

Statistical bulletin

Index of Production, UK: June 2015

Movements in the volume of production for the UK production industries: manufacturing, mining and quarrying, energy supply, and water and waste management. Figures are seasonally adjusted.



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1 . Main points

- Total production output is estimated to have increased by 0.7% between Quarter 1 (Jan to Mar) 2015 and Quarter 2 (Apr to June) 2015. Manufacturing, the largest component of production, is estimated to have decreased by 0.3% between these periods
- The largest contribution to the quarterly growth came from mining & quarrying, which increased by 6.3%, the highest since Quarter 4 (Oct to Dec) 1993
- Total production output is estimated to have increased by 1.5% in June 2015 compared with June 2014. There were increases in 3 of its 4 main sectors, with the largest contribution coming from mining & quarrying, which increased by 6.3%
- Manufacturing output increased by 0.5% in June 2015 compared with June 2014. The largest contribution to the increase came from the manufacture of transport equipment, which increased by 7.2%
- Total production output is estimated to have decreased by 0.4% in June 2015 compared with May 2015. There were decreases in 2 of the 4 main sectors, with the largest contribution coming from mining & quarrying, which decreased by 3.8%
- Manufacturing output increased by 0.2% in June 2015 compared with May 2015. The largest contribution to the increase came from the manufacture of basic metals & metal products, which increased by 4.9%
- In the 3 months to June 2015, production and manufacturing were 9.2% and 4.8% respectively below their figures reached in the pre-downturn GDP peak in Quarter 1 (Jan to Mar) 2008
- The preliminary estimate of GDP, published on 28 July 2015, contained an estimated increase of 1.0% for production in Quarter 2 (Apr to June) 2015. This release of data estimates that production increased by 0.7% between Quarter 1 (Jan to Mar) 2015 and Quarter 2 (Apr to June) 2015. The impact on the previously published GDP estimate for Quarter 2 (Apr to June) 2015 is less than 0.1 percentage points

2 . Index of Production headline figures

This bulletin presents the monthly estimates of the Index of Production (IoP) for the United Kingdom production industries, June 2015. The IoP is one of the earliest indicators of growth and it measures output in the manufacturing (the largest component of production), mining & quarrying, energy supply and water supply & waste management industries. The production industries account for 14.6% of the [output approach to the measurement of gross domestic product](#).

IoP values are referenced to 2011 so that the average for 2011 is equal to 100. Therefore, an index value of 110 would indicate that output is 10% higher than the average for 2011. The index estimates are mainly based on a monthly business survey (MBS) of approximately 6,000 businesses, covering all the territory of the UK without geographical breakdown. The total IoP estimate and various breakdowns are widely used in private and public sector institutions. Care should be taken when using the month on month growth rates due to their volatility. All figures contained within this release are seasonally adjusted estimates, unless otherwise stated.

Table 1 shows the main figures for this release. Figure 1 shows the production and manufacturing series from March 2013 to June 2015. This release also presents the economic context to the IoP; GDP impact and components; a supplementary analysis to the IoP; industry spotlight; and a background notes section for an assessment of the quality of the IoP, as well as an explanation of the terms used in this bulletin.

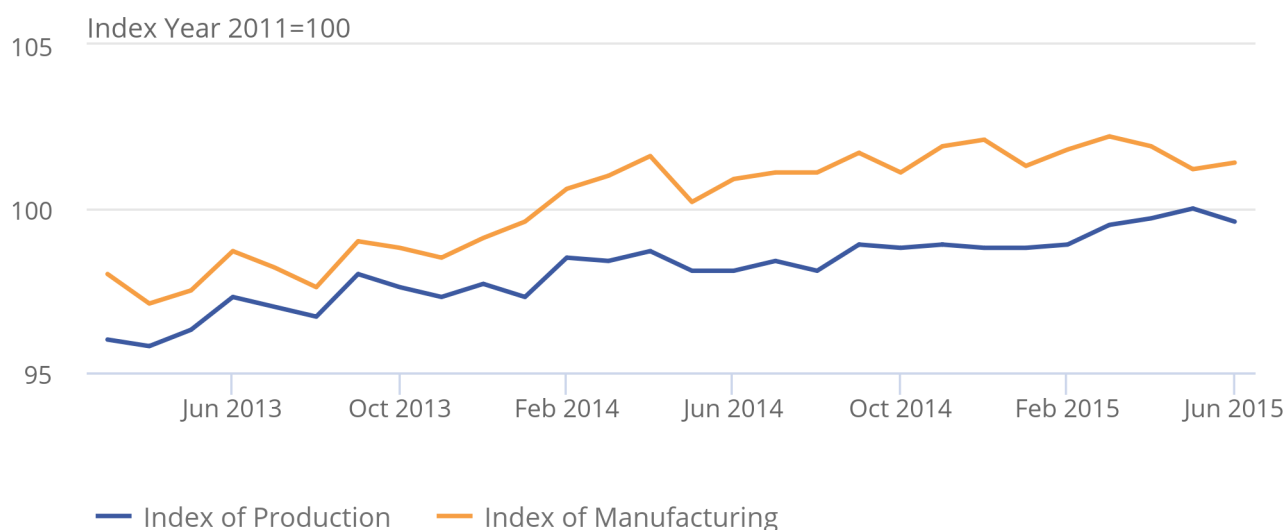
Table 1: Index of Production main figures, June 2015, UK

	Index number 2011=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
Production	99.6	1.5	1.5	-0.4	0.7
Manufacturing	101.4	0.5	0.6	0.2	-0.3

Source: Primarily Monthly Business Survey (Production and Services) - Office for National Statistics

Figure 1: Seasonally adjusted production and manufacturing, Mar 2013 to June 2015, UK

Figure 1: Seasonally adjusted production and manufacturing,
Mar 2013 to June 2015, UK



Source: Office for National Statistics

3 . Quality of the Index of Production

We have developed [guidelines for measuring statistical quality](#); these are based upon the 5 European Statistical System (ESS) quality dimensions. The IoP in its current form adheres to these requirements. One important dimension for measuring statistical quality is accuracy. That is, the extent to which the estimate measures the underlying "true" value of the output growth (of the production industries) in the UK for a particular period. Although the IoP meets its legal requirements for statistical accuracy, still as in all survey-based estimates, by definition, its estimates are subject to statistical uncertainty or errors. These errors consist of 2 main elements; the sampling error and the non-sampling error.

For many well-established statistics we measure and publish the sampling error associated with the estimate, using this as an indicator of accuracy. The IoP however, is constructed from a variety of data sources, some of which are not based on random samples. As a result, we currently do not publish a measure of the sampling error associated with the IoP underlying data, mainly the monthly business survey (MBS). However, research is currently under way to attempt to measure the standard error and the results of this will be published on completion.

Non-sampling errors are not easy to quantify but can be caused by coverage issues, measurement, processing and non-response. The response rate gives an indication of the likely impact of non-response error on the survey estimates. From January 2015, the MBS response rates for data included in the IoP publication were published in the background methods section of the statistical bulletin. This is to give further information of the percentages of the amount of turnover and questionnaire forms returned. We publish [MBS historical response rates back to 2010 \(34 Kb Excel sheet\)](#).

A further dimension of measuring accuracy is reliability, which can be measured 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

Revisions to the IoP are typically small (around 0.1 to 0.2 percentage points), with the frequency of upward and downward revisions broadly equal.

Further information on the most recent revisions analysis can be found in the revisions to IoP section and in the revision triangles section in the bulletin background note.

It should be noted that care should be taken when using the month-on-month growth rates, due to their volatility. Further information on the latest quality and methodology information (QMI) for the IoP can be found in the [QMI paper \(247.9 Kb Pdf\)](#). Furthermore, the IoP is constantly being reviewed and improved for accuracy and uncertainty as part of the GDP(O) improvement project; further details of improvements are published each year as part of a suite of Blue Book articles. A full list of the GDP(O) improvement project articles can be found on the [Improvements](#) page of our website.

