

Article

# Productivity economic commentary, UK: July to September 2020

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

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# 1 . Main points

## Labour productivity

- Output per hour, the UK's headline measure of labour productivity, increased by 4.0% in Quarter 3 (July to Sept 2020), compared with the same quarter a year ago; this is the largest increase since Quarter 4 (Oct to Dec) 2005. [See Section 3.](#)
- Output per worker fell by 7.9% over the same period, reflecting the impact of the Coronavirus Job Retention Scheme, which reduced hours worked but preserved workers' employment statuses; only Quarter 2 (Apr to June) 2020 has seen a fall larger than this since records began in 1959. [See Section 3.](#)
- The increase in output per hour at the whole economy level was driven by a decrease in hours in less productive industries, creating a positive “allocation” effect as more productive industries now represent a larger share of the economy. [See Section 4.](#)

## Multi-factor productivity

- Multi-factor productivity (MFP) in Quarter 3 2020 is estimated to have decreased by 0.8% compared with the same quarter a year ago. [See Section 6.](#)
- This fall is based on the assumption that capital has been fully utilised throughout the pandemic, which is unlikely given government restrictions; hence our new set of estimates based on lower levels of capital utilisation. [See Section 6.](#)

## Public service productivity

- Compared with the same quarter a year ago, experimental estimates for Quarter 3 2020 public service productivity indicate a fall of around 22.4%; this fall was driven by an increase in inputs of 13.1% and a fall in output of 9.3%. [See Section 7.](#)
- This reflects increased expenditure on healthcare and social protection and reduced education and healthcare services provided as a consequence of the coronavirus (COVID-19) pandemic. [See Section 7.](#)
- Public service productivity increased by 10.1% in Quarter 3 2020 when compared with the previous quarter, Quarter 2 2020; this is the highest quarter-on-previous-quarter increase in public service productivity on record. [See Section 7.](#)

## Unit labour costs

- Unit labour costs (ULCs) increased by 5.9% compared with the same quarter a year ago; this excludes the impact of wage subsidies. [See Section 8.](#)

## 2 . Latest statistics at a glance

Table 1: Productivity statistics for Quarter 2 (April to June) 2020 and Quarter 3 (July to Sept) 2020

Series	Status	2020 Q2 Quarter on same quarter a year ago	2020 Q3 Quarter on same quarter a year ago	2020 Q2 Quarter on previous quarter	2020 Q3 Quarter on previous quarter
<b>Labour productivity</b>					
• <b>Output per hour</b>	National Statistics	-1.0%	4.0%	-0.7%	5.6%
• <b>Output per worker</b>	National Statistics	-20.5%	-7.9%	-17.9%	16.6%
• <b>Output per job</b>	National Statistics	-20.3%	-7.8%	-17.6%	16.5%
<b>Multi-factor productivity</b>	Experimental Statistics	-12.0%	-0.8%	-10.0%	12.5%
<b>Public service productivity</b>	Experimental Statistics	-32.6%	-22.4%	-27.5%	10.1%
<b>Unit labour costs</b>	National Statistics	10.6%	5.9%	6.2%	-4.0%

Source: Office for National Statistics

### Notes

1. Output per hour is the headline measure of labour productivity in the UK. It is preferable to use quarter on same quarter a year ago comparisons as productivity is a structural feature of economies and quarter on quarter data can be distorted by short-run volatility and transition costs.
2. Public Service Productivity annual estimates are National Statistics. Quarterly estimates hold quality change constant and are experimental statistics.

Productivity represents the relationships between inputs and outputs in the production process. Productivity is defined as the ratio between outputs and inputs. Increasing productivity means greater efficiency in producing output of goods and services from labour, capital, materials and any other necessary inputs. As a practical concept, productivity helps define both the scope for raising living standards and the competitiveness of an economy. Therefore productivity has an important role in formulating and assessing government policy.

The UK government's response to the ongoing pandemic began to affect the UK economy at the end of Quarter 1 (Jan to Mar) 2020. This bulletin examines Quarter 3 (July to Sept) 2020, where we saw the end of the first national lockdown and schemes such as "Eat Out to Help Out".

## 3 . Labour productivity headline measures

Our headline measure of productivity is output per hour growth compared with the same quarter in the previous year. Quarter-on-year comparisons provide a more reliable indicator of longer-term productivity trends compared with quarter-on-quarter comparisons, that are impacted by short-run volatility and transition costs. Figure 1 depicts the growth rates of output per hour and output per worker over time.

## Figure 1: Output per hour rose by 4% while output per worker fell by 7.9%, as hours fell much more than workers compared to a year ago

Output per hour and output per worker, quarter-on-same-quarter a year ago percentage growth rates, seasonally adjusted, Quarter 1 (Jan to Mar) 1998 to Quarter 3 (July to Sept) 2020, UK

### Figure 1: Output per hour rose by 4% while output per worker fell by 7.9%, as hours fell much more than workers compared to a year ago

Output per hour and output per worker, quarter-on-same-quarter a year ago percentage growth rates, seasonally adjusted, Quarter 1 (Jan to Mar) 1998 to Quarter 3 (July to Sept) 2020, UK



Source: Office for National Statistics

Output per hour and output per worker estimates are usually closely aligned. However, in response to the ongoing global pandemic the UK government introduced measures to reduce the spread of COVID-19. Schemes such as the Coronavirus Job Retention Scheme allowed UK employers to designate some or all employees as furloughed workers and receive government support to continue paying part of these furloughed employees' salaries, therefore protecting the employees from redundancy. However, whilst workers remained employed their hours worked fell, demonstrated by a 12.1% reduction in the number of hours worked compared with the same quarter a year ago; only Quarter 2 (April to June 2020) has had a larger drop of hours worked since records began in 1971.

When compared with the same quarter a year ago, employment has decreased by 0.8%. Alongside these changes in the labour market, there has been an accompanying 8.6% reduction in gross value added (GVA) when compared with the same quarter a year ago, the second largest drop in history.

