Article

Productivity overview, UK: January to March 2022

The main findings from official statistics and analysis of UK productivity, presenting a summary of recent developments.

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Table of contents

1 . Main points

Labour productivity

- Output per hour worked in Quarter 1 (Jan to Mar) 2022 was 1.7% higher than the average level in 2019, prior to the coronavirus (COVID-19) pandemic, but 0.6% lower than in Quarter 4 (Oct to Dec) 2021.

- Output per worker was 7.2% higher in Quarter 1 2022 relative to Quarter 1 2021 and was 1.4% above its pre-coronavirus pandemic levels.

Growth accounting

- In Quarter 1 2022, multifactor productivity (MFP) was still 0.5% above the 2019 pre-coronavirus pandemic average.

- Capital and labour inputs grew slower than gross value added (GVA) in the year to Quarter 1 2022, resulting in 1% MFP growth compared with Quarter 1 2021.

Public service productivity

- Public service productivity was 6.8% lower than the average level in 2019.

- Public service productivity has fallen by 2.7% in Quarter 1 2022, mainly driven by a rise in inputs of 2.7%.

- A fall in healthcare output was cancelled out by rises in other areas to deliver a 0% growth in public service output.

2 . Labour productivity

Output per hour worked, our headline measure of labour productivity, was 1.7% above its pre-coronavirus (COVID-19) pandemic levels. Output per worker and output per job were 1.4% and 1.2%, respectively, above their pre-coronavirus pandemic levels.

Relative to the same quarter in the previous year, Quarter 1 (Jan to Mar) 2021, output per hour worked was down 0.8%. Output per worker and output per job grew by 7.2% and 7.0%, respectively.

Output per hour worked decreased by 0.6% in Quarter 1 2022 compared with the previous quarter. Both output per worker and output per job increased by 0.6% and 0.4%, respectively, over the same period.

Figure 1: Labour productivity measures have stabilised similar to pre-coronavirus pandemic levels

Labour productivity measures, UK, index 2019=100, Quarter 1 (Jan to Mar) 2019 to Quarter 1 2022

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Labour productivity measures, UK, index 2019=100, Quarter 1 (Jan to Mar) 2019 to Quarter 1 2022
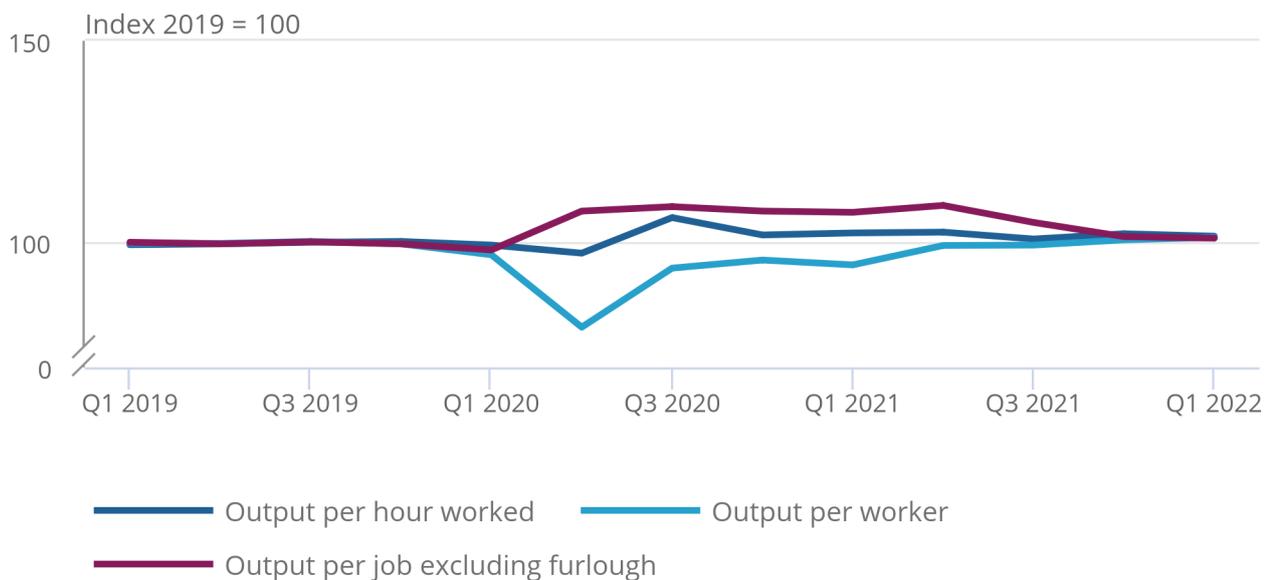
Source: Office for National Statistics – Productivity overview, UK

