

# Northern Ireland

## Correction to Index of Production

### Quarter 4 (October-December) 2016

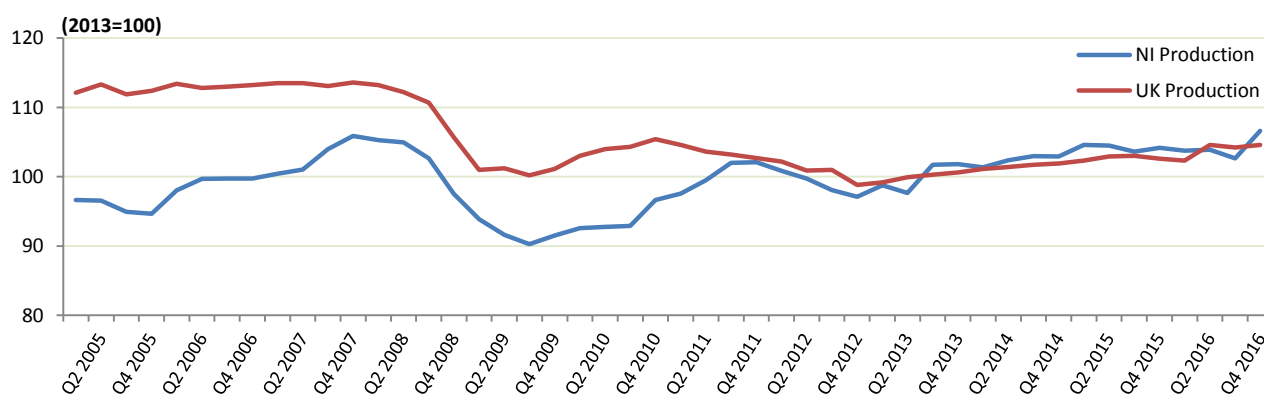


Date: 13 April 2017  
Geographical Area: Northern Ireland  
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#### Key points

This publication is a corrected version of the Index of Production issued on the 15<sup>th</sup> March 2017 relating to Quarter 4 (October – December) 2016, which has now been withdrawn. The error only affects the Quarter 4 2016 publication. This Bulletin includes corrected results for Production by broad industry sector and corrected manufacturing sub sector tables will be published on the 28<sup>th</sup> April.

- Revised results from the Index of Production (IOP) for the fourth quarter (October-December) of 2016 showed that output in Northern Ireland (NI) increased, in real terms, by 3.9% over the quarter. This was the highest quarterly growth rate recorded since Quarter 3 (July – September) 2013.
- This corrects the previously published estimate of quarterly growth of 5.4% for the Production sector. Further details on the nature and impact of the error are included on page 4.
- The revised figures indicate that compared to the same period one year earlier, the NI index grew by 2.3% to Quarter 4 2016.
- A less marked increase in output was also reported for the UK production sector as a whole, with quarterly and annual increases of 0.4% and 1.9% respectively.
- Despite the marked increase in NI output in Quarter 4, there was no growth observed in real terms between 2015 and 2016 in the production sector.
- The output from the overall production industries (seasonally adjusted) in Quarter 4 2016 is now at the highest level on record and is some 18.1% above the low point recorded in Quarter 3 (July-September) 2009.
- This is the second quarter of Northern Ireland production output statistics following the EU referendum on 23rd June 2016. The post-referendum picture is still emerging and will continue to do so over the coming quarters and years. It is not possible to separate out the specific impact of the referendum from pre-existing trends.



## **National Statistics**

The United Kingdom Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics.

National Statistics status means that official statistics meet the highest standards of trustworthiness, quality, and public value.

All official statistics should comply with all aspects of the Code of Practice for Official Statistics. They are awarded National Statistics status following an assessment by the Authority's regulatory arm. The Authority considers whether the statistics meet the highest standards of Code compliance, including the value they add to public decisions and debate.

It is a producer's responsibility to maintain compliance with the standards expected of National Statistics. If we become concerned about whether these statistics are still meeting the appropriate standards, we will discuss any concerns with the Authority promptly. National Statistics status can be removed at any point when the highest standards are not maintained, and reinstated when standards are restored.

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## Revisions and Corrections

An error was identified in the Index of Production publication which was issued on the 15th March 2017 relating to Quarter 4 2016, and the bulletin was withdrawn. The correction affects all Quarter 4 data in this publication but does not impact on the overall trend of the NI Production sector.

The error was a production error where incorrect deflators were applied during results processing. A correction has been applied to all tables of Production output and broad industry sector (Manufacturing, Electricity, etc) for Quarter 4 2016, utilising the correct deflators. Corrected manufacturing sub sector tables will be published on 28<sup>th</sup> April.

The originally published figures reported quarterly increases for the NI production sector as a whole and the individual broad sectors. The IOP quarterly rise was initially reported as 5.4%, which was the highest quarterly growth rate in recent decades. The corrected quarterly rise is 3.9%, which is now the highest growth rate since Quarter 3 2013. The majority of the broad sectors are still reporting quarterly increases, but these increases are lower than originally reported, with the electricity and gas sector showing the most marked revision of the broad sectors (now 2.2% compared to the original value of 5.6%). Manufacturing, which represents 81% of the IOP index, is reporting a lower increase of 3.1% (initially 4.3%).

When compared to the same period one year earlier, originally published figures reported increases for the NI production sector as a whole and the individual broad sectors. The majority of these indices are still showing an increase, with the increases lower than originally reported. The most marked revision on this measure was in the manufacturing sector, where a rise of 1.0% was initially reported and corrected figures are reporting a fall of 0.4% over the year. The electricity and gas sector is reporting an increase of 3.9%, compared to the initial increase of 7.6%.

Results, particularly for the most recent quarter, are provisional and subject to revision as more up-to-date data become available (e.g. through late returns). Figures can also change as a result of the seasonal adjustment process, methodological changes or changes to classifications.

The Index of Production publication has published data on a 2013=100 basis to correlate with ONS publications. SIC07 deflators with the base year 2010=100 have been applied to all series.

