

Yanked away

Accounting for the post-pandemic productivity divergence between Britain and America

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Summary

Productivity growth – or increasing the amount of output produced from an hour's work – is the main way that living standards rise over time. But Britain made worryingly little progress on this front in the 2010s, with the lowest productivity growth of any G7 economy bar Italy.

Moving from the 2010s into the 2020s, Britain has entered an exceptionally volatile period. The pandemic was followed by war in Europe, governments dispensed extraordinary fiscal support, and the world now finds itself on the verge of a trade war. But halfway through the 2020s, now is a good time to step back from recent volatility and assess Britain's productivity performance over the decade so far.

Alarmingly, while Britain's record was dire in the 2010s, things have got even worse in the 2020s. Official data suggests that UK productivity growth averaged just 0.4 per cent per year from 2019 to 2024, a third lower than the already weak growth rate of the 2010s. But recent issues with official labour market data have probably flattered the UK's post-pandemic productivity record. Alternative estimates based on tax and payroll data suggest that productivity has declined outright, with an estimated fall of 0.5 per cent over this period. Such a sustained fall in productivity would be almost unprecedented for Britain: in almost half a century of official data from 1971 to 2019, only during the depths of the financial crisis had productivity previously fallen once over a five-year period (by 0.6 per cent between 2007 and 2012). And historical estimates suggest that it would be the first time in the past 250 years that productivity was lower halfway through a decade than when the decade began.

Britain isn't alone in its recent struggles: productivity in Canada, France, and Italy has also fallen below pre-pandemic levels. But the US has bucked this trend entirely. Although recent US economic data has been soft, its productivity growth since the pandemic has been in a league of its own: between 2019 and 2024, US productivity has grown by 9.1 per cent. It is the only G7 economy where productivity growth has accelerated in recent years, increasing at by 1.9 per cent a year on average, compared to 1.0 per cent in the 2010s.

By looking at data for broad sectors of the economy we can account for the recent productivity divergence between the US and UK. The UK's healthcare sector has been a major drag on productivity in Britain, with output per hour falling by 19 per cent since 2019. But Britain's problems have been much more broad-based. Since 2019, productivity has fallen in 13 of the ONS's 19 high-level sectors, which together account for nearly two-thirds of UK output (63 per cent in 2019). At the same time, the information and

communications sector, which was a major contributor to UK productivity growth in the 2010s, has seen a sharp slowdown in growth. Productivity growth has more than halved compared to the pre-pandemic period, reducing its contribution to aggregate growth at precisely the moment when other parts of the economy have also weakened.

Meanwhile, US productivity growth has been boosted by a continued boom in oil and gas extraction. American oil and gas extraction has increased since before the pandemic despite falling hours worked in mining and quarrying. But in Britain, extraction is way down on pre-pandemic levels and hours are little changed. These starkly different trends mean that the mining and quarrying sector alone explains one-sixth (16 per cent) of the post-pandemic gap in productivity growth between the US and UK, despite accounting for less than 2 per cent of output in both economies. But there is little sign that cheaper energy has boosted productivity elsewhere in the economy: outside of mining, the US's growing productivity advantage has been concentrated in services, rather than more energy-intensive sectors like manufacturing and construction.

US tech companies have become world-beating, but it is the way that the rest of the US economy uses this tech that drives its productivity overperformance. Tech-using rather than tech-producing services account for more of its recent productivity gains relative to Britain. Professional, scientific and technical services accounts for another sixth (17 per cent) of the post-pandemic gap in productivity growth between the US and the UK – twice as much as the tech (ICT) sector (8 per cent).

What is driving this broad outperformance? Business investment is a critical part of the story. The UK's long history of under-investment has left British workers operating with less kit and infrastructure than their American counterparts, and this trend has accelerated in the 2020s. In the key service sectors where the US has outperformed the UK since the pandemic, the UK's capital stock stopped growing entirely in 2023. By contrast, America's continues to grow at 3 per cent a year. Software investment has played an important role. Either side of the pandemic, businesses' spending on software has risen twice as fast in the US (up 42 per cent from 2017-19 to 2021-23) than in the UK (up 17 per cent). A lack of business dynamism has further held back UK productivity. The US has seen an increase in business formation since the pandemic, particularly in services, while UK firm creation and the movement of workers to more productive firms have remained subdued.

Reversing Britain's productivity malaise should be a top priority for the Government. In some areas, such as planning reform and protecting public investment, the Government has already taken welcome steps. But there are a few areas of focus that aren't currently receiving the attention they should. The tax system could be tweaked to be more supportive of investment and dynamism. Expanding full expensing to cover software

investment, reducing distortions created by non-residential stamp duty and the VAT registration threshold, and shifting tax incentives from small businesses to high-growth new firms are all worth careful consideration. Enhancing trade openness can also boost productivity – particularly in services sectors where the prospects for trade agreements are more realistic. The right policy choices can make a meaningful difference in preventing another decade of economic stagnation in Britain.

Productivity growth stalled in the 2010s, leading to a decade of wage stagnation

Whether you look across the globe or back through time, the link between labour productivity – commonly measured as GDP per worker or per hour worked – and living standards is undeniable. In a sample of 138 countries today, more than 90 per cent of the variation in real wages can be explained by variation in productivity (the left panel of Figure 1).¹ And in Britain, the transformation in average living standards since the mid-19th century has seen both pay and productivity increase tenfold (the right panel of Figure 1).

But this tight link between productivity and pay turned against workers in the 2010s.² UK labour productivity grew by an average of just 0.6 per cent per year over the decade, slower than every G7 economy except Italy.³ At the same time, wages in the 2010s fell by 0.2 per cent after adjusting for inflation.⁴ On both fronts, the 2010s represented a significant slowdown from typical growth rates in the pre-financial crisis period.⁵ And this dual slowdown was no coincidence: a decomposition of real wages reveals that weak productivity growth was the biggest contributor to the slowdown in real wage growth after the financial crisis.⁶ This lack of wage growth, combined with Britain's already high levels of income inequality, has left middle-income households in Britain worse off than their counterparts in Western Europe.⁷

¹ In the left panel of Figure 1, the R-squared of a linear regression of the log real consumption wage on log output per worker across countries is 0.92.

² From this point on, productivity or labour productivity refers to real GDP or gross value added (GVA) per hour worked unless otherwise stated.

³ E Fry, S Pittaway & G Thwaites, *Life in the slow lane: Assessing the UK's economic and trade performance since 2010*, Resolution Foundation, June 2024.

⁴ This is based on CPI-adjusted Average Weekly Earnings (AWE), as shown in Figure 9 of N Cominetti & H Slaughter, *Job done?: Assessing the labour market since 2010 and the challenges for the next government*, Resolution Foundation, June 2024.

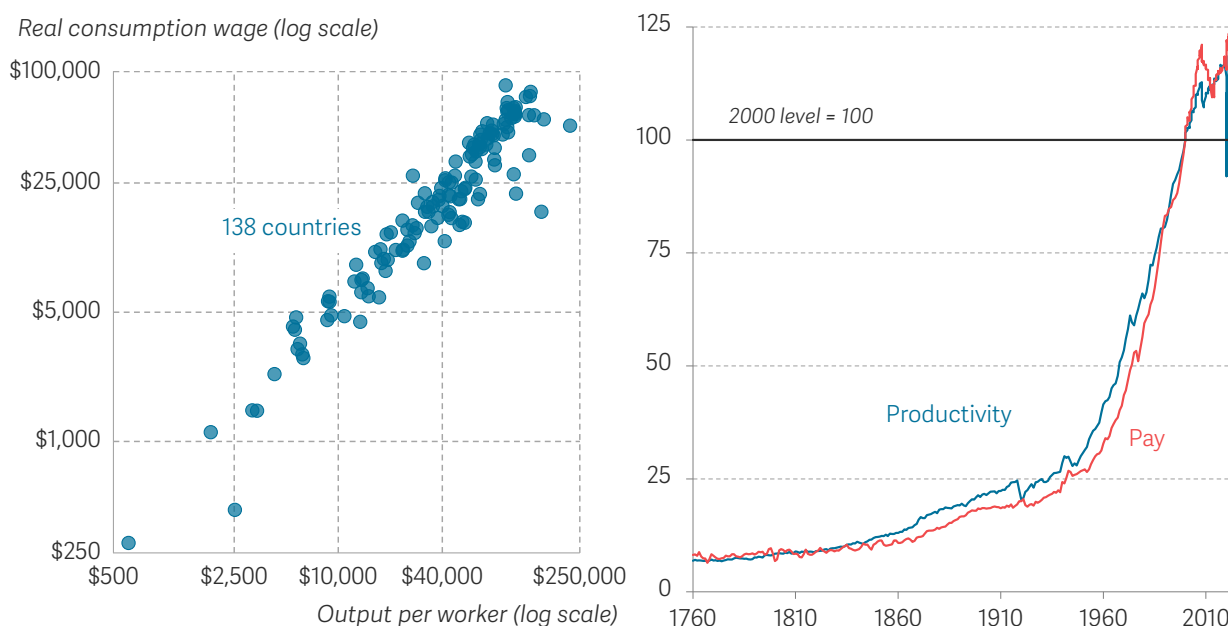
⁵ E Fry, S Pittaway & G Thwaites, *Life in the slow lane: Assessing the UK's economic and trade performance since 2010*, Resolution Foundation, June 2024; N Cominetti & H Slaughter, *Job done?: Assessing the labour market since 2010 and the challenges for the next government*, Resolution Foundation, June 2024.

⁶ G Thwaites, *The Macroeconomic Policy Outlook Q2 2024*, Resolution Foundation, May 2024.

⁷ Z Janan & S Pittaway, *Whose price is it anyway?: Comparing the spending power of low-to-middle income families in Britain and abroad*, Resolution Foundation, January 2025.

FIGURE 1: Labour productivity is the main driver of real wages in the long run

Relationship between productivity and real wages across countries in 2019 (left panel) and indices of productivity and real wages in the UK (right panel)



NOTES: In the left panel, the real consumption wage is output per worker multiplied by the labour share and the relative price of consumption to output. Both wages and productivity are expressed at current PPPs in 2017 US dollars. In the right panel, productivity is output per worker and pay is the real consumption wage. These charts are taken from G Thwaites, *The Macroeconomic Policy Outlook Q2 2024*, Resolution Foundation, May 2024.

SOURCE: RF analysis of ONS, Labour productivity; Bank of England, *A millennium of macroeconomic data*; Penn World Table.

Official data has masked the true extent of Britain's productivity crisis in the 2020s

Worryingly, at the halfway point of the 2020s there are no signs of a productivity growth revival in the UK. In fact, over the past five years things have got even worse.

According to official data on hours worked from the Labour Force Survey (LFS), output per hour grew by a total of 1.8 per cent in the five years from 2019 to 2024. On an annual basis, the equates to productivity growth of just 0.4 per cent per year, a third lower than Britain's already meagre growth rate in the 2010s.

However, data from the LFS is currently more uncertain than usual. The survey's response rate collapsed during the pandemic and has yet to recover to pre-pandemic levels.⁸ And there is good reason to think that higher non-response levels have led to the LFS understating the number of people in work. Other data sources – for example, the ONS's Workforce Jobs (WFJ) estimates and HMRC's Real Time Information (RTI) payroll data and self-employed tax returns – point to a stronger post-pandemic employment recovery than that suggested by the LFS.⁹

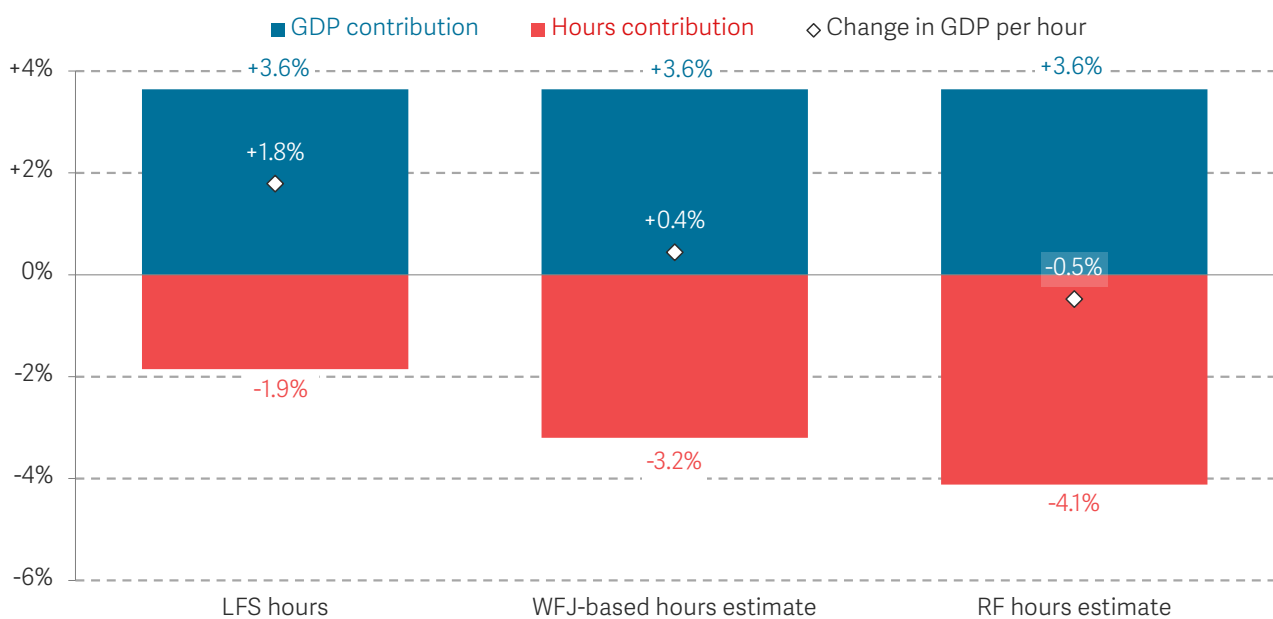
⁸ ONS, *Labour Force Survey performance and quality monitoring report: October to December 2024*, February 2025.

