

Statistical bulletin

UK index of services: June 2016

Monthly movements in gross value added for the service industries, which overall account for around 79% of UK gross domestic product (GDP).



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Release date:
26 August 2016

Next release:
30 September 2016

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1. Main points

The reporting period for this release covers the calendar month of June 2016, and therefore includes data for a short period after the EU referendum. There is very little anecdotal evidence at present to suggest that the referendum has had an impact on services output.

The Index of Services was estimated to have increased by 2.4% in June 2016 compared with June 2015. All of the 4 main components of the services industries increased in the most recent month compared with the same month a year ago.

The largest contribution to total growth came from business services and finance, which contributed 1.1 percentage points.

The latest Index of Services estimates show that output increased by 0.2% between May 2016 and June 2016. This follows flat growth of 0.0% between April 2016 and May 2016.

The Index of Services increased by 0.5% in Quarter 2 (Apr to June) 2016 compared with Quarter 1 (Jan to Mar) 2016. This figure was unrevised from the estimate used in the gross domestic product (GDP) preliminary estimate, published on 27 July 2016. This figure is consistent with the Second Estimate of GDP, published on 26 August 2016.

In this release of data, the earliest period open to revision is April 2016.

2. Understanding the Index of Services (IoS)

About the IoS

The monthly IoS provides a timely indicator of growth in the output of the services industries. The IoS is an important economic indicator and shares exactly the same industry coverage as the corresponding [quarterly series within UK gross domestic product \(GDP\)](#). The primary purpose of the IoS is to produce a short-term measure of the output of the services industries within the UK economy and show the monthly movements in the gross value added (GVA) of the services industries ([2007 Standard Industrial Classification](#) (SIC 2007) sections G to T).

The 4 main components of the services industries are:

- distribution, hotels and restaurants
- transport, storage and communication
- business services and finance
- government and other services

The IoS is the largest contributor to the output approach to the measurement of GDP, accounting for 78.8% of UK GDP in 2013.

All data in this bulletin are seasonally adjusted estimates and have had the effect of price changes removed (in other words, the data are deflated). Further information on some of the main concepts (including seasonal adjustment and deflation) underlying the estimates can be found in background note 11.

The quality of the IoS

The IoS is published around 8 weeks after the end of the reference month. There is no simple way of measuring the accuracy of the IoS, that is, the extent to which the estimate measures the underlying “true” value of the output growth (of the services industries) in the UK for a particular period. All estimates, by definition, are subject to statistical uncertainty and the Office for National Statistics (ONS) measure and publish the sampling error associated with the estimate for many well-established statistics, using this as an indicator of accuracy. However, as IoS is constructed from a wide variety of data sources, some of which are not based on random samples, we don't publish a measure of the sampling error associated with it.

Reliability is one dimension of measuring accuracy, using evidence from analyses of revisions to assess the closeness of early estimates to subsequent estimated values. Revisions are an inevitable consequence of the trade-off between timeliness and accuracy. Figures for the most recent months are provisional and subject to revision in light of:

- late responses to surveys and administrative sources
- forecasts being replaced by actual data
- revisions to seasonal adjustment factors, which are re-estimated every month and reviewed annually

Monthly revisions to the IoS are typically small (around 0.1 to 0.2 percentage points), with the frequency of upward and downward revisions broadly equal. More information on the most recent revisions analysis can be found in the component analysis section and in background note 15.

Care should be taken when using the month-on-month growth rates, due to their volatility (background note 10).

Further information on the quality of the IoS is available in the Quality of the IoS report, available to download from the [Index of Services methodology](#) page on our website. It should be noted that as part of the IoS [industry review process](#), we are continually working on methodological changes to improve the accuracy of the IoS.

3. Main information

Table 1: Index of Services main information, June 2016

UK	Percentage change				
	Index number (2013=100)	Most recent month on a year earlier	Most recent 3 months on a year earlier	Most recent month on previous month	Most recent 3 months on previous 3 months
Index of services	108.4	2.4	2.7	0.2	0.5

Source: Office for National Statistics

The Index of Services (IoS) measures the quantity of output from all UK services industries, which account for more than three-quarters of the output approach to the measurement of GDP. Index values are currently referenced to 2013 so that the average for 2013 is equal to 100. Therefore, an index value of 110 would indicate that output is 10% higher than the average for 2013.

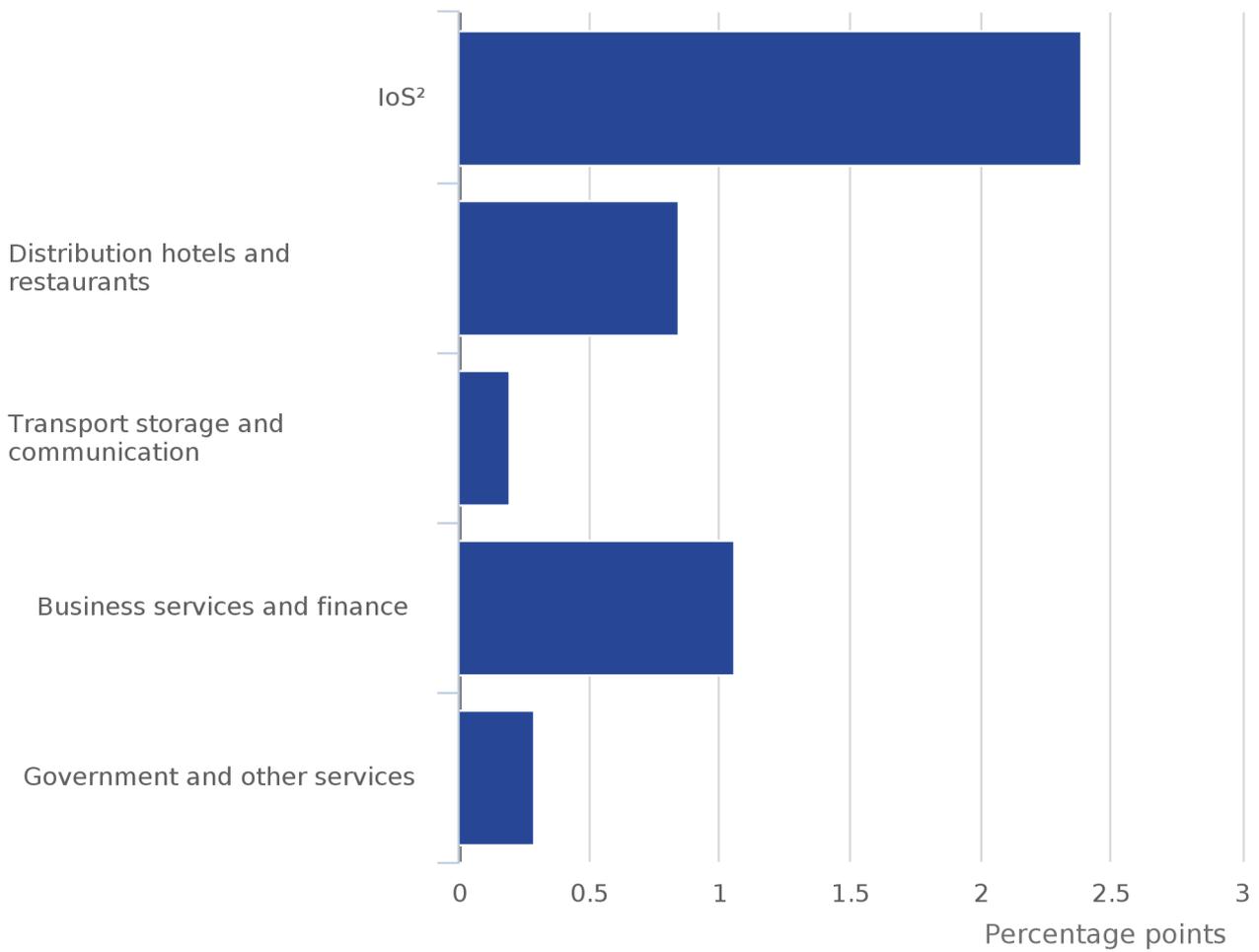
As seen in Figure 1, the IoS increased by 2.4% in June 2016 compared with June 2015. In order of their contribution to growth (listed in Table IOS1 in the [Index of Services - publication tables dataset](#)):