Graphs and tables of the corrected and original series can be accessed at <https://www.nisra.gov.uk/publications/index-production-iop-statistical-bulletin-and-tables-quarter-4-2016>

The IOP revisions policy can be found at <https://www.nisra.gov.uk/publications/quality-and-revisions-documents-iop>

**Table 1: Corrected and original percentage changes for IOP and broad sectors**

		Percentage change compared to:		
		Previous quarter	Same quarter one year ago	Most recent four quarters compared to previous four quarters
All Production industries - Sections B,C,D,E	Corrected change	3.9%	2.3%	0.0%
	Original change	5.4%	3.9%	0.4%
	Revision	<b>-1.5%</b>	<b>-1.6%</b>	<b>-0.4%</b>
Manufacturing – Section C	Corrected change	3.1%	-0.4%	-1.1%
	Original change	4.3%	1.0%	-0.8%
	Revision	<b>-1.2%</b>	<b>-1.4%</b>	<b>-0.3%</b>
Water, supply & waste management – Section E	Corrected change	5.9%	16.1%	5.8%
	Original change	7.3%	17.5%	6.1%
	Revision	<b>-1.4%</b>	<b>-1.4%</b>	<b>-0.3%</b>
Electricity, gas, steam & air conditioning – Section D	Corrected change	2.2%	3.9%	0.9%
	Original change	5.6%	7.6%	1.9%
	Revision	<b>-3.4%</b>	<b>-3.7%</b>	<b>-1.0%</b>
Mining & quarrying – Section B	Corrected change	8.5%	37.6%	16.4%
	Original change	8.1%	36.8%	16.2%
	Revision	<b>0.4%</b>	<b>0.8%</b>	<b>0.2%</b>

## Introduction

This bulletin provides data which is collected from the Index of Production (IOP) aspect of the Quarterly Business Survey (QBS) for Northern Ireland. The IOP is one of the earliest official indicators of the performance of Northern Ireland industry and, as such, represents an important short-term measure of change in a significant area of the economy. The contents of this report will be of interest to government policymakers, Members of the Legislative Assembly, the business community, economic commentators, academics and members of the general public with an interest in the state of the NI economy. A summary of uses is available on the website at <https://www.nisra.gov.uk/publications/methodology-and-usage-iop>

The latest Department for the Economy (DfE) economic commentary (November 2016) provides an overview of the state of the Northern Ireland economy, setting it in context with the UK and Republic of Ireland. This can be found at <https://www.economy-ni.gov.uk/publications/dfe-economic-commentary>

The most up-to-date official statistics on the economy and labour market, including those published on the same day as the Northern Ireland Index of Services and Index of Production, are available on the economic overview page of the Northern Ireland Statistics and Research Agency (NISRA) website at <https://www.nisra.gov.uk/statistics/nisra-economic-and-labour-market-statistics-elms/economic-overview>

The separate Northern Ireland Index of Services (IOS) provides an important short-term measure of change in the output of the private services sector of the economy. It is based on up-to-date information about the output and sales of the services industry. Provisional figures for IOS for the fourth quarter of 2016 showed that output, in real terms, increased by 1.6% over the quarter and by 3.8% over the year. The index has recovered by 8.8% since the recent minimum value recorded in Quarter 2 (January-March) 2012. Further information and results from the NI IOS can be accessed at <https://www.nisra.gov.uk/statistics/economic-output-statistics/index-services>

The Index of Production is published on a Standard Industrial Classification 2007 (SIC07) basis. This has an impact on the type of businesses classified as production sector. For example, publishing activities move from the production to the services sector and sewerage and waste disposal moves from services to the production sector. Within the production sector, there are some new groupings of businesses. IOP data prior to Quarter 2 2011 were collected on a SIC03 basis and it has been converted to approximate the SIC07 coverage. Further detail can be found in the background notes (section 5).

The background notes in Section 5 of this publication provide detailed information on the methodology used to produce the statistics as well as information on the quality and accuracy of the data. This bulletin contains detailed results for the production industries i.e. the mining & quarrying, the manufacturing, the electricity, gas, steam and air conditioning supply and the water supply, sewerage, waste management (inc. recycling) sectors on a 2013=100 basis. These data are seasonally adjusted (where stated).

Manufacturing is typically the main determinant of change in the production sector, representing 81.1% of the approximate Gross Value Added (GVA) in the production industries. The other elements of the index relate to water supply, sewerage, waste management (inc. recycling) which represents around 9.9% of the index; electricity, gas, steam and air conditioning supply which represents around 6.7% and mining and quarrying which represents around 2.3%.

Comparative UK data (produced by the Office for National Statistics) are presented where these are available. The latest ONS IOP results on a comparative 2013=100 basis are available at

<http://www.ons.gov.uk/economy/economicoutputandproductivity/output/bulletins/indexofproduction/previousReleases>

Information on the manufacturing sub-sectors (e.g. food, drink, and tobacco) along with information by market sector (classifying production under one of three headings, according to the purpose for which output is intended i.e. investment goods, intermediate goods, and consumer goods) will be published on 28<sup>th</sup> April.

This publication provides three measures of growth for the Index. The quarter-on-quarter change provides the most recent measure of how the sector is changing. It is appropriate to compare consecutive quarters as the indices are seasonally adjusted, where appropriate, to remove the effects of changes in output as a result of the time of the year. We also provide comparisons with the same quarter one year ago and a comparison of the most recent twelve months with the twelve months before. The quarterly comparison over the year provides an additional control on seasonal effects. The comparison of the rolling annual average is useful for identifying changes in output over a longer period than the other two approaches.

### **Date of next publication**

The next Northern Ireland Index of Production publication is planned for 14<sup>th</sup> June 2017.

# 2

## Executive summary

### Revised results for Quarter 4 (October-December) 2016

Revised results from the Index of Production (IOP) for the fourth quarter of 2016 showed that output in Northern Ireland (NI) increased, in real terms, by 3.9% over the quarter. This was the highest quarterly growth rate recorded since Quarter 3 (July – September) 2013.

Compared to the same period one year earlier, the NI index grew by 2.3% to Quarter 4 2016. Despite the quarterly and yearly increase in NI output to Quarter 4, growth for the whole of 2016 in the production sector reported no change when compared to 2015.

**Table 2: Index of Production percentage change, Northern Ireland and UK**

	NI	UK
<b>Percentage change compared to:</b>		
Previous quarter	3.9%	0.4%
Same quarter one year ago	2.3%	1.9%
Most recent four quarters compared to previous four quarters	0.0%	1.2%

**Figure 2: Index of Production, Northern Ireland and UK**



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A less marked increase in output was also reported for the UK production sector as a whole, with quarterly and annual increases of 0.4% and 1.9% respectively.



## **Manufacturing (Seasonally Adjusted)**

Manufacturing comprises the main element (81.1%) of the production index and therefore the manufacturing index has a similar profile to the overall production index. The manufacturing index remains below (3.3%) the peak in Quarter 4 2007.

