Office for National Statistics

Article

UK productivity flash estimate: October to December 2020

Flash estimate of labour productivity for Quarter 4 (Oct to Dec) 2020 based on the latest data from the gross domestic product (GDP) first quarterly estimate and labour market statistics.

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1 . Main points

- Labour productivity for Quarter 4 (Oct to Dec) 2020, as measured by output per hour, fell by 1.1% when compared with the same quarter a year ago (Quarter 4 2019). See Section 3.

- Output per worker fell by 6.3% compared with the same quarter a year ago, largely because of retained employment through the Coronavirus Job Retention Scheme (furlough), while not undertaking working activities. See Section 4.

- Output per hour decreased by 4.5% compared with the previous quarter (July to Sept 2020), as total hours worked recovered faster than gross value added (GVA). See Section 3.

- Output per worker rose by 1.4% compared with the previous quarter as the number of workers on furlough continued to decrease. See Section 4.

- Most industries in the economy experienced a fall in output per hour compared with the same quarter a year ago. See Section 6.

2 . Latest statistics at a glance

The labour productivity flash publication uses the latest labour market statistics and the gross value added (GVA) first quarterly estimates to calculate labour productivity. This publication provides a first look at UK productivity for Quarter 4 (Oct to Dec) 2020. During this period, coronavirus (COVID-19) restrictions were tightened across the UK.

Output per hour fell by 1.1% during Quarter 4 2020 compared with the same quarter in the previous year (Oct to Dec 2019). During the same period, output per worker fell by 6.3%.

Table 1: Headline labour productivity indicators for the UK
Seasonally adjusted, UK, Quarter 1 (Jan to Mar) 2020 to Quarter 4 (Oct to Dec) 2020

Whole economy

	Quarter on same quarter in previous year		Quarter on previous quarter	
	Output per hour (growth %)	Output per worker (growth %)	Output per hour (growth %)	Output per worker (growth %)
2020 Q1	-0.1	-3.3	-1.1	-3.2
2020 Q2	-1.0	-20.5	-0.7	-17.9
2020 Q3	4.0	-7.9	5.6	16.6
2020 Q4	-1.1	-6.3	-4.5	1.4

Source: Office for National Statistics – UK productivity flash estimate

Notes

1. Quarter 4 2020 estimates are derived from the first available information on output and labour inputs. Data for the earlier quarters are consistent with the labour productivity National Statistics.

This quarter we have also produced data comparing yearly productivity growth to understand how productivity growth in 2020 compares with earlier years (Table 2). In the last 10 years we have seen two periods of annual decline.

Table 2: Productivity growth over the years
UK, 1997 to 2020, cumulative average annual growth rates

Whole economy

	Output per hour	Output per worker
	(growth %)	(growth %)
1997 - 2007	2.1	1.8
2008 - 2009 (financial crisis)	-0.9	-1.7
2010 - 2019	0.5	0.7
2020 (COVID-19)	0.3	-9.6

Source: Office for National Statistics – UK productivity flash estimate

3 . Output per hour

Our preferred measure of productivity growth is output per hour growth compared with the same quarter a year ago (Oct to Dec 2020 compared with Oct to Dec 2019). This estimate removes any short-term fluctuations that may affect productivity and better shows the longer-term impact on people's standard of living. Therefore, unless stated otherwise this publication will primarily make comparisons with the same quarter in the previous year.

Throughout Quarter 4 2020, coronavirus (COVID-19) restrictions were tightened as coronavirus infection rates increased. This article explores how these restrictions changed the economy and affected productivity.

Figure 1 separates changes in output per hour into its two main parts – gross value added (GVA) and total hours worked.