Users should note that Labour Force Survey (LFS) responses have been reweighted using updated HM Revenue and Customs (HMRC) Real Time Information (RTI). For more information, see our Impact of reweighting on Labour Force Survey key indicators: 2022 article. There are differences in our estimates reported in the UK productivity flash estimate: January to March 2022 and our latest estimates. The differences reflect an update to the initial estimates of gross domestic product (GDP) in Quarter 1 2022 and the reweighting of key indicators in the LFS.

As this is the second full quarter since the closure of the Coronavirus Job Retention Scheme (CJRS) and the Self Employment Income Support Scheme (SEISS), we have stopped our experimental 'Output per job excluding furloughed workers' dataset. For consistency, we have continued the series by including the Quarter 1 2022 output per job estimate to this series. The data show convergence in the measures following the period when furlough was in action, where they diverged because of the employment support schemes introduced during the coronavirus pandemic.

Figure 2 shows that the quarter-on-quarter fall in output per hour worked was driven by a bigger increase in the number of hours worked than growth in gross value added (GVA). In Quarter 1 2022, the number of hours worked increased by 1.3%, while GVA growth was only 0.8%.

Figure 2: Output per hour worked declined by 0.6% on the quarter, driven by a bigger growth in the number of hours worked than growth in GVA

Gross value added, hours worked, output per hour worked, UK, index 2019 = 100, Quarter 1 (Jan to Mar) 2008 to Quarter 1 2022

Figure 2: Output per hour worked declined by 0.6% on the quarter, driven by a bigger growth in the number of hours worked than growth in GVA

Gross value added, hours worked, output per hour worked, UK, index 2019 = 100, Quarter 1 (Jan to Mar) 2008 to Quarter 1 2022
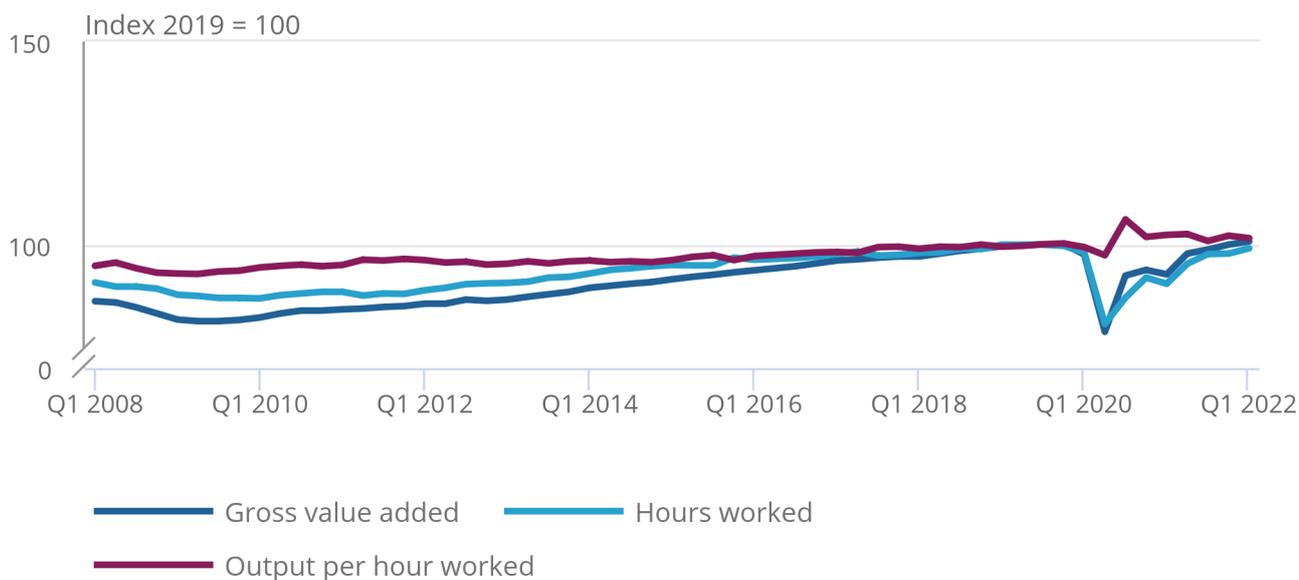
Source: Office for National Statistics – Productivity overview, UK

3 . Labour productivity by industry

Whole economy growth in productivity is affected by reallocation of economic activity between industries (the between industry effect), as well as the direct contributions from productivity growth within industries (the within industry effect).

