Office for National Statistics

Statistical bulletin

Labour productivity, UK: October to December 2019

Output per hour, output per job and output per worker for the whole economy and a range of industries.

Notice

7 July 2020

Subsequent releases of this productivity release were combined with other productivity measures into a single article. The latest figures from the combined article are published in the Productivity economic commentary page.

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1 . Main points

- Labour productivity for Quarter 4 (Oct to Dec) 2019, as measured by output per hour, saw a small rise of 0.3% compared with the same quarter a year ago.

- This rise was caused by gross value added (GVA) growing at 1.1% compared with the same quarter a year ago, while hours worked grew by 0.8%.

- The 0.3% growth in output per hour was largely caused by a strong performance from construction, while manufacturing made the largest negative contribution to whole-economy productivity growth.

- Over the decade, whole-economy growth in output per hour was led by productivity improvements in non-financial services, while financial services saw a decline in output per hour.

2 . The productivity puzzle

Productivity is the main cause of economic growth and largely determines the long-term economic health of a nation. It helps define both the scope for raising living standards and the competitiveness of an economy, increasingly informing government policy.

Labour productivity measures the volume of gross value added (GVA) produced per unit of labour input, with hours worked as the preferred labour input. It has demonstrated weak growth since the 2008 economic downturn, while in the previous 10 years it was close to historical long-term average growth rates of 2.0% per year. This sustained period of minimal labour productivity growth has been labelled the UK's "productivity puzzle", and it is arguably the defining economic question of our age.

In December 2019, the Royal Statistical Society named the estimated average annual increase in UK productivity in the decade or so since the financial crisis the "Statistic of the Decade", reflecting the significance of the unusual weakness observed since the 2008 economic downturn.

3 . Labour productivity growth compared with the same quarter a year ago

In Quarter 4 (Oct to Dec) 2019, output per hour was 0.3% higher when compared with the quarter a year ago (this is called "quarter on year" growth). After four consecutive quarters of zero or negative growth, the last two quarters of positive growth are an improvement. However, in historical terms 0.3% is still a very low productivity growth rate, significantly below the post-2008 economic downturn median and less than a seventh of the pre-downturn median growth rate. The takeaway story is the continued weakness of the UK's productivity growth since the economic downturn.

Figure 1 shows the log growth rate of output per hour compared with the same quarter a year ago, noting the 25th, 50th and 75th percentiles of growth. Labour productivity growth since the downturn has been consistently far weaker than in the decade before it. The median productivity growth of the post-downturn period is less than one-quarter of what it was during the pre-downturn period (starting with Quarter 1 (Jan to Mar) 1998).

Furthermore, productivity growth has still not recovered to anything like pre-downturn levels. Since the downturn, more than one in four quarter on year growth rates were negative, while Quarter 4 2004 saw the only negative growth rate in the decade before the downturn.

Figure 1: Output per hour has risen by 0.3% from the same quarter a year ago, the second consecutive quarter

Output per hour, quarter on year log growth rates, seasonally adjusted, UK, Quarter 1 (Jan to Mar) 1998 to Quarter 4 (Oct to Dec) 2019

Download the data

Notes:

1. Percentiles are measurements that indicate the percentage of observations beneath a specified point. The 25th percentile is the value below which 25% of the observations reside.

2. Percent log growth used in the chart will differ slightly from percent growth in published datasets.

Figures for output per job, an alternate measure of labour productivity, are included in the LPROD01 dataset. In Quarter 4 2019, output per job contracted by 0.1% compared with the the same quarter a year ago. Over a longer time period, output per job exhibits a similar pattern to output per hour, with the post-downturn median roughly a third of the pre-downturn growth rate.

Output per hour grew by 0.3% compared with the previous quarter, the same as its quarter on year growth rate.

Gross value added and hours worked

Output per hour is calculated as gross value added (GVA) divided by the number of hours worked. This means that using all logged growth rates, the change in output per hour can be expressed as the change in GVA minus the change in hours. Compared with the same quarter a year ago, GVA grew by 1.1% while hours worked grew by 0.8%, resulting in the 0.3% growth in labour productivity.

Figure 2 shows the quarter on year log growth rate for output per hour, decomposed into the growth rates of GVA and hours. Because an increase in hours causes productivity to fall, holding GVA constant, hours growth is "reversed" in Figure 2 to show it as a negative contribution.

Since the downturn, annual log growth in GVA averaged 1.8%, somewhat higher than the average log growth rate of hours worked of 1.3%. As a result, productivity log growth has averaged 0.6%, with brief instances of higher growth, most noticeably in the initial recovery from the 2008 economic downturn. Subsequent years experienced a slump in productivity, with consecutive periods of negative growth between Quarter 2 (Apr to June) 2012 and Quarter 1 (Jan to Mar) 2013. Since then, productivity growth has remained weak, despite a somewhat stronger performance from mid 2016 to early 2018.

Figure 2: The 0.3% increase in output per hour reflects that GVA grew by 1.1% while hours grew by 0.8%, compared with the same quarter a year ago

Output per hour, quarter on year log growth rates, seasonally adjusted, UK, Quarter 3 (July to Sept) 2009 to Quarter 4 (Oct to Dec) 2019
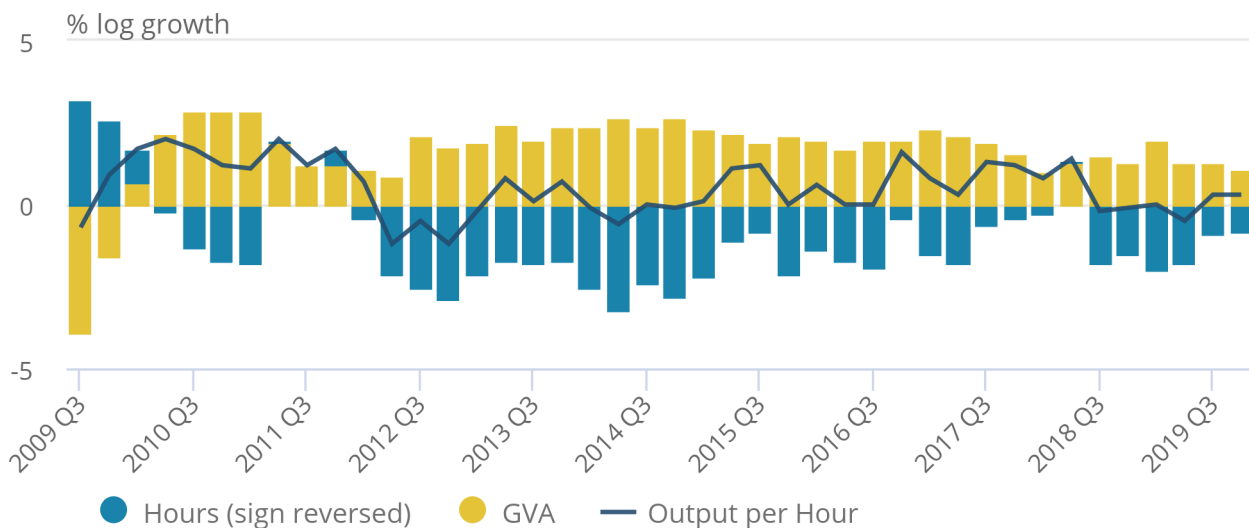
Source: Office for National Statistics – Labour productivity

Notes:

1. Percent log growth used in the chart will differ slightly from percent growth in published datasets.

4 . Contributions to productivity growth

Another way of breaking down the headline growth figure of 0.3% is using the "Generalised Exactly Additive Decomposition" (GEAD) methodology to decompose whole-economy productivity growth into the direct contributions from different industry sections.

Figure 3 shows that the UK's whole-economy growth in output per hour was caused by the construction industry. With all growth rates in logs, output per hour in construction grew by 7.0% compared with the same quarter a year ago, because its gross value added (GVA) grew by 1.6% while its hours declined by 5.4%. This contributed 0.4% to whole-economy productivity growth, greater than the 0.3% the whole economy actually saw.

It is worth noting that productivity growth in the construction sector has been historically volatile. The largest negative contribution was made by manufacturing, which declined by 1.6% in productivity and contributed negative 0.2% to whole-economy productivity growth.

While several industry sections saw large increases or decreases in productivity, the positive and negative contributions mostly cancelled out, resulting in the small whole-economy increase of 0.3%.