- business services and finance increased by 2.6%
- distribution, hotels and restaurants increased by 4.7%
- government and other services increased by 1.0%
- transport, storage and communication increased by 1.5%

Further detail on these movements can be found in the component analysis section.

Figure 1: Index of Services contributions¹ to the month-on-month a year ago percentage change, June 2016

UK



Source: Office for National Statistics

Notes:

1. Individual contributions may not sum to the total due to rounding.
2. Percentage change.

Between May 2016 and June 2016, as seen in Figure 2, IoS output increased by 0.2%.

Out of the 4 main components of the services industries, 3 increased in the most recent month compared with the previous month. In order of their contribution to growth (listed in Table IOS1 in the [Index of Services - publication tables dataset](#)):

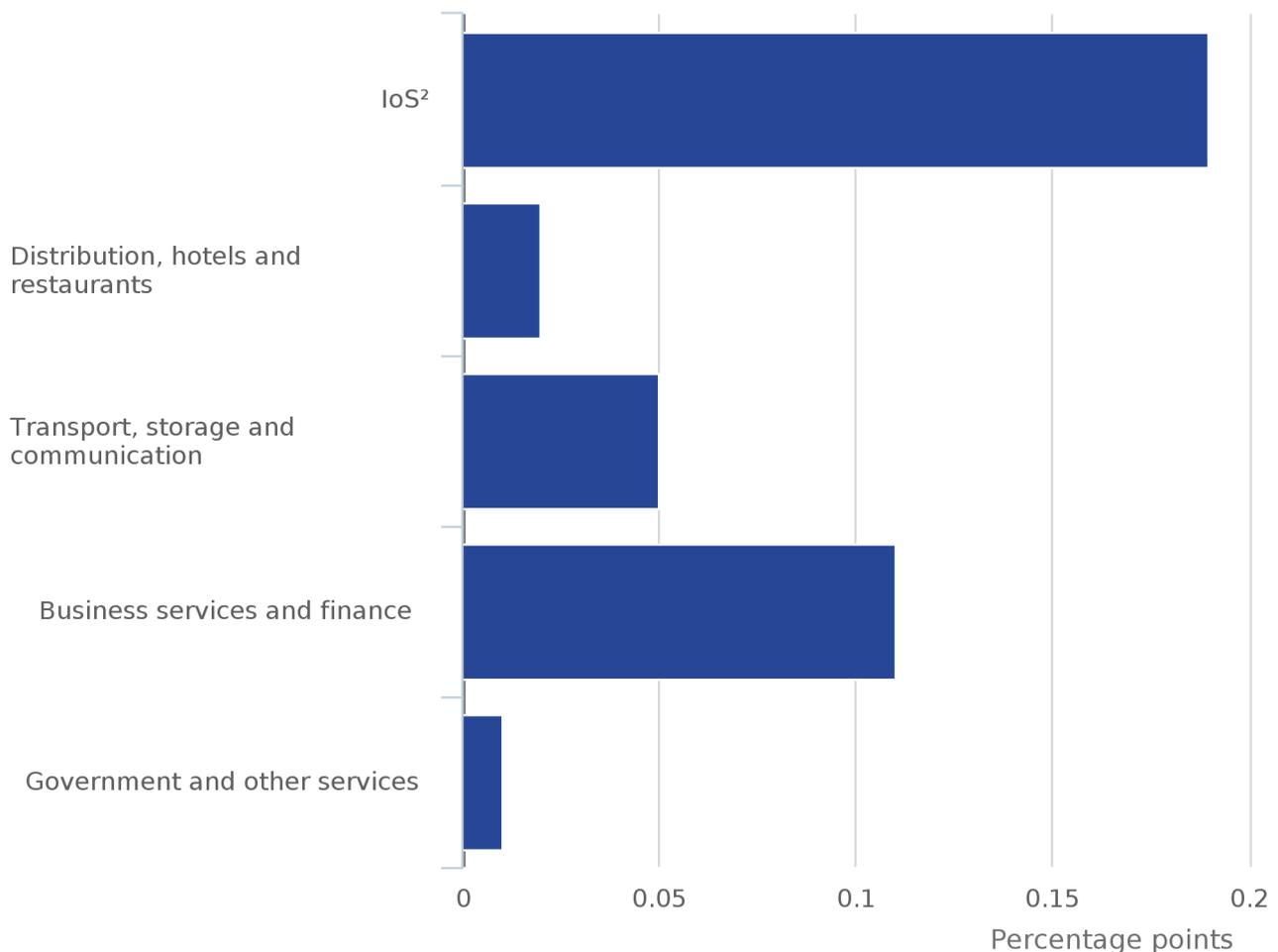
- business services and finance increased by 0.3%
- transport, storage and communication increased by 0.3%
- distribution, hotels and restaurants increased by 0.1%

Output of the government and other services industries was flat (0.0%).

More detail on individual components can be found in the [Index of Services - publication tables dataset](#). The tables also provide information on the growth for the 3 months ending June 2016 compared with the previous 3 months and compared with the 3 months ending June 2015.

Figure 2: Index of Services contributions¹ to the month-on-month percentage change, June 2016

UK



Source: Office for National Statistics

Notes:

1. Individual contributions may not sum to the total due to rounding.
2. Percentage change.

4. Economic background

Total services grew by 2.7% between Quarter 2 (Apr to June) 2015 and Quarter 2 2016 and by 0.5% between Quarter 1 (Jan to Mar) 2016 and Quarter 2 2016. This compares with growth rates of 2.2% and 0.6% respectively for the economy as a whole.