- Manufacturing output levels grew over the quarter by 3.1% (UK: increased by 1.3%)
- Manufacturing output levels decreased by 0.4% compared to the same quarter one year ago whilst UK levels increased by 2.0% over the same period
- Manufacturing output levels fell by 1.1% over the most recent four quarters compared to the previous four quarters, while the UK manufacturing increased over the same period (0.7%)

## **Other Production**

The water supply, sewerage, and waste management sector (seasonally adjusted) increased over the quarter (5.9%) and over the year (16.1%). The NI index is 5.7% below the recent peak recorded in Quarter 1 (January-March) 2012, while the UK index recorded a rise of 15.6% over the same period.

The electricity, gas, steam and air conditioning supply sector (seasonally adjusted) reported an increase in output over the quarter (2.2%) and a rise over the year (3.9%). The UK also recorded growth over the quarter (3.9%) and over the year (5.4%). The NI index is 5.2% below the peak recorded in Quarter 3 2008, with the UK reporting a fall (6.5%) over the same period.

The seasonally adjusted mining and quarrying sector (accounting for approximately 2.3% of the overall production index) reported growth in output of 8.5% compared to the previous quarter and an increase of 37.6% when compared to the same period a year earlier. The respective figures for the whole of the UK reported a decrease of 7.0% over the quarter and a decrease of 3.1% over the year. The output from this sector in Quarter 4 2016 is now the highest level recorded and is some 71.2% above the low point recorded in Quarter 1 2005.

## **Commentary**

This is the second quarter of NI production sector statistics following the EU referendum on 23rd June 2016. The post-referendum picture is still emerging and will continue to do so over the coming quarters and years. It is not possible to separate out the specific impact of the referendum from pre-existing trends.

There was a strong performance across the production sector in the final quarter of 2016 (3.9% growth). This growth was observed across all sectors, but primarily driven by the strong growth in manufacturing. The weakness of the sterling exchange rate in the second half of 2016 is likely to have been a contributory factor to growth in sales outside the UK. This has offset a relatively weak performance earlier in the year but overall output in the production sector in 2016 showed no change relative to 2015, in real terms.

# 3

## Production by broad industry groups

This section focuses on the performance of the sub-sectors which make up the overall production sector. The main industry categories of which it is comprised are listed in order of importance of the contribution.

**Figure 3: Manufacturing<sup>1</sup> – SIC07 Section C (weight = 81.1%), Northern Ireland and UK**



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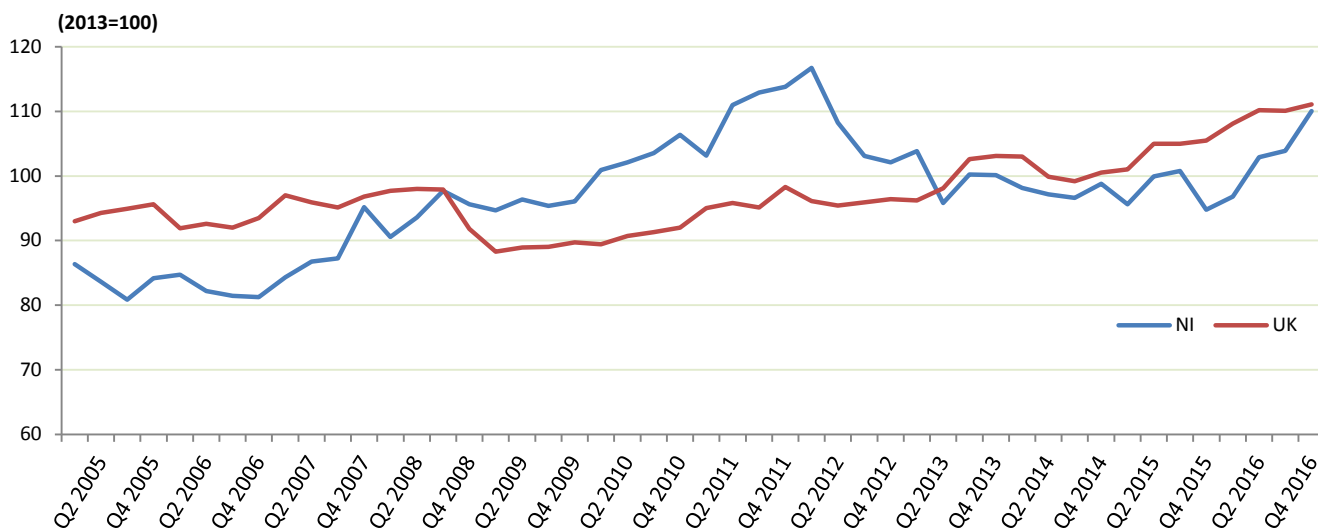
**Table 3: Manufacturing percentage change, Northern Ireland and UK**

	NI	UK
<b>Percentage change compared to:</b>		
Previous quarter	3.1%	1.3%
Same quarter one year ago	-0.4%	2.0%
Most recent four quarters compared to previous four quarters	-1.1%	0.7%

Manufacturing comprises the main element (81.1%) of the production index and therefore the manufacturing index has a similar profile to the overall production index. Manufacturing output increased by 3.1% in real terms over the fourth quarter of 2016 and recorded a fall of 0.4% when compared to the same period a year earlier. By comparison, UK manufacturing output increased over the quarter (1.3%) and over the year (2.0%).

<sup>1</sup> The manufacturing sub-sector has been seasonally adjusted using X-13 ARIMA SEATS.

**Figure 4: Water supply, sewerage, and waste management (inc. recycling)<sup>2</sup> – SIC07 Section E (weight = 9.9%) (seasonally adjusted series), Northern Ireland and UK**