⁹ During the pandemic, response rates fell particularly sharply among high-employment groups of renters and owner-occupiers, which could indicate a disproportionate fall in response rates among people in work. For more, see: A Corlett & H Slaughter, *Measuring up?: Exploring data discrepancies in the Labour Force Survey*, Resolution Foundation, August 2024.

As shown in Figure 2, if we estimate hours worked from these alternative measures of employment, productivity growth has not just slowed in Britain, it has disappeared entirely. An estimate of hours worked based on WFJ suggests that productivity grew by only 0.4 per cent over this five-year period; our preferred estimate – which is based on HMRC’s administrative tax data – suggests it has in fact fallen by 0.5 per cent.¹⁰ Such a fall would be nearly unprecedented in Britain’s pre-pandemic history. In almost half a century of official data from 1971 to 2019, only in the depths of the financial crisis had GDP per hour ever previously fallen over a five-year period (by 0.6 per cent between 2007 and 2012).¹¹ According to historical productivity estimates, it would also make the 2020s the only decade in the past 250 years (since the 1770s) that the level of productivity was lower at the half way mark than it was when the decade began.¹²

FIGURE 2: The past five years of productivity growth looks bad in official data and alternative estimates look even worse

Change in GDP per hour from 2019 to 2024 and contributions from GDP and hours: UK



NOTES: LFS hours are total actual weekly hours worked in the UK. The WFJ-based hours estimate is calculated as the product of all workforce jobs and average hours from the LFS, calculated as the ratio of total LFS hours to total LFS employment. The RF hours estimate is calculated as average LFS hours multiplied by an update of the UK employment estimate described in A Corlett, *Get Britain's Stats Working: Exploring alternatives to Labour Force Survey estimates*, Resolution Foundation, November 2024.

SOURCE: RF analysis of ONS, Labour Force Survey, National Accounts, Workforce jobs & PAYE RTI; HMRC, Income of individuals with self-employment sources.

¹⁰ The construction of this estimate is discussed in detail in A Corlett, *Get Britain's Stats Working: Exploring alternatives to Labour Force Survey estimates*, Resolution Foundation, November 2024.

¹¹ This is based on productivity measured as GDP per hour worked. The ONS's headline measure of whole economy GVA per hour also only fell once over a five-year period prior to the pandemic, by less than 0.1 per cent between 2007 and 2012.

¹² Here, productivity is measured as GDP per worker, sourced from: Bank of England, *A millennium of macroeconomic data*.

Many other developed economies have also experienced weak productivity growth since the pandemic, while the US is a clear outlier

Britain isn't alone when it comes to weak productivity growth in recent years. Among the G7, Canada, France and Italy have all seen productivity fall since the final quarter of 2019, and by a similar amount to our estimated fall in UK productivity (see Figure 4).¹³ But, as discussed in Box 1, the counterpart to weak productivity growth in France and Italy has been a surge in employment relative to pre-pandemic levels. By contrast, Britain has the unenviable record of having both falling productivity and the G7's biggest drop in working-age employment since before the pandemic.

BOX 1: Alongside flatlining productivity, Britain post-pandemic employment record has been particularly poor

Across countries and over time, employment and labour productivity can be inversely related. If a country has a low employment rate among the part of its population with less education and skills, that can boost its aggregate labour productivity figures. For example, in France only around half (53 per cent) of 25-to-64-year-olds with a below-upper-secondary education were in employment in 2019, compared to nearly two-thirds (65 per cent) in Britain – an employment gap of 12 percentage points.¹⁴ By contrast, the employment gap among those with a post-secondary education was just 1 percentage point (86 per cent in France versus 87 per cent in Britain). This concentration of low employment

among those with less education skews the average skill level in the labour force in favour of higher productivity in France.¹⁵ In addition, countries with more liberalised labour markets (like the US in recent decades) tend to see cyclical economic fluctuations show up as swings in employment rather than productivity, and vice versa in countries with more regulated labour markets where employment levels are stickier.¹⁶

Given this relationship between employment and productivity, it's worth looking at how employment has changed across the G7 since before the pandemic. As shown in the left panel of Figure 3, according to our preferred estimate of the change in

¹³ Due to data limitations, Canadian labour productivity is measured as GDP per worker.

¹⁴ OECD, [Employment by education level](#).

¹⁵ However, a more significant driver of the productivity gap between France and Britain is the level of capital per worker – which is 40 per cent higher in France. J Oliveira-Cunha et al., [Business time: How ready are UK firms for the decisive decade?](#), Resolution Foundation, November 2021.

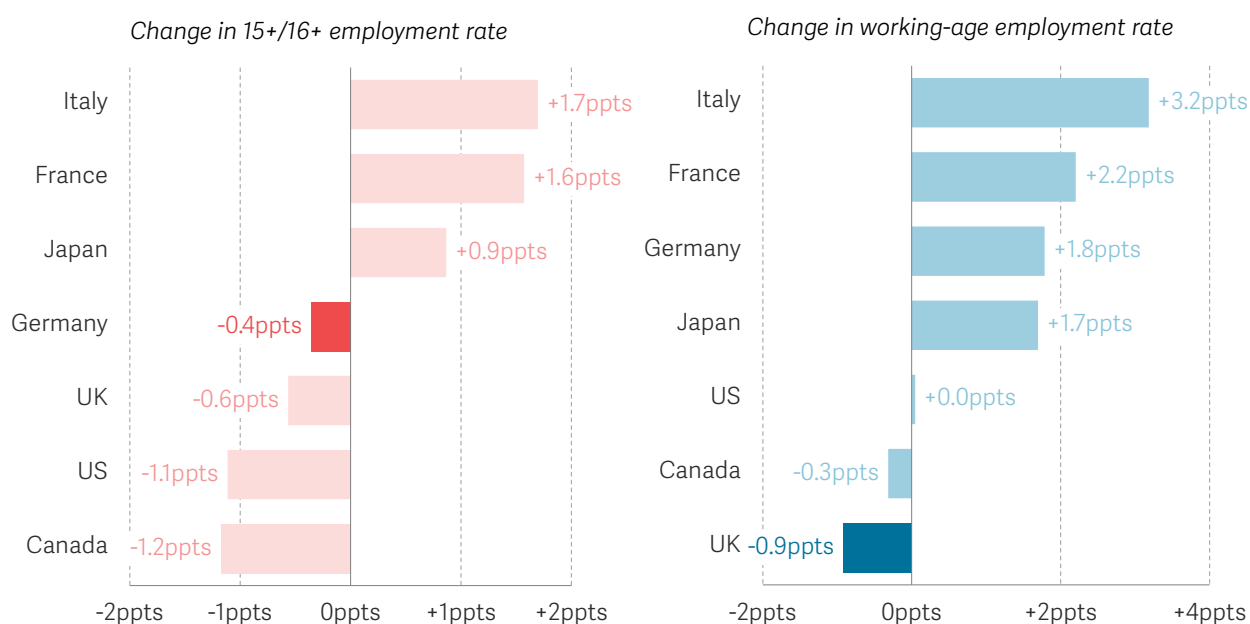
¹⁶ J Galí & T van Rens, [The Vanishing Procyclicality of Labour Productivity](#), The Economic Journal, January 2021.

Britain's overall adult employment rate since Q4 2019 is around the middle of the pack among G7 economies (note that the LFS would put Britain at the bottom of the pile, with a fall of 1.3 percentage points). But this overall change masks a particularly sharp fall in the working-age employment rate, where Britain's fall of 0.9 percentage points ranks last in the G7. Compared to

other countries, Britain's employment fall has been disproportionately concentrated among the working-age. Elsewhere – in the US and Germany in particular – employment has fallen most rapidly among those aged 64-and-over, consistent with early retirements being more of a factor than other more concerning drivers of economic inactivity.

FIGURE 3: Over the past five years, the working-age employment rate has fallen more in the UK than anywhere in the G7

Change in employment rate between Q4 2019 and Q4 2024: G7 economies



NOTES: Changes in the left panel refer to the 16+ population for the UK and the 15+ population for all other countries; changes in the right panel refer to the 16-64 population for the UK and 15-64 population for all other countries. UK changes are based on an update of the UK employment estimate described in A Corlett, Get Britain's Stats Working: Exploring alternatives to Labour Force Survey estimates, Resolution Foundation, November 2024.

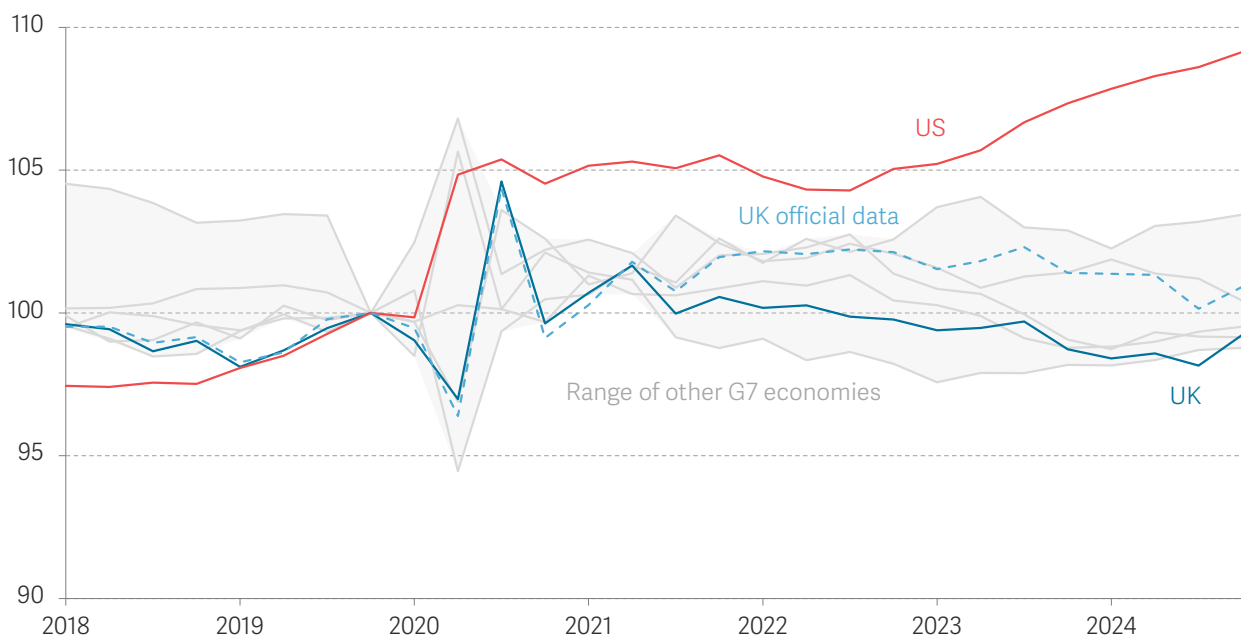
SOURCE: RF analysis of OECD, Infra-annual labour statistics; ONS, Labour Force Survey, National Accounts & PAYE RTI; HMRC, Income of individuals with self-employment sources.

Not every economy has struggled though. As shown in Figure 4, labour productivity in the US has pulled away from the rest of the G7. Along with France and Italy, US productivity spiked in Q2 2020 as Covid restrictions came into force across the globe. Measurements from this time are highly uncertain, but what's striking is that US productivity remained elevated as restrictions were eased and economic activity

recovered. US productivity growth then reaccelerated at the start of 2023. All told, in the five years from 2019 to 2024 US labour productivity grew by 9.6 per cent. Hours worked grew by 2.9 per cent, a little less than growth in the UK over the same period (our preferred estimate for the UK is 4.1 per cent). But the bulk of America's productivity divergence with the UK is down to GDP, which grew by 12.5 per cent between 2019 and 2024. Unlike the rest of its G7 peers, the US has seen productivity growth accelerate in the post-pandemic period. From 2019 to 2024, GDP per hour grew at an average of 1.9 per cent per year, up from a rate of 1.0 per cent over the preceding decade.