Figure 3: Construction grew by log 7.0% and contributed 0.4% to whole-economy output per hour growth, while manufacturing contracted by 1.6% and contributed negative 0.2%

GEAD direct effect contributions to log growth of whole economy output per hour, UK, year to Quarter 4 (Oct to Dec) 2019

Figure 3: Construction grew by log 7.0% and contributed 0.4% to whole-economy output per hour growth, while manufacturing contracted by 1.6% and contributed negative 0.2%

GEAD direct effect contributions to log growth of whole economy output per hour, UK, year to Quarter 4 (Oct to Dec) 2019
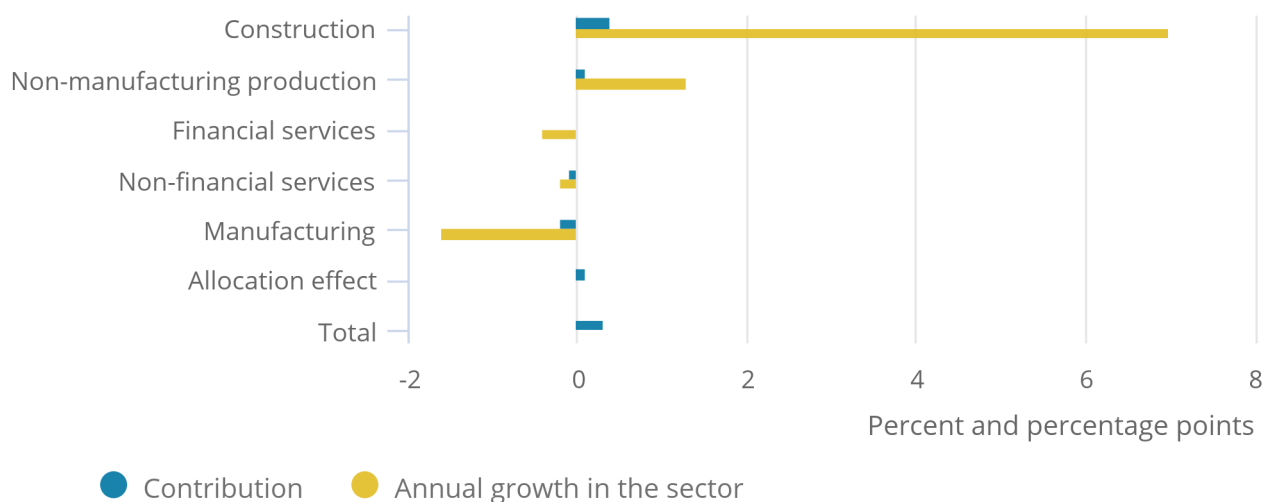
Source: Office for National Statistics – Labour productivity

Notes:

1.Percent log growth used in the chart will differ slightly from percent growth in published datasets.

Contributions to productivity growth over 10 years

At the end of the decade, it is now possible to compare the most recent labour productivity data with the decade as a whole. In this analysis, we focus on which sectors of the economy have contributed to productivity growth.

In the 10 years to Quarter 4 (Oct to Dec) 2019, output per hour grew by log 5.2%, indicating an annual growth rate of log 0.5%. This growth is not evenly distributed throughout the economy. Instead, it was overwhelmingly led by the non-financial services sector, notably through strong growth in the wholesale and retail trade and administration and support services industries. Apart from non-financial services, the rest of the economy saw in aggregage virtually no growth in output per hour over the 10 years up to Quarter 4 2019.

Strikingly, financial services has seen a net negative contribution to output per hour growth, reflecting that its productivity has actually declined over the decade. This contrasts with the years leading up to the 2008 economic down, where financial services saw extremely strong productivity growth, so the post-downturn decline may offer evidence this earlier growth was unsustainable.

Figure 4 compares the quarter on year industry contributions to whole-economy productivity growth with the same industry's contributions over a 10-year period ending with Quarter 4 2019. Generally, there is little link between the quarter on year contributions and the decade's average contributions.

In contrast to the quarter on year contributions, over the 10-year period, construction's contribution to productivity growth was relatively insignificant, showing the most recent figures are unusual for construction. Despite the non-financial services sector's recent negative contribution, over the last decade it was the main cause of productivity growth.

Figure 4: In the 10 years up to Quarter 4 2019, non-financial services were the main cause of productivity growth, while financial services had a net negative contribution

GEAD direct effect contributions to log growth of whole economy output per hour, UK, year to Quarter 4 (Oct to Dec) 2019 and average annual contributions during 10 years to Quarter 4 2019

Figure 4: In the 10 years up to Quarter 4 2019, non-financial services were the main cause of productivity growth, while financial services had a net negative contribution

GEAD direct effect contributions to log growth of whole economy output per hour, UK, year to Quarter 4 (Oct to Dec) 2019 and average annual contributions during 10 years to Quarter 4 2019
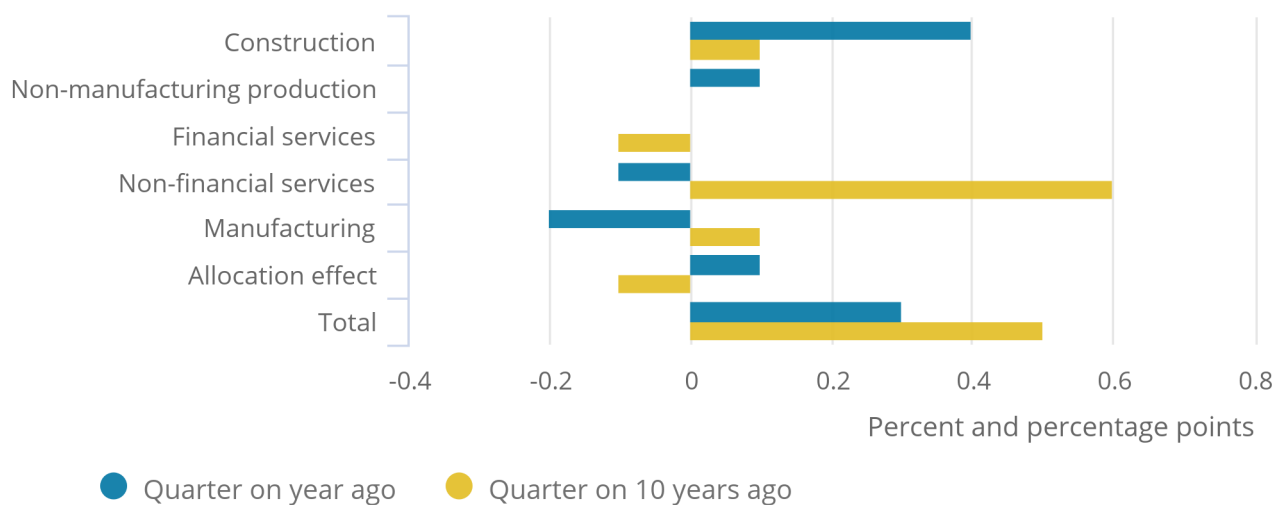
Source: Office for National Statistics – Labour productivity

Notes:

1. Percent log growth used in the chart will differ slightly from percent growth in published datasets.

Over the 10-year period, the allocation effect (the effect of changes in the relative size of industries on productivity) was somewhat negative, implying a transfer of labour inputs from more productive to less productive industry sections. However, this may not present the full picture because of the effect of imputed rental. Imputed rental represents the value of the accommodation services that owner-occupiers provide to themselves. It makes up about 10% of real UK GVA and the majority of the GVA of the real estate industry. There is a strong case for excluding imputed rental from GVA for the purposes of calculating labour productivity; see, for example, Section 11.16 of the European System of Accounts 2010 (ESA 2010).

This is relevant because research suggests that excluding imputed rental causes significant changes to the allocation effect because of the low labour input relative to the outputs. In particular, if imputed rental is excluded from GVA, the average direct effect over the period 1998 to 2008 increases by 0.14 percentage points, while the average allocation effect decreases by 0.54 percentage points.

Over the decade 2008 to 2018 (the latest period for which this analysis is available), the overall growth differential is much smaller. Excluding imputed rent makes no difference to the average direct contribution to output per hour growth in the 10 years to 2018, while the allocation effect decreases by 0.12 percentage points per year on average.

5 . Labour productivity data

Labour Productivity Tables 1 to 8 and R1 (LPROD01)
Dataset | Released 7 April 2020
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 (LPROD02)
Dataset | Released 7 April 2020
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 | Released 7 April 2020
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.

Labour productivity by industry division
Dataset | Released 7 April 2020
Contains statistics on productivity hours, output per hour and output per hour at current prices. Productivity hours measures the whole economy and sectoral hours worked. Output per hour is GVA divided by productivity hours. Output per hour at current prices is displayed in British pounds. These are experimental statistics for the UK.

Labour productivity: revisions triangles (LPRODREV)
Dataset | Released 7 April 2020
Revisions triangles for the main labour productivity variables. Data present the first estimates of chosen statistics used in the labour productivity publication against later revised estimates. Includes output per worker, output per job and output per hour, first estimates and revisions.

Labour productivity time series (PRDY)
Dataset | Released 7 April 2020
Quarterly output per hour, output per job and output per worker for the whole UK economy and a range of industries.

Quarterly regional productivity hours and jobs (NUTS1)
Dataset | Released 7 April 2020
Quarterly UK productivity hours and jobs for the Nomenclature of Units for Territorial Statistics: NUTS1 regions. Seasonally adjusted and non-seasonally adjusted experimental statistics.

6 . Glossary

Labour productivity

Labour productivity is calculated by dividing output by labour input.

Labour inputs

Labour inputs in this release are measured in terms of workers, jobs ("productivity jobs") and hours worked ("productivity hours").

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.

7 . Measuring the data

The measure of output used in these statistics is the chained volume (real) measure of gross value added (GVA) at basic prices.

