

Statistical bulletin

# Index of Production: March 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 0.1% between Quarter 4 (Oct to Dec) 2014 and Quarter 1 (Jan to Mar) 2015. Manufacturing, the largest component of production, is also estimated to have increased by 0.1% between these periods
- The largest contribution to the quarterly growth came from electricity, gas, steam & air conditioning output, which increased by 2.7%
- Total production output is estimated to have increased by 0.7% in March 2015 compared with March 2014. There were increases in 2 of the 4 main sectors, with manufacturing output being the largest contributor, increasing by 1.1%
- Total production output increased by 0.5% between February 2015 and March 2015. The largest contribution to this increase came from mining & quarrying, which increased by 2.6%
- Manufacturing output increased by 0.4% between February 2015 and March 2015. The main contributors to the increase were basic pharmaceutical products & pharmaceutical preparations; other manufacturing & repair; and rubber, plastic products & other non-metallic mineral products
- In the 3 months to March 2015, production and manufacturing were 10.2% 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 April 2015, contained an estimated decrease of 0.1% for production in Quarter 1 (Jan to Mar) 2015. This release of data estimates that production increased by 0.1% between Quarter 4 (Oct to Dec) 2014 and Quarter 1 (Jan to Mar) 2015 and the impact on the previously published GDP estimate for Quarter 1 (Jan to Mar) 2015 is less than 0.1 percentage points, rounded to 1 decimal place

# 2 . Main figures

This bulletin presents the monthly estimates of the Index of Production (IoP) for the United Kingdom production industries, March 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, currently 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 December 2012 to March 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.

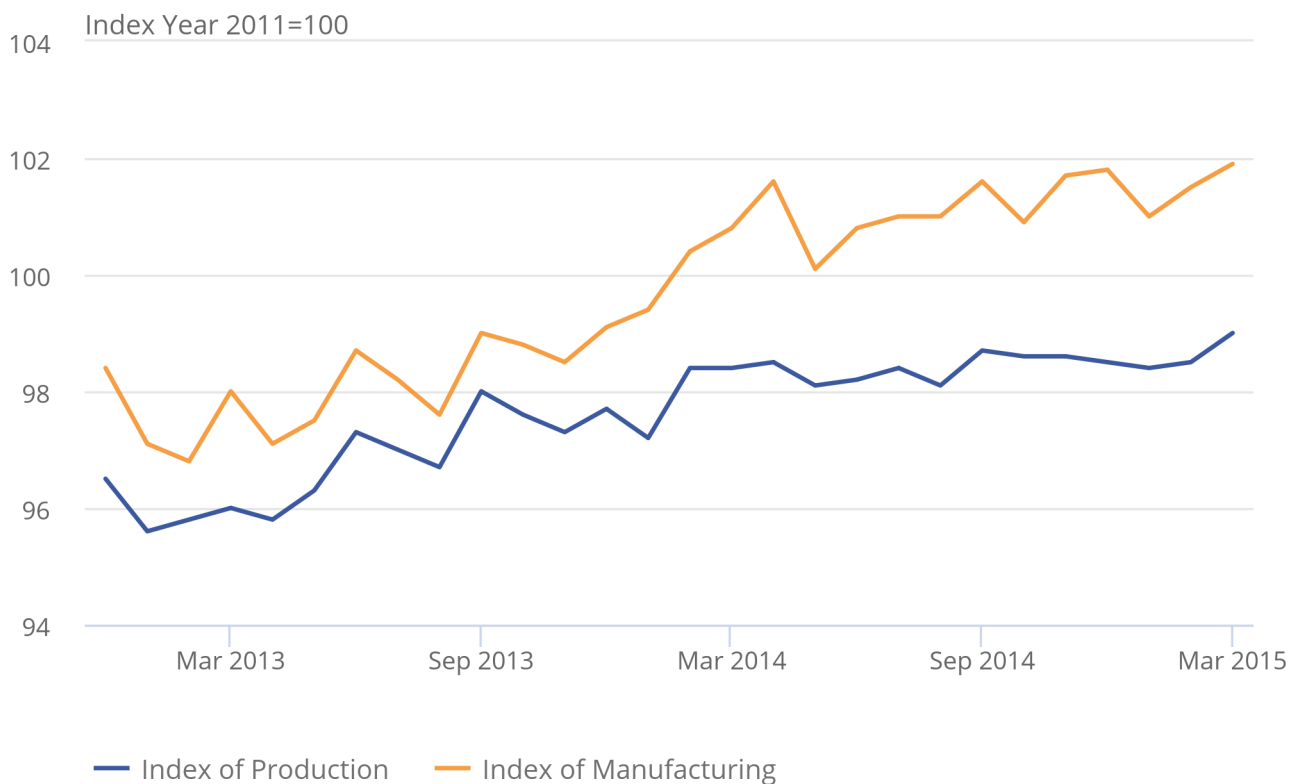
**Table 1: Index of Production main figures, March 2015, UK**

	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	99.0	0.7	0.6	0.5	0.1
Manufacturing	101.9	1.1	1.3	0.4	0.1

Source: Office for National Statistics

**Figure 1: Seasonally adjusted production and manufacturing, December 2012 to March 2015, UK**

Figure 1: Seasonally adjusted production and manufacturing,  
December 2012 to March 2015, UK



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

### 3 . Quality of the Index of Production

We have developed [guidelines for measuring statistical quality \(1.22 Mb Pdf\)](#); 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 surveys-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. In this and future publications, we are also publishing MBS historical response rates back to 2010.

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 \(4.43 Mb ZIP\)](#) 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. 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

Figure 2 shows that the pace of growth in manufacturing exceeded that of total production between 2003 and 2006. This trend was, however, temporarily interrupted following the economic downturn in 2008, when manufacturing fell by a greater extent than total production.