Figure 1: Output per hour fell by 1.1% in Quarter 4 2020 as coronavirus restrictions continue to affect the economy

Percentage change on same quarter a year ago, seasonally adjusted, UK, Quarter 1 (Jan to Mar) 2009 to Quarter 4 (July to Sept) 2020

Figure 1: Output per hour fell by 1.1% in Quarter 4 2020 as coronavirus restrictions continue to affect the economy

Percentage change on same quarter a year ago, seasonally adjusted, UK, Quarter 1 (Jan to Mar) 2009 to Quarter 4 (July to Sept) 2020
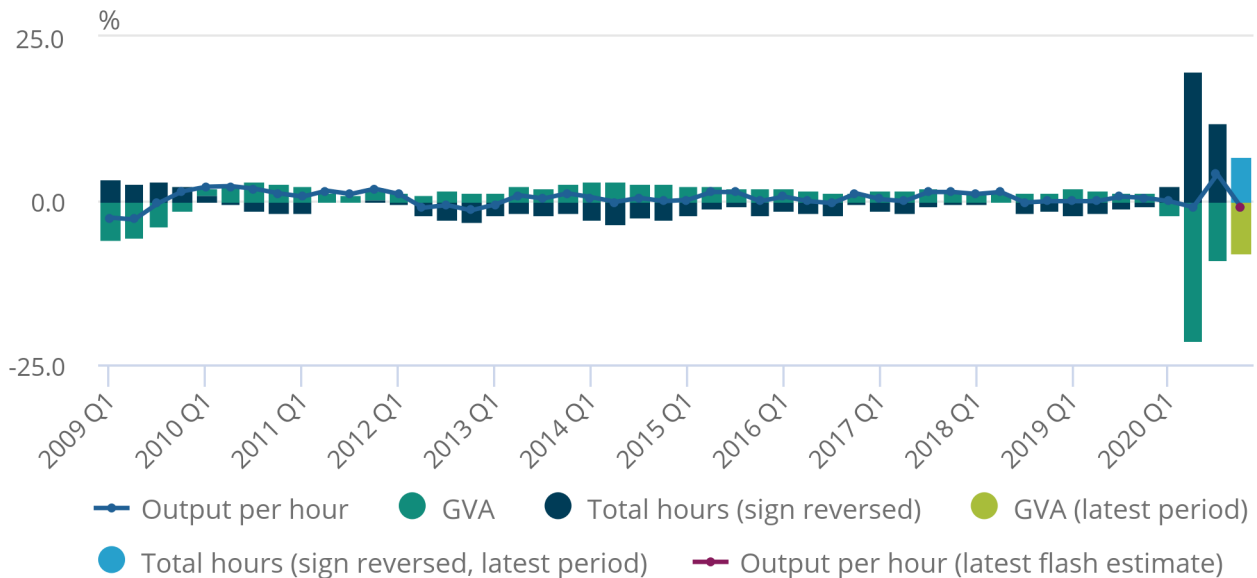
Source: Office for National Statistics – UK productivity flash estimate

Notes:

1. Estimates of hours worked have had their sign reversed to reflect how they affect output per hour. An increase in hours worked will contribute negatively to output per hour, while a decrease in hours worked will contribute positively to output per hour.

2. Quarter 4 2020 statistics are coloured differently as they are provisional estimates.

In Quarter 4, output per hour decreased by 1.1% when compared with the same quarter a year ago. This decline can be attributed to the decrease in the total number of hours worked (6.8%) and GVA (7.9%). Both hours worked and GVA have started to recover from the effects of the coronavirus pandemic, although GVA to a lesser extent. The difference in the rate of recovery for these two estimates explains why we have observed a decrease in output per hour compared with last year.

In Quarter 4, total hours worked increased by 5.8% and GVA increased by 1.0% when compared with Quarter 3 (July to Sept) 2020, further evidence of the different rates of recovery of these two estimates. In our previous economic commentary, we showed that staff on furlough were disproportionately from industries with lower levels of productivity, so their return to active hours worked has resulted in a less than proportionate increase in GVA. This has resulted in a 4.5% decrease in output per hour when compared with the previous quarter.

To see more information on the breakdown of GVA, visit the GDP first quarterly estimate. To see more information on total hours worked, visit the UK Labour Market February 2021 release.