Since 1997, the services industries as a whole have grown at a faster rate than all other headline industries. While gross domestic product (GDP) has grown at a compound average growth rate (further information on compound average growth can be found in background note 11) of 2.0% each year from 1998 to 2015, services have grown at a compound average growth rate of 2.6% each year. More information can be found in [Second Estimate of GDP: Quarter 2 \(Apr to June\) 2016](#). This has led to a continuing re-orientation of the economy towards services, despite productivity in the services industries as a whole rising more slowly than in the production industries (and manufacturing in particular) since 1997 (more information can be found in [Labour Productivity: Jan to Mar 2016](#)). The higher output growth therefore reflects the increasing share of the labour force employed in services, which grew from 73% to 80% between 1997 and 2015 ([UK Labour Market: August 2016](#)).

In addition to strong long-run growth, the services industries as a whole were also less affected by the downturn (between 2008 and 2009) than other headline industries, such as production and construction. Following the downturn, the relatively strong growth in the services industries has provided the largest contribution to the recovery and has been the only major headline industry grouping to have surpassed its pre-downturn peak levels (more information can be found in [Second Estimate of GDP: Quarter 2 \(Apr to June\) 2016](#)).

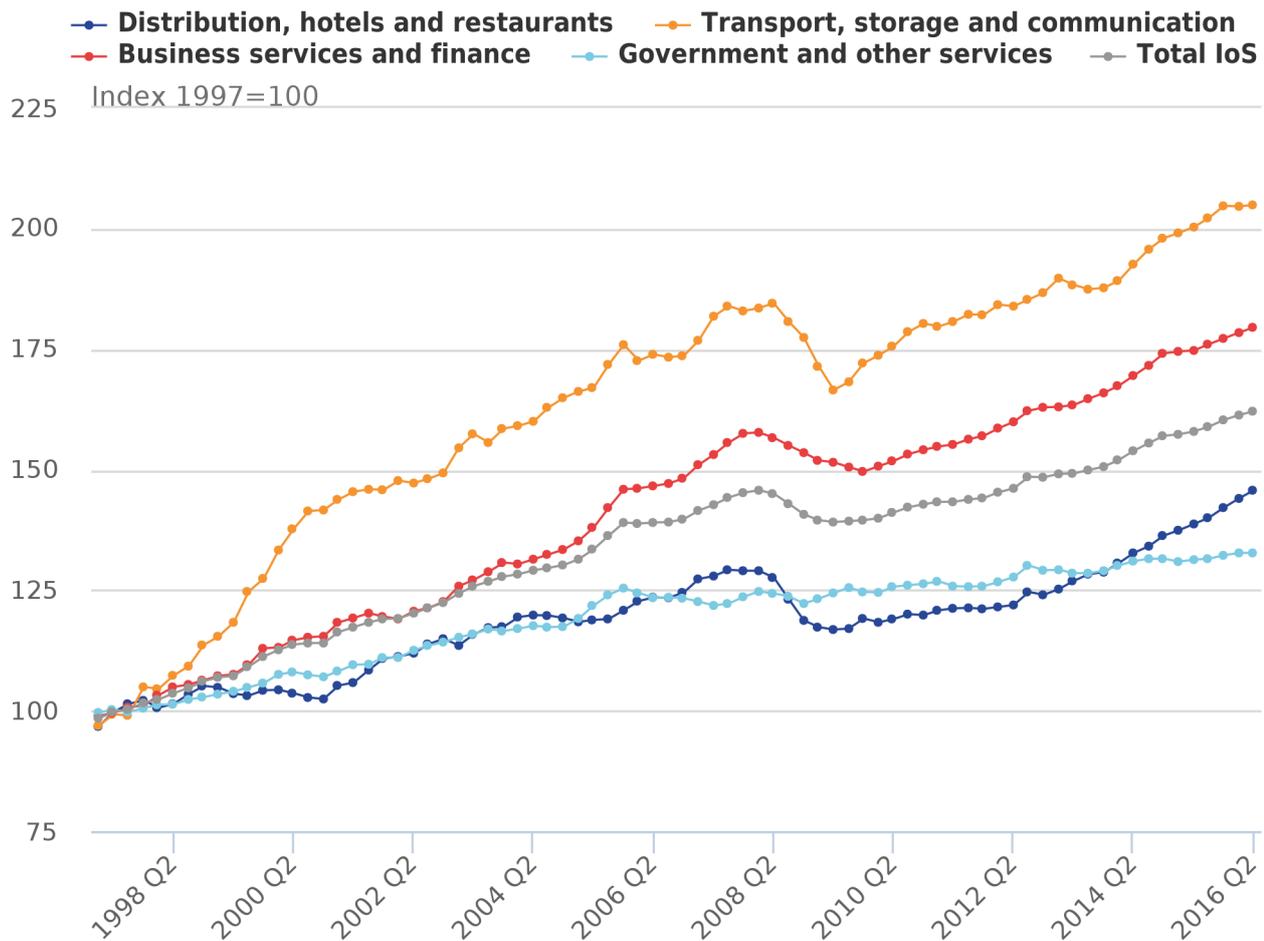
Even though the services industries as a whole have been performing better than all other headline industries, the growth within the services' sub-components has been quite varied. Figure 3 shows that from 1998 to 2015, transport, storage and communication, and business services and finance grew faster than the services industries as a whole, at compound average growth rates of 4.0% and 3.2% each year respectively. Meanwhile, services grew at a compound average growth rate of 2.6% each year over the same period. However, government and other services, and distribution, hotels and restaurants grew at slower rates than the services industries as a whole (at compound average growth rates of 1.5% and 1.9% each year respectively) from 1998 to 2015.

The economy's downturn, Quarter 1 2008 to Quarter 2 2009, affected the 4 sub-components of the services industries to different degrees. Distribution, hotels and restaurants, and transport, storage and communication were affected the most, with their output falling by 9.4% and 9.3% respectively, while the output of the services industries as a whole contracted by 4.6% over the same period. Business services and finance, and government and other services were impacted less severely, with their output contracting by 3.9% and 0.3% respectively.

Business services and finance experienced a strong recovery following the economy's downturn and in Quarter 2 2016 output was 13.9% above pre-downturn levels. The recoveries of transport, storage and communication, and distribution, hotels and restaurants were also strong and in Quarter 2 2016 output was 11.7% and 12.9% above their respective levels in Quarter 1 2008. However, the recovery of the government and other services industries was more modest and in Quarter 2 2016 output was 6.4% above its Quarter 1 2008 value.