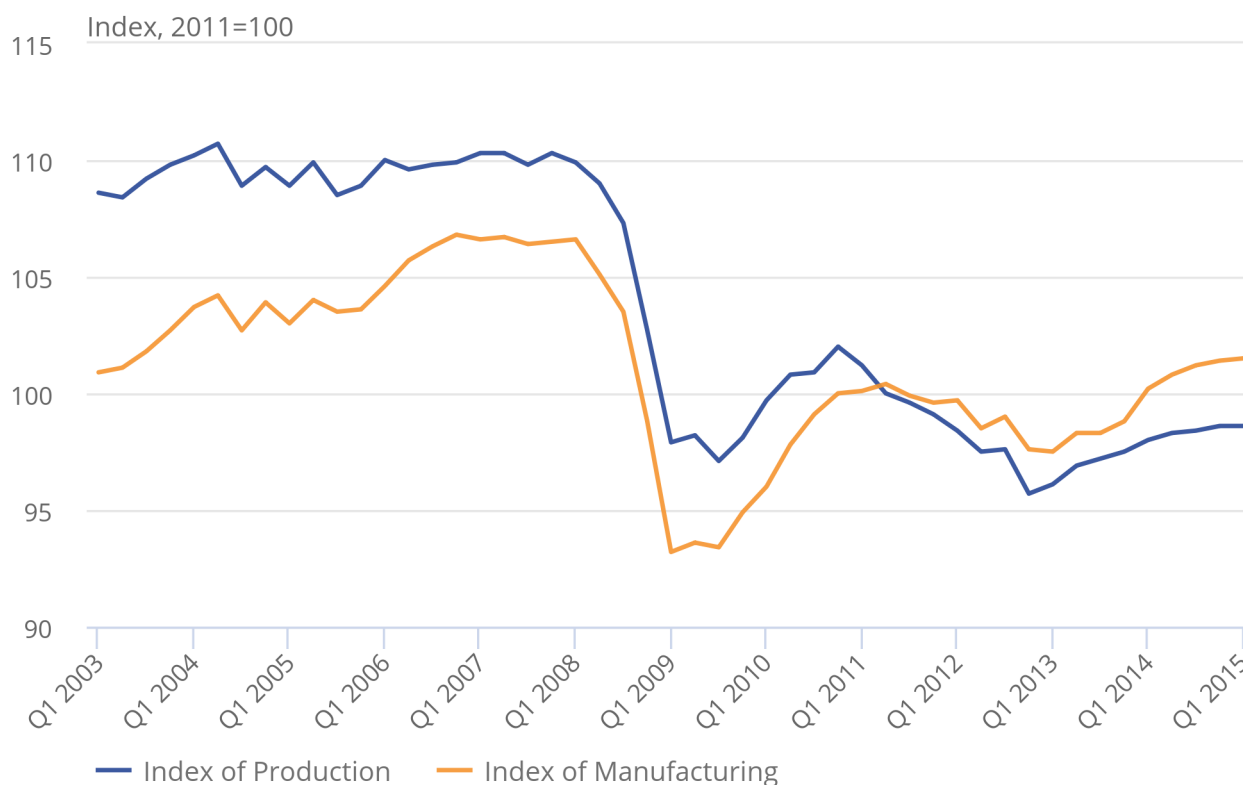
Following the 2008 to 2009 downturn, total production and manufacturing returned to growth for a short period, before falling again in 2011 and 2012. This coincided with falling gross domestic product (GDP) in the euro area. Total production was particularly affected, falling below its downturn trough in Quarter 4 (Oct to Dec) 2012, while manufacturing fell by a smaller amount.

For production and manufacturing, conditions improved throughout 2013 and continued to do so in 2014. [The Preliminary Estimate](#) reported that GDP rose by 0.3% in the first quarter of 2015, marking a 9th consecutive quarter of expansion, mainly due to the services industries which grew by 0.5% on the quarter. Looking at the other components of GDP, agriculture experienced a 0.2% contraction in output and construction fell by a marked 1.6%, a second successive quarter of decline.

Despite production output being stable on the quarter, the industry continued to show growth on an annual basis; production was 0.6% higher in Quarter 1 (Jan to Mar) 2015 compared with Quarter 1 (Jan to Mar) 2014, with manufacturing 1.3% higher. For production and manufacturing, this does however represent the weakest quarter-on-year growth since Quarter 3 (July to Sep) 2013.

**Figure 2: Quarterly seasonally adjusted production and manufacturing, quarter 1 (Jan to Mar) 2003 to quarter 1 (Jan to Mar) 2015, UK**

Figure 2: Quarterly seasonally adjusted production and manufacturing, quarter 1 (Jan to Mar) 2003 to quarter 1 (Jan to Mar) 2015, UK



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

Despite GDP having surpassed its pre-downturn peak in Quarter 3 (Jul to Sep) 2013, services (which account for over 78% of total GDP) remained the only industry grouping to have exceeded its pre-downturn peak in output. In contrast, output in the production and construction industries in Quarter 1 (Jan to Mar) 2015 remained below levels experienced just before the onset of the downturn, by 10.4% and 8.5% respectively (according to the Preliminary Estimate of GDP). Manufacturing output has performed more favourably compared with these industries; however output still remained 4.8% below pre-downturn levels.

The recent period of rising manufacturing output has coincided with easing price pressures in the manufacturing industry, 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). We publish both measures in the [Producer Price Inflation bulletin](#). Input prices marked their seventeenth successive month of deflation in the year to March 2015, with prices falling by 13.0%, although this was up from a fall of 13.5% in the year to February 2015. Output prices have also experienced deflation, falling by 1.7% on an annual basis, unchanged from the previous month.