4 . Economic context

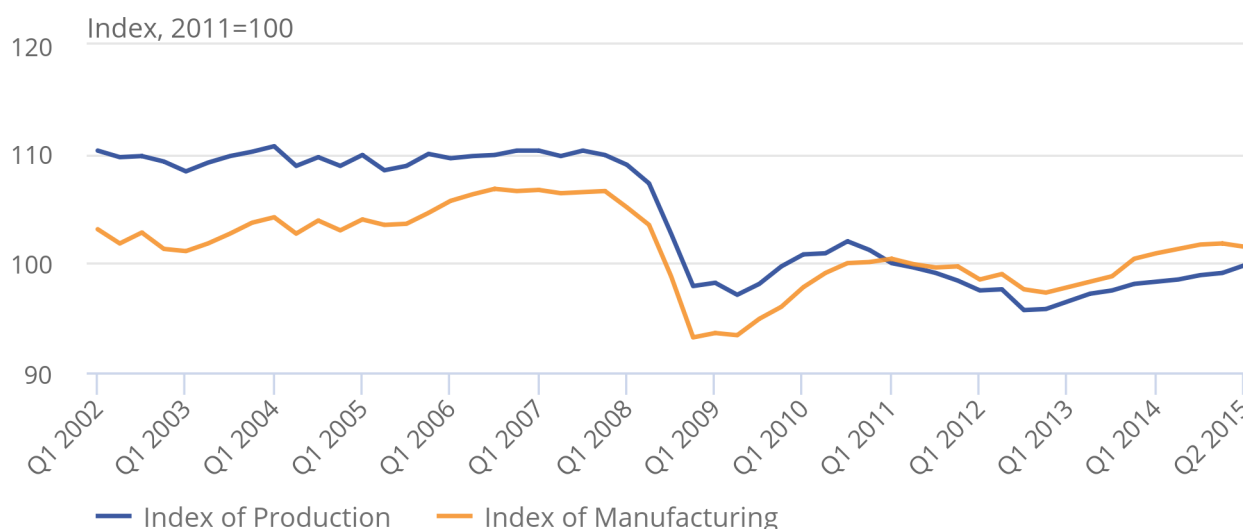
In April 2015 and May 2015 production output increased while manufacturing output contracted. In June 2015, these trends were reversed; production fell slightly while manufacturing output edged upwards, albeit to a lesser extent than the fall in the previous 2 months (for more information and analysis of the latest figures see the production and sectors supplementary analysis section of the bulletin).

Figure 2 shows that the UK manufacturing industry grew steadily between Quarter 1 (Jan to Mar) 2002 and Quarter 1 (Jan to Mar) 2008 at a compound growth rate of 0.1% per quarter. The economic downturn impacted the industry severely, with output contracting by 12.2% between the economy's peak Quarter 1 (Jan to Mar) 2008 and the economy's trough in Quarter 2 (Apr to June) 2009. Following the economic downturn in 2008 and 2009, manufacturing returned to growth for a short period, before falling again in 2011 and 2012. This coincided with falling gross domestic product (GDP) in the euro area.

Between Quarter 1 (Jan to Mar) 2014 and Quarter 1 (Jan to Mar) 2015 the production and manufacturing industries experienced steady growth. In Quarter 2 (Apr to Jun) 2015 production continued to grow while manufacturing contracted (for more information and analysis on the latest quarterly data see the production and sectors supplementary analysis section of the bulletin).

Figure 2: Quarterly seasonally adjusted production and manufacturing, Quarter 1 (Jan to Mar) 2002 to Quarter 2 (Apr to Jun) 2015, UK

Figure 2: Quarterly seasonally adjusted production and manufacturing, Quarter 1 (Jan to Mar) 2002 to Quarter 2 (Apr to Jun) 2015, UK



Source: Office for National Statistics

Notes:

1. Throughout this release Q1 refers to Quarter 1 (January to March), Q2 refers to Quarter 2 (April to June), Q3 refers to Quarter 3 (July to September) and Q4 refers to Quarter 4 (October to December)

Headline GDP surpassed its pre-downturn peak in Quarter 3 (July to Sep) 2013, but services (which account for over 78% of total GDP) remained the only headline industry grouping to have achieved this. Output in the production and manufacturing industries still remained below levels experienced just before the onset of the downturn (according to the [Gross Domestic Product Preliminary Estimate](#), Quarter 2 (Apr to Jun) 2015). This is consistent with the historical trend of services growing at a faster rate than production and manufacturing despite the fact that productivity in the production industries - manufacturing in particular - has, on average, grown at a faster rate than in the service industries since 1997 (more information can be found in [Labour Productivity, Quarter 1 \(Jan to Mar\) 2015](#)). The slower output growth and increased productivity, therefore, reflect the fall in [enter link description here](#) share of the labour force employed in manufacturing, which fell from 16.5% to 9.8% between 1997 and 2014 ([Labour Market Statistics, July 2015, reference table EMP13 \(154.5 Kb Excel sheet\)](#)).

Over the past year the manufacturing industry has experienced low price inflation, both in terms of the prices manufacturers pay for materials and fuels used in the production process (input prices) and the prices they charge for the goods they produce (output prices). Input prices paid by UK manufacturers fell by 12.6% in the year to June 2015, down from a fall of 12.3% in the year to May 2015. Output prices have also experienced deflation, falling by 1.5% on an annual basis, with crude oil impacting input prices. This feeds through to petroleum products, contributing to the decrease in output prices (this data came from the [Producer Price Inflation bulletin](#)).

International perspective

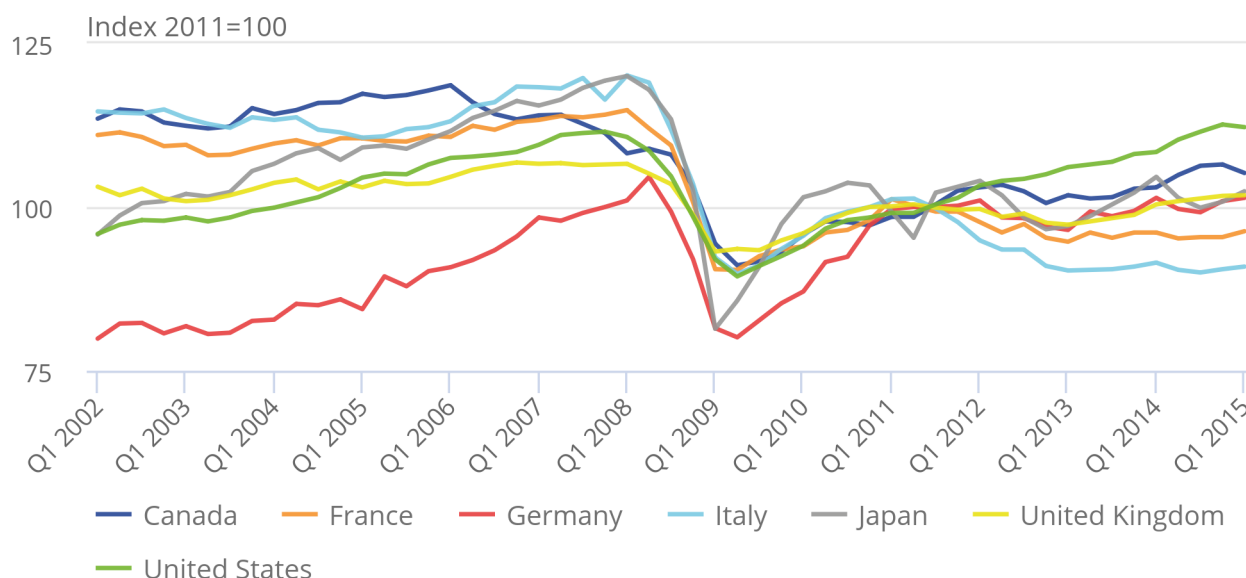
Globally, the performance of manufacturing output has varied across the G7 nations since the onset of the economic downturn (Figure 3). Japan experienced the largest average annual fall in output over 2008 and 2009 (12.5 % per annum), whereas the smallest decline was in the UK (6.1 % per annum).

Following the economic downturn in 2008 and 2009, all G7 nations' manufacturing industries returned to growth. However, almost all members experienced subsequent declines in growth between the second half of 2012 and the first half of 2013, particularly in Italy and Japan. More recently, in Quarter 1 (Jan to Mar) 2015, France, Germany, Italy, Japan, and the UK experienced growth in manufacturing output, although this was to varying degrees. Japan experienced the strongest growth on a quarterly basis (1.6%), France and Germany grew by 0.9% and 0.5% respectively, while growth was relatively modest in Italy and the UK. Canada and the USA both experienced a decline in manufacturing output, the former by a marked 1.2%.

For most G7 countries, manufacturing output remained below their respective pre-downturn levels experienced in 2007. Output in Italy, France, Japan and Canada remained 23.1%, 15.3%, 12.7% and 6.9% below the countries' pre-downturn levels respectively. In Q1 2015 the UK was also below its pre-downturn level but to a lesser extent. However, in Quarter 3 (July to Sep) 2014, the USA did surpass its pre-downturn level and exceeded it by 1.2% in Quarter 1 (Jan to Mar) 2015, while Germany was also above its pre-downturn level and exceeded it by 1.2% in Quarter 1 (Jan to Mar) 2015, while Germany was also above its pre-downturn level, by 2.6% (more information can be found on the OECD website).