4 . Output per worker

Labour productivity is measured as the output per unit of labour input; for more information see our Quality and Methodology Information report (QMI). While our preferred measure of labour productivity is output per hour, an alternative measure is output per worker, which uses the number of workers (employment) as the labour input.
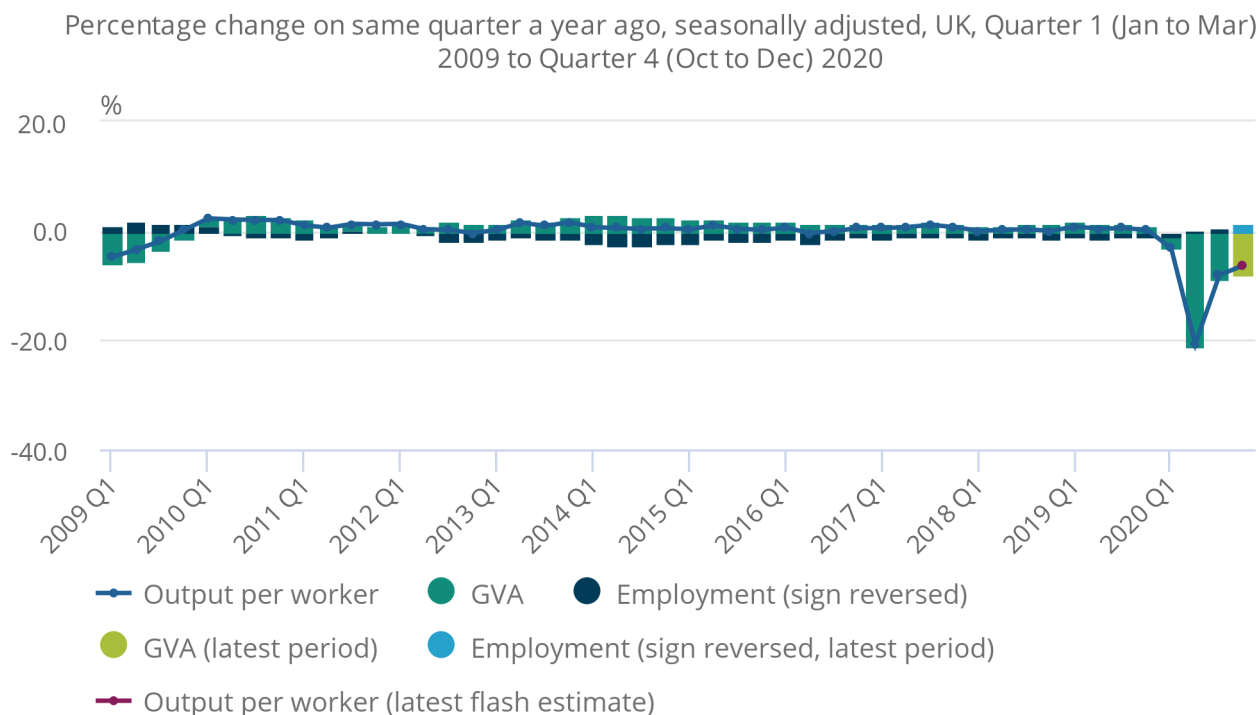
Output per hour and output per worker previously had similar growth rates, but the Coronavirus Job Retention Scheme (furlough) has caused a divergence. To qualify for furlough, workers must work zero or reduced hours. This means that their total hours worked will fall, but they are still counted as workers, so the number of workers does not fall. The way that labour productivity is measured means that if total hours worked falls, but the number of workers does not fall, growth in output per hour will be higher than growth in output per worker. This means that furlough can lead to a divergence between output per hour growth and output per worker.

Figure 2 separates output per worker into its main two parts – gross value added (GVA) and employment.