Labour input measures used in this bulletin are known as "productivity jobs" and "productivity hours". Productivity jobs differ from the workforce jobs (WFJ) estimates, published in Table 6 of our Labour market overview, in three ways:

- to achieve consistency with the measurement of GVA, the employee component of productivity jobs is derived on a reporting unit basis, whereas the employee component of the WFJ estimates is on a local unit basis

- productivity jobs are scaled so industries sum to total Labour Force Survey (LFS) jobs – note that this constraint is applied in non-seasonally adjusted terms; the nature of the seasonal adjustment process means that the sum of seasonally adjusted productivity jobs and hours by industry can differ slightly from the seasonally adjusted LFS totals

- productivity jobs are calendar quarter average estimates, whereas WFJ estimates are provided for the last month of each quarter

Productivity hours are derived by multiplying employee and self-employed jobs at an industry level (before seasonal adjustment) by average actual hours worked from the LFS at an industry level. Results are scaled so industries sum to total unadjusted LFS hours and are then seasonally adjusted.

Industry estimates of average hours derived in this process differ from published estimates (found in Table HOUR03 in the Labour market overview release), as the HOUR03 estimates are calculated by allocating all hours worked to the industry of main employment, whereas the productivity hours system takes account of hours worked in first and second jobs by industry.

Labour productivity is then derived using growth rates for GVA and labour inputs in line with the following equation:

$$\Delta Labour \Pr oductivity = \Delta \left(\frac{\mathrm{OutputinGrossValueAdded(GVA)terms}}{\mathrm{LabourInputs(hours, workersorjobs)}} \right) \approx \Delta GVA - \Delta Labour\, Inpu$$

Presentation of growth rates in log percentage changes

In this release, charts and associated text measure growth in terms of percentage log changes, and we will continue to use this presentation in future releases. The datasets will still contain percentage growth rates and these statistics hold the National Statistics status.

For typical rates of change for labour productivity and labour inputs, this change will not make much difference to the result. For example, a 2.0% percentage change translates to a 1.98% log change. We are adopting the approach because a log change between two observations has the same numerical value regardless of which observation is the starting point. This is not true for a percentage change. For illustrative purposes, in the following example log changes are substantially different from percentage changes.

Suppose a series starts at 7, doubles to 14, then halves back to 7. The log change from 7 to 14 is 69%, and the log change from 14 to 7 is negative 69%. But the percentage change from 7 to 14 is 100%, while the percentage change from 14 to 7 is negative 50%. The log change reflects the fact that the second change reverses the first (and so has the same value) while the percentage change series appears to be very different in the first period compared with the second.

This approach is the same as that used by the Office for National Statistics (ONS) to compile multi-factor productivity.

Revisions

This release reflects revisions to GVA resulting from quarterly national accounts, affecting time periods since the start of 2019. Revisions to the current data also reflect revisions to jobs data for Quarter 3 (July to Sept) 2019. Revisions resulting from seasonal adjustment affect all periods.

This research note provides further information on the sources of revisions to labour productivity estimates.

Quality and methodology

More quality and methodology information on strengths, limitations, appropriate uses, and how the data were created is available in the Labour productivity QMI.

8 . Strengths and limitations

This release reports labour productivity estimates for Quarter 4 (Oct to Dec) 2019 for the whole economy. Productivity is important as it is considered to be a cause of long-run changes in average living standards.

This edition forms part of our quarterly productivity bulletin, which also includes unit labour costs, quarterly estimates of public service productivity, quarterly estimates of multi-factor productivity, and a productivity economic commentary.

Comparability and consistency

The output statistics in this release are consistent with the latest Quarterly national accounts, released 31 March 2020. Note that productivity in this release does not refer to gross domestic product (GDP) per person, which is a measure that includes people who are not in employment.

The labour input measures used in this release are consistent with the latest labour market statistics, released 17 March 2020.

In October 2018, the Office for National Statistics (ONS) informed users in a notice that we will no longer be publishing estimates on international comparisons of productivity, owing to an ongoing review of the methodology. In December 2018, the Organisation for Economic Co-operation and Development (OECD) published a working paper, "International productivity gaps: Are labour input measures comparable?", which showed the methodologies, data sources and adjustments used to estimate labour inputs varied significantly across countries. The ONS published an article exploring these differences and the impact they had on our international comparison of productivity statistics.

The GEAD methodology

The analysis of industrial contributions to whole-economy changes in labour productivity in this article uses the "Generalised Exactly Additive Decomposition" (GEAD) algorithm described in Tang and Wang (2004). This is the same algorithm as the one used to derive the contributions published in the dataset, " Breakdown of contributions, whole economy and sectors", which is part of the labour productivity release.

The GEAD algorithm has wide acceptance in the economics community. However, users should be aware that some commentators (for example, Reinsdorf 2015) have raised concerns about the interpretability of the GEAD contributions. In particular, the direct effects reported in the charts in this release are weighted by nominal GVA, not real GVA. This is necessary to ensure additivity (because real GVA is not additive) but means that the GEAD direct effects reflect the impact of numerically equivalent changes in real GVA on labour productivity differently depending on whether they arise from price changes or not.

Seasonal adjustment

Unless otherwise stated, all figures are seasonally adjusted.

Data quality

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.

9 . Related links

Unit labour costs, UK: October to December 2019
Article | Released 7 April 2020
Unit labour costs and sectional unit labour costs estimates for the whole economy and a range of industries.

Multi-factor productivity estimates, UK: October to December 2019
Article | Released 7 April 2020
Growth accounting estimates for the UK market sector and 10 industry groups. These are Experimental Statistics.

Public service productivity: quarterly, UK: October to December 2019
Article | Released 7 April 2020
Contains the latest experimental estimates for quarterly UK total public service productivity, inputs and output. These are Experimental Statistics.

Productivity economic commentary: October to December 2019
Article | Released 7 April 2020
An article drawing together the main findings from official statistics and analysis of UK productivity to present a summary of recent developments.

Regional labour productivity, including industry by region, UK: 2018
Article | Released 5 February 2020
Regional output per hour and output per job, and an experimental analysis of the performance of output per hour levels and growth by industry and region.

Subregional productivity in the UK: February 2020
Article | Released 28 February 2020
Estimates for subregional labour productivity measured as gross value added (GVA) per hour worked and GVA per filled job.

Improving estimates of labour productivity and international comparisons
Article | Released 9 January 2019
Discusses recent Organisation for Economic Co-operation and Development (OECD) findings showing that the methodologies, data sources and adjustments used to estimate the number of persons, jobs and hours worked varied significantly across countries, and explores these differences and the impact on our international comparison of productivity statistics.

Analysis of compositional changes in hours worked in the UK
Article | Released 7 August 2019

Analysis of the changes in the UK labour composition during and after the 2008 economic downturn, and international comparison over the last five years.