Quarter 4 (Oct to Dec) 2021 and Quarter 1 (Jan to Mar) 2022 are the first two quarters where we have data following the closure of the furlough schemes. The trend within these quarters shows a continued fall in the contribution of the between industry effect to productivity growth. The fall reflects the fact that during the coronavirus (COVID-19) pandemic, the most productive sectors of the economy were more likely to remain open. As lockdown restrictions eased, the contribution to productivity growth caused by the between industry effect has fallen.

Figure 3: Compared with pre-coronavirus pandemic levels (2019 average), productivity in Quarter 1 (Jan to Mar) 2022 benefitted from growth within industries more than reallocation between industries

Percentage change from the 2019 average, output per hour worked, between-industry reallocation, within-industry productivity growth, Quarter 1 (Jan to Mar) 2019 to Quarter 1 2022

Figure 3: Compared with pre-coronavirus pandemic levels (2019 average), productivity in Quarter 1 (Jan to Mar) 2022 benefitted from growth within industries more than reallocation between industries

Percentage change from the 2019 average, output per hour worked, between-industry reallocation, within-industry productivity growth, Quarter 1 (Jan to Mar) 2019 to Quarter 1 2022
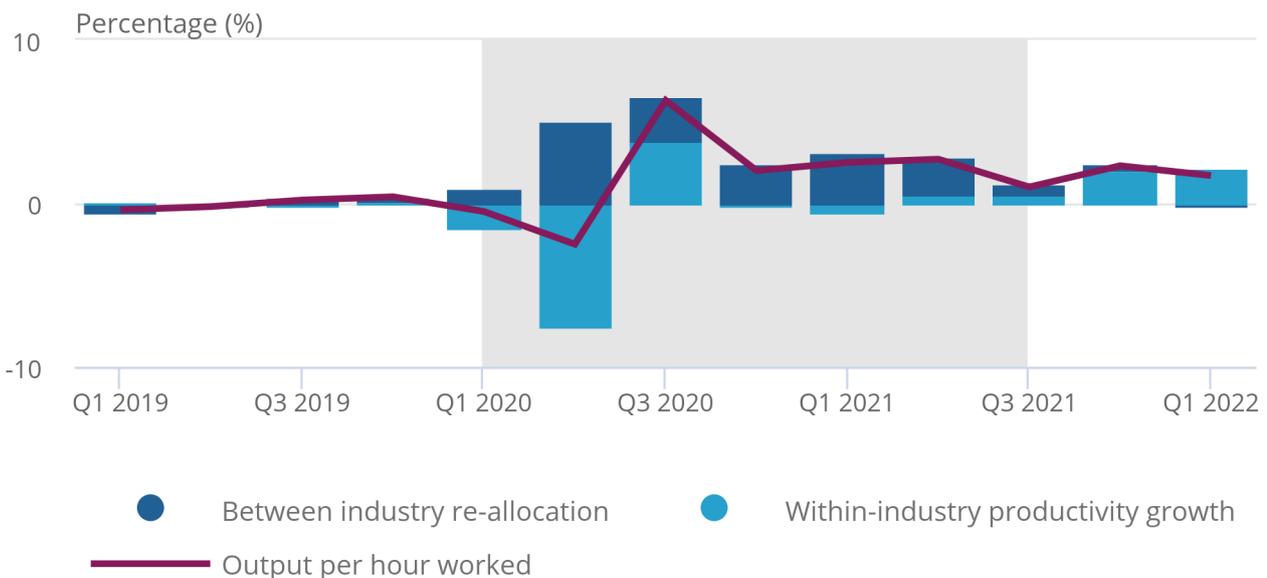
Source: Office for National Statistics – Productivity overview, UK

Notes:

1. The between-industry effect is calculated across 17 industry sections. Different results may be found depending on the industry granularity entered into the analysis.

2. The between and within-industry effects may not add up to the output per hour total. This is because of the exclusion of the National Accounts balancing value.

