



Paper

# Price index production on buildings

Base shifting from price level 2000 to 2015=100

May 2017

# Inhoud

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# Introduction

Each quarter, Statistic Netherlands (CBS) publishes price indices on the production of buildings. These price indices are intended to convert the value of construction output – also calculated by CBS – from current prices to fixed prices.

This leads to elimination of the effect of price increases from the production value and output differences will solely be the result of changing volumes.

From Q1 2017 onwards, the price index construction output since Q1 2015 will be calculated and published based on the new reference year 2015 (2015=100).

Simultaneously with the base shift, various changes were implemented. These changes are described in this report. The first section of this report includes an explanation of the method currently used to calculate the price index. In the second section, the effects of the changes introduced when the base shift was implemented are discussed. The third section elaborates on developments of the old and new indices. Finally, section 4 includes recommendations on how to link the series price level 2000 to the series 2015=100.

## 1. Old method

Each quarter, CBS calculates the output value of the construction sector. The output value is affected by price developments of building materials, labour and volume. From an economic point of view, it may be interesting to know the output volume. This can be achieved by filtering out the effects of price developments. To eliminate the effects of price developments, the price index of building costs of new dwellings is used for the production of residential and non-residential property.

The output for the construction sector, calculated for 2 sections (New constructions and Other constructions) and 3 sectors (dwellings, buildings for the private sector and buildings for the (semi-)public sector) is linked to the rescaled series New dwellings 2000=100; output price index building costs. The results of these links are the output price indices, price level 2000.

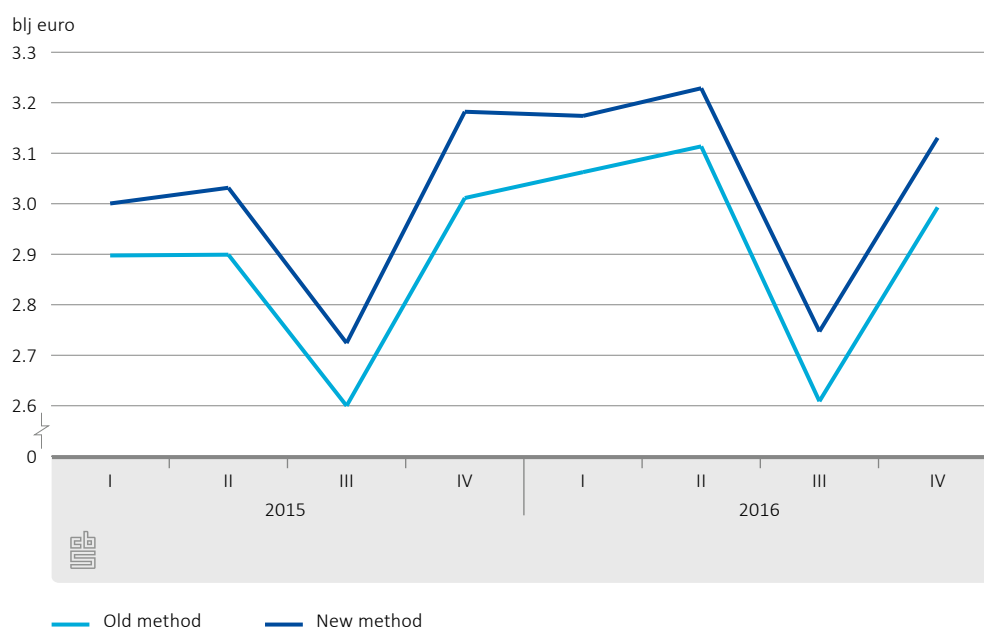
## 2. Changes related to base shifting

Alongside the base shift of the construction output from price level 2000 to 2015=100, several improvements were made in the calculation of price indices. These improvements are described below.

### 2.1 Production construction sector

From January 2017 onwards, CBS has revised the calculation method of the construction output. Output is based on the number of building permits issued by municipal authorities and reported to CBS. From January 2017 onwards, the number of building permits reported to CBS since 2012, is adjusted for non-response. This results in a better estimate of the actual number of building permits and a more accurate estimate of the total output volume realised by the construction sector.