## International perspective

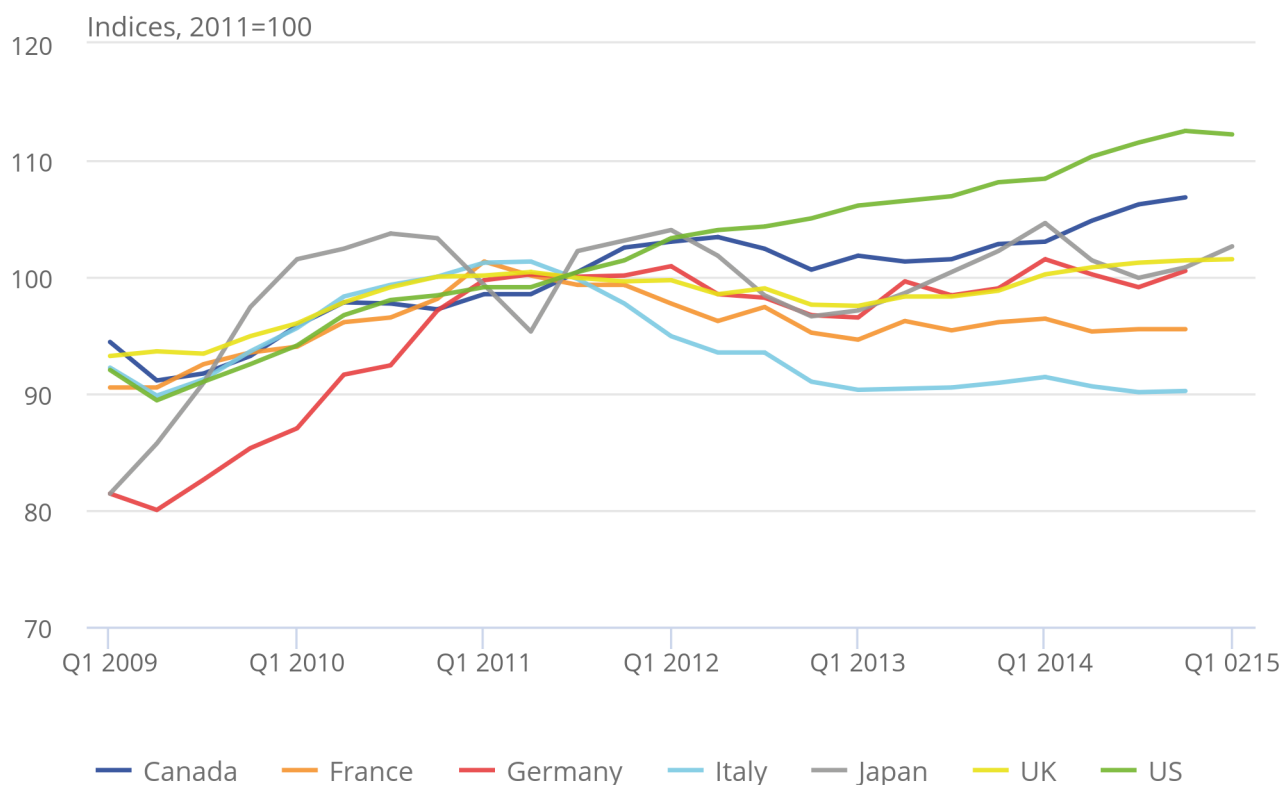
Globally, the performance of manufacturing output has varied across G7 nations since the onset of the economic downturn; Japan experienced the largest average annual fall in output over 2008 and 2009 (12.5% per annum), whereas the smallest decline was in the UK (6.1% per annum).

Following the 2008 to 2009 economic downturn, all [G7 nations' manufacturing](#) industries returned to growth. However, except for the USA, all members experienced further declines between the second half of 2012 and the first half of 2013, particularly in Italy and Japan. More recently, in Quarter 4 (Oct to Dec) 2014, Canada, Germany and Italy experienced growth in manufacturing output, although this has been to varying degrees, while output growth in France was flat. Germany experienced the strongest growth on a quarterly basis (1.4%), it was relatively more modest in Canada and Italy. Data for Quarter 1 (Jan to Mar) 2015, only currently available for the UK, USA and Japan shows a mixed picture. Output in Japan grew strongly on the quarter (1.8%), there was a slight increase for the UK (0.1%) and the USA contracted (-0.3%).

For most member states, manufacturing output remained below their respective pre-downturn levels experienced in 2007. Output in Italy, France and Japan remained a marked 23.7%, 16.1% and 12.6% below respective pre-downturn levels. 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 respective pre-downturn level, by 1.7%.

**Figure 3: Quarterly international manufacturing output, quarter 1 (Jan to Mar) 2009 to quarter 4 (Oct to Dec) 2014 and quarter 1 (Jan to Mar) 2015**

Figure 3: Quarterly international manufacturing output, quarter 1 (Jan to Mar) 2009 to quarter 4 (Oct to Dec) 2014 and quarter 1 (Jan to Mar) 2015



Source: OECD / Office for National Statistics

**Notes:**

1. Data for the UK are consistent with the March ONS Index of Production bulletin, while data for all other remaining G7 economies have been sourced from OECD

Figure 4 presents month-on-year percentage growth rates in 8 of the 13 UK manufacturing sub-industries for February 2015, alongside comparable growth rates achieved in Germany, France, Italy and the euro area. This shows that the UK experienced the strongest total manufacturing growth of these listed countries at 1.2%, compared with total euro area manufacturing growth of 0.8%. Germany experienced growth of 0.2%, while France and Italy both experienced falling output over the same period, suggesting the strength in euro area manufacturing came from outside of these major economies.

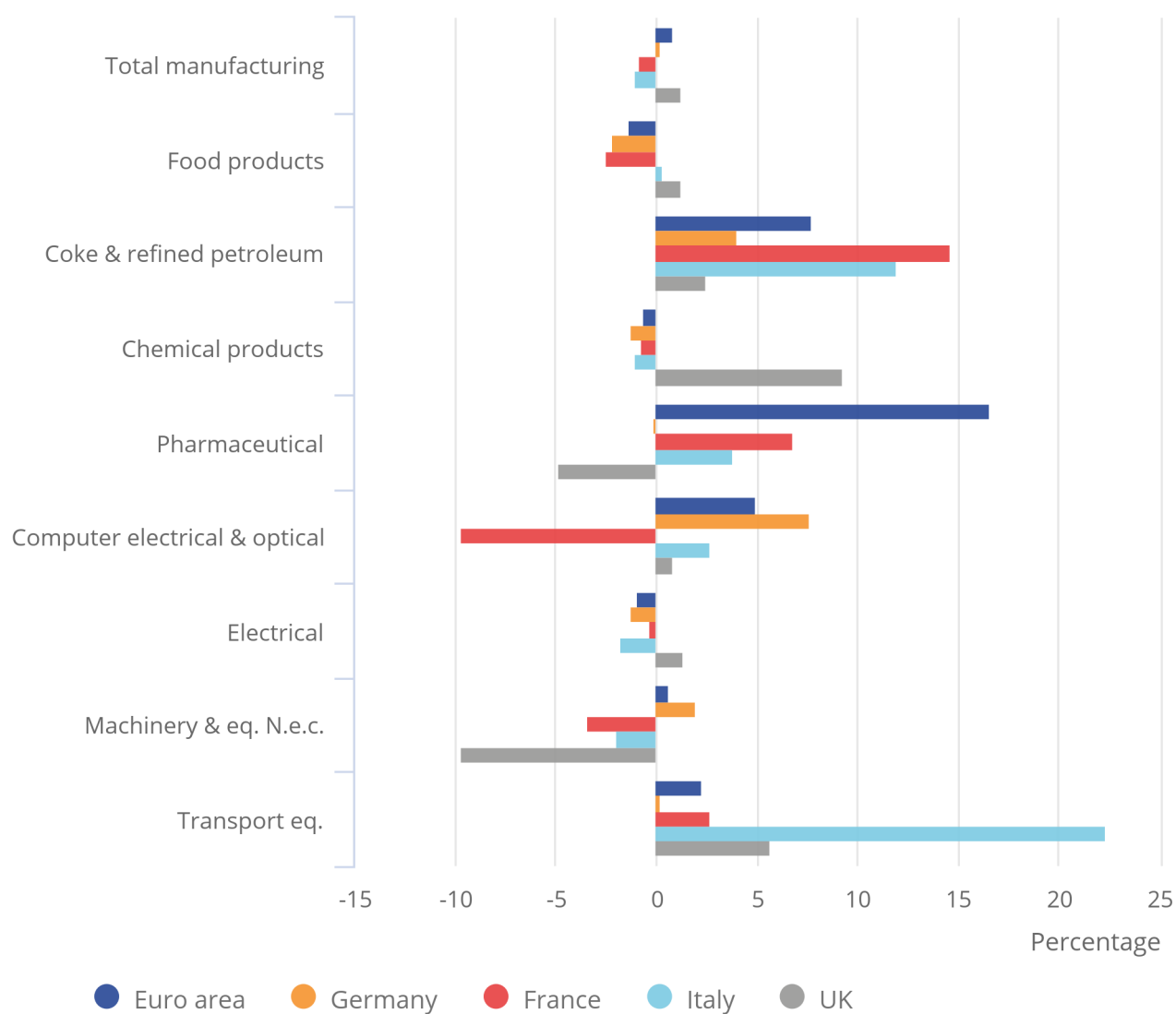
Figure 4 shows that the UK's comparable strength is concentrated in the manufacture of chemicals & chemical products; partially offset by relative weakness in the manufacture of pharmaceutical products and the manufacture of other machinery & equipment (that includes general purpose machinery products for use in other industries, such as pumps, valves gears and compressors, among others). The UK also experienced strong growth in the manufacture of transport equipment (5.7%), a sub-industry which grew in all these listed economies and was particularly strong in Italy, where output increased by 22.3%.

