INSTITUTO NACIONAL DE ESTADISTICA

Housing Price Index, base 2007 Methodological preview

Subdirectorate General for Statistics on Prices and Household Budgets

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1. Introduction

The main statistics currently in existence and which provide information on the evolution of property market prices originate from the Ministry of Housing, from the scope of Public Administration, and from surveying companies and estate agents, as regards the private sector.

Any of these make possible a perspective of the property market in Spain, but they do not show the sector situation from all possible fields, thereby preventing the carrying out of a complete analysis thereof. This shortage of information is the main reason for the INE planning the implementation of a set of statistics covering the housing market generally, placing emphasis on hedonic regression procedures for processing quality adjustments, an aspect which is of vital importance in price indices.

This same concern is present in European Union (EU) countries. In 2002 a Study Group was set up at the heart of the Statistical Office of the European Communities (EUROSTAT), to look into housing purchase prices; this group, initially formed by Germany, the United Kingdom, Poland, Finland and Spain, had the undertaking of studying the situation of this market in each country, pinpoint the main sources available, and propose a valid statistical procedure for all EU countries, which would enable the drawing of housing price evolution comparisons.

Subsequently, in 2006, seven more countries joined the Study group: Cyprus, France, Greece, Italy, the Netherlands, the Republic of Slovakia, and Slovenia, in order to obtain data on the evolution of housing prices, both new and second-hand, in each of these countries. In December 2007, the third phase of the Study group commenced, one of its purposes being to periodically produce indices and bring about improvement in their calculation methodology.

With this initial situation, the implementation of statistics aimed at ascertaining the temporary evolution of housing purchase prices in Spain, and which resolves the need for current information and makes it possible to establish international comparisons.

To this end, a work plan was devised in order to implement a Housing Price Index (HPI). This plan was conceived taking into account work carried out at the heart of the EUROSTAT study group.

Furthermore, in 2005 the INE set up an Interministerial and Bank of Spain Work Group, with Presidency of the Government, Bank of Spain and Ministry of Economy and Tax, Justice and Housing representatives. In this Group all elements were presented and analysed which must conform to a housing price evolution indicator with the basic features conferring the required international comparability.

This document deals with the planning of this operation, which includes in detail the procedure followed in the years prior to the implementation of the new indicator, as well as the most relevant methodological features defining it.

Particular emphasis has been placed on the model developed for processing information obtained, based on regression methods, conferring these statistics a decisive nature as compared with those issued to date for the public sector.

2. Background

The creation of the Study Group regarding owned housing coordinated by EUROSTAT has served to drive development of an operation aimed at measuring the evolution of housing prices in Spain. Indeed, work carried out over the last few years within this group may be regarded as preliminary to work planning followed by the obtaining of the HPI.

In the first phase, the main operation carried out by the Study Group was the implementation of a pilot for collecting new housing prices, with the main objective of verifying the functioning of collection in the field, testing a questionnaire model and, lastly, analysing the differences which exist between this system for obtaining information, and obtaining it via surveying companies.

With this objective, the field test was limited to the provinces of Madrid and Segovia, where new housing developments were visited in order to collect sale price and features of all types of housing within the development.

On the other hand, preliminary studies were carried out using survey values, for which average survey values were used by the most important survey companies in Spain, by size stratum, for eight provinces.

Conclusions drawn from these first pilots served to embark on designing the future index. Using these, the first basic ideas were conceived for developing the index methodology, such as suitable calculation periodicity, the cost/efficiency relationship of each of the methods and other relevant aspects, such as processing applied to changes in housing quality.

In the second phase, the EUROSTAT study group continued working in order to determine the methodology for calculating a harmonised ownership housing price index. To this end, the reference of this HPI implementation project presented in this document is the general guidelines marked by EUROSTAT for the harmonised indicator.

In tandem with this, the INE has analysed the sources of information available for calculating the HPI, as this is one of the basic elements for subsequently developing the indicator methodology. Each one provides information on the housing merchanting process from a different perspective.

In addition to the two sources already mentioned (valuations and property developments) there are four other possible sources in order to obtain data on housing: drafting of deeds, mortgage loans, Land registers and estate agents.