FIGURE 4: US labour productivity is pulling away from the rest of the G7

Index of GDP per hour/worker (Q4 2019 = 100): G7 economies



NOTES: For the UK, US, Germany, France and Italy, productivity is GDP per hour; for Canada and Japan, it is GDP per worker.

SOURCE: RF analysis of ONS, Labour Force Survey, National Accounts, Workforce jobs & PAYE RTI; HMRC, Income of individuals with self-employment sources; Eurostat, Labour productivity and unit labour costs; OECD, Productivity and unit labour costs; FRED, Real Gross Domestic Product; Bureau of Labor Statistics, Hours worked and employment in total U.S. economy and subsectors.

What accounts for the remarkable post-pandemic productivity divergence between the US and the UK? One way to shed light on the issue is go under the hood of aggregate productivity growth and look at productivity trends by sector. Given the LFS data issues highlighted above, this is an especially difficult task for the post-pandemic period, and Annex 1 explains how we account for these issues in our sectoral productivity estimates. Nonetheless, with that sectoral framework as a guide, here are five things to know about UK and US productivity growth in recent years.

Five things to know about the post-pandemic productivity trends in the UK and US

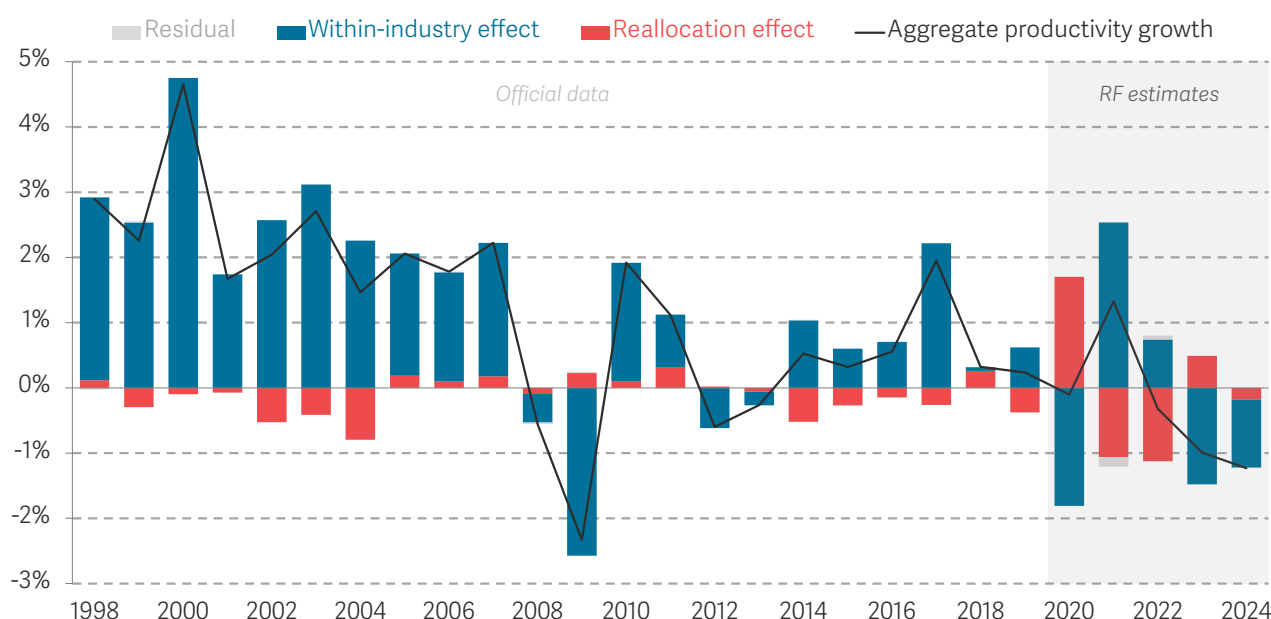
1. The health sector has been a drag on UK productivity, but it's far from the whole story

The productivity of individual sectors affects aggregate productivity in two ways. Productivity growth within individual sectors directly boosts aggregate productivity. This “within-industry” effect is more significant for sectors that make up a larger share of aggregate output or hours worked.¹⁷ Aggregate productivity can also rise if labour is reallocated from less productive to more productive sectors (a “reallocation” effect).

It turns out that, at the level of 19 industrial sectors for which the ONS published productivity data, within-industry effects have been the dominant driver of Britain's post-pandemic productivity slowdown.¹⁸ Figure 5 shows a decomposition of annual UK productivity growth into within-industry and reallocation effects.

FIGURE 5: In Britain, productivity growth within industries has slowed since the pandemic

Decomposition of annual labour productivity growth: UK



NOTES: Within-industry effects are for 19 section-level industry aggregations and are calculated using output weights. The methodology for estimating sectoral productivity in the post-pandemic period is outlined in Annex 1. 2024 is annualised data based on the first three quarters of the year. Aggregate productivity excludes imputed rents in the real estate sector.

SOURCE: RF analysis of ONS, Output per hour, Labour Force Survey, Workforce jobs & PAYE RTI; HMRC, Income of individuals with self-employment sources.

¹⁷ In this paper, within-industry contributions are based on each sector's share of aggregate GVA, mirroring the approach used by the ONS to calculate contributions in its [output per hour worked](#) release. The decomposition is explained in OECD, [Decomposition of aggregate labour productivity growth into industry contributions – Methodology applied in the OECD Compendium of Productivity Indicators 2023](#), January 2023.

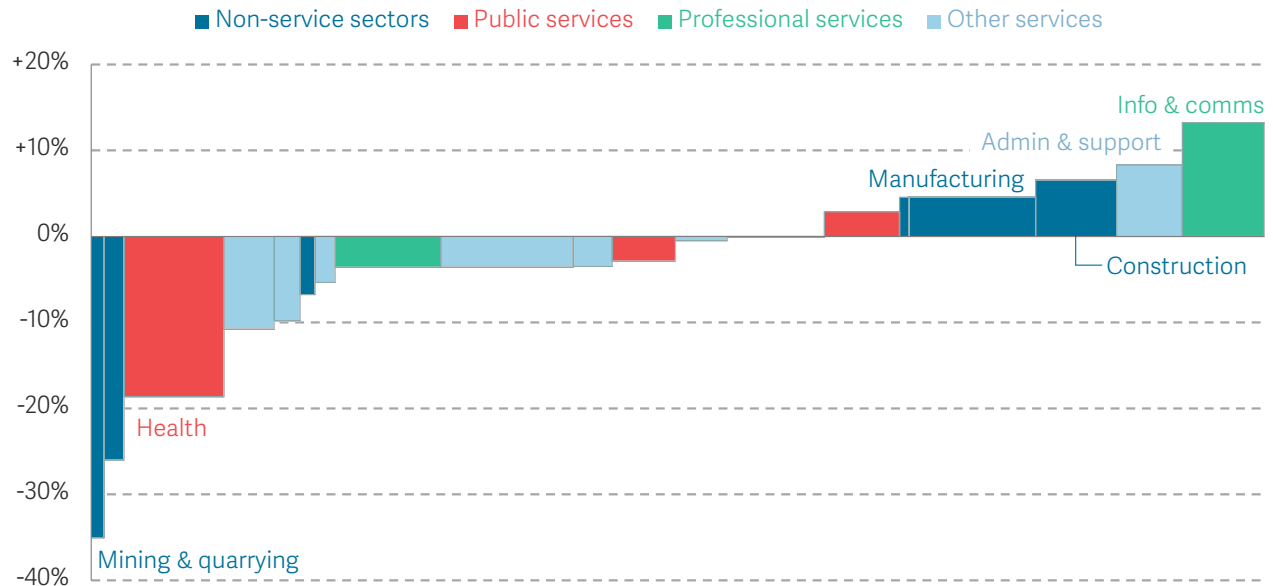
¹⁸ This is not to say that reallocation of labour within these sectors has not been important, just that reallocation at this more granular level would show up as a within-industry effect in the available data.

Reallocation effects were large and volatile during the pandemic, as the low-productivity hospitality sector shuttered and then gradually reopened. But, over the past five years, the overall contribution of reallocation to aggregate productivity growth is little changed from the 2010s. The slowdown of productivity growth within industries has been far more impactful. In the 2010s, productivity growth within industries contributed an average of 0.7 percentage points per year to aggregate productivity growth in the 2010s (more than accounting for the 0.6 per cent average aggregate productivity growth in this period, as reallocation had a small negative impact). But between 2019 and the first three quarters of 2024, within-industry productivity growth has been negative on average, dragging on aggregate growth by an average of 0.2 percentage points per year.¹⁹

But productivity growth hasn't been negative in all sectors. Figure 6 shows the cumulative change in productivity by sector between 2019 and the latest full year of sectoral data (Q4 2023 to Q3 2024). The width of each bar is proportional to a given sector's share of output in 2019 and is therefore broadly proportional to the sectors' average within-industry contribution in the post-pandemic period.²⁰

FIGURE 6: The health sector has been the biggest drag on aggregate productivity in Britain

Change in real GVA per hour by sector: UK, Q1-Q4 2019 to Q4 2023-Q3 2024



NOTES: The width of each bar corresponds to each industry's share of aggregate output in 2019. The area of each bar is therefore roughly proportional to its within-industry contribution to aggregate productivity growth. Annex 1 outlines the methodology for calculating changes in hours worked by sector.

SOURCE: RF analysis of ONS, Output per hour, Labour Force Survey, Workforce jobs & PAYE RTI; HMRC, Income of individuals with self-employment sources.

¹⁹ This figure is not directly comparable to the aggregate productivity trend outlined in the previous section, as we do not have sectoral data for Q4 2024. In particular, aggregate data showed that productivity rose between Q3 2024 and Q4 2024, but we do not know the sectoral decomposition of that rise.

²⁰ Strictly speaking, each sector's within-industry contribution will depend on the combined interaction of productivity growth and output shares within individual years, but these shares are relatively slow-moving over time.

The biggest positive contributions to productivity growth have come from information and communication services, administrative and support services, construction and manufacturing. All four are relatively large sectors (together accounting for £3 in every £10 of UK output in 2019) that have seen productivity grow by at least 4.5 per cent since 2019.

These positive contributions, however, have been outweighed by weakness in other sectors. We estimate that since 2019 productivity has fallen in 13 of the 19 sectors shown in Figure 6, which together account for nearly two-thirds of UK output (63 per cent in 2019). But the most negative within-industry contribution has come from the health sector. The ONS estimates that labour productivity in the health sector fell by 19 per cent between 2019 and the year to Q3 2024, which dragged on aggregate labour productivity growth by an average of 0.2 percentage points per year. It's worth noting that the recent trend in healthcare productivity is a live issue, and NHS England's own productivity estimates are more positive than the ONS's labour productivity measure.²¹ Although, as discussed in Box 2, even these more optimistic estimates suggest that healthcare productivity remains below pre-pandemic levels.

BOX 2: The most recent trend in UK health sector productivity is being debated, but everyone agrees it hasn't recovered from the pandemic

Falling health sector productivity is more than just a statistical artefact. NHS waiting lists have soared since the pandemic,²² while activity has stagnated or dropped across some of the NHS's core functions.²³ Although activity hasn't fallen everywhere (the number of GP appointments in England rose from 28 million to 33 million between January 2020 and January 2025, for example) the ONS estimates that, across the health sector as a whole, real gross value added (GVA) fell

5 per cent between 2019 and the year to Q3 2024. Over the same period, hours worked in the health sector have grown by 16 per cent, implying a productivity hit of 19 per cent.

As most healthcare in the UK is provided by the state, arriving at a single measure of output is particularly difficult. Unlike sectors where goods and services are provided by the market, in most of the healthcare sector there are no prices to guide the valuation of output when calculating

²¹ For more discussion of the latest NHS England data, see: O Harvey-Rich, M Warner & B Zaranko, [NHS hospital productivity: some positive news](#), Institute for Fiscal Studies, November 2024.

²² NHS England, [Referral to Treatment \(RTT\) Waiting Times](#).