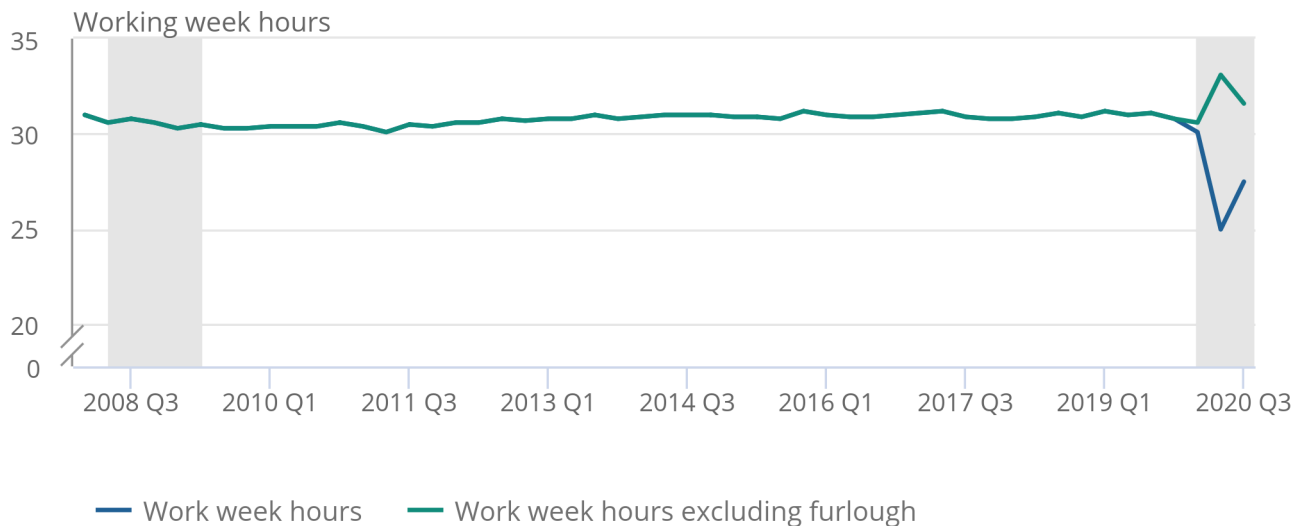
These factors explain the disparity between output per hour and output per worker seen in this quarter. A large decrease in GVA is offset by an even larger fall in hours worked, resulting in a 4.0% increase in output per hour when compared with the same quarter a year ago. In contrast, the fall in GVA is not offset by an equivalent fall in employment, resulting in 7.9% decrease in output per worker when compared with the same quarter a year ago. Figure 2 demonstrates the drop in hours that causes the disparity between these measures.

**Figure 2: Average working week hours dropped by 11.3% when compared with the same quarter a year ago, and rose 1.6% over the same period when we exclude furlough workers**

Average working week hours per job, seasonally adjusted, Quarter 1 (Jan to Mar) 2008 to Quarter 3 (July to Sept) 2020

Figure 2: Average working week hours dropped by 11.3% when compared with the same quarter a year ago, and rose 1.6% over the same period when we exclude furlough workers

Average working week hours per job, seasonally adjusted, Quarter 1 (Jan to Mar) 2008 to Quarter 3 (July to Sept) 2020



Source: Office for National Statistics

In Quarter 3 (July to Sept) 2019 the average working week per job was 31.1 hours, whereas by Quarter 3 (July to Sept) 2020 the average working week had decreased to 27.5 hours. This reduction is due to furloughed employees not working any hours. A decrease in average working week hours resulted in a fall in total hours worked that was larger than the fall in GVA, meaning output per hour increased. The drop in employment was small in comparison with the fall in GVA, leading to a large decrease in output per worker and causing a disparity between output per worker and output per hour.

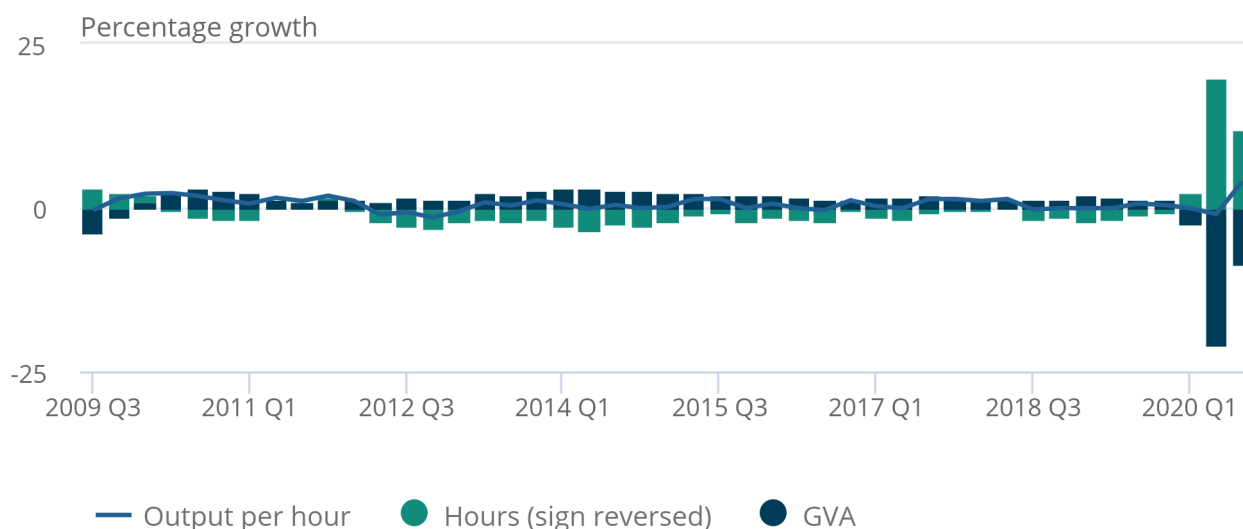
Figure 3 breaks down output per hour growth into changes in total hours worked and GVA, demonstrating the drivers behind the rise.

**Figure 3: Hours worked decreased to a larger extent than gross value added, resulting in a 4% increase in output per hour**

Whole economy output per hour, quarter-on-same-quarter a year ago percentage growth rates, seasonally adjusted, Quarter 3 (July to Sept) 2009 to Quarter 3 2020, UK

### Figure 3: Hours worked decreased to a larger extent than gross value added, resulting in a 4% increase in output per hour

Whole economy output per hour, quarter-on-same-quarter a year ago percentage growth rates, seasonally adjusted, Quarter 3 (July to Sept) 2009 to Quarter 3 2020, UK



Source: Office for National Statistics

Notes:

1. Hours sign has been reversed to demonstrate increasing hours has a negative impact on output per hour

## 4 . Labour productivity industry breakdown

In this section we examine each industry's contribution to growth in whole economy output per hour. The impact of the ongoing pandemic has affected industries to varying degrees, illustrated in Figure 4 and Figure 5.

**Figure 4: Less productive industries (ranked by output per hour in Quarter 3 (July to Sept) 2019) observed a greater decrease in the number of hours worked than more productive industries in Quarter 3 2020 when compared to the same quarter a year ago**

Industries ranked by Quarter 3 (July to Sept) 2019 productivity and the relative change in hours worked in Quarter 3 2020 compared with the same quarter a year ago, Current prices, seasonally adjusted, UK

Notes:

1. On the right-hand graph, industries are ranked by output per hour in Quarter 3 (July to Sept) 2019.
2. The left graph shows relative hours changes between Quarter 3 (July to Sept) and the same quarter a year ago.
3. Industry L (Real estate) was excluded from this analysis because the productivity for this industry is distorted by the inclusion of imputed rents in this industry's gross value added (GVA).

## Download the data

[.xlsx](#)

In Quarter 3 (July to Sept) 2020, total hours worked decreased in every industry except the finance and services industry when compared with the same quarter the previous year. In general, hours worked decreased more in industries with lower productivity than in industries with higher productivity. For example, accommodation and food services was the second least productive industry in Quarter 3 2019; this industry had a large decrease in hours worked in Quarter 3 2020, down 38.6% compared with the same quarter a year before. In contrast, mining and quarrying was the most productive industry in Quarter 3 2019; this industry had a small decrease in hours worked in Quarter 3 2020, down 4.6% compared with the same quarter a year before.