Having studied the aforementioned sources in detail and weighing up the pros and cons of each one, it has been decided that drafting of deed values provide the best information for monitoring owned housing prices.

The features of surveying values, which have resulted in this source not being used to calculate HPI, are as follows: they exclude merchanting of housing in cash, may

include some dwellings not subject to merchanting, surveying values are not effectively paid prices (as they may be over- or undervalued) and in addition, some companies in the sector make it difficult for the INE to obtain information.

Mortgage loans have been ruled out because their values do not usually coincide with the valuation price, and in each case the relationship between the market price and loan value is different. Furthermore, they do not provide any advantage over the deed drafting value, as regards speed of data or database content availability, since they are also taken from notary and property registers.

Land register data has also been dispensed with, because the land register value does not provide a good measurement of the housing price, and moreover, the availability of information relating to new housing would be delayed, thus preventing collecting of the transaction in the reference period.

On the other hand, housing developments have also been ruled out due to the complexity of collecting data, including the high cost in relation to the efficiency thereof. Furthermore, collecting of prices on developments only provides data on new housing, requiring the use of another source in order to obtain second-hand housing prices. This other source may be the one collected from prices at estate agents, which entails great difficulty in price monitoring, such as the replacing of sold housing for other similar housing, and the decrease in price of those remaining unsold in order to stimulate its sale.

In this way, the source selected as suitable for calculating the HPI is the notary register, which contains among other data, the value on drafting the deeds for a dwelling. This value is updated each time there is a merchanting of the dwelling. Among the features shown by this data, the following are worth noting:

- They include information on all housing subject to transaction in the reference period, both those paid for in cash and those paid for using financing;
- they include information both on new housing, and on second-hand housing;
- this is an official item of data;
- housing may be included in the calculation of the index in the month in which the transaction occurs, where information is available in time;
- it includes qualitative information (localisation, size, etc.).

The implementation of notaries' computerised indices in early 2004 entailed a substantial change in the way in which the latter transmit compulsory information to Public Administrations, and is of great statistical use for ascertaining the reality of legal and economic activity in Spain.

In early 2005, a Partnership agreement was signed between the INE and the General Council of Notaries for carrying out statistical operations relating to real estate assets, thus enabling availability of information necessary for calculating the HPI and guaranteeing the necessary periodicity for producing an indicator of this significance.

3. Objectives

The HPI has the primary objective of measuring the evolution of the level of merchanting prices of free price housing, both new and second-hand, over time. This is therefore an indicator conceived solely for establishing comparisons over time.

Not included within its scope is the measuring of price levels. Therefore, spatial comparisons cannot be established for price levels, whereas they can for price evolutions.

In order to calculate the HPI, protected housing is excluded due to it not being accessible to all buyers, and it not being governed by the usual market forces. This is housing whose type, dimensions and prices are regulated by the Authorities, as a condition in order for buyers to benefit from specific advantages of both a financial and fiscal nature. Buyers must, in turn, also meet conditions set down regarding ownership of property, family income, etc.

Similarly, within the scope of production of European Union harmonised statistics, the HPI aims to serve as a comparative element between EU Member States, as far as housing price evolution is concerned. In this sense, the index has been conceived under certain methodological parameters, which grant it a high degree of comparability with the indicators produced by other countries, based on concepts used for the production of the EU Harmonised Index of Consumer Prices (HICP).

Since the HPI is conceived as an indicator which uses administrative records as a main source of data, it is not necessary to apply a sampling technique.

The use of administrative records makes it possible to have available information for the whole of the population which makes up the scope of the study or research, which favours precision for greater levels of breakdown. Another advantage associated with the use of records is the reduction in costs if compared with statistics using sampling surveys as a base.

4. Areas of research

ANALYSIS UNITS

Bearing in mind that the objective of the HPI is to measure the evolution of the level of merchanting prices of free price housing in Spain, the unit for analysis is free price housing.

POPULATION SCOPE

The HPI reference population or stratum includes the entire population (individuals), resident both inside and outside Spain, who have acquired a dwelling during the reference period. Merchantings carried out by legal entities or financial institutions do not form part of the HPI population scope.

