Office for National Statistics

Article

UK productivity flash estimate: July to September 2023

Labour productivity for Quarter 3 (July to September) 2023 based on data from the gross domestic product (GDP) first quarterly estimate and labour market statistics.

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13 February 2024

Notice

15 February 2024

We are merging our "Productivity overview, UK" and "UK productivity flash estimate" releases. This is because of the reintroduction of an LFS-based dataset in the February 2024 UK labour market publication. More information can be found in our Statement on the Labour Force Survey

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1 . Main points

- Incorporating National Accounts revisions and in the absence of Labour Force Survey data, in Quarter 3 (July to Sept) 2023, preliminary estimates of UK output per worker growth were 0.1% below the same quarter a year ago.

- Our preferred method for estimating average hours worked, provide preliminary estimates of UK output per hour worked in Quarter 3 2023 to be 0.3% below the same quarter a year ago, but 2.5% above the pre-coronavirus (COVID-19) period.

These are preliminary estimates and so are subject to revision. There are no Labour Force Survey data for Quarter 3 2023, so we are providing the best possible estimates using the best available data sources. Estimates may be revised when we release our more detailed Productivity overview articlefor the quarter.

2 . Latest statistics

The Office for National Statistics (ONS) has been facing the challenge of falling response rates for household surveys, as have other comparable national statistical institutes.

This issue became more acute in the Labour Force Survey (LFS) data collected for August 2023. The LFS estimates due to be published in October 2023 were suspended because of quality concerns. There is a comprehensive plan to address these concerns and reintroduce LFS estimates that includes data collection and methodological improvements. Read more about it in our Labour Force Survey: planned improvements and its reintroduction article, which was published on the 2 November 2023.

We are also continuing to transition to the Transformed Labour Force Survey (TLFS). This is already in the field, and we expect it to become the primary source in 2024.

The labour productivity flash estimate uses the gross value added (GVA) from the first quarterly GDP estimateto provide the first look at UK productivity for Quarter 3 (July to September) 2023.

Table 1: The latest labour productivity statistics
UK, Quarter 3 (July to Sept) 2022 to Quarter 3 (July to Sept) 2023

	Output per hour worked growth rates			Output per worker growth rates		
Period	**Quarter vs 2019 pre-pandemic level (%)**	**Quarter-on-year ago (%)**	**Quarter-on-quarter (%)**	**Quarter vs 2019 pre-pandemic level (%)**	**Quarter-on-year ago (%)**	**Quarter-on-quarter (%)**
Q3 2022	2.9	1.0	0.4	1.7	1.4	0.1
Q4 2022	3.3	0.1	0.5	1.7	-0.1	0.0
Q1 2023	2.1	-0.3	-1.2	1.5	-0.6	-0.2
Q2 2023	2.8	0.3	0.7	1.8	0.2	0.3
Q3 2023	2.5	-0.3	-0.2	1.6	-0.1	-0.2

Source: UK productivity flash estimate from the Office for National Statistics

Notes

1. Comparisons with pre-coronavirus (COVID-19) pandemic levels use average 2019 levels as the base period.

2. Output per hour worked for Quarter 3 2023 is calculated using the carry forward of average hours from Quarter 2 2023, the most robust method, according to our sensitivity analysis (see Section 5 for more details).