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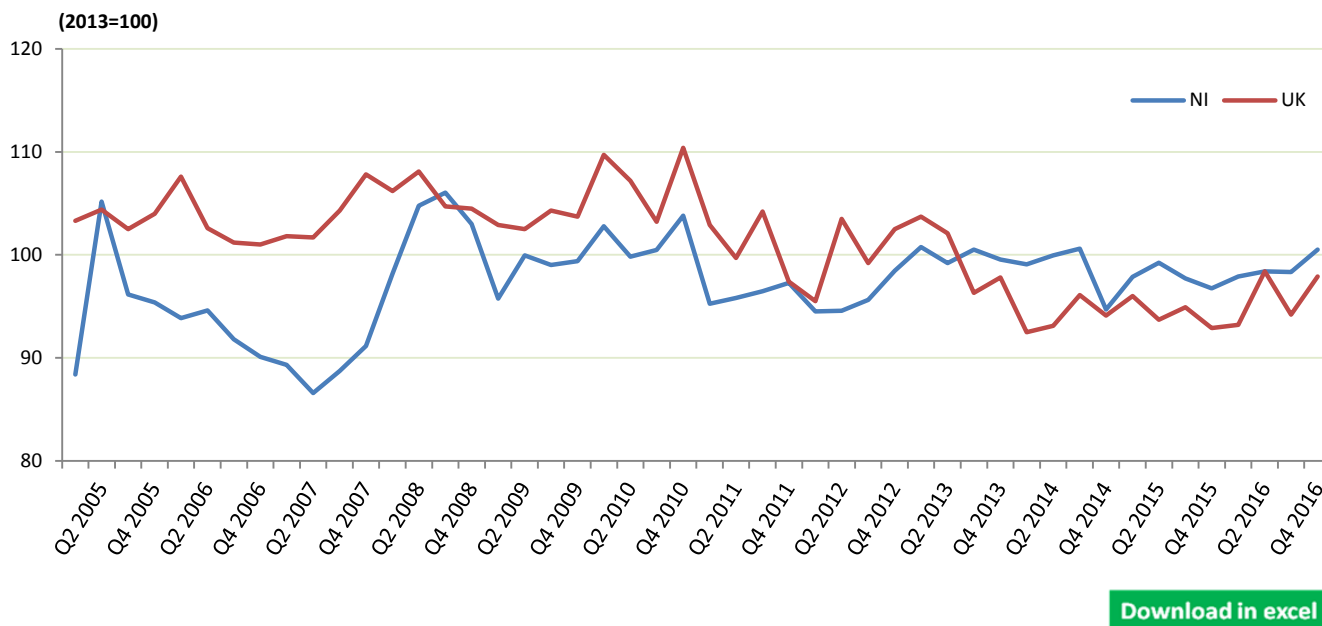
**Table 4: Water supply, sewerage, and waste management (inc. recycling) percentage change, Northern Ireland**

	NI	UK
<b>Percentage change compared to:</b>		
Previous quarter	5.9%	0.9%
Same quarter one year ago	16.1%	5.3%
Most recent four quarters compared to previous four quarters	5.8%	5.5%

The NI index has shown steady growth in the last year and is now at a similar level (111.0) to that of the UK (111.1). This sector remains below (5.7%) the peak reached in Quarter 1 2012.

<sup>2</sup> The water supply, sewerage and waste management (inc. recycling) sub-sector has been seasonally adjusted using X-13 ARIMA SEATS.

**Figure 5: Electricity, gas, steam and air conditioning supply<sup>3</sup> – SIC07 Section D (weight = 6.7%), Northern Ireland and UK**



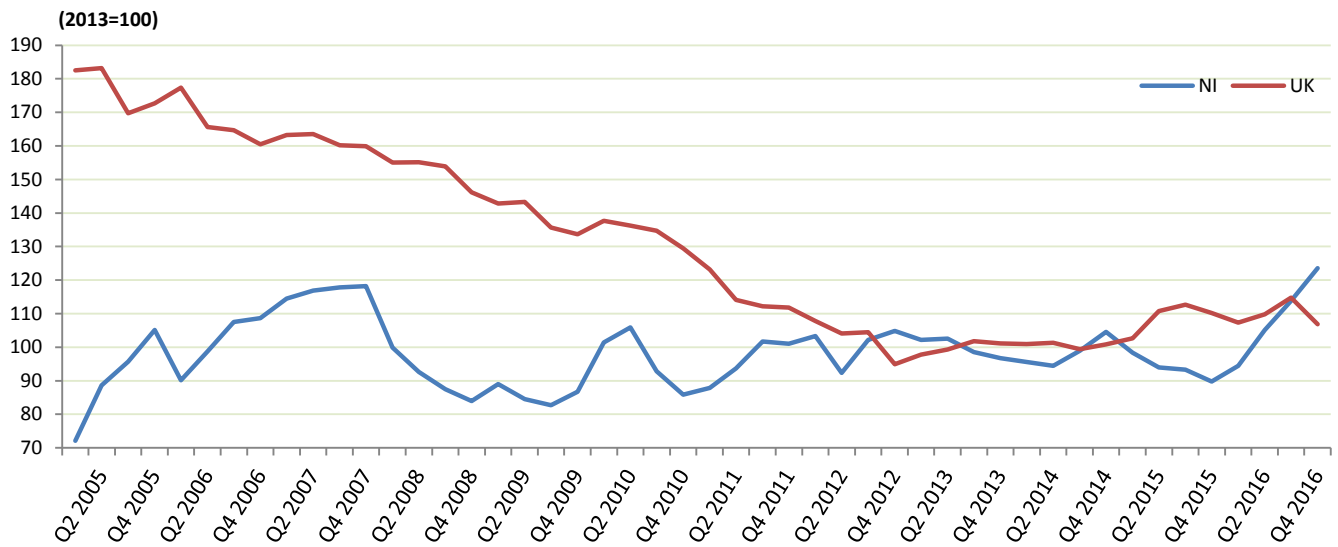
**Table 5: Electricity, gas, steam and air conditioning supply, Northern Ireland and UK**

	NI	UK
<b>Percentage change compared to:</b>		
Previous quarter	2.2%	3.9%
Same quarter one year ago	3.9%	5.4%
Most recent four quarters compared to previous four quarters	0.9%	1.6%

This index is 5.2% below the peak recorded in Quarter 3 2008, with the UK also reporting a fall (6.5%) over this same period. The NI index has recovered 16.1% from the low point recorded in Quarter 2 2007 while the UK has recorded a fall of 3.7% over the same period.

<sup>3</sup> The electricity, gas, steam and air conditioning supply sub-sector has been seasonally adjusted using X-13 ARIMA SEATS.

**Figure 6: Mining and quarrying<sup>4</sup> – SIC07 Section B (weight = 2.3%), Northern Ireland and UK**



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**Table 6: Mining and quarrying percentage change, Northern Ireland and UK**

	NI	UK
<b>Percentage change compared to:</b>		
Previous quarter	8.5%	-7.0%
Same quarter one year ago	37.6%	-3.1%
Most recent four quarters compared to previous four quarters	16.4%	0.6%

The output from this sector in Quarter 4 2016 is now the peak output level recorded and is some 71.2% above the low point recorded in Quarter 1 2005.

<sup>4</sup> The mining and quarrying sub-sector has been seasonally adjusted using X-13 ARIMA SEATS.