Figure 2: Output per worker fell by 6.3% in Quarter 4 2020 when compared with the previous year as the Coronavirus Job Retention Scheme retained workers while gross value added fell

Percentage change on same quarter a year ago, seasonally adjusted, UK, Quarter 1 (Jan to Mar) 2009 to Quarter 4 (Oct to Dec) 2020

Source: Office for National Statistics – UK productivity flash estimate

Notes:

1. Estimates of employment have had their sign reversed to reflect how they affect output per worker. An increase in employment will contribute negatively to output per worker, while a decrease in employment (number of workers) will contribute positively to output per worker.

2. Quarter 4 2020 statistics are coloured differently as they are provisional estimates.

In Quarter 4, output per worker fell by 6.3% compared with the same quarter in the previous year, as a result of a 7.9% fall in GVA and a smaller 1.6% decrease in employment. This decrease in employment is far smaller than would be expected for a GVA drop of this magnitude, largely because of the effects of the furlough scheme.

When compared with the previous quarter (July to Sept 2020), GVA rose by 1% and employment fell by 0.4%, leading to an output per worker rise of 1.4%.

5 . Economic context

Both employment and total hours grew quite consistently between the 2008 to 2009 economic downturn and the end of 2019. This was only slightly outpaced by the growth in gross value added (GVA), leading productivity growth to be slow by historical standards. Figure 3 shows the levels of GVA, employment and total hours worked since Quarter 1 (Jan to Mar) 2008.

Hours worked and GVA both fell substantially in Quarter 2 (Apr to June) 2020, as a result of the coronavirus (COVID-19) pandemic. In Quarter 3 (July to Sept) 2020, as restrictions were lifted and economic activity increased, hours worked and GVA rebounded. This rebound continued in Quarter 4 (Oct to Dec) 2020 at a slower pace. By Quarter 4 2020, hours worked and GVA were at levels last seen in 2014.

Employment has not followed the same path as hours worked in 2020, falling only slightly as a result of the Coronavirus Job Retention Scheme (furlough). In Quarter 4 2020, employment was at levels last seen in 2018.

Figure 3: Total hours worked and gross value added rose for the second successive quarter while employment continued to decline

Seasonally adjusted, UK, Quarter 1 (Jan to Mar) 2008 to Quarter 4 (Oct to Dec) 2020

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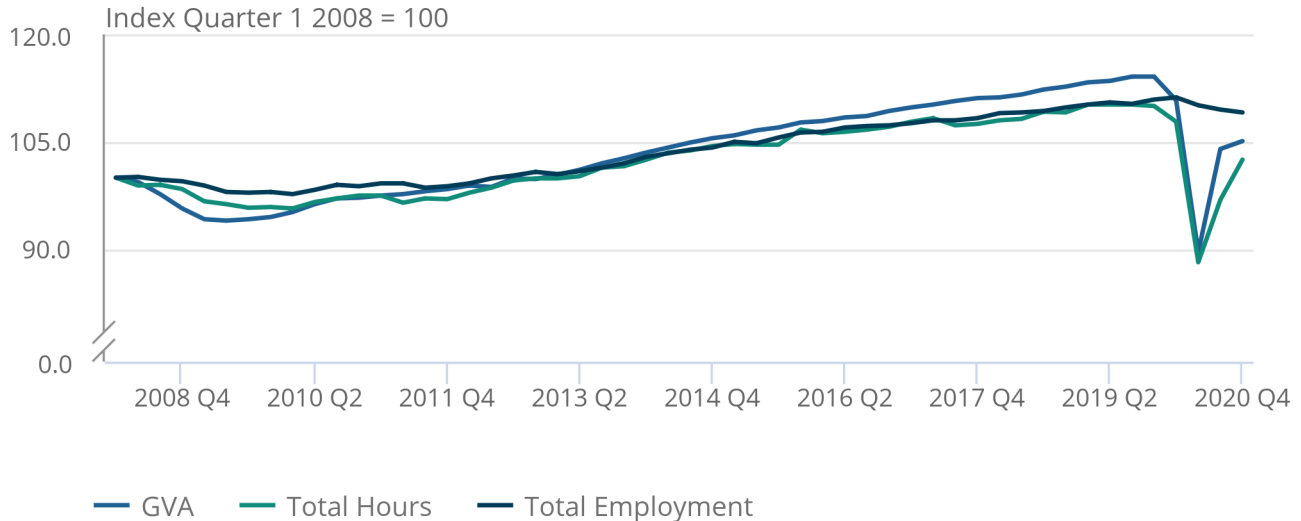
Source: Office for National Statistics – UK productivity flash estimate