Figure 3: Quarterly international manufacturing output, Quarter 1 (Jan to Mar) 2002 to Quarter 1 (Jan to Mar) 2015

Figure 3: Quarterly international manufacturing output, Quarter 1 (Jan to Mar) 2002 to Quarter 1 (Jan to Mar) 2015



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

Notes:

1. Data for the UK are consistent with the April ONS Index of Production bulletin, while data for all other remaining G7 economies have been sourced from OECD
2. Throughout this release Q1 refers to Quarter 1 (January to March), Q2 refers to Quarter 2 (April to June), Q3 refers to Quarter 3 (July to September) and Q4 refers to Quarter 4 (October to December)

Figure 4 presents month-on-year percentage growth rates in 8 of the 13 UK manufacturing sub-industries for May 2015, alongside comparable growth rates achieved in Germany, France, Italy and the euro area. This shows that the UK experienced slower manufacturing growth at 1.0%, compared to total euro area manufacturing growth of 2.4%. Manufacturing output increased in France, Italy and Germany by 3.6%, 3.5% and 2.1%, respectively over the same period.

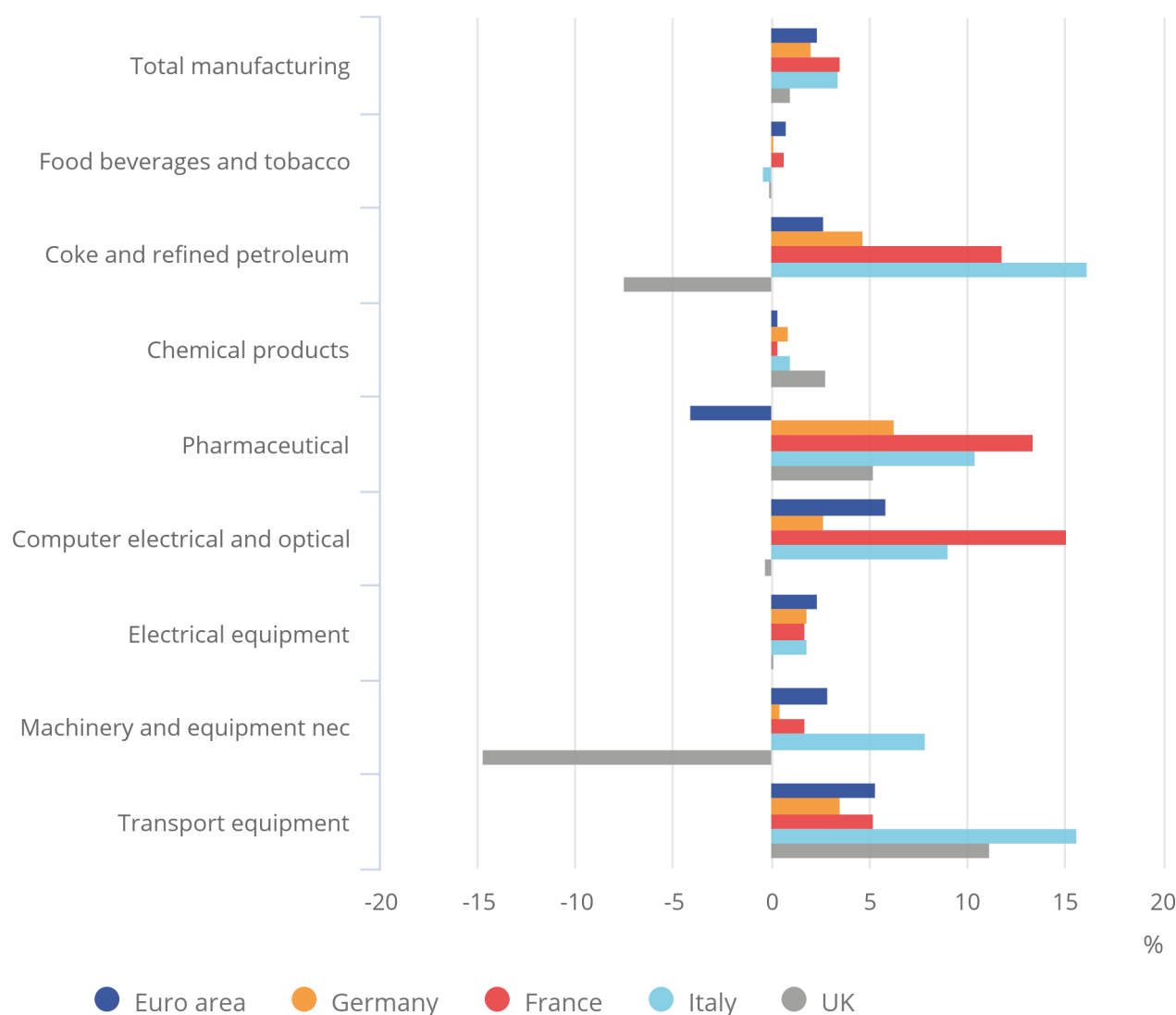
Figure 4 also shows that the UK's comparable strength was currently concentrated in the manufacture of chemical products, which was offset by relative weakness in the manufacture of machinery & equipment not else classified, coke & refined petroleum, computer, electronic & optical products, as well as food, beverages & tobacco.

Figure 4: Month on a year ago manufacturing sub-industry percentage growth in the UK and the euro area

May 2015 compared with May 2014

Figure 4: Month on a year ago manufacturing sub-industry percentage growth in the UK and the euro area

May 2015 compared with May 2014



Source: Office for National Statistics, Eurostat

Notes:

1. Data for the UK are consistent with the June ONS Index of Production bulletin, while data for all other remaining economies have been sourced from Eurostat
2. Throughout this release Q1 refers to Quarter 1 (January to March), Q2 refers to Quarter 2 (April to June), Q3 refers to Quarter 3 (July to September) and Q4 refers to Quarter 4 (October to December)

5 . Gross domestic product (GDP) impact and components

In this release, the earliest period open for revision was April 2015, in line with the [National Accounts revisions policy](#).

The [preliminary estimate of GDP](#), published on 28 July 2015, contained a forecasted increase of 1.0% for production in Quarter 2 (Apr to June) 2015. This release of data estimates that production increased by 0.7% between Quarter 1 (Jan to Mar) 2015 and Quarter 2 (Apr to June) 2015. The rise in IoP was lower than forecasted primarily due to revisions in 2 sectors. Firstly, the rise in the mining & quarrying sector was revised down from 7.8% to 6.3% following the receipt of actual data to replace estimates. Secondly, the rise in the water, waste & sewage management sector was lower than forecasted within the GDP preliminary estimate, as a result of further information from data sources (see IoP revisions for further details). Due to the weight of the production industries within the economy, the impact on the recently published GDP preliminary estimate was less than 0.1 percentage points.

The estimates for the production industries are generally the first of the main components for the output approach to the measurement of GDP to be published (agriculture, [construction](#) and [services](#) are the other components). All the components are already available for Quarter 1 (Jan to Mar) 2015. Details of the data already published can be found in Table 2. The [Retail Sales Index](#) reported in Table 2 is not a direct component of the output approach to measuring GDP. It does, however, feed into estimates of GDP in 2 ways. Firstly, it feeds into the services industries when GDP is measured from the output approach. Secondly, it is a data source used to measure household final consumption expenditure which feeds into GDP estimates when measured from the expenditure approach.

Output in the construction industry for June 2015 will be published on 14 August 2015 and services output for the same period on 28 August 2015.

Table 2: GDP component table, June 2015, UK

Publication	Percentage of GDP	Release date	Month or quarter of GDP	Most recent quarter on a year earlier	Most recent quarter on quarter earlier	Percentage change	
						Most recent month on the same month a year ago	Most recent month on the previous month
Index of Production ¹	14.6	06 Aug	Jun	..	..	1.5	-0.4
			Q2	1.5	0.7	..	..
			Q1	1.0	0.2	..	..
Construction	6.4	10 Jul	May	..	..	1.3	-1.3
			Q1	4.4	-0.2	..	..
Index of Services	78.4	28 Jul	May	..	..	2.7	0.3
			Q1	3.1	0.4	..	..
Retail Sales		23 Jul	Jun	..	..	4.0	-0.2
			Q2	4.4	0.7	..	..
			Q1	5.5	0.9	..	..
Agriculture	0.6	28 Jul	Q2	-0.4	-0.7	..	..

