



METHODOLOGICAL EXPLANATION

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HOUSE PRICE INDICES

This methodological explanation relates to the data releases:

- Residential housing price indices, Slovenia, quarterly (First Release)



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1 PURPOSE

The purpose of publishing the data on house price indices is to show quarterly price movements of dwellings sold to domestic and foreign households.

The purpose of publishing the number and value of housing transactions is to show all transactions performed in the observed quarter, where the purchaser is a household, only sales that are inherited or donated are excluded.

The main published statistics are:

- House price index.
- Price index of newly built dwellings (flats and family houses).
- Price index of existing dwellings (flats and family houses).
- Price indices of newly built flats.
- Price indices of newly built family houses.
- Price indices of existing flats.
- Price indices of existing family houses.
- House sales.

2 LEGAL FRAMEWORK

- [Annual Programme of Statistical Surveys \(LPSR\) \(only in Slovene\)](#)
- [National Statistics Act](#) (OJ RS, No. 45/95 and 9/01)
- Commission Regulation 2016/792 on harmonised indices of consumer prices and the house price index, and repealing Council Regulation (EC) No 2494/95 (CELEX: [32016R792](#)).

3 UNIT DESCRIBED BY THE PUBLISHED DATA

The unit described by the published data is a newly built or existing dwelling sold to a household. Free market dwelling transaction price is a key variable.

4 SELECTION OF OBSERVATION UNIT

Observation units are new or existing residential real estate.

The coverage of housing transactions is complete. For price index calculation, all market transactions that fit the pre-defined criteria are used (see section 7.2 for details).

5 SOURCES AND METHODS OF DATA COLLECTION

Data are collected quarterly.

Data are collected with the statistical survey CENE-STAN/ČL where the property transaction data source is the Real Estate Transactions Database (ETN) kept by the Surveying and Mapping Authority of the Republic of Slovenia (GURS). The survey covers all real estate transactions in Slovenia, GURS transmits the agreed real estate transactions data to SURS at the latest 65 days after each quarter.

The Real Estate Market Register is a multi-purpose database on real estate purchase and sale transactions and on rental legal transactions for buildings and parts of buildings, managed and maintained by GURS. SURS uses data from the database to review and improve data on recorded real estate sales transactions (PGV), which is part of the ETN. The basic purpose of the records is to systematically monitor and analyze market prices and real estate rents for the needs of mass real estate valuation, for the needs of periodic reports and to ensure public transparency of the Slovenian real estate market.

6 DEFINITIONS

Dwellings: newly built and existing flats, and newly built and existing family houses.

Existing flat: a residential unit in a multi-dwelling building, which is not sold for the first time and for which a real estate transaction tax has to be paid at sale. Normally an existing flat is more than three years old.

Existing family house: a one-dwelling or a two-dwelling building for permanent residence.

Newly built flat: a residential unit in a multi-dwelling building which is being sold for the first time and is less than 3 years of age or is less than 10 years of age and VAT was paid at sales.

Newly built family house: a one-dwelling or a two-dwelling building which is being sold for the first time and is less than 3 years of age or is less than 10 years of age and VAT was paid at sales.

Transaction prices: contractually agreed sales prices. In existing flats all taxes and contributions are excluded, while transaction prices of new housing include the value added tax. Transaction prices of family houses include the value of land that belongs to the house. Transaction prices of flats include the value of a garage or parking places that belong to the flat if they are subject of a single sales contract.

House sales: number and value of housing transactions. The house sales indicators are total number and value of dwellings transactions (both houses and flats) sold in Slovenia where the purchaser is a household. All transactions subject to inheritance or donations are excluded.

Quarter: signing date of the first binding sales contract is decisive for classifying the transaction into an adequate quarter.

Hedonic method: a two-phase procedure for calculating the price index. In the first phase characteristics of real estate that influence its price formation are valued by means of regression analysis. In the second phase statistical parameters from the regression analysis are used in one of the known formulas used for index calculation.

Owners occupiers are those households that live in a dwelling (flat, house) that they own.

Owner occupier's housing expenditures represent those expenditures incurred by owners occupiers when purchasing, maintaining and living in their own home.

7 EXPLANATIONS

7.1 CLASSIFICATIONS

The house price index covers the following categories:

H.1. Dwellings - total

H.1.1 Newly built dwellings

H.1.1.1. Newly built flats

H.1.1.2. Newly built family houses

H.1.2. Existing dwellings

H.1.2.1. Existing flats, Slovenia

H.1.2.1.1. Existing flats, Ljubljana municipality

H.1.2.1.2. Existing flats, rest of Slovenia (without the municipality of Ljubljana)

H.1.2.1.2.1 Existing flats, Maribor municipality

H.1.2.1.2.2 Existing flats, rest of Slovenia (without the municipality of Ljubljana and Maribor)

H.1.2.2. Existing family houses

The owner-occupied housing price index covers the following expenditure categories:

O.1. Owner-occupiers housing expenditures

O.1.1. Acquisitions of dwellings

O.1.1.1. New dwellings

O.1.1.1.1. Purchases of new dwellings

O.1.1.1.2. Self-build dwellings and major renovations

O.1.1.2. Existing dwellings new to households

O.1.1.3. Other services related to the acquisitions of dwellings

O.1.2. Ownership of dwellings

O.1.2.1. Major repairs and maintenance

O.1.2.2. Insurance connected with the dwelling

O.1.2.3. Other services related to ownership of dwellings

7.2 DATA PROCESSING

DATA EDITING

Data were statistically edited by using appropriate systematic corrections. For more, see the general methodological explanations [Statistical data editing](#).

WEIGHTING

For calculating the aggregated price index of several types of dwellings, the annual value of transactions of individual types of dwelling is used for weighting.

SEASONAL ADJUSTMENT

Seasonal adjustment is not applicable.

DATA PROCESSING OTHER

From all transactions of dwellings, only market transactions for which all appropriate data on dwelling characteristics are available are taken into account. Thus all transactions that are related to inheritance and other kinds of transfer of ownership between relatives are eliminated. Transactions of all types of dwellings worth less than EUR 20,000 are eliminated.

Mixed transactions where more than five dwellings are being sold within one sales contract and the individual prices cannot be determined are eliminated as well.

Existing dwellings

For calculating the price index of existing flats, we only use transactions:

- That are larger than 18 m² but smaller than 250 m²
- That were constructed less than 200 years ago
- Whose average price per square metre of usable floor area is not lower than EUR 300 but not higher than EUR 5,000

For calculating the price index of existing family houses, we only use transactions:

- That are larger than 40 m² but smaller than 300 m²
- That were constructed less than 200 years ago
- Whose average price per square metre of usable floor area is not lower than EUR 300 but not higher than EUR 5,000
- Whose associated building plot is not larger than 4,000 m²

Newly built dwellings

As regards physical characteristics, for newly built flats and family houses the same criteria as for existing flats and family houses are applied. A dwelling is considered to be new if at the time of transaction it is less than 3 years of age or is less than 10 years of age when the investor is selling it for the first time and VAT is paid at sales.

7.3 INDICES

In the first step, the values of tourist capacities (number of beds) according to municipalities, the value of the regional gross domestic product per capita in the region and the value zone are attributed to residential real estate transactions.

The next step is data processing according to the so-called hedonic principle. The core of this approach is multiple regression analysis of real estate characteristics influencing price formation.

On the left-hand side of the equation is a dependent variable – a logarithm of the sales price of real estate $\ln p$, and on the right-hand side is first the constant, followed by the term with the sum of regression coefficients for each explanatory (independent) variable z (i.e. real estate characteristics), while the last term of the equation is the residue.

Each individual type of real estate requires individual regression analyses model, composed of explanatory variables, i.e. property characteristics, which can explain most efficiently properties sale prices variations. The following regression models have been developed:

Existing flats in the municipality of Ljubljana:

- Usable floor area.
- Net floor area.
- Age.
- Garage size (in m²) and outdoor parking if included in the sale contract.
- Value zone.

Existing flats in the municipality of Maribor:

- Usable floor area.
- Net floor area.
- Age.
- Garage size (in m²) and outdoor parking if included in the sale contract.
- Value zone.

Existing flats in the rest of Slovenia (without the municipality of Ljubljana):

- Usable floor area.
- Net floor area.
- Age.
- Garage size (in m²) and outdoor parking place size if included in the sale contract.
- Value zone.

Existing flats in the rest of Slovenia (without the municipalities of Ljubljana and Maribor):

- Usable floor area.
- Net floor area.
- Age.
- Garage size (in m²) and outdoor parking place size if included in the sale contract.
- Value zone.

Newly built flats, Slovenia:

- Usable floor area.
- Net floor area.
- Garage size (in m²) and outdoor parking place size if included in the sales.
- Value zone.

Existing family houses, Slovenia:

- Usable floor area.
- Net floor area.
- Age.
- Size of the building plot on which the house is located and which is part of the sales contract for the house.

- Value zone.

Newly built family houses, Slovenia:

- Usable floor area.
- Net floor area.
- Construction phase (third, fourth, fifth) of the house from the sales contract.
- Regional gross domestic product per capita of the region in which the real estate is located.
- Number of tourist beds in the municipality in which the real estate is located.
- Size of the building plot on which the house is located and which is part of the sales contract for the house.
- House was sold with the assistance of a real estate company (yes/no).

Price index calculation is a two-step procedure. First, the hedonic regression analyses based on “characteristics price index” formula are performed for each type of real estate, for each regression model separately. The output regression coefficients are obtained for each individual property characteristics. Regression coefficients of individual real estate characteristics indicate the impact of individual characteristics on the formation of the total real estate price. In the next step regression coefficients are used in the Laspeyres index formula for the final price index calculation. The basis for weighting in the formula is average values of real estate characteristics in the fourth quarter of the previous year.