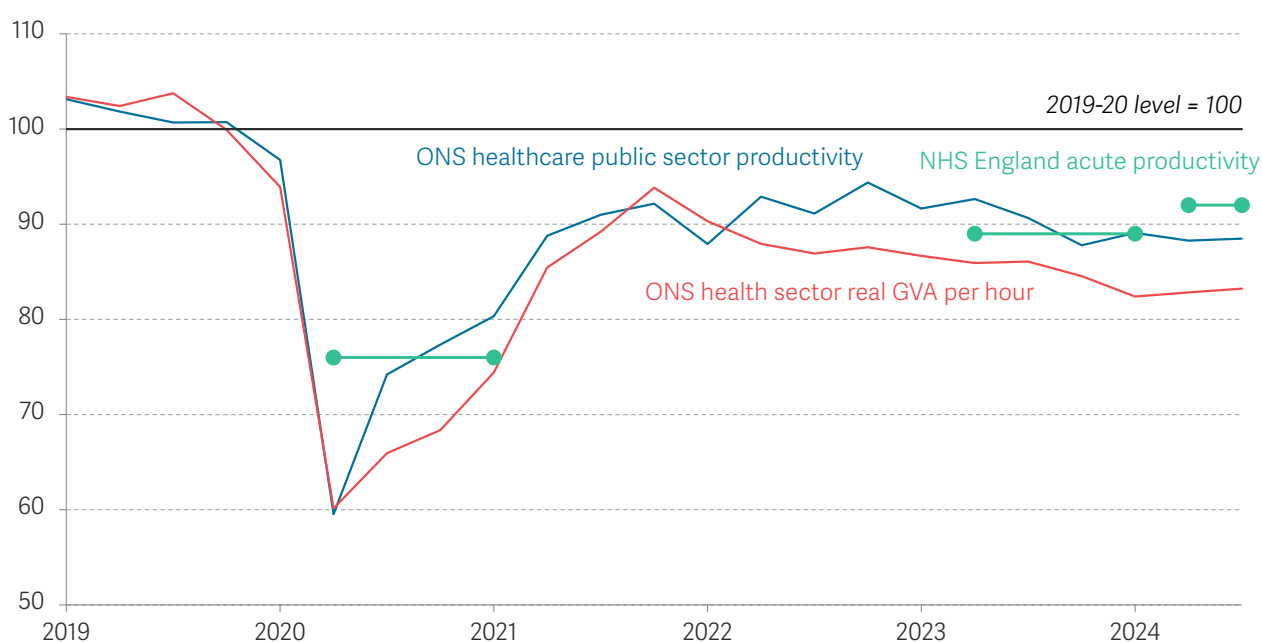
²³ For example, between 2019-20 and 2023-24 the number of face-to-face ambulance responses in England fell 8 per cent, despite a 5 per cent increase in the number of calls answered. Source: NHS England, [Ambulance Quality Indicators](#).

productivity. Given this, and the importance of the health sector to aggregate productivity, it's worth considering alternative measures of health sector productivity. The ONS itself has an alternative measure of public healthcare productivity.²⁴ This

is a conceptually different measure to GVA per hour – for example, it covers only services provided by the state and accounts for all inputs rather than just labour – and has recovered to a higher level than GVA per hour after the pandemic (see Figure 7).²⁵

FIGURE 7: The ONS and NHS England have different measures of healthcare productivity, but all suggest that it hasn't fully recovered from the pandemic

Indices of healthcare sector productivity (2019-20 = 100): UK/England



NOTES: The series for ONS healthcare public sector productivity is constructed from the ONS's quarterly UK public service productivity series, rebased to match the most recent annual public service productivity data between 2020 and 2022. Annex 1 outlines the methodology for calculating the change in hours used to calculate the index of real GVA per hour.

SOURCE: RF analysis of ONS, Output per hour, Labour Force Survey, PAYE RTI & Quarterly UK Public Service Productivity; HMRC, Income of individuals with self-employment sources; NHS England, NHS productivity, May 2024; NHS England, NHS productivity update, February 2025.

In recent years, NHS England has published its own estimates of acute hospital productivity. Again, these

estimates are conceptually different from the two ONS measures. In particular, they only cover England and

²⁴ The ONS has separately published annual and quarterly estimates of public services productivity. The annual series is a better measure that fully accounts for quality adjustments. But the quarterly series is timelier, with data up to Q3 2024. However, the quarterly series is based on a previous vintage of annual data that only incorporates quality adjustment up to 2021. In Figure 7, we have combined the quarterly data with the latest annual data by rebasing the quarterly series to match the most recent annual public service productivity data between 2020 and 2022. For more details on the ONS measures, see: ONS, [Public service productivity, quarterly, UK: July to September 2024](#), February 2025; ONS, [Public service productivity: total, UK, 2022](#), March 2025.

²⁵ The ONS's approach to measuring productivity in the health care is covered in detail in: ONS, [How to compare and interpret ONS productivity measures](#), May 2020.

exclude primary care.²⁶ Despite these differences, NHS England's estimates broadly line up with the ONS's measure of healthcare public services productivity in 2023-24. But NHS England think that acute healthcare productivity has ticked up again in 2024-25. Compared to GVA per hour, this implies a notably different trend in healthcare productivity since 2019: it fell by less during the pandemic and has been growing rather than falling more recently.

Nonetheless, even NHS England's more optimistic estimates suggest that healthcare productivity remains

below pre-pandemic levels. Holding all else constant, revising health sector GVA per hour to match NHS England would boost the level of aggregate productivity by 0.8 per cent.²⁷ This would imply aggregate productivity grew by just 0.3 per cent between 2019 and 2024, better than our estimated fall of 0.5 per cent based on ONS and HMRC data but still a significant slowdown compared to productivity growth in the 2010s. Therefore, specific issues with the ONS's measurement of health sector productivity cannot fully explain the UK's aggregate productivity woes.

Reallocation of labour into the health sector has provided an additional headwind to aggregate productivity growth. The share of the workforce occupied in the health sector has been growing for some time, but that trend has accelerated recently: since 2019, the health sector's share of aggregate hours has risen by 1.4 percentage points, effectively the same rise that occurred over the previous fifteen years (1.5 percentage points). As well as healthcare productivity growth being weak in recent years, the level of productivity in the sector has historically been below the economy-wide average.²⁸ Allocating a larger share of hours to a sector with increasingly below-average productivity has provided an additional drag on aggregate productivity growth of 0.1 percentage points per year, assuming the additional labour would otherwise be employed in averagely productive ways.

But the health sector alone cannot account for Britain's productivity slowdown since the 2010s. From 2010 to 2019, the health sector had little impact on aggregate productivity growth: its combined within-industry and reallocation effect was negative, but less than 0.1 percentage points a year on average. In the 2020s, this has grown to a drag of 0.3 percentage points. But this change explains less than half of Britain's productivity

²⁶ For more on the differences between the ONS's and NHS England's estimates, see: ONS & NHS England, [Comparison between the recently published ONS quarterly public service productivity statistics and NHS England productivity statistics](#), February 2025.

²⁷ In this calculation, the revision to GVA per hour comes entirely from higher GVA rather than fewer hours worked.

²⁸ It is difficult to compare the level of productivity in a sector like health, where most services are provided for free at the point of use, to sectors where goods and services are provided by the private sector. But it's worth noting that this fact holds true in the US, where the vast majority of healthcare services are provided by the private sector. In 2023, GVA per hour in the US healthcare sector was around 40 per cent below the average across the whole US economy.

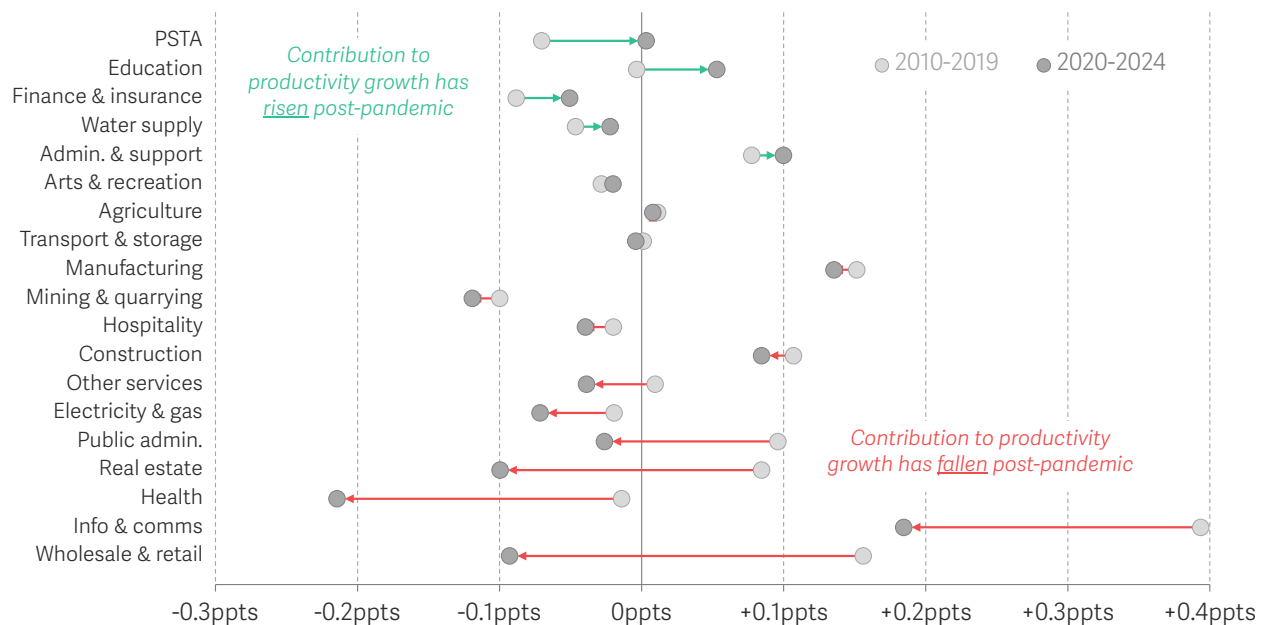
slowdown from the 2010s to the 2020s. Annual productivity growth has fallen from 0.6 per cent to -0.1 per cent, based on our preferred estimate of productivity growth in the 2020s – a drop-off of 0.7 percentage points.

2. The information and communications sector has been a key – but easy-to-miss – driver of Britain’s productivity slowdown

If issues in the health sector can’t fully explain Britain’s productivity slowdown, what can? The answer lies in a combined slowdown across a few key sectors: five out of 19 sectors, including health, more than account for the entirety of the slowdown (see Figure 8).²⁹ Within that, an important driver has been Britain’s information and communications sector, which includes activities like computer programming and software, as well as telecoms and broadcasting. As seen in Figure 8, its contribution to aggregate productivity growth has fallen by more than any other sector in the post-pandemic period except for wholesale and retail trade (whose average contribution in the 2010s was flattened by a particularly strong cyclical recovery between 2009 and 2010).³⁰

FIGURE 8: Productivity growth in the UK’s information and communication sector has slowed significantly

Annualised within-industry contributions to aggregate productivity growth, 2010-2019 and 2020-2024: UK



NOTES: PSTA refers to professional, scientific and technical activities. Real estate excludes imputed rent. Annex 1 outlines the methodology for calculating changes in hours worked by sector. 2024 is annualised data based on the first three quarters of the year.

SOURCE: RF analysis of ONS, Output per hour, Labour Force Survey, Workforce jobs & PAYE RTI; HMRC, Income of individuals with self-employment sources.

²⁹ These sectors are Public administration, Real estate, Health, Information and communications, and Wholesale and retail.

³⁰ One way to mitigate the impact of cyclical effects is to use 2007 as the starting point instead of 2010 for the pre-pandemic period. On this basis, information and comms has seen the biggest slowdown from before to after the pandemic.

It's easy to miss the role played by information and communications in explaining Britain's productivity slowdown. Looking solely at changes in productivity since 2019 – as in Figure 6 above – information and communications has experienced more growth than any other sector in the UK. But it is doing much less to compensate for weakness in other sectors that it did in the 2010s. The average annual contribution of information and communications since 2019 (0.2 percentage points per year) has halved from its 2010s level (0.4 percentage points per year).

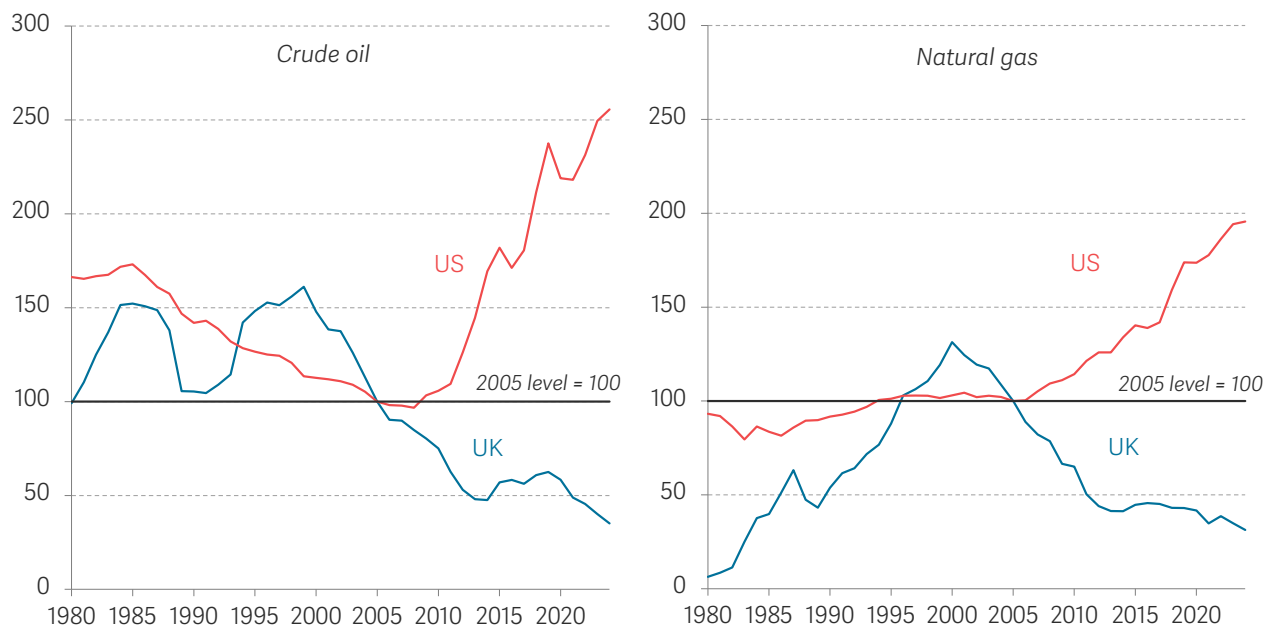
Having unpacked the UK's productivity slowdown, we now turn our attention to the US. As outlined above, aggregate productivity growth has been far more rapid in the US than the UK in recent years. But which sectors account for this divergence, and what lessons does the sectoral pattern hold for the UK?