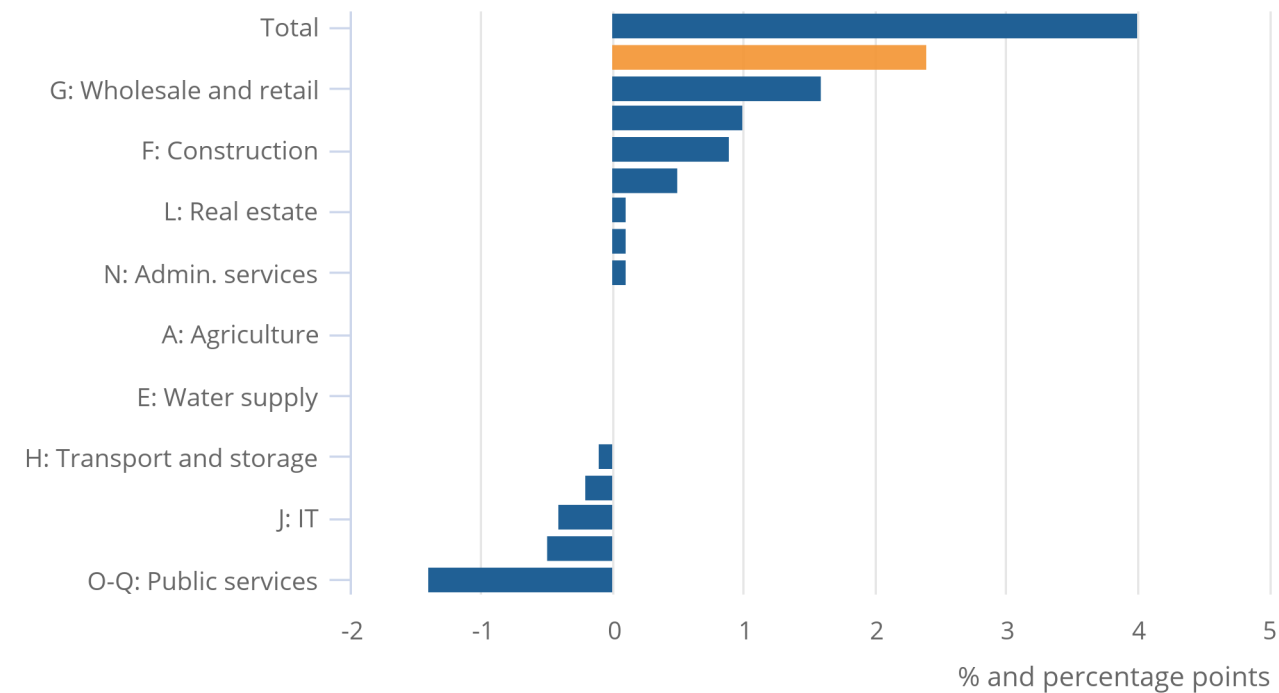
Overall, industries with relatively low productivity contributed a smaller fraction of activity to the whole economy in Quarter 3 2020 than they did a year earlier, and industries with relatively high productivity contributed a larger fraction of the total economic activity. This change in the distribution of economic activity accounted for 2.4 percentage points of the 4% growth in output per hour for the whole economy, as shown by the "allocation effect" in Figure 5.

**Figure 5: Growth in whole economy output per hour was dominated by the allocation effect, with mixed contributions from particular industry sections**

Direct effect contributions to percentage growth of whole economy output per hour, UK, year to Quarter 3 (July to Sept) 2020

Figure 5: Growth in whole economy output per hour was dominated by the allocation effect, with mixed contributions from particular industry sections

Direct effect contributions to percentage growth of whole economy output per hour, UK, year to Quarter 3 (July to Sept) 2020



Source: Office for National Statistics – Labour productivity

Notes:

1. Growths can be far larger than contributions due to the relative size of the industry.

The allocation effect accounts for changes in the distribution of activity between industries within the economy. The allocation effect accounted for 2.4 percentage points of output per hour growth this quarter. Changes within each industry can also increase or decrease productivity directly. For example, less productive physical stores closing while more productive on-line stores remain open is a positive allocation effect within wholesale and retail.

Figure 5 shows that a decrease in output per hour within public services (O, P and Q) reduced whole economy output per hour by 1.4 percentage points, whereas growth in output per hour within wholesale and retail (G) increased whole economy output per hour by 1.6 percentage points. These changes in productivity within sectoral categories may themselves be partly attributed to allocation effects due to shifts in the share of economic activity between more granular industry categories within each of the industrial sectors.



## 5 . The effects of the Coronavirus Job Retention Scheme on labour productivity

We have compiled Experimental Statistics to demonstrate the effect of the government's furlough scheme on labour productivity. The most accurate data for the furlough scheme comes from Her Majesty's Revenue and Customs (HMRC). The HMRC estimates count "employments", which are equivalent to jobs, so the comparison of labour productivity including and excluding the furlough scheme is presented on an output per job basis in Figure 6. These data are distinct and should not be confused with the output per hour and output per worker statistics quoted elsewhere in this release.

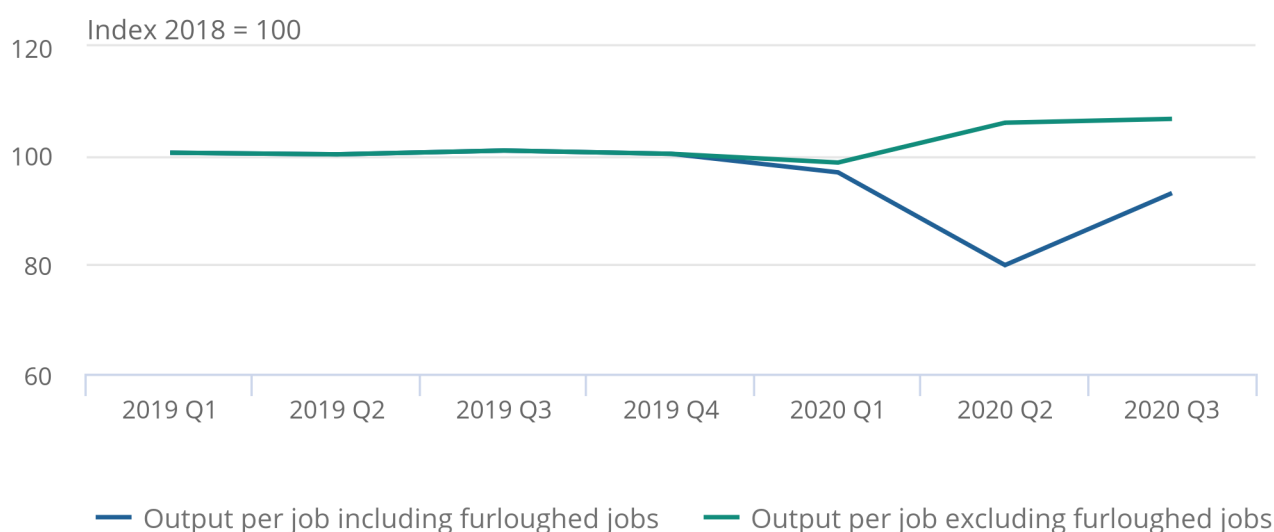
While the output per job series are National Statistics, the data excluding furloughed jobs are experimental. The experimental series aggregates daily HMRC data on furloughed employments, by industry, and averages these data across the quarter to determine the effects of the furlough scheme. These estimates are then subtracted from the total job figures.

