

INSTITUTO NACIONAL DE ESTADISTICA



**Main characteristics of
the Price Indices for
Export and Import of
Industrial Products
(IPRIX-IPRIM), base 2010**

Madrid, April 2013

MAIN CHARACTERISTICS OF THE IPRIX-IPRIM, BASE 2010

Introduction

Council Regulation (EC) No. 1165/98 regarding short-term statistics sets out a common production framework for community statistics for all European Community Member States and for a set of short-term indicators for industry, construction and services, in order to analyse the evolution of the economic cycle.

One of the rules included in this regulation sets out that member states undertake to change the base of their short-term indicators every five years. In order to fulfil this community requirement, since January 2013 the Export Price Index of Industrial Products (IPRIX) and the Import Price Index of Industrial Products (IPRIM) in base 2010 have been implemented.

Operating a base change consists, essentially, of reviewing and updating each methodological element, as well as procedures for calculating indices and determining the best options for attaining representative and accurate indicators that adapt to economic trends.

Until the coming into force of base 2010, both the IPRIX and the IPRIM based their calculation on what is called a fixed-base system, whose main characteristic is that, both the composition of the shopping basket and its weightings are unaltered for the entire time that the base is used.

With the IPRIX and the IPRIM base 2010, there begins a new calculation system based on chain-linking indices, whose most important features are their dynamism and current nature. These are more up-to-date indices, since they revise their methodological system on an ongoing basis in order to improve it. To this end, direct contact is established with the different academic forums and national and international producing bodies.

They are also more dynamic indicators than their predecessors in that they revise the weightings annually for certain functional breakdown levels, and include in the shortest possible timeframe any change detected in the industrial sector, whether it be the appearance of new products, changes in productive activity or in the sample of establishments.

I. General methodology

I.1 BASE PERIOD OR INDEX REFERENCE PERIOD

The **base period** for the IPRIX and IPRIM, for which the arithmetic average of the monthly indices is equal to 100, is the **year 2010**.

I.2 REFERENCE PERIOD OF THE PRICES

The reference period of the prices is the period with whose prices compare with current prices, in other words, the period chosen for calculating simple indices.

With the fixed-base Laspeyres formula (used in systems prior to 2010) this period coincided with the base period. Nevertheless, with the chain-linked Laspeyres calculation formula, used since base 2010 was implemented, the reference period of the prices varies each year.

In the IPRIX and IPRIM base 2010, the **reference period of the prices** is the **month of December of the year immediately prior**.

I.3 REFERENCE PERIOD OF THE WEIGHTING STRUCTURE

Is the period to which the weightings used as the System's structure refer.

For the IPRIX, the weighting structure for base 2010 is compiled using the information from the Industrial Companies Survey, which provides information regarding turnover per branch of activity, and using foreign trade data from the statistical reports of Intrastat and the Single Administrative Document (SAD), which contains information regarding the production value of exported and imported products by branch of activity.

On the other hand, IPRIM uses solely data from Intrastat and the SAD for all levels.

Data from these surveys used to calculate weightings refer to year 2010. This structure was subsequently updated to the year 2012 using information from the IPRIX and IPRIM, respectively.

Thus, the **reference period of the weightings** will be December 2012, during the first year, and **December of the year immediately prior** in subsequent ones, since weightings will be updated annually, using the latest information available from the surveys and the evolution of prices of the IPRIX-IPRIM.

I.4 INDEX POPULATION OR REFERENCE STRATUM

This is the population group whose income structure is used as a base for selecting representative products and calculation of the weightings for these.

In the IPRIX 2010, the reference stratum for the index includes all **companies manufacturing and selling industrial products in the foreign market**.

Therefore, income from products sold in the domestic market are excluded.

In turn, in the IPRIM 2010, the reference stratum for the index includes all companies that import industrial products.

I.5 CLASSIFICATION USED

The classifications used in the IPRIX-IPRIM are the National Classification of Economic Activities for 2009 (CNAE-2009) for the branches of activity (up to the 4-digit level) and the Combined Nomenclature for products and varieties.