1 Labour productivity key measures
United Kingdom

<div align="right">Seasonally adjusted (2016=100)</div>

	Whole economy			Production		Manufacturing		Services	
	Output per worker	Output per job	Output per hour	Output per job	Output per hour	Output per job	Output per hour	Output per job	Output per hour
Section	A-U	A-U	A-U	B-E	B-E	C	C	G-U	G-U
Indices									
	A4YM	LNNN	LZVB	DJ4M	DJK3	DJ4P	DJK6	DJE3	DJP9
2016	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2017	101.0	101.0	100.9	100.1	100.6	100.7	101.6	101.1	101.0
2018	101.1	101.2	101.4	99.1	100.5	100.3	102.2	101.9	101.9
2019	101.4	101.5	101.4	98.0	98.9	99.2	100.1	102.2	101.8
2016 Q1	99.7	99.7	99.6	99.1	98.5†	99.5	98.7†	100.0	99.7
Q2	99.7	99.7	99.8	100.3	100.7†	100.1	100.5†	99.5	99.7
Q3	100.0	99.9	100.1	99.9$_†$	100.4	99.6†	100.1	99.9	100.0
Q4	100.6	100.7	100.5	100.7†	100.5	100.7	100.7	100.7	100.5
2017 Q1	100.9	101.0	100.4	101.3	101.4	101.5	102.0	100.9	100.2
Q2	100.8	100.8	100.1	99.7	99.6	100.2	100.4	100.9$_†$	100.3
Q3	101.1	101.2	101.5	99.5	100.3	99.8	101.0	101.2†	101.7
Q4	101.2	101.2	101.6	100.1	101.0	101.1	102.7	101.3	101.6
2018 Q1	100.7	100.7	101.2	99.4	100.6	100.5	102.2	101.2	101.4
Q2	101.1	101.2	101.5	98.8	100.1	100.1	102.1	101.8	102.3
Q3	101.5	101.6	101.2	99.3	100.6	100.1	102.5	102.2	101.8
Q4	101.2	101.3	101.5	99.1	100.6	100.3	101.9	102.2	102.3
2019 Q1	101.6†	101.7$_†$	101.2†	100.2	99.2	102.2	101.4	102.2	101.8
Q2	101.1	101.2†	101.0	97.7	98.4	98.7	99.6	101.9	101.5$_†$
Q3	101.8	101.9	101.6	97.4	98.4	98.4	99.2	102.6	102.0†
Q4	101.2	101.3	101.8	96.8	99.6	97.4	100.3	102.2	102.0
Per cent change on quarter a year ago									
	A4YN	LNNP	LZVD	DJ4O	DJK5	DJ4R	DJK8	DJE5	DJQ3
2016 Q1	0.6	1.0	0.6	1.2	0.5	–	–0.8$_†$	1.1	0.7
Q2	–0.3	–	–	1.2	2.0	0.1	0.7†	0.1	0.1
Q3	0.5	0.5	–	1.3	1.3	0.2	0.4	0.4†	–0.2
Q4	1.1	1.2	1.7	1.7	3.7	1.3	3.7	0.9	1.4
2017 Q1	1.2	1.2	0.8	2.2	3.0	2.0	3.4	0.9	0.5
Q2	1.1	1.2	0.3	–0.6	–1.1$_†$	–	–	1.5	0.6
Q3	1.1	1.2	1.3	–0.4	–†	0.2	0.9	1.4	1.8
Q4	0.6	0.6	1.2	–0.6	0.6	0.4	2.0	0.6	1.0
2018 Q1	–0.2	–0.2	0.8	–1.8	–0.8	–1.0	0.2	0.3	1.2
Q2	0.3	0.3	1.4	–0.9	0.5	–0.1	1.7	0.9	2.0
Q3	0.4	0.4	–0.2	–0.2	0.3	0.4	1.5	1.0	–
Q4	–	0.1	–0.1	–1.0	–0.4	–0.9	–0.8	0.9	0.7
2019 Q1	0.9†	1.0†	–†	0.8†	–1.4	1.7†	–0.8	1.1	0.3†
Q2	–	–	–0.5	–1.2	–1.6	–1.4	–2.5	–	–0.8
Q3	0.3	0.3	0.3	–1.9	–2.2	–1.7	–3.3	0.4	0.2
Q4	–	–0.1	0.3	–2.3	–1.0	–2.9	–1.6	–	–0.3
Per cent change on previous quarter									
	A4YO	DMWR	TXBB	DJ4N	DJK4	DJ4Q	DJK7	DJE4	DJQ2
2016 Q1	0.2	0.2	0.8	0.1	1.6	0.2†	1.6$_†$	0.1	0.6
Q2	–0.1	–0.1	0.2	1.2	2.2	0.6	1.8†	–0.5	–
Q3	0.3	0.3	0.3	–0.5†	–0.3†	–0.5	–0.3	0.4	0.3
Q4	0.6	0.7	0.3	0.8	0.1	1.1	0.6	0.8	0.5
2017 Q1	0.3	0.3	–	0.6	0.9	0.8	1.3	0.2	–0.3$_†$
Q2	–0.1	–0.1	–0.3	–1.5	–1.8	–1.3	–1.6	–	–†
Q3	0.3	0.3	1.3	–0.3	0.7	–0.4	0.6	0.3	1.5
Q4	0.1	0.1	0.2	0.6	0.7	1.4	1.7	0.1	–0.2
2018 Q1	–0.5	–0.5	–0.4	–0.7	–0.4	–0.6	–0.5	–0.2	–0.2
Q2	0.4	0.5	0.3	–0.6	–0.5	–0.4	–0.1	0.7	0.8
Q3	0.4	0.4	–0.3	0.4	0.6	–	0.4	0.4	–0.5
Q4	–0.3	–0.3	0.3	–0.2	–	0.1	–0.6	–	0.5
2019 Q1	0.4†	0.4†	–0.4$_†$	1.2	–1.4	1.9	–0.5	–†	–0.5
Q2	–0.5	–0.6	–0.1†	–2.6	–0.8	–3.5	–1.7	–0.4	–0.3
Q3	0.7	0.7	0.5	–0.3	–	–0.3	–0.4	0.8	0.5
Q4	–0.5	–0.6	0.3	–0.6	1.2	–1.0	1.1	–0.4	–

†indicates that estimates are new or have been revised. The period marked
is the earliest in the table to have been revised

2 Output per job: Manufacturing subsections
United Kingdom

	Food, beverages & tobacco	Textiles, wearing apparel & leather	Wood & paper products, & printing	Chemicals, Pharmaceuticals	Rubber, plastics & non-metallic minerals	Basic metals & metal products	Computer etc products, Electrical equipment	Machinery & equipment	Transport equipment	Coke & refined petroleum, Other manufacturing
Divisions	10-12	13-15	16-18	20-21	22-23	24-25	26-27	28	29-30	19,31-33
Level (£k)										
2016	67.8	45.2	46.1	169.4	52.7	53.1	79.8	78.4	85.4	56.2
Indices										
	DJ54	DJ57	DJ5F	DJ5I	DJ5L	DJB2	DJB7	DJC2	DJC5	DJD3
2016	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2017	97.9	102.7	103.5	92.0	94.0	98.6	99.6	103.0	108.6	105.5
2018	99.9	101.8	102.4	90.8	91.7	92.7	109.0	105.2	103.6	103.7[†]
2019	102.2	105.1	101.0	91.6	91.3	88.8	112.5	99.7	97.8	102.2
2016 Q1	101.3	108.5	98.9[†]	97.9	100.2	100.2	96.9	96.5[†]	99.0	99.3[†]
Q2	101.1[†]	98.6	100.4	102.4	101.7	99.4	100.1	97.6	101.7	97.5
Q3	99.3	97.8	100.2	98.8	98.6	100.3	99.3	102.8	97.9	101.7
Q4	98.3	95.0	100.5	100.9	99.5	100.1	103.6	103.1	101.4	101.5
2017 Q1	99.2	99.1	104.4	91.4	97.0	99.0	101.6	105.7	106.0	109.7
Q2	97.3	101.1	101.8	93.9	94.8	98.1	99.3	102.0	106.5	105.1
Q3	97.4	103.2	104.5	90.9	91.7	97.2	97.7	101.1	111.0	102.3
Q4	97.9	107.3	103.3	91.8	92.3	100.3	100.0	103.3	110.8	105.0
2018 Q1	98.0	97.7	101.4	90.1	90.0	97.0	107.4	105.7	108.3	104.0
Q2	100.2	102.1	102.3	90.3	91.1	92.7	108.3	104.7	104.3	102.4
Q3	100.7	101.5	101.7	88.0	92.9	93.0	108.5	105.3	103.1	104.1
Q4	100.6	106.0	104.3	94.9	92.8	87.9	111.7	105.3	98.7	104.1
2019 Q1	103.1	105.4[†]	105.3	98.4[†]	94.9[†]	91.3[†]	115.7[†]	103.1	100.0[†]	103.8
Q2	100.9	103.4	102.7	89.9	90.8	87.7	113.7	99.9	93.4	106.3
Q3	102.5	103.5	98.0	91.0	89.2	87.9	110.8	98.2	99.6	102.0
Q4	102.2	108.2	97.7	86.9	90.3	88.1	109.7	97.5	98.1	96.7
Per cent change on quarter a year ago										
	DJ56	DJ5E	DJ5H	DJ5K	DJ5N	DJB6	DJB9	DJC4	DJD2	DJD7
2016 Q1	−2.1	7.6	−1.0[†]	1.1	5.9	−1.7	4.4	−5.2	−2.8	0.5
Q2	−1.3	−5.9	1.6	5.7	8.6	−2.7	2.7	−0.6	−2.4	−2.7
Q3	−3.6[†]	−9.6	–	1.3	2.6	3.4	2.0	6.0	−3.3	3.7[†]
Q4	−4.3	−8.2	−0.4	3.3	2.8	2.8	6.7	8.2[†]	0.1	2.8
2017 Q1	−2.1	−8.6	5.5	−6.6	−3.2	−1.2	4.8	9.5	7.1	10.5
Q2	−3.7	2.5	1.4	−8.3	−6.7	−1.3	−0.9	4.4	4.8	7.7
Q3	−1.9	5.5	4.3	−7.9	−7.1	−3.1	−1.7	−1.6	13.3	0.6
Q4	−0.5	12.9	2.9	−9.0	−7.2	0.2	−3.4	0.2	9.3	3.5
2018 Q1	−1.3	−1.4	−2.9	−1.5	−7.2	−2.0	5.7	−0.1	2.2	−5.2
Q2	3.0	1.0	0.4	−3.8	−4.0	−5.5	9.0	2.6	−2.1	−2.5
Q3	3.4	−1.6	−2.6	−3.2	1.4	−4.3	11.1	4.1	−7.1	1.8
Q4	2.8	−1.2	0.9	3.4	0.6	−12.3	11.7	1.9	−10.9	−0.9
2019 Q1	5.2	7.9[†]	3.9	9.3[†]	5.4[†]	−5.9[†]	7.7[†]	−2.4	−7.7[†]	−0.2
Q2	0.8	1.3	0.5	−0.4	−0.3	−5.4	5.0	−4.6	−10.4	3.7
Q3	1.7	1.9	−3.6	3.4	−4.0	−5.5	2.1	−6.7	−3.4	−1.9
Q4	1.6	2.1	−6.3	−8.4	−2.8	0.2	−1.8	−7.4	−0.6	−7.1
Per cent change on previous quarter										
	DJ55	DJ58	DJ5G	DJ5J	DJ5M	DJB3	DJB8	DJC3	DJC6	DJD4
2016 Q1	−1.3[†]	4.8	−1.9[†]	0.3	3.5	2.9	−0.2	1.4	−2.3	0.5[†]
Q2	−0.3	−9.1	1.5	4.6	1.4	−0.8	3.3	1.1	2.7	−1.7
Q3	−1.8	−0.8	−0.2	−3.6	−3.0	0.8	−0.8	5.2[†]	−3.7	4.2
Q4	−1.0	−2.8	0.3	2.1	0.9	−0.2	4.3	0.3	3.6	−0.2
2017 Q1	0.9	4.3	3.9	−9.4	−2.6	−1.1	−1.9	2.6	4.5	8.1
Q2	−1.9	2.0	−2.5	2.7	−2.2	−0.9	−2.3	−3.5	0.5	−4.2
Q3	0.1	2.1	2.6	−3.1	−3.4	−0.9	−1.6	−0.9	4.2	−2.7
Q4	0.5	3.9	−1.1	0.9	0.7	3.2	2.4	2.2	−0.1	2.7
2018 Q1	0.1	−8.9	−1.9	−1.9	−2.5	−3.2	7.3	2.3	−2.3	−1.0
Q2	2.3	4.5	0.9	0.3	1.1	−4.5	0.8	−0.9	−3.7	−1.5
Q3	0.5	−0.6	−0.6	−2.5	2.0	0.3	0.3	0.6	−1.1	1.6
Q4	−0.1	4.4	2.6	7.8	−0.1	−5.5	2.9	–	−4.3	0.1
2019 Q1	2.5	−0.6[†]	1.0	3.7[†]	2.2[†]	3.8[†]	3.5[†]	−2.1	1.2[†]	−0.3
Q2	−2.1	−1.9	−2.5	−8.6	−4.3	−3.9	−1.7	−3.1	−6.6	2.4
Q3	1.5	0.1	−4.6	1.2	−1.8	0.3	−2.6	−1.7	6.7	−4.0
Q4	−0.2	4.6	−0.3	−4.5	1.2	0.2	−0.9	−0.7	−1.5	−5.2