**Figure 6: An estimated effect of the government's furlough schemes on output per job**

Whole economy output per job including and excluding furloughed jobs, index with 2018 base year, seasonally adjusted, Quarter 1 (Jan to Mar) 2019 to Quarter 3 (Jul to Sep) 2020, UK

### Figure 6: An estimated effect of the government's furlough schemes on output per job

Whole economy output per job including and excluding furloughed jobs, index with 2018 base year, seasonally adjusted, Quarter 1 (Jan to Mar) 2019 to Quarter 3 (Jul to Sep) 2020, UK



Source: Office for National Statistics

#### Notes:

1. Furloughed jobs are estimated using a mean average of HMRC's daily furloughed "employments" data. For days before the furloughed schemes were introduced a zero has been used in the average.

The overall effect of excluding furloughed workers, as demonstrated in Figure 6, is that output per job increases by 0.6% when compared with the previous quarter. This is because the output in the quarters affected by the lockdown are shared across fewer jobs, suggestive of the furlough scheme being predominantly used in sectors of the economy with lower levels of productivity. The effect is large enough to increase output per job and to bring it above 2019 productivity levels on this metric.

In July to September 2020, output per job including furloughed jobs increased compared with the previous quarter, but was still lower than the output per job excluding furloughed workers (which has marginally increased between these two quarters).

The data presented above should be used cautiously. Our preferred measure of labour productivity is output per hour because hours worked data takes account of different working patterns among workers. Jobs data fails to do this in a meaningful way, as there is no indication from jobs data how much time a worker spends at a job. If part-time jobs are disproportionately affected by the lockdown then it can be assumed that hours data would fall to a lesser degree than jobs, resulting in a less significant shift in the output per hour data for the period.

We have also included a dataset showing experimental statistics of output per job including and excluding furloughed workers for 17 industries of the economy. The estimated distribution of furloughs across industries has been constrained so that the industries add up to the number of furloughs for the whole economy in each quarter.

Whilst all industries saw a decrease in output per job in Quarter 2 (Apr to June 2020) compared with the previous quarter, they also saw an increase in Quarter 3 (July to Sept 2020). This is largely seen in industries such as construction, accommodation and food services, and entertainment; all of which saw significant decreases in output per job during the coronavirus (COVID-19) lockdown period but were allowed to re-open businesses and services when many lockdowns began to ease.

## 6 . Multi-factor productivity

Estimates of multi-factor productivity (MFP) provide a more nuanced view, controlling for the changes in the various inputs used to create economic output and how these inputs are combined to deliver output. These inputs include changes to capital services (such as machinery and software), changes to the composition of the labour market (for example, the number of workers with university degrees) and changes to labour input in terms of hours worked. This is explained in [a simple guide to multi-factor productivity](#). MFP only covers the market sector and excludes the public sector and other similar parts of the economy.

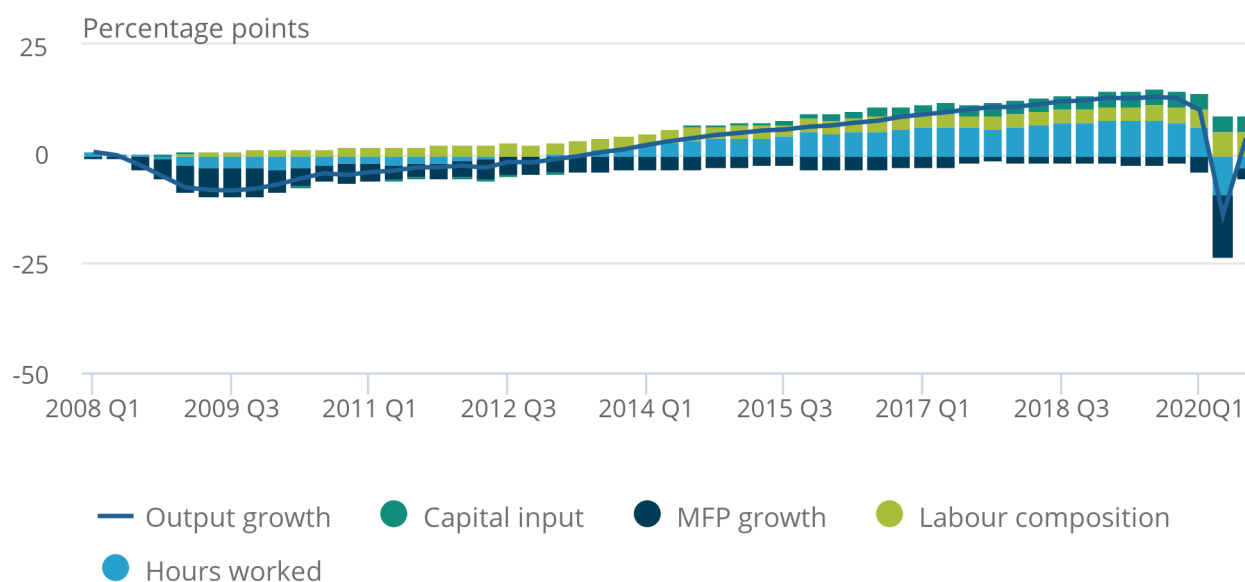
MFP in the market sector in Quarter 3 (July to Sept) 2020 decreased by 0.8% compared with the same quarter a year ago. This fall contributes to the 9.1% decrease in gross value added (GVA) over the year. Figure 7 shows the quarter-on-quarter cumulative growth of GVA since Quarter 4 (Oct to Dec) 2007. It also includes the decomposition of this growth across labour and capital inputs as well as the MFP residual.

**Figure 7: Market sector multi-factor productivity rose on the quarter but is still below 2007 levels**

Breakdown of cumulative quarterly output growth, Quarter 1 (Jan to Mar) 2008 to Quarter 3 (July to Sept) 2020, UK, market sector

## Figure 7: Market sector multi-factor productivity rose on the quarter but is still below 2007 levels

Breakdown of cumulative quarterly output growth, Quarter 1 (Jan to Mar) 2008 to Quarter 3 (July to Sept) 2020, UK, market sector



Source: Office for National Statistics – Multi-factor productivity

### Notes:

1. Columns show contributions of components of output growth, calculated by weighting log changes in each component by its factor income share.
2. MFP is calculated by residual.

The market sector saw a 15.4% decrease in hours on the same quarter a year ago along with the fall in GVA, although labour composition, which reflects labour capability, rose by 2.8%, suggesting that those on lower wages saw their hours fall as they were relatively more likely to make use of the Government's furlough scheme. As a result, the proportion of hours worked by higher-paid workers has increased, raising their contribution to average hours worked in the UK.