Figure 3: Index of Services and sub-components, Quarter 1 (Jan to Mar) 1997 to Quarter 2 (Apr to June) 2016

UK



Source: Office for National Statistics

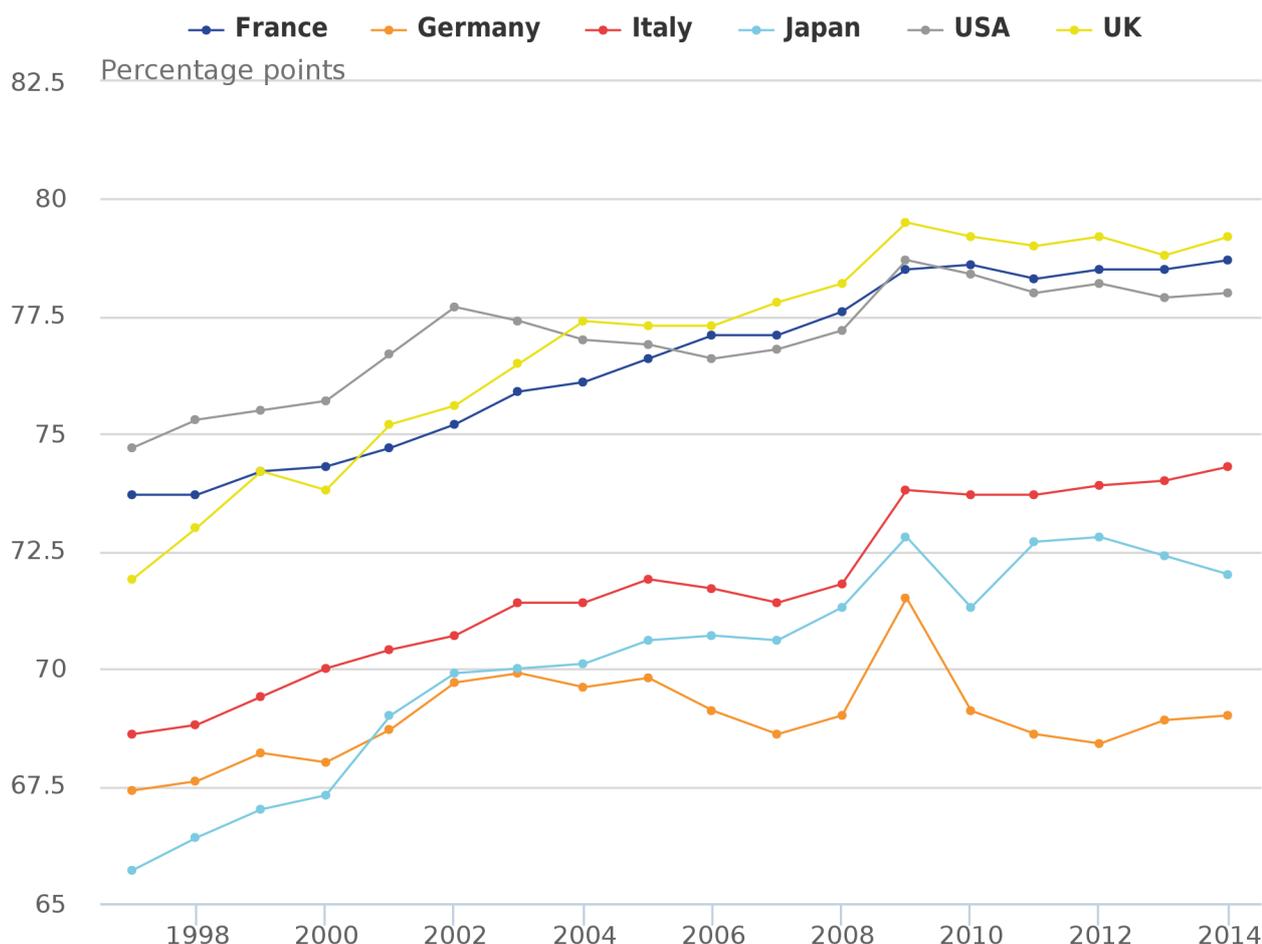
Notes:

1. Q1 refers to Quarter 1 (Jan to Mar); Q2 refers to Quarter 2 (Apr to June); Q3 refers to Quarter 3 (July to Sept); and Q4 refers to Quarter 4 (Oct to Dec).

Figure 4 shows the share of nominal (unadjusted for the effect of price changes) gross value added (GVA) accounted for by services in the UK and a selection of other major economies. More information on data for France, Germany, Italy, Japan and the USA can be found on the [Organisation for Economic Co-operation and Development \(OECD\)](http://www.oecd.org) website. In 1997, the share of nominal GVA accounted for by services in the UK was just under 72%, in the top half of the range relative to the other economies shown. By 2014, the UK had become relatively more reliant on services, as its share rose to over 79% of nominal GVA.

Figure 4: Services as a percentage of nominal gross value added (GVA) in the UK and comparable economies¹ to the UK

1997 to 2014



Source: Office for National Statistics, Organisation for Economic Co-operation and Development (OECD)

Notes:

1. OECD data correct at 16 August 2016.

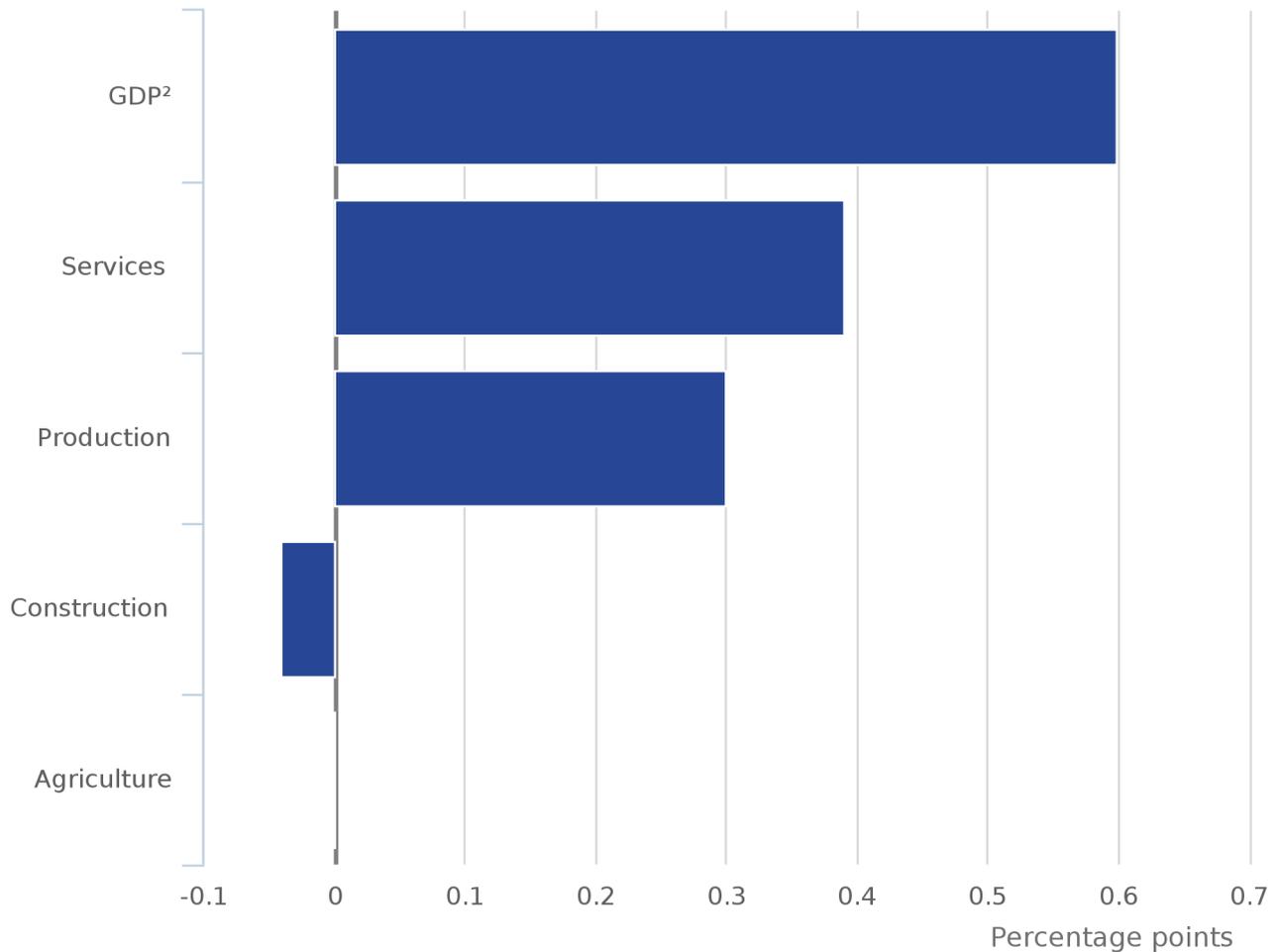
5. GDP impact and components

With a weight of 78.8%, the services industries are the largest industrial grouping in the output approach to measuring gross domestic product (GDP). The releases for the short-term economic indicators that feed directly into the output approach to measuring GDP include a table detailing growth in the 4 main industrial groupings (Table 2). This will aid understanding of the relationship between the individual short-term releases and GDP output.

In Quarter 2 (Apr to June) 2016, GDP was estimated to have increased by 0.6% compared with the previous quarter. The contribution an industry grouping makes to the GDP quarterly growth is dependent on the quarterly change in that industry grouping and its weight within the output approach to measuring GDP.

Figure 5: GDP contribution¹ to the quarter-on-quarter percentage change, Quarter 2 (Apr to June) 2016

UK



Source: Office for National Statistics

Notes:

- Contributions are to output gross value added and therefore may not sum to the percentage change in GDP. More information on the difference between the 2 measures can be found in the Short Guide to National Accounts.
- Percentage change to 1 decimal place.

Monthly estimates are produced for each industrial grouping except agriculture. The latest estimates for [production](#), [construction](#) and [retail sales](#) were published on 9 August 2016, 12 August 2016 and 18 August 2016 respectively. However, due to timing of the availability of the retail sales data, this release presents data as at 21 July 2016. The [Second Estimate of GDP](#) for Quarter 2 (Apr to June) 2016 was published on 26 August 2016 alongside this bulletin.

Table 2: GDP output component tables, Quarter 2 (Apr to June) 2016, chained volume measure, seasonally adjusted

UK				Percentage change	
Publication	% of GDP	Release date	Period of GDP	Most recent quarter on a year earlier	Most recent quarter on previous quarter
Index of Production	14.6	09 Aug	Q2 ¹	1.8	2.1

			Q1 ²	0.3	-0.2
Construction output	5.9	12 Aug	Q2	-1.4	-0.7
			Q1	0.2	-0.3
Index of Services	78.8	26 Aug	Q2	2.7	0.5
			Q1	2.5	0.6
Retail Sales ³		21 July	Q2	4.9	1.6
			Q1	4.1	1.2
Agriculture	0.7		Q2	0.4	-0.3
			Q1	1.4	0.0

Source: Office for National Statistics

Notes:

1. Q2 is Quarter 2 (Apr to June)
2. Q1 is Quarter 1 (Jan to Mar)
3. Data are presented as at 21 July 2016 due to timing of the availability of data
4. Individual weights may not sum to the total due to rounding

6. Component analysis

Table 3: Growth rates and contributions¹ to the Index of Services, June 2016

UK					Percentage change	
Description	% of Services	Month on a year earlier (%)	Contribution to services (% points)	Month on month growth (%)	Contribution to services (% points)	
Total services industries	100	2.4	2.4	0.2	0.2	
Distribution, hotels and restaurants	17	4.7	0.8	0.1	0.0	
Transport, storage and communication	13	1.5	0.2	0.3	0.0	
Business services and finance	40	2.6	1.1	0.3	0.1	
Government and other services	29	1.0	0.3	0.0	0.0	

Source: Office for National Statistics

Notes:

1. Individual contributions and weights may not sum to the total due to rounding.

Distribution, hotels and restaurants

The index of distribution, hotels and restaurants increased by 4.7% in June 2016 compared with June 2015; this follows an increase of 5.4% in May 2016 compared with the same month a year earlier. The main contributors to the increase were: retail trade except of motor vehicles and motorcycles, which increased by 4.4%, and wholesale and retail trade and repair of motor vehicles and motorcycles, which increased by 8.9%.

Transport, storage and communication

The index of transport, storage and communication increased by 1.5% in June 2016 compared with June 2015; this follows an increase of 2.2% in May 2016 compared with the same month a year earlier. The main contributor to the increase was: computer programming, consultancy and related activities, which increased by 9.5%.

Business services and finance

The index of business services and finance increased by 2.6% in June 2016 compared with June 2015; this follows an increase of 2.8% in May 2016 compared with the same month a year earlier. The main contributors to the increase were: other professional service activities, which increased by 3.7%, and administrative and support services activities, which increased by 3.7%.

Government and other services

The index of government and other services increased by 1.0% in June 2016 compared with June 2015; this follows an increase of 1.1% in May 2016 compared with the same month a year earlier. The main contributor to the increase was: human health and social work activities, which increased by 2.6%.

Revisions

The Index of Services (IoS) follows the [National Accounts revisions policy](#). Revisions are caused by a number of factors including, but not limited to:

- revisions to source data due to late responses
- actual data replacing forecast data
- revisions to seasonal factors that are re-estimated every period

More information on IoS revisions is available on the [Index of Services methodology](#) page.