GEOGRAPHICAL SCOPE

The geographical scope of the research is made up of the whole of Spain.

TEMPORAL SCOPE

The survey will be conducted on a quarterly basis, thereby enabling estimation of the prices between consecutive quarters, the accumulated evolution during the year, as well as the annual evolution.

5. Variables used

The information used for calculating the HPI is taken from the General Council of Notaries, with whom the INE has signed a partnership agreement aimed at enabling the use of data from notaries for statistical purposes. Pursuant to this, the General Council of Notaries, via the Notarial Certification Agency (ANCERT), provides the data making up the main source of information for this indicator.

The INE receives information on a monthly basis on transfers of real estate assets carried out in Spain approximately six weeks after the end of the data reference month, as well as successive subsequent updates in which new observations or amendments to those previously sent are made.

The HPI is a short-term indicator, produced quarterly, using in its preparation the latest data available to the INE at the time of calculation, which represents, on average, over 90% of the total for transfers made in the quarter. This cover more than meets the requirements of this indicator, bearing in mind the punctuality and opportunity criteria expected of statistics of this nature. Nevertheless, the information received subsequent to calculation of the indicator does not overly affect the end result.

The information submitted monthly by ANCERT has improved both in quality and in content. Since 2007, information has been received regarding the following variables:

- Location of dwelling variables:
  - Autonomous Community
  - Province
  - Municipality
  - Post Code
  - Type, name and number of the street
  - Subdivided property, block, staircase, floor and door

- Temporal variable indicating the day on which the dwelling is transferred:
  - Date of authorisation

- Legal act codes:
  - Merchanting of property
  - Awarding of housing association to its members, and
  - Award to co-owner in the property development community

- Variables relating to the price of the dwelling:
  - Operation price
  - Object value

    In multiple-object acts, if several objects are included in the operation price, then the value of each of them is allotted to the *object value* field.

- Variables relating to features of the dwelling:
  - Property class. This indicates the type of urban property; a distinction is made between dwellings, parking spaces, storage rooms and plots of land.
  - Reference in the land register of the property and reason for absence or for not being able to obtain this, where appropriate.
  - Type of dwelling, distinguishing between flats and houses.
  - Variable which indicates whether the dwelling is new or second-hand. A dwelling is deemed to be new when it is the first transfer on the merchanting deed, which is normally carried out by the developer or construction company on behalf of the first buyer; for the remainder of transfers, in other words, where there is more than one transfer on the public deed, the dwelling is deemed to be second-hand.
  - Built area in m^2.
  - Variables indicating whether the parking space and storage room price is included in the price.
  - Variable indicating whether the dwelling is free price or state-subsidised housing.

- Variables relating to the buyer:
  - Individual or legal entity. Transactions are received from individuals, whilst those made by legal entities and financial institutions are excluded.
  - Country, province and municipality of residence of the buyer.

In order to calculate the HPI, in addition to information received from the General Council of Notaries, information from other sources is taken into account, in order to supplement the former and create new variables, making it possible to increase the explanatory capacity of the regression model used in the calculation.

The variables created with the information from other sources are as follows:

- **Cluster of provinces**. Grouping of the 52 provinces by means of a cluster analysis using the average net value of the mortgage variable (INE).

- **Size of the municipality**. It classifies the municipalities among large, medium-sized and small provincial capitals, using the latest population data available from the Continuous Municipal Register of Inhabitants (INE).

- **Tourism-oriented municipality**. This is obtained from the information on the number of annual overnight stays in each type of tourist establishment, provided by the *Hotel Occupancy, Holiday Dwelling Occupancy and Rural Tourism Accommodation Occupancy* (INE) surveys.

- **Type of environment.** This variable classifies postcodes, taking into account information of a socio-economic nature, taken from the 2001 Population and Housing Census (INE), as well as the average annual price per square metre within each postcode (notaries).

6. Calculation methodology

The HPI calculation system is based on the combining of two basic elements reflecting the features of the property market: housing prices, which represent the convergence of market supply and demand, and weightings, or relative importance of each type of housing, by expenditure by households when buying a dwelling.