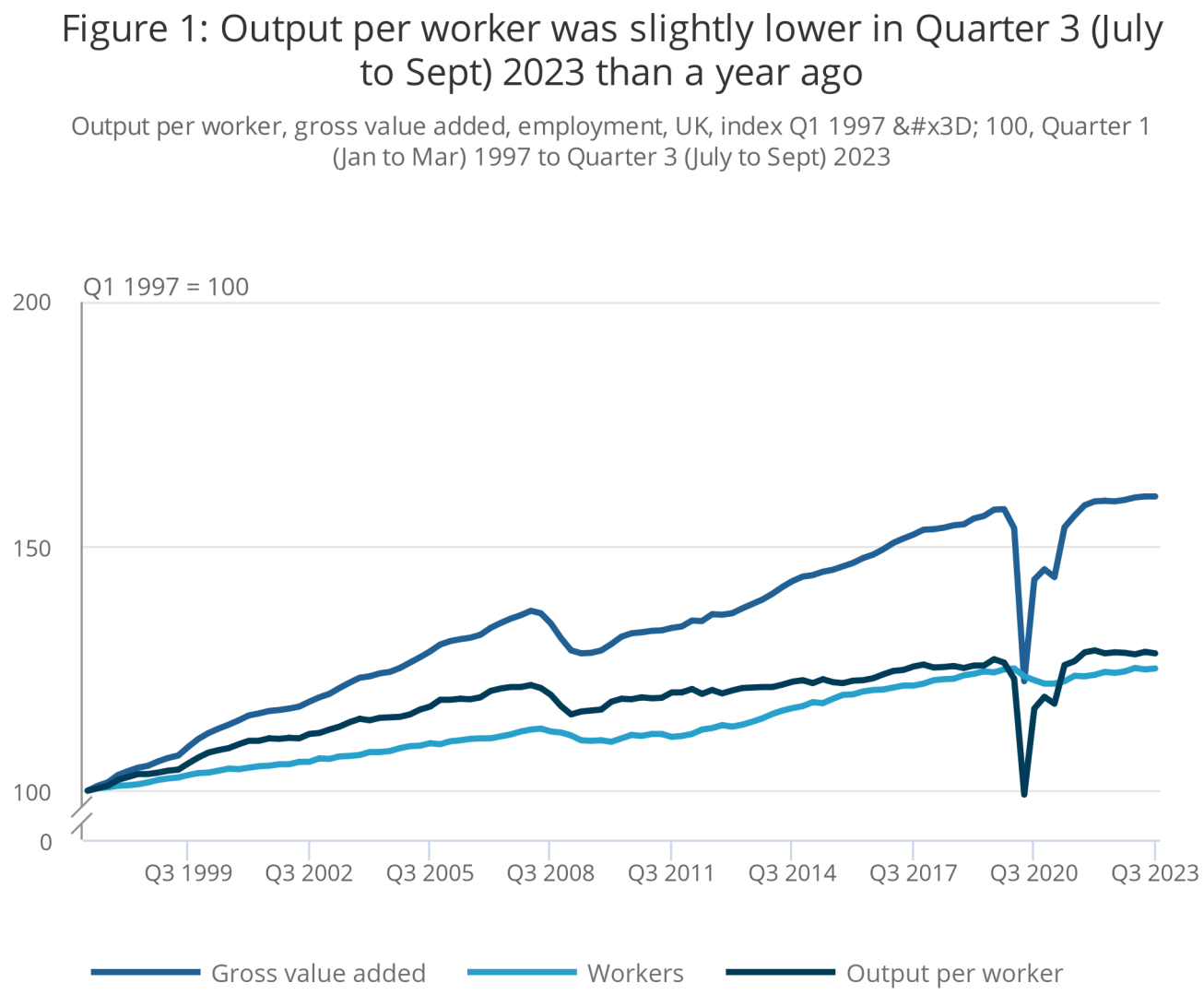
3 . Output per worker

Output per worker is the ratio of total output relative to the number of workers.

Preliminary estimates of UK output per worker for Quarter 3 (July to September) 2023 decreased by 0.1% relative to a year earlier. This was because of a 0.6% increase in gross value added (GVA), offset by a slightly higher 0.7% increase in the number of workers.

Figure 1: Output per worker was slightly lower in Quarter 3 (July to Sept) 2023 than a year ago

Output per worker, gross value added, employment, UK, index Q1 1997 = 100, Quarter 1 (Jan to Mar) 1997 to Quarter 3 (July to Sept) 2023



Source: UK productivity flash estimate from the Office for National Statistics

Notes:

1. In the absence of LFS data, an adjusted employment has been calculated. For more details see Labour Market release.

4 . Output per hour worked

As we have stated in Section 2, there is no Labour Force Survey (LFS) data available for Quarter 3 (July to September) 2023, so we are providing experimental estimates using the best available data sources and methods.