For example, hours for the least educated workers (which correlates with lower incomes) in the market sector fell by 34.3% on the year against a 3.9% decrease for the most educated. Similarly, hours fell by 20% for workers aged 16 to 29 years against a 13.9% decrease for workers aged 30 to 49 years. Part of this is a result of certain industries being affected by lockdown more than others. For example, businesses involved in hospitality saw much larger falls in hours than other industries, affecting younger, less educated workers relatively more than other groups.

## Capital services

Capital services, the level of productive capital used in the economy, increased by 1% on the same quarter a year ago. This increase in the amount of capital used reflects the assumptions made in the calculation of these estimates, namely constant utilisation of the economy's capital stock from one period to the next. However, various restrictions on movement and economic transactions during Quarter 3 2020 have resulted in different patterns of capital usage across the economy: many offices and factories have remained empty or have been used at a reduced rate compared with previous years; and much of the equipment housed in these buildings went unused. Both factors have caused capital utilisation to fall.

This assumption of constant utilisation leads capital services growth to be overestimated, and as a result MFP growth to be underestimated. It also raises the level of capital deepening, the amount of capital workers can utilise per hour, above that of periods prior to 2020. This increase is driven by a lower level of hours worked, particularly in industries most affected by policies aimed at tackling the pandemic. To tackle this, we have compiled experimental statistics to complement our core MFP estimates. The experimental statistics apply a utilisation factor to our capital services estimates that is equal to the change in average hours worked in each industry.

For example, if hours worked fell in a particular industry by 20% from one period to the next, then we would apply a downward adjustment of 20% to capital services, or equivalently estimate just 80% of the capital services employed by that industry from our usual method of calculation. We have applied this method for all periods affected by the pandemic and related policies (that is, all periods of 2020).

The effects of this are displayed in Figure 8. Under this methodology, capital input decreased in Quarter 1 (Jan to Mar), Quarter 2 (Apr to June) and Quarter 3 2020. The core methodology has capital services growing compared to a year earlier by 1.8%, 1.2% and 1% for Quarters 1, 2 and 3, respectively. These experimental statistics see a fall in capital services each period by 3.1%, 17.8% and 12.4%, respectively.

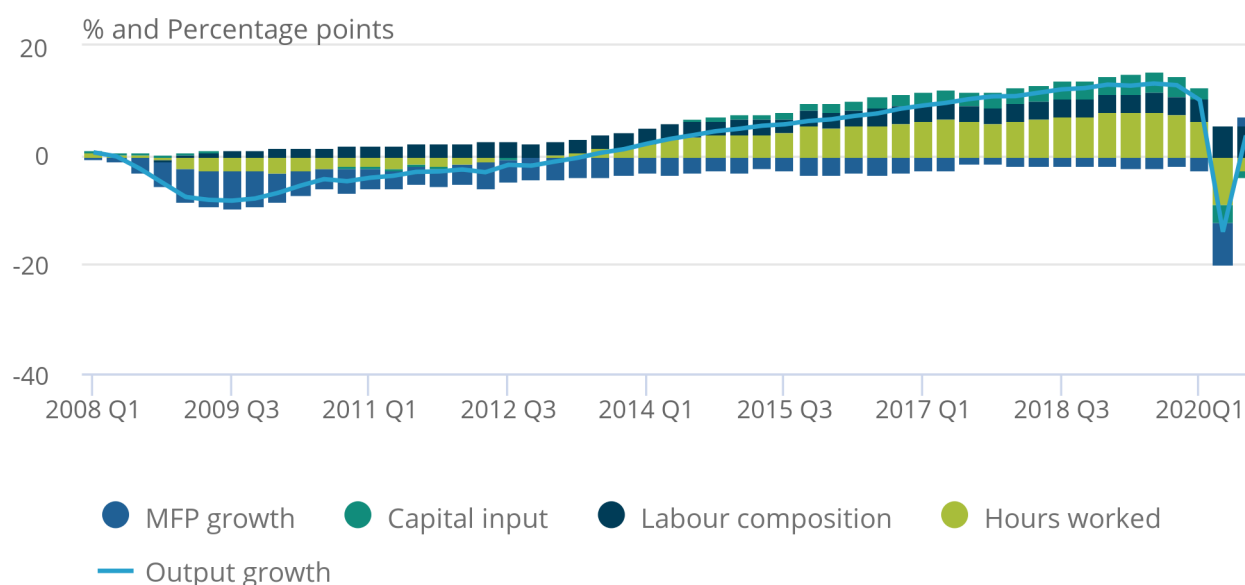
There is a corresponding increase in MFP. The core methodology shows a fall in MFP of 2.5%, 12% and 0.8% for Quarters 1, 2 and 3, respectively, versus falls of 0.8% and 5.3% in Quarters 1 and 2 and an increase of 4.3% in Quarter 3. The Quarter 3 estimate has MFP above the level last seen before the financial crisis. In Quarter 2 the only element that is driving an increase in output growth is the composition of the labour market, as described in the previous section.

## Figure 8: Taking account of decreased capital utilisation causes MFP to be noticeably more positive than in core estimates

Breakdown of cumulative quarterly output growth, Quarter 1 (Jan to Mar) 2008 to Quarter 3 (July to Sept) 2020, UK, market sector

### Figure 8: Taking account of decreased capital utilisation causes MFP to be noticeably more positive than in core estimates

Breakdown of cumulative quarterly output growth, Quarter 1 (Jan to Mar) 2008 to Quarter 3 (July to Sept) 2020, UK, market sector



Source: Office for National Statistics – Multi-factor productivity

#### Notes:

1. Labour productivity growth is the cumulative quarter-on-quarter percentage change in market sector gross value added (GVA) per hour worked.
2. Columns show contributions of components, calculated by weighting percentage changes in each component by its factor income share.
3. MFP is calculated by residual.

This methodology is likely to provide more accurate estimates of capital services employed in the UK in 2020, however it has certain weaknesses. The methodology assumes that all capital was utilised by all workers to the same degree during the lockdown and related-restrictions. It also assumes that the value-added from the use of this capital is equal throughout the industry.