The combining of these two elements in order to obtain the HPI is carried out by means of the **chain-linked Laspeyres index formula**.

In addition to considering the aforementioned elements, another relevant aspect in any price index is the adjustment for change in quality occurring in goods whose prices are monitored over time. When the observed prices correspond to housing, this aspect is crucial, since it is not possible to track the price of the same dwelling over time, and therefore the composition of the basket used for calculation will be different each month, thus affecting the measurement of its price evolution

The solution is to create strata or cells grouping the dwellings with similar features and to monitor the average price of each stratum; subsequently the joint evolution will be obtained by weighting each stratum. In this sense, it is appropriate to create small strata; since the more defined the cell, the better the quality adjustment.

Conversely, in order to obtain average representative prices of each cell with the traditional estimators, it is necessary to have available a minimum number of observations per cell each quarter. This requirement will necessitate increasing the stratum size, reducing the number of features defining it. This may lead to dwellings belonging to the same stratum not being as homogeneous as one would like. Therefore, the HPI uses hedonic regression models which enable the quarterly price estimate per cell, irrespective of whether or not there exist dwellings belonging to this cell in the quarter. In this way, the number of strata is greater, which means that the quality change adjustment is considerably improved.

Below is shown in greater detail the calculation process, affecting the aspects shown and, particularly, in the regression model used.

6.1. PRICES

Prices per square metre are the basic element in calculating the indicator. The regression model is used with the information on merchantings of dwellings during the quarter, in order to obtain parameter estimates, which subsequently enable calculation of estimated prices for each cell or stratum.

Prior to obtaining the parameters of the model, a process of filtering and validation of the received data is performed.

6.2. REGRESSION MODEL

The regression model applied is a general linear model. All the main effects are categorical variables, which therefore take a finite number of values. The surface area of the dwelling is the only continuous variable, although it is categorised for inclusion in the model, creating several disjointed variables. In addition, the model includes the most important interaction of the aforementioned variables.

Each combination of possible explanatory variable values of the model forms a cell.

The model is semi-logarithmic, in other words, the dependent variable is the Neperian logarithm of the price per square metre of the dwelling. In this way, the non-linear relationship is captured between the price and the other variables; in addition, it enables simple interpretation of the model's coefficients or parameters.

The model to be used, in principle, for estimating prices in 2007 and 2008, includes the following main effects or explanatory variables:

- Type of dwelling (distinguishing between flats and houses)
- New/second-hand
- Built area
- Parking (Yes/No)
- Storage room (Yes/No)
- Cooperative (Year/No)
- Cluster of provinces
- Size of the municipality
- Tourist-oriented municipality (Yes/No)
- Type of environment

In addition, the model includes the most significant interactions between the aforementioned main effects.

Annually, the model will be subject to review, incorporating the latest available information into the variables created and adding possible new variables from notaries' databases.

Specification of the regression model

Each quarter, the prices of dwellings resulting in the transaction are taken into account. Each of these belongs to a cell or stratum, depending on their features.

The econometric model for the price per square metre of dwelling *i*, belonging to cell *c* ($P_{i,c}^{tr}$) is defined in the following way:

$$l_{i,c}^{tr} = \ln\left(P_{i,c}^{tr}\right) = x_c' \ \beta^{tr} + \varepsilon_{i,c}^{tr} \qquad tr = 1, 2, 3, 4 \qquad c = 1, 2 \ldots k \qquad i = 1, 2 \ldots n_c^{tr}$$

where:

x_c' is a vector, with a dimension (*1xp*), which takes values 0 and 1, depending on the features defining cell *c*, as regards the main effects and the interactions.

β^{tr} is a vector of *p* unknown parameters, with a (*px1* dimension), which defines the proportional effect on the expected price per square metre of the dwelling of *p* dichotomy variables included in x'_c, in quarter *tr*.

The *p* unknown parameters correspond to the independent term or constant of the model and to the coefficients associated with each of the dichotomy variables which stand out from the main effects and from interaction included in the model.

$\varepsilon_{i,c}^{tr}$ is the random distortion of the model, in quarter *tr*.