Source: Office for National Statistics

Notes:

1. The data for the index of production reflects the latest revisions published as part of this release.

2. Q1 = Jan to Mar, Q2 = Apr to Jun

6 . Production and sectors supplementary analysis

Table 3: Headline growth rates to the Index of Production, June 2015, UK

Description	Percentage of production	Month on same month a year ago growth	Month on previous month growth	Percentage	
				Quarter on previous quarter growth	
IoP	100.0	1.5	-0.4	0.7	
Sector B	15.7	6.3	-3.8	6.3	
Division 06	12.9	10.3	-5.8	10.7	
Sector C	69.4	0.5	0.2	-0.3	
Sector D	7.1	-2.0	-0.3	-3.1	
Sector E	7.9	4.5	0.5	3.0	

Source: Office for National Statistics

Notes:

1. Headline figures for the Index of Production are: Total Index of Production; Sector B Mining & quarrying; and within this Division 06 Oil & gas extraction; Sector C Manufacturing; Sector D Electricity, gas, steam & air conditioning; and Sector E Water supply, sewerage & waste management

Figure 5: Contribution to production percentage growth, between Quarter 1 (Jan to Mar) 2015 and Quarter 2 (Apr to June) 2015, UK

Figure 5: Contribution to production percentage growth, between Quarter 1 (Jan to Mar) 2015 and Quarter 2 (Apr to June) 2015, UK

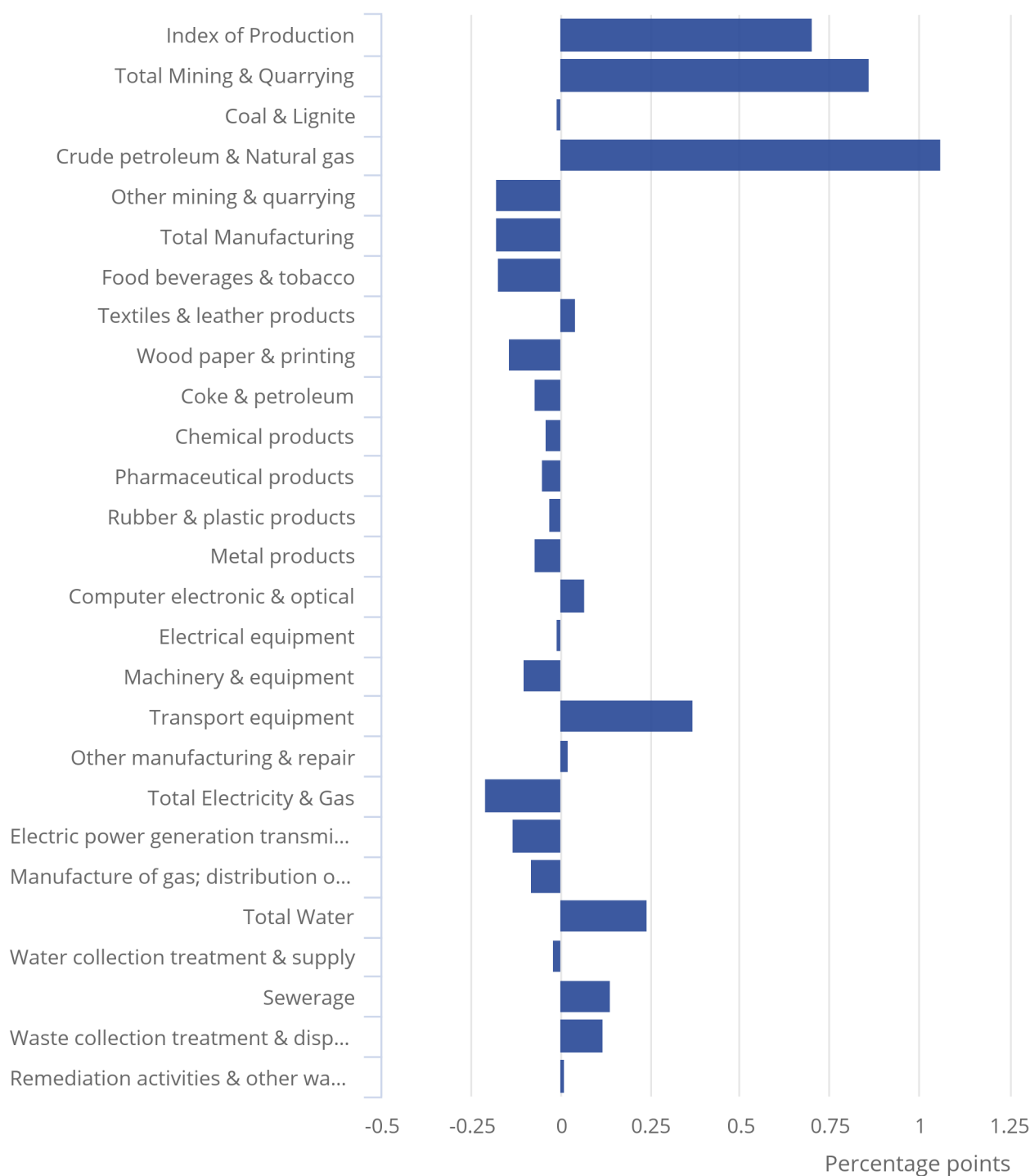


Figure 6: Contribution to production percentage growth, between June 2014 and June 2015, UK

Figure 6: Contribution to production percentage growth,
between June 2014 and June 2015, UK