[†] indicates that estimates are new or have been revised. The period marked
is the earliest in the table to have been revised.

3 Output per hour worked: Manufacturing subsections
United Kingdom

Seasonally adjusted (2016=100)

	Food, beverages & tobacco	Textiles, wearing apparel & leather	Wood & paper products, & printing	Chemicals, Pharmaceuticals	Rubber, plastics & non-metallic minerals	Basic metals & metal products	Computer etc products, Electrical equipment	Machinery & equipment	Transport equipment	Coke & refined petroleum, Other manufacturing
Divisions	10-12	13-15	16-18	20-21	22-23	24-25	26-27	28	29-30	19,31-33
Level (£)										
2016	36.9	26.3	24.7	94.4	27.4	27.8	43.8	41.8	45.0	30.4
Indices										
	DJK9	DJL4	DJL7	DJM4	DJM7	DJN4	DJN7	DJO5	DJO8	DJP3
2016 Q1	99.9†	105.1	95.7†	100.0†	98.1†	98.6†	97.4	98.0	98.7†	99.6†
Q2	98.9	100.4†	99.7	102.5	101.4	101.5	100.4†	96.5†	103.8	99.2
Q3	101.5	98.9	103.8	97.6	99.0	101.0	100.0	100.8	97.3	100.4
Q4	99.7	95.6	100.8	99.9	101.5	98.8	102.2	104.7	100.2	100.8
2017 Q1	100.4	98.0	102.6	90.5	96.1	103.6	101.5	105.9	104.6	110.9
Q2	101.5	100.5	100.2	91.1	91.8	98.1	102.8	103.6	104.1	106.1
Q3	100.7	100.2	102.9	95.4	87.5	100.0	102.1	103.6	109.5	105.3
Q4	98.6	104.7	105.6	94.1	87.6	103.0	107.5	106.1	112.0	108.8
2018 Q1	100.4	99.7	101.2	95.1	87.6	95.3	113.1	109.0	110.4	109.1
Q2	99.8	100.2	105.0	98.7	94.9	92.0	109.2	105.1	105.7	109.8
Q3	102.2	105.2	102.7	91.7	92.5	92.7	113.8	105.9	108.4	110.7
Q4	101.0	103.7	104.7	95.1	91.8	88.7	117.4	110.7	101.3	108.4
2019 Q1	100.9	102.2	105.6	97.7	90.4	91.8	116.0	103.8	99.5	104.5
Q2	99.1	107.8	105.5	91.6	87.6	89.3	116.9	101.2	94.8	109.5
Q3	101.2	105.5	101.1	90.5	90.7	87.2	114.7	97.7	98.4	107.0
Q4	108.3	103.7	100.8	87.4	95.2	88.5	115.8	97.4	97.4	104.6
Per cent change on quarter a year ago										
	DJL3	DJL6	DJM3	DJM6	DJM9	DJN6	DJN9	DJO7	DJP2	DJP5
2016 Q1	−4.0	6.3	−5.7†	2.0	11.5†	−1.1†	1.3	−3.5	−1.0†	−4.8†
Q2	−4.8	−1.5†	1.7	3.5	14.8	–	3.0	−2.2	3.5	−6.8
Q3	1.1†	−10.9	6.6	−1.2†	7.3	3.3	−1.1	2.2	−3.4	−3.4
Q4	0.1	−11.9	6.8	3.5	9.0	7.4	3.1	13.5†	0.6	−0.2
2017 Q1	0.4	−6.8	7.1	−9.5	−2.1	5.1	4.2	8.0	6.0	11.3
Q2	2.6	–	0.5	−11.1	−9.5	−3.4	2.4	7.3	0.3	6.9
Q3	−0.8	1.3	−0.9	−2.2	−11.6	−1.0	2.1	2.9	12.5	4.9
Q4	−1.1	9.5	4.8	−5.8	−13.7	4.2	5.2	1.4	11.8	8.0
2018 Q1	–	1.8	−1.3	5.1	−8.8	−8.0	11.4	3.0	5.6	−1.6
Q2	−1.7	−0.3	4.7	8.4	3.4	−6.3	6.3	1.5	1.5	3.5
Q3	1.5	4.9	−0.1	−3.9	5.7	−7.3	11.4	2.1	−1.0	5.1
Q4	2.5	−0.9	−0.9	1.1	4.7	−13.9	9.2	4.3	−9.5	−0.4
2019 Q1	0.5	2.5	4.4	2.8	3.1	−3.7	2.6†	−4.9	−9.9	−4.2
Q2	−0.7	7.6	0.5	−7.2	−7.7	−2.9	7.0	−3.7	−10.3	−0.2
Q3	−1.0	0.3	−1.5	−1.3	−1.9	−5.9	0.8	−7.7	−9.3	−3.3
Q4	7.2	–	−3.7	−8.2	3.8	−0.2	−1.3	−12.0	−3.9	−3.4
Per cent change on previous quarter										
	DJL2	DJL5	DJM2	DJM5	DJM8	DJN5	DJN8	DJO6	DJO9	DJP4
2016 Q1	0.3	−3.1	1.4	3.6	5.3†	7.2	−1.8	6.2†	−0.9†	−1.4
Q2	−1.0†	−4.4†	4.2†	2.4†	3.4	2.9†	3.1	−1.6	5.3	−0.4†
Q3	2.6	−1.6	4.1	−4.8	−2.5	−0.5	−0.3	4.4	−6.3	1.2
Q4	−1.8	−3.3	−2.9	2.4	2.6	−2.2	2.2†	3.9	2.9	0.4
2017 Q1	0.7	2.5	1.8	−9.5	−5.4	4.9	−0.7	1.1	4.4	10.0
Q2	1.2	2.6	−2.3	0.7	−4.5	−5.3	1.3	−2.2	−0.5	−4.3
Q3	−0.8	−0.3	2.6	4.8	−4.7	1.9	−0.6	0.1	5.2	−0.7
Q4	−2.1	4.4	2.7	−1.4	0.1	3.0	5.2	2.4	2.3	3.3
2018 Q1	1.8	−4.7	−4.2	1.0	–	−7.5	5.2	2.7	−1.4	0.2
Q2	−0.5	0.4	3.7	3.8	8.4	−3.5	−3.4	−3.6	−4.3	0.6
Q3	2.4	5.0	−2.1	−7.1	−2.6	0.8	4.2	0.7	2.6	0.8
Q4	−1.2	−1.4	1.9	3.7	−0.8	−4.3	3.2	4.6	−6.6	−2.1
2019 Q1	−0.1	−1.4	0.9	2.7	−1.5	3.5	−1.2	−6.3	−1.8	−3.6
Q2	−1.7	5.4	−0.1	−6.3	−3.0	−2.6	0.7	−2.5	−4.8	4.8
Q3	2.1	−2.1	−4.1	−1.1	3.5	−2.4	−1.8	−3.4	3.8	−2.3
Q4	7.0	−1.7	−0.3	−3.5	5.0	1.5	1.0	−0.3	−1.0	−2.2

† indicates that estimates are new or have been revised. The period marked
is the earliest in the table to have been revised.