6 . Output per hour by industry

In this section we explore output per hour by industry for Quarter 4 (Oct to Dec) 2020. Data by industry are available in the [dataset](#) accompanying this release, with notes on the methodology. The data are [experimental](#) and will be revised after Quarter 4 2020 data become available and published in our subsequent [productivity bulletin series.](#)

Table 3 shows the growth in output per hour compared with last quarter (July to Sept 2020) and the same quarter a year ago (Oct to Dec 2019) for each industry sector. It also decomposes output per hour into the growth of gross value added (GVA) and total hours worked in these sectors over the same periods.

Table 3: Growth in output per hour by industry sector, with growth in gross value added (GVA) and hours worked
Seasonally adjusted, UK, Quarter 4 (Oct to Dec) 2020

	Quarter on same quarter in previous year			Quarter on previous quarter		
	Output per hour	GVA	Hours worked	Output per hour	GVA	Hours worked
	(growth %)	(growth %)	(growth %)	(growth %)	(growth %)	(growth %)
Whole economy	-1.1	-7.9	-6.8	-4.5	1.0	5.8
Non-manufacturing production	-4.8	-7.0	-2.3	1.1	-1.6	-2.7
Manufacturing	1.7	-3.5	-5.1	-5.8	3.3	9.7
Construction	4.5	-2.8	-6.9	-9.0	4.6	14.9
Services	-0.2	-7.3	-6.8	-4.2	0.6	4.9

Source: Office for National Statistics – UK productivity flash estimate

Notes

1. These industry-level flash estimates assume no change to the proportion of employee jobs in each industry from the previous quarter to the latest one.

2. These estimates will be revised in future releases as data become available on the actual distribution of employee jobs across industries in the latest quarter. This data should therefore be interpreted with caution.

Figure 4 illustrates the contributions from industry sections to growth in whole economy output per hour when comparing this quarter with the same quarter a year ago. It also shows the allocation effect, which results from changes in the distribution of economic activity among industries.

Figure 4: Output per hour fell overall despite a strong positive allocation effect

Contributions to quarter on year output per hour growth, seasonally adjusted, UK, Quarter 4 (Oct to Dec) 2020

Figure 4: Output per hour fell overall despite a strong positive allocation effect

