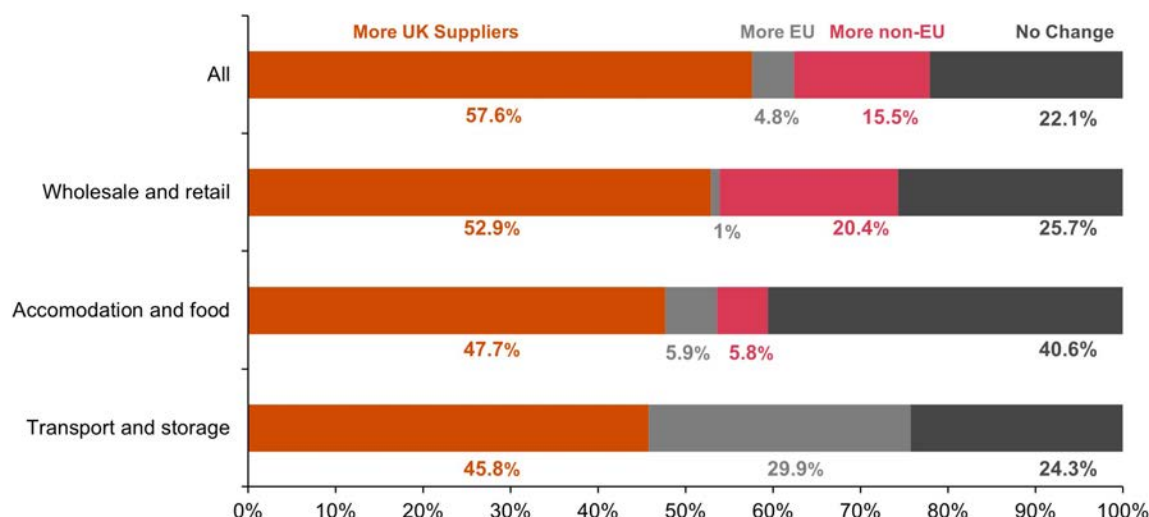
Within the UK, dependence on traditional suppliers has seen some industries become more vulnerable to supply chain disruptions. Around 92% of currently trading businesses in the UK have experienced some levels of supply chain disruptions in July 2022, a 50 ppt increase from just 40% in March, according to a Business Insights and Conditions Survey (BICS) by the ONS.⁶⁶ The automotive sector, for example, saw UK car production in 2021 fall by 35% compared to 2019 as a result of war in Ukraine and a continued global shortage of semiconductor chips. It has cut this year's expected output by 15%, prompting the industry to push back its milestone – to return to producing 1 million vehicles per year – by two years, to 2025.⁶⁷

As a result, businesses have started reshoring as part of their mitigation strategy. The most recent BICS survey asking businesses' reshoring appetite has shown 57.6% of the respondents reporting an increase in using UK suppliers, as well as a further 4.8% moving their supply chain closer to home with an

increase in EU suppliers. (see Figure 4.12). Reshoring decisions differ across industries, with wholesale and retail increasing their UK suppliers by the most among the focus industries in the BICS survey, with 52.9% of respondents reporting an increase of UK suppliers, in contrast just 1% of these businesses reported an increase in EU suppliers. Transport and storage reported a much larger increase in EU suppliers, with 29.9% of respondents, with this industry the only one to have no respondent reporting an increase in global suppliers. According to Make UK, the UK manufacturers' trade group, around three-quarters of UK manufacturers have increased the number of their British suppliers in the past two years.⁶⁸ UK car manufacturers have also started moving their production away from Eastern Europe following Russia's invasion of Ukraine and the consequent sanctions imposed on Moscow.⁶⁹

Figure 4.12: There are a growing number of businesses reporting changes to their supply chains towards reshoring

Percentage of businesses reporting changes to their supply chains (%), January 2022*



Sources: PwC analysis, ONS's BICS – Wave 48

Note: (*) The last ONS survey that includes the questions on reshoring. Other sectors have less than 1% responses, therefore are not reported.

⁶⁶Business insights and impact on the UK economy (BICS) Wave 62 surveyed around 39,000 UK businesses for the survey live period between 25 July 2022 and 07 August 2022, [link](#)

⁶⁷Financial Times, [link](#)

⁶⁸Financial Times, [link](#)

⁶⁹City A.M., 'Automotive sector in favour of relocating car manufacturing to UK', 23 March 2022, [link](#)

The shift towards reshoring could see the UK reduce its reliance on overseas suppliers. A survey of 132 senior decision makers of UK manufacturers conducted immediately before the start of the war in Ukraine found that 42% of businesses had significantly or moderately increased the proportion of their suppliers based in Great Britain in the last two years.⁷⁰ The key drivers of the shift to onshoring have been increasing supply certainty and economic resilience from future shocks, with 47% and 32% of respondents citing the pandemic and Brexit as major disruptions to their supply chain. While 43% of the respondents plan to speed up this process over the next two years, this trend is likely to accelerate further as a result of the conflict.