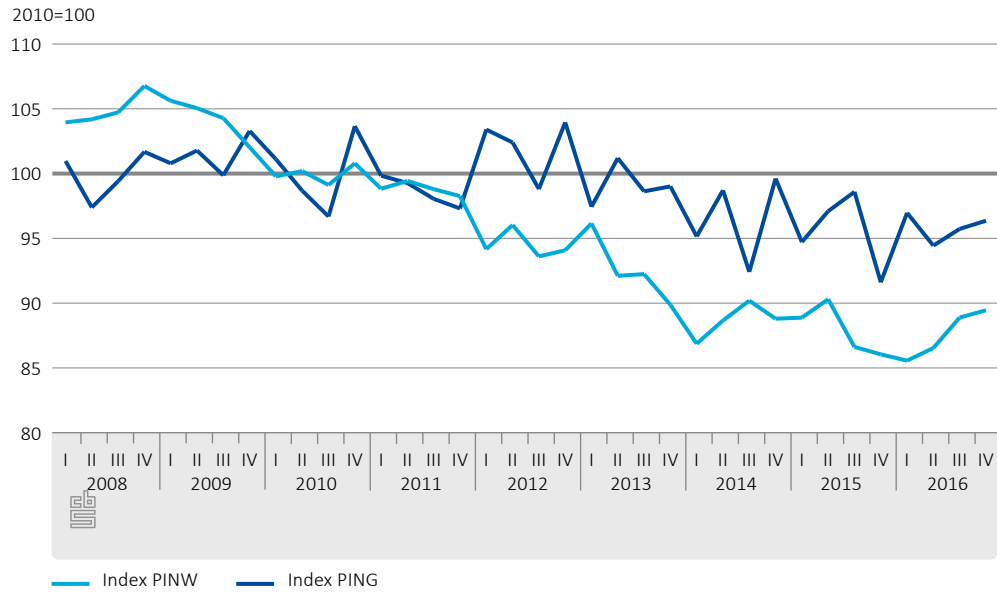
#### 2.1.1 Construction output



### 2.2 Price index building costs 'other buildings'

In the series price indices output price level 2000, the production of all sectors (dwellings and 'other buildings') is linked to the price indices of building costs of dwellings. Because it seems likely that building costs of 'other buildings' deviate from those for dwellings, these price developments were surveyed. This resulted in a new series Output price indices building costs 'other buildings' (non-residential). The chart below shows the output price index series of dwellings (PINW) and of 'other buildings' (PING). The chart illustrates that the building costs of dwellings in the period after 2008 decreased more rapidly than the building costs of 'other buildings'.

### 2.2.1 Output price index dwellings (PINW) and of 'other buildings' (PING)



Since the new base year 2015=100 became effective, the production of dwellings has been linked to the output price index of dwellings and the production of buildings in the private and the (semi-)public sector is linked to the output price index of 'other buildings'.

### 2.3 From price level to reference year

The result of linking production data to the series output price indices dwellings and 'other buildings' is a price index of the production on buildings. The average of the old series in the reference year is not equal to 100. However, this is fairly common for series of price indices. Therefore, the price indices are rescaled to an average of 2015=100. The rescaling process does not affect the development of the series.

### 2.4 Level of detail

With the introduction of the new series 2015=100, price indices will be rounded to 1 decimal place. As a result, small variations in price indices will become more distinct.