Figure 4 shows the contribution to total growth in output per hour worked for 17 industries relative to the 2019 average. Manufacturing, wholesale and retail, and IT had the biggest positive industry contribution to productivity growth. By contrast, mining and quarrying, and administrative services all negatively contributed to productivity growth. The energy, water supply, and recreation and culture industries made little, if any, contribution to productivity growth in Quarter 1 2022.

Figure 4: Contributions to total growth in output per hour worked for 17 industries relative to the 2019 average

Output per hour worked contributions, percentage points, relative to 2019 average

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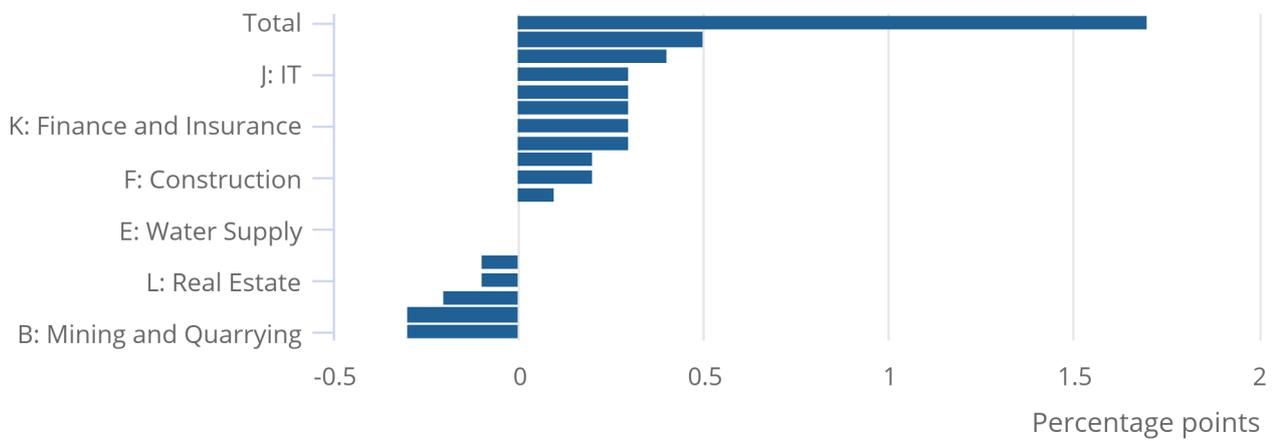
Source: Office for National Statistics – Productivity overview, UK

4 . Growth accounting

Following a period of volatility during the coronavirus (COVID-19) pandemic, multifactor productivity (MFP) has remained relatively flat for the second quarter in a row. It grew 1.6% between Quarter 1 (Jan to Mar) 2021 and Quarter 1 2022, just 0.5% lower than the 2019 average.

Since Quarter 1 2021, the biggest driver to gross value added (GVA) growth has come from hours worked, as working patterns returned to normal following coronavirus-related disruptions. Labour composition, a measure that uses wages as a proxy for the productivity of the different groups in the labour force, acted as a drag on GVA. This was because many of those who worked less during the coronavirus pandemic were in industries with lower productivity levels and have since returned to work.

Investment is seen as a key driver to productivity growth. In the growth accounting framework, investment flows feed through the capital services measure, which is an estimate of the services businesses receive from their capital stock.

When considering the contribution of capital services to GVA growth, it is possible to divide both by hours, which gives two related estimates: output per hour worked (our headline measure of labour productivity) and capital deepening (the capital available to workers per hour worked). A third measure, capital productivity, is calculated as output per unit of capital (that is, GVA and capital services).

Increasing investment between 1994 to 2007 led to growth in capital deepening, meaning workers had more capital available to them. Output per hour also grew. In contrast, capital productivity (output per unit of capital input) did not grow as fast as labour productivity because capital was one of the main drivers of growth during this period.

From 2008, investment weakened resulting in capital shallowing (less capital available to workers). This is one reason for the productivity puzzle, as both output and capital input growth slowed capital productivity also slowed. Furthermore, after coronavirus restrictions were lifted at the end of 2021, capital deepening and output per hour worked were both above their pre-coronavirus pandemic levels.