We produce revisions triangles of services growth to provide users with an indication of the reliability of this main indicator. Statistical tests are performed on the average revision to test if it is statistically significantly different from 0. Further information can be found in background note 15.

In this release of data, the earliest period open to revision is April 2016. The growth rate for April 2016 compared with April 2015 (2.9%) was unrevised. The month-on-month growth rate for April 2016 compared with March 2016 (0.6%) was also unrevised. The growth rate for May 2016 compared with May 2015 (2.7%) was unrevised. The month-on-month growth rate for May 2016 compared with April 2016 was revised up 0.1 percentage points from negative 0.1% to 0.0%. The largest contributor to the revision was business services and finance.

Further details on the revisions to the IoS components can be found in the RIOS1 tables in the [Index of Services - publication tables dataset](#).

7. Industry spotlight: Creative, arts and entertainment activities

According to the UK Standard Industrial Classification 2007 (SIC 2007), creative, arts and entertainment activities (industry 90) include activities such as performing arts, artistic creation and the operation of arts facilities.

In 2015, this industry generated £5.6 billion of output gross value added (GVA) in current prices, which represented 24.3% of GVA in the arts, entertainment and recreation section (section R). The share of total output attributed to this industry increased slightly between 1997 and 2015, from 0.2% to 0.3%, suggesting that the industry grew slightly faster than the rest of the economy ([Second estimate of GDP: Quarter 2 \(Apr to June\) 2016](#)).

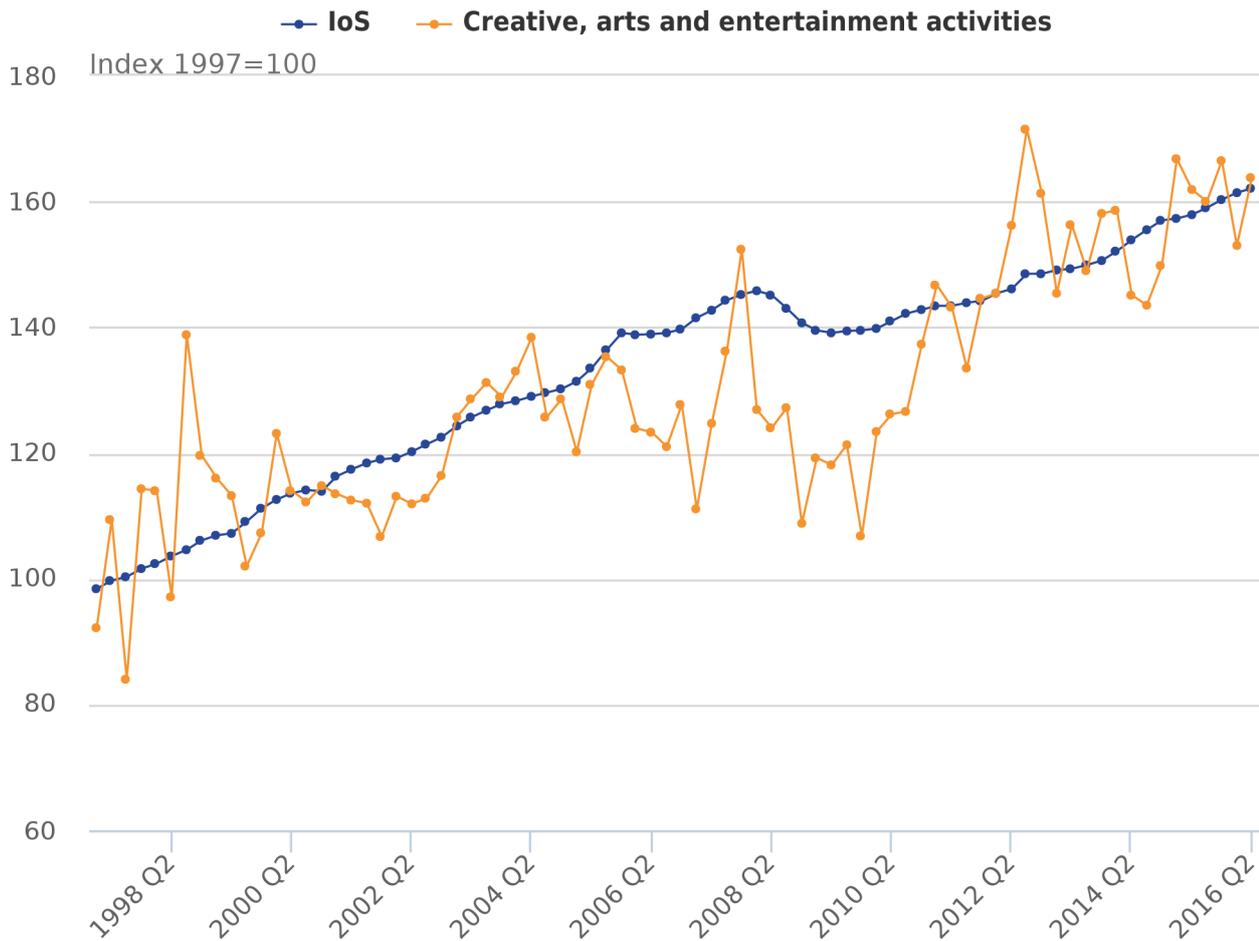
Figure 6 shows that – aside from during the economic downturn – the performances of creative, arts and entertainment activities and total services have tracked each other broadly over time, but creative, arts and entertainment activities has experienced much greater volatility. From Quarter 2 1997 to Quarter 1 (Jan to Mar) 2008, the industry grew at a compound average growth rate of 0.7% per quarter, compared with 0.9% for services as a whole (further information on compound average growth can be found in background note 11).

During the economy's downturn between Quarter 1 2008 and Quarter 2 2009, the output of the services industries contracted by 4.6%. Creative, arts and entertainment activities experienced a much larger decline over a slightly longer period, contracting by 29.9% between Quarter 4 (Oct to Dec) 2007 and Quarter 4 2009.

Since Quarter 2 2009, creative, arts and entertainment activities recovered from its steep decline, growing at a compound average growth rate of 1.2% each quarter. Services also returned to strong and consistent growth, growing at a compound average growth rate of 0.5% each quarter. By Quarter 2 2016, creative, arts and entertainment activities was 7.4% above its pre-downturn peak value (in Quarter 4 2007), while the services industry as a whole was 11.2% above its value in Quarter 1 2008.

Figure 6: Index of Services and creative, arts and entertainment activities

UK, 1997 to 2016



Source: Office for National Statistics

Notes:

1. Q1 refers to Quarter 1 (Jan to Mar); Q2 refers to Quarter 2 (Apr to June); Q3 refers to Quarter 3 (July to Sept); and Q4 refers to Quarter 4 (Oct to Dec).