### 3. Old series versus new series

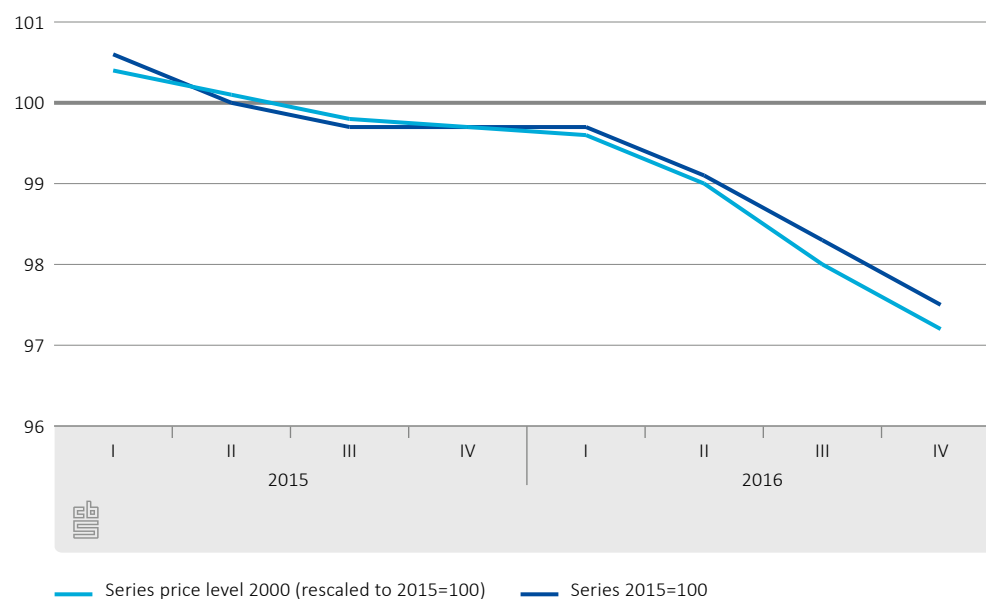
Together, the changes mentioned above will cause the new series of price indices to deviate from series published earlier. The most comprehensive adjustment was caused by application of the new price indices for 'other buildings'.

The charts below show both the old and the new series for the Total and the section New constructions. To facilitate comparison, the old series price level 2000 was rescaled to 2015=100. The series not shown in the section Other constructions present a picture similar to the series New constructions.

#### 3.1 Total new and other constructions

The new series based on 2015=100 deviates from the old series based on price level 2000. This is mainly due to the incorporation of the new price index of construction costs 'other buildings'. Because the construction costs of the category 'other buildings' (non-residential) decreased less rapidly than the construction costs of dwellings, the new price index for the total production is above the index of the old series.

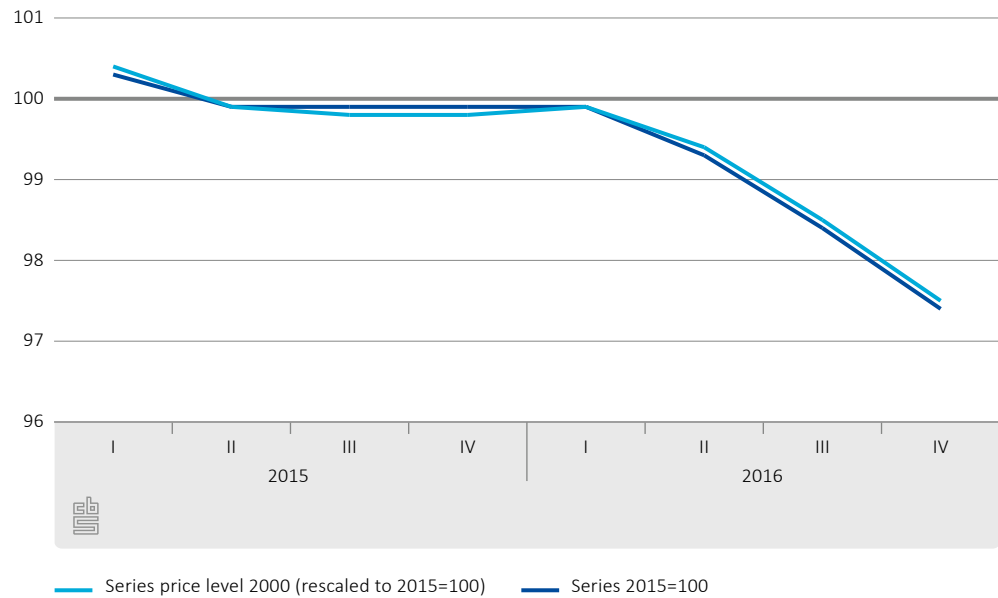
##### 3.1.1 Price index on the production, Total new and other constructions