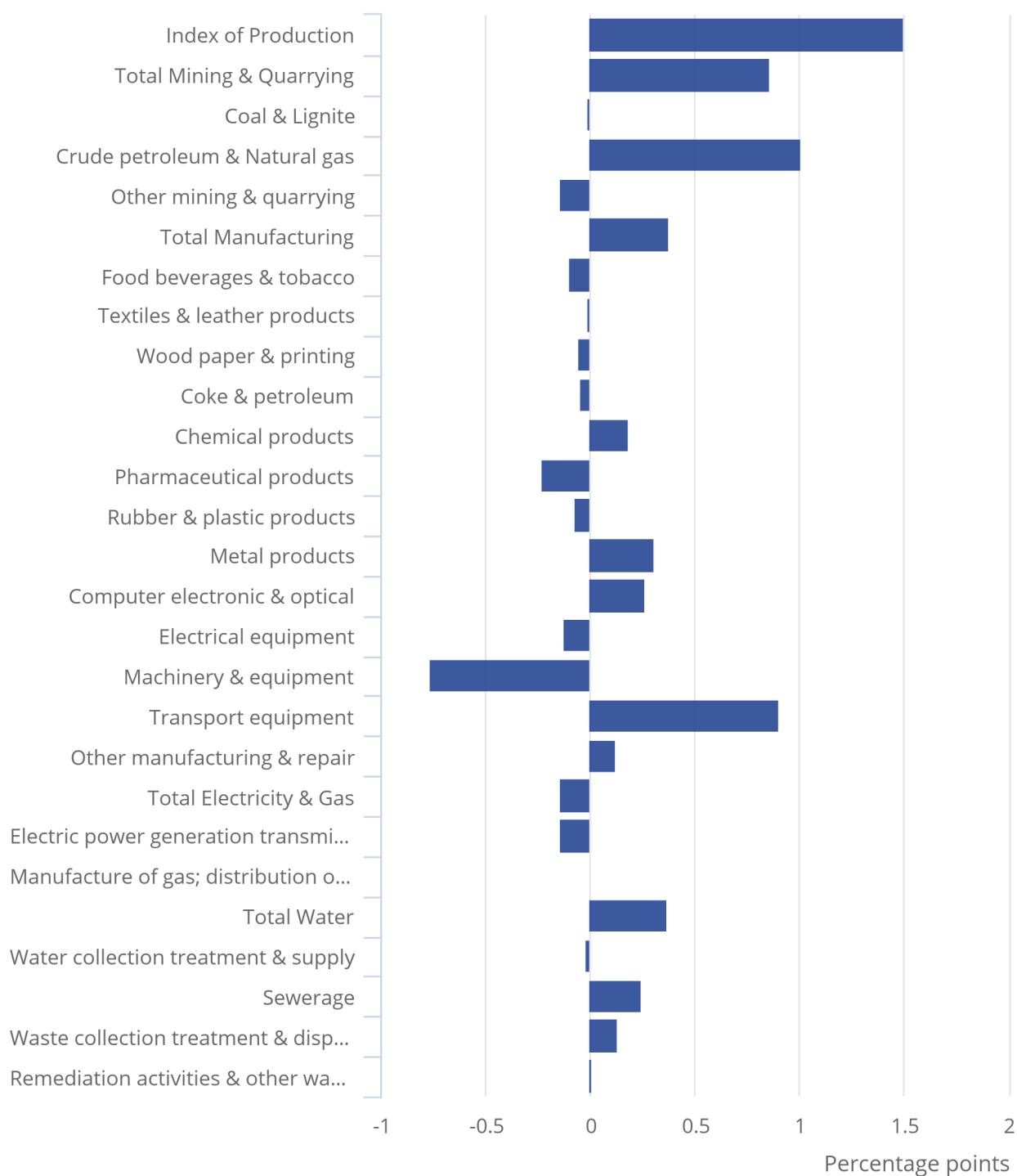
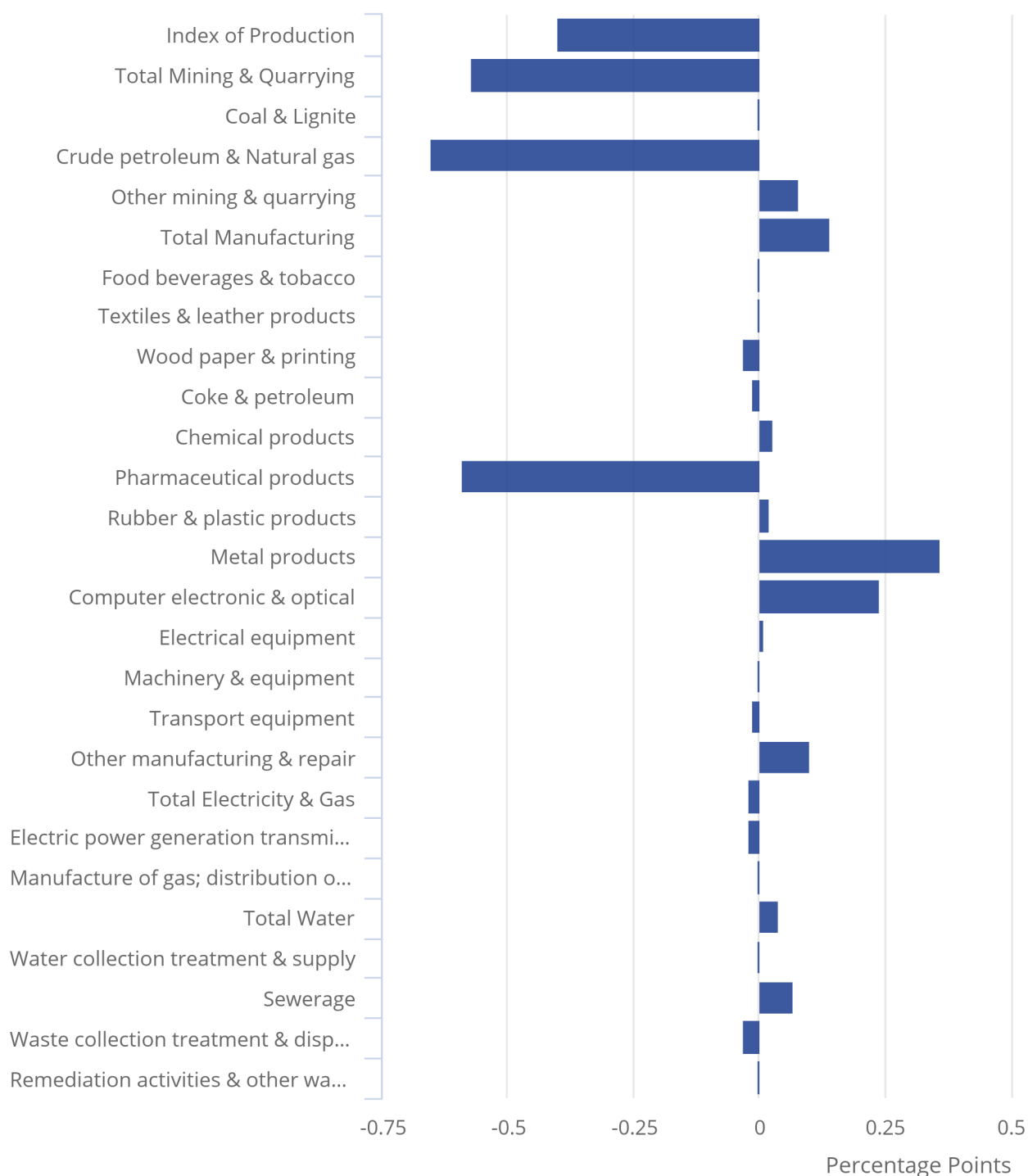


Figure 7: Contribution to production percentage growth, between May 2015 and June 2015, UK

Figure 7: Contribution to production percentage growth,
between May 2015 and June 2015, UK



Total production

As seen in Table 3, total production increased by 0.7% in Quarter 2 (Apr to June) 2015 compared with Quarter 1 (Jan to Mar) 2015, the largest quarterly increase since Quarter 3 (July to Sep) 2013. This increase was lower than the estimated increase of 1.0% contained within the recent preliminary estimate of GDP. This was due to downward revisions to mining & quarrying and water supply, sewerage & waste management, caused by the receipt of new and revised data to replace early estimates. The quarterly increase in total production reflected increases of 6.3% in mining & quarrying output and 3.0% in water supply, sewerage & waste management. Partially offsetting these increases were decreases in manufacturing (the largest component in production) of 0.3% and in electricity, gas, steam & air conditioning output of 3.1%.

Total production output in June 2015 increased by 1.5% compared with June 2014 (Table 3). This increase reflected rises in 3 of its 4 main sectors, with mining & quarrying having the largest contribution, increasing by 6.3% and contributing 0.9 percentage points to total production. There were also increases in water supply, sewerage & waste management of 4.5% and in manufacturing of 0.5%. Partially offsetting these increases was a decrease in electricity, gas, steam & air conditioning output of 2.0%.

Between May 2015 and June 2015, total production decreased by 0.4% (Table 3). There were decreases in 2 of its 4 main sectors. The downward contributions came from mining & quarrying, which decreased by 3.8% and contributed 0.6 percentage points and electricity, gas, steam & air conditioning output, which decreased by 0.3% and had a negligible contribution to total production. Partially offsetting the decreases were increases in manufacturing, which increased by 0.2% and contributed 0.1 percentage points to total production and water supply, sewerage & waste management output, which increased by 0.5% and had a negligible contribution to total production (Figure 7).

Manufacturing

Manufacturing decreased by 0.3% in Quarter 2 (Apr to June) 2015 compared with Quarter 1 (Jan to Mar) 2015, the same as the estimate contained within the latest GDP preliminary release. This is the first quarterly decrease since Quarter 1 (Jan to Mar) 2013, when it decreased by 0.3%. Output decreased in 9 of its 13 sub-sectors. As seen in Figure 5, the sub-sector with the largest downward contribution was the manufacture of food products, beverages & tobacco, which decreased by 1.7% and contributed 0.2 percentage points to total production. Output decreased in 8 of 11 industries within this sub-sector. The main contributor to this decrease was the manufacture of bakery & farinaceous products, which decreased by 5.6% and contributed 0.1 percentage points to total production. This was the third consecutive quarterly decrease since Quarter 3 (July to Sept) 2014.

In contrast, the manufacturing sub-sector with the largest quarterly upward contribution to total production was the manufacture of transport equipment, which increased by 2.9% and contributed 0.4 percentage points to total production. This was the 3rd consecutive quarterly increase, in line with the strength seen in previous quarters. The main contributor to the increase was the manufacture of air, spacecraft & related machinery, which increased by 6.4% and contributed 0.3 percentage points to total production. Anecdotal evidence suggested that this strength was contracts-related.

Manufacturing output increased by 0.5% between June 2014 and June 2015 and contributed 0.4 percentage points to total production growth. Output increased in 5 of the 13 manufacturing sub-sectors compared with a year ago (Figure 6 for the contribution to production growth from each of the main sectors and sub-sectors). The manufacturing sub-sector with the largest upward contribution to total production growth was the manufacture of transport equipment, which increased by 7.2% and contributed 0.9 percentage points to total production. The main contributor within this sub-sector was the manufacture of air, spacecraft & related machinery, which increased by 19.1% and contributed 0.9 percentage points to total production. This was this industry's 10th consecutive increase compared with a year ago.

In contrast, the manufacturing sub-sector with the largest downward contribution to total production was the manufacture of machinery & equipment not elsewhere classified, which decreased by 14.7% and contributed 0.8 percentage points to total production.

Manufacturing output increased by 0.2% between May 2015 and June 2015 and contributed 0.1 percentage points to total production. There were increases in 7 of the 13 manufacturing sub-sectors (Figure 7). The manufacturing sub-sector with the largest contribution to the increase in total production was the manufacture of basic metals & metal products, which increased by 4.9% and contributed 0.4 percentage points to total production, having had a similar decrease in the previous month. The largest contributor to this increase was the manufacture of weapons & ammunition, which increased by 31.3% and contributed 0.1 percentage points to total production, having decreased by 22.0% in the previous month. Anecdotal evidence suggested the strength is widespread and mainly contract-related.