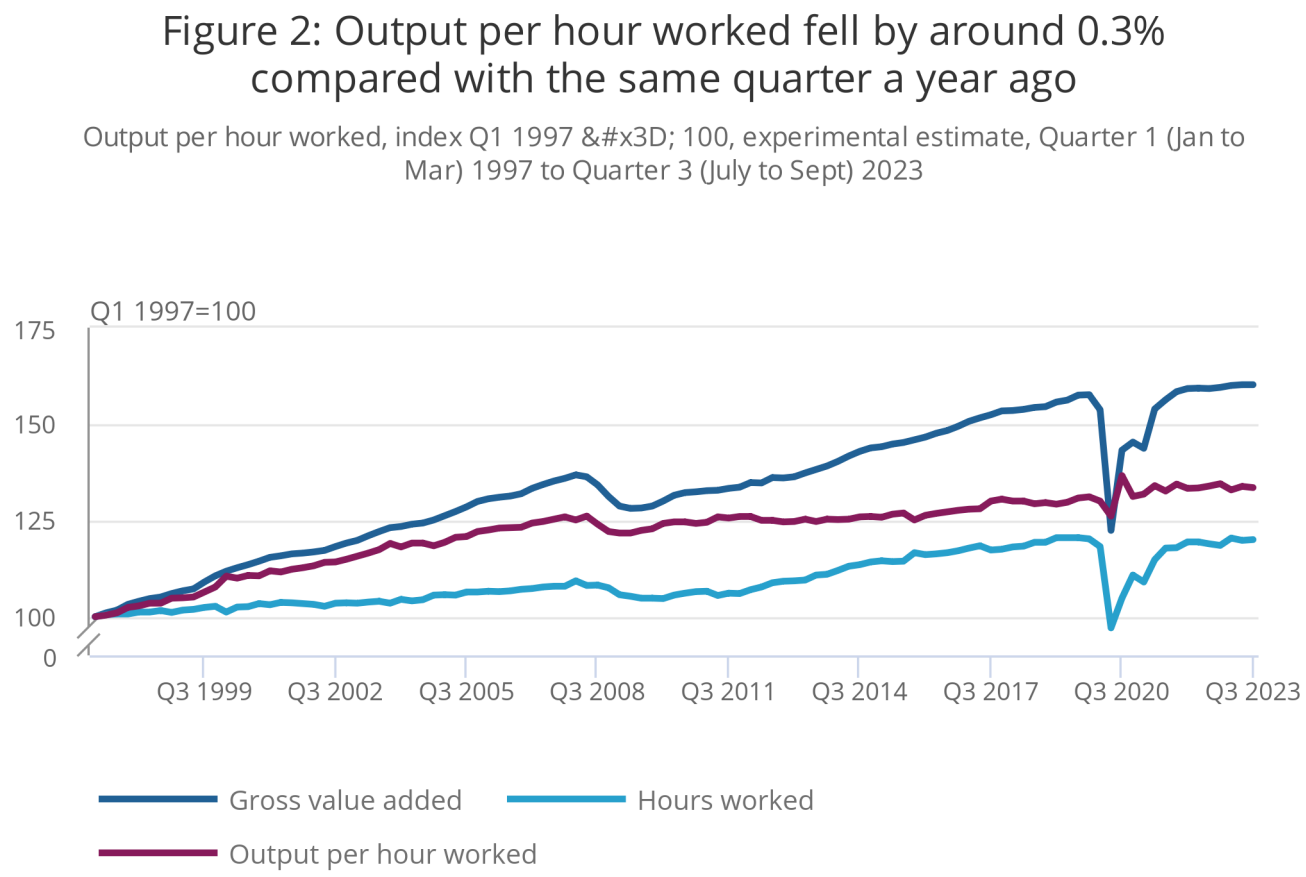
For output per hour, we have used the adjusted LFS estimates for employment, in the Labour market November 2023 release and the Labour market October 2023 release. We have used four different methodologies to estimate the average hours worked. All of these provide a relatively narrow range of average hours, which is itself a relatively stable measure in the short-term. The most robust method, was carry forward average hours, and this is the one used to calculate output per hour worked in this section. More information can be found in Section 5: Changes to methods following LFS suspension.

Flash is an early experimental estimate which we expect to revise when we publish our more detailed Productivity overview articlefor the quarter.

Using the most robust method of carrying forward average hours from Quarter 2 (Apr to June) 2023 shows that preliminary experimental estimates of UK output per hour worked for Quarter 3 2023 decreased by 0.3%, when compared with a year ago. However, preliminary estimates increased by 2.5% when compared with pre-coronavirus (COVID-19) pandemic levels.

Figure 2: Output per hour worked fell by around 0.3% compared with the same quarter a year ago

Output per hour worked, index Q1 1997 = 100, experimental estimate, Quarter 1 (Jan to Mar) 1997 to Quarter 3 (July to Sept) 2023



Source: UK productivity flash estimate from the Office for National Statistics

Notes:

1. Output per hour worked for Q3 2023 is calculated using the carry forward of average hours from Q2 2023, the most robust method, according to our sensitivity analysis (see Section 5 for more details).

5 . Changes to methods following LFS suspension

Because of the Labour Force Survey (LFS) estimates being suspended in October 2023, this publication includes only whole economy estimates for output per hour and output per worker. For both measures we have used the adjusted LFS estimates for employment, in the Labour market November 2023 and the Labour market October 2023 release.

For output per hour, we have used four methodologies to estimate the average hours worked, in the absence of LFS data. All of these provide a relatively narrow range of average hours, which is itself a relatively stable measure in the short-term.

