Industrial Price Indices base 2005. Methodological notes

Introduction

The Industrial Price Index (IPRI) compiled by the National Statistics Institute is one of the main indicators for monitoring the economic situation.

Up until December 2008, the indices have been published with the year 2000 as their base period. In accordance with European Union guidelines, the indices must be published with the new base 2005 as of January 2009.

The Industrial Prices Indices are Laspeyres-type indices. These indices are suitable for managing the evolution of short-term phenomena, but have the disadvantage of losing representativity over the course of time, and base changes become necessary in order to update their structure.

The changes affect the branches under investigation, the baskets of products, the weightings and the sample of informant units. Furthermore, the base change has been seized upon in order to introduce a series of quantitative and methodological improvements, which, if carried out at another time, would distort the development of the indices.

The main objective of this new design, aside from continuing to extend and improve coverage of this indicator, both for the national total and for the Autonomous Communities, has been to adapt to the current Classification of Economic Activities (CNAE-2009).

The Industrial Price Index with base 2000 used the Classification of Economic Activities for the year 1993 (CNAE-93). Royal Decree 475/2007, of 13 April 2007, approved the National Classification of Economic Activities 2009 (CNAE-2009), which will be applied as of January 2009.

Moreover, based on Regulation (CE) No. 1893/2006 of the European Parliament and Council of 20 December 2006, which establishes the European Classification of Economic Activities (NACE Rev.2), the statistics governed by Regulation (CE) No. 1165/98 on short-term statistics will be compiled based on NACE Rev. 2 as of 1 January 2009.

Thus, the industrial branches investigated in the new base are those established by the CNAE-2009.

The Large Industrial Sectors (in other words, durable consumer goods, non-durable consumer goods, capital goods, intermediate goods and energy), continued the definition established by the Commission Regulation (CE) No. 656/2007 of 14 June, which amends regulation (CE) No. 586/2001 with reference to the defining of the Large Industrial Sectors.

At the same time, the indices in previous bases have had to be re-calculated (*backcasting)*, following the new classification, in order to have available series of linked indices, such that users may have available sufficiently long series for their analyses. Some of these linked series have been available since January 1975.

Characteristics of the new IPRI base 2005

Objective and main uses

The objective of the industrial price indices is to measure evolution, on a monthly basis, of the prices of products manufactured by industry in the first stage of their commercialisation. It involves a dynamic indicator, with emphasis placed upon the measuring of variations and not of levels.

Industrial price indices have different uses, the following ones being:

- Direct use as an indicator for the analysis of price inflation in different states of production. In addition, it is a useful tool for researchers and companies when analysing specific products or markets.

- Indirect use as a deflator, in order to convert current price value data into constant price data at constant prices, or in order to deflate those series investigated in value in the industrial production index.

Prices to be measured and transactions to be observed

In order to uniformly measure price evolution over time, the notion of price measured by the IPRI needs to be accurately defined. At the same time, it is necessary to delimit the group of transactions giving rise to the aforementioned prices.

The prices measured by the indices have the following features:

1) All technical and commercial criteria determining prices (quality, quantity, type of buyer or client...) should remain fixed over time.

2) These are the basic prices, in other words, not including VAT or other indirect taxes invoiced or transport and commercialisation expenses

3) These are effective prices, in force on a specific day. Therefore, list or catalogue prices are not taken.

4) Prices assigned to a specific model are observed, rather than average prices or unit values.

5) These are prices obtained for products sold and not prices paid for materials consumed.

In relation to the economic transactions giving rise to industrial prices, it is worth highlighting the following:

1) Actual sales that are the source of effective prices are taken into account. Transactions within the same company, which only give rise to accounting prices are not taken into account.

2) Sales to companies in the same branch of activity are included (concept of *gross sector*), to companies in other branches, to wholesalers, retailers, public administrations and end consumers.

3) Only sales of products manufactured and sold on the Spanish domestic market are taken into account. Therefore sales of imported products and sales on the foreign market are excluded.

4) Only sales of industrial products by industrial establishments are observed. Sales of industrial products by non-industrial establishments producing them as accessories are excluded.

Scope and coverage

The index covers all industrial sectors, excluding construction. It investigates the extractive industries, manufacturing, electrical energy and gas supply, and water supply branches of activity, corresponding to sections B, C, D and E of the current National Classification of Economic Activities (CNAE-2009). Water supply is investigated for the first time.

From a territorial scope perspective, the index provides data relating to the national total and by Autonomous Community.

Model sale prices are those in force on the 15th day of the month or the day immediately prior to it in the case of no transaction having been carried out on that date.