## 4

# Quarterly/annual/rolling annual average changes

Table 7: Index of Production – Quarterly, annual and rolling annual average<sup>5</sup> changes by sector, Northern Ireland

		All Production industries - Sections B, C, D, E (seasonally adjusted)				Manufacturing – Section C (seasonally adjusted) weight <sup>6</sup> = 81.1%				Water, supply & waste management – Section E (seasonally adjusted) weight <sup>15</sup> = 9.9%				Electricity, gas, steam & air conditioning – Section D (seasonally adjusted) weight <sup>15</sup> = 6.7%				Mining & quarrying – Section B (seasonally adjusted) weight <sup>15</sup> = 2.3%			
		Index	% Change			Index	% Change			Index	% Change			Index	% Change			Index	% Change		
			Quarter	Annual	Rolling		Quarter	Annual	Rolling		Quarter	Annual	Rolling		Quarter	Annual	Rolling		Quarter	Annual	Rolling
2005	Q1	96.7	-	-	-	100.6	-	-	-	86.3	-	-	-	88.4	-	-	-	72.1	-	-	-
	Q2	96.6	-0.1	-	-	99.4	-1.3	-	-	83.6	-3.1	-	-	105.2	19.0	-	-	88.6	22.9	-	-
	Q3	94.9	-1.7	-	-	97.9	-1.4	-	-	80.8	-3.4	-	-	96.1	-8.6	-	-	95.7	8.0	-	-
	Q4	94.6	-0.3	-	-	96.8	-1.1	-	-	84.2	4.1	-	-	95.4	-0.8	-	-	105.1	9.8	-	-
2006	Q1	98.0	3.6	1.4	-	101.6	4.9	0.9	-	84.7	0.7	-1.9	-	93.9	-1.6	6.2	-	90.1	-14.3	24.9	-
	Q2	99.7	1.7	3.2	-	103.4	1.8	4.1	-	82.2	-3.0	-1.7	-	94.6	0.8	-10.1	-	98.8	9.6	11.5	-
	Q3	99.7	0.0	5.1	-	103.2	-0.2	5.4	-	81.4	-0.9	0.7	-	91.8	-3.0	-4.5	-	107.6	8.9	12.4	-
	Q4	99.7	0.0	5.4	3.7	103.7	0.5	7.1	4.3	81.3	-0.2	-3.4	-1.6	90.1	-1.9	-5.6	-3.8	108.7	1.1	3.4	12.1
2007	Q1	100.4	0.7	2.4	4.0	104.1	0.3	2.5	4.7	84.3	3.8	-0.5	-1.2	89.3	-0.8	-4.8	-6.3	114.5	5.4	27.1	13.2
	Q2	101.0	0.6	1.4	3.5	105.0	0.9	1.6	4.1	86.7	2.8	5.5	0.6	86.6	-3.1	-8.5	-5.8	116.9	2.1	18.3	14.9
	Q3	104.0	2.9	4.3	3.3	108.2	3.0	4.8	4.0	87.2	0.6	7.1	2.1	88.7	2.5	-3.4	-5.6	117.8	0.8	9.6	14.0
	Q4	105.9	1.8	6.2	3.6	109.5	1.2	5.6	3.6	95.1	9.1	17.1	7.2	91.2	2.8	1.2	-3.9	118.2	0.3	8.8	15.4
2008	Q1	105.3	-0.6	4.8	4.2	108.7	-0.7	4.5	4.1	90.5	-4.8	7.4	9.2	98.2	7.7	9.9	-0.3	99.9	-15.5	-12.8	5.4
	Q2	104.9	-0.3	3.9	4.8	108.3	-0.4	3.1	4.5	93.6	3.4	7.9	9.8	104.8	6.7	21.0	7.0	92.6	-7.3	-20.7	-4.3
	Q3	102.7	-2.2	-1.3	3.4	104.9	-3.1	-3.0	2.5	97.7	4.4	12.0	11.0	106.0	1.2	19.5	12.8	87.5	-5.6	-25.8	-13.0
	Q4	97.5	-5.0	-7.9	-0.2	97.8	-6.8	-10.6	-1.6	95.6	-2.1	0.5	6.8	103.0	-2.8	13.0	15.8	84.0	-4.0	-29.0	-22.1

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<sup>5</sup> The change in the rolling annual average measures the change in the average of the latest four quarters against the same four quarters one year previous.

<sup>6</sup> The regional GVA weights relate to 2014.

**Table 7 (cont): Index of Production – Quarterly, annual and rolling annual average<sup>7</sup> changes by sector, Northern Ireland**