In terms of energy supply chain, having one of the world's largest renewable energy capacities, the UK has the potential to produce more onshore renewable energy. With a diverse supply of renewable energy, ranging from onshore wind, solar power, nuclear to hydroelectricity power, the UK could increase the resilience of its energy system through further investment in order to fully utilise its renewable capacities. The landmark Energy Security Bill announced in July 2022 has provided an unprecedented set of 26 measures to boost the UK's energy independence and security, including unleashing competition in onshore electricity networks, and accelerating the growth of low carbon technologies - a step closer to reducing the country's exposure to volatile gas prices.⁷¹ While it could take time for the impact of any policies to manifest, promoting onshore energy supply has the potential to drive economic growth as well as energy independence which is particularly crucial as the world is facing increasing energy supply uncertainty.

Reshoring of activities is also likely to positively impact the domestic labour market, especially among high-skilled workers. We estimated reshoring could bring around 100,000 to 200,000 jobs back to the UK by the mid-2020s and boost annual output by around £6-12 billion at 2014 prices⁷². More recent study by the Center for European, Governance and Economic Development Research (CEGE) found reshoring could push up wages and employment

among high-skilled workers, estimating a 10% increase in reshoring could boost employment in professional occupations by between 780 to 1,150 workers a year⁷³. However, there is no evidence of similar impact on wages and job creation in elementary occupations, such as miners, cleaners and food preparation assistants⁷⁴.

It is worth noting that reshoring should be taken with careful consideration. While reshoring is on the rise,⁷⁵ the benefits of offshoring production in driving cost efficiency and skill utilisation have been widely documented. Therefore, the right balance between onshore and offshore would make sure businesses benefit from cost efficiency while mitigating risks effectively

4.10. Accelerating the net zero progress for a more sustainable future

The UK government has set out a solid strategy to meet the UK's law-binding commitment to achieve net zero by 2050. Its Build Back Greener white paper has identified the industries key to achieving this goal, including power, fuel and hydrogen, industry, heat and buildings, transport, natural resources and greenhouse gas removals. The plan commits to goals ranging from advancing offshore wind and jet zero, to green finance and innovation.⁷⁶ It also aims at significantly reducing costs of renewable energy by 2024, allowing households to cut down on energy bills amid surges in gas prices.

Despite ranking second in the Environmental Performance Index,⁷⁷ tangible progress is lagging the Government's policy ambition, and it is likely to fail to deliver net zero by 2050.⁷⁸ The Climate Change Committee reports the UK currently lacks credible government plans to deliver over a third of the emissions reductions required if the Sixth Carbon Budget in the mid-2030s is to be met. It also highlights energy efficiency in homes and agricultural and land use as the worst performing targets, where government policy has failed to guide the promised private sector action.⁷⁹

⁷⁰Make UK, 'Operating Without Borders – Building Global Resilient Supply Chains', [link](#)

⁷¹BEIS, 'Energy Security Bill - Building a clean, affordable, home-grown energy system', 2022, [link](#)

⁷²Current programmes will not deliver Net Zero', June 2022, [link](#)

⁷³CEGE, 'Robots, reshoring, and the lot of low-skilled workers', July 2018 [link](#)

⁷⁴Elementary occupation group is defined as major group 9 according to the ISCO-08, [link](#)

⁷⁵PwC, UK Economic Outlook, March 2014, [link](#)

⁷⁶CHM Government, 'Net Zero Strategy: Build Back Greener', Oct 2021, [link](#)