Contributions to quarter on year output per hour growth, seasonally adjusted, UK, Quarter 4 (Oct to Dec) 2020
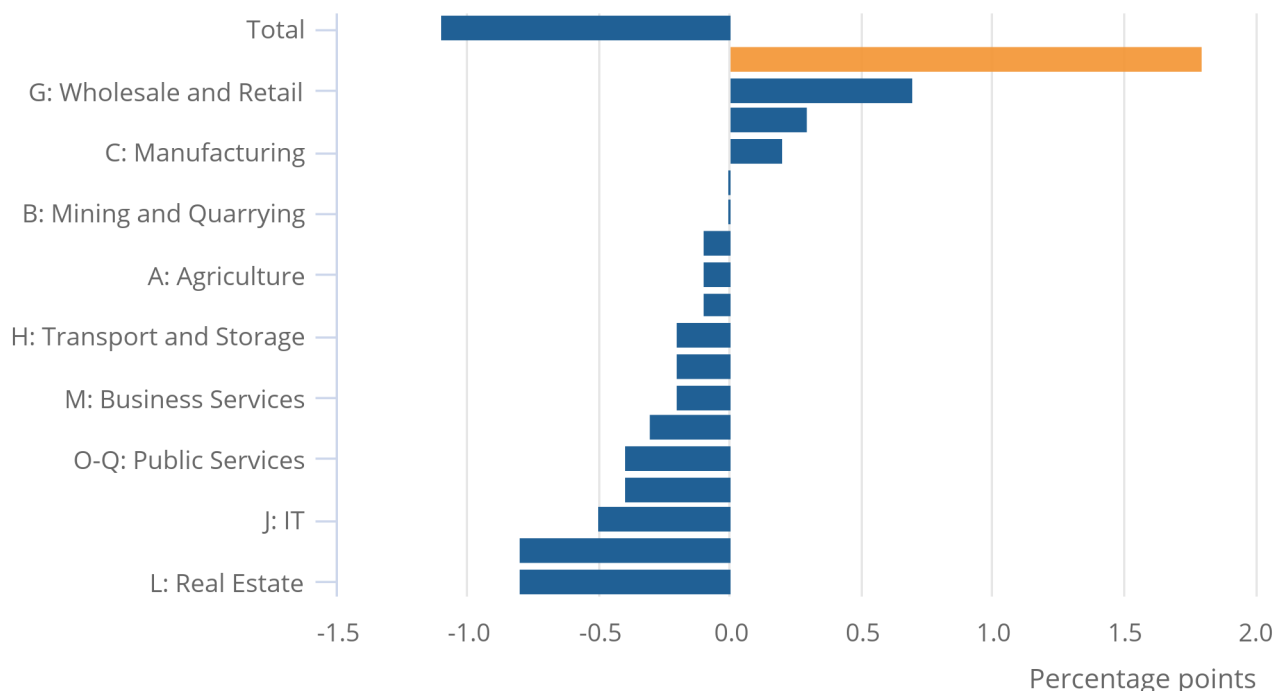
Source: Office for National Statistics – UK productivity flash estimate

Notes:

1. Output per hour growth for an individual industry can be far larger than the contribution of that industry to growth in whole economy output per hour, depending on the relative size of the industry.

The allocation effect accounts for changes in productivity that are because of changes in the size of different industries in the economy. The coronavirus pandemic has led some less-productive industries to shrink in size, such as the retail, and accommodation and food services industries. Meanwhile, more-productive industries such as professional services and manufacturing now make up a proportionately larger share of the economy. This increases aggregate productivity in the economy.

Figure 4 shows that there was positive reallocation between Quarter 4 2019 and Quarter 4 2020, which partially offsets falling productivity in many industries. The allocation effect in Figure 4 does not account for changes in the types of activities within industries, such as the move from physical retail to online retail. These changes will be part of the productivity growth estimates of the relevant industries.

Figure 4 shows a decrease in output per hour in the accommodation and food services industry (I), which reduced whole economy output per hour by 0.8 percentage points. Most of the other industry sections also contributed to the overall fall in output per hour for the whole economy.

In contrast, the overall fall in output per hour was partly offset by increases in output per hour in the wholesale and retail (G), construction (F), and manufacturing industries (C). These "within-industry" changes may reflect changing business practices: for example, less productive physical stores closing while more productive on-line stores remain open may be a factor leading to the relatively strong growth observed within the wholesale and retail sector.

The industry with the largest growth of output per hour was "chemical and pharmaceutical products", which grew by 17.3%. The biggest decline of output per hour was in the "other services" industry, which declined by 13.9%. However, as some low-productivity industries re-opened in Q4 2020, the allocation effect would be negative compared to Q3 2020. Table 3 shows a much larger increase in hours worked than in GVA in Q4 compared to Q3 2020, partly because of the re-opening of some low-productivity industries.

7 . UK productivity flash estimate data

[Flash productivity by section](#)
Dataset | Published 23 February 2021
Flash estimate of labour productivity by section. The latest data are from the gross domestic product (GDP) first quarterly estimate and labour market statistics.

8 . Glossary

Labour productivity

Labour productivity measures how many units of labour input are needed to produce a unit of output, 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.