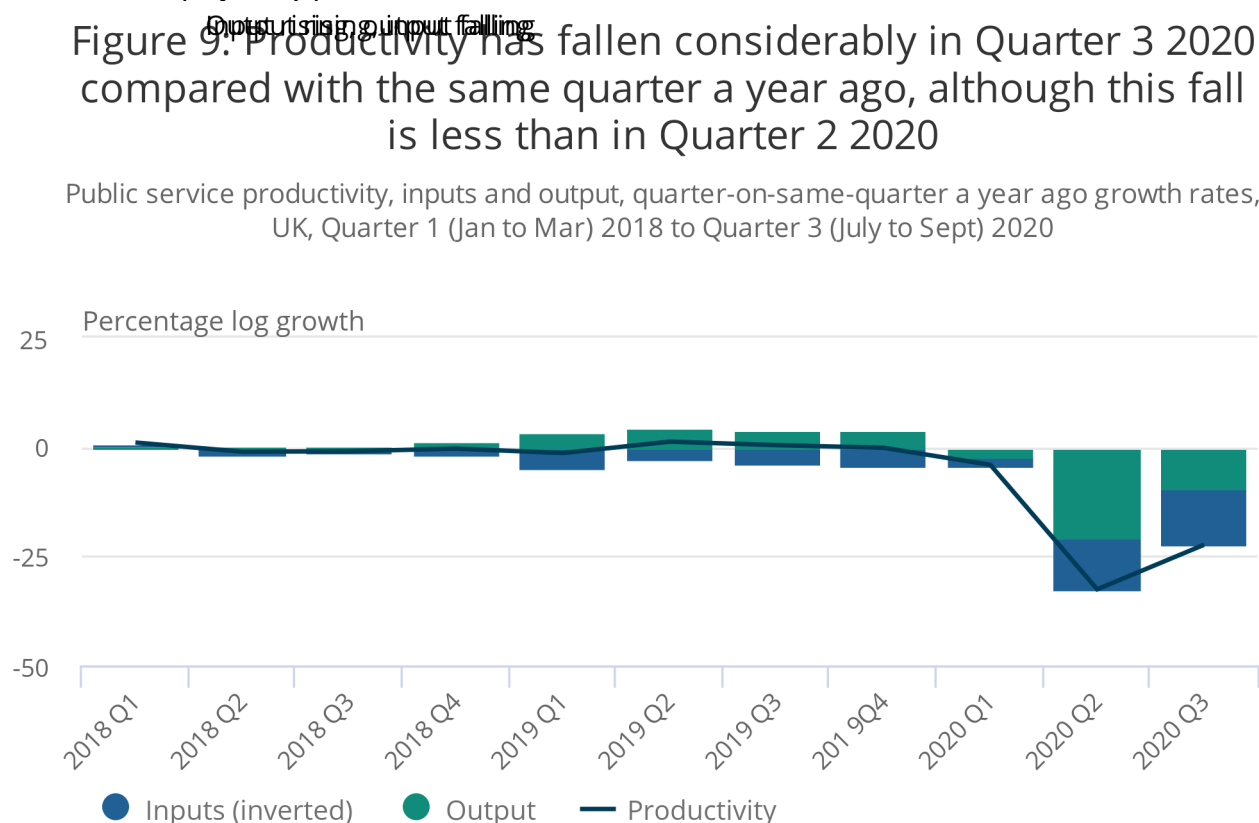
To illustrate the drawbacks, consider a furniture factory where the machinery and buildings used to create products is shut down, but the sales team continue to work from home, resulting in hours worked falling by 40%. Under this model, all capital services used by the factory would fall by 40%, no matter who is using the capital, what they are doing and how much value it derives to the company. To combat some of these weaknesses, we are investigating new methods to apply to capital utilisation and a research paper will be published later this year which will provide a more robust approach to estimating capital services in the UK.

## 7 . Public service productivity

Alongside the [annual estimate of public service productivity](#), which is badged as a National Statistic, and other measures of productivity, we also publish quarterly [experimental](#) measures of total public service productivity. The quarterly series offers a timelier measure, as the annual series has a significant time lag to include quality adjustment factors. The quarterly series holds quality adjustment constant for the three latest years in the series.

**Figure 9: Productivity has fallen considerably in Quarter 3 2020 compared with the same quarter a year ago, although this fall is less than in Quarter 2 2020**

Public service productivity, inputs and output, quarter-on-same-quarter a year ago growth rates, UK, Quarter 1 (Jan to Mar) 2018 to Quarter 3 (July to Sept) 2020



Source: Office for National Statistics

**Notes:**

1. Data are from this experimental quarterly release.
2. Experimental quarterly estimates of productivity are indirectly seasonally adjusted, calculated using seasonally adjusted inputs and seasonally adjusted output.
3. Growth rates have been expressed in (natural) logarithm changes.

Compared with the same quarter in the previous year, productivity for total public services fell by 22.4% in Quarter 3 (July to Sept) 2020. During this period, inputs increased by 13.1% while output fell by 9.3%. This is the second largest fall in public service productivity on record. The largest fall was 32.6% in Quarter 2 (Apr to June) 2020 (this figure has been revised up from a fall of 35.7% in our [previous publication](#) as a result of updated healthcare expenditure data). When the 4.1% fall in public service productivity in Quarter 1 (Jan to Mar) 2020 is also considered, the three largest falls recorded in public service productivity have all happened since the onset of the COVID-19 pandemic. This illustrates the impact of the COVID-19 pandemic on public service productivity.

An increase in [expenditure in healthcare and in social protection](#) were the main source of total inputs growth. The increase in social protection inputs may be indicative of additional local government support during the COVID-19 pandemic. The increase in healthcare inputs likely reflects expenditure on the Test and Trace programme and continued additional procurement necessary due to the COVID-19 pandemic, for example additional purchases of personal protective equipment (PPE).

Activities such as Test and Trace are not yet captured from our outputs source data so are added as adjustments. These are approximate initial adjustments based on the available in-year spending data for the period April to September 2020 (more information can be found in [GDP quarterly national accounts, UK: July to September 2020](#)). The Office for National Statistics (ONS) is investigating how to fully capture activity related to Test and Trace as set out in this [recently published blog](#), which gives more detail on our latest health estimates.

The main drivers of the fall in output were in healthcare and education. However, both these falls were noticeably reduced compared with Quarter 2 (Apr to June) 2020. This is reflected in the high quarter-on-previous-quarter output growth, as seen in Figure 10. For healthcare, this is a consequence of a strong recovery in activities such as elective surgeries, accident and emergency admissions and GP appointments in Quarter 3 (Jul to Sept) 2020. Despite this the activity volumes for healthcare services remained well below their 2019 levels.

For education, this reflects the partial re-opening of schools towards the end of the summer term as national lockdown restrictions eased, and the full re-opening of schools from September. Quarter 3 2020 also covers the summer holidays, which we have adjusted to smooth the path of education output over the holiday period – so that education output will be higher in August than in July, but lower than in September when schools had re-opened.