#### 3.2 New constructions, Dwellings

Compared to the old series, the price index representing the production of dwellings only shows a minor adjustment after base shifting. This is because the construction costs index of dwellings was already used to calculate the old price index of this section. Differences between the old and the new index series are caused by adjustment of the provisional price indices of dwellings and the change in the calculation of the building production (see 2.1).

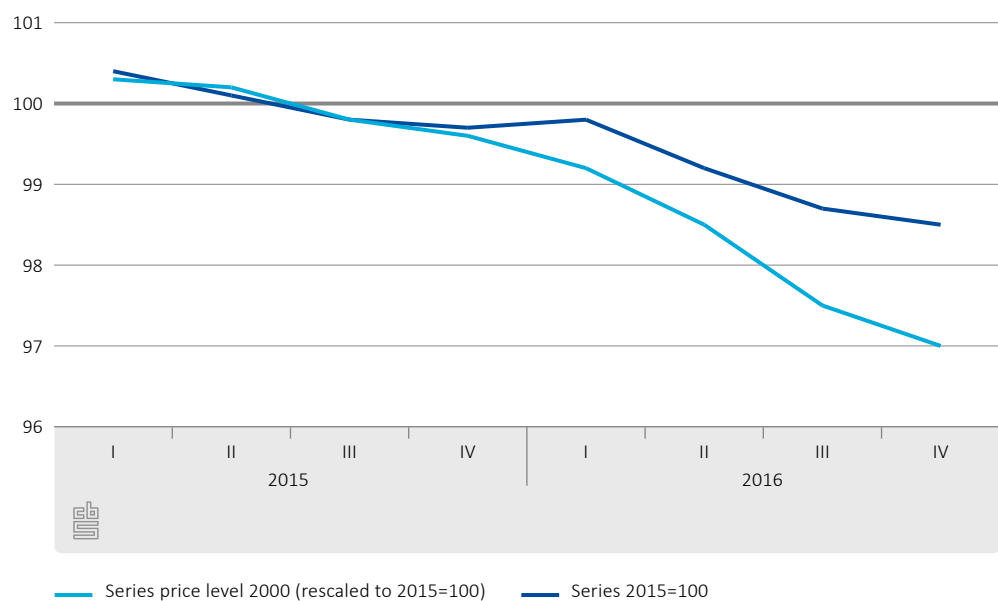
### 3.2.1 Price index on the production, New constructions, dwellings



### 3.3 New constructions, Private sector

Due to incorporation of output price indices for 'other buildings' (non-residential) in the calculation of the price indices for production, the price index deviates significantly from the old series. As shown above (see 2.2), the construction costs of non-residential property declined less rapidly than the construction costs of dwellings. As a result, the new price indices for production of the private sector also fall less rapidly than the price indices in the old series.

