

Producing organisation: INSEE

## Characteristics

- Correction : Non-adjusted (raw)
- Reference period : 2010
- Periodicity : Quarterly
- Geographical area : Metropolitan France

## Introduction

The Ministry of Ecology, Sustainable Development and Energy carried out a survey entitled “Cost price of new housing” based on about 1,600 planning permissions taken from the Sit@del2 database. From this survey, INSEE was able to produce a “Construction Cost Index”, according to regulatory values since 1953, which is currently produced using a hedonic model, and a price index for the production of new housing for residential use, for strictly statistical purposes. In both instances, these are in fact producer price indices for housing construction activity (part of the class of activities: “41.20 - Construction of residential and non-residential buildings”): the differences lie mainly in the change in reference period (Q1 1953 vs. year 2010) and the revision policy of the published series.

## Definition

The Construction Cost Index ([CCI](#)) is a quarterly index, reference 100 in Q4 1953, the date it was created. The CCI measures changes in the construction price of new buildings for non-cohousing residential use in Metropolitan France. It is published in the Journal Officiel around the middle of the fourth month following the quarter under review. It is calculated by INSEE in collaboration with the Ministry of Ecology, Sustainable Development and Energy.

The name “Construction Cost Index” has become established over time, but this is in fact inaccurate since it is actually a price index based on observation of construction contracts between the contracting authorities and the companies carrying out the building work, and excludes any other components that go to make up the cost of housing (land costs, ancillary promotion costs, financial costs, etc.). The actual cost of construction is derived from other indicators, mainly the “[Buildings indices](#)”.

## Calculation method

A price index is an instrument for measuring price changes. To do this, pure price variations must be isolated, by first removing any effect linked with changes in the content of the products in question. In this precise case, for example, this may be a rise in the price of a dwelling after the surface area of the rooms has been increased, or when stricter insulation standards have been applied or if better quality equipment has been installed. Price indices are usually prepared as follows: the current value of an intangible sample of articles is compared with what it was on a reference date, and if an article is replaced by a different model, then a “quality effect” has to be assessed, i.e. the effect this change has had on the new price. A pure price change can then be obtained by deducting the quality

effect.

The specific problem with construction is that each building is unique. It is therefore not possible to compare the price of the same construction at different periods. This means that price variations cannot be measured by simply observing them, and this confuses the perception of inflation in the construction sector. Indeed these prices depend on a large number of parameters: building layout, materials used, equipment installed, constraints related to the worksite, location and scale of the operation, type of relationship between those involved (developers, house builders, general building companies, subcontractors, clients), construction schedule, circumstances around the finalising of the deal. The calculation method has to adapt to these characteristics.

### **1. Until Q4 2009: a posteriori decomposition (surveyed)**

The principle behind the calculation is to compare the market price for each building operation to a fictitious price obtained by evaluating each element of the construction according to its price on a reference date. These reference prices are brought together in the general evaluation table prepared in 1987. The a posteriori decomposition is carried out by surveyors from the relevant Ministry. The calculation method used for the index means that it is suitable for a Paasche-chained index. The weightings assigned to the different types of housing and construction regions are based on the reality of the current quarter. Thus a Paasche index does not need to be set to a new “base”. The method ensures that any change in the quality of the dwellings and the medium-term reliability of the measurements are taken into account. Interpreting quarterly variations is made complex mainly because of the duration of the construction process. Calculations are carried out each quarter based on a representative sample following price changes in some 6,000 new dwellings by monitoring 320 cases.

Indices in the third quarter are calculated econometrically based on changes in an index of the cost of factors of construction (index BT01). The percentage of variation in the CCI between Q2 and Q3 2009 is given in the formula: “ $CCI = 0.69953 x(t)$ ”, where  $x(t)$  represents the percentage variation in the BT01 index over the same period.

The Construction Cost Index for Q4 2009 is calculated in a similar way. The percentage variation in the CCI between Q3 and Q4 2009 is given in the formula: “ $CCI = 0.71978 x(t)$ ”, where  $x(t)$  represents the percentage variation in the BT01 index between July and October 2009.

### **2. From Q1 2010: the hedonic method**

With the hedonic method, an econometric model is used to establish a relationship between the market price of construction and the characteristics of the building, in order to evaluate the implicit value of these different characteristics (e.g. surface area, number of floors, level of comfort, geographic location and standard of living of the place of construction). Price change over time is captured in the model using dummy variables for the date. This method is already used by INSEE, especially for the price index for used housing. It ensures that changes in housing quality are taken into consideration.

The scope of the CCI is very wide. It includes the three main types of construction for residential use: purely individual, grouped individual and collective housing. To take into account the wide variety of constructions, a hedonic model is defined for each construction type. The model coefficients are re-estimated each quarter; the models themselves are reviewed periodically. The

hedonic CCI for all new housing construction is obtained by aggregating the three sub-indices in proportion to the importance of each type of construction.

The data needed to calculate the CCI derive from the statistical survey on the “Construction Cost Index and the Cost of New Housing” (CCI-PRLN), conducted by the statistics department of the Ministry of Ecology, Sustainable Development and Energy. This survey can trace changes in construction prices by monitoring 500 cases representing 7,000 to 8,000 new dwellings, depending on the quarter.

## Uses

The Construction Cost Index is used primarily to review rents of commercial leases (French Commercial Code, Law no. 2001-1168 of 11 December 2001 art. 33 V, Official Journal of 12 December 2001, articles L145-33 and L145-34). According to Law no. 2011-525 of 17 May 2011 intended to simplify and improve the quality of law (article 63), there are three indices that can be used when reviewing professional leases:

- the [Construction Cost Index](#) or, if they are applicable...
- the [Commercial rent index](#) (business and artisanal activities);
- the [Tertiary activities rent index](#) (other than commercial).

Decree no. 2008-1139 of 4 November 2008 concerning the Commercial rent index and Decree no. 2011-2028 of 29 December 2011 concerning the Tertiary activities rent index provide a definition of the activities concerned and the way these indices are calculated and published.

The Construction Cost Index, the Commercial rent index and the Tertiary activities rent index are all published in the Journal Officiel. The date of publication in the Journal Officiel is the reference date.

Changes in the CCI can be compared with or reconciled with changes in the cost indicators of factors of production, such as the [BT01](#).

The CCI is also used to produce for statistical purposes the [Producer price index for construction of new residential buildings - Base 2010](#), which is used in particular to deflate the national construction accounts, alongside the Dwellings maintenance and improvement work price indices ([IPEA](#)), which are now produced every quarter by INSEE and published in the Informations Rapides collection.

## Bibliography

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