



Paper

Method description House Price Index

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1. Introduction

1.1 Reason for the report

Statistics Netherlands calculates a House Price Index (HPI) following a European regulation. In European Commission Regulation 93/2013 [1] it is stated that member states need to calculate a HPI. The regulation refers to the Technical manual on Owner-Occupied Housing and House Price Indices [2] for the requirements the HPI needs to meet. This report describes how Statistics Netherlands calculates the HPI.

1.2 Objective HPI

The HPI measures the price development of dwellings purchased by households. The HPI is seen as an important macro-economic indicator. The HPI is for instance used to develop monetary policy. It is also part of Owner-Occupied Housing (OOH). This is a statistic measuring the costs of owning a dwelling. Because the HPI is calculated along European standards, the HPI is also used to compare the price development of dwellings in several European countries.

1.3 Abbreviations

Abbreviation	Definition
HPI	House Price Index
OOH	Owner-Occupied Housing
PED	Price index for existing own homes
PND	Price index for newly built dwellings

1.4 References

- [1] Europese Commissie (2013) Verordening Nr 93/2013 van de Commissie van 1 februari 2013 tot vaststelling van uitvoeringsbepalingen van Verordening (EG) nr. 2494/95 van de Raad inzake geharmoniseerd indexcijfers van de consumentenprijzen, wat de vaststelling van indexcijfers van de prijzen van door eigenaar bewoonde woningen betreft.
<https://eur-lex.europa.eu/legal-content/NL/TXT/?uri=CELEX%3A32013R0093>
- [2] European Commission – Eurostat (2017) Technical manual on Owner-Occupied Housing and House Price Indices.
<http://ec.europa.eu/eurostat/documents/7590317/0/Technical-Manual-OOH-HPI-2017/>
- [3] Centraal Bureau voor de Statistiek (2014) Prijsindex Bestaande Koopwoningen. CBS Methodebeschrijving.
<https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/prijsindex-bestaande-koopwoningen--pbk---2015-100>

[4] Centraal Bureau voor de Statistiek (2018) Prijsindex Nieuwbouw Koopwoningen. Methodebeschrijving.

2. Calculation House Price Index

2.1 Conceptual framework

The HPI measures the price development of dwellings sold to households. The HPI covers the price development of existing dwellings as well as newly built dwellings. Both dwellings bought to live in and dwellings bought to rent out are covered by the HPI, as long as the dwelling is bought by a private person. Dwellings bought by non-private persons are not covered in the HPI. These dwellings are commercial property.

The price development of dwellings is based on the selling price. This is the price paid for the dwelling, including the land on which the property stands. The selling price does not include additional costs such as notary fees, estate agent fees and property assessment costs. Moreover, moveable property like household effects are also not included.

Only dwellings sold to households with a known selling price are covered by the HPI. For this reason, self-built dwellings are excluded.

2.2 Sources

The HPI is a weighted aggregate of the price index for newly built dwellings (PND) and the price index for existing dwellings (PED). The PED is calculated on a monthly basis and available from 1995. The PND is calculated on a quarterly basis and available from 2015. The HPI is therefore calculated on a quarterly basis and starting in 2015. The table House Prices: new and existing dwellings price index 2015=100 in StatLine contains the PED, the PND and the HPI on a quarterly basis and starting in 2015. The PED on a monthly basis is available from 1995 in the table [Existing own homes; purchase prices; price indices 2015=100](#). The PED by region and type of dwelling is also available on a quarterly basis starting in 1995: [Existing own homes; purchase price indices by region 2015=100](#) and [Existing own homes; purchase price indices by type of dwelling](#).

The method used to calculate PND and the method used to calculate the PED are explained in separate method descriptions: PND and [PED](#). This document describes how both indices are aggregated to the HPI.

2.3 Weights

The HPI is a weighted aggregate of the PND and PED. The weights represent the annual total value of purchase prices of newly built dwellings and existing dwellings. The weight is calculated by summing up the selling prices of all dwellings sold in a year. Each year new weights are calculated.

