

Construction Output Price Indices (OPIs)

Notes and Definitions

Introduction

Output Price Indices (OPIs) measure the price level of work being executed in a given period.

The OPIs for Construction were originally devised to deflate construction output from current to constant levels, but are also used in a range of statutory and contractual applications.

The OPIs for Direct Labour measure the price levels of all Direct Labour Organisation (DLO) works being carried out in any given quarter. They are derived from the resource costs of labour and material and are used in a range of statutory and contractual applications. The OPIs for Direct Labour are no longer used for deflating construction output from current to constant levels, but will continue to be published.

Notes for this Period

N/A

Coverage

The OPIs are produced by the Building Cost Information Service (BCIS) on behalf of the Department of Business, Innovation and Skills (BIS) and consist of the following:

Output Price Index for All Work (2010): All New Construction and Repair and Maintenance Work

Output Price Index for New Construction (2010): All New Construction

Output Price Index for New Construction (2010): Infrastructure

Output Price Index for New Construction (2010): Private Commercial

Output Price Index for New Construction (2010): Private Housing

Output Price Index for New Construction (2010): Private Industrial

Output Price Index for New Construction (2010): Public Housing

Output Price Index for New Construction (2010): Public Non-Housing

Output Price Index for Repair and Maintenance (2010): All Repair and Maintenance

Output Price Index for Repair and Maintenance (2010): Infrastructure

Output Price Index for Repair and Maintenance (2010): Private Housing
Output Price Index for Repair and Maintenance (2010): Private Non-Housing
Output Price Index for Repair and Maintenance (2010): Public Housing
Output Price Index for Repair and Maintenance (2010): Public Non-Housing
Output Price Index for Direct Labour (2010): Public Housing New Construction
Output Price Index for Direct Labour (2010): Public Housing Repair and Maintenance
Output Price Index for Direct Labour (2010): Public Non-Housing New Construction
Output Price Index for Direct Labour (2010): Public Non-Housing Repair and Maintenance

Application and Relevance

The quarterly OPIs for the construction sectors within new construction and repair and maintenance are used as deflators to convert the output of construction work for those sectors from current to constant prices.

The current value of the volume of output in a quarter is made up of work completed during that quarter on contracts let during or before that quarter. The quarterly OPIs for Direct Labour are derived from the Construction Material Indices published by BIS and the BCIS Price Adjustment Formulae Indices (PAFI).

The OPIs are primarily required to deflate construction output and as a result are revised where improvements in their calculation can be made. Such changes were made in 2010 and 2011 (please see section 'Calculation Method' for more details) and the resultant indices are known as the OPIs (2010). These revisions and resultant continuity issues can cause difficulty where the indices have been written into contracts. BIS and BCIS offer the following guidance on the use of the OPIs (2010) in contracts that refer to the superseded series.

- in any new contractual arrangement and whenever otherwise possible, the revised OPIs (2010) should be used as published; or
- in any existing arrangement for the OPIs (2010) for New Construction and the OPIs (2010) for Repair and Maintenance, where the old superseded 1995=100 series and the old 2010 series adjusted by the old linking factor are being used, and subject to the wording of any contract, they should continue to be used up until 2Q2010, called the 'new linking quarter' for New Construction and Repairs and Maintenance and 4Q2009 for OPIs for Direct Labour, and thereafter the new '2010 series' (2005=100) should be used, adjusted using the new linking conversion factors in the table below; or
- in any existing arrangement for the OPIs (2010) for New Construction and the OPIs (2010) for Repair and Maintenance, where the old 2010 series are being used, and subject to the wording of any contract, the new 2010 series should be used instead; or

- in any existing arrangement for the OPIs (2010) for Direct Labour, where the old superseded 1995=100 series are being used, and subject to the wording of any contract, they should continue to be used up until 4Q2009, the 'linking quarter', and thereafter the '2010 series' (2005=100) should be used, adjusted using the linking conversion factors in the table below.

Index linking

Linking factors should only be used from the linking quarter going forward. They are not applicable to the back indices in the old superseded series or to the 2010 series, as published prior to 12 September 2011.

The linking factors given in the table below can be used to convert the 2010 OPI series (2005=100) to the same base as the superseded series (1995=100). They are based on the last available firm index from the 2010 OPI series. The old linking factors for New Construction and Repair and Maintenance published since 13 September 2010 are superseded by the index values for 2Q2009 to 2Q2010 given in the table below.