		All Production industries - Sections B, C, D, E (seasonally adjusted)				Manufacturing – Section C (seasonally adjusted) weight <sup>8</sup> = 81.1%				Water, supply & waste management – Section E (seasonally adjusted) weight <sup>17</sup> = 9.9%				Electricity, gas, steam & air conditioning – Section D (seasonally adjusted) weight <sup>17</sup> = 6.7%				Mining & quarrying – Section B (seasonally adjusted) weight <sup>17</sup> = 2.3%			
		Index	% Change			Index	% Change			Index	% Change			Index	% Change			Index	% Change		
			Quarter	Annual	Rolling		Quarter	Annual	Rolling		Quarter	Annual	Rolling		Quarter	Annual	Rolling		Quarter	Annual	Rolling
2009	Q1	93.9	-3.7	-10.9	-4.1	93.9	-4.0	-13.7	-6.1	94.7	-1.0	4.5	6.1	95.7	-7.1	-2.5	12.3	89.0	5.9	-10.9	-22.0
	Q2	91.6	-2.4	-12.7	-8.2	90.5	-3.6	-16.4	-10.9	96.3	1.8	2.9	4.9	99.9	4.4	-4.6	5.7	84.6	-5.0	-8.7	-19.5
	Q3	90.3	-1.4	-12.1	-10.9	89.2	-1.4	-15.0	-13.9	95.4	-1.0	-2.4	1.3	99.0	-0.9	-6.6	-0.6	82.7	-2.1	-5.4	-14.6
	Q4	91.5	1.4	-6.1	-10.5	90.5	1.4	-7.5	-13.3	96.1	0.7	0.5	1.3	99.4	0.4	-3.5	-4.3	86.8	4.9	3.3	-5.8
2010	Q1	92.6	1.1	-1.4	-8.3	90.3	-0.2	-3.8	-11.0	100.9	5.1	6.6	1.9	102.8	3.4	7.3	-2.1	101.4	16.9	14.0	0.7
	Q2	92.8	0.2	1.3	-4.8	91.0	0.8	0.6	-6.7	102.1	1.2	6.0	2.6	99.8	-2.9	-0.1	-0.9	105.9	4.4	25.2	9.2
	Q3	92.9	0.1	2.9	-0.9	91.8	0.8	2.9	-2.1	103.5	1.4	8.6	5.4	100.5	0.6	1.5	1.2	92.8	-12.4	12.2	13.7
	Q4	96.6	4.0	5.6	2.1	95.2	3.7	5.2	1.2	106.4	2.7	10.7	8.0	103.8	3.3	4.4	3.2	85.9	-7.4	-1.0	12.5
2011	Q1	97.6	1.0	5.4	3.8	97.6	2.6	8.1	4.2	103.2	-3.0	2.2	6.8	95.3	-8.2	-7.3	-0.4	87.9	2.3	-13.4	4.8
	Q2	99.5	2.0	7.3	5.3	98.5	0.9	8.2	6.1	111.0	7.6	8.7	7.5	95.8	0.6	-4.0	-1.4	93.7	6.7	-11.5	-4.4
	Q3	102.0	2.5	9.8	7.0	101.0	2.5	10.0	7.9	112.9	1.7	9.1	7.7	96.5	0.7	-4.0	-2.8	101.7	8.5	9.5	-4.6
	Q4	102.1	0.1	5.7	7.0	101.0	0.0	6.1	8.1	113.8	0.8	7.0	6.8	97.3	0.8	-6.3	-5.4	101.0	-0.7	17.6	-0.5
2012	Q1	100.9	-1.2	3.4	6.5	99.7	-1.3	2.1	6.5	116.7	2.6	13.2	9.5	94.5	-2.9	-0.8	-3.8	103.4	2.3	17.6	7.3
	Q2	99.7	-1.1	0.2	4.7	99.1	-0.5	0.6	4.6	108.3	-7.3	-2.5	6.5	94.6	0.1	-1.3	-3.2	92.3	-10.7	-1.5	10.6
	Q3	98.1	-1.6	-3.8	1.3	97.2	-1.9	-3.7	1.2	103.1	-4.8	-8.7	1.9	95.6	1.1	-0.9	-2.4	102.2	10.7	0.5	8.1
	Q4	97.1	-1.0	-4.9	-1.4	96.1	-1.1	-4.8	-1.5	102.1	-1.0	-10.3	-2.4	98.5	3.0	1.2	-0.4	104.8	2.6	3.8	4.8
2013	Q1	98.8	1.7	-2.1	-2.7	97.6	1.5	-2.1	-2.5	103.8	1.7	-11.1	-8.2	100.8	2.3	6.6	1.4	102.2	-2.5	-1.1	0.5
	Q2	97.7	-1.1	-2.0	-3.2	98.0	0.5	-1.1	-2.9	95.8	-7.7	-11.5	-10.4	99.2	-1.6	4.9	2.9	102.6	0.4	11.1	3.4
	Q3	101.7	4.1	3.7	-1.4	102.1	4.1	5.0	-0.8	100.2	4.6	-2.8	-9.0	100.5	1.3	5.1	4.4	98.5	-4.0	-3.6	2.3
	Q4	101.8	0.1	4.9	1.1	102.3	0.2	6.4	2.0	100.1	-0.1	-1.9	-7.0	99.5	-0.9	1.1	4.4	96.7	-1.8	-7.7	-0.7

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<sup>7</sup> The change in the rolling annual average measures the change in the average of the latest four quarters against the same four quarters one year previous.

<sup>8</sup> The regional GVA weights relate to 2014.

**Table 7 (cont): Index of Production – Quarterly, annual and rolling annual average<sup>9</sup> changes by sector, Northern Ireland**

		All Production industries - Sections B, C, D, E (seasonally adjusted)				Manufacturing – Section C (seasonally adjusted) weight <sup>10</sup> = 81.1%				Water, supply & waste management – Section E (seasonally adjusted) weight <sup>10</sup> = 9.9%				Electricity, gas, steam & air conditioning – Section D (seasonally adjusted) weight <sup>10</sup> = 6.7%				Mining & quarrying – Section B (seasonally adjusted) weight <sup>10</sup> = 2.3%			
		Index	% Change			Index	% Change			Index	% Change			Index	% Change			Index	% Change		
			Quarter	Annual	Rolling		Quarter	Annual	Rolling		Quarter	Annual	Rolling		Quarter	Annual	Rolling		Quarter	Annual	Rolling
2014	Q1	101.3	-0.5	2.6	2.3	101.8	-0.5	4.3	3.6	98.1	-2.0	-5.5	-5.5	99.1	-0.5	-1.7	2.3	95.6	-1.1	-6.4	-2.0
	Q2	102.4	1.0	4.8	4.0	103.7	1.9	5.8	5.4	97.2	-1.0	1.4	-2.3	99.9	0.9	0.8	1.3	94.4	-1.3	-8.0	-6.4
	Q3	103.0	0.6	1.2	3.3	104.2	0.4	2.0	4.6	96.6	-0.6	-3.6	-2.5	100.6	0.7	0.1	0.1	98.9	4.8	0.4	-5.5
	Q4	102.9	0.0	1.1	2.4	104.1	-0.1	1.7	3.4	98.8	2.3	-1.3	-2.3	94.7	-5.9	-4.9	-1.4	104.5	5.7	8.1	-1.6
2015	Q1	104.6	1.6	3.2	2.6	106.3	2.1	4.4	3.5	95.6	-3.2	-2.6	-1.6	97.9	3.4	-1.2	-1.3	98.4	-5.9	2.9	0.7
	Q2	104.5	-0.1	2.1	1.9	106.0	-0.3	2.2	2.6	99.9	4.5	2.8	-1.2	99.2	1.4	-0.7	-1.7	94.0	-4.5	-0.4	2.7
	Q3	103.6	-0.9	0.6	1.7	104.9	-1.0	0.7	2.2	100.8	0.9	4.3	0.8	97.7	-1.5	-2.9	-2.4	93.3	-0.7	-5.7	1.2
	Q4	104.2	0.6	1.2	1.8	106.3	1.3	2.1	2.3	94.8	-6.0	-4.1	0.1	96.7	-1.0	2.2	-0.7	89.7	-3.8	-14.1	-4.6
2016	Q1	103.7	-0.4	-0.8	0.8	105.5	-0.8	-0.8	1.1	96.8	2.1	1.3	1.1	97.9	1.2	0.0	-0.4	94.5	5.3	-4.0	-6.2
	Q2	103.9	0.1	-0.6	0.1	104.6	-0.9	-1.3	0.2	102.9	6.3	3.0	1.1	98.4	0.5	-0.9	-0.4	105.1	11.3	11.8	-3.3
	Q3	102.7	-1.2	-0.9	-0.3	102.7	-1.8	-2.1	-0.5	103.9	1.0	3.1	0.8	98.3	-0.1	0.6	0.5	113.8	8.2	22.0	3.3
	Q4	106.6	3.9	2.3	0.0	105.9	3.1	-0.4	-1.1	110.0	5.9	16.1	5.8	100.5	2.2	3.9	0.9	123.5	8.5	37.6	16.4

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<sup>9</sup> The change in the rolling annual average measures the change in the average of the latest four quarters against the same four quarters one year previous.