9 . Data sources and quality

This flash estimate of UK productivity uses the first available information on output and labour input for the latest quarter, Quarter 4 (Oct to Dec) 2020. These data may be revised in subsequent months. As such, we release the more detailed productivity bulletin after the publication of gross domestic product (GDP) quarterly national accounts.

This release uses gross value added (GVA) to determine growth in output for the latest quarter and uses the latest estimates from the GDP first quarterly estimate released concurrently. Estimates of earlier quarters are consistent with the Labour productivity National Statistics.

Contributions are to output gross value added (GVA) and therefore may not sum to the percentage change in average GDP. More information of the difference between the three measures can be found in the UK National Accounts – a short guide (PDF, 137KB).

Historically, our flash productivity estimates have been fairly accurate. In all but two instances – Quarter 1 and 3 in 2018 – our flash estimate has correctly indicated the direction of productivity growth. This gives us confidence that our current flash estimates will correctly depict the direction of productivity growth for the following quarter.

Figure 5 shows the accuracy of this quarterly flash article by comparing the flash estimates with the official National Statistics.

Figure 5: Output per hour flash estimate revisions

UK, Quarter 4 (Oct to Dec) 2016 to Quarter 3 (July to Sept) 2020

Figure 5: Output per hour flash estimate revisions

UK, Quarter 4 (Oct to Dec) 2016 to Quarter 3 (July to Sept) 2020

- % Change on same quarter on a year ago, National Statistic
- % Change on same quarter on a year ago, previous flash estimates

Source: Office for National Statistics – UK productivity flash estimate

Labour market data for the same period are from the Labour market overview, UK: December 2020 statistical bulletin, published on 15 December 2020.

Data for the earlier quarters, Quarter 1 (Jan to Mar) 2008 until Quarter 3 2020, are consistent with the Labour productivity National Statistics. Figure 5 shows revisions to growth rates on the quarter a year ago compared with the first whole economy flash estimates published for the corresponding period. The aim is to show the reliability of the initial flash estimates over time.

This is the third quarter that we have published flash estimates of output per hour split by industry, and these Experimental Statistics continue to be evaluated. Preliminary assessment indicates that the data for the previous time period gave potentially useful early estimates of output per hour growth on the same quarter a year ago. Across industries, there was an average absolute departure of about 2.9 percentage points between flash growth estimates and the eventual National Statistics estimates of output per hour growth (compared with the same quarter a year ago), in a period with exceptional growth rates ranging from about negative 8% to positive 30%.

Details of the policy governing the release of new data are available from the UK Statistics Authority.

End of EU exit transition period

As the UK enters into a new Trade and Co-operation Agreement with the EU, the UK statistical system will continue to produce and publish our wide range of economic and social statistics and analysis. We are committed to continued alignment with the highest international statistical standards, enabling comparability both over time and internationally, and ensuring the general public, statistical users and decision-makers have the data they need to be informed.

As the shape of the UK's future statistical relationship with the EU becomes clearer over the coming period, ONS (Office for National Statistics) is making preparations to assume responsibilities that as part of our membership of the EU, and during the transition period, were delegated to the statistical office of the EU, Eurostat. This includes responsibilities relating to international comparability of economic statistics, deciding what international statistical guidance to apply in the UK context and to provide further scrutiny of our statistics and sector classification decisions.

In applying international statistical standards and best practice to UK economic statistics, we will draw on the technical advice of experts in the UK and internationally, and our work will be underpinned by the UK's well-established and robust framework for independent official statistics, set out in the Statistics and Registration Service Act 2007. Further information on our proposals will be made available later this year.

10 . Related links

GDP first quarterly estimate, UK: October to December 2020
Bulletin | Released 12 February 2021
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: February 2021
Bulletin | Released 23 February 2021
Estimates of employment, unemployment, economic inactivity and other employment-related statistics for the UK.

Productivity economic commentary, UK: July to September 2020
Bulletin | Released 19 January 2021
The main findings from official statistics and analysis of UK productivity, presenting a summary of recent developments.