Figure 5: At the end of 2021, both capital per hour worked and output per hour worked were above their pre-coronavirus pandemic levels

Capital deepening, GVA per hour worked and capital productivity, UK, index=2019, Quarter 1 (Jan to Mar) 1994 to Quarter 1 2022

Figure 5: At the end of 2021, both capital per hour worked and output per hour worked were above their pre-coronavirus pandemic levels

Capital deepening, GVA per hour worked and capital productivity, UK, index=2019, Quarter 1 (Jan to Mar) 1994 to Quarter 1 2022
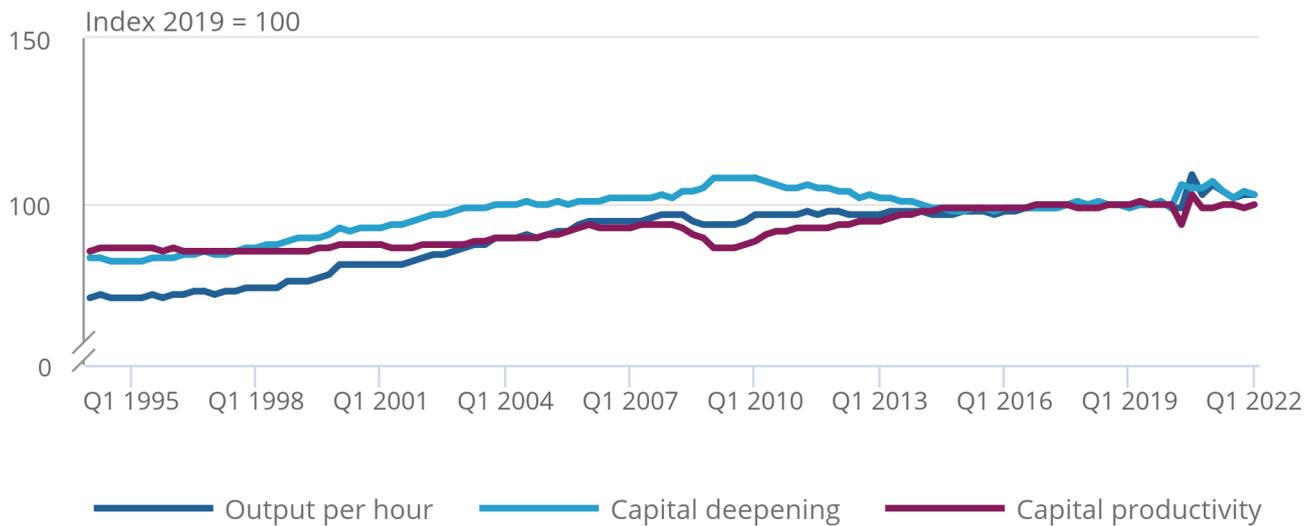
Source: Office for National Statistics – Productivity overview, UK

Notes:

1. Capital measures in this chart have been adjusted to account for lower utilisation of capital during periods lockdown. This adjustment is based on changes to hours. It begins in Quarter 1 2020 and ends in Quarter 4 2021.

5 . Public service productivity

Public service productivity fell by 2.7% in Quarter 1 (Jan to Mar) 2022 compared with Quarter 4 (Oct to Dec) 2021. This is the first fall since Quarter 1 (Jan to Mar) 2021, driven by a rise in public service inputs by 2.7% and by a 0% growth for output.

Inputs have risen in most service areas, with the exception of social protection and some areas of local government. A fall in healthcare output, specifically activities capturing test and trace and vaccinations, critical care and accident and emergency services, has led to a 0% growth in output.

Figure 6: Public service productivity fell in Quarter 1 2022, the first time since Quarter 1 2021

Quarterly growth rates in public service output, inputs and productivity, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 1 2022