For calculating the price index of newly built family houses “re-pricing index” is used, this is a Jevons-type formula which is part of the hedonic methods of calculating price indices. For calculating average prices of goods, the geometric mean of “raw”, input prices of real estate is used. The “re-pricing index” formula has a characteristic that for balancing the differences in the quality of houses between comparable periods reference data on house characteristics from a much longer period of observation can be used. The reference period for calculating the price index of newly built houses is 2008 (four quarters).

A good characteristic of the “re-pricing index” method is that it enables the index calculation even with a small number of transactions in the current quarter.

Formula for calculating the »re-pricing index«

The price index I_s is calculated directly as a ratio between the index of “raw” prices of real estate $I_s^{\text{unadjusted}}$ and the index of quality adjusted prices of real estate characteristics - I_s^{EQI} . The index of “raw” real estate prices is the ratio between the geometric mean of real estate prices in the current quarter n_s and the selected base quarter n_0 . The index of quality adjusted prices is the ratio between the arithmetic means of quality adjusted prices of real estate characteristics from the current and the selected base quarter. The factors for quality adjustment in both periods are regression coefficients of real estate characteristics calculated on the basis of transactions from the reference period 2008 for newly built family houses. Regression coefficients of real estate characteristics for the reference period are calculated on the basis of

logarithmic linear regression function.

The owner-occupied housing price index (OOHPI)

The Owner-Occupied Housing Price Index measures the change over time in the transaction prices of dwellings that were purchased for own-use and the cost of all goods and services that households purchase in their role as owners occupiers of dwellings (see classification in chapter 7.1). As the index is based on the net acquisitions approach, only purchased dwellings that are new to the household sector are covered, while transactions between households are excluded.

The price index of Acquisitions of dwellings covers expenditures incurred by owners occupiers on new dwellings (purchases of new dwellings, as well as self-build dwellings and major renovations), purchases of existing dwellings that are new to the household sector and the other costs related to the acquisitions of dwellings (such as property transfer tax, stamp duty, real estate agent commission, notary fee, etc.).

The price index of Ownership of dwellings covers expenditures incurred by owners occupiers on Major repairs and maintenance of the dwelling, on insurance connected with the dwelling and other costs related to ownership n.e.c.

Indices "Existing dwellings new to households« and »Other services related to ownership of dwellings« are not calculated and published in Slovenia due to their too small weights.

7.4 PRECISION

The precision is not calculated.

7.5 OTHER EXPLANATIONS

8 PUBLISHING

- SiStat Database: [Prices and Inflation](#) - [Real Estate Prices](#); House price indices, Owner-occupied housing price indices, and House sales are published.
- First Release (Prices and Inflation, [Real Estate Prices](#)): »House price indices, Slovenia«.
- EUROSTAT (Statistical Office of the European Union).

9 REVISION OF THE DATA

9.1 PUBLISHING OF PRELIMINARY AND FINAL DATA

The house price indices, owner occupied housing price indices and house sales data are published quarterly and are published as final data. They are calculated from quarterly data on concluded real estate purchase and sale transactions, which are sent to SURS 65 days after the end of each quarter by the Surveying and Mapping Authority of the Republic of Slovenia (hereinafter GURS), which managed and maintained the Real Estate Market Register (hereinafter ETN).

After the publication of the final data, the house price indices, owner occupied housing price indices and house sales data can be revised unplanned only exceptionally, if we find discrepancies in the number of concluded real estate purchase and sale transactions between annual data sent to us by GURS 105 days after the end of each observed year and the previously mentioned quarterly data or due to subsequent discovery of other major discrepancies (inconsistencies) in the data.

9.2 FACTORS INFLUENCING COMPARABILITY OVER TIME

There are no breaks in time series, so all points in time are comparable.

Until 2011, the "characteristics price index" method was used to calculate the index of existing family house prices, and then, by the fourth quarter of 2015, the "re-pricing index" method, now the method of "characteristics price index" is re-used. The consistency test has shown that both models are consistent internally and comparable, so we believe there are no breaks in the time series.

10 OTHER METHODOLOGICAL MATERIALS

Methodological materials on SURSs website are available at <https://www.stat.si/statweb/en/Methods/QuestionnairesMethodologicalExplanationsQualityReports>.

- Questionnaire:
 - SURS does not collect data for this survey by using a questionnaire.
- Quality reports for the Survey:
 - Residential property prices (STAN-ČL)

theme: Prices and Inflation, sub-theme: Real Estate Prices

- Eurostat: [Handbook on Residential property price indices](#)
- Eurostat: [Technical Manual on Owner Occupied Housing and House Price Indices](#)
- Metadata (Eurostat): [HPI metadata](#)