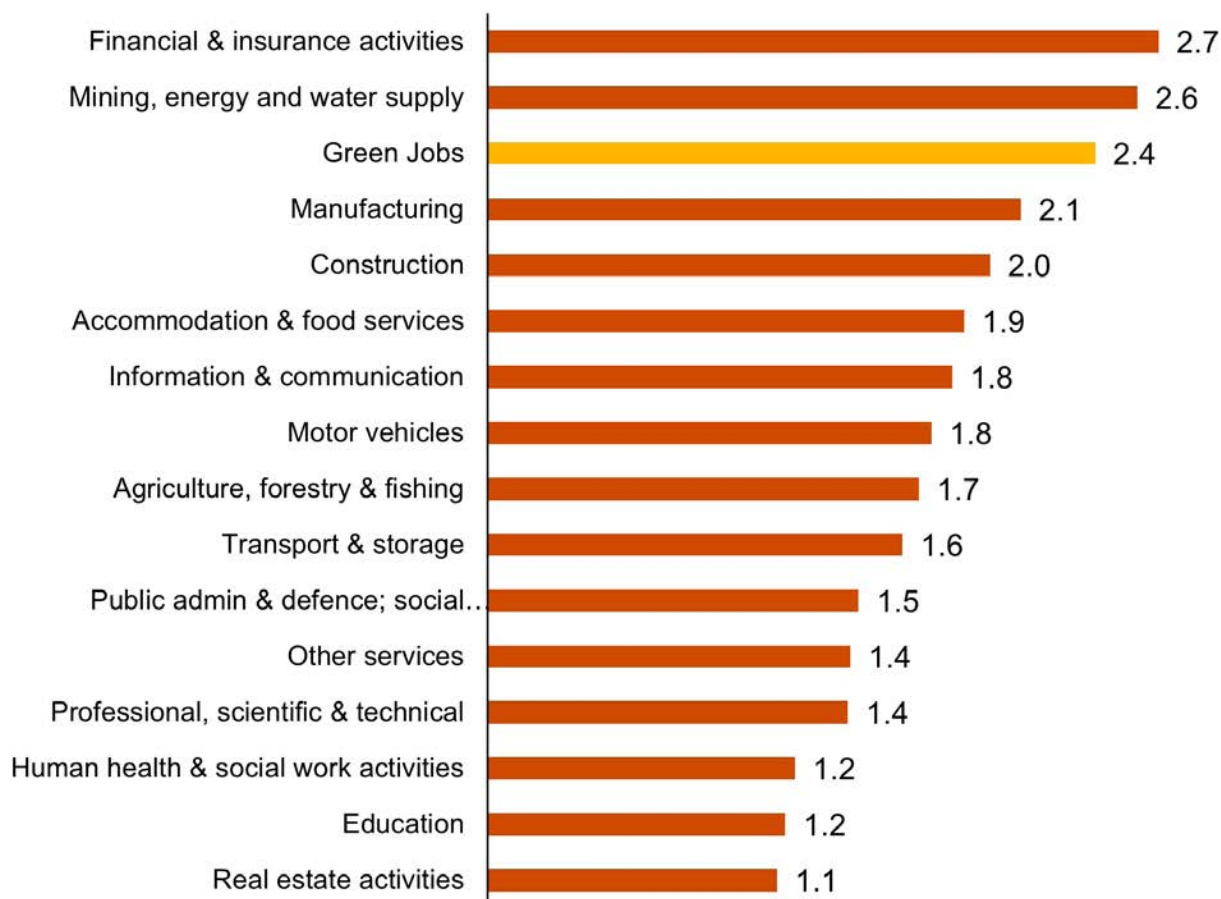
⁷⁷EPI, Environmental Performance Index 2022, [link](#) EPI, Environmental Performance Index 2022, [link](#)

⁷⁸CCC, '2022 Progress Report to Parliament', [link](#)

⁷⁹Current programmes will not deliver Net Zero', June 2022, [link](#)

Figure 4.13: Green jobs have the potential to create more additional jobs than the majority of UK sectors

Employment multipliers by industry



Sources: PwC's Green Jobs Barometer, ONS

The Government's net zero objectives are expected to have a significant impact on the UK labour market. PwC's Green Jobs Barometer reveals that in 2021, just 1.2% of advertised jobs in the UK could be identified as green. The ambition outlined in Build Back Greener is to support up to 440,000 jobs across net zero industries in 2030, with a broader impact of two million jobs supported through the greening of existing sectors.⁸⁰ If this goal is met, it would equate to 6.2% of total UK employment. Green jobs are estimated to have an employment multiplier of 2.4, that is for every green job created, there are a

further 1.4 jobs supported in the economy (see Figure 4.13). This would place green jobs with the third highest employment multiplier behind just financial and insurance services, and mining and energy, with multipliers of 2.7 and 2.6 respectively. However, in addition to the high employment multiplier of green jobs, if the goal of 2 million green jobs by 2030 is met, this will be 1.4x and 4x more jobs than finance or mining and energy currently employ, highlighting the vast high value employment opportunities the transition to net zero offers.⁸¹

⁸⁰HM Government, 'Net Zero Strategy: Build Back Greener', Oct 2021, [link](#)

⁸¹DONS, 'FTE multipliers and effects, bespoke industry groups', 2019, [link](#)

Despite being better positioned than most European countries to meet energy demand this winter, the UK government has begun contingency plans for supply shortages.⁸² Following Russia's invasion of Ukraine, the Government declared the UK was not at risk of energy shortages, with less than 4% of UK gas supply coming from Russia in 2021⁸³. However, with forecasts that Ofgem's annual price cap could average at around £7,000 in our scenario where natural gas prices remain at end of August levels and where there is no direct government intervention, the tide is likely to turn. The unprecedented challenge has led the UK government to establish a new public body to oversee Britain's energy system.