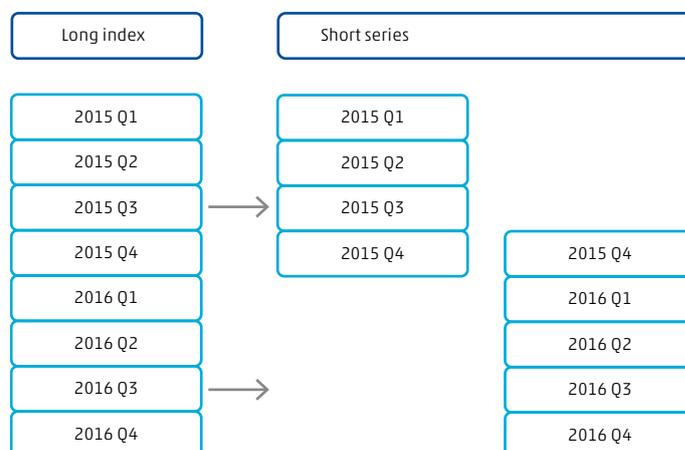
The total value purchase prices of dwellings sold and the total value purchase prices of existing dwellings sold are published as separate indicators in the StatLine table.

2.4 Index calculation

2.4.1 Aggregation of the price indices for newly built dwellings for existing dwellings is weighted. The calculation consists of five steps: Split long index series into short index series

The PND and the PED are both long index series. The PND starts in 2015 and the PED starts in 1995. Because new weights are calculated annually, the aggregation takes place on annual basis. Therefore, the long index series needs to be split up in short annual index series. This way the annual weights can be used in the aggregation of both statistics. The annual series are calculated by calculating the development of each quarter relative to the fourth quarter of the year before. In the first year, the development of each quarter is calculated relative to the first quarter. The used PND indices and PED indices are not rounded. The first quarter of the short index series is set to 100.

Split long index series into short series



2.4.2 Weighted aggregation of short index series

The short annual index series of the PND and PED are aggregated weighted. The result is a short annual index series. The annual total value sold serves as weight. The formula for calculating the weighted aggregate is:

$$(1) \quad I_{HPI}^{j,q} = \frac{(W_{PND}^j I_{PND}^q + W_{PED}^j I_{PED}^q)}{(W_{PND}^j + W_{PED}^j)}$$

Where $I_{HPI}^{j,q}$ is the index of the HPI in quarter q of year j is, W_{PND}^j the weight in year j of the PND and I_{PND}^q the index in quarter q of the PND.

2.4.3 Calculating the development relative to the previous quarter

For each quarter, the development relative to the previous quarter is calculated. The development is calculated by dividing the value of a specific quarter by the value of the previous quarter.

$$(2) \quad \text{Development HPI } q, q-1 = \frac{I_{HPI}^q}{I_{HPI}^{q-1}}$$

2.4.4 Calculate long index series

Using the development of each quarter relative to the previous quarter the short index series can be chained into one long index series. The first quarter is set to 100. The other quarters are calculated by multiplying the development with the index number of the previous quarter.

2.4.5 Rescaling

The index is rescaled to the base year. The index is rescaled by calculating the average index value of the base year. Then the index number of each quarter is divided by this average and multiplied by 100.

2.4.6 Rounding

The values are rounded before publication. Each number is rounded to one decimal.

2.5 Calculation of additional indicators

Apart from the HPI price index, three related indicators are also calculated and published. These are the number of sold dwellings, the total value purchase prices and the average purchase price.

2.5.1 Number of sold dwellings

The number of sold dwellings to households is calculated by adding up the number of sold newly built dwellings and the number of sold existing dwellings.

2.5.2 Total value purchase prices

The total value purchase prices of dwellings sold to households is calculated by adding up the selling prices of all sold newly built dwelling and all existing dwellings.

2.5.3 Average purchase price

The average purchase price of dwellings sold to households is calculated by dividing the total value purchase price by the number of sold dwellings.

Explanation of figures

Empty cell	Figure not applicable
.	Figure is unknown, insufficiently reliable or confidential
*	Provisional figure
**	Revised provisional figure
2017–2018	2017 to 2018 inclusive
2017/2018	Average for 2017 to 2018 inclusive
2017/'18	Crop year, financial year, school year, etc., beginning in 2017 and ending in 2018
2015/'16–2017/'18	Crop year, financial year, etc., 2015/'16 to 2017/'18 inclusive

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

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