3. US productivity has been boosted by a continued boom in oil and gas extraction...

Over the past 20 years, oil and gas production has moved in opposite directions on either side of the Atlantic, as illustrated by Figure 9.

FIGURE 9: The US has experienced an oil and gas boom since 2005, while UK production has plummeted

Volume indices of annual oil (left panel) and natural gas (right panel) production (2005 = 100): UK and US



NOTES: Gas in gross production, measured in standardised cubic metres (UK) or cubic feet (US) per year. Oil is measured in cubic metres (UK) or barrels (US) per year.

SOURCE: RF analysis of North Sea Transition Authority, PPRS view; U.S. Energy Information Administration, U.S. Natural Gas Gross Withdrawals & U.S. Field Production of Crude Oil.

In the US, oil production more than doubled between 2005 and 2019 (from 1.9 billion to 4.5 billion barrels per year) and natural gas production rose by three-quarters (from 23 trillion to 41 trillion cubic feet per year).³¹ This rise has continued since 2019, with oil production up a further 8 per cent by 2024 and gas up 13 per cent. By contrast, the UK has seen a continued decline in production as North Sea reserves have dwindled.³² Between 2019 and 2024, oil production has fallen by 44 per cent and gas production by 27 per cent.³³

Meanwhile, hours worked in the broader mining and quarrying sector – of which oil and gas is the main part – haven't matched each country's production trends.³⁴ In the US, the total number of hours worked in mining and quarrying has consistently declined since the data became available in 2014. Hours have continued to decline in the post-pandemic period too – down 14 per cent between 2019 and 2023 (the most recent year of sectoral hours data in the US). Over the same period, total hours worked in the UK mining and quarrying sector rose by 1 per cent. This surprising finding appears to be more than just a statistical artefact. Official data from before the pandemic shows that, despite mining and quarrying accounting for an ever-smaller share of Britain's hours worked, the absolute number of hours worked hasn't fallen much. Workers in the UK mining and quarrying sector clocked up around the same number of hours in 2019 as they did in 2005 (2.4 million in both years). This is despite, as shown in Figure 9, producing only three-fifths (63 per cent) as much oil and two-fifths (43 per cent) as much natural gas.

The productivity implications of these trends are clear. In the US, where production has boomed despite falling hours worked, mining and quarrying productivity has soared; in the UK, falling output and sticky hours have meant the opposite. Figure 10 shows the within-industry contributions of individual sectors to aggregate productivity growth in the UK and US between 2020 and 2023.³⁵ Mining and quarrying has contributed 0.14 percentage points to annual productivity growth in the US, while dragging on growth by 0.12 percentage points in the UK – adding up to a cumulative 1 percentage point difference between 2020 and 2023. For context, aggregate UK productivity in 2023 was 6.6 per cent lower than if we had tracked US productivity growth. Mining and quarrying

³¹ This surge in production is a result of the so-called 'shale revolution' in the US. Technological developments in hydraulic fracturing (or fracking) and horizontal drilling allowed the US to exploit previously untapped oil and gas reserves stored in shale rock formations (hence the term 'shale revolution').

³² North Sea Transition Authority, *Reserves and Resources Report as at end 2023*, October 2024.

³³ UK data for December 2024 is not yet available, so this calculation uses an annualised figure based on production from January to November.

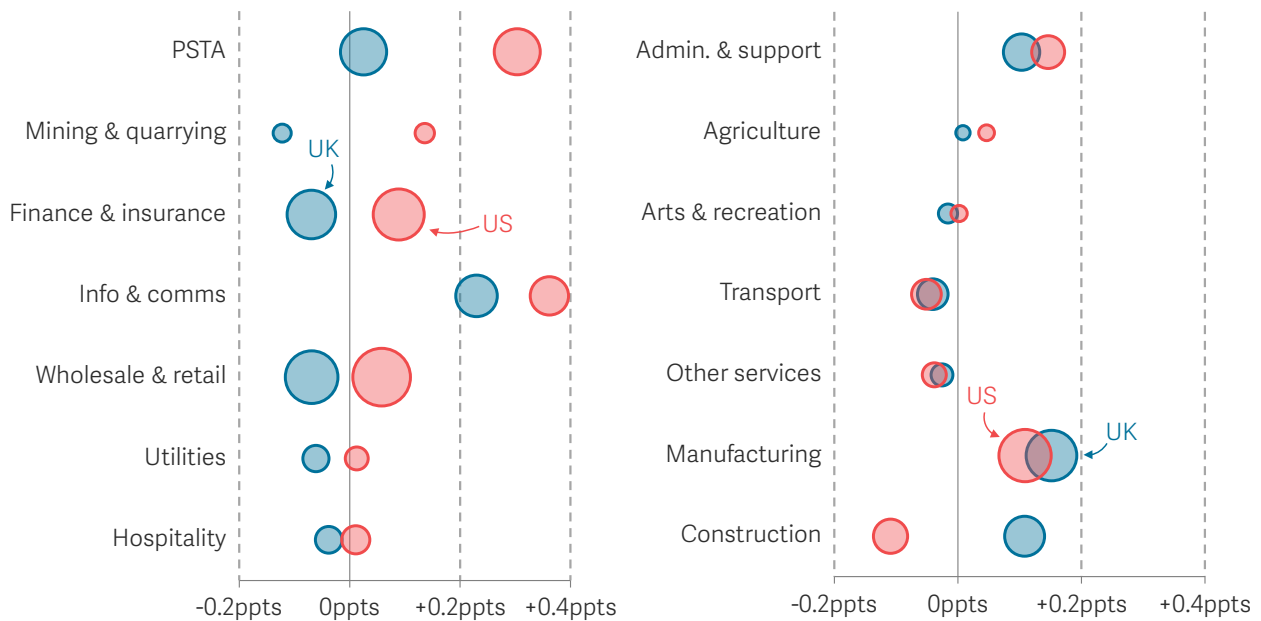
³⁴ Oil and gas extraction accounted for 87 per cent of the UK's mining and quarrying GVA in Q4 2024 and 61 per cent of the US's mining and quarrying GVA in Q3 2024. In the US, the remainder of the sector's GVA is roughly split between mining support services and extraction of other commodities, such as minerals.

³⁵ Here and in the sections that follow, we exclude the following sectors where GVA is particularly difficult to measure or compare across countries: education, health, public administration and real estate (which predominantly consists of imputed and actual rents, rather than real estate business activity). Collectively these sectors account for around a third of GDP in both the UK and the US, and account for roughly a third of the US-UK aggregate productivity divergence between 2019 and 2023 – mostly due to particularly weak productivity in the UK health sector (as discussed above) and particularly strong productivity growth in the US real estate sector. For the remaining sectors, some minor adjustments have been made to the US data to enhance its comparability with UK sectoral definitions. See Annex 1 for details.

therefore accounts for 16 per cent of the overall gap despite accounting for less than 2 per cent of output in both the UK (1.3 per cent in 2023) and the US (1.5 per cent).

FIGURE 10: Mining & quarrying has played an outsized role in explaining the US-UK productivity divergence

Average annual contribution to growth in GVA per hour from 2020 to 2023, by sector:
UK and US



NOTES: Bubbles are sized in proportion to each sector's share of aggregate GVA. Excludes sectors where GVA is particularly difficult to measure or compare across countries, namely education, health, public administration and real estate. For the remaining sectors, some minor adjustments have been made to the US data to enhance its comparability with UK sectoral definitions. See Annex 1 for details. PSTA refers to professional, scientific and technical activities.

SOURCE: RF analysis of ONS, Output per hour, Labour Force Survey & PAYE RTI; HMRC, Income of individuals with self-employment sources; Bureau of Economic Analysis, Value Added by industry; Bureau of Labor Statistics, Industry Output and Employment.

4. ...but lower energy prices haven't boosted US productivity more widely

The counterpart to the US's booming gas extraction has been lower energy prices than the UK and the rest of Europe. In the second half of the 2000s, the spot price of natural gas in the US drifted below its European equivalent. And the wedge between US and European prices widened further as Europe's supplies of Russian gas were cut following the invasion of Ukraine.³⁶ These trends have been mirrored in the prices paid for gas by businesses in the UK and US (see the left panel of Figure 11). And, because UK electricity prices are frequently based on the price of gas,³⁷ British businesses have faced a sharp rise in electricity costs too – even larger than that faced by their counterparts in France, a country that generates a greater share of its electricity from nuclear power (see the

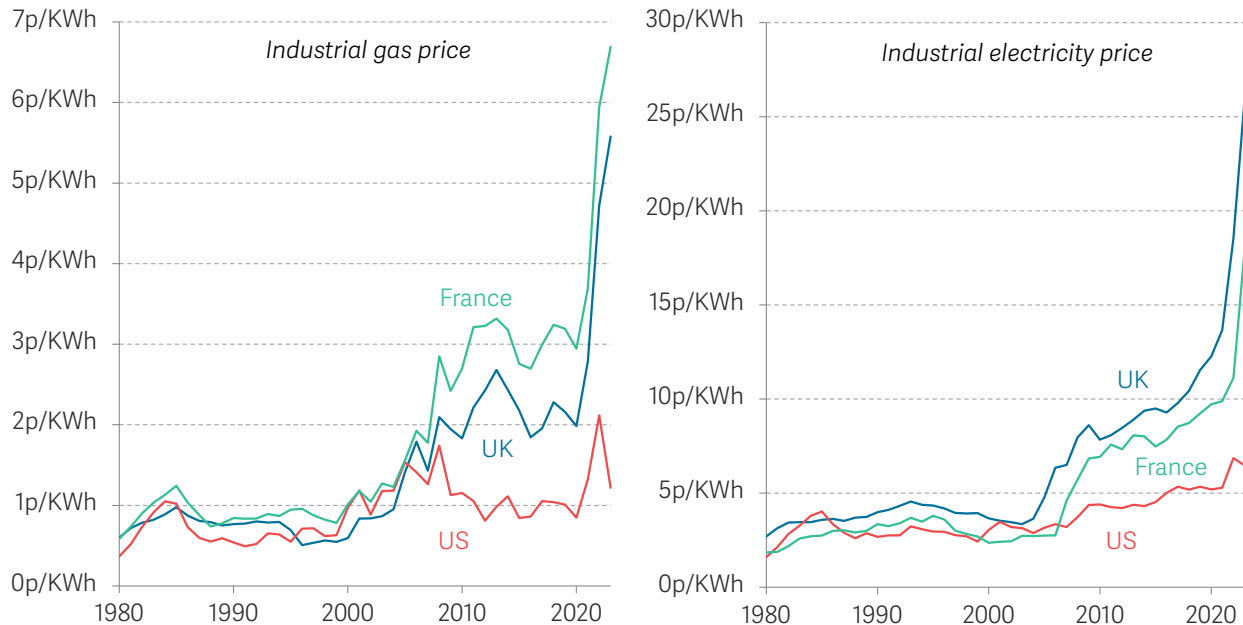
³⁶ IMF, *Primary Commodity Prices*.

³⁷ I Stewart, *Why is cheap renewable electricity so expensive on the wholesale market?*, House of Commons Library, September 2023.

right panel of Figure 11).³⁸ From 2019 to 2023, UK industrial gas prices rose by 158 per cent and electricity prices by 124 per cent, compared to a 21 per cent rise both prices in the US.

FIGURE 11: Industrial energy prices in the UK have surged well above those in the US

Average industrial price of gas (left panel) and electricity (right panel): France, UK and US



NOTES: Prices are converted using annual average exchange rates and include all taxes where not refundable on purchase.

SOURCE: Department for Energy Security and Net Zero, International industrial energy prices.