The new linking factors should only be used from the linking quarter onward, this being 3Q2010 onwards for the new 2010 OPIs for New Construction and Repairs and Maintenance and 1Q2010 onward for the OPIs for Direct Labour.

Prior to these dates the original 1995=100 indices and the indices given in the table below should be used.

To avoid confusion between the old and new linking factors for New Construction and Repair and Maintenance, the old 2010 OPIs adjusted by the old linking factors for 2Q2009 to 2Q2010 are given in the table below, followed by the new linking factor to be used with the new 2010 OPIs from 3Q2010. There is no change to the linking factors for Direct Labour.

New 2010 series	Index / Factor			Superseded series
	Prior to 2Q2009	2Q2009 to 2Q2010	3Q2010 onwards	
BIS Output	Use superseded 1995=100 Series	2Q2009=165	New 2010 OPIs x 1.4682	BIS Output
Price Index for New Construction (2010): Public Housing		3Q2009=168		Price Index for New Construction: Public Housing
		4Q2009=170		
		1Q2010=167		
		2Q2010=165		

BIS Output Price Index for New Construction (2010): Private Housing	Use superseded 1995=100 Series	2Q2009=184	New 2010 OPIs x 1.6987	BIS Output Price Index for New Construction: Private Housing
		3Q2009=193		
		4Q2009=197		
		1Q2010=197		
		2Q2010=197		
BIS Output Price Index for New Construction (2010): Infrastructure	Use superseded 1995=100 Series	2Q2009=137	New 2010 OPIs x 1.2967	BIS Output Price Index for New Construction: Infrastructure
		3Q2009=144		
		4Q2009=145		
		1Q2010=145		
		2Q2010=145		
BIS Output Price Index for New Construction (2010): Public Non-Housing	Use superseded 1995=100 Series	2Q2009=152	New 2010 OPIs x 1.2749	BIS Output Price Index for New Construction: Public Non- Housing
		3Q2009=151		
		4Q2009=145		
		1Q2010=140		
		2Q2010=138		
BIS Output Price Index for New Construction (2010): Private Industrial	Use superseded 1995=100 Series	2Q2009=126	New 2010 OPIs x 1.1526	BIS Output Price Index for New Construction: Private Industrial
		3Q2009=122		
		4Q2009=118		
		1Q2010=114		
		2Q2010=113		
BIS Output Price Index for New Construction (2010): Private Commercial	Use superseded 1995=100 Series	2Q2009=137	New 2010 OPIs x 1.2221	BIS Output Price Index for New Construction: Private Commercial
		3Q2009=133		
		4Q2009=128		
		1Q2010=125		
		2Q2010=124		
BIS Output Price Index for New Construction (2010): All New Construction	Use superseded 1995=100 Series	2Q2009=151	New 2010 OPIs x 1.3476	BIS Output Price Index for New Construction: All New Construction
		3Q2009=151		
		4Q2009=148		
		1Q2010=147		
		2Q2010=145		

BIS Output Price Index for Repair and Maintenance (2010): All Repair and Maintenance	Use superseded 1995=100 Series	2Q2009=182	New 2010 OPIs x 1.5263	BIS Output Deflators for Contractors: Repairs and Maintenance
		3Q2009=183		
		4Q2009=185		
		1Q2010=186		
		2Q2010=185		
		1Q2010 onwards		
BIS Output Price Index for Direct Labour (2010): Public Housing New Construction		2010 OPIs x 1.550	BIS Output Price Index for Direct Labour: Public Housing New Construction	
BIS Output Price Index for Direct Labour (2010): Public Housing Repair and Maintenance		2010 OPIs x 1.733	BIS Output Price Index for Direct Labour: Public Housing Repair and Maintenance	
BIS Output Price Index for Direct Labour (2010): Public Non-Housing New Construction		2010 OPIs x 1.557	BIS Output Price Index for Direct Labour: Public Non-Housing New Construction	
BIS Output Price Index for Direct Labour (2010): Public Non-Housing Repair and Maintenance		2010 OPIs x 1.669	BIS Output Price Index for Direct Labour: Public Non-Housing Repair and Maintenance	

Publication

Quarterly and annual versions of the OPIs are published. The quarters are calendar quarters (e.g. first quarter covers January, February and March).

Annual indices are based on the mean of the quarterly indices and relate to the calendar year.

The indices are published quarterly at 9.30am on the Monday following the second Friday of the last month in the quarter, i.e. in March, June, September and December.