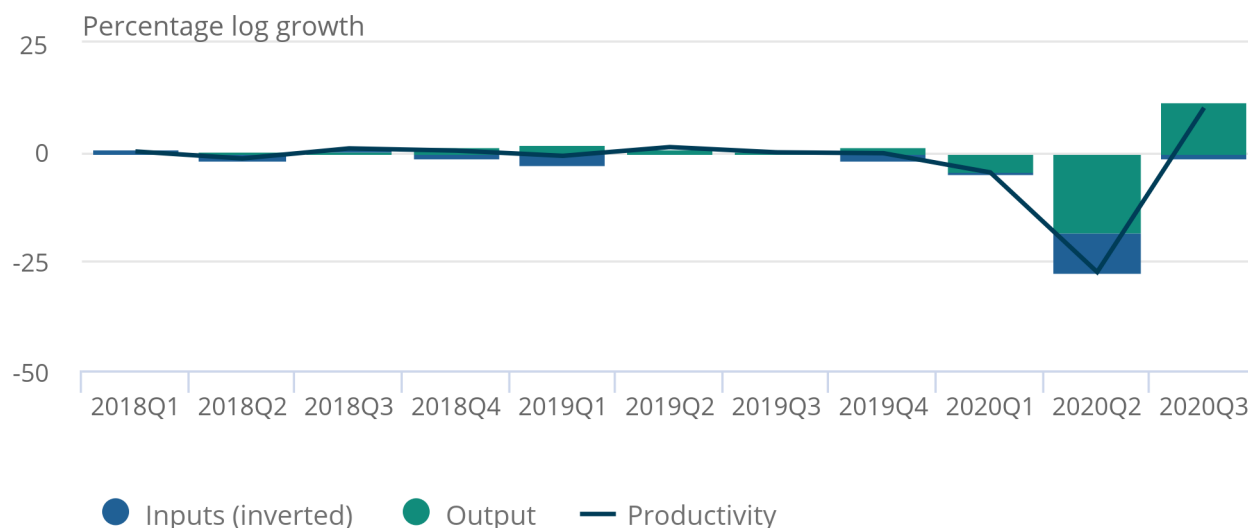
The recent blog, [School's Out: measuring education output in the summer of the pandemic](#) explains the approach in more detail. This blog builds upon an earlier blog, [Public services: measuring the part they play in the economy through the pandemic](#), which explains the adjustments that have been made to accommodate the impact of remote learning on primary and secondary schooling.

**Figure 10: Productivity growth when compared with the previous quarter is the highest on record**

Public service productivity, inputs and output, quarter-on-quarter growth rates, UK, Quarter 1 (Jan to Mar) 2018 to Quarter 3 (July to Sept) 2020

## Figure 10. Productivity growth when compared with the previous quarter is the highest on record

Public service productivity, inputs and output, quarter-on-quarter growth rates, UK, Quarter 1 (Jan to Mar) 2018 to Quarter 3 (July to Sept) 2020



Source: Office for National Statistics

### Notes:

1. Data are from this experimental quarterly release.
2. Experimental quarterly estimates of productivity are indirectly seasonally adjusted, calculated using seasonally adjusted inputs and seasonally adjusted output.
3. Growth rates have been expressed in (natural) logarithm changes.

Figure 10 compares the current quarter with the previous quarter and shows how public service productivity rebounded over the summer months. In Quarter 3 (July to Sept) 2020, productivity grew by 10.1% when compared with the previous quarter (Apr to June). This represents the largest quarter-on-quarter productivity growth on record. The previous largest increase was 1.3% in Quarter 3 (July to Sept) 2013, nearly eight times smaller.

Output grew by 11.5% over the last quarter, while there was a 1.3% growth in inputs. The growth in output, when compared with Quarter 2 2020, was driven by [large increases in healthcare and education output](#).

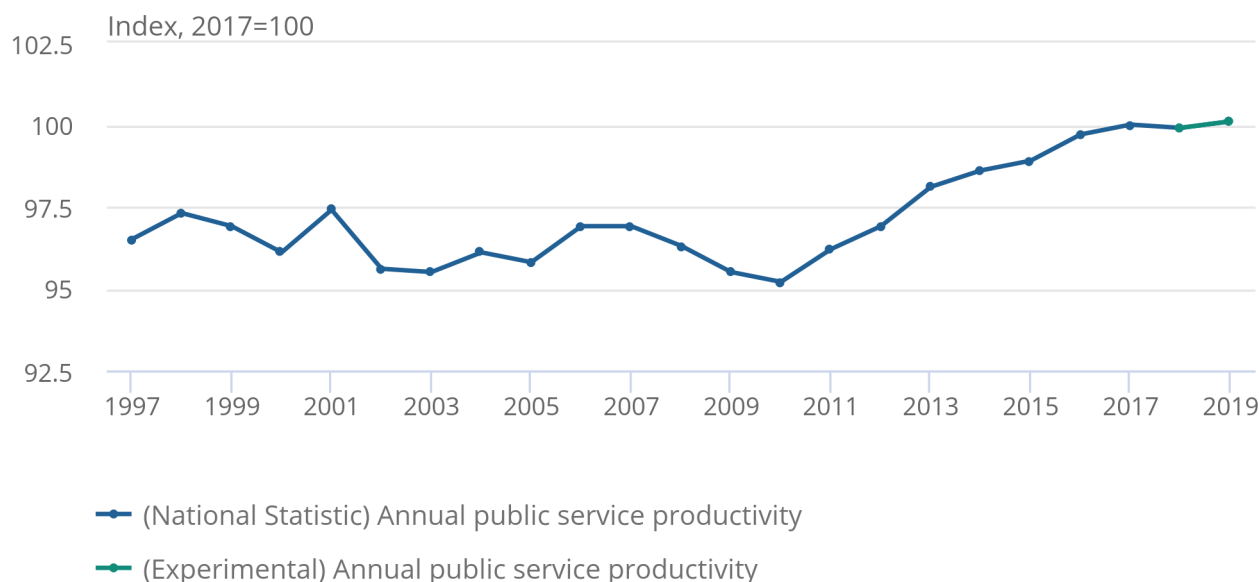


**Figure 11: Annual public service productivity is estimated have remained stable during 2018 and 2019, but experimental quarterly estimates suggest there will be a large fall in 2020**

Total public service productivity, UK, from 1997 to 2019

Figure 11: Annual public service productivity is estimated have remained stable during 2018 and 2019, but experimental quarterly estimates suggest there will be a large fall in 2020

Total public service productivity, UK, from 1997 to 2019



Source: Office for National Statistics

Notes:

1. Annual estimates from 1997 to 2017 are based on the latest annual public service productivity release.
2. Annual estimates from 2018 to 2019 are based on the experimental quarterly estimates in this article.

We expect that annual public service productivity will remain stable in 2018 and 2019, falling by 0.1% and then increasing by 0.2%. However, the sharp fall in the quarterly estimates since the beginning of this year, shown in Figure 9, suggest that there will be a large fall in annual public service productivity in 2020.

This estimate should be treated with caution until the annual estimates for 2018, 2019 and 2020 are available, as these data do not include adjustments for changes in the quality of services delivered (please note that the release of Annual public service productivity 2018 has been [delayed until April 2021](#)). Furthermore, due to the lack of the availability of some data during the COVID-19 pandemic, it is possible that there will be further revisions to our estimates for recent quarters, such as the incorporation of new unit costs and activities data for the NHS Test and Trace service. As such, we are constantly working with our data suppliers to ensure the provision of future data and will document any impact that any revision might have on our estimates.

## 8 . Unit labour costs

Unit labour costs (ULCs) capture the full costs of labour incurred in the production of a unit of economic output; they reflect the relationship between the cost of labour and the value of the corresponding output. If increases in labour costs are not reflected in the volume of output, this can put upward pressure on the prices of goods and services. ULCs can therefore be viewed as an indicator of inflationary pressure, as labour costs are the most important contributor to the costs of production. The Office for National Statistics (ONS) produces nominal ULCs, which are expressed as a ratio between total labour costs per hour worked in current prices, and output per hour worked in constant prices. Wage subsidies such as the government's furlough schemes are excluded from the total labour costs.