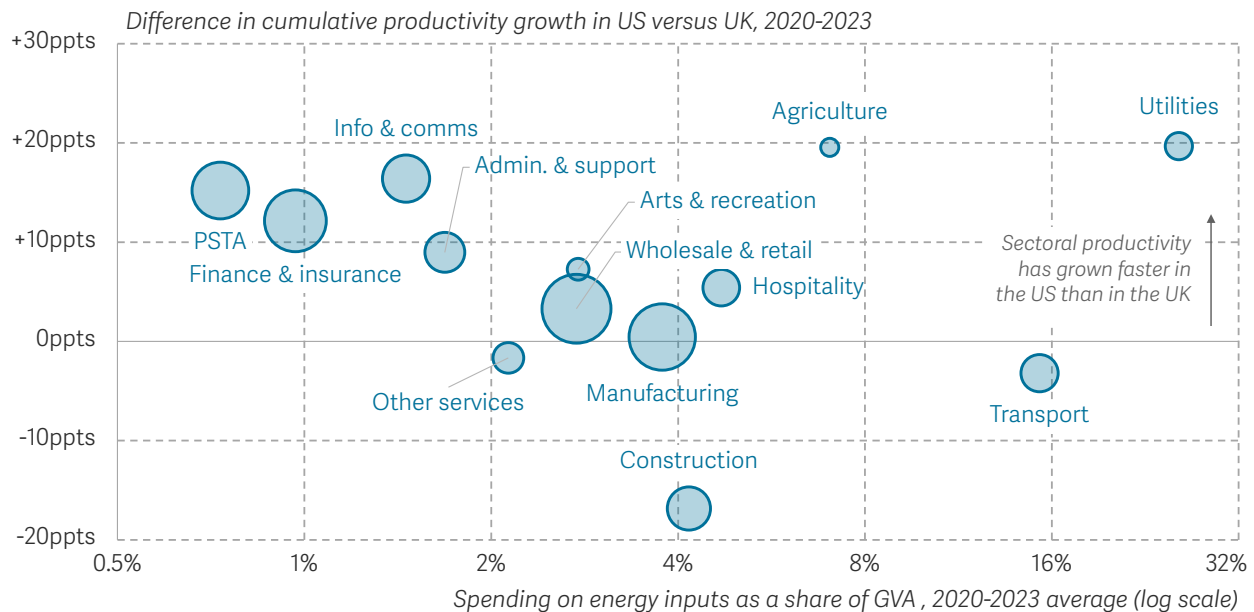
Given these vastly different trends in energy prices, you might expect energy-intensive sectors to account for a large share of the recent US-UK productivity divergence.³⁹ But, outside of the special case of mining and quarrying, this is difficult to see in the sectoral data. The sectors toward the bottom-right of Figure 10, where the UK has matched or outperformed the US in recent years, contain a few notably energy-intensive sectors. Indeed, between 2020 and 2023, transport, construction and manufacturing contributed more to aggregate productivity growth in the UK than they did in the US. Figure 12 makes this point more explicitly, plotting the energy-intensity of different sectors against the degree to which productivity growth has outperformed in the US compared to the UK. Two small energy-intensive sectors – namely agriculture and utilities – have seen productivity grow by much more in the US than in the UK. But the trend across larger sectors (which matter more for aggregate productivity) is a negative correlation between energy intensity and US productivity outperformance.

³⁸ Between 2019 and 2023, UK industrial electricity prices rose by 124 per cent versus 93 per cent in France and just 21 per cent in the US.

³⁹ GVA is approximately equal to the value of output minus expenditure on intermediate inputs. Holding all else equal, a higher price for energy inputs will mechanically reduce a sector's GVA.

FIGURE 12: In terms of productivity growth, large energy-intensive sectors in the US haven't outperformed their UK counterparts in recent years

Spending on energy inputs as a share of GVA and difference in productivity growth in 2020-2023, by sector: UK and US



NOTES: Productivity is measured as real GVA per hour. Excludes mining and sectors where GVA is particularly difficult to measure or compare across countries, namely education, health, public administration and real estate. For calculating productivity growth among the remaining sectors, some minor adjustments have been made to the US data to enhance its comparability with UK sectoral definitions. See Annex 1 for details. PSTA refers to professional, scientific and technical activities. Spending on energy inputs as a share of GVA is based on US data and US sector definitions.

SOURCE: RF analysis of ONS, Output per hour, Labour Force Survey & PAYE RTI; HMRC, Income of individuals with self-employment sources; Bureau of Economic Analysis, Value Added by industry & Composition of gross output by industry; Bureau of Labor Statistics, Industry Output and Employment.

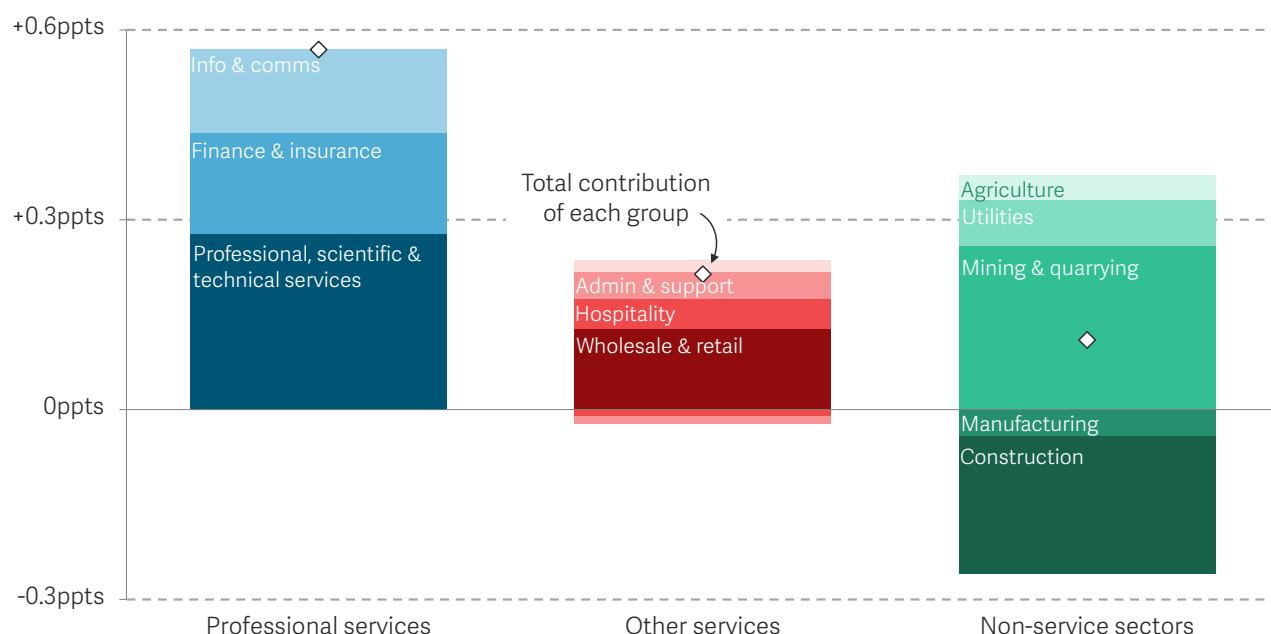
Even so, high energy prices could still affect aggregate productivity if they caused high-value energy-intensive sectors to shrink, reallocating labour towards less productive parts of the economy. This is a particular concern in manufacturing, which is the only large energy-intensive sector with above-average productivity at the level of granularity we observe. While the overall impact of this reallocation depends on precisely which industries labour is reallocated towards, manufacturing's labour market footprint has shrunk more rapidly in the UK than the US in recent years. Between 2019 and 2023, the manufacturing sector's share of aggregate hours worked shrank 0.6 percentage points in the UK, compared to 0.3 percentage points in the US. But the aggregate impact of this extra reallocation is small, accounting for less than 0.1 percentage points of the 6.6 per cent gap between aggregate UK and US productivity growth between 2020 and 2023.

5. The US's outperformance in services is more about tech-using than tech-producing sectors

Turning to less energy-intensive parts of the economy naturally leads us to the services sector, where there is more evidence of US outperformance in recent years. To illustrate, Figure 13 takes the difference in sectors' contributions to aggregate productivity growth (the gaps between the blue and red dots in Figure 10) and assigns them to groups.

FIGURE 13: The US's productivity advantage is growing across a range of service sectors

Difference in average annual within-industry contribution to growth in GVA per hour from 2020 to 2023, by sector: US compared to UK



NOTES: The unlabelled sectors in 'Other services' are arts and recreation, transport, and other service activities not included elsewhere. Excludes sectors where GVA is particularly difficult to measure or compare across countries, namely education, health, public administration and real estate. For the remaining sectors, some minor adjustments have been made to the US data to enhance its comparability with UK sectoral definitions. See Annex 1 for details.

SOURCE: RF analysis of ONS, Output per hour, Labour Force Survey, Workforce jobs & PAYE RTI; HMRC, Income of individuals with self-employment sources; Bureau of Economic Analysis, Value Added by industry; Bureau of Labor Statistics, Industry Output and Employment.

Professional services emerge as a particularly important source of productivity growth in the US. In part, this reflects the rapid growth of America's large, high-profile tech companies, who mostly operate in the information and communications sector. But productivity growth in professional services sectors that use rather than produce tech has been more consequential. Between 2019 and 2023, professional, scientific and technical services accounted for one-sixth (17 per cent) of the post-pandemic gap

in productivity growth between the US and the UK – twice as much as the tech (ICT) sector (8 per cent).

The additional tailwind from faster productivity growth in less glamorous service sectors – like administrative and support services, wholesale and retail, and hospitality – shouldn't be overlooked. For example, different rates of productivity growth in the wholesale and retail sector account for almost as much of the US-UK aggregate productivity growth gap (0.51 percentage points) as information and communications. The broader group of 'other' service sectors in Figure 13 account for a third of UK hours worked (32 per cent in Q1-Q3 2024) and a quarter of output (24 per cent). Ensuring healthy rates of productivity growth in these sectors is key to achieving sustained growth in living standards in today's services-based economy.

Low levels of business investment continue to dog the UK

When looking for reasons why the American service sector has experienced more productivity growth than Britain in the 2020s, it's worth starting with what we know has caused British productivity growth to lag in the past.

Going as far back as the 1990s, Britain has continually invested less than its peers, and this trend has continued into the 2020s.⁴⁰ As shown in the left panel Figure 14, Britain's private-sector capital stock (excluding real estate) has grown by less than America's in 22 of the last 26 years. This has hindered the productivity of British workers by leaving them with less of the kit and infrastructure they need to do their jobs effectively, compared to their counterparts in America and other developed economies.⁴¹

The investment gap between Britain and America has widened in recent years. Investment by British businesses hit a brick wall around the time of the Brexit referendum.⁴² As a result, growth in Britain's capital stock has slowed by two-thirds, from 2.8 per cent in 2016 to 0.9 per cent in 2023. Notably, this slowdown has been particularly stark in the service sectors where the US has significantly outperformed

⁴⁰ A Alayande & D Coyle, *Investment in the UK: Longer term trends*, Working Paper No. 040, The Productivity Institute, November 2023; J Fernald & R Inklaar, *The UK Productivity "Puzzle" in an International Comparative Perspective*, Oxford Bulletin of Economics and Statistics, January 2025.

⁴¹ J Oliveira-Cunha et al., *Business time: How ready are UK firms for the decisive decade?*, Resolution Foundation, November 2021.

⁴² For more on the drivers of stagnating business investment in the UK, see: P Bunn et al., *Influences on investment by UK businesses: evidence from the Decision Maker Panel*, Bank of England Quarterly Bulletin, June 2021.

the UK.⁴³ In real terms, American businesses in those sectors invested 24 per cent more in 2023 than in 2016, while their British counterparts invested only 7 per cent more.⁴⁴ Britain's current level of investment in these sectors is enough only to offset depreciation: as shown in the right panel of Figure 14, growth in these sectors' capital stock has fallen to zero.

FIGURE 14: Growth in Britain's capital stock has slowed recently, particularly in sectors where productivity growth has lagged behind the US

Annual growth in the real stock of net fixed assets, by country and sector group: UK and US



NOTES: The non-real estate private sectors are all sectors except education, health, public administration and real estate. US-outperforming service sectors are defined as information and communications, finance and insurance, professional, scientific and technical activities, and wholesale and retail trade. See Annex 1 for details on sectoral definitions.

SOURCE: RF analysis of ONS, Gross and net capital stocks for total UK economy, by industry and asset; Bureau of Economic Analysis, Fixed Assets Accounts Tables.

Looking at trends in the type of investment reveals an important role for tech adoption in explaining the continued divergence in investment between Britain and America the post-pandemic period.⁴⁵ As shown in Figure 15, US businesses spent 42 per cent more on software investment in the last three years of data (2021-23) than in the three years before the pandemic (2017-19). At the same time, UK businesses increased their level of spending by less than half as much (17 per cent). American businesses have also scaled up their investment more rapidly in other tech-related areas like R&D and ICT.