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

February 2015 compared with February 2014

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

February 2015 compared with February 2014



Source: Eurostat/ONS

Notes:

1. Data for the UK are consistent with the March ONS Index of Production bulletin, while data for all other remaining economies have been sourced from Eurostat

## 5 . Gross domestic product (GDP) impact and components

In this release, the earliest period open for revision was January 2015, in line with the [National Accounts revisions policy \(43.3 Kb Pdf\)](#).

The [preliminary estimate of GDP](#), published on 28 April 2015, contained a forecasted decrease of 0.1% for production in Quarter 1 (Jan to Mar) 2015. This release of data estimates that production increased by 0.1% between Quarter 4 (Oct to Dec) 2014 and Quarter 1 (Jan to Mar) 2015. This was primarily due to revisions to mining & quarrying, caused by the receipt of actual data to replace estimates. Due to the weight of the production industries within the economy, the impact on the recently published GDP preliminary estimate is minimal.

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 March 2015 will be published on 15 May 2015 and services output for the same period on 28 May 2015.

**Table 2: GDP component table, March 2015, UK**

Publication	Percentage of GDP	Release date	Month or Quarter of GDP	Most recent quarter on a year earlier	Most recent quarter on a quarter earlier	Percentage change	
						Most recent month on the same month a year ago	Most recent month on the previous month
Index of Production <sup>1</sup>	14.6	May 15	Mar	..	..	0.7	0.5
			Q1	0.6	0.1	..	..
			Q4	1.0	0.2	..	..
Construction	6.4	Apr 15	Feb	..	..	-1.3	-0.9
			Q4	4.5	-2.2	..	..
Index of services	78.4	Apr 15	Feb	..	..	3.2	0.3
			Q4	3.4	0.9	..	..
Retail sales		Apr 15	Mar	..	..	4.2	-0.5
			Q1	5.2	0.9	..	..
			Q4	4.9	2.2	..	..
Agriculture	0.6	Apr 15	Q1	0.9	-0.2	..	..

Source: Office for National Statistics

Notes:

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

## 6 . Production and sectors supplementary analysis

**Table 3: Headline growth rates for the Index of Production, March 2015, UK**

Description	Percentage of production	Month on same month a year ago growth (Percentage)	Month on previous month growth (Percentage)	Quarter on previous quarter growth (Percentage)
IoP	100	0.7	0.5	0.1
Sector B	15.7	-2.6	2.6	-0.7
Division 06	12.9	-5.1	4.9	-1.9
Sector C	69.4	1.1	0.4	0.1
Sector D	7.1	4.9	-1.1	2.7
Sector E	7.9	-0.8	-0.3	-0.8

Source: Office for National Statistics

Note:

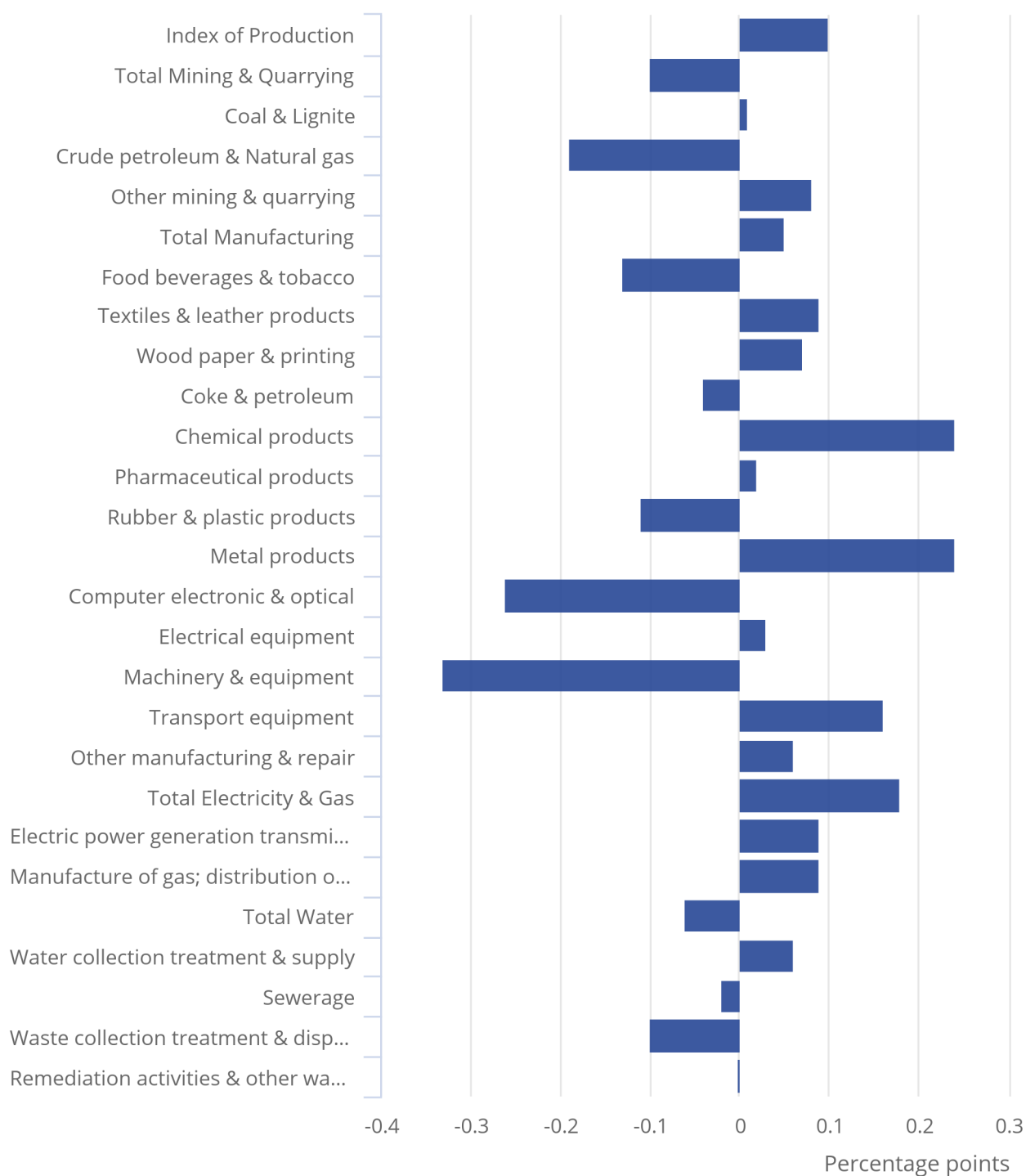
1. Headline figures for the Index of Production are:

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 4 (Oct to Dec) 2014 and quarter 1 (Jan to Mar) 2015, UK**

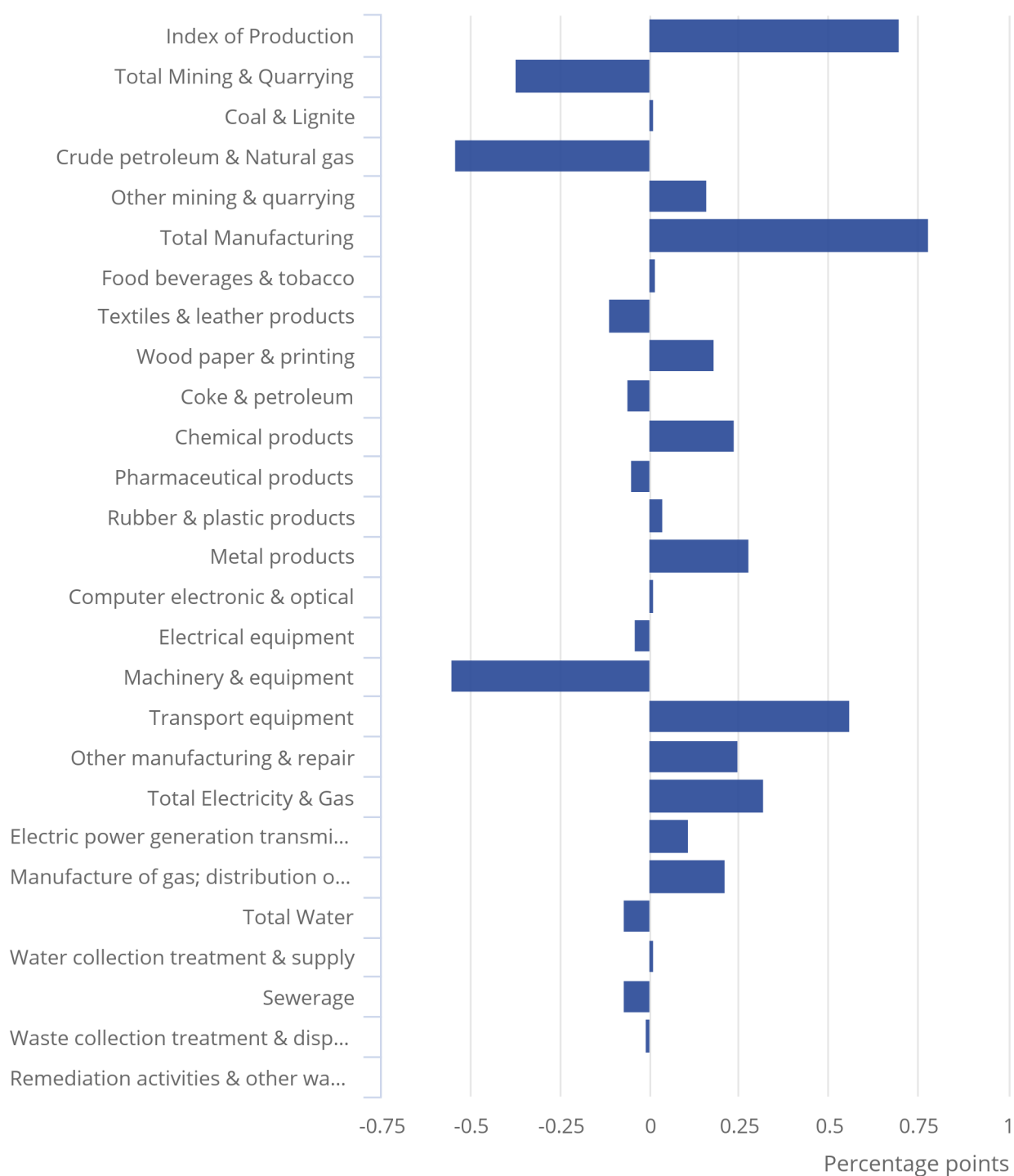
Figure 5: Contribution to production percentage growth, between quarter 4 (Oct to Dec) 2014 and quarter 1 (Jan to Mar) 2015, UK