In contrast to the above increases, the manufacturing sub-sector with the largest downward contribution to total production was the manufacture of pharmaceutical products & pharmaceutical preparations, which decreased by 10.7% and contributed 0.6 percentage points to total production, having increased by 8.6% the previous month.

Mining and quarrying

Mining & quarrying output increased by 6.3% in Quarter 2 (Apr to June) 2015 compared with Quarter 1 (Jan to Mar) 2015 and contributed 0.9 percentage points to total production. This increase was less than the forecast of 7.8% contained within the latest preliminary estimate of GDP, due to actual data replacing estimates. The main contributor to the increase in mining & quarrying was the extraction of crude petroleum & natural gas, which increased by 10.7% and contributed 1.1 percentage points to total production (Figure 5), having decreased by 0.8% in the previous quarter. Anecdotal evidence suggested the quarterly increase in the extraction of crude petroleum & natural gas was mainly due to increases in crude oil production (which was led by offshore pipelines and offshore loaders); NGL and to some extent gas production. Evidence from the Department of Energy and Climate Change (DECC) suggested the recent tax changes announced in the March 2015 Budget have been a contributing factor to the quarterly rise (Figure 8).

Figure 8: Quarterly growth for division 6, oil and gas, Quarter 2 (Apr to Jun) 2010 to Quarter 2 (Apr to Jun) 2015

Figure 8: Quarterly growth for division 6, oil and gas, Quarter 2 (Apr to Jun) 2010 to Quarter 2 (Apr to Jun) 2015



Source: Office for National Statistics

Notes:

1. Throughout this release Q1 refers to Quarter 1 (January to March), Q2 refers to Quarter 2 (April to June), Q3 refers to Quarter 3 (July to September) and Q4 refers to Quarter 4 (October to December)

Mining & quarrying output increased by 6.3% between June 2014 and June 2015 and contributed 0.9 percentage points to total production. The sub-sector with the largest upward contribution was the extraction of crude petroleum & natural gas, which increased by 10.3% and contributed 1.0 percentage points to total production (Figure 6). This was due to increases in crude oil production compared with last year when planned maintenance in a number of terminals hampered production.

Mining & quarrying output decreased by 3.8% in June 2015 compared with May 2015 and contributed 0.6 percentage points to total production. This is the first decrease since February 2015, when it decreased by 2.5%. The sub-sector with the largest downward contribution was the extraction of crude petroleum & natural gas, which decreased by 5.8% and contributed 0.7 percentage points to total production (Figure 7). This followed an increase of 7.0% in the previous month. Evidence suggests that the decrease observed within this sub-sector was mainly attributed to a slowdown in crude oil, NGL and gas production following a higher than usual strength in production, observed over previous months.

Electricity, gas, steam & air conditioning

Electricity, gas, steam & air conditioning output decreased by 3.1% in Quarter 2 (Apr to June) 2015 compared with Quarter 1 (Jan to Mar) 2015 and contributed 0.2 percentage points to total production. This is similar to the forecasted decrease of 2.9% contained within the GDP preliminary estimate and follows an increase of 2.8% in the previous quarter. The decrease was reflected in both of its sub-sectors, with the largest contribution coming from electric power generation, transmission & distribution, which decreased by 2.8% and contributed 0.1 percentage points to total production.

Electricity, gas, steam & air conditioning output decreased by 2.0% in June 2015 compared with June 2014 and contributed 0.1 percentage points to total production (Figure 6). This reflected a decrease in output in 1 of its 2 sub-sectors:- electric power generation, transmission & distribution, which decreased by 3.0% and contributed 0.1 percentage points to total production. Evidence suggested that the decrease was mainly attributed to energy efficiencies and, to a lesser extent, to increased micro-energy generation.

Electricity, gas, steam & air conditioning output decreased by 0.3% in June 2015 compared with May 2015 and had a negligible contribution to total production (Figure 7). This followed an increase of 1.6% in the previous month. The decrease was in 1 of its 2 sub-sectors:- electric power generation, transmission & distribution, which decreased by 0.5% and had a negligible contribution to total production. Anecdotal evidence suggested that the monthly decrease in output was mainly attributed to a reduction in demand for domestic space heating and was in line with the usual fluctuations in this industry's output.

Water & waste management

Water supply, sewerage & waste management output increased by 3.0% in Quarter 2 (Apr to June) 2015 compared with Quarter 1 (Jan to Mar) 2015, the third consecutive quarterly increase since Quarter 3 (July to Sep) 2014. This rise is lower than the forecasted rise of 4.8% contained within the GDP preliminary estimate, as a result of further information from data sources (see IoP revisions for further details). This increase reflected increases in 3 of its 4 sub-sectors. The largest contributor to the increase was sewerage, which increased by 5.7% and contributed 0.1 percentage points to total production (Figure 5), having decreased by 0.7% in the previous quarter.

Water supply, sewerage & waste management output increased by 4.5% in June 2015 compared with June 2014 and contributed 0.4 percentage points to total production. This increase reflected a rise in 3 of its 4 sub-sectors' output (Figure 6), with the largest contribution coming from sewerage, which increased by 10.4% and contributed 0.2 percentage points to total production.

Water supply, sewerage & waste management output increased by 0.5% between May 2015 and June 2015 and had a negligible contribution to total production. This was the sixth consecutive increase since December 2014. This increase reflected a rise in 1 of its 4 sub-sectors (Figure 7):- sewerage, which increased by 2.7% and contributed 0.1 percentage points to total production.

Revisions to IoP

Revisions to the Index of Production follow the [National Accounts Revisions policy \(41.6 Kb Pdf\)](#). Revisions are caused by a number of factors including, but not limited to revisions to source data due to late responses to the monthly business survey (MBS), actual data replacing forecast data and revisions to seasonal factors that are re-estimated every period. We produce revisions triangles of production and manufacturing growth to provide users with one indication of the reliability of this important indicator. Statistical tests are performed on the average revision to test if it is statistically significantly different from zero. Further information can be found in background note 5.

In this release of data, the earliest period open for revision was April 2015. There were no revisions to IoP month-on-month growth rates greater than 0.1 percentage points.

In May 2015, there was a downward revision of 0.1 percentage points. The month-on-month growth rate was revised from a rise of 0.4% to 0.3%. This was attributed to a revision to crude oil & gas production and water, sewage & waste management as a result of late responses and further information about data from suppliers.

Further details on the revisions to IoP components can be found in the IoP5R tables, located within the data section of this release.

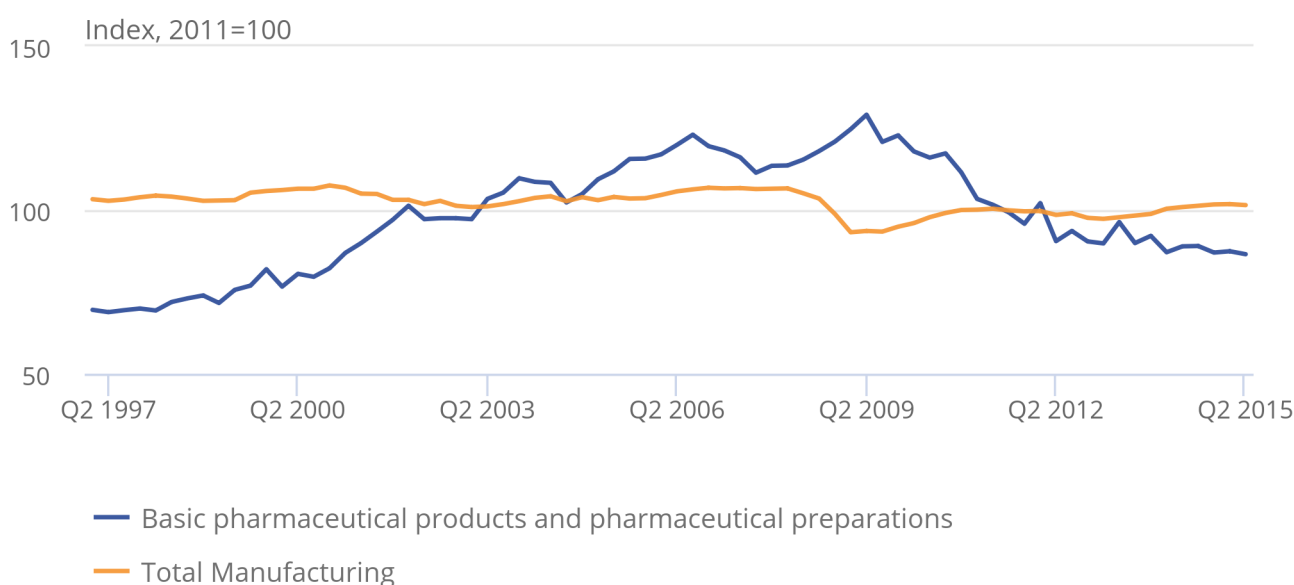
7 . Industry spotlight: Manufacture of basic pharmaceutical products and pharmaceutical preparations

Industry CF covers the “Manufacture of basic pharmaceutical products & pharmaceutical preparations” in the Index of Production data and accounts for around 8.6% of manufacturing output. According to the Standard Industrial Classification (SIC07), industry CF includes the manufacture of basic pharmaceutical products (division 21.1) which covers the manufacture of medicinal active substances to be used for their pharmacological properties in the manufacture of medicaments, processing of blood, manufacture of chemically-pure sugars, processing of glands and manufacture of extracts of glands. The industry also includes the manufacture of pharmaceutical preparations (division 21.2), which consists of manufacture of medicaments, chemical contraceptive products, medical diagnostic preparations, radioactive in-vivo diagnostic substances, biotech pharmaceuticals and botanical products.