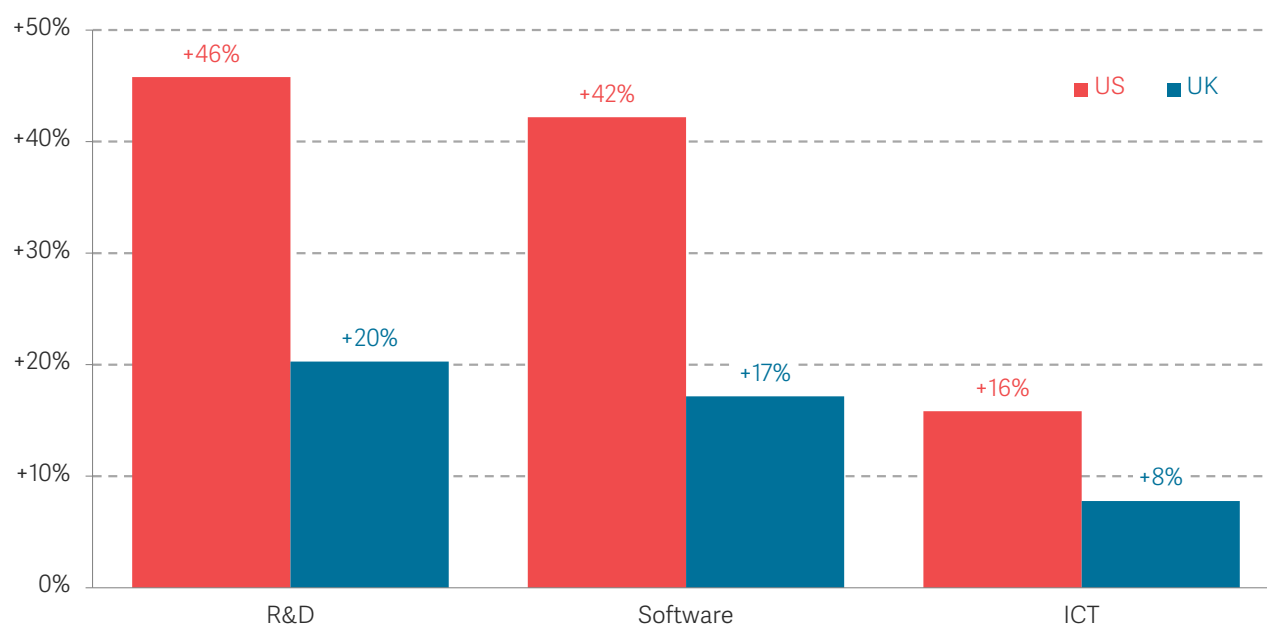
⁴³ Excluding mining and quarrying, these sectors are the four largest contributors to the US-UK productivity growth gap between 2019 and 2023 (Figure 13), namely information and communications, finance & insurance, professional, scientific & technical activities, and wholesale and retail trade. This is consistent with the finding of a particularly sharp investment slowdown in business and professional services in J Haskel & J Martin, *How has Brexit affected business investment in the UK?*, Economics Observatory, March 2023.

⁴⁴ ONS, *Annual Gross Fixed Capital Formation by Industry and Asset*; Bureau of Economic Analysis, *Fixed Assets Accounts Tables*.

⁴⁵ For more on recent US investment in tech, see: J Politano, *The AI Investment Boom*, October 2024.

FIGURE 15: Tech-related investment by businesses has risen by much more in the US than in the UK

Change in nominal business investment between 2017-19 and 2021-23, by type of investment: UK and US



SOURCE: RF analysis of ONS, Annual Gross Fixed Capital Formation by Industry and Asset; Bureau of Economic Analysis, Fixed Assets Accounts Tables.

The long-term decline in business dynamism on both sides of the Atlantic has been partially reversed in the US services sector

Britain's relative lack of business investment compared to the US is a longstanding issue. But a new development, that helps explain the accelerated productivity divergence of recent years, is a nascent recovery in business dynamism in the US.

For decades, Britain's economy has been getting less dynamic. A dynamic economy is one in which productive businesses gain at the expense of their less productive competitors – often due to new, innovative firms starting up and growing, while uncompetitive ones shrink and go out of business. This raises productivity by reallocating labour and capital to the most productive firms. Various measures of dynamism, such as the rate of job moves and the reallocation of labour between sectors, have been declining in Britain since the 1990s. This has often been overlooked as part of Britain's productivity slowdown.⁴⁶

Prior to the pandemic, the pace of reallocation in America was falling too.⁴⁷ But during the height of the pandemic, sectoral reallocation surged in the US to well above previous peaks.⁴⁸ The increase in reallocation was both larger and longer-lived in the US than in the Euro Area where, like Britain, governments sought to protect existing jobs during

⁴⁶ R Davies, N Hamdan & G Thwaites, *Ready for change: How and why to make the UK economy more dynamic*, Resolution Foundation, September 2023.

⁴⁷ R A Decker & J Haltiwanger, *Surging Business Formation in the Pandemic: Causes and Consequences?*, Brookings Papers on Economic Activity, September 2023.

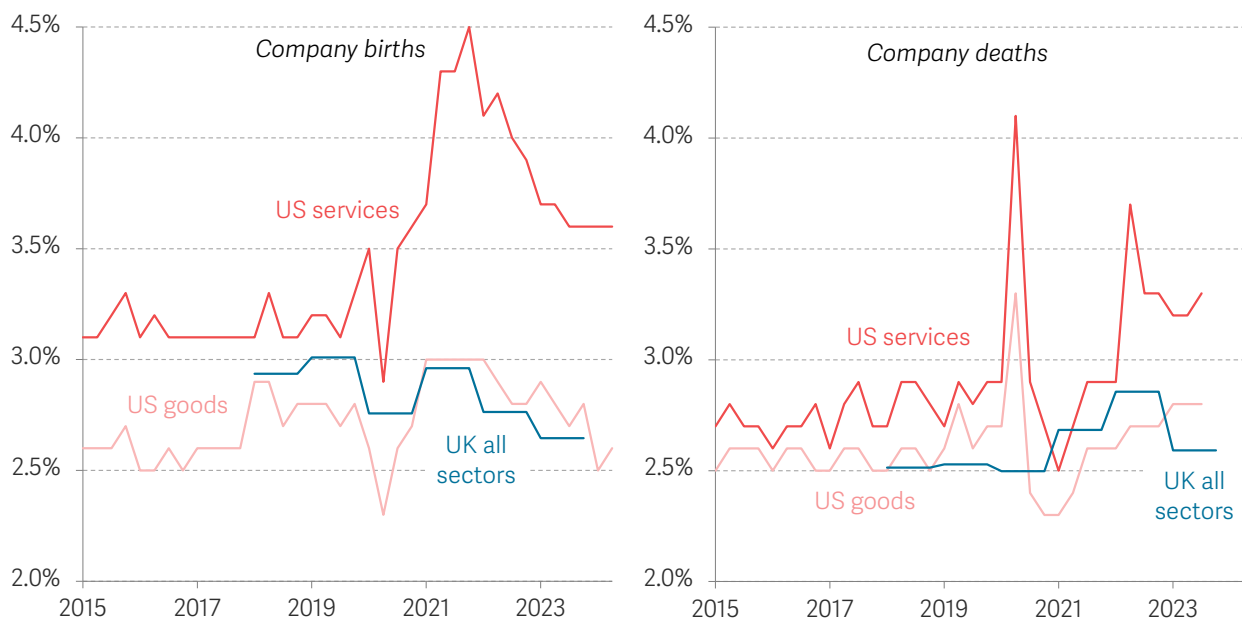
⁴⁸ F de Soyres, *Why is the U.S. GDP recovering faster than other advanced economies?*, FEDS Notes, May 2024.

lockdowns.⁴⁹ America's surge in reallocation reflected both the lack of support for existing jobs during the pandemic and the subsequent 'great resignation', in which many workers gained from leaving their existing jobs and moving into higher-paying roles in more productive firms.⁵⁰

Another consequence of the pandemic-induced shake-up of America's labour market has been an uptick in business formation. Parts of America that saw the most job separations during the pandemic also saw notable increases in the number of new businesses being created.⁵¹ This rise in business formation has been shown to reflect a genuine uptick in entrepreneurship and employer business creation, as opposed to employees merely reclassifying themselves as self-employed.⁵² As seen in the left panel of Figure 16, this rise has been concentrated in services. Moreover, it has more recently been followed by an uptick in business deaths, suggesting a genuine rise in productivity-enhancing creative destruction. ONS data suggests that there has been no such rise in the UK, with rates of company births slightly down on pre-pandemic levels.⁵³

FIGURE 16: The post-pandemic rise in US business formation has been concentrated in services

Quarterly rate of company births and deaths by sector group: UK and US



NOTES: Excludes public sector enterprises. UK data are average quarterly rates based on annual data.

SOURCE: RF analysis of Bureau of Labor Statistics, Business Employment Dynamics; ONS, Business demography.

⁴⁹ J García-Cabo, A Lipińska & G Navarro, *Sectoral shocks, reallocation, and labor market policies*, BIS Working Papers No. 1095, April 2023.

⁵⁰ D Autor, A Dube & A McGraw, *The Unexpected Compression: Competition at Work in the Low Wage Labor Market*, NBER Working Paper, March 2023. This analysis studies sectoral reallocation at a much more granular level than the sectors covered in this paper. Therefore much of the reallocation here could show up as within-sector productivity improvements in our analysis.

⁵¹ R A Decker & J Haltiwanger, *Surging Business Formation in the Pandemic: Causes and Consequences?*, Brookings Papers on Economic Activity, September 2023.

⁵² R A Decker & J Haltiwanger, *Surging Business Formation in the Pandemic: A Brief Update*, September 2024.

⁵³ ONS, *Business demography, UK: 2023*, November 2024.

UK policy makers can do more to mirror the US's success

A dynamic, high-investment business sector isn't something policy makers can control directly. Ultimately, it is the product of a healthy economy. But that doesn't mean there aren't things that can be done to improve Britain's present situation and boost productivity growth.

Most remedies for weak productivity growth focus on structural changes, but cyclical factors are important too. Labour productivity in Britain is strongly procyclical – in other words, it rises when the economy booms and falls when the economy tanks.⁵⁴ This is consistent with labour hoarding in downturns, where hiring and firing costs mean that businesses temporarily reduce the intensity of workers' jobs rather than firing them outright.⁵⁵ If the UK had followed the US with better-targeted and more aggressive fiscal stimulus during its post-pandemic recovery, this would have likely boosted Britain's productivity recovery.⁵⁶ However, to the extent that this extra stimulus (over and above any induced supply boost) wasn't fully offset by higher interest rates, it would have come at the cost of more persistent inflation. Moreover, the currently strained fiscal context probably rules out the prospect of more government borrowing today.⁵⁷

Structural changes, however, should remain on the table. Indeed, some such changes already have a prominent place in the Government's policy agenda, most notably planning reforms that aim to make it easier for businesses to invest in physical infrastructure.⁵⁸ The Government also deserves credit for not cutting public investment since coming into office, something that many of its predecessors have been unable to resist when facing fiscal pressures.⁵⁹ But there are other, less high-profile policy levers that the Government could pull.

⁵⁴ A Barnett et al., [The UK productivity puzzle](#), Bank of England Quarterly Bulletin, June 2014. Interestingly, US labour productivity has been countercyclical in recent years, reflecting its highly flexible labour market. For more, see: J G Fernald & J C Wang, [Why Has the Cyclical of Productivity Changed? What Does It Mean?](#), Federal Reserve Bank of San Francisco Working Paper, April 2016; J Galí & T van Rens, [The Vanishing Procyclicality of Labour Productivity](#), The Economic Journal, January 2021.

⁵⁵ This has been posited as one reason why productivity in European economies, which typically have less flexible labour markets than Britain, has lagged behind US productivity in the post-pandemic period: F de Soyres, [Why is the U.S. GDP recovering faster than other advanced economies?](#), FEDS Notes, May 2024.

⁵⁶ The UK's energy bill support was poorly targeted and gave large amounts to high-income households who are less likely to spend than low-to-middle-income households. For more, see: S Pittaway & J Smith, [Built to last: Towards a sustainable macroeconomic policy framework for the UK](#), Resolution Foundation, October 2023; P Levell, M O'Connell & K Smith, [The welfare effects of price shocks and household relief packages: Evidence from an energy crisis](#), Institute for Fiscal Studies, January 2025.

⁵⁷ In recent years, the Government been operating with little headroom against its self-imposed fiscal rules. More fundamentally, yields on UK government debt have become more sensitive to investor sentiment in recent years, consistent with investors' concerns about the UK economy and fiscal position. For more, see: S Pittaway & J Smith, [The Macroeconomic Policy Outlook Q1 2025](#), Resolution Foundation, January 2025.

⁵⁸ Ministry of Housing, Communities and Local Government, [Guide to the Planning and Infrastructure Bill](#), March 2025.

⁵⁹ C Aref-Adib et al., [Unsung Britain bears the brunt: Putting the 2025 Spring Statement in context](#), Resolution Foundation, March 2025; F Odamtten & J Smith, [Cutting the cuts: How the public sector can play its part in ending the UK's low-investment rut](#), Resolution Foundation, March 2023.