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

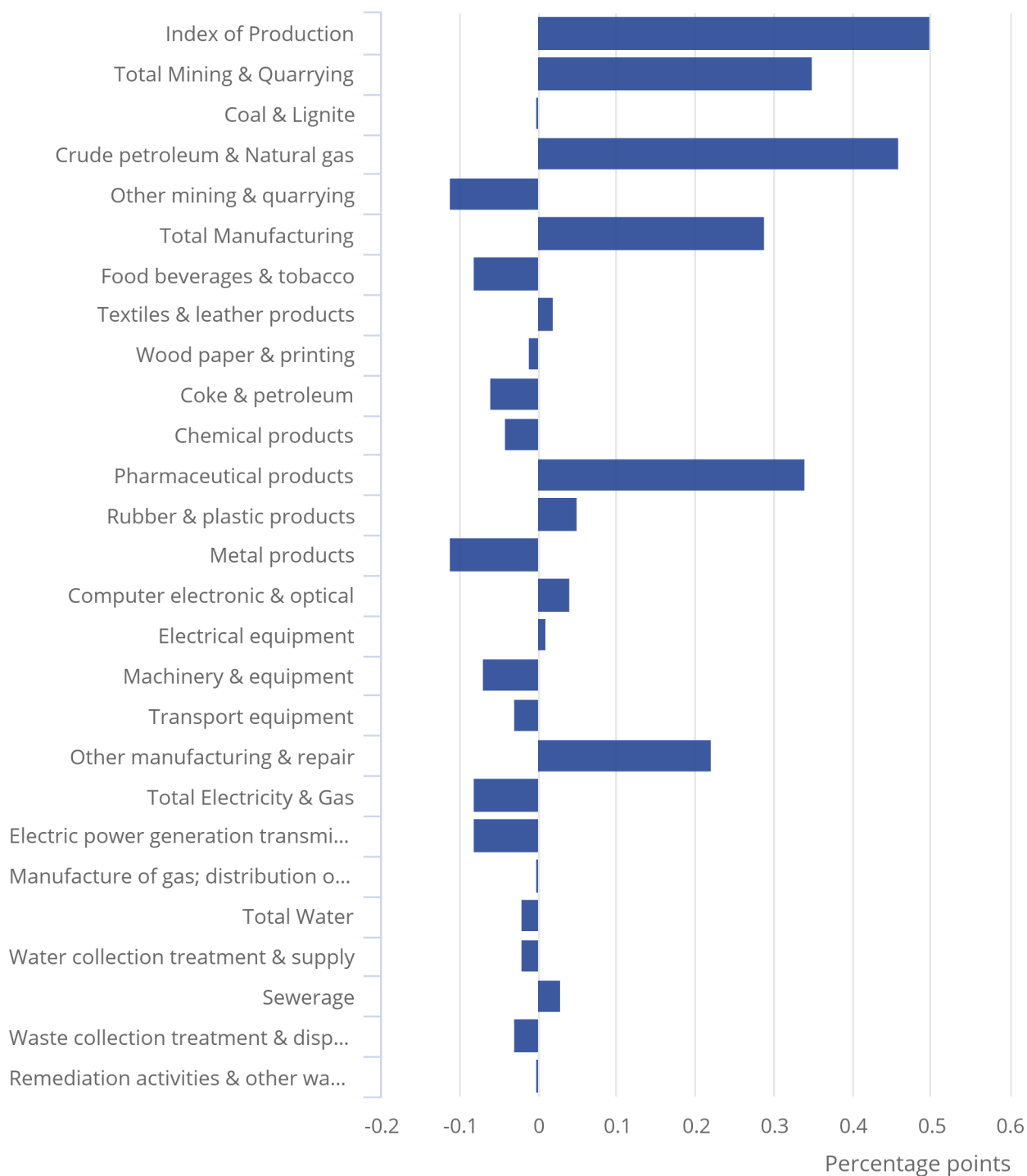
Figure 6: Contribution to production percentage growth,  
between March 2014 and March 2015, UK





**Figure 7: Contribution to production percentage growth, between February 2015 and March 2015, UK**

Figure 7: Contribution to production percentage growth,  
between February 2015 and March 2015, UK



## Total production

As seen in Table 3, total production increased by 0.1% in Quarter 1 (Jan to Mar) 2015 compared with Quarter 4 (Oct to Dec) 2014, the 9th consecutive quarterly increase since Quarter 4 (Oct to Dec) 2012. This increase was higher than the forecasted fall of 0.1% contained within the recent GDP preliminary estimate. This was due to revisions to oil and gas data, caused by the receipt of actual data to replace early forecasted estimates. The quarterly increase in total production reflected increases of 2.7% in electricity, gas, steam & air conditioning output and 0.1% in manufacturing. Largely offsetting these increases were decreases in mining & quarrying of 0.7% and in water supply, sewerage & waste management of 0.8%.

Total production output in March 2015 increased by 0.7% compared with March 2014, see Table 3. This increase reflected rises in 2 of its 4 main sectors with manufacturing having the largest contribution, increasing by 1.1% and contributing 0.8 percentage points. The rises were partially offset by a fall in mining & quarrying, which decreased by 2.6% and contributed 0.4 percentage points to total production.

Between February 2015 and March 2015, total production increased by 0.5% (see Table 3). There were increases in 2 of its 4 main sectors. The largest upward contributions were from mining & quarrying, which increased by 2.6% and contributed 0.4 percentage points and manufacturing, which increased by 0.4% and contributed 0.3 percentage points. Partially offsetting the increases were decreases in electricity, gas, steam & air conditioning output, which decreased by 1.1% and contributed 0.1 percentage points to total production and water supply, sewerage & waste management output, which decreased by 0.3%, having increased by 0.8% the previous month (see Figure 7).

## Manufacturing

Manufacturing increased by 0.1% in Quarter 1 (Jan to Mar) 2015 compared with Quarter 4 (Oct to Dec) 2014, as forecasted within the latest GDP preliminary estimate. This is the 8th consecutive quarterly increase since Quarter 1 (Jan to Mar) 2013. Output increased in 8 of its 13 sub-sectors. As seen in Figure 5, the sub-sector with the largest contribution was the manufacture of chemicals & chemical products, which increased by 6.0% and contributed 0.2 percentage points to total production.

In contrast, the manufacturing sub-sector with the largest quarterly downward contribution to total production was the manufacture of machinery & equipment not elsewhere classified, which decreased by 6.6% and contributed 0.3 percentage points to total production. This was the 3rd consecutive quarterly decrease and weakness in the global market was cited as a possible contributing factor.