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Quarterly growth rates in public service output, inputs and productivity, UK, Quarter 1 (Jan to Mar) 2019 to Quarter 1 2022
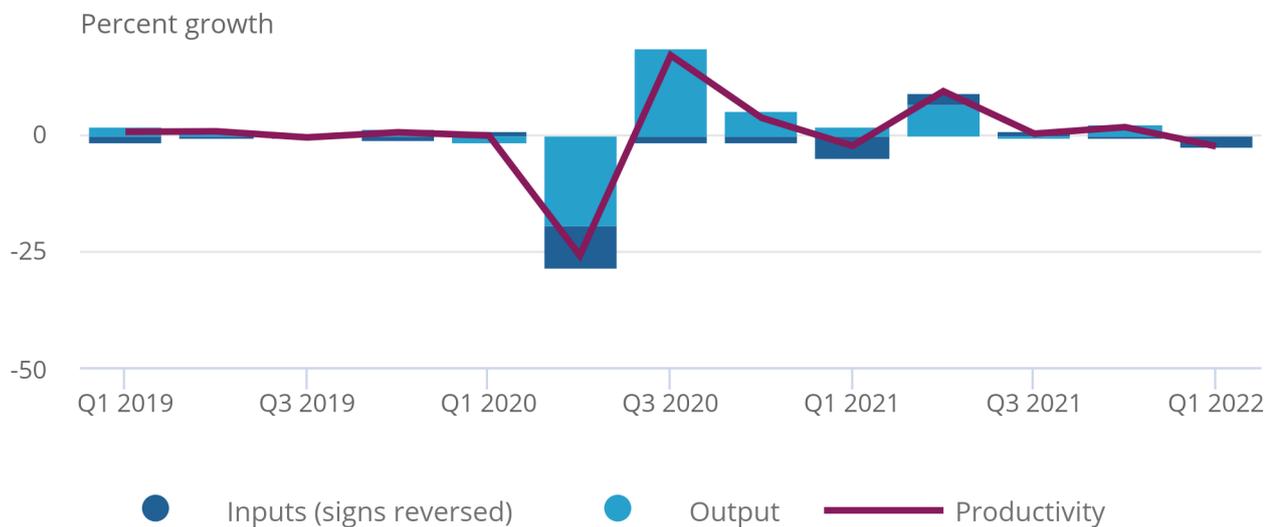
Source: Office for National Statistics – Productivity overview, UK

In Quarter 1 2022, public service inputs and output were both higher than the average 2019 level. However, public service productivity was 6.8% lower than average 2019 levels. Increased spending over the coronavirus (COVID-19) pandemic has contributed to the growth in inputs of 18.8%, which has outpaced the growth in output of 10.7%.

Figure 7: Public service productivity has still not recovered to pre-coronavirus (COVID-19) pandemic levels

Public service productivity, UK, index 2019=100, Quarter 1 (Jan to Mar) 2019 to Quarter 1 2022

Figure 7: Public service productivity has still not recovered to pre-coronavirus (COVID-19) pandemic levels

Public service productivity, UK, index 2019=100, Quarter 1 (Jan to Mar) 2019 to Quarter 1 2022

Index 2019 = 100
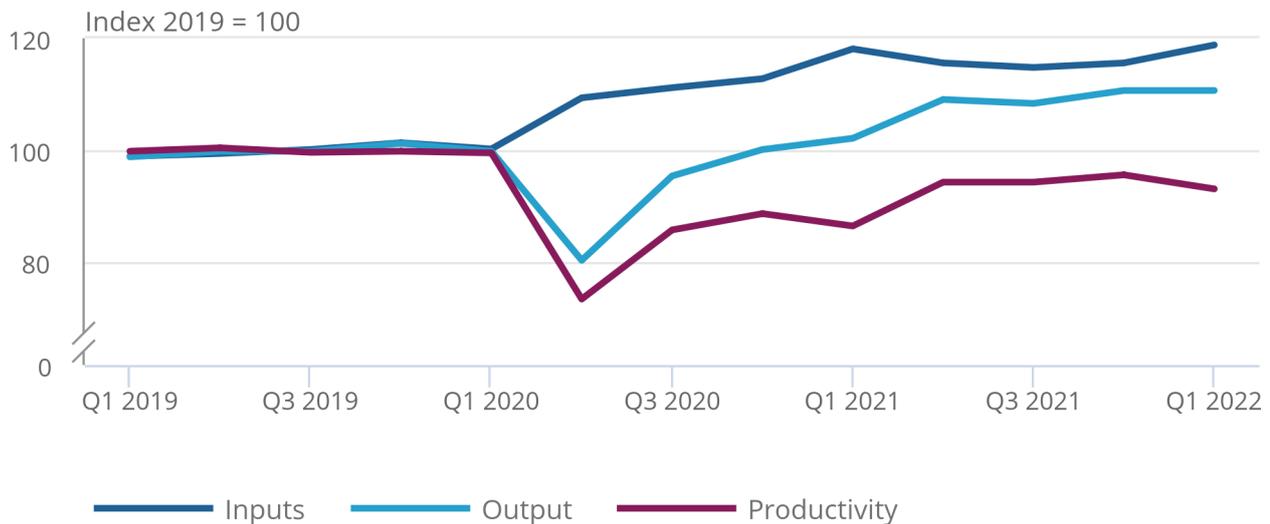
Source: Office for National Statistics – Productivity Overview, UK

Our estimates include ongoing improvements of how we estimate non-market output for healthcare and non-market output for education.