This industry CF experienced strong growth in volume terms in the decade prior to the downturn as opposed to the more moderate growth seen across total manufacturing. The level of output in the industry peaked in Quarter 2 (Apr to June) 2009, following a period of fairly consistent growth between 1997 and 2009 at a compound growth rate of 5.0% per annum. During the economic downturn, that lasted from Quarter 1 (Jan to Mar) 2008 until Quarter 2 (Apr to June) 2009, the pharmaceutical industry grew by 13.6% while the manufacturing industry contracted by 12.2 %. However following this, the industry's output had a distinctly different experience, contracting by 33.0 % between Quarter 2 (Apr to June) 2009 and Quarter 2 (Apr to June) 2015 while manufacturing grew by 8.4% over the same period.

Figure 9: Quarterly manufacturing output of basic pharmaceutical products and pharmaceutical preparations, seasonally adjusted, Quarter 1 (Jan to Mar) 1997 to Quarter 2 (Apr to June) 2015, UK

Figure 9: Quarterly manufacturing output of basic pharmaceutical products and pharmaceutical preparations, seasonally adjusted, Quarter 1 (Jan to Mar) 1997 to Quarter 2 (Apr to June) 2015, UK



Source: Office for National Statistics

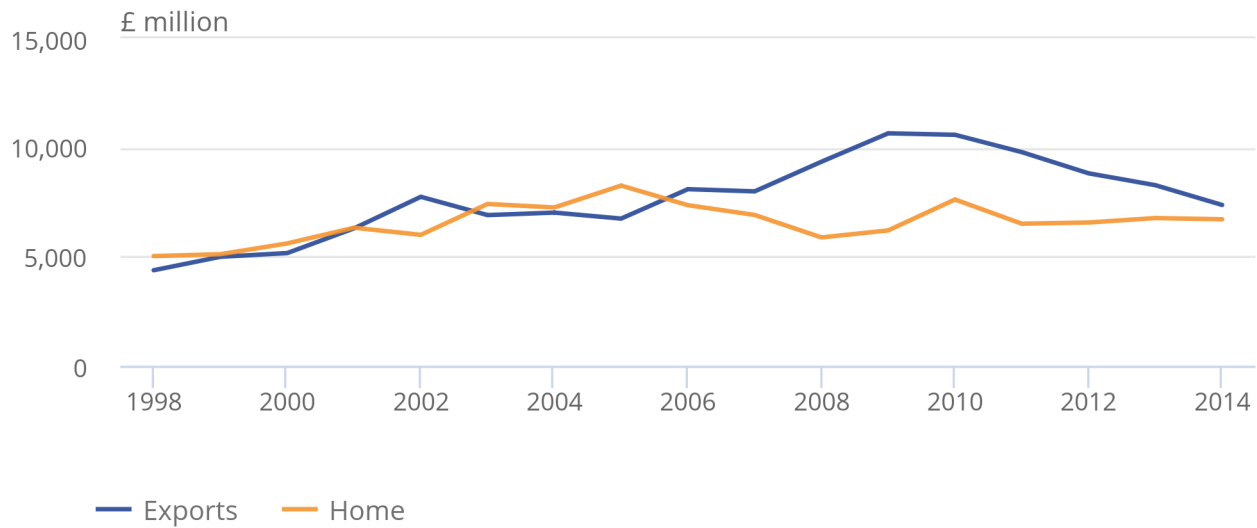
Notes:

1. Throughout this release Q1 refers to Quarter 1 (January to March), Q2 refers to Quarter 2 (April to June), Q3 refers to Quarter 3 (July to September) and Q4 refers to Quarter 4 (October to December)

According to the [annual business survey](#) (ABS) this industry generated £15.0 billion of total turnover in 2013, which represented 2.9% of the total turnover of the manufacturing industry (£9.2 billion of the total turnover originated in the manufacture of pharmaceutical preparations section of the industry, with the remainder coming from the manufacture of basic pharmaceutical products). The "[turnover and orders in production and services industries](#)" (TOPSI) publication separates total turnover into export turnover and home turnover. Export turnover experienced strong growth between 1999 and 2010, increasing at a compound growth rate of 7.6% per annum while the growth in home turnover was more subdued over the same period, rising at a compound growth rate of 3.5% per annum. Export turnover reached its peak in 2009 which coincided with the peak in industry 21's output. However since 2010, export turnover experienced a continuous sharp decline and in 2014 it was 30.8% below its peak.

Figure 10: UK turnover and orders in manufacture of basic pharmaceutical products and pharmaceutical preparations, 1998 to 2014

Figure 10: UK turnover and orders in manufacture of basic pharmaceutical products and pharmaceutical preparations, 1998 to 2014



Source: Monthly Business Survey (Production and Services) - Office for National Statistics

8. Background notes

1. What's new?

Some news articles that provide supplementary information regarding the Energy sector, which may be of interest:-

[70 countries including UK met to agree on energy cooperation and investment.](#) Source: Offshore Energy Today.com.

[Norway experienced increases in terms of oil production last month as did the UK.](#) Source: Offshore Energy Today.com.

[The Queen's speech](#) and March budget announced measures to improve energy security. Source: Offshore Energy Today.com.

[The Assessment of Short-Term Economic Output Indicators: Preliminary Estimate of GDP, Indices of Production and Services, and Retail Sales](#) has been published on the UK Statistics Authority website. See assessment report number 278 for further details.

On 7 January 2015, the following papers were published on our website:

[Impact of quarterly employment question on monthly survey response.](#)

[Monthly Business Survey variance of change.](#)

Upcoming changes

The Index of Production release for July 2015, to be published on 9 September 2015. In line with the National Accounts revisions policy, no revisions will be published next month.

In September 2014 the industry review timetable was published as part of the [GDP\(O\) Improvement Report](#) stating that during July 2015, 4 industry reviews would be published. However, the publication of these reviews will now be delayed. The 4 industry reviews are:

- professional services
- water transport
- social care
- post and courier services

The National Accounts (NA) work plan will be published early summer, outlining future priorities for NA and this project. An update to users will follow the agreement of the NA work plan and will provide further information of the progress of industry reviews. Should you have any queries please contact us at STOI.Development@ons.gov.uk.

2. 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 customer needs. They are produced free from any political interference.

3. Understanding the data

Short guide to the Index of Production

This statistical bulletin gives details of the index of output of the production industries in the United Kingdom. Index numbers of output in this statistical bulletin are on the base 2011=100 and are classified to the [2007 Standard Industrial Classification](#) (SIC). The production industries, which accounted for 14.6% of gross domestic product in 2011, cover mining & quarrying (Section B), manufacturing (Section C), gas & electric (Section D), and water supply & sewerage (Section E).

Interpreting the data

The non-seasonally adjusted series contain elements relating to the impact of the standard reporting period, moving holidays and trading day activity. When making comparisons it is recommended that users focus on seasonally adjusted estimates as these have the seasonal effects and systematic calendar related components removed.

Figures for the most recent months are provisional and subject to revision in light of:

- late responses to surveys and administrative sources
- revisions to seasonal adjustment factors which are re-estimated every month and reviewed annually (changes from the latest review are included in this release)

Definitions and explanations

Definitions found within the main statistical bulletin are listed:

- chained volume measure - an index number from a chain index of quantity. The index number for the reference period of the index may be set equal to 100 or to the estimated monetary value of the item in the reference period
- index number - a measure of the average level of prices, quantities or other measured characteristics relative to their level for a defined reference period or location. It is usually expressed as a percentage
- seasonally adjusted - seasonal adjustment aids interpretation by removing effects associated with the time of the year or the arrangement of the calendar, which could obscure movements of interest

Use of the data

The IoP is a key economic indicator and one of the earliest short-term measures of economic activity. The main output is a seasonally adjusted estimate of total production and broad sector groupings of mining & quarrying, manufacturing, energy and water supply & sewerage. The total IoP estimate and various breakdowns are widely used in private and public sector institutions, particularly the Bank of England, Her Majesty's Treasury and the Office for Budget Responsibility, to assist in informed policy and decision making.