Seasonally adjusted (2016=100)

	Wholesale & retail trade, motor vehicle repair	Transport & storage	Accommo-dation & food services	Information & commu-nication	Finance & insurance	Real estate activities	Profes-sional, scientific & technical activities	Admin & support services	Government services	Arts, enter-tainment & recreation	Other services
Section	G	H	I	J	K	L	M	N	O-Q	R	S-U
Level (£k)											
2016	36.4	48.9	21.6	80.3	109.6	436.4	50.8	31.4	37.3	29.6	34.9
Indices											
	DJE6	DJE9	DJF4	DJF7	DJG5	DJH4	DJH7	DJI2	DJI5	DJJ3	DJJ6
2016	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2017	102.4	102.4	100.4	100.3	99.8	97.0	105.8	102.1	100.9	100.4	101.8
2018	105.1	102.4	101.0	105.1	97.9	94.5	108.7	104.6	100.4	100.6	102.1
2019	109.4	99.7	100.8	108.6	95.7	93.8	105.6	107.2	101.5	100.0	97.2
2016 Q1	99.0	102.3	101.1	99.3†	98.4	98.6	100.1	100.2†	100.2	103.4	100.3
Q2	99.4	100.4	100.5	98.1	99.1	98.7	99.7	98.4	99.6	101.2†	100.4†
Q3	99.5	98.7	99.2	100.8	101.1†	100.5	99.8†	100.3	99.8	99.3	97.4
Q4	102.0	98.6	99.2	101.9	101.4	102.3	100.4	101.2	100.4	96.1	101.8
2017 Q1	102.0	102.3	99.9	99.2	101.2	96.3	103.2	102.0	101.3	100.5	100.1
Q2	101.9	101.4	100.3†	99.9	100.2	98.6	104.9	101.2	100.8	103.0	102.6
Q3	102.9	102.5	100.8	100.2	99.5	97.3	106.9	102.1	101.0	98.5	102.3
Q4	102.7	103.3	100.8	102.0	98.4	95.7	108.1	103.2	100.5	99.3	102.2
2018 Q1	102.6	102.8	100.2	102.2	98.4	92.6	109.0	103.6	99.9	99.4	102.2
Q2	104.7	102.7	100.4	104.6	98.7	95.8	109.7	105.0	100.1	99.5	102.1
Q3	106.2	102.6	101.2	106.5	97.7	95.9	108.8	104.2	100.7	100.7	102.8
Q4	106.9	101.4	102.3	107.0	97.0	93.5	107.5	105.5	101.0	102.6	101.2
2019 Q1	108.1†	101.2†	102.3	108.8	96.1	96.4	105.4	107.0	101.4†	99.4	97.9
Q2	109.3	98.5	100.8	109.1	95.9	96.6	103.9	106.5	101.2	99.7	94.9
Q3	110.3	99.9	100.8	109.3	96.3	91.7†	106.0	107.5	101.6	100.6	99.2
Q4	110.1	99.3	99.4	107.2	94.6	90.5	106.9	107.8	101.6	100.3	96.6
Per cent change on quarter a year ago											
	DJE8	DJF3	DJF6	DJF9	DJG8	DJH6	DJH9	DJI4	DJI7	DJJ5	DJJ8
2016 Q1	4.7	−7.9	−0.2	5.7	−1.2	2.6	−0.3	1.5	0.9	1.5	−1.5
Q2	3.6	−7.8	−1.6	2.3†	4.2†	2.6	−2.6	−0.8	−0.8	−1.1	−2.0
Q3	3.7	−7.5	−2.6	4.7	7.6†	1.9	−1.6	−0.4	−1.0	−3.0†	−5.9
Q4	5.8	−4.9	−3.2	5.0	3.4	2.6	−0.7	1.8	−0.5	−7.6	−5.7
2017 Q1	3.0	–	−1.2	–	2.9	−2.2	3.1	1.9	1.1	−2.8	−0.2
Q2	2.5	0.9	−0.2	1.9	1.1	–	5.2	2.8	1.2	1.8	2.1
Q3	3.4	3.9	1.7	−0.6	−1.6	−3.2	7.2†	1.8	1.2	−0.7	5.0
Q4	0.6	4.8	1.6	0.1	−2.9	−6.5	7.6	2.0	–	3.3	0.4†
2018 Q1	0.5†	0.5	0.3	3.0	−2.8	−3.9	5.6	1.5	−1.4	−1.1	2.1
Q2	2.7	1.3	0.1	4.7	−1.5	−2.9	4.6	3.7	−0.7	−3.4	−0.4
Q3	3.2	–	0.4	6.3	−1.8	−1.4	1.7	2.1	−0.2	2.3	0.5
Q4	4.1	−1.9	1.5	4.8	−1.5	−2.2	−0.5	2.3†	0.5	3.3	−1.0
2019 Q1	5.4	−1.5†	2.2†	6.4	−2.3	4.1	−3.3	3.3	1.5	–	−4.2
Q2	4.4	−4.2	0.5	4.3	−2.9	0.8	−5.3	1.5	1.1	0.2	−7.1
Q3	3.9	−2.6	−0.4	2.6	−1.4	−4.4†	−2.5	3.1	0.9†	−0.1	−3.5
Q4	3.0	−2.0	−2.9	0.2	−2.5	−3.3	−0.6	2.1	0.6	−2.3	−4.6
Per cent change on previous quarter											
2016 Q1	4.7	−7.9	−0.2	5.7	−1.2	2.6	−0.3	1.5	0.9	1.5	−1.5
Q2	3.6	−7.8	−1.6	2.3†	4.2†	2.6	−2.6	−0.8	−0.8	−1.1	−2.0
Q3	3.7	−7.5	−2.6	4.7	7.6†	1.9	−1.6	−0.4	−1.0	−3.0†	−5.9
Q4	5.8	−4.9	−3.2	5.0	3.4	2.6	−0.7	1.8	−0.5	−7.6	−5.7
2017 Q1	3.0	–	−1.2	–	2.9	−2.2	3.1	1.9	1.1	−2.8	−0.2
Q2	2.5	0.9	−0.2	1.9	1.1	–	5.2	2.8	1.2	1.8	2.1
Q3	3.4	3.9	1.7	−0.6	−1.6	−3.2	7.2†	1.8	1.2	−0.7	5.0
Q4	0.6	4.8	1.6	0.1	−2.9	−6.5	7.6	2.0	–	3.3	0.4†
2018 Q1	0.5†	0.5	0.3	3.0	−2.8	−3.9	5.6	1.5	−1.4	−1.1	2.1
Q2	2.7	1.3	0.1	4.7	−1.5	−2.9	4.6	3.7	−0.7	−3.4	−0.4
Q3	3.2	–	0.4	6.3	−1.8	−1.4	1.7	2.1	−0.2	2.3	0.5
Q4	4.1	−1.9	1.5	4.8	−1.5	−2.2	−0.5	2.3†	0.5	3.3	−1.0
2019 Q1	5.4	−1.5†	2.2†	6.4	−2.3	4.1	−3.3	3.3	1.5	–	−4.2
Q2	4.4	−4.2	0.5	4.3	−2.9	0.8	−5.3	1.5	1.1	0.2	−7.1
Q3	3.9	−2.6	−0.4	2.6	−1.4	−4.4†	−2.5	3.1	0.9†	−0.1	−3.5
Q4	3.0	−2.0	−2.9	0.2	−2.5	−3.3	−0.6	2.1	0.6	−2.3	−4.6

† indicates that estimates are new or have been revised. The period marked
is the earliest in the table to have been revised.

5 Output per hour worked: Services sections
United Kingdom

	Wholesale & retail trade, motor vehicle repair	Transport & storage	Accommodation & food services	Information & communication	Finance & insurance	Real estate activities	Professional, scientific & technical activities	Admin & support services	Government services	Arts, entertainment & recreation	Other services
Section	G	H	I	J	K	L	M	N	O-Q	R	S-U

Level (£)

2016	23.7	26.8	15.8	44.5	61.7	280.7	28.7	20.2	26.0	22.5	23.5

Indices

	DJQ4	DJQ7	DJR2	DJR5	DJS3	DJS6	DJS9	DJT7	DJU2	DJV6	DJV9
2016	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2017	101.5	102.9	100.5	100.2	101.8	98.6	107.3	102.5	100.4	95.8	99.3
2018	105.0	102.0	103.3	105.7	98.7	97.8	109.0	104.8	100.2	97.1	99.1
2019	109.0	98.4	100.2	108.2	97.0	97.0	106.2	108.7	100.5	96.7	94.2
2016 Q1	98.1	102.4†	101.5	100.2	98.3	101.7	99.3†	101.5	99.4	101.7	100.2
Q2	99.9†	100.3	99.9	99.4	99.3	96.0†	101.4	96.4	100.5	102.4	98.5†
Q3	99.8	98.7	99.4	99.7†	100.5†	103.9	99.8	100.3†	99.9	99.3†	99.7
Q4	102.3	98.6	99.2	100.7	101.9	98.5	99.6	101.9	100.2	96.6	101.5
2017 Q1	101.4	101.9	99.5	97.2	103.0	96.3	103.6	101.4	100.2	97.6	99.1
Q2	101.3	102.1	99.3	97.8	101.8	98.2	104.9	101.2	99.9†	99.3	100.2
Q3	102.6	103.7	101.4†	101.3	101.3	101.1	110.5	102.7	101.2	91.5	99.9
Q4	100.9	104.1	101.7	104.4	100.9	98.8	110.2	104.8	100.5	94.8	98.1
2018 Q1	102.5	101.4	103.4	103.3	100.2	97.8	109.1	104.0	99.8	96.0	98.4
Q2	104.6	103.3	105.2	105.2	99.8	99.5	110.6	104.3	100.1	95.0	100.2
Q3	106.0	102.1	101.7	106.8	97.9	95.5	108.1	105.0	100.0	96.8	99.9
Q4	106.9	101.4	103.1	107.3	97.0	98.4	108.1	106.0	101.0	100.5	98.1
2019 Q1	107.8	99.4	99.6	108.5	96.4	101.0	105.6	108.4	101.0	96.0	94.9
Q2	108.5	97.6	100.2	109.2	96.5	97.4	104.8	109.0	100.1	96.8	92.9
Q3	109.2	99.2	100.0	108.6	98.5	94.1	106.7	108.7	100.1	96.9	97.3
Q4	110.5	97.3	101.1	106.5	96.6	95.7	107.8	108.8	100.6	97.1	91.8