<sup>10</sup> The regional GVA weights relate to 2014.



# 5

## Background notes

### Background

The Northern Ireland Index of Production (IOP) has been produced since 1949 and figures are available in the current format back to 2005. It is published quarterly and is designed to provide a general measure of changes in the output of the production industries in Northern Ireland. (This is defined as Standard Industrial Classification 2007 sections B, C, D and E.) In 2014 these industries accounted for approximately 18% of regional Gross Value Added (GVA). More information on Regional GVA is available at <http://www.ons.gov.uk/economy/grossvalueaddedgva>

### Index numbers

An index number is a convenient form of expressing a series in a way that makes it easier to see changes in that series. The numbers in the series are expressed relatively, with one number in that series chosen to be the 'base' (usually expressed as 100) and other numbers being measured relative to that base. Index numbers have the advantage that they allow different types of data to be combined on a consistent basis, e.g. deflated current price data with volume data. The aim of the Index of Production is to provide a reliable indicator of short-term changes in the output of the production sector. Index numbers are a very good way of communicating this message. For example, the Index of Production Quarter 4 2016 value of 106.6, means that the level of output was 6.6% higher than in 2013 which had a base year value of 100. The NI IOP is a Laspeyres volume index. The UK economic accounts are based on the European System of Accounts (ESA), which in turn is based on the UN System of Accounts (SNA). The ESA-preferred type of output indicator is one that measures deflated gross output (or turnover) for an industry. These use an approximate price charge estimator to remove the effects of inflation. For this reason, we and the ONS, use a Laspeyres volume index (as opposed to Paasche, Lowe or Fisher indices). The ONS paper, link following, on the Methodology of the Monthly Index of Services (Annex A: Mathematical Formulation of the Index of Services) gives a good explanation of Index numbers theory. <http://www.ons.gov.uk/ons/guide-method/user-guidance/index-of-services/index-of-services-annex-a--mathematical-formulation-of-the-index.pdf>

### Index sample

The IOP sample was refreshed for Quarter 1 2014 and was drawn on a SIC07 basis. The sample was boosted from around 650 businesses and it is now approximately 1,000 companies. Due, in part, to the significant number of companies which fall into the census element, more than 60% of businesses in the new sample were also in the old sample. As a statutory survey the response rate is around 80%. The sample of production industries is selected directly from the Inter Departmental Business Register (IDBR), by stratifying companies by industry and company size. The sample consists of a census of dominant companies and a Neyman stratified random sample of the remaining companies. The census element consists of all companies employing 40 or more employees and those employing 0 to 39 employees and having a turnover of £10 million or more. This sample

has been designed to give sufficiently accurate results, yet keep the total costs to businesses to a minimum.

Questionnaires were issued to both the new and existing businesses on each sample, for three quarters, as a means to calculate a link factor between the old sample (up to and including Quarter 4 2013) and the new sample (from Quarter 1 2014 onwards). With advice from Office for National Statistics methodologists, as the result of a successful Quality Improvement Fund, a methodology has been developed in order to integrate the new samples without making significant changes to the back series data, thus giving a meaningful index.

### **Data collection, validation and Index calculation**

Survey forms are issued quarterly, immediately after the period to which they relate. For example, forms are issued in October asking for information relating to July to September. Since the beginning of 2016, a Quarterly Business Survey form was issued to all businesses who previously received an Index of Production form and/or a Quarterly Employment Survey form and companies are now asked to provide employment and/or turnover information at the same time. This combined survey form, coupled with the roll-out of an 'eForm' (designed to collect data electronically) is intended to reduce the burden to businesses currently receiving two separate forms at different times.

Historically a number of companies provided volume information rather than turnover data (e.g. litres of a product rather than the turnover value of the product). From Quarter 2, 2010 these companies were asked to also provide turnover data and from Quarter 2 2011 the IOP estimates have solely been based on turnover. In response to user demand information is also collected on the value of exports. This will be used to produce a quarterly index in due course once a sufficient back series has been established and development work has been undertaken.

Data validation is carried out ensuring that data fall within the expected limits, contacting the company where appropriate for clarification.

The overall Index of Production is calculated by weighting together industry level indices using relative shares of Accounts Gross Value Added (GVA) data from the most recent Regional Accounts, which is currently 2014. The IOP relative weights used to produce the aggregated industries are derived from the Regional GVA estimate, published annually by ONS. Figures within this publication of IOP are weighted using 2014 GVA which became available on 15th December 2016.

For practically all series, the value of sales deflated to allow for price changes, is used as the indicator. In the remaining cases, changes in the volume of production or the number of employees are used as a proxy measure.

From Quarter 2 2014, the individual series have been seasonally adjusted using X-13 ARIMA SEATS, which introduces improvements to the models used for seasonal adjustment. Also, during the annual seasonal adjustment review in December 2015 (from Quarter 3 2015) the smoothing methodology, applied to companies with particularly volatile returns, has now been removed for the remaining few companies. The main

sectors affected are the water supply, sewerage, and waste management (inc. recycling) and mining and quarrying along with some of the individual manufacturing subsectors.

Further information on the methodology and impact of the seasonal adjustment changes can be found in the methodological note published at <https://www.nisra.gov.uk/publications/methodology-and-usage-iop>

It is also possible to aggregate all individual series to give indices by final use of goods produced. This is known as a market sector analysis and estimates are given in Section 5 of this bulletin. It distinguishes between seasonally adjusted consumer, seasonally adjusted investment and seasonally adjusted intermediate goods. The latter are described as intermediate because they include materials used to produce goods for consumption.

The productivity index provides a measure of the number of units of output produced per person per paid hour. The productivity index is based on the seasonally adjusted manufacturing index, seasonally adjusted employees in employment and average weekly hours (based on hours worked for full-time adult manufacturing workers including overtime from the Annual Survey of Hours and Earnings). An index of total employee hours is calculated based on the number of employees in employment and average weekly hours. The seasonally adjusted index of manufacturing is divided by the index of total employee hours to produce the Index of Productivity.