The latest calculated index values available will be for the quarter prior to the quarter of the date of publication.

There are no monthly index values.

Revision Policy

Output Price Indices for New Construction and Repair and Maintenance

Provisional quarterly OPIs for New Construction and Repair and Maintenance are first published for the quarter prior to the publication quarter. Indices are normally held provisional for four quarters, after which they are published as firm indices. Index values may change as the indices become firm. The firm indices will incorporate additional data received but are not expected to change significantly. Changes between the first provisional index and a firm index are typically less than 1%.

Once published as firm, the indices will not be changed for revisions in the input data. Firm indices will only be changed in exceptional circumstances: to correct publication errors or in the event of a change in methodology. If a revision to a firm index is necessary then the indices will be marked as 'R' for the current publication, but this marker will be removed in subsequent publications. Changes in methodology will be recorded under notes and definitions. Any major changes or revisions will be pre-announced, where practicable, together with the reasons for revisions and how they are handled.

Annual indices will always be updated to reflect changes in the quarterly series.

Output Price Indices for Direct Labour

The quarterly OPIs for Direct Labour are first published as provisional indices and will be published as firm indices one quarter later.

The indices are not normally held provisional for more than one quarter, but this may happen if the series used to construct these series are held provisional for longer than normal. A provisional index may change. Changes between the first provisional index and a firm index are typically less than 1%.

Once published as firm, the indices will not be changed for revisions in the input data. Firm indices will only be changed in exceptional circumstances: to correct publication errors or in the event of a change in methodology. If a revision to an index is necessary then the indices will be marked as 'R' for the current publication, but this marker will be removed in subsequent publications. Changes in methodology will be recorded under notes and definitions. Any major changes or revisions will be pre-announced, where practicable, together with the reasons for revisions and how they are handled.

Annual indices will always be updated to reflect changes in the quarterly series.

Range

The earliest available OPIs for Construction are for 1st quarter 1955, apart from New Construction Infrastructure which is available from 1st quarter 1980. Repairs and Maintenance Public Housing and Repairs and Maintenance Private Housing are both available from 1st quarter 1985. Repairs and Maintenance Infrastructure is available from 1st quarter 2010.

The earliest available Output Price Indices for Direct Labour are for 1st quarter 1990.

There are no monthly index values.

Calculation Method

The OPIs measure the movement of prices of construction work being carried out in a given period. They are derived from Tender Price Indices (TPIs) and are used as 'deflators' to convert Construction Output and Construction New Orders estimates from current prices to constant prices.

Output of new construction work in a quarter is made up of work done on contracts let during or before that quarter. The sector TPIs are converted to sector OPIs by applying weights to the sector TPIs, based on the typical duration of development for each sector.

For Public Housing, for example, the following weights are used to convert the TPI to an OPI.

Period	n	n-1	n-2	n-3	n-4	n-5	n-6	n-7
Weights (W)	0.07	0.14	0.18	0.20	0.17	0.13	0.08	0.03

The value of New Orders for Public Housing in each of the quarters n to n-7 from the new orders survey is multiplied by the relevant weight for each period in the proportions set out in the table above to provide a value, x, for the current period such that:

$$x = \sum_{n-7}^n w(n) \times NO(n)$$

A harmonically weighted average OPI index is then created as follows:

$$OPI = x / \sum_{n-7}^n \frac{w(n) \times NO(n)}{TPI(n)}$$

Where w = weight, NO = New Orders value and TPI = the tender price index for the period.

The resulting OPI is then rescaled to ensure that 2005 = 100.

The full list of weights is shown below

Weights applied to new orders	Period										
	n	n-1	n-2	n-3	n-4	n-5	n-6	n-7	n-8	n-9	n-10
Public housing	0.07	0.14	0.18	0.20	0.17	0.13	0.08	0.03			
Private housing	0.07	0.13	0.17	0.19	0.17	0.13	0.09	0.06			
Infrastructure	0.07	0.11	0.13	0.13	0.13	0.12	0.10	0.08	0.06	0.04	0.02
Public non-housing	0.08	0.16	0.20	0.20	0.17	0.12	0.07	0.03			
Private industrial	0.16	0.28	0.27	0.17	0.09	0.05					
Private commercial	0.12	0.20	0.21	0.19	0.14	0.09	0.05				

Changes in Method

There have been several changes in methodology in the compilation of the **BIS** OPIs since June 2010.