Annual public service productivity is estimated to have risen by 9% in 2021 following a fall of 13.1% in 2020, as shown in our previous article. After a large fall at the beginning of the coronavirus pandemic, output recovered in the following quarters in line with the easing of government restrictions and the increase of healthcare and education activities.

These experimental statistics annual estimates use less granular and comprehensive data sources compared with our annual public service productivity estimate, which is badged as a National Statistic. The experimental estimates of public service output accounts for the volume of activity, for example the number of GP appointments and school attendance. They do not account for the quality of output, such as effectiveness of NHS treatments, and attainment levels within schools. More accurate estimates at an annual level for 2020 will be published in early 2023.

6 . Developments

Since April 2022, the datasets associated with this release have been modified in accordance with the accessibility legislation. As part of this process, we have restructured our growth accounting datasets that relate to multifactor productivity (MFP). To provide time for quality assurance, some of our underlying datasets will be published after the publication date for this release. We welcome any feedback or questions on our developments productivity@ons.gov.uk.

We have released our Productivity development plan for 2021 to 2023, where we set out plans to build on recent improvements to our productivity statistics and look to introduce new outputs. This follows the Office for Statistics Regulation assessment of the Office for National Statistics' (ONS') productivity statistics in early 2021.

Terminology change

Along with changes to the structure of our growth account datasets, we have changed the name of our key labour market input from Quality Adjusted Labour Input (QALI) to Compositionally Adjusted Labour Input (CALI). This change removes the subjective characteristics of the word "quality" and provides a more accurate reflection of what the estimates are capturing.

We are using growth accounting for the related sections of our publication instead of multifactor productivity. The former provides a wider definition that covers all the data that are used in the calculation of multifactor productivity estimates.

Education changes

We have adopted the education breakdown used in labour market publications instead of the bespoke productivity approach. This is because of changes to the Labour Force Survey's education questions, and an investigation into the education variables used in our CALI estimates. This aligns our growth accounting estimates with other education-related data produced by the ONS. This change was applied to the underlying CALI data from 2016 and not currently to headline measures, where the previous labour composition growth rates were applied to the most recent period. The next step is to apply this change across the whole time series and to headline measures.

Economic statistics governance after EU exit

Following the UK's exit from the EU, new governance arrangements are being put in place that will support the adoption and implementation of high-quality standards for UK economic statistics.

The new National Statistician's Committee for Advice on Standards for Economic Statistics (NSCASE) will ensure its processes for influencing and adopting international statistical standards are world leading. The advice it provides to the National Statistician will span the full range of domains in economic statistics, including the National Accounts, fiscal statistics, prices, trade and the balance of payments, and labour market statistics. There is further information about NSCASE on the UK Statistics Authority's website.

7 . Data

Output per hour worked, UK
Dataset | Released 7 July 2022
Estimates for gross value added (GVA), hours worked and output per hour worked by high, section and division level industry, as defined by the Standard Industrial Classification (SIC). Contains annual and quarterly statistics. Contains estimates for industry quarter on quarter, year on year and quarter on year contributions to whole economy output per hour worked.

Output per job, UK
Dataset | Released 7 July 2022
Estimates for GVA, jobs and output per job worked by high, section and division level industry, as defined by the Standard Industrial Classification (SIC). Contains annual and quarterly statistics. Contains estimates for industry quarter on quarter, year on year and quarter on year contributions to whole economy output per job.

Output per worker, UK
Dataset | Released 7 July 2022
Estimates for GVA, workers, and output per worker by high and section level industry, as defined by the Standard Industrial Classification (SIC). Contains annual and quarterly statistics.

Multi-factor productivity estimates
Dataset MFP01 | Released 7 July 2022
Indices and log changes for gross value added (GVA), multi-factor productivity, implied factor prices, hours worked, labour composition, capital services and GVA per hour worked.

Public service productivity, quarterly
Dataset | Released 7 July 2022
Includes quarterly, annual and revisions tabs to see the picture for UK public service productivity and also to see how much has changed in the data.

8 . Glossary

Labour productivity

Labour productivity measures how many units of output are produced for each unit of labour input, and is calculated by dividing output by labour input.

Labour inputs

The preferred measure of labour input is hours worked ("productivity hours"), but workers and jobs ("productivity jobs") are also used.