Moreover, information is provided on the Main Industrial Sectors (MIS), in order to comply with Regulation (EC) N° 586/2001 of the Commission. These MIS classify industrial products fundamentally by the economic destination thereof.

I.6 FUNCTIONAL AND GEOGRAPHICAL BREAKDOWN OF THE INDICES

In the IPRIX-IPRIM base 2010, indices are calculated at different functional breakdown levels for Spain and by markets (Eurozone-rest of the world). The functional and geographical breakdown level to which indices are published is as follows:

IPRIX: National: general, sections (1 digit CNAE-09), divisions (2 digits CNAE-09), groups (3 digits CNAE-09) and classes (4 digits CNAE-09), as well as by economic destination of the goods.

IPRIM: National: general, sections and divisions (2 digits CNAE-09), as well as by economic destination of the goods.

I.7 GENERAL CALCULATION FORMULA

Until the coming into force of base 2010, both the IPRIX-IPRIM based their calculation on what is called a fixed-base Laspeyres type index. The main advantage of an index of this type is that it enables comparing the same structure of products and weightings throughout the time that the base is in effect; however, there is also the drawback that the weighting structure loses relevance as time elapses and productive activity changes.

The IPRIX-IPRIM, base 2010, will use the chain-linked Laspeyres formula, which consists of referring the prices from the current period to the prices from the year immediately prior. Moreover, each year the weightings will be updated for the branches with information taken from the Industrial Companies Survey, Intrastat, the SAD and other sources.

Basically, the calculation process is the same as for a Laspeyres: weighted averages are calculated for indices of articles that make up each one of the functional groups for which indices are obtained. They are compared with those calculated the previous month. In this case the weightings used do not stay fixed during the period the system is in force.

Use of the chain-linked indices formula avoids the self-weighting of the branches of IPRIX-IPRIM via the level of the indices, in other words, the branches will not gain/lose weight in the basket as their indices reach greater/lesser magnitudes.

On the other hand, annual updating of weightings has the following advantages:

- The IPRIX-IPRIM adapts to changes in the industrial sector in a very short period of time;
- The appearance of new products may be detected, as may the disappearance of ones considered to be of little significance, as well as changes in production activity or in the sample of respondent units for inclusion in the IPRIX-IPRIM for the following year, where this occurs, whereas in previous bases it was necessary to await the base change in order to incorporate these changes.

Another important innovation in the new base is the use of the **geometric average** for the calculation of the average prices of those products included in the basket, which are involved in the preparation of the monthly index.

Furthermore, as of base 2010 all indices are aggregational, both in terms of function and by market.

II. Sample selection

One of the most important aspects of the base change process is the updating of the sample. To this end, a complete study is carried out of the industrial activities, the basket of products, the weightings and the sample of respondent units, for the purpose of updating its structure and improving its representativeness.

As a result of this sample update, each month, the IPRIX, base 2010, includes approximately 14,000 prices of 1,700 products, in a sample of nearly 3,600 industrial establishments.

In turn, the IPRIM sample is composed of 2,100 products for which 18,000 prices are collected in approximately 4,600 establishments.

II.1 SELECTION OF ACTIVITIES

The criteria used for defining what activities are to form part of the IPRIX and IPRIM, base 2010 calculation, are as follows: for the national grouping, classes (4 digits CNAE-09) that exceed 0.1% of the total turnover for industry, and for markets (Euro zone and rest of the world), divisions (2 digits CNAE-09), which exceed 1.0% of the total turnover for industry for each market are included.

Following these criteria, branches have been removed that do not reach the national coverage minimum, such as for example Manufacture of fur items or Manufacture of watches and clocks, in the IPRIX; and Extraction of salt or Manufacture of explosives, in the IPRIM. Others have been included, such as Manufacture of aircraft and spacecraft and machinery thereof, Manufacture of railway and tramway locomotives and rolling stock and Repair of machinery, in the IPRIX; and the Manufacture of railway and tramway locomotives and rolling stock, in the IPRIM.