In the post-downturn period (between 2010 and 2015), the volume of creative, arts and entertainment activities grew by 27.6%, roughly comparable to the 26.6% increase in the number of employee jobs in the industry over the same period. Over the same period, the number of employee jobs worked by men increased by 24.2%, while the number of employee jobs worked by women increased by 29.7%. Within the industry, a slightly larger proportion of both male and female employees worked part-time (31.4% of men and 56.3% of women) compared to the services industry as a whole (21.4% of men and 48.8% of women) ([UK Labour Market: August 2016](#)).

8. Quality and methodology

Some general information on the quality of the Index of Services (IoS) can be found in the [Understanding the Index of Services](#) section in the main part of this statistical bulletin.

The [Index of Services Quality and Methodology Information document](#) contains important information on:

- the strengths and limitations of the data

- the quality of the output, including the accuracy of the data and how it compares with related data
- uses and users
- how the output was created

Further quality and methodology information, including details of the quality adjustments process for IoS, was published on 31 October 2014 and can be found on the [Index of Services methods](#) page on our website.

9. Background notes

1. What's new

The [GDP Improvement report](#), published on 1 July 2016, provided a detailed update of the implementation of improvements for Blue Book 2016, progress on industry reviews and wider cross-cutting improvements and a comprehensive timetable for the industry review project.

2. Continuous improvement of GDP

To reflect the improvements seen in the [GDP Improvement report](#), along with updated weights, the [GDP \(O\) source catalogue](#) (Excel file download) has been updated and was released alongside [The Blue Book 2016 publication](#) on 29 July 2016.

The industry review programme reviews the concepts, methods and data sources underpinning the short-term indicators that support the IoS bulletin. The 2 latest reviews were published on 23 March 2016 and covered the [water transport industry](#) and the [postal and courier activities industry](#). The recommendations of these reports are included in this release of data.

3. Experimental Statistics

The Index of Services (IoS) achieved [National Statistics](#) status in 2007. This was due, at least in part, to a series of industry reviews which underpinned short-term estimates. However, a number of low-level industries remained Experimental Statistics when the programme of industry reviews paused in 2008 to focus on the transition to Standard Industrial Classification 2007 (SIC2007), improved deflator methodology, and the implementation of a new IT platform.

In 2011, IoS moved to SIC2007 and a reappraisal of the experimental industries was made using detailed comments from methodologists who quality assured the progress of IoS towards the National Statistics label. A review was published in August 2012 and outlined the 17 industries which remained experimental. A [review](#) of the 17 industries has taken place by experts against the Code of Practice for Official Statistics and, in noting the original comments, we are clear that the issues and requirements have been addressed where appropriate. Further details can be found in the latest [GDP output improvement report](#). Agreement has been given by the Director General for Economic Statistics to officially move these Experimental Statistics to Official Statistics.

4. VAT project update

An article entitled [VAT update July 2016](#) was published on 12 July 2016, the fifth in a series of articles.

There are 4 previous articles which have been published in this series:

[Feasibility study into the use of HMRC turnover data within Short-term Output Indicators and National Accounts](#), 14 August 2015.

[Exploitation of HMRC VAT data](#), 7 October 2015.

[HMRC VAT project update](#), 21 December 2015.

[HMRC VAT update](#), 4 April 2016

5. What do you think?

As a user of our statistics we welcome your feedback on this publication. If you would like to get in touch please contact us via email: ios.enquiries@ons.gsi.gov.uk.

6. Understanding the data

Short guide to the Index of Services

The Index of Services (IoS) shows the monthly movements in the gross value added (GVA) of the service industries ([2007 Standard Industrial Classification \(SIC 2007\)](#) sections G to T). These industries accounted for around 79% of gross domestic product (GDP) in 2013. The index is estimated using the same data sources and national accounts methodology as the quarterly estimate of services industries' GVA within the output approach to measuring GDP (GDP (O)). These consist of the distribution, hotels and restaurant industries (SIC 2007 sections G and I), transport, storage and communications (sections H and J), business services and finance (sections K to N), and government and other services (sections O to T).

7. International comparison

International comparison with the IoS is difficult, as most comparable economies don't produce equivalent estimates. [Eurostat turnover in services estimates](#) are not comparable with the IoS, as they exclude the wholesale and retail trade; furthermore, most of the estimates are only available quarterly. The [USA](#) also produces services output estimates, but only on a quarterly basis, with a 4-month lag time. [Japan](#) has a direct equivalent of the IoS, but the estimates are not seasonally adjusted. The closest equivalent estimates are from [Canada](#), which produces a monthly output estimate of GDP with a breakdown by industry (including an aggregate for services). There are also comparable quarterly estimates from [Sweden](#) and [Ireland](#).

8. Short guide to national accounts

The national accounts provide an integrated description of all economic activity within the economic territory of the UK, including activity involving both domestic units (that is, individuals and institutions resident in the UK) and external units (those resident in other countries). In addition to being comprehensive, the accounts are fully integrated and internally consistent. More information can be found in [UK national accounts - a short guide](#).

9. How our statistics explain the economy

The IoS is mentioned in [How ONS statistics explain the UK economy](#), which was released on our website on 27 June 2014, alongside [Quarterly National Accounts, Q1 \(Jan to Mar\) 2014](#).

10. Interpreting the data

Some monthly data are volatile. When looking at growth rates, the headline IoS figures focus on the percentage change between the most recent month-on-a-year earlier and the most recent 3 months-on-a-year earlier.

The monthly [Index of Services statistical bulletin](#) is usually published on the same days as the [Gross domestic product preliminary estimate statistical bulletin](#), the [Second estimate of GDP statistical bulletin](#) or the [Quarterly National Accounts statistical bulletin](#).

The data for the IoS in this statistical bulletin are generally consistent with the [Second Estimate of GDP: Quarter 2 \(Apr to June\) 2016](#), published on 26 August 2016. However, rounding can sometimes cause differences between the 3-monthly growth rates presented in this release, compared with the quarterly growth rates presented in the quarterly national accounts. Data for the retail industry are broadly comparable with [Retail sales in Great Britain: June 2016](#), published on 21 July 2016, but as the 2 series operate under different revisions policies, there can be timing differences in the updating of the 2 series. Also, adjustments to the data within the IoS release are sometimes made at the time of the Blue Book to improve the coherence of the 3 approaches to measuring GDP. Therefore, inconsistencies between the 2 series are not unusual but tend to be small. There are also conceptual and coverage differences between retail sales and retail output which can lead to apparent inconsistencies.

11. Definitions and explanations

Definitions found within the main statistical bulletin are listed:

Index number

An index number is a number which indicates the change in magnitude relative to the magnitude at a specified point, the latter usually taken as 100. The Index of Services (IoS) is currently referenced to 2013 so that the average for 2013 is equal to 100. Therefore, an index value of 110 would indicate that output is 10% higher than the average for 2013.