There is a growing body of evidence that innovation is sensitive to the taxes faced by potential innovators.⁶⁰ While a wholesale cut to Corporation Tax or the top rate of Income Tax would be fiscally ill-advised and regressive, there are smaller tweaks the government should be thinking about to boost innovation and dynamism. Reforming non-residential Stamp Duty, bringing software investment into scope for full expensing, and redirecting tax breaks from small businesses to new ones, should be under consideration if the Government were looking for ways to make the tax system more supportive of dynamism.⁶¹ Tweaks such as these could be funded by cutting the VAT registration threshold. Reducing it gradually from £90,000 to £30,000 could raise more than £1.5 billion per year while removing a disincentive for many small firms to grow.⁶²

Trade – while a near-permanent fixture in Britain’s political landscape – is often not thought of as a way of boosting productivity. In firm-level data, more productive firms tend to be more likely to trade internationally, but there is also evidence that trade boosts productivity directly. Participating in international markets allows firms to learn from abroad and boosts the potential rewards available from investing in innovation.⁶³ Trade barriers can also weigh on productivity by being a drain on managers’ time.⁶⁴ Leaving the EU has provided a significant headwind to UK trade, and there is more we can do to mitigate its impact on productivity at minimal cost to the exchequer.⁶⁵ Services, where Britain is already the second-largest exporter in the world, should be at the forefront of our trade strategy.⁶⁶ There is a strong case for being ambitious in pursuing deeper services trade agreements, including mutual recognition for professional qualifications in regulated services like law, architecture and engineering.⁶⁷ An even bolder move would be reconsidering the Government’s red lines on Britain’s relationship with the EU, but the potential gains here are significant. A ‘UK Protocol’ that involved joining the EU’s customs territory and the single market for goods could boost annual GDP growth by 0.2 percentage points over the next decade, mainly through higher productivity growth.⁶⁸

60 C I Jones, *Taxing Top Incomes in a World of Ideas*, Journal of Political Economy, July 2022; U Akcigit et al., *Taxation and Innovation in the Twentieth Century*, The Quarterly Journal of Economics, June 2021.

61 R Davies, N Hamdan & G Thwaites, *Ready for change: How and why to make the UK economy more dynamic*, Resolution Foundation, September 2023.

62 M Broome, A Corlett & G Thwaites, *Tax planning: How to match higher taxes with better taxes*, Resolution Foundation, June 2023. The £1.5 billion costing in this paper is based on the previous VAT registration threshold of £80,000.

63 H Breinlich et al., *The relationship between trade and productivity: a feasibility study*, LSE Consulting, September 2023.

64 For evidence on this channel in the aftermath of the Brexit referendum, see: N Bloom et al., *The impact of Brexit on UK firms*, Bank of England Staff Working Paper, August 2019.

65 The productivity drag from Brexit is likely to be significant. The OBR, for example, estimates that the current UK-EU trading relationship means that the UK’s level of potential output is 4 per cent lower than if it had stayed in the EU. OBR, *Economic and fiscal outlook*, March 2024.

66 Resolution Foundation & Centre for Economic Performance, LSE, *Ending Stagnation: A New Economic Strategy for Britain*, Resolution Foundation, December 2023.

67 E Fry & S Hale, *Trading blows: How should Britain buy and sell in a turbulent world?*, Resolution Foundation, December 2024.

68 E Fry & G Thwaites, *The growth mindset: Sizing up the Government’s growth agenda*, Resolution Foundation, September 2024; S Dhingra & T Sampson, *Brexit Economics*, LSE Centre for Economic Performance, November 2019.

A comprehensive dissection of the UK's post-pandemic productivity slowdown will take time to emerge, as more research and data becomes available over time.⁶⁹ But, having reached the mid-point of the 2020s, now is a good time for an initial assessment. A substantial part of the UK's latest productivity issues lies in the health sector. The Government will hope that additional spending on the NHS can boost productivity,⁷⁰ as some of its recent issues are due to a lack of capital investment, overworked frontline staff and hospitals operating over capacity.⁷¹ But, compared with America, productivity growth in Britain's broader service sector has been found lacking. Turning this around will be key to ensuring Britain doesn't follow the 2010s with another decade of economic stagnation.

⁶⁹ For example, the gold standard of data for international productivity decompositions, the [EUKLEMS-INTANProd database](#), is only updated to 2021 at the time of writing.

⁷⁰ For details of the announced rise in public spending on healthcare, see: C Aref-Adib et al., [More, more, more: Putting the Autumn Budget 2024 decisions on tax, spending and borrowing into context](#), Resolution Foundation, October 2024.

⁷¹ S Freedman & R Wolf, [The NHS productivity puzzle: Why has hospital activity not increased in line with funding and staffing?](#), Institute for Government, June 2023.

Annex 1 – Estimating sector-level productivity in the UK and US

Estimating hours worked and labour productivity in UK sectors

Given the ongoing issues with the ONS's Labour Force Survey (LFS), estimating changes in hours worked across sectors is more difficult than usual. The ONS's headline sectoral labour productivity estimates use a combination of data sources to calculate hours worked by sector. But crucially, hours are ultimately re-scaled to match the LFS in aggregate.⁷² Since the pandemic, the LFS's response rate has collapsed and its estimate for aggregate employment has fallen well below the level implied by the ONS's Workforce Jobs (WFJ) survey of employers and HMRC's tax data.⁷³ It's therefore likely that, by re-scaling aggregate hours to match the LFS, the ONS's headline labour productivity releases have understated growth in aggregate hours since the pandemic and thus overstated recent productivity growth.

In this analysis, we therefore depart from the ONS's estimates of hours worked by sector from Q1 2020 onwards. This part of the annex describes how we construct our alternative estimates.

We start by estimating the number of jobs in each sector. We take the number of employees by industry from the ONS's Real Time Information (RTI) data, which tracks the number of payrolled employees through HMRC's PAYE system.⁷⁴ We re-scale these numbers to match the aggregate number of employees estimated in previous Resolution Foundation analysis.⁷⁵ In practice, this is a small upwards adjustment that reflects a minority of employees not captured by PAYE.⁷⁶ Self-employed jobs by industry are taken from WFJ.⁷⁷ These self-employed figures are ultimately derived from the LFS. We therefore re-scale them so that the aggregate change in jobs since Q4 2019 matches the change in sole traders and partners in HMRC self-assessment tax returns.^{78, 79} This approach does

⁷² ONS, [Labour productivity QMI](#), November 2024.

⁷³ A Corlett & H Slaughter, [Measuring up?: Exploring data discrepancies in the Labour Force Survey](#), Resolution Foundation, August 2024.

⁷⁴ ONS & HMRC, [Earnings and employment from Pay As You Earn Real Time Information, seasonally adjusted](#).

⁷⁵ A Corlett, [Get Britain's Stats Working: Exploring alternatives to Labour Force Survey estimates](#), Resolution Foundation, November 2024.

⁷⁶ The average adjustment between Q1 2019 and Q4 2024 is an increase of 0.1 per cent.

⁷⁷ ONS, [JOBS02: Workforce jobs by industry](#).

⁷⁸ HMRC, [Income of individuals with self-employment sources](#). This data is only available on an annual basis up to the 2022/23 tax year. We hold the current level of sole traders and partners constant in the more recent period and create a smoothed quarterly series to avoid sharp changes in employment between tax years.

⁷⁹ Before the pandemic, the number of self-employed jobs implied by the LFS (as published in WFJ) was consistently higher than the number sole traders and partners in HMRC self-assessment tax returns. This gap probably reflected HMRC counting the number of individuals, while LFS/WFJ counted the number of jobs (of which an individual can have more than one). To ensure that our measure of self-employed jobs is comparable with the pre-pandemic data, we re-scale the HMRC tax returns data to match the aggregate number of self-employed jobs in LFS/WFJ on average between Q3 2014 and Q4 2019.

not capture changes in the number of unpaid family workers or government sponsored trainees that might not be captured in PAYE, but LFS data suggests that together these only account for around 1-in-200 jobs across the economy (0.5 per cent in Q4 2024).⁸⁰

While the aggregate level of self-employed jobs matches that implied by administrative data, we remain wholly reliant on the LFS for information on the sectoral pattern of changes. As a result, this part of our estimates is unusually uncertain. But reassuringly, most of the variation in employment across sectors is driven by changes in employees, where we have more confidence in the underlying data.⁸¹ However, this does mean our employment estimates are more uncertain for sectors – such as agriculture and construction – where self-employment is more prevalent.⁸²

We convert sector-level estimates of workers to total hours worked based on average hours implied by the ratio of industry hours and jobs in the ONS's labour productivity releases.⁸³ Finally, sectoral output (GVA) is also taken from the same productivity release. In the case of missing data points for agriculture and real estate in Q3 2024, we roll forward data from Q2 2024.

Aligning the definitions of sectors in the UK and the US

Comparing sectoral data in the UK and the US is complicated by the fact that the two countries use different systems of sectoral classification. The UK uses Standard Industrial Classification (SIC) codes, while the US has used North American Industry Classification System (NAICS) codes since 1997.

To account for some of the significant differences between the two systems, some NAICS subsectors have been reallocated to a different higher-level sector.

- 'Waste management and remediation services' (NAICS code 562) has been transferred from 'Administrative and support services' to 'Utilities'.
- 'Management of holding companies' (NAICS code 55) has been added to 'Financial and insurance activities'.
- 'Rental and leasing services' and 'Lessors of intangible assets' (NAICS codes 532 and 533) have been added to 'Administrative and support services'.

In addition, some sectors have been merged where a more granular split is not available in both the US and UK data:

⁸⁰ ONS, [EMP01 SA: Full-time, part-time and temporary workers \(seasonally adjusted\)](#).

⁸¹ Looking across sectoral changes between 2019 and the year to Q3 2024, the average absolute contribution of a change in employees to a sector's overall change in employment was 4.9 percentage points. The average absolute contribution from self-employment was 1.4 percentage points.

⁸² In construction, we estimate no overall change in employment, resulting from a 92,000 rise in employees and 90,000 fall in self-employment. This pattern is likely to have been influenced by IR35 reforms implemented in 2021 to reduce bogus self-employment.

⁸³ ONS, [Output per hour worked, UK](#); ONS, [Output per job, UK](#).

- In the UK data, 'Electricity, gas, steam and air conditioning supply' has been merged with 'Water supply, sewerage, waste management and remediation activities'.
- In the US data, wholesale and retail trade have been merged.

Table 1 provides details on the sectoral definitions used when comparing UK and US data in this paper.

TABLE 1: Summary of aligned UK and US sector definitions

Sector	SIC 2007 section	SIC 2007 divisions	NAICS code
Agriculture	A	01 to 03	11
Mining and quarrying	B	05 to 09	21
Manufacturing	C	10 to 33	31 to 33
Utilities	D and E	35 to 39	22 and 562
Construction	F	41 to 43	23
Wholesale and retail	G	45 to 47	42, 44 and 45
Transport	H	49 to 53	48, 492 and 493
Hospitality	I	55 and 56	72
Info & comms	J	58 to 63	51
Finance	K	64 to 66	52 and 55
Real estate	L	Excluded from intl. comparisons	
PSTA	M	69 to 75	54
Admin. and support	N	77 to 82	561, 532 and 533
Public admin.	O	Excluded from intl. comparisons	
Education	P	Excluded from intl. comparisons	
Health	Q	Excluded from intl. comparisons	
Arts & recreation	R	90 to 93	71
Other services	S and T	94 to 98	81

NOTES: PSTA refers to professional, scientific and technical activities.

Calculating hours worked and labour productivity in US sectors

For US sectors, productivity is calculated using Bureau of Economic Analysis (BEA) data on GVA by industry and Bureau of Labor Statistics (BLS) data on hours.⁸⁴ Where subsectors have been merged, a chained volume measure (CVM) of GVA for the combined sector is calculated based on the weighted average of CVM growth rates for the component subsectors, weighted by nominal GVA in the base year.

⁸⁴ BEA, Value added by industry; BLS, Industry Output and Employment.

The Resolution Foundation is an independent research and policy organisation. Our goal is to improve the lives of people with low to middle incomes by delivering change in areas where they are currently disadvantaged.

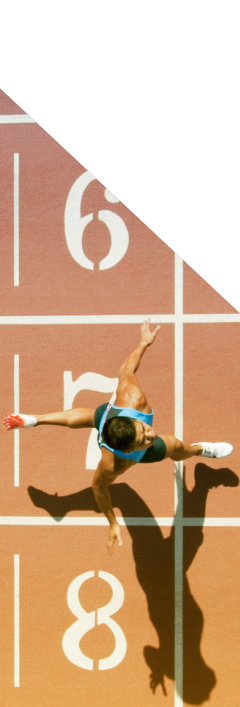
We do this by undertaking research and analysis to understand the challenges facing people on a low to middle income, developing practical and effective policy proposals; and engaging with policy makers and stakeholders to influence decision-making and bring about change.

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