II.2 SELECTION OF PRODUCTS

Products making up the IPRIX-IPRIM base 2010 basket are included depending on the production value of the product within the class to which they belong, covering up to 60% thereof, in those weighing over 0.1%, and covering up to 40% in the remainder.

Information for selecting products is obtained from statistical statements from Intrastate and the SAD, referring to the year 2010.

II.3 OBTAINING OF WEIGHTINGS

The weighting structure of the IPRIX, base 2010, has two fundamental sources of information:

- The Industrial Companies Survey, which provides data regarding turnover of industrial companies, by branch of activity.
- Statistical statements from Intrastate and the Single Administrative Document, providing information regarding the production value of industrial products.

As of the first one, the weighting is obtained for each of the represented in the en IPRIX, as a quotient of the turnover of industrial companies whose main activity is said branch and the total turnover for industry. Before calculating weightings, turnover of branches not represented among the branches of the highest aggregate is distributed.

Secondly, data for Intrastate and the SAD is used to obtain the weighting of products, by distributing the weighting for the branch among the products that make up the IPRIX basket, proportionally to their production value.

For the IPRIM, only Intrastate and SAD data are used for all breakdowns, both branches and products.

The weightings structure the following is calculated with data from the surveys referring to year 2010 (base year).

Moreover, since the IPRIX-IPRIM base 2010 uses the calculation formula for chain-linked indices, this structure must be updated to the year 2012, for which information has been used regarding price evolution, provided by the actual indicators.

As has already been mentioned, the weight or importance of the aggregates making up these indicators will be updated annually, which will make it possible to adapt the indicator to changes occurring in industrial activities.

II.4 SELECTION OF ESTABLISHMENTS

Establishments are selected for each product in the basket. The objective being pursued must always be to obtain significant variation rates regarding the maximum geographical and functional breakdown level.

The number of establishments surveyed for each product is determined depending of the weight thereof, by endeavouring to cover at least 60% of the production value, and to select at least five respondent establishments.

Information for selecting establishments is obtained from the State Tax Office Foreign Trade database, of which all companies that have exported or imported industrial products in the reference year form a part.

II.5 DETERMINING THE NUMBER OF OBSERVATIONS

The number of observations for each product is determined by the sub-varieties reported by establishments.

Each establishment is asked to submit information regarding the price of sub-varieties (specific models of a product) most exported or imported.

Thus, in base 2010 prices are collected for 14,000 sub-varieties in the IPRIX, and 18,000 in the IPRIM.

III. Linked series

The implementation of any system of price indices implies a break in the continuity of the series, and more so when, in addition to changing the composition of the representative products and their corresponding weightings, a change occurs in the calculation methodology used to compile the indices, as in the case of the IPRIX and the IPRIM, base 2010.

For the purpose of having continued series available, at least for certain breakdown levels, and which enable calculating variation rates between different periods, and allowing users to perform studies and predictions relating to price evolution, the INE has prepared a link, and publishes the indices in base 2010, as of January 2005, in order to thus provide the continuity of the information published until now.

It is important to highlight that, as the new IPRIX-IPRIM has taken the year 2010 as its base, the series have been recalculated in the new base, using the new calculation formula and the new weightings, as of January 2010. Therefore, the variation rates of the IPRIX-IPRIM, base 2010, for the years 2010, 2011 and 2012, will be different from those calculated using the indices in base 2005.

It is worth highlighting that base 2010 marks the beginning of publishing the Industrial Price Index of the aggregated domestic and foreign markets, which are obtained as a result of linking the Industrial Price Index (IPRI) and the IPRIX. This indicator shows the evolution of the prices of those industrial products manufactured in the domestic market and sold both in the domestic market and abroad.

Moreover, from this base indices are published with three decimals and the variation rates with one, although they are calculated with all the available decimals for the index, and the data will be final three months after it is first published.