The Future System Operator (FSO) will provide independent advice to guide the UK towards net zero and improved energy resilience, effectively renationalising critical responsibilities that have been held by National Grid since its privatisation.

The UK government set out its energy security strategy in a 2022 White Paper, which called for improved energy efficiency, more renewable production and less foreign energy imports.⁸⁴

Currently, half of UK demand for gas is met through domestic supplies. The Government highlights gas as a crucial energy transition fuel, estimating it will still be used in 2050 and pointing to a boost in North Sea production as key to energy security. To further boost domestic resilience, the Government hopes to increase domestic renewable capacity by 15% by 2030 and nuclear capacity, to meet 25% of projected electricity demand by 2050.

The Government estimates an additional investment required for achieving net zero to be around £40bn to £60bn per year over the next 15 years⁸⁵ but the benefits may outweigh the costs.

Transition to net zero through innovation in low carbon sectors could add £27bn to the UK economy through domestic economic activity and further £26bn through exports by 2050.⁸⁶ This could also contribute to job creation, especially in lower-carbon industries, such as offshore wind and electric vehicle manufacturing. In their interim report, HM Treasury estimated that increasing offshore wind could support 60,000 new jobs while contributing to replacing jobs in high carbon sectors, such as mining and quarrying.⁸⁷ More importantly, transition to net zero could mitigate the costs and risks of global warming, which is estimated to cost the world around 5%-20% of global GDP each year.⁸⁸ While the majority of the investment is expected to come from the private sector, it is crucial that the Government continues to raise awareness alongside providing timely policy interventions to incentivise businesses, households, and government organisations to drive the progress toward net zero.

Conclusion

Amid unprecedented levels of uncertainty at both global and national levels, there is no quick fix for the series of tough challenges the UK's new prime minister is facing. To deliver an ambition in which an economically strong and a more sustainable economy is a reality, the Government could consider focussing policy on the areas discussed in this report.

⁸²Financial Times, 'UK power cuts feared in worst-case scenario for energy supplies' August 2022, [link](#)

⁸³Department for Business, Energy & Industrial Strategy, 'Russia-Ukraine and UK energy: factsheet', February 2022, [link](#)

⁸⁴HM Government, 'British Energy Security Strategy', April 2022, [link](#) ⁸⁵Institute for Government, [link](#)

⁸⁶HM Treasury, 'Net Zero Review: Analysis exploring the key issues', October 2021, [link](#)

⁸⁷Department for Business, Energy & Industrial Strategy (BEIS), 'Energy innovation needs assessment: overview', 2019, [link](#)

⁸⁸HM Treasury, 'Net Zero Review: Interim report', December 2020, [link](#)

⁸⁹HM Treasury, 'Net Zero Review: Analysis exploring the key issues', October 2021, [link](#)



Technical annex

The GDP nowcast model is built based upon six main economic variables. Data is collected for a period from 1 January 1976 to 21 August 2022. The components of the index are:

- Quarterly Real GDP.
- Quarterly Real Personal Income .
- Monthly Employment.
- Monthly Vacancies.
- Monthly Industrial Production.
- Monthly Real Manufacturing and Trade Sales.

These indicators provide useful information on the state of the economy. All component series are converted into period-over-period growth rates, using the continuous compounding method and annualised growth rates are presented in percentage points. These growth rates are used in the model to estimate a single factor f_t . We model this factor as a daily first-order autoregressive process using method described in a study by Aruoba, Diebold, and Scotti. We estimate the parameters of the model's state-space representation via Kalman filtering. Using these estimated parameters, we compute the daily values as the mathematical expectations of $f_t = 1, 2, \dots, T$, conditional on the source data, where T represents the most recent observation across all component variables.

Having estimated the factor, the next step is to construct the GDP nowcast. We do this in two stages. First, we aggregate the daily index to the frequency of the GDP that we are interested in. For instance, if we want to nowcast GDP at a quarterly frequency, we first find the quarterly average of the factor f_t . In the second step, the average values for the factor will be used to nowcast the GDP growth

$$\Delta GDP_t = \beta_0 + \beta_1 \hat{f}_t + \hat{\epsilon}_t$$

The parameters of the model are estimated by OLS, and the nowcast for ΔGDP_t is given by

$$(\Delta GDP_t)^\wedge = \beta_0 + \beta_1 f_t$$

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