ONS introduced new construction output statistics in June 2010. As part of this process, revised OPIs were produced to deflate the current price output to constant prices. These were called the '2010 series' and were published with a base of 2005 =100. As part of the changes made to the method of estimating the construction output statistics by ONS, a new set of OPIs for New Construction and Repair and Maintenance was published in July 2010. They were developed following discussions between BIS, ONS and BCIS and are based on the use of the available indices that best represent the sectors of the construction industry covered by the output statistics. This included the production of new indices for the private industrial and infrastructure sectors. New '2010 series' for the Direct Labour OPIs were also developed at this time.

On 10 September 2010, ONS announced further changes to the new 2010 OPIs. These changes comprised revisions to some of the indices previously published for some of the new 2010 OPI series. These revisions affected some of the linking conversion factors previously published that link the new 2010 OPI series to the superseded 1995 OPI series.

On 12 August 2011, ONS implemented further changes to the new 2010 OPIs. These changes comprise revisions to the indices so that:

- the latest deflators are applied back to their earliest availability;
- the latest Standard Industrial Classifications are applied to the classification of the output volume data;
- the implied deflators achieved by dividing the current output volume figures by the resultant constant output volume figures in the base year (2005) is equal to 100; and
- output is revised back for 12 months.

The effect of these revisions is to:

- revise the values and growths of the existing indices;
- provide the index values to one place of decimals;
- carry four quarters provisional;
- replace the OPI for Repair and Maintenance (2010): Public/Private Non-Housing with separate indices for Public and Private Non-Housing;
- introduce a new OPI for Repair and Maintenance (2010): Infrastructure;
- introduce a new OPI for All Work (2010): All New Construction and Repair and Maintenance Work; and
- provide index values back to 1955 except New Construction: Infrastructure back to 1980, Repair and Maintenance: Public and Private back to 1985 and Repair and Maintenance: Infrastructure back to 2010.

No changes were made to the OPIs (2010) for Direct Labour.

Base

The OPIs are set at 100 at the base year of 2005.

Superseded Series

The OPIs superseded the Cost of New Construction (CNC) Index.

The old OPIs for New Construction and Contractors Repair and Maintenance series, with a 1995 average base (1995=100), are superseded.

ONS no longer use the Output Deflators for Direct Labour for deflating Construction Output. Since they are referred to in some statutes, BCIS will continue the series, however, to be in line with the new OPIs produced by ONS, this new series has been renamed 'OPIs for Direct

Labour' and has been rebased to 2005=100. The old Deflators for Direct Labour series, with a 1995 average base (1995=100), are superseded.

The OPIs for Public Works have also been discontinued, but they can be extended by linking them to the closest equivalent index in the revised 2010 series using the following indices for 2Q2009 to 2Q2010 and then the linking factors from 3Q2010 onward. Prior to 2Q2009, the original 1995=100 indices should be used.

C	Notes	A	Index / Factor		
			Prior to 2Q2009	2Q2009 to 2Q2010	3Q2010 onward
Output Price Indices for Public Works		Output Price Indices for New Construction (2010)			
Building	The same as OPIs for New Construction: Public Works	Public Non-Housing	Use superseded 1995=100 Series	2Q2009=152	New 2010 OPIs x 1.2749
				3Q2009=151	
				4Q2009=145	
				1Q2010=140	
				2Q2010=138	
Roads	No direct equivalent; could be linked to Infrastructure	Infrastructure	Use superseded 1995=100 Series	2Q2009=136	New 2010 OPIs x 1.2869
				3Q2009=143	
				4Q2009=144	
				1Q2010=144	
				2Q2010=144	
Non-Roads	The same as OPIs for New Construction: Public Works	Public Non-Housing	Use superseded 1995=100 Series	2Q2009=152	New 2010 OPIs x 1.2749
				3Q2009=151	
				4Q2009=145	
				1Q2010=140	
				2Q2010=138	
Civil Engineering	No direct equivalent; could be linked to Infrastructure	Infrastructure	Use superseded 1995=100 Series	2Q2009=141	New 2010 OPIs x 1.3347
				3Q2009=148	
				4Q2009=149	
				1Q2010=149	
				2Q2010=149	
All Public Works	No direct equivalent; could be linked to Public Non-Housing	Public Non-Housing	Use superseded 1995=100 Series	2Q2009=146	New 2010 OPIs x 1.2238
				3Q2009=145	
				4Q2009=139	
				1Q2010=135	
				2Q2010=132	

Further Information

Enquiries about the indices should be addressed to BCIS.

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