4. Methods

An article about the [Index of Production methodology \(78.4 Kb Pdf\)](#) is available on our website.

Composition of the data

The Index of Production uses a variety of different data from sources which are produced on either a quarterly or monthly basis.

Most of the series are derived using current price turnover deflated by a suitable price index. This includes the monthly business survey (MBS) data; Our short-term survey of various industries in the economy. It is one of the main data sources used in the compilation of the Index of Production.

Approximately 70% of the IoP estimates are based on data collected through our monthly business survey (MBS). The remainder are based on data received from external sources. The MBS response rates for data included in this publication are presented in Table 4 for the current month and the 3 months prior. The response rates for the historical periods are updated to reflect the current level of response, incorporating

data from late returns. Two response rates are included with one percentage for the amount of turnover returned and the other percentage for the amount of questionnaire forms. We have also published [MBS historical production industries response rates back to 2010 \(34 Kb Excel sheet\)](#).

Table 4: Monthly business survey (MBS) Response Rates, June 2015, UK

	Percentage			
	Year Period		Turnover	Questionnaire
MBS overall	2015	Jun	87.6	74.2
	2015	May	94.5	83.2
	2015	Apr	94.9	84.6
	2015	Mar	96.1	85.3
MBS production only	2015	Jun	89.1	77.6
	2015	May	95.5	86.1
	2015	Apr	96.5	87.1
	2015	Mar	97.4	88.6

Source: Office for National Statistics

Seasonal adjustment

The index numbers in this statistical bulletin are all seasonally adjusted in line with international best practise using software called X-13-ARIMA-SEATS. 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 effects of day of the week and Easter are used respectively to make trading day and Easter adjustments prior to seasonal adjustments.

Although leap years only happen every 4 years, they are predictable and regular and their impact can be estimated. Hence, if there is a leap year effect, it is removed as part of regular seasonal adjustment.

Deflation

It is common for the value of a group of financial transactions to be measured in several time periods. The values measured will include both the change in the volume sold and the effect of the change of prices over that year. Deflation is the process whereby the effect of price change is removed from a set of values.

All series, unless otherwise quoted, are chained volume measures. Deflators adjust the value series to take out the effect of price change to give the volume series.

5. Quality

Basic quality information

A common pitfall in interpreting data is that expectations of accuracy and reliability in early estimates are often too high. Revisions are an inevitable consequence of the trade off between timeliness and accuracy. Early estimates are based on incomplete data.

Very few statistical revisions arise as a result of "errors" in the popular sense of the word. All estimates, by definition, are subject to statistical "error" but in this context the word refers to the uncertainty inherent in any process or calculation that uses sampling, estimation or modelling. Most revisions reflect either the

adoption of new statistical techniques, or the incorporation of new information which allows the statistical error of previous estimates to be reduced. Only rarely are there avoidable "errors" such as human or system failures, and such mistakes are made quite clear when they do occur.

Quality and methodology information report

A quality and methodology information report for this statistical bulletin can now be found on our website.

Revision triangles

One indication of the reliability of the key indicators in this bulletin can be obtained by monitoring the size of revisions. Table 5 is based on the revisions which have occurred over the last 5 years. Please note that these indicators only report summary measures for revisions. The revised data may, themselves, be subject to sampling or other sources of error.

Table 5 presents a summary of the differences between the first estimates published between July 2008 and June 2014 and the estimates published 12 months later.

Table 5: Revisions, June 2015, UK

Growth rates	Value in latest period	Percentage change	
		Revisions between first publication and estimates 12 months later	
		Average over the last 60 months	Average over the last 60 months without regard to sign (average absolute revision)
Production - 3 month	0.7	-0.14	0.28
Manufacturing - 3 month	-0.3	-0.14	0.28
Production - 1 month	-0.4	-0.11	0.27
Manufacturing - 1 month	0.2	-0.07	0.27

Source: Office for National Statistics

[Spreadsheets give revisions triangles of estimates \(4.55 Mb ZIP\)](#) for all months from March 1998 through to the current month.

A statistical test has been applied to the average revisions to find out if they are statistically significantly different from zero. An asterisk (*) indicates if a figure has been found to be statistically significant from zero.

The table uses historical data for the most recent 60 months, comparing the estimate at first publication with the estimate as published 12 months later. The numbers which underpin these averages include normal changes due to late data and re-seasonal adjustment, but also significant methodological changes, the most recent being the introduction of the 2007 standard industrial classification in October 2011.

The result presented in Table 5 suggests that the average revision for our 3 monthly estimates is not statistically significantly different from zero and that there are small downward revisions for our monthly production estimates over 12 months. In other words, the initial estimates for any given period provide a good indication of the later IoP estimates once more data have become available.

6. Publication policy

Details of the policy governing the release of new data are available from our media relations office. Also available is a [list of those given pre-publication access](#) to the contents of this release.

A complete set of series in the statistical bulletin are available to download free of charge on the [Data section](#) of the Office for National Statistics website. Alternatively, for low-cost tailored data, call Online Services on 0845 601 3034 or email info@ons.gsi.gov.uk.

7. Accessing data

The complete run of data in the tables of this statistical bulletin is also available to view and download in electronic format free of charge using the [ONS Time Series Data service](#). Users can download the complete bulletin in a choice of zipped formats, or view and download their own selections of individual series.

We provide an [analysis of past revisions in the IoP and other statistical bulletins \(224.6 Kb Pdf\)](#) which present time series. Details can be found on our website.

We [publish revisions triangles \(65.8 Kb Pdf\)](#) for all the main published key indicators on our website.

8. Relevant links

In November 2014, [Government Statistical Service \(GSS\) uncertainty guidance](#) was published.

The Changing Shape of UK Manufacturing, an event coordinated jointly with the Department for Business, Innovation and Skills, took place on 22 October 2014. The event featured a range of talks from users, producers and suppliers of manufacturing statistics, not just from government, but also business representatives and academics. To view the content of the day, please visit [Storify](#)

[Disclosure control policy \(337 Kb Word document\)](#)

[The UK has one of the fastest growing economies in the G7](#)

We have [published a short story](#) describing how the pharmaceuticals industry has changed over time.

[Impact on National Accounts of Producer Price Index Rebasing](#)

On 17 September 2014 a [Summary of upcoming changes to GDP](#) was published.

An article titled [Impact of upcoming improvements on estimates of real and nominal annual and quarterly GDP: 1997 to 2012](#) was published on 3 September 2014.

On 31 October 2014, we published [updated methodology](#) for the IoP on the guidance and methodology web pages. The updated documentation includes a new and comprehensive source catalogue detailing the methods, data and weights used to compile IoP, IoS and GDP(O).

The [GDP Output Improvement Report](#), published on 30 September 2014, provides a detailed update of the implementation of improvements for Blue Book 2014, progress on industry reviews and wider cross-cutting improvements, a comprehensive timetable for the industry review project, an update of industry quality ratings and progress on experimental statistics.

On 6 November 2014 we published a short story looking at the changing shape of the UK aerospace manufacturing industry.

9. Customer feedback

We have received some comments from users regarding the Index of Production. These have mainly been in 3 areas and the bullet points detail the action we have taken, or plans to take, to address these concerns:

- users commented that longer timeseries would be useful so [long run timeseries of data](#) for the main IoP industries are available. Furthermore, [data at 4 decimal places for IoP and the main sub-sectors is now available](#)
- users would like more information on data content. From the bulletin published on 11 March 2015, response rates for the Monthly Business Survey data feeding in to IoP were included

- users also raised concerns that the IoP is not benchmarked to annual data through the supply and use framework. This is being addressed as part of our [response \(875 Kb Pdf\)](#) to the [National Statistics Quality Review of National Accounts \(570.9 Kb Pdf\)](#)

As a reader and user of our statistics we would welcome your feedback on the content of this publication, your views for improvement and on the way you currently use our statistics. If you would like to get in touch or to send your feedback please contact us via email: < indexofproduction@ons.gsi.gov.uk >.

10. **Following ONS**

Follow @ONS on [Twitter](#) and receive up to date information about our statistical releases.

Like our [Facebook page](#) to receive our updates in your newsfeed and to post comments on our page.

11. **Next publication:** Wednesday 9 September 2015

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12. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gsi.gov.uk