We estimated average hours worked and applied these to the count of workers for Quarter 3 (July to September) 2023 to estimate total hours worked. This allowed us to estimate output per hour worked.

The four methods we used to estimate average hours include:

- carrying forward average hours from the previous quarter
- carrying forward average hours from the same quarter a year ago
- obtaining average hours from Time-Use survey data, applying seasonality factors from previous LFS estimates, interpolating to intervening time periods, and applying the inferred growth rate to LFS average hours for the previous quarter to estimate average hours for Quarter 3 2023
- calculating growth in LFS average hours from rolling quarters a year ago, and applying these to LFS average hours for recent time periods to estimate average hours for Quarter 3 2023

We did a sensitivity analysis, in which we calculated prediction errors by using root mean square (RMSE). The most robust method is the carry forward average hours from Quarter 2 (Apr to June) 2023, which had the lowest RMSE and so is our preferred approach. However, none of the three alternative methods provided poor estimates.

The method using Time-Use survey data had the most limitations because of a smaller sample size and time-series, unlike the LFS. We present all output per hour worked growth rates from all methodologies in Table 2.

Table 2: Experimental output per hour worked growth rate estimates for all methodologies
UK, Quarter 3 (July to Sept) 2023

Methodologies	Quarter vs 2019 pre-pandemic levels (%)	Quarter-on-year (%)	Quarter-on-quarter (%)
Carry forward average hours from previous quarter	2.5	-0.3	-0.2
Carry forward average hours from quarter a year ago	2.7	-0.1	0.0
NOWCAST using the Time Use survey	2.4	-0.5	-0.4
3-month rolling growth rates	2.7	-0.2	-0.1

Source: UK productivity flash estimate from the Office for National Statistics

Notes

1. Comparisons with pre-coronavirus (COVID-19) pandemic levels use average 2019 levels as the base period.
2. These are experimental and preliminary estimates, and so subject to revision.

We welcome feedback about our publication changes. To help us meet user needs, please email productivity@ons.gov.uk.

6 . UK productivity flash estimate data

Because of the Labour Force Survey (LFS) estimates being suspended in October 2023, we have not updated our flash productivity estimates by section dataset for this release.

You can view previous data from 15 August 2023 in the Flash productivity by section dataset.

7 . Glossary

Gross value added (GVA)

The value generated by any unit engaged in production and the contributions of individual sectors or industries to gross domestic product.

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 or jobs ("productivity jobs") are sometimes used.

Output

Output is measured by GVA in chained volume measures (CVM), which is an estimate of the volume of goods and services produced for final use by an industry, and in aggregate for the UK, after adjusting for price changes. It is calculated as turnover (sales) minus purchases (intermediate consumption).

8 . Data sources and quality

This release uses the first available information on output and labour input for Quarter 3 (July to Sept) 2023.

These data may be revised when we release the more detailedProductivity overview articlein January 2024.

This release uses gross value added (GVA) from ourGDP first quarterly estimate bulletin to determine output. Labour market data are from the Labour market overview statistical bulletin. Because of the Labour Force Survey (LFS) estimates being suspended in October 2023, this publication includes only whole economy estimates for output per hour and output per worker. For both measures we have used the adjusted LFS estimates for employment, in October and November 2023. Read more in Section 5: Changes to methods following LFS suspension.

Estimates of the productivity time series for previous time periods have been revised and therefore may not be consistent with the labour productivity national statistics.

New estimates of GVA are more volatile on a quarterly basis, especially in production industries. This reflects the use of new data and methods, but also challenges in reconciling quarterly and annual data, as explained in our Recent challenges of balancing the three approaches of GDP article. As productivity is a structural feature of the economy, we continue to advise users to focus on long-term trends of productivity.

9 . Related links

Productivity overview, UK: April to June 2023
Bulletin | Released 24 October 2023
The main findings from official statistics and analysis of UK productivity, presenting a summary of recent developments.

GDP first quarterly estimate, UK: July to September 2023
Bulletin | Released 10 November 2023
First quarterly estimate of gross domestic product (GDP). Contains current and constant price data on the value of goods and services to indicate the economic performance of the UK.

Labour market overview, UK: November 2023
Bulletin | Released 14 November 2023
Estimates of employment, unemployment, economic inactivity, and other employment-related statistics for the UK.

Labour Force Survey: planned improvements and its reintroduction
Methodology | Released 2 November 2023
Planned data collection and methodological improvements to address quality concerns with Labour Force Survey estimates.

10 . Cite this article

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