Manufacturing output increased by 1.1% between March 2014 and March 2015 and contributed 0.8 percentage points to total production growth. Output increased in 8 of the 13 manufacturing sub-sectors compared with a year ago (see 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 4.6% and contributed 0.6 percentage points to total production. The main contributor within this sub-sector was the manufacture of air & spacecraft-related machinery, which increased by 6.8% and contributed 0.3 percentage points to total production. This was this industry's 6th 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 10.7% and contributed 0.6 percentage points to total production.

Manufacturing output increased by 0.4% between February 2015 and March 2015. There were increases in 6 of the 13 manufacturing sub-sectors (see Figure 7). The manufacturing sub-sector with the largest contribution to the increase in total production was the manufacture of basic pharmaceutical products & pharmaceutical preparations, which increased by 6.7% and contributed 0.3 percentage points to total production. Evidence suggests that the observed strength was widespread within the industry.

In contrast to the above increases, the manufacturing sub-sector with the largest downward contribution to total production was the manufacture of basic metals & metal products, which decreased by 1.4% and contributed 0.1 percentage points to total production.

## **Mining and quarrying**

Mining & quarrying output decreased by 0.7% in Quarter 1 (Jan to Mar) 2015 compared with Quarter 4 (Oct to Dec) 2014 and contributed 0.1 percentage points to total production. This decrease was less than forecasted within the latest GDP preliminary estimate, due to actual data replacing estimates. The main contributor to the decrease in mining & quarrying was the extraction of crude petroleum & natural gas, which decreased by 1.9% and contributed 0.2 percentage points to total production (see Figure 5), having had an increase of 0.2% in the previous quarter.

Mining & quarrying output decreased by 2.6% between March 2014 and March 2015 and contributed 0.4 percentage points to total production. The sub-sector with the largest downward contribution was the extraction of crude petroleum & natural gas, which decreased by 5.1% and contributed 0.5 percentage points to total production (see Figure 6). This decrease reflected the continuing pattern of volatility shown in this sub-sector.

Mining & quarrying output increased by 2.6% in March 2015 compared with February 2015. The sub-sector with the largest upward contribution was the extraction of crude petroleum & natural gas, which increased by 4.9% and contributed 0.5 percentage points to total production (see Figure 7). This followed a decrease of 3.7% the previous month in this sub-sector. Evidence suggests that the rise observed within this sub-sector was mainly attributed to an increase in crude oil production from some of the offshore pipelines and offshore loaders and also to a slight increase in production from associated gas terminals in the North Sea.

## **Electricity, gas, steam and air conditioning**

Electricity, gas, steam & air conditioning output increased by 2.7% in Quarter 1 (Jan to Mar) 2015, similar to the decrease in the previous quarter. This was reflected in both of its sub-sectors; the manufacture of gas & distribution of gaseous fuels through mains and electric power generation, transmission & distribution. Each contributed 0.1 percentage points to total production (see Figure 5). This quarterly increase reflected an overall increase in demand due to the slight drop in temperature over the quarter, having decreased by a similar amount in the previous quarter.

Electricity, gas, steam & air conditioning output increased by 4.9% in March 2015 compared with March 2014 and contributed 0.3 percentage points to total production (see Figure 6). This reflected increases in output in both sub-sectors, with the largest contribution from the manufacture of gas & distribution of gaseous fuels through mains, which increased by 10.8% and contributed 0.2 percentage points to total production. Evidence suggested that the average temperature during March 2015 was cooler than a year earlier, therefore the increase in output was mainly attributed to an increase in demand for gas in domestic space heating and for the purpose of generating electricity.

Electricity, gas, steam & air conditioning output decreased by 1.1% in March 2015 compared with February 2015 and contributed 0.1 percentage points to total production (see Figure 7). The decrease was in both of its sub-sectors, with the largest downward contribution coming from electric power generation, transmission & distribution, which decreased by 1.6% and contributed 0.1 percentage points to total production. Evidence suggested that the monthly decrease in output was mainly attributed to reduction in demand for domestic space heating.

## Water and waste management

Water supply, sewerage & waste management output decreased by 0.8% in Quarter 1 (Jan to Mar) 2015 compared with Quarter 4 (Oct to Dec) 2014, having increased by 1.1% in the previous quarter. The largest contributor to the decrease was waste collection, treatment & disposal activities, which decreased by 3.0% and contributed 0.1 percentage points to total production (see Figure 5).

Water supply, sewerage & waste management output in March 2015 decreased by 0.8% compared with March 2014 and contributed 0.1 percentage points to total production. This was the 10th consecutive decrease since May 2014, compared with a year ago. This decrease reflected falls in 3 of its 4 sub-sectors' output (see Figure 6). The largest contributor to the decrease was sewerage output, which decreased by 2.7% and contributed 0.1 percentage points to total production.

Water supply, sewerage & waste management output decreased by 0.3% between February 2015 and March 2015, having increased by 0.8% the previous month. This decrease reflected falls in 3 of its 4 sub-sectors (see Figure 7), with the largest downward contribution coming from waste collection, treatment & disposal activities, which decreased by 1.0% and had a negligible contribution to total production.

## Revisions to IoP

Revisions to the Index of Production follow the [National Accounts Revisions policy \(43.3 Kb Pdf\)](#) (41.7 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 is January 2015. There were no revisions to IoP month on month growth rates. 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: other manufacturing and repair

Industry CM covers "other manufacturing and repair" in the Index of Production data. The industry accounts for around 8.8% of manufacturing output, and encompasses a diverse range of sub-industries. According to the Standard Industrial Classification (SIC07), it includes the manufacture of furniture (division 31, accounting for approximately 24% of "other manufacturing and repair"), other manufacturing (division 32, 33%) and repair and installation of machinery and equipment (division 33, 43%).

Other manufacturing (division 32) captures a wide range of products not elsewhere classified, such as the manufacture of jewellery, musical instruments, games, toys and medical and dental instruments. Repair and installation of machinery and equipment (division 33) is driven mainly by high value, milestone payment-based contracts and is hence more volatile, particularly for repair and maintenance of ships & boats, and repair and maintenance of aircraft & spacecraft.

A long-term view of other manufacturing and repair shows that its path broadly follows that of total manufacturing; steady growth until the mid-1990s (despite a period of decline from 1974 to 1983) followed by relative stability. The industry has however, unlike manufacturing as whole, recovered to its level immediately prior to the downturn in 2008, although it remains around 6.8% below its peak in Quarter 4 (Oct to Dec) 2000.