These distortions must comply with the model hypotheses shown

below:

$$E\left(\varepsilon_{i,c}^{tr}\right) = 0 \ ; \quad Var\left[\varepsilon_{i,c}^{tr}\right] = \sigma^{2,tr} \ ;$$

$$Cov\left(\varepsilon_{i,c}^{tr} \ , \ \varepsilon_{j,d}^{tr'}\right) = 0 \qquad \forall \ (tr, \ i, \ c) \neq (tr', \ j, \ d)$$

n_c^{tr} is the number of observations (housing transactions) in cell *c*, in quarter *tr*.

k is the number of cells or housing types considered in the model.

6.3. WEIGHTINGS

The weighting structure enables the establishing of the importance or weight of each cell or stratum as compared with the rest, depending on expenditure on buying housing of every type during the reference period.

This involves a flow variable (transactions carried out) whose composition may change from one year to the next, and not a stock variable, as would be the case with the number of dwellings existing in Spain.

The information source used in order to obtain weightings is the same as the one providing prices; notary data makes it possible to ascertain the types of transactions carried out over time, both in number and in value.

The weighting structure will be obtained with information referring to the last three available years. Thereby two objectives are sought:

- To guarantee stability in the weighting structure, since if this changes significantly from one year to the next, annual rates may be affected.

- Improving representativeness of the index. The more years are included in the calculation, the greater the variety of types of housing represented, the greater the number of cells or strata and the better the quality adjustment.

Due to the dynamic nature of the property market, it is appropriate to update the weighting structure on an annual basis, such that this represents the market situation as reliably as possible. It will be possible to carry this out, as the HPI is a Chain-linked Laspeyres index.

As was mentioned earlier, the weightings for each cell represent the relationship between household expenditure when buying dwellings of the same type, in other words, belonging to the same cell, and the total expenditure when buying a dwelling.

Expenditure on housing is calculated using information on quantities sold (dwellings in metres square) during the reference period, in each of the cells; and prices (of dwellings per square metre) estimated using the regression model for the fourth quarter of the year immediately preceding the current one:

$$W_c^a = \frac{Q_c^{(a-1,a-2,a-3)} \times \hat{P}_c^{4,\,a-1}}{\sum_{\forall c} Q_c^{(a-1,a-2,a-3)} \times \hat{P}_c^{4,\,a-1}} \qquad a \geq 2008 \,,$$

where, $Q_c^{(a-1,a-2,a-3)}$ represents the annual average quantity in metres square of dwellings sold in the reference period for weightings (a-1, a-2, a-3) , belonging to cell *c*.

The reason for calculating expenditure on housing using prices estimated by taking the regression model for the last quarter of the previous year is to correct the lag between the reference period for the weightings and the reference period for the prices. In this way, using the latest information available on prices, housing expenditure is updated to the last quarter of the previous year, which is also the reference year for prices during the whole year.

Although the Autonomous Community variable does not form a part of the regression model, and therefore, is not directly involved in determining the strata; the different weighting structures have been calculated for each Autonomous Community, as well as for the country as a whole; this enables calculation of indices on the different geographical breakdowns.

6.3. CALCULATION OF INDICES

The general formula used in the calculation HPI is a chain-linked Laspeyres index, analogous to that used in the Consumer Price Index (CPI). In the case of HPI, since it is a quarterly indicator, the period used for linking is the fourth quarter of each year and not the month of December.

The reason for using chain-linked indices is that they enable annual updates to the weightings, as well as methodological changes, such as review of the model, inclusion of new strata, etc., unlike the case with a fixed-base Laspeyres index, in which both weightings and methodology remain fixed during the whole validity period of the base.

In a chain-linked index, three reference periods are defined:

- **Reference period of the base index or period.** This is the one in which all indices are made equal to 100. It usually involves the period of a year. In the HPI the base year is 2007, and all the indices published since then will have the aforementioned period as a reference.

- **Reference of weightings.** This is the period referred to in the data used in calculating weightings.

  Every year the HPI weightings will be updated with the latest information available on merchantings of dwellings carried out over the last available three years. Consequently, the reference period of the weightings will vary each year.