The seasonally adjusted Northern Ireland Index of Production is annually chain-linked (chain-linking involves the linking of growth estimates between different periods in order to produce a continuous time series) using GVA estimates derived from regional accounts using the fourth quarter of the preceding year as the link period. Inaccuracies caused by the assumption of a stable relationship between GVA and turnover are reduced using this methodology. When annual weights are used the assumption only has to be maintained from one year to the next year. A paper on annual chain-linking from ONS is available at <http://www.ons.gov.uk/ons/rel/regional-accounts/regional-gross-value-added--income-approach-/december-2010/stb-regional-gva-dec-2011.html>

The standard method for linking two series (for example one based on a SIC03 sample and one based on SIC07 sample) is to calculate the index under the old and new circumstances over some link period, and then apply the growth of the subsequent new series to the old series. As the relationship of both samples to the IDBR was known, the IDBR was used to provide the link period. Thus the ratio of the IDBR turnover for Quarter 1 2011 and Quarter 2 2011 is known. We have the Quarter 2 2011 value (SIC07) and the Quarter 1 2011 value (converted from SIC03 to SIC07). We can, therefore, create the following link factor:

$$\text{link factor} = \frac{(\text{Q2 2011 sample estimate} * \text{IDBR Q1 2011 value})}{(\text{Q1 2011 sample estimate} * \text{IDBR Q2 2011 value})}$$

This can then be applied to the converted back series along with historic Quarter 1 to Quarter 2 fluctuations, thus retaining the previous growth rates and any seasonal effects.

For Quarter 1 2014 and Quarter 2 2014, questionnaires were issued to companies in both the existing sample and the new sample, thus allowing a link factor to be calculated based on the average percentage change between the two. This link factor was then applied to each of the quarterly turnover back series (grossed & deflated), in order to give a series of the same magnitude as the new sample series (from Quarter 1 2014 onwards).

## **Deflation**

All series, unless otherwise quoted, are measured at constant market price. Deflators adjust the value series to take out the effect of price change to give the volume series. Details on the changes to the ONS deflators methodology can be found at the following link <http://www.ons.gov.uk/ons/guide-method/method-quality/specific/economy/national-accounts/methodology-and-articles/2011-present/index.html>

## **Seasonal adjustment**

The index numbers in this statistical bulletin are seasonally adjusted, following the annual seasonal adjustment review which was carried out in December 2015. This aids interpretation by removing annually recurring fluctuations, for example due to holidays or other regular seasonal patterns. All IOP time series are checked on an annual basis using X-13 ARIMA SEATS for evidence of seasonality, and those series where seasonality is detected are adjusted using X-13 ARIMA SEATS in order to obtain a clear picture of the general trend. Unadjusted data are also available.

The figures presented in this publication are calculated using the X-13 ARIMA SEATS method of seasonal adjustment. The following is a link to an ONS Guide to seasonal adjustment with X-12 ARIMA (an updated guide for X-13 ARIMA SEATS is currently being finalised by ONS) <http://www.ons.gov.uk/ons/guide-method/method-quality/general-methodology/time-series-analysis/guide-to-seasonal-adjustment.pdf>

## **Quality reporting/Planned future revisions**

One indicator of the reliability of the figures in this bulletin can be obtained by monitoring the size of revisions. The IOP revisions policy can be found at <https://www.nisra.gov.uk/publications/quality-and-revisions-documents-iop>

## **Summary quality report**

The latest summary quality report for this publication can be found on the IOP Quality and Revisions page of the website at <https://www.nisra.gov.uk/publications/quality-and-revisions-documents-iop>

## **Publication of results on a SIC07 basis**

A Standard Industrial Classification (SIC) was first introduced into the UK in 1948 for use in classifying business establishments by the type of economic activity in which they are engaged. The UK is required by European legislation to revise the SIC in parallel with NACE (the statistical classification of economic activities in the European Communities) so that both systems are identical down to and including the four digit class level. More information on SIC07 can be found at the following links:

<http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/standard-industrial-classification/index.html>

<http://www.ons.gov.uk/ons/rel/naa2/second-estimate-of-gdp/q2-2011/art---bb11-improvements-to-gdp--ios--iop.html>

## **Status of figures in current bulletin**

Results are published on a SIC07 basis in this bulletin and all indices are produced on a 2013=100 basis.

All figures are published to one decimal place. Figures for annual averages and percentage changes over the previous quarter and year are based on unrounded figures and may not agree with the published constituent parts.

Results, particularly for the latest quarter, are provisional and subject to revision as more up to date information become available.

The overall IOP index has been produced using X-13 ARIMA SEATS seasonal adjustment. Some of the sectors and sub-sectors have also been seasonally adjusted, and those can be identified throughout the bulletin.

Comparisons between the Index of Production and the Annual Business Inquiry (ABI) may not necessarily match because of definitional and coverage differences.

## **Publications policy**

All Economic and Labour Market Statistics (ELMS) Branch statistical publications are available to download free of charge from the NISRA website

<https://www.nisra.gov.uk/statistics>. Further information on ELMS is available at <https://www.nisra.gov.uk/statistics/economy/nisra-economic-and-labour-market-statistics-elms>

The IOP bulletin and tables from the current publication, which includes all the data from the start of the series in 2005, are available in Excel and Open Document format to download free of charge from the IOP website at

<https://www.nisra.gov.uk/statistics/economic-output-statistics/index-production>

The Economic and Labour Market Statistics Branch statistics publication schedule is available at <https://www.nisra.gov.uk/publications/elms-publication-schedule>

The list of people given pre-release access to this publication is available at <https://www.nisra.gov.uk/statistics/nisra-economic-and-labour-market-statistics-elms/statistical-protocols-and-compliance>

## **SIC 2007 definitions**

### **Manufacturing – SIC07 Section C (weight 81.1%)**

The boundaries of manufacturing and the other sectors of the classification system can be somewhat blurred. As a general rule, the activities in the manufacturing section involve the transformation of materials into new products. Their output is a new product.

### **Water supply, sewerage, and waste management (inc. recycling) – SIC07 Section E (weight 9.9%)**

This section covers activities related to the management (including collection, treatment and disposal) of various forms of waste, such as solid or non-solid industrial or household waste, as well as contaminated sites. Activities of water supply are also grouped in this section since they are often carried out in connection with, or by units also engaged in, the treatment of sewage.

### **Electricity, gas, steam and air conditioning supply – SIC07 Section D (weight 6.7%)**

This section includes the activity of providing electric power, natural gas, steam, hot water and the like through a permanent infrastructure (network) of lines, mains and pipes. Also included is its distribution in industrial parks or residential buildings. This, therefore, includes the operation of electric and gas utilities.

### **Mining and quarrying – SIC07 Section B (weight 2.3%)**

This section covers the extraction of minerals occurring naturally as solids (coal and ores), liquids (petroleum) or gases (natural gas). Extraction can be achieved by different methods such as underground or surface mining, well operation, seabed mining, etc.

## **Next publication**

The next bulletin will be published on 14<sup>th</sup> June 2017.

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