Output

Output refers to gross value added (GVA), which is an estimate of the volume of goods and services produced by an industry, and in aggregate for the UK.

Multi-factor productivity

For any given change in output, multi-factor productivity (MFP) measures the amount that cannot be accounted for by changes in inputs of quality-adjusted labour and capital.

Capital services

Capital services refer to the flow of productive services provided by an asset that is employed in production. Capital services are the appropriate measure of capital input in production analysis.

Labour composition

Labour composition measures the characteristics of the labour used in the production process. The labour measure used in multi-factor productivity is quality-adjusted labour input (QALI), which splits the hours worked data using four categories: industry, age, sex and education.

Public service productivity

Productivity of public services is estimated by comparing growth in the total amount of output with growth in the total amount of inputs used. Growth rates of output and inputs for individual service areas are aggregated by their relative share of total government expenditure (expenditure weight) to produce estimates of total public service output, inputs and productivity.

9 . Measuring the data

Revisions

Key indicators in the Labour Force Survey (LFS) have been reweighted since we published our flash estimate of labour productivity in May 2022. For more information, see our Impact of reweighting on Labour Force Survey key indicators: 2022 article.

Methodological information

Multifactor productivity (MFP) estimates are compiled using the growth accounting framework, which decomposes changes in economic output. In this case, gross value added (GVA) of the UK market sector, into contributions from changes in measured inputs: labour, capital and a residual element known as MFP. For more information, see our simple guide to MFP and our MFP QMI.

Information on data used in public service productivity can be found in our previous release and in our Sources and methods for public service productivity estimates.

The measure of output used in these statistics is the chained volume (real) measure of gross value added (GVA) at basic prices, as detailed in our Labour productivity, UK; October to December 2019 article.

10 . Strengths and limitations

During the coronavirus (COVID-19) pandemic there have been additional challenges to collecting labour market data and estimating gross domestic product (GDP). As a result, the estimates are subject to increased uncertainty and there is an increased likelihood of larger revisions than usual in future releases of these measures.

The data contained in this release are estimates. While they represent our best assessment of productivity in the UK, they will get revised as we receive more reliable data over time.

Gross value added estimates are revised as part of the National Accounts publication process. Labour market data are infrequently revised to account for new information.

There are always potential risks to data quality. These risks can include survey samples providing an inaccurate representation for the UK, respondent answers being incorrect, inaccurate data categorisations, and data compilation issues and errors. We work hard to mitigate these risks to ensure data quality remains high.

Some data in our publication has received the National Statistic badge, which demonstrates the compliance with the Code of Practice for Statistics, as assessed by the Office for Statistics Regulation. Other data has an experimental badge, which denotes that we are still developing these data to create the best output possible. All data goes through rigorous quality assurance to provide the best estimates available.

More information on the strengths and limitations of the data, as well as the quality and accuracy of the data, is available in the Labour productivity QMI, the Multi-factor productivity (MFP) QMI and in the Public service productivity: total, UK QMI. Further information is available in our Sources and methods for public service productivity estimates.

11 . Related links

Something

[GDP quarterly national accounts, UK: January to March 2022](#)
Bulletin | Released 30 June 2022
Revised quarterly estimate of gross domestic product (GDP) for the UK. Uses additional data to provide a more precise indication of economic growth than the first estimate.

[Labour market overview, UK: June 2022](#)
Bulletin | Released 14 June 2022
Estimates of employment, unemployment, economic inactivity, and other employment-related statistics for the UK.

[Public service productivity: total, UK, 2019](#)
Article | Released 22 February 2022
Updated measures of output, inputs, and productivity for public services in the UK between 1997 and 2019. Includes service area breakdown, as well as impact of quality adjustment and latest revisions.

[Sources and methods for public service productivity estimates](#)
Article | Released 11 May 2022
Sources and methods information for the Public service productivity: total, UK publication, detailing the main concepts, output and inputs measures by service area.

[UK productivity flash estimate: January to March 2022](#)
Article | Released 17 May 2022
Flash estimate of labour productivity for Quarter 3 (July to September) 2021 based on latest data from GDP first quarterly estimate and labour market statistics.

[Unit labour costs and labour income, UK: 2022](#)
Article| Released 13 May 2022
Labour share of income, unit labour costs (ULCs), unit wage costs (UWCs) and average labour compensation per hour worked (ALCH), broken down by industry.