Per cent change on quarter a year ago

	DJQ6	DJQ9	DJR4	DJR7	DJS5	DJS8	DJT6	DJT9	DJU7	DJV8	DJW3
2016 Q1	3.9†	−7.4	0.6	4.7	−3.6	4.9	0.2	–	0.4†	3.8†	−1.1†
Q2	4.1	−7.3	−1.4	2.1	1.9	−0.4†	–	−4.7	0.5	1.5	−6.2
Q3	2.5	−7.1†	−2.2	0.2†	3.9	4.3	−1.2†	−2.0†	−0.7	−3.2	−5.1
Q4	6.4	−2.8	−3.7	1.7	3.2†	−5.2	0.5	3.4	0.7	−4.5	−6.0
2017 Q1	3.4	−0.4	−2.0	−3.0	4.8	−5.2	4.3	−0.1	0.8	−4.0	−1.2
Q2	1.4	1.7	−0.6	−1.6	2.6	2.4	3.4	5.0	−0.7	−3.0	1.7
Q3	2.8	5.1	1.9	1.6	0.8	−2.7	10.8	2.4	1.3	−7.9	0.2
Q4	−1.4	5.5	2.6	3.7	−1.0	0.3	10.6	2.9	0.3	−1.8	−3.3
2018 Q1	1.1	−0.6	3.9	6.3	−2.8	1.5	5.3	2.5	−0.4	−1.7	−0.7
Q2	3.3	1.2	5.9†	7.6	−2.0	1.3	5.5	3.1	0.3	−4.3	−0.1
Q3	3.3	−1.5	0.3	5.5	−3.4	−5.5	−2.2	2.2	−1.3	5.8	–
Q4	6.0	−2.5	1.4	2.7	−3.9	−0.5	−1.8	1.1	0.6	6.0	−0.1
2019 Q1	5.2	−1.9	−3.7	5.1	−3.8	3.3	−3.2	4.3	1.2	–	−3.6
Q2	3.8	−5.5	−4.7	3.7	−3.3	−2.1	−5.2	4.5	–	1.9	−7.2
Q3	3.0	−2.8	−1.6	1.6	0.6	−1.5	−1.3	3.6	0.1	0.1	−2.6
Q4	3.3	−4.1	−2.0	−0.7	−0.4	−2.7	−0.3	2.7	−0.4	−3.4	−6.4

Per cent change on previous quarter

	DJQ5	DJQ8	DJR3	DJR6	DJS4	DJS7	DJT2	DJT8	DJU6	DJV7	DJW2
2016 Q1	2.0	0.9	−1.5†	1.1	−0.5	−2.1†	0.1	3.0	−0.1	0.6†	−7.2†
Q2	1.8	−2.0†	−1.6	−0.8†	1.0†	−5.6	2.1†	−5.0	1.1	0.6	−1.7
Q3	−0.1†	−1.6	−0.5	0.3	1.2	8.2	−1.6	4.0†	−0.6	−3.0	1.2
Q4	2.5	–	−0.2	1.0	1.4	−5.1	−0.2	1.6	0.2	−2.7	1.8
2017 Q1	−0.9	3.3	0.3	−3.5	1.1	−2.2	4.0	−0.5	–†	1.1	−2.4
Q2	−0.1	0.1	−0.2	0.7	−1.2	2.0	1.2	−0.2	−0.3	1.7	1.2
Q3	1.3	1.6	2.1	3.5	−0.5	2.9	5.4	1.5	1.4	−7.9	−0.3
Q4	−1.7	0.4	0.4	3.1	−0.4	−2.2	−0.3	2.1	−0.8	3.7	−1.8
2018 Q1	1.6	−2.6	1.6	−1.1	−0.7	−1.0	−1.0	−0.8	−0.6	1.2	0.3
Q2	2.0	1.9	1.8	1.9	−0.4	1.7	1.4	0.4	0.3	−1.0	1.8
Q3	1.3	−1.1	−3.3	1.5	−1.9	−4.0	−2.2	0.6	−0.2	1.9	−0.3
Q4	0.8	−0.7	1.4	0.4	−0.9	3.0	–	0.9	1.1	3.9	−1.8
2019 Q1	0.9	−2.0	−3.4	1.2	−0.6	2.7	−2.4	2.3	–	−4.5	−3.3
Q2	0.7	−1.9	0.7	0.6	0.1	−3.6	−0.7	0.6	−0.9	0.9	−2.0
Q3	0.6	1.7	−0.2	−0.5	2.1	−3.4	1.8	−0.3	–	0.1	4.7
Q4	1.2	−2.0	1.0	−1.9	−1.9	1.7	1.1	0.1	0.5	0.2	−5.7

† indicates that estimates are new or have been revised. The period marked
is the earliest in the table to have been revised.

6 Market Sector productivity
United Kingdom

	Output per worker			Output per hour worked		
	Index	Per cent change on quarter a year ago	Per cent change on previous quarter	Index	Per cent change on quarter a year ago	Per cent change on previous quarter
	GYY4	GYY5	GYY6	GYY7	GYY8	GYY9
2016	100.0	..	..	100.0	..	..
2017	101.6	..	..	101.7	..	..
2018	102.1†	..	..	102.6†	..	..
2019	102.4	..	..	102.5	..	..
2016 Q1	99.6	−	1.3	99.5	−	1.9†
Q2	100.0	−0.4†	0.4	100.1	0.2	0.6
Q3	99.8	0.6	−0.2	99.9†	0.3	−0.1
Q4	100.6	2.3	0.8	100.4	2.8	0.5
2017 Q1	101.4	1.7	0.8	100.9	1.4	0.5
Q2	101.4	1.4	−	100.8	0.7†	−0.2
Q3	101.7	1.9	0.3	102.2	2.3	1.5
Q4	102.1	1.5	0.4	102.9	2.4	0.7
2018 Q1	101.3†	−0.1	−0.8†	102.2	1.2	−0.7
Q2	102.1	0.7	0.8	102.7	2.0	0.5
Q3	102.6	0.8	0.4	102.6	0.4	−0.1
Q4	102.3	0.2	−0.2	102.7	−0.2	0.1
2019 Q1	102.6	1.3	0.3	102.3	0.1	−0.4
Q2	102.1	−	−0.5	102.2	−0.5	−0.1
Q3	102.7	0.2	0.7	102.8	0.2	0.6
Q4	102.1	−0.2	−0.6	102.9	0.1	0.1

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is the earliest in the table to have been revised.

7 Output per job and hour worked: Other industries
United Kingdom

Seasonally adjusted (2016=100)

Section	Agriculture, forestry and fishing		Construction	
	Output per job	Output per hour worked	Output per job	Output per hour worked
	A	A	F	F

Level (£)				
2016	30 480.0	14.4	51 450.7	26.3

Indices				
	DJ4K	DJJ9	DJD8	DJP6
2003	106.7	107.6	97.8	98.1
2004	101.7	101.0	100.4	101.1
2005	103.0	107.9	95.1	96.4
2006	98.2	101.6†	94.7	95.9
2007	95.2	100.4	93.7	95.2
2008	98.5	103.5	90.9	93.3
2009	91.7	87.5	82.0	84.9
2010	85.6	81.3	93.9	96.1
2011	95.7	94.1	95.7	99.8
2012	87.6	90.2	89.4	92.7
2013	96.3	96.5	90.8	92.1
2014	95.0	95.3	97.0	95.9
2015	104.6	108.4	98.8	98.6
2016	100.0	100.0	100.0	100.0
2017	102.2	102.2	102.3	102.4
2018	101.6	102.1	101.8	102.0
2019	103.7	103.9	104.5	105.9

Per cent change on previous year				
	DJ4L	DJK2	DJE2	DJP8
2003	−3.8	−6.0	2.3	3.6
2004	−4.6	−6.1	2.7	3.0
2005	1.3	6.8	−5.3	−4.6
2006	−4.7	−5.9	−0.5	−0.5
2007	−3.0	−1.1	−1.0	−0.7
2008	3.4	3.0	−3.1	−2.0
2009	−6.9	−15.4	−9.7	−9.0
2010	−6.6	−7.1	14.4	13.2
2011	11.7	15.7	1.9	3.9
2012	−8.4	−4.2	−6.6	−7.2
2013	9.9	7.0	1.6	−0.7
2014	−1.4	−1.3	6.8	4.2
2015	10.1	13.8†	1.8	2.8
2016	−4.4	−7.8	1.3	1.4
2017	2.2	2.2	2.3	2.4
2018	−0.5	−0.1	−0.4	−0.3
2019	2.1	1.8	2.6	3.8

† indicates that estimates are new or have been revised. The period marked
is the earliest in the table to have been revised.