  In 2008, the reference period of the weightings will be the one composed of the years 2005, 2006 and 2007.

- **Reference period of the prices**. This is the period with whose prices the current prices are compared; in other words, the period chosen for calculating simple indices. This reference period is the fourth quarter of the year immediately prior to the current one, and it will therefore vary each year.

The general formula for calculating basic indices and grouped indices, and the general calculation system of chain-linked indices are set out below.

Basic indices

A basic grouping is the lowest grouping component for which indices are obtained and whose calculation entails no weightings; these grouping indices are called basic indices. In the HPI the basic grouping is the cell or the stratum.

The basic index of cell *c* is obtained as a quotient of the estimated price of the aforementioned cell in the current period and the estimated price in the fourth quarter of the previous year:

$$_{(4,\ a-1)}I_c^{tr,a} = \frac{\hat{P}_c^{tr,a}}{\hat{P}_c^{4,\ a-1}} \times 100 \quad a \geq 2008$$

where

$\hat{P}_c^{tr,a}$ is the price per metre square of dwellings belonging to cell *c*, in quarter *tr* of year *a*, estimated using the regression model, and

$\hat{P}_c^{4,a-1}$ is the price per metre square for dwellings in cell *c*, in the fourth quarter of year *(a-1)*, estimated using the same regression model as was used in the price of the denominator.

Grouped indices referring to the fourth quarter

The index of grouping *A*, either of functional or geographical type, is calculated taking the basic indices of the cells belonging to the aforementioned grouping and their corresponding weightings, in accordance with the following expression:

$$ {}_{(4,\,a-1)}I_A^{tr,a} = \sum_{c\in A} W_c^a \times {}_{(4,\,a-1)}I_c^{tr,a} \qquad a \geq 2008 $$, where

W_c^a is the weighting of cell *c*, so much per one, valid during year *a*, and

${}_{(4,\,a-1)}I_c^{tr,a}$ is the basic index of cell *c*, in quarter *tr* of year *a*.

The quarterly repercussions referring to the fourth quarter and accumulated throughout the year will be calculated.

Indices in base 2007

The indices to be published are indices in base 2007, which are obtained by chain-linking the indices referring to the fourth quarter of the previous year, according to the following expression:

$$ {}_{07}I_A^{tr,a} = {}_{07}I_A^{4,(a-1)} \times \left(\frac{{}_{4,(a-1)}I_A^{tr,a}}{100} \right) = $$

$$ a \geq 2008 $$

$$ = {}_{07}I_A^{4,07} \times \left(\frac{{}_{(4,07)}I_A^{4,08}}{100} \right) \times \ldots \times \left(\frac{{}_{(4,\,a-2)}I_A^{(4,\,a-1)}}{100} \right) \times \left(\frac{{}_{(4,\,a-1)}I_A^{tr,a}}{100} \right) $$

For base year, 2007, the indices are defined as set out below:

$$ {}_{07}I_A^{tr,07} = \sum_{c\in A} W_c^{07} \times I_c^{tr,07} $$ where

$$ I_c^{tr,07} = \frac{\hat{P}_c^{tr,07}}{\bar{\hat{P}}_c^{\,07}} \times 100 \qquad \text{with} \qquad \bar{\hat{P}}_c^{\,07} = \frac{1}{4}\sum_{tr=1}^{4} \hat{P}_c^{tr,07} $$

In the same way, the indices are obtained for the different regions *R* (Autonomous Communities) using the weighting structure in each of them.

$$_{(4,\ a-1)}I^{tr,a}_{A,R} = \sum_{c \in A} W^{a}_{c,R} \times {}_{(4,\ a-1)}I^{tr,a}_{c} \qquad a \geq 2008$$

The quarterly, accumulated and annual variation rates will be obtained, taking the indices in base 2007.

7. Dissemination

Data is published for the national group, the Autonomous Communities and the Autonomous Cities of Ceuta and Melilla, thus enabling the establishment of comparisons between the evolution of prices in the different Communities.

As regards the functional breakdown, broken down information is provided on new housing and second-hand housing on a national level.