Seasonal adjustment

The index numbers in this statistical bulletin are all seasonally adjusted. This aids interpretation by removing annually recurring fluctuations, for example, due to holidays or other regular seasonal patterns. Unadjusted data are also available.

Seasonal adjustment removes regular variation from a time series. Regular variation includes effects due to month lengths, different activity near particular events such as shopping activity before Christmas, and regular holidays such as the May bank holiday.

Some features of the calendar are not regular each year, but are predictable if we have enough data, for example, the number of certain days of the week in a month may have an effect, or the impact of the timing of Easter. As Easter changes between March and April, we can estimate its effect on time series and allocate it between March and April depending on where Easter falls. Estimates of the effect of the day of the week and Easter are used respectively to make trading day and Easter adjustments prior to seasonal adjustment.

X-13-ARIMA-SEATS is the current seasonal adjustment software used for the IoS.

Value (current price)

Economic transactions involve the production of goods and the sale of goods and services (commodities). The monetary value (or current price) of these transactions is a product of the quantity produced or sold and the unit price. In a particular period, the total (aggregate) value of all transactions taking place in the economy is simply the sum of the individual transaction values in that period. The current price is sometimes referred to as the “nominal” price.

Volume (constant price)

When it comes to comparing the difference in aggregate values between 2 time periods, the observed movement is generally a combination of changes in quantity and changes in price. In a lot of cases, the interest of users of economic data lies in understanding the degree to which economic growth is being driven by changes in quantities (that is, physical volumes of production and consumption). It is standard practice to present many economic statistics as volume series (showing changes in the level of the series that have not been affected by changes in price) and such series are referred to as “at constant prices” or “real” prices.

Deflation

The process of removing price changes from a value series and converting to a volume series is known as deflation. Where information on prices is not available, but value and volume data are, an implied deflator (or price) can be derived by dividing the first by the latter. All index numbers presented in this bulletin are volume measures and have had the effect of price changes removed unless otherwise stated.

Chained volume measures

The indices in this bulletin are presented as “chained volume” measures, meaning that successive volume estimates have been linked (or chained) together. Annual chain-linking was introduced in 2003 and is considered preferable to producing standard volume series, as chained volume measures more accurately reflect volume changes over time. More information on chain-linking can be found in the [Tuke and Reed \(2001\) Economic Trends](#) article, and a paper on chain-linking weights in the output approach to measuring GDP can be found on the [Methods and sources](#) page.

Compound average growth

Compound average growth is the rate at which a series would have increased or decreased if it had grown or fallen at a steady rate over a number of periods. This allows the composition of growth in the recent economic recovery to be compared to the long run average.

Gross domestic product (GDP)

The total value of production activity in the economic territory. It is the balancing item on the production account for the whole economy. Domestic product can be measured gross or net of consumption of fixed capital (or depreciation). It is presented in the accounts at market (or purchasers') prices. A further distinction is that it can be at current prices or chained volume measures.

12. Composition of the data

The IoS uses a wide variety of different data, from many sources, which are produced on either an annual, quarterly or monthly basis.

Some of the indicators are derived using current price turnover deflated by a suitable price index. This includes data from the monthly business survey (MBS), an ONS short-term survey on different parts of the economy. It is one of the main data sources used in the compilation of the IoS.

Other sources use direct volume measures that don't need to be deflated, such as Civil Aviation Authority data for air transport. Other proxies, such as employment numbers, are also used. This is the case with public sector employment and workforce jobs data.

Where monthly data are not available (for example, when data are delivered quarterly or annually), monthly estimates are derived by forecasting data. This is done using the X-13-ARIMA-SEATS forecasting method and interpolating a monthly path using a cubic spline.

An X-13-ARIMA-SEATS forecast is also used where actual data at industry level are not available for the latest period (a lower proportion of actual data are available for the latest month). When the forecast is replaced by actual data, this may lead to revisions to the published data.

The IoS adheres to the [Government Statistical Service disclosure control policy](#). More information can be found in the [Quality and Methodology Information \(QMI\)](#) report.

13. Response rates

Approximately 42% of the IoS estimates are based on data collected via our Monthly Business Survey (MBS). In addition, approximately 7% of the IoS estimates are collected via our Retail Sales Inquiry (RSI). The remainder is based on data received from other ONS sources and external data sources. The MBS and RSI response rates for data included in this publication are presented for the current month and the 3 months prior in Table 4. The response rates for the previous periods are updated to reflect the current level of response, incorporating data from late returns. There are 2 response rates included; the first is a percentage of the sampled turnover returned and the other is a percentage of the amount of questionnaire forms returned.

Table 4: Survey response rates, June 2016

UK	Response rates (%)			
	Mar 2016	Apr 2016	May 2016	June 2016
Monthly business survey (services)				
Turnover	96.6	96.0	94.9	87.5
Questionnaire	84.0	83.9	81.7	73.0
Retail sales inquiry				
Turnover	91.7	97.0	95.9	85.0

Source: Office for National Statistics

[Historical monthly business survey response rates](#) for the services industries as at the time of the relevant publication are also available back to 2010.

14. National accounts revisions policy

Main documentation explaining the national accounts [revisions policy](#) is available.

15. Revisions triangles

Standard Industrial Classification 2007 (SIC 2007) revisions triangles are contained in a zip folder. This folder can be found within the [data section of this bulletin](#).

Revisions to data provide an indication of the reliability of main indicators. A statistical test has been applied to the average revision to find out if it is statistically significantly different from 0. An average revision close to 0 is desirable as it suggests that revisions are not predictable in any 1 direction. An asterisk (*) indicates if the average revision has been found to be statistically significantly different from 0.

Table 5 presents a summary of the differences published between July 2010 and June 2015 and the estimates published 12 months later.

Table 5: Revisions between first publication and estimates 12 months later

UK			Percentage change
	Value in latest period	Average over the last 60 months	Average over the last 60 months without regard to sign (average absolute revision)
Index of Services 3 month on 3 month growth rate	0.5	-0.08*	0.16
Index of Services 1 month on 1 month growth rate	0.2	-0.03	0.14

Source: Office for National Statistics

Notes:

1. An asterisk (*) indicates if the average revision has been found to be statistically significantly different from 0.

16. Accessing data

The data presented in the tables of this statistical bulletin are also available to download from the [dataset section of this publication](#). A complete run of data is available as a [time series dataset](#) on our website.

17. Code of Practice for Official Statistics

[National Statistics](#) are produced to high professional standards set out in the [Code of Practice](#) for Official Statistics. They undergo regular quality assurance reviews to ensure that they meet your needs. They are produced free from any political interference.

The [UK Statistics Authority](#) has designated these statistics as National Statistics, in accordance with the [Statistics and Registration Service Act 2007](#) and signifying compliance with the [Code of Practice](#) for Official Statistics.