8 Labour input indices: Workers, productivity jobs and productivity hours
United Kingdom

Seasonally adjusted (2016=100)

	Whole economy				Production		Manufacturing		Services	
	Workers	Jobs	Hours	Ratio of jobs to workers	Productivity jobs	Productivity hours	Productivity jobs	Productivity hours	Productivity jobs	Productivity hours
Section	A-U	A-U	A-U	A-U	B-E	B-E	C	C	G-U	G-U
Indices										
	TXEL	LNNM	LZVA	TXET	DJW6	DK3S	DJW9	DK3V	DK2G	DK56
2016	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2017	101.0	100.9	101.1	99.9	101.6	101.2	101.6	100.7	100.6	100.7
2018	102.2	102.1	101.9	99.9	103.4	102.0	102.8	100.9	101.8	101.7
2019	103.3	103.2	103.3	99.9	103.1	102.2	102.2	101.2	103.2	103.7
2016 Q1	99.5	99.4	99.6	100.0	99.6†	100.3	99.5	100.4†	99.4	99.6
Q2	100.0	100.0	99.9	100.0	100.4	100.1	100.6	100.3	100.0	99.7
Q3	100.2	100.3	100.1	100.1	100.0	99.5	100.1†	99.6	100.4	100.3
Q4	100.3	100.3	100.5	100.0	99.9	100.1	99.8	99.8	100.2	100.4
2017 Q1	100.6	100.6	101.1	99.9	100.0	99.9	100.0	99.5	100.3	100.9
Q2	101.0	100.9	101.6	99.9	101.2	101.4†	101.2	100.9	100.6	101.3†
Q3	101.0	101.0	100.6	100.0	102.4	101.5	102.5	101.2	100.6	100.1
Q4	101.3	101.3	100.9	100.0	102.9	101.9	102.7	101.1	100.8†	100.6
2018 Q1	101.9	101.8	101.4	100.0	103.4	102.2	103.0	101.3	101.4	101.2
Q2	102.0	101.9	101.5	99.9	103.6	102.3	103.1	101.0	101.5	101.1
Q3	102.2	102.1	102.4	99.9	103.7	102.3	103.1	100.7	101.8	102.3
Q4	102.7	102.6	102.3	99.9	103.0	101.4	102.1	100.5	102.3	102.2
2019 Q1	103.0	102.8	103.4	99.8	102.7	103.7	101.9	102.7	102.7	103.2
Q2	103.4	103.3	103.4	99.9	103.2	102.4	102.3	101.4	103.3	103.7
Q3	103.2	103.1	103.4	99.9	103.4	102.3	102.3	101.5	103.1	103.8
Q4	103.8	103.7	103.2	100.0	103.2	100.3	102.3	99.3	103.8	104.0
Per cent change on quarter a year ago										
	DIW9	LNNO	LZVC		DJW8	DK3U	DJX3	DK44	DK2I	DK58
2016 Q1	1.3	1.0	1.4		−1.1	−0.5	−1.3	−0.6	1.2	1.6
Q2	2.0	1.8	1.8		0.1	−0.6	0.5	–	1.7	1.7
Q3	1.5	1.4	2.0		−0.3†	−0.3	–	−0.2	1.6	2.2
Q4	1.0	0.9	0.4		0.5	−1.5	0.1	−2.2	1.0	0.5
2017 Q1	1.2	1.1	1.5		0.4	−0.4	0.5	−0.9	0.9	1.3
Q2	1.0	0.9	1.8		0.8	1.3	0.5	0.6	0.6	1.5
Q3	0.8	0.7	0.6		2.4	2.0	2.4	1.7	0.2	−0.2
Q4	1.0	1.0	0.4		2.9	1.7	2.9	1.3	0.6	0.2
2018 Q1	1.2	1.3	0.3		3.4	2.3	3.1	1.9	1.1†	0.3†
Q2	1.0	1.0	−0.1		2.3	0.9	1.9	0.1	0.9	−0.2
Q3	1.1	1.1	1.8		1.3	0.8	0.6	−0.5	1.2	2.2
Q4	1.4	1.3	1.5		0.1	−0.5	−0.6†	−0.6†	1.5	1.6
2019 Q1	1.1	1.0	2.0		−0.7	1.5	−1.1	1.4	1.2	2.0
Q2	1.3	1.3	1.8		−0.4	0.1	−0.7	0.4	1.7	2.6
Q3	1.0	1.0	1.0		−0.3	–†	−0.7	0.8	1.3	1.5
Q4	1.0	1.1	0.8		0.2	−1.1	0.2	−1.2	1.4	1.7
Per cent change on previous quarter										
	DIW8	TXAJ	TXBU		DJW7	DK3T	DJX2	DK3Y	DK2H	DK57
2016 Q1	0.1	–	−0.5		0.2	−1.3	−0.2	−1.6	0.1	−0.3
Q2	0.6	0.6	0.3		0.8	−0.2	1.1	−0.1†	0.6	0.1
Q3	0.2	0.3	0.2		−0.4†	−0.6†	−0.5†	−0.7	0.4	0.5
Q4	0.1	–	0.4		–	0.7	−0.3	0.2	−0.2†	0.1
2017 Q1	0.3	0.3	0.6		0.1	−0.2	0.2	−0.3	0.1	0.5
Q2	0.4	0.4	0.5		1.2	1.4	1.2	1.4	0.3	0.3
Q3	–	–	−1.0		1.2	0.1	1.3	0.3	–	−1.2†
Q4	0.3	0.3	0.2		0.4	0.4	0.2	−0.1	0.3	0.5
2018 Q1	0.6	0.6	0.5		0.5	0.3	0.4	0.2	0.6	0.6
Q2	0.1	0.1	0.2		0.2	0.1	–	−0.3	0.1	−0.1
Q3	0.1	0.2	0.9		0.1	–	0.1	−0.3	0.3	1.1
Q4	0.5	0.5	−0.1		−0.7	−0.8	−1.0	−0.2	0.5	–
2019 Q1	0.3	0.3	1.1		−0.3	2.3	−0.2	2.2	0.4	0.9
Q2	0.3	0.4	–		0.5	−1.3	0.4	−1.3	0.6	0.5
Q3	−0.2	−0.2	–		0.2	−0.1	–	0.2	−0.2	0.1
Q4	0.6	0.6	−0.2		−0.1	−2.0	−0.1	−2.2	0.6	0.2

† indicates that estimates are new or have been revised. The period marked
is the earliest in the table to have been revised.

R1 REVISIONS ANALYSIS
Revisions since previously published estimates

Whole economy

	Output per worker		Output per job		Output per hour worked	
	Per cent change on quarter a year ago	Per cent change on previous quarter	Per cent change on quarter a year ago	Per cent change on previous quarter	Per cent change on quarter a year ago	Per cent change on previous quarter
	A4YN	A4YO	LNNP	DMWR	LZVD	TXBB
2015 Q3	–	–	–	–	–	–
Q4	–	–	–	–	–	–
2016 Q1	–	–	–	–	–	–
Q2	–	–	–	–	–	–
Q3	–	–	–	–	–	–
Q4	–	–	–	–	–	–
2017 Q1	–	–	–	–	–	–
Q2	–	–	–	–	–	–
Q3	–	–	–	–	–	–
Q4	–	–	–	–	–	–
2018 Q1	–	–	–	–	–	–
Q2	–	–	–	–	–	–
Q3	–	–	–	–	–	–
Q4	–	–	–	–	–	–
2019 Q1	0.1	0.1	0.1	0.1	0.1	–
Q2	0.1	–	0.1	–	0.1	0.1
Q3	0.2	0.1	0.2	0.1	0.2	0.1

Manufacturing

	Output per job		Output per hour worked	
	Per cent change on quarter a year ago	Per cent change on previous quarter	Per cent change on quarter a year ago	Per cent change on previous quarter
	DJ4R	DJ4Q	DJK8	DJK7
2015 Q3	–	–0.1	–0.1	–0.1
Q4	–	0.1	–	–
2016 Q1	–	0.1	–	–
Q2	–	–	0.1	0.1
Q3	–	–0.1	–	–
Q4	–	–	–	–0.1
2017 Q1	–	–	–	–
Q2	–	0.1	0.1	0.1
Q3	–	–0.1	–	–0.1
Q4	–	0.1	–	–
2018 Q1	–	–	–	–
Q2	–	–	–	0.1
Q3	–	–0.2	0.1	–0.1
Q4	–	0.1	–0.1	–0.2
2019 Q1	–0.6	–0.7	–0.6	–0.5
Q2	–1.0	–0.4	–1.1	–0.2
Q3	–1.4	–0.5	–1.4	–0.4

Services

	Output per job		Output per hour worked	
	Per cent change on quarter a year ago	Per cent change on previous quarter	Per cent change on quarter a year ago	Per cent change on previous quarter
	DJE5	DJE4	DJQ3	DJQ2
2015 Q3	–	–	–	–
Q4	–	–	–	–
2016 Q1	–	–	–	–
Q2	–	–	–	–
Q3	–0.1	–	–	–
Q4	0.1	–	–	–
2017 Q1	–	–	–	–
Q2	–	–	–	–0.1
Q3	–	–	–	–
Q4	–	–	–	–
2018 Q1	–	–	–	–
Q2	–	–	–	–0.1
Q3	–	–	–	–
Q4	–	–	–	–
2019 Q1	–	–0.1	–0.1	–
Q2	–	–	–	–
Q3	0.1	0.1	0.1	0.2