Products, varieties and subvarieties

Each branch of activity is represented by an indicator at the maximum breakdown level, in other words, the CNAE-2009 type (four digits), whose objective is to measure monthly development. These indicators are constructed on the basis of a basket of products and varieties of representative products. Products and varieties from the basket are defined on the basis of the European Union list of products (*Prodcom list*). Products and varieties are goods, which show uniform physical and commercial features, and which normally correspond to the last aggregation level of the aforementioned product classification.

Lastly, there are the subvarieties, which are specific models of each product or variety manufactured by a specific establishment. Elementary price data, from which the indices are calculated, are obtained at the subvariety level.

Aggregation formula

The usual practice in the majority of countries for constructing an index of industrial prices is the use of the Laspeyres formula, with set weightings for the year taken as the comparison base.

In the case of price indices, this methodology assumes that the indices are compiled, regarding as constant the relative structure of the quantities sold in the base year as constant.

$$I^t = \frac{\sum_i p_i^t \, q_i^0}{\sum_i p_i^0 \, q_i^0} = \frac{\sum_i \frac{p_i^t}{p_i^0} \, p_i^0 \, q_i^0}{\sum_i p_i^0 \, q_i^0} = \sum_i I_i^t \, W_i$$

$$\mathbf{I}_{\mathbf{i}}^{\mathbf{t}} = \frac{\mathbf{p}_{\mathbf{i}}^{\mathbf{t}}}{\mathbf{p}_{\mathbf{i}}^{\mathbf{0}}}$$

$$\mathbf{W_i} = \frac{\mathbf{p_i^0 \, q_i^0}}{\sum_{\mathbf{i}} \mathbf{p_i^0 \, q_i^0}}$$

$\mathbf{p_i^t}$ **y** $\mathbf{p_i^0}$ are the prices in the current period and in the base period, respectively

$\mathbf{q_i^0}$ these are the quantities sold in the base period

Given the aggregation levels already shown, indices are calculated for each of the subvarieties, products, branches of activity and a general index. The subvariety indices are elementary indices of prices obtained as the price quotient in current period t and the price in the base year. Product indices are obtained as an arithmetic average of the subvariety indices of which they are formed. Henceforth, calculation of the indices of the different branches and or the general index is performed using the Laspeyres formula.

Base year

The year taken as the base is 2005. The architecture of the index (weightings, basket of representative products, etc.) reflects the industrial structure in said year.

Weightings

The weightings have been calculated in accordance with the importance of the branches of activity and of products in the year 2005, taking the structural information for the sector industrial provided by the Annual Industrial Companies Survey (ICS) and Industrial Products Survey (IPS).

For CNAE-2009 activities (class, group, division and section) by value of ICS-2005 turnover, after correcting sales in the foreign market. For products, by production value, provided by the AIPS-2005.

Nomenclatures

The index uses the prevailing official classifications. In order to specify the branches of activity, the National Classification of Economic Activities is used (CNAE-2009). Conversely, in order to specify products, the PRODCOM list (Community Production).

At the same time, Regulation (CE) No. 586/2001 of the Commission establishes the definition of Large Industrial Sectors (LIS), for which short-term European statistics must provide information. The LIS essentially consider the economic destination of industrial goods and products.

These large sectors are: Consumer durable goods, Non-durable consumer goods, Capital goods, Intermediate goods and Energy. Moreover, the Consumer Goods series is calculated as the weighted sum of durable and non-durable consumer goods.

Basic surveys

Primary information for calculating indices is obtained from an ongoing survey aimed at industrial establishments.

For each product and variety from the basket, a group of establishments has been selected, representing the majority of their production. Generally, it has been sufficient to include establishments with 20 or more employees.

The survey, which collects information every month from 8,000 establishments, is performed by means of customised questionnaires, via a mixed method of post and interviewers. Questionnaires may also be completed online.

The response rate reached for the first preview of the index is over 90%, increasing during revisions thereof.

Series link

The new Indices are calculated in the new base 2005 as of the year 2006. In this way, the indices have been calculated with the new weighting, product and informant structure since January 2006.

A link has been made for periods prior to the base year, in order to provide sufficiently uniform, long series. The link endeavours to solve the break caused by the two bases, containing a continuing series for each heading.

The series link consists of multiplying the old series by link coefficients, which mean that in the base year the index average is equal to 100:

$$K = \frac{1200}{\sum_{t \in año\ 2005} I^{2000,t}}$$

These coefficients were obtained independently for each series, therefore none turns out to be a weighted aggregation of its components.

This link has the advantage of being simple, and on the other hand, it guarantees that published variation rates for all periods prior to the base year are maintained.