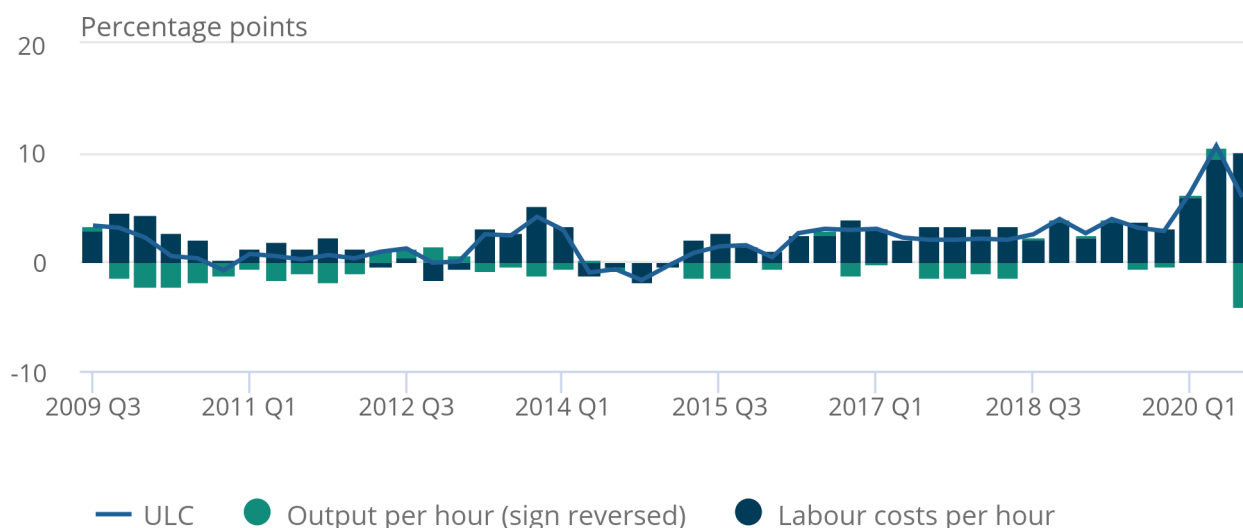
In Quarter 3 (July to Sept) 2020, ULCs increased by 5.9% compared with the same quarter in the previous year. The increase in ULCs was driven primarily by an increase in the labour costs per hour, which dominated a smaller increase in output per hour. Since Quarter 4 (Oct to Dec) 2019, ULCs have increased by 4.8%. The last three quarters of volatility follows a period of fairly stable ULCs growth, which has occurred since Quarter 2 (Apr to June) 2016. Prior to this, ULCs growth had been volatile within a moderate range around zero.

**Figure 12: Whole economy unit labour costs were up 5.9% compared with the previous year**

Whole economy unit labour costs, quarter on year growth rates, seasonally adjusted, UK, Quarter 3 (July to Sept) 2009 to Quarter 3 2020

Figure 12: Whole economy unit labour costs were up 5.9% compared with the previous year

Whole economy unit labour costs, quarter on year growth rates, seasonally adjusted, UK, Quarter 3 (July to Sept) 2009 to Quarter 3 2020



Source: Office for National Statistics

Notes:

1. Labour costs per hour estimates will differ from those in our index of labour costs per hour bulletin because of differences in methodology.

Note that the quarter-on-year growth of ULCs in Quarter 2 (Apr to June) 2020 has seen a larger downward revision than usual, reducing the estimated increase by about a fifth.

## 9 . Productivity economic commentary data

### [Labour Productivity Tables 1 to 8 and R1](#)

Dataset LPROD01 | Released 19 January 2021

Estimates of main productivity metrics, corresponding to tables from the PDF version of the statistical bulletin

### [Productivity jobs, productivity hours, market sector workers, market sector hours](#)

Dataset LPROD02 | Released 19 January 2021

Underlying labour inputs behind the labour productivity estimates by industry and industrial sector as defined by the Standard Industrial Classification (SIC). Contains statistics on productivity jobs, productivity hours and market sector workers. These statistics are the main intermediates in producing output per worker and output per hour statistics.

### [Breakdown of contributions, whole economy and sectors](#)

Dataset PRODCONTS | Released 19 January 2021

Provides estimates of contributions to labour productivity (measured as output per hour) using the “Generalised Exactly Additive Decomposition” (GEAD) methodology as described in Tang and Wang (2004), UK. Contains data on total worked hours, gross value added (GVA) estimates, output per hour series and prices deflators. Includes data disaggregated by sector. Also contains quarter on quarter, quarter-on-same-quarter a year ago and annual formats for selected outputs.

### [Multi-factor productivity estimates](#)

Dataset MFP01 | Released 19 January 2021

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 19 January 2021

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.

### [Unit labour costs](#)

Dataset | Released 19 January 2021

Unit labour costs and revisions from previously published estimates, UK.

## 10 . Glossary

### Labour productivity

Labour productivity measures how many units of labour input is 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.

## 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.

## 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. Service areas are defined by Classification of the Functions of Government (COFOG).

## Unit labour costs

Unit labour costs (ULCs) capture the full costs of labour incurred in the production of a unit of economic output. They are usually expressed as a ratio of total labour compensation per hour worked in current prices, to output per hour worked in constant prices.

# 11 . Measuring the data

The measure of labour productivity output used in these statistics is the [chained volume \(real\) measure of gross value added \(GVA\) at basic prices](#).

Multi-factor productivity (MFP) estimates are compiled using the growth accounting framework, which decomposes changes in economic output, in this case 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 [Sources and methods for public service productivity estimates](#).

This release reflects revisions to gross value added and income data resulting from quarterly national accounts, affecting time periods since 2018. Revisions to the current data also reflect revisions to jobs data resulting from an annual benchmarking to the Business Register and Employment Survey, and other [revisions to workforce jobs estimates](#) primarily affecting periods since 2018. Revisions resulting from seasonal adjustment affect all periods.

## 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 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 early this year.

## 12 . Strengths and limitations

All data in this release were collected during the lockdown that was imposed because of the coronavirus (COVID-19). During this period 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.

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](#) for the labour productivity estimates; the [Multi-factor productivity \(MFP\) QMI](#) for the MFP estimates; and in the [Public service productivity: total, UK QMI](#) for the PSP estimates with further information available in [Sources and methods for public service productivity estimates](#).

## 13 . Related links

### [GDP quarterly national accounts, UK: July to September 2020](#)

Bulletin | Released 22 December 2020

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: September 2020](#)

Bulletin | Released 15 September 2020

Estimates of employment, unemployment, economic inactivity and other employment-related statistics for the UK.

### [Subregional productivity in the UK: February 2020](#)

Article | Released 28 February 2020

The article provides estimates for sub regional labour productivity measured as gross value added (GVA) per hour worked and GVA per filled job.

### [Public service productivity: total, UK, 2017](#)

Article | Released 8 January 2020

Updated measures of output, inputs and productivity for public services in the UK between 1997 and 2017. Includes service area breakdown, as well as impact of quality adjustment and latest revisions.