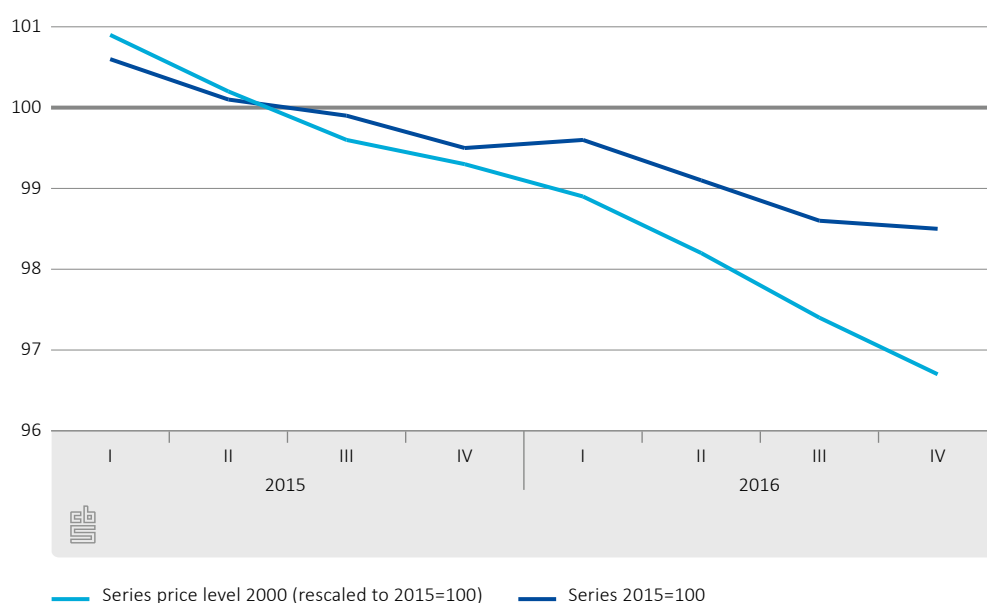
#### 3.3.1 Price index on the production, New constructions, private sector



### 3.4 New constructions, (semi-)Public sector

The price indices of production in the (semi-)public sector follow the same pattern as the price indices for the Private sector described above (see 3.3). Due to the moderate reduction of construction costs in the category 'other buildings' relative to the reduction of the construction costs of dwellings, the new series of price indices of production also declines less rapidly than the old series price indices of production. The difference between the price indices of the Private sector and the (semi-)public sector is caused by the difference in output level in both sectors.

#### 3.4.1 Price index on the production, New constructions, (semi-)public sector



## 4. Linking old and new series

With the first publication of figures in the series 2015=100, the old series are ended and for the most recent data, the reader is referred to the series 2015=100.

When using price index figures, CBS advises to calculate price developments as much as possible within one series, because in that case the calculation method will be consistent over time.

From this point of view CBS has the following advice:

- The calculation of a price change over a period starting in or after Q1 2000 and ending no later than Q4 2016 is based on the series price level 2000.
- The calculation of a price change over a period starting in or after Q1 2015 should be based on the series 2015=100.
- The calculation of a price change in a period starting between Q1 2000 and Q4 2016 and ending after Q4 2016 can be achieved by linking the series with price level 2000 to the series 2015=100. From Q1 2017 (within the series 2015=100), the percentage change



relative to Q4 2016 must be calculated on base price level 2000, as the price index for Q4 2016 is the most recent figure published on base price level 2000. Subsequently, this development must be adjusted to the results of Q4 2016 of the series price level 2000 (see example below).

#### 4.0.1 Example how to link several series of price index figures<sup>1)</sup>

Index series	Q4 2016	Change	Q1 2017
Series price level 2000	105	–	–
Series 2015=100	101.2	2.0%	103.2
Linked series price level 2000	105	2.0%	107.1

<sup>1)</sup> The data shown above are fictitious and only serve as an example.

The index for Q1 2017 of the linked series is calculated by working out the difference between Q4 2016 and Q1 2017, according to the series on 2015=100 and multiplying this by the index for Q4 2016 according to the series price level 2000. In the example:  $(103.2 / 101.2) * 105 = 107.1$ .

For Q2 2017, the linked index is calculated in the same manner. Due to rounding differences, the link must always be applied in Q4 2016.

If you have any questions please contact [CBS Infoservice](#).

## Explanation of symbols

Empty cell	Figure not applicable
.	Figure is unknown, insufficiently reliable or confidential
*	Provisional figure
**	Revised provisional figure
2016–2017	2016 to 2017 inclusive
2016/2017	Average for 2016 to 2017 inclusive
2016/'17	Crop year, financial year, school year, etc., beginning in 2016 and ending in 2017
2014/'15–2016/'17	Crop year, financial year, etc., 2014/'15 to 2016/'17 inclusive

Due to rounding, some totals may not correspond to the sum of the separate figures.

## Colofon

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