**Figure 8: Quarterly manufacturing output of other manufacturing and repair and total manufacturing, seasonally adjusted, quarter 1 (Jan to Mar) 1949 to quarter 1 (Jan to Mar) 2015, UK**

Figure 8: Quarterly manufacturing output of other manufacturing and repair and total manufacturing, seasonally adjusted, quarter 1 (Jan to Mar) 1949 to quarter 1 (Jan to Mar) 2015, UK

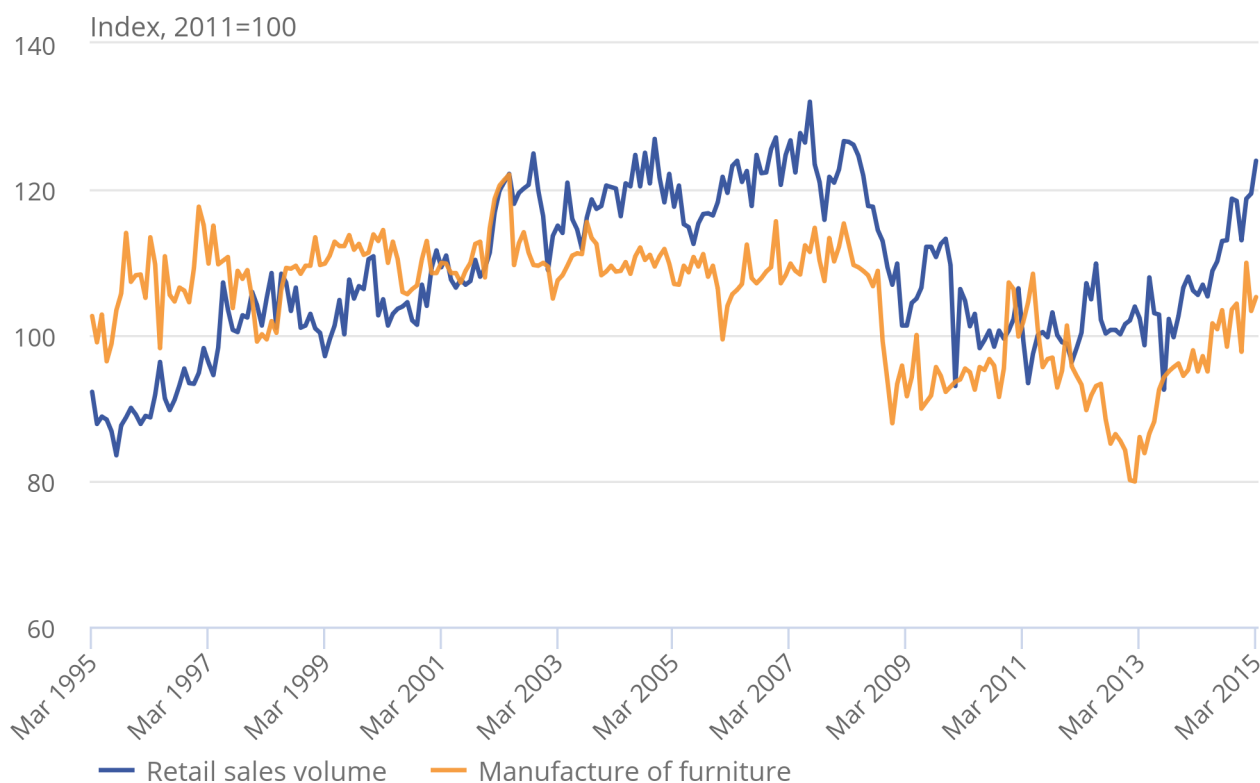


**Source: Office for National Statistics**

Manufacture of furniture (division 31) has bounced back strongly from a period of sharp decline between mid-2011 and 2013; output growth on a month-on-same month a year ago basis has been positive for 20 consecutive months, at an average of 11.0%. A sustained pickup is also evident in retail sales data for furniture stores, which shows that growth in the volume of sales in this store type over the same period averaged 7.2%.

**Figure 9: Monthly indices of manufacture of furniture and volume of retail sales in furniture stores, seasonally adjusted, March 1995 to March 2015, UK**

Figure 9: Monthly indices of manufacture of furniture and volume of retail sales in furniture stores, seasonally adjusted, March 1995 to March 2015, UK



Source: Office for National Statistics

## 8. Background notes

### 1. What's new?

There has been much speculation about how the low oil prices will affect the oil and gas industry and this [article](#) outlines the impact.

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

On 7 January 2015, the following papers were published:

[Impact of quarterly employment question on monthly survey response \(163.7 Kb Pdf\)](#) .

[Monthly Business Survey variance of change \(110 Kb Pdf\)](#) .

We have implemented an updated version of the seasonal adjustment software called X-13-ARIMA-SEATS. The new version is in line with international best practice and is a change from the previously used

version X-12-ARIMA. In practice, this will result in improved quality of outputs for seasonally adjusted estimates.

## **Upcoming changes**

The Index of Production release for April 2015, to be published on 10 June 2015, will have a revisions period back to January 2014.

## **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 the ONS 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 \(33.5 Kb Excel sheet\)](#) back to 2010.

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

	Percentage			
	Year Period		Turnover	Questionnaire
MBS overall	2015	Mar	89.2	74.6
	2015	Feb	95.6	83.4
	2014	Jan	95.4	85.7
	2014	Dec	97.5	86.6
MBS production only	2015	Mar	88.8	77.8
	2015	Feb	95.6	86.0
	2014	Jan	97.8	88.5
	2014	Dec	98.2	89.9

Source: Office for National Statistics

### 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 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 April 2008 and March 2014 and the estimates published 12 months later.

**Table 5: Revisions, March 2015, UK**

Growth rates	Value in latest period	Percentage change	
		Revisions between first publication and estimates twelve months later	
		Average over the last 60 months	Average over the last 60 months without regard to sign (average absolute revision)
Production - 3 month	0.1	-0.15	0.29
Manufacturing - 3 month	0.1	-0.16	0.29
Production - 1 month	0.5	-0.11	0.27
Manufacturing - 1 month	0.4	-0.09	0.27

Source: Office for National Statistics

[Spreadsheets give revisions triangles \(4.43 Mb ZIP\)](#) of estimates 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 [Customer Contact Centre](#).

## 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 \(244.6 Kb Pdf\)](#) 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 \(56 Kb Excel sheet\)](#) 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](mailto: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 10 June 2015 Issued by :

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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](http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html) or from the Media Relations Office email: [media.relations@ons.gsi.gov.uk](mailto:media.relations@ons.gsi.gov.uk)

These National Statistics are produced to high professional standards and released according to the arrangements approved by the UK Statistics Authority.