Over the next few years, the possibility of providing another type of more broken down data, by type of housing or the features thereof will be evaluated.

The following data will be published quarterly:

- indices in base 2007;
- quarterly variation rates;
- year-to-date variation rates;
- annual variation rates;
- quarterly repercussions (new and second-hand housing);
- year-to-date repercussions (new and second-hand housing).

8. Concepts and definitions

- **ANCERT. Notarial Certification Agency** (formerly the Notarial Institute for Information Technologies (INTI)). General Council of Notaries Company, incorporated for technological modernisation of the Spanish notaries body.

- **Cell.** Combination of the possible values of the variables or features (main effects of the regression model) defining a specific housing type.

- **General Council of Notaries**. Institution coordinating the Professional Associations of Notaries throughout Spain. It manages the database relating to transfers of real estate assets (Computerised notaries index), making it possible to obtain information necessary to calculating the HPI.

- **Housing association**. This is the group of people who, in compliance with the general requirements of the association (drafting of bylaws, recording in the Co-operatives Register, formation of boards governing them, accounting, etc.), join in order to take part in a joint project, carrying out as many activities as are necessary (searches for plots of land, search for a financial institution to finance construction, hiring the architect, drafting of contracts of incorporation, project contract, housing award contracts, etc.), in order to acquire accommodation, and/or premises and ancillary sites for themselves or persons with whom they co-habit.

- **Main effect**. Regression model explanatory variable.

- **Mortgage**. Entitlement contracted by the mortgage lender as compared with the borrower in the case of non-payment of obligations by the latter, and which is exercised on the property appearing as a guarantee or collateral. In the case of a mortgage loan on a dwelling, the mortgaged property is the dwelling purchased.

- **Interaction.** Regression model explanatory variable, obtained as a combination of other explanatory variables (main effects) of the model.

- **Hedonic regression model.** Hedonic price models analyse the price of a good depending on its multiple features, by means of the price estimate implicit in each of them.

- **Flats**. These are dwellings forming part of a two- or more storey or level building, all accessible from a public thoroughfare. So long as there are restricted areas and common areas, there is a special kind of coproperty established as horizontal property.

- **Surveying.** A survey is an estimate of market value based on different parameters determining this, such as surface, location, age, etc. The majority of surveys are carried out at the request of a banking institution in order to grant a mortgage for buying the dwelling, and are usually carried out by a surveying company.

- **Value on drafting the deeds**. Drafting the deeds is confirmation by means of a public deed and in law of an issue or an act.

  The value on drafting the deed of the dwelling is that appearing in the merchanting public deed as the value of the dwelling.

- **Housing**. All structurally separate and independent venues that, taking into account how they were constructed, reconstructed, transformed or adapted, are intended to be inhabited by persons and forms part of a building.

- **Free price dwelling**. This is a non state-subsidised dwelling.

- **New dwelling**. Dwellings are classified into new or second-hand depending on the order of the transfer carried out. Thus when it is the first transfer on the merchanting deed, which is normally carried out by the developer or construction company on behalf of the first buyer, the dwelling is classified as new.

- **State-subsidised dwelling**. This is a dwelling which is subject to any type of subsidy for its construction, regardless of which body grants this, and where surface and price limitations are taken into account. Those dwellings which have exceeded the time limit of the aforementioned subsidy are excluded, as are others which, although they haven't yet exceeded it, appear with a construction value defined in a Ministerial Order by the Ministry of Economy and Tax. These last two considerations confer upon the dwelling the category of free price dwelling.

- Second-hand housing. Dwellings are classified as new or second-hand depending on the order of the transfer carried out. Thus, where there is more than one transfer on the public deed, the dwelling is deemed to be second-hand.

- **Single family dwelling**. This is a dwelling located on an independent plot, accommodating a single family. Single family dwellings may be:

  - **Detached houses**. A dwelling isolated on its outermost perimeter from any other building.

  - **Semi-detached houses**. A building adjoining onto another, with the remainder of the outermost perimeter isolated from all other buildings in the vicinity.

  - **Terraced houses**. A building adjoining onto two other neighbouring buildings, with the remainder of the